No. 24-43

In the Supreme Court of the United States

STATE OF WEST VIRGINIA, ET AL.,

v.

B.P.J., BY NEXT FRIEND AND MOTHER,
HEATHER JACKSON,

ON WRIT OF CERTIORARI
TO THE UNITED STATES COURT OF APPEALS
FOR THE FOURTH CIRCUIT

JOINT APPENDIX (VOLUME VIII OF X)

(Pages 3028-3562)

MICHAEL R. WILLIAMS
Solicitor General
Counsel of Record
OFFICE OF THE
WEST VIRGINIA
ATTORNEY GENERAL
State Capitol Complex
Building 1, Room E-26
Charleston, WV 25305
mwilliams@wvago.gov
(304) 558-2021

Counsel for Petitioners
West Virginia, et al.

JOSHUA A. BLOCK
Counsel of Record
AMERICAN CIVIL
LIBERTIES UNION
FOUNDATION
125 Broad Street Floor 18
New York, NY 10004
jblock@aclu.org
(212) 549-2593

Counsel for Respondent
B.P.J.

[additional counsel listed on inside cover]

PETITION FOR WRIT OF CERTIORARI FILED: JULY 11, 2024
CERTIORARI GRANTED: JULY 3, 2025

(continued from front cover)

JOHN J. BURSCH
Counsel of Record
ALLIANCE DEFENDING FREEDOM
440 First Street, NW, Suite 600
Washington, DC 20001
jbursch@ADFlegal.org
(616) 450-4235
Co-Counsel for State of West Virginia and Counsel for Lainey Armistead

AMY M. SMITH
Counsel of Record
STEPTOE & JOHNSON PLLC
400 White Oaks Boulevard
Bridgeport, WV 26330-4500
(304) 933-8000
amy.smith@steptoe-johnson.com

Counsel for Harrison County Board of Education and Dora Stutler

KELLY C. MORGAN
Counsel of Record
BAILEY & WYANT, PLLC
500 Virginia St. E., Suite 600
Charleston, WV 25301
(303) 345-4222
kmorgan@baileywyant.com

Counsel for West Virginia State Board of Education and W. Clayton Burch, State Superintendent

TABLE OF CONTENTS

Page

VOLUME I

Docket Entries,
B.P.J., et al. v. West Virginia State Board of Education, et al.,
No. 21-cv-00316 (S.D. W. Va.) 1

Docket Entries,
B.P.J. v. West Virginia State Board of Education,
No. 23-1078 (4th Cir.) 35

Supplemental Declaration of Katelyn Kang
(June 9, 2021) 56

B.P.J. First Amended Complaint
(July 16, 2021) 411

District Court Memorandum Opinion
Granting Plaintiff's Motion
for a Preliminary Injunction
(July 21, 2021) 438

Harrison County Board and County
Superintendent Stipulation of Uncontested
Facts (March 7, 2022) 455

West Virginia State Board of Education and
W. Clayton Burch Stipulation of
Uncontested Facts (March 30, 2022) 458

Lainey Armistead Declaration
(April 21, 2022) 460

Chelsea Mitchell Declaration (April 21, 2022) 469

Christina Mitchell Declaration (April 21, 2022) 482

TABLE OF CONTENTS
(continued)

Page

VOLUME II

Alanna Smith Declaration (April 21, 2022) 496

Selina Soule Declaration (April 21, 2022) 503

Darcy Aschoff Declaration (April 21, 2022) 513

Cynthia Monteleone Declaration (April 21, 2022) 518

Madison Kenyon Declaration (April 21, 2022) 523

Mary Marshall Declaration (April 21, 2022) 530

Haley Tanne Declaration (April 21, 2022) 535

Linnea Saltz Declaration (April 21, 2022) 541

Heather Jackson Declaration (April 21, 2022) 547

Redacted Gender Support Plan (April 21, 2022) 555

Redacted Preferred Name Request Form (April 21, 2022) 564

Pictures of B.P.J. (April 21, 2022) 575

B.P.J. Declaration (April 21, 2022) 578

Excerpts from West Virginia's Responses to Plaintiff's First Set of Interrogatories (April 21, 2022) 583

Excerpts from West Virginia's Responses to Plaintiff's Second Set of Requests for Admission (April 21, 2022) 586

TABLE OF CONTENTS
(continued)

Page

Excerpts from Dora Stutler's Responses and Objections to Plaintiff's Second Set of Requests for Admission (April 21, 2022).....591

Excerpts from Harrison County Board of Education's Responses and Objections to Plaintiff's Second Set of Requests for Admission (April 21, 2022).....596

Excerpts from West Virginia State Board of Education's Responses and Objections to Plaintiff's Second Set of Requests for Admission (April 21, 2022).....602

W. Clayton Burch's Responses and Objections to Plaintiff's Second Set of Requests for Admission (April 21, 2022).....606

Excerpts from WVSSAC's Responses to Second Set of Requests for Admission (April 21, 2022).....628

Excerpts from Lainey Armistead's Responses and Objections to Plaintiff's Second Set of Requests for Admission (April 21, 2022).....634

Redacted Deposition Transcript of B.P.J. dated January 21, 2022 (April 21, 2022).....639

Deposition Transcript of Heather Jackson dated January 19, 2022 (April 21, 2022).....750

Redacted Deposition Transcript of Heather Jackson dated January 20, 2022 (April 21, 2022).....801

TABLE OF CONTENTS
(continued)

Page

VOLUME III

Deposition Transcript of Bernard Dolan dated February 11, 2022 (April 21, 2022)..... 966

Redacted Deposition Transcript of Lainey Armistead dated March 11, 2022 (April 21, 2022)..... 1105

Declaration of Deanna Adkins, MD (April 21, 2022)..... 1245

VOLUME IV

Deposition Transcript of Deanna Adkins, MD dated March 16, 2022 (April 21, 2022)..... 1291

Expert Report and Declaration of Joshua D. Safer, MD, FACP, FACE (April 21, 2022)..... 1534

Rebuttal Expert Report and Declaration of Joshua D. Safer, MD, FACP, FACE (April 21, 2022)..... 1613

VOLUME V

Deposition Transcript of Joshua Safer, M.D. dated March 24, 2022 (April 21, 2022)..... 1628

Joshua Safer, MD Errata..... 1830

Expert Report and Declaration of Professor Mary D. Fry, PHD (April 21, 2022)..... 1836

Deposition Transcript of Mary D. Fry, PH.D. dated March 29, 2022 (April 21, 2022)..... 1913

Mary Fry Errata..... 2105

TABLE OF CONTENTS
(continued)

Page

VOLUME VI

Declaration of Gregory A. Brown, PH.D., FACSM (April 21, 2022) 2116

Deposition Transcript of Gregory A. Brown dated March 25, 2022 (April 21, 2022) 2233

Gregory Brown Errata 2439

Declaration of Dr. Chad. T. Carlson, M.D., FACSM (April 21, 2022) 2443

VOLUME VII

Deposition Transcript of Chad T, Carlson, M.D., FACSM dated March 28, 2022 (April 21, 2022) 2521

Chad Carlson Errata 2691

Mountain Hollar MS Invitational Official Team Scores (April 21, 2022) 2695

Doddridge Invitational Official Team Scores (April 21, 2022) 2699

Email Chain re Transgender Participation (April 21, 2022) 2705

Email Chain re Transgender Participation with attachment 2021 Green Book Summary (April 21, 2022) 2707

Excerpt of Email Chain re Transgender Participation (April 21, 2022) 2729

TABLE OF CONTENTS
(continued)

Page

Excerpt of West Virginia State Board of Education's Enrolled Bill Review Form for H.B. 3293 (April 21, 2022) 2735

Screen Capture of Jordan Bridges' Facebook Page (April 21, 2022) 2739

MSNBC Twitter, 4/30/21 Governor Justice Interview (April 21, 2022) 2746

NCAA Update to Transgender Policy (April 21, 2022) 2748

Plaintiff's Statement of Undisputed Facts (April 21, 2022) 2751

Lainey Armistead First Supplemental Disclosure (May 12, 2022) 2778

Expert Rebuttal Report and Declaration of Deanna Adkins, M.D (May 12, 2022) 2791

Rebuttal Expert Report and Declaration of Aron Janssen, M.D. (May 12, 2022) 2815

Declaration of James M. Cantor, PH.D. (May 12, 2022) 2866

VOLUME VIII

Declaration of Stephen B. Levine, MD (May 12, 2022) 3028

Memorandum by B.P.J. to Exclude Expert Testimony of Gregory A. Brown (May 12, 2022) 3165

TABLE OF CONTENTS
(continued)

Page

Expert Declaration of Gregory A. Brown, Ph.D. FACSM, *Hecox, et. al v. Little*, *et al.*, No. 20-cv-00184-DCN (D. Id.) (May 12, 2022) 3197

Deposition Transcript of James M. Cantor, PhD dated March 21, 2022 (May 12, 2022) 3324

VOLUME IX

Deposition Transcript of Aron Janssen, M.D. dated April 4, 2022 (May 12, 2022)..... 3563

Aron Janssen Errata..... 3771

Deposition Transcript of Stephen B. Levine, MD dated March 30, 2022 (May 12, 2022) 3773

Deposition Transcript of Stephen B. Levine, MD dated September 10, 2021 (May 12, 2022) 3990

Deposition Transcript of Stephen B. Levine, MD dated December 21, 2020 (May 12, 2022)..... 4030

WVSSAC Board of Directors Transgender Policy (May 12, 2022) 4039

VOLUME X

Memorandum by Lainey Armistead, State of West Virginia in response to Motion by B.P.J. to Exclude Expert Testimony of Gregory A. Brown (May 26, 2022) 4042

Plaintiff's Reply in Support of Statement of Undisputed Material Facts (May 26, 2022) 4074

TABLE OF CONTENTS
(continued)

Page

Email from Dr. Swartos to B. Dolan, May 6, 2019 (May 27, 2022) 4147

Circulating Testosterone as the Hormonal Basis of Sex Differences in Athletic Performance by David. J. Handelsman, et al. (2018) (May 27, 2022) 4150

Reply Memorandum of Law in Support of Motion to Exclude the Expert Testimony of Gregory A. Brown (June 3, 2022) 4245

Judgment Order (January 5, 2023) 4263

Declaration of B.P.J. in Support of Motion for Stay (January 20, 2023) 4265

Declaration of Heather Jackson in Support of Motion for Stay (January 20, 2023) 4269

Connect-Bridgeport Middle School Invitational Team Results, March 25, 2022 (January 20, 2023) 4274

2022 Charles Pointe Invitations, August 27, 2022 Team Results (January 20, 2023) 4308

Photos from B.P.J.'s 2022 Cross-Country Season 4334

Memorandum Opinion denying motion by B.P.J. to Stay Pending Appeal (February 7, 2023) 4341

Order of 4CCA Granting Motion for an Injunction Pending Appeal (February 22, 2023) 4347

TABLE OF CONTENTS
(continued)

Page

Appendix in Support of State of West Virginia and Lainey Armistead's Motion to Suspend the Injunction Pending Appeal (July 11, 2023) 4349

Heather Jackson Declaration (July 19, 2023) 4406

Order of 4CCA Denying Motion to Suspend Injunction (August 4, 2023) 4410

Order Vacating Order Granting Summary Judgment (May 16, 2024) 4418

Scheduling Order (May 20, 2024) 4421

Motion to Stay Proceedings Pending Resolution of Petition for Writ of Certiorari (May 21, 2024) 4424

Memorandum Opinion and Order granting Motion to Stay Proceedings Pending Resolution of Petition for Writ of Certiorari (June 7, 2024) 4426

Order Denying Defendants' Expedited Motion for Clarification (February 28, 2025) 4435

IN THE UNITED STATES DISTRICT COURT FOR THE SOUTHERN DISTRICT OF WEST VIRGINIA

CHARLESTON DIVISION

B. P. J., et al.,

Plaintiffs,

v. CIVIL ACTION NO. 2:21-cv-00316

WEST VIRGINIA STATE BOARD OF EDUCATION, et al.,

Defendants,

and

LAINEY ARMISTEAD,

Defendant-Intervenor.

DECLARATION OF STEPHEN B. LEVINE, MD

I, Dr. Stephen B. Levine, pursuant to 28 U.S. Code § 1746, declare under penalty of perjury under the laws of the United States of America that the facts contained in my Expert Report of Stephen B. Levine, MD., in the Case of B.P.J. v. West Virginia State Board of Education, dated February 23, 2022 and attached hereto, are true and correct to the best of my knowledge and belief, and that the opinions expressed therein represent my own expert opinions.

Executed on February 23, 2022.

/s/ Stephen B. Levine MD
Stephen B. Levine, MD

Expert Report of

Stephen B. Levine, MD

In the case of B.P.J. vs. West Virginia State Board of Education.

February 23, 2022

I. CREDENTIALS & SUMMARY

1. I am Clinical Professor of Psychiatry at Case Western Reserve University School of Medicine, and maintain an active private clinical practice. I received my MD from Case Western Reserve University in 1967, and completed a psychiatric residency at the University Hospitals of Cleveland in 1973. I became an Assistant Professor of Psychiatry at Case Western in 1973, became a Full Professor in 1985, and in 2021 was honored to be inducted into the Department of Psychiatry's "Hall of Fame."

2. Since July 1973, my specialties have included psychological problems and conditions relating to individuals' sexuality and sexual relations, therapies for sexual problems, and the relationship between love, intimate relationships, and wider mental health. In 2005, I received the Masters and Johnson Lifetime Achievement Award from the Society of Sex Therapy and Research. I am a Distinguished Life Fellow of the American Psychiatric Association.

3. I have served as a book and manuscript reviewer for numerous professional publications. I have been the Senior Editor of the first (2003), second (2010), and third (2016) editions of the *Handbook of Clinical Sexuality for Mental Health Professionals*. In addition to five previously solo-authored books for professionals, I have recently published *Psychotherapeutic Approaches to Sexual Problems* (2020). The book has a chapter titled "The Gender Revolution."

4. In total I have authored or co-authored over 180 journal articles and book chapters, 20 of which deal with the issue of gender dysphoria. I am an invited member of a Cochrane Collaboration subcommittee that is currently preparing a review of the scientific literature on the

effectiveness of puberty blocking hormones and of cross-sex hormones for gender dysphoria for adolescents. Cochrane Reviews are a well-respected cornerstone of evidence-based practice, comprising a systematic review that aims to identify, appraise, and synthesize all the empirical evidence that meets pre-specified eligibility criteria in response to a particular research question.

5. I first encountered a patient suffering what we would now call gender dysphoria in July 1973. In 1974, I founded the Case Western Reserve University Gender Identity Clinic, and have served as Co-Director of that clinic since that time. Across the years, our Clinic treated hundreds of patients who were experiencing a transgender identity. An occasional child was seen during this era. I was the primary psychiatric caregiver for several dozen of our patients and supervisor of the work of other therapists. I was an early member of the Harry Benjamin International Gender Dysphoria Association (later known as WPATH) and served as the Chairman of the committee that developed the 5th version of its Standards of Care. In 1993 the Gender Identity Clinic was renamed, moved to a new location, and became independent of Case Western Reserve University. I continue to serve as Co-Director.

6. In the course of my five decades of practice treating patients who suffered from gender dysphoria, I have at one time or another recommended or prescribed or supported social transition, cross-sex hormones, and surgery for particular patients, but only after extensive diagnostic and psychotherapeutic work.

7. In 2006, Judge Mark Wolf of the Eastern District of Massachusetts asked me to serve as an independent, court-appointed expert in a litigation involving the treatment of a transgender inmate within the Massachusetts prison system. In that litigation, the U.S. Court of Appeals for the

First Circuit in a 2014 (En Banc) opinion cited and relied on my expert testimony. I have been retained by the Massachusetts Department of Corrections as a consultant on the treatment of transgender inmates since 2007.

8. In 2019, I was qualified as an expert and testified concerning the diagnosis, understanding, developmental paths and outcomes, and therapeutic treatment of transgenderism and gender dysphoria, particularly as it relates to children, in the matter of *In the Interest of J.A.D. Y. and J.U.D.Y.,* Case No. DF-15-09887-S, 255th Judicial District, Dallas County, TX (the "*Younger* litigation"). I have provided expert testimony in other litigation as listed in my curriculum vitae. In 2019, I provided written expert testimony in the landmark case in the United Kingdom; *Bell v. The Tavistock and Portman NHS Foundation Trust.*

9. I am regularly requested to speak on the topic of gender dysphoria and have given countless presentations to academic conferences and Departments of Psychiatry around the country. In May of this year, I will be co-presenting a symposium on the management of adolescent-onset transgender identity at American Psychiatric Association's Annual Meeting.

10. A fuller review of my professional experience, publications, and awards is provided in my curriculum vitae, a copy of which is attached hereto as Exhibit A.

11. I am being compensated for my time spent in connection with this case at a rate of $400.00 per hour for consultation and $500.00 per hour for time spent testifying.

12. I have reviewed the "Declaration and Expert Report of Deanna Adkins, MD," dated January 21, 2022 ("Adkins"). In that declaration Dr. Adkins makes a variety of statements about gender dysphoria, therapies for

gender dysphoria, and outcomes of therapies, which I believe to be inaccurate, or unsupported by scientific evidence. Dr. Adkins is a pediatric endocrinologist. I note with some concern that Dr. Adkins makes a number of sweeping and purportedly scientific assertions but cites almost no peer-reviewed articles or studies that support her opinions.

13. Based on her declaration, Dr. Adkins' practice is focused on children and adolescents; her CV and declaration do not suggest substantial experience in working with adults or older young adults who are living in a transgender identity, or who suffer from gender dysphoria. (This diagnosis requires "clinically significant" distress.) The wider lifecycle view that derives from experience with these adults (and familiarity with the literature concerning them) provides an important cautionary perspective. The psychiatrist or psychologist treating a trans child or adolescent, of course seeks to make the young patient happy, but the overriding consideration is the creation of a happy, highly functional, mentally healthy person for the next 50 to 70 years of life. I refer to treatment that keeps this goal in view as the "life course" perspective.

14. Dr. Adkins' stated belief that the only way to avoid harm is affirmative care is just one of many questionable assumptions that lack firm scientific foundation. Others that frequently ride along with advocates' convictions about affirmative care include:

a. A trans identity is immutable;

b. Trans identities are primarily caused by biological forces;

c. Gender identity and orientation are distinct stable dimensions of identity;

d. There are no alternative treatments to affirmative care;

e. Affirmative care lastingly improves mental health and social function;

f. Affirmative care reduces the rates of suicidal ideation and suicide;

g. Young teens can give informed consent for hormones because they know best what will make them happy now and in the future;

h. De-transition of affirmed youth is rare;

i. Associated psychopathology during and after affirmative care is primarily due to minority stress.

15. These assertions are inaccurate or unsupported, for reasons that I explain in this Declaration. I will provide citations to published, peer-reviewed articles that inform my judgments.

16. I have also reviewed the "Expert Report and Declaration of Joshua D. Safer, MD," dated January 21, 2022 ("Safer"). In that declaration Dr. Safer similarly makes a variety of statements about gender dysphoria, therapies for gender dysphoria, and outcomes of therapies, which I believe to be inaccurate, or unsupported by scientific evidence. Dr. Safer also makes a number of sweeping and purportedly scientific assertions that are not substantiated by peer-reviewed articles or studies.

17. It is also my opinion that a number of Dr. Safer's assertions are inaccurate or unsupported, for reasons that I explain in this Declaration. Similarly, I will provide citations to published, peer-reviewed articles that inform my judgments.

18. A summary of the key points that I explain in this report is as follows:

a. Sex as defined by biology and reproductive function is clear, binary, and cannot be changed. While hormonal and surgical procedures may enable some individuals to "pass" as the opposite gender during some or all of their lives, such procedures carry with them physical, psychological, and social risks, and no procedures can enable an individual to perform the reproductive role of the opposite sex. (Section II.A.)

b. The diagnosis of "gender dysphoria" encompasses a diverse array of conditions, with widely differing pathways and characteristics depending on age of onset, biological sex, mental health, intelligence, motivations for gender transition, socioeconomic status, country of origin, etc. Data from one population (e.g., adults) cannot be assumed to be applicable to others (e.g., children). (Section II.B.)

c. Among practitioners in the field, there are currently widely varying views concerning both the causes of and appropriate therapeutic response to gender dysphoria in children or adolescents. There are no generally accepted "standards of care" and existing studies do not provide a basis for a scientific conclusion as to which therapeutic response results in the best long-term outcomes for affected individuals. (Section III.)

d. Transgender identity is not biologically based. Rather, gender dysphoria is a psychiatric condition that cannot be identified by any biological test or measurement. (Sections IV.A, IV.B.)

e. Disorders of sexual development ("DSDs") are biological phenomena. It is an error to conflate and/or

scientifically link DSDs with incidents of gender dysphoria. (Sections IV.C, IV.D.)

f. The large majority of children who are diagnosed with gender dysphoria "desist"—that is, their gender dysphoria does not persist—by puberty or adulthood. Desistance is also increasingly observed among teens and young adults who have experienced "rapid onset gender dysphoria" — first manifesting gender dysphoria during or shortly after adolescence. (Section V.A., V.B.)

g. "Social transition" —the active affirmation of transgender identity—in young children is a powerful psychotherapeutic intervention that will substantially reduce the number of children "desisting" from transgender identity. Therefore, the profound implications of "affirmative" treatment—which include taking puberty blockers and cross-sex hormones—must be taken into account where social transition is being considered. (Section VI.A,, VI.B.)

h. Administration of puberty blockers is not a benign "pause" of puberty, but rather a powerful medical and psychotherapeutic intervention that almost invariably leads to persistence in a transgender identity and, ultimately, to the administration of cross-sex hormones. (Section VI.C.)

i. The knowledge base concerning the "affirmative" treatment of gender dysphoria available today has very low scientific quality with many long-term implications remaining unknown. (Section VILA)

j. There are no studies that show that affirmation of transgender identity in young children reduces suicide or suicidal ideation, or improves long-term outcomes, as compared to other therapeutic approaches. Meanwhile,

multiple studies show that adult individuals living transgender lives suffer much higher rates of suicidal ideation, completed suicide, and negative physical and mental health conditions than does the general population. This is true before and after transition, hormones, and surgery. (Section VII.B., VII.C.)

k. In light of what is known and not known about the impact of affirmation on the incidence of suicide, suicidal ideation, and other indicators of mental and physical health, it is scientifically baseless, and therefore unethical, to assert that a child or adolescent who express an interest in a transgender identity will kill him- or herself unless adults and peers affirm that child in a transgender identity. (Section VIII.)

l. Hormonal interventions to treat gender dysphoria are experimental in nature and have not been shown to be safe, but rather put an individual at risk of a wide range of long-term and even life-long harms including: physical health risks; sterilization and the associated emotional response; impaired sexual response; surgical complications and lifelong after-care; alienation of family and romantic relationships; elevated mental health risks of depression, anxiety, and substance abuse. (Section IX.)

II. BACKGROUND ON THE FIELD

A. The biological baseline of the binary sexes

19. Dr. Adkins asserts that "the terms biological sex and biological male or female are imprecise and should be avoided." (Adkins at 10.) Dr. Safer further asserts that the term biological sex "can cause confusion," and moreover that a person's sex encompasses gender identity. (Safer at 6.) These statements are untrue. Biological sex is very well defined in all biological sciences including medicine. It is

pervasively important in human development throughout the lifecycle.

20. Sex is not "assigned at birth" by humans visualizing the genitals of a newborn; it is not imprecise. Rather, it is clear, binary, and determined at conception. The sex of a human individual at its core structures the individual's biological reproductive capabilities—to produce ova and bear children as a mother, or to produce semen and beget children as a father. As physicians know, sex determination occurs at the instant of conception, depending on whether a sperm's X or Y chromosome fertilizes the egg. A publication of the federal government's National Institute of Health accurately summarizes the scientific facts:

> "Sex is a biological classification, encoded in our DNA. Males have XY chromosomes, and females have XX chromosomes. Sex makes us male or female. Every cell in your body has a sex—making up tissues and organs, like your skin, brain, heart, and stomach. Each cell is either male or female depending on whether you are a man or a woman." (NIH 2022.)

21. The binary of biological sex is so fundamental and wide-ranging in its effects on human (and mammal) development and physiology that since 2014 the NIH has required all funded research on humans or vertebrate animals to include "sex as a biological variable" and give "adequate consideration of both sexes in experiments." (NIH 2015). In 2021, the Endocrine Society issued a position paper elaborating on the application of the NIH requirement. The Endocrine Society correctly stated that "Sex is a biological concept . . . all mammals have 2 distinct sexes;" that "biological sex is . . . a fundamental source of intraspecific variation in anatomy and physiology;" and that "In mammals, numerous sexual traits (gonads,

genitalia, etc.) that typically differ in males and females are tightly linked to each other because one characteristic leads to sex differences in other traits." (Bhargava et al. 2021 at 221, 229.)

22. The Endocrine Society emphasized that "The terms sex and gender should not be used interchangeably," and noted that even in the case of those "rare" individuals who suffer from some defect such that they "possess a combination of male- and female-typical characteristics, those clusters of traits are sufficient to classify most individuals as either biologically male or female." They concluded, "Sex is an essential part of vertebrate biology, but gender is a human phenomenon. Sex often influences gender, but gender cannot influence sex." (Bhargava et al. 2021 at 220-221, 228.) For purposes of this litigation, Dr. Bhargava's statement that gender cannot influence sex is of central importance.

23. As these statements and the NIH requirement suggest, biological sex pervasively influences human anatomy, its development and physiology. This includes, of course, the development of the human brain, in which many sexually dimorphic characteristics have now been identified. In particular, the Endocrine Society and countless other researchers have determined that human brains undergo particular sex-specific developmental stages during puberty. This predictable developmental process is a genetically controlled coordinated endocrine response that begins with pituitary influences leading to increases in circulating sex hormones. (Bhargava et al. 2021 at 225, 229; Blakemore et al. 2010 at 926-927, 929; NIH 2001.).

24. Humans have viewed themselves in terms of binary sexes since the earliest historical records. Recognizing a concept of "gender identity" as something distinct from sex

is a rather recent innovation whose earliest manifestations likely began in the late 1940s. Its usage became common in medicine in the 1980s and subsequently in the larger culture. Definitions of gender have been evolving and remain individual-centric and subjective. In a statement on "Gender and Health," the World Health Organization defines "gender" as "the characteristics of women, men, girls and boys that are socially constructed" and that "var[y] from society to society and can change over time," and "gender identity" as referring to "a person's deeply felt, internal and individual experience of gender." (WHO Gender and Health.) As these definitions indicate, a person's "felt" "experience of gender" is inextricably bound up with and affected by societal gender roles and stereotypes—or, more precisely, by the affected individual's *perception* of societal gender roles and stereotypes and their personal idiosyncratic meanings. Typically, gendered persons also have subtly different, often idiosyncratic, reactions to societal gender roles and stereotypes without preoccupation with changing their anatomy.

25. Thus, the self-perceived gender of a child begins to develop along with the early stages of identity formation generally, influenced in part from how others label the infant: "I love you, son (daughter)." This designation occurs thousands of times in the first two years of life when a child begins to show awareness of the two possibilities. As acceptance of the designated gender corresponding to the child's sex is the outcome in >99% of children everywhere, anomalous gender identity formation begs for understanding. Is it biologically shaped? Is it biologically determined? Is it the product of how the child was privately regarded and treated? Is it a product of the quality of early life caregiver attachments? Does it stem from trauma-based rejection of maleness or femaleness, and if so,

flowing from what trauma? Does it derive from a tense, chaotic interpersonal parental relationship without physical or sexual abuse? Is it a symptom of another, as of yet unrevealed, emotional disturbance or neuropsychiatric condition (autism)? The answers to these relevant questions are not scientifically known but are not likely to be the same for every trans-identified child, adolescent, or adult.

26. Under the influence of hormones secreted by the testes or ovaries, numerous additional sex-specific differences between male and female bodies continuously develop postnatally, culminating in the dramatic maturation of the primary and secondary sex characteristics with puberty. These include differences in hormone levels, height, weight, bone mass, shape, musculature, body fat levels and distribution, and hair patterns, as well as physiological differences such as menstruation and ejaculation. These are genetically programmed biological consequences of sex—the actual meaning of sex over time. Among the consequences of sex is the consolidation of gender identity during and after puberty.

27. Despite the increasing ability of hormones and various surgical procedures to reconfigure some male bodies to visually pass as female, or vice versa, the biology of the person remains as defined by his (XY) or her (XX) chromosomes, including cellular, anatomic, and physiologic characteristics and the particular disease vulnerabilities associated with that chromosomally defined sex. For instance, the XX (genetically female) individual who takes testosterone to stimulate certain male secondary sex characteristics will nevertheless remain unable to produce sperm and father children. It is certainly true, as Dr. Adkins writes, that "[h]ormone therapy and social

transition significantly change a person's physical appearance." (Adkins at 8.) But in critical respects this change can only be "skin deep." Contrary to assertions and hopes that medicine and society can fulfill the aspiration of the trans individual to become "a complete man" or "a complete woman," this is not biologically attainable. (Levine 2018 at 6; Levine 2016 at 238.) It is possible for some adolescents and adults to pass unnoticed—that is, to be perceived by most individuals as a member of the gender that they aspire to be—but with limitations, costs, and risks, as I detail later.

B. Definition and diagnosis of gender dysphoria

28. Specialists have used a variety of terms over time, with somewhat shifting definitions, to identify and speak about a distressing incongruence between an individual's genetically determined sex and the gender with which they identify or to which they aspire. Today's American Psychiatric Association *Diagnostic and Statistical Manual of Mental Disorders* ("DSM-5") employs the term Gender Dysphoria and defines it with separate sets of criteria for adolescents and adults on the one hand, and children on the other.

29. There are at least five distinct pathways to gender dysphoria: early childhood onset; onset near or after puberty with no prior cross gender patterns; onset after defining oneself as gay for several or more years and participating in a homosexual lifestyle; adult onset after years of heterosexual transvestism; and onset in later adulthood with few or no prior indications of cross-gender tendencies or identity. (Levine 2021.) The early childhood onset pathway and the more recently observed onset around puberty pathway are most relevant to this matter.

30. Gender dysphoria has very different characteristics depending on age and sex at onset. Young children who are living a transgender identity commonly suffer materially fewer symptoms of concurrent mental distress than do older patients. (Zucker 2018 at 10.) The developmental and mental health patterns for each of these groups are sufficiently different that data developed in connection with one of these populations cannot be assumed to be applicable to another.

31. The criteria used in DSM-5 to identify Gender Dysphoria include a number of signs of discomfort with one's natal sex and vary somewhat depending on the age of the patient, but in all cases require "clinically significant distress or impairment in . . . important areas of functioning" such as social, school, or occupational settings. The symptoms must persist for at least six months.

32. Children who conclude that they are transgender are often unaware of a vast array of adaptive possibilities for how to live life as a man or a woman—possibilities that become increasingly apparent over time to both males and females. A boy or a girl who claims or expresses interest in pursuing a transgender identity often does so based on stereotypical notions of femaleness and maleness that reflect constrictive notions of what men and women can be. (Levine 2017 at 7.) A young child's—or even an adolescent's—understanding of this topic is quite limited. Nor can they grasp what it may mean for their future to be sterile. These children and adolescents consider themselves to be relatively unique; they do not realize that discomfort with the body and perceived social role is neither rare nor new to civilization. What is new is that such discomfort is thought to indicate that they must be a trans person.

C. Impact of gender dysphoria on minority and vulnerable groups

33. Given that, as I discuss later, a diagnosis of gender dysphoria is now frequently putting even young children on a pathway that leads to irreversible physical changes and sterilization by young adulthood, it should be of serious concern to all practitioners that minority and vulnerable groups are receiving this diagnosis at disproportionately high rates. These include: children of color (Rider et al. 2018), children with mental developmental disabilities (Reisner et al. 2015), children on the autistic spectrum (at a rate more than 7x the general population) (Shumer et al. 2016; van der Miesen et al. 2018), children with ADHD (Becerra-Culqui et al. 2018), children residing in foster care homes, adopted children (at a rate more than 3x the general population) (Shumer et al. 2017), victims of childhood sexual or physical abuse or other "adverse childhood events" (Thoma 2021 et al.; Newcomb et al. 2020; Kozlowska et al. 2021), children with a prior history of psychiatric illness (Edwards-Leeper et al. 2017; Kaltiala-Heino et al. 2015; Littman 2018), and more recently adolescent girls (in a large recent study, at a rate more than 2x that of boys) (Rider et al. 2018 at 4**).**

D. Three competing conceptual models of gender dysphoria and transgender identity

34. Discussions about appropriate responses by mental health professionals ("MHPs") to actual or sub-threshold gender dysphoria are complicated by the fact that various speakers and advocates (or a single speaker at different times) view transgenderism through at least three very different paradigms, often without being aware of, or at least without acknowledging, the distinctions.

35. Gender dysphoria is **conceptualized and described by some professionals and laypersons as though it were a serious, physical medical illness that causes suffering,** comparable to diseases that are curable before it spreads, such as melanoma or sepsis. Within this paradigm, whatever is causing distress associated with gender dysphoria—whether secondary sex characteristics such as facial hair, nose and jaw shape, presence or absence of breasts, or the primary anatomical sex organs of testes, ovaries, penis, or vagina—should be removed to alleviate the illness. The promise of these interventions is the cure of the gender dysphoria.

36. Dr. Adkins appears to endorse this perspective, asserting that gender dysphoria is a "medical condition." (Adkins at 4.) It should be noted, however, that gender dysphoria is a psychiatric, not a medical, diagnosis. Since its inception in DSM-III in 1983, it has always been specified in the psychiatric DSM manuals and has not been specified in medical diagnostic manuals. Notably, gender dysphoria is the only psychiatric condition to be treated by surgery, even though no endocrine or surgical intervention package corrects any identified biological abnormality. (Levine 2016 at 240.)

37. Gender dysphoria is alternatively **conceptualized in developmental terms,** as an adaptation to a psychological problem that may have been first manifested as a failure to establish a comfortable conventional sense of self in early childhood. This paradigm starts from the premise that all human lives are influenced by past processes and events. Trans lives are not exceptions to this axiom. (Levine 2016 at 238.) MHPs who think of gender dysphoria through this paradigm may work both to identify and address causes of the basic problem of the deeply uncomfortable self or a sense of self impaired by later adversity or abuse. The

purpose is to ameliorate suffering when the underlying problem cannot be solved. MHPs first work with the patient and (ideally) family to learn about the events and processes that may have led to the trans person repudiating the gender associated with his sex. The developmental paradigm is mindful of temperamental, parental bonding, psychological, sexual, and physical trauma influences, and the fact that young children work out their psychological issues through fantasy and play and adolescents work out their issues by adopting various interests and identity labels.

38. There is evidence among adolescents that peer social influences through "friend groups" (Littman 2018) or through the internet can increase the incidence of gender dysphoria or claims of transgender identity. Responsible MHPs will want to probe these potential influences to better understand what is truly deeply tied to the psychology of the patient, and what may instead be being "tried on" by the youth as part of the adolescent process of self-exploration and self-definition.

39. In addition, the developmental paradigm recognizes that, with the important exception of genetic sex, essentially all aspects of an individual's identity evolve—often markedly—across the individual's lifetime. This includes gender. Some advocates assert that a transgender identity is biologically caused, fixed from early life, and eternally present in an unchanging manner. As I review later, however, this assertion is not supported by science.[1]

---

[1] Even the advocacy organization The Human Rights Campaign asserts that a person can have "a fluid or unfixed gender identity." https://www.hrc.org/resources/glossary-of-terms.

40. The third paradigm through which gender dysphoria is alternatively conceptualized is from **a sexual minority rights perspective.** Under this paradigm, any response other than medical and societal affirmation and implementation of a patient's claim to "be" the opposite gender is a violation of the individual's civil right to self-expression. Any effort to ask "why" questions about the patient's condition, or to address underlying causes, is viewed as a violation of autonomy and civil rights. In the last few years, this paradigm has been successful in influencing public policy and the education of pediatricians, endocrinologists, and many mental health professionals. Obviously, however, this is not a medical or psychiatric perspective. Unfortunately, it appears to be the most powerful perspective that exists in the public, nonscientific debate.

E. Four competing models of therapy

41. Few would disagree that the human psyche is complex. Few would disagree that children's and adolescents' developmental pathways typically have surprising twists and turns. The complexity and unpredictability of childhood and adolescent development equally applies to trans-identifying youth. Because of past difficulties of running placebo-controlled clinical trials in the transgender treatment arena, substantial disagreements among professionals about the causes of trans identities and their ideal treatments exist. These current disagreements might have been minimized if trans treated persons were carefully followed up to determine long term outcomes. They have not been. When we add to this to the very different current paradigms for understanding transgender phenomena, it is not scientifically surprising that disagreements are sharply drawn. It is with this in mind that I summarize below the

leading approaches, and offer certain observations and opinions concerning them.

(1) The "watchful waiting" therapy model

42. In Section V.A below I review the uniform finding of eleven follow-up studies that the large majority of children who present with gender dysphoria will desist from desiring a transgender identity by adulthood if left untreated by social transition approaches.

43. When a pre-adolescent child presents with gender dysphoria, a "watchful waiting" approach seeks to allow for the fluid nature of gender identity in children to naturally evolve—that is, take its course from forces within and surrounding the child. Watchful waiting has two versions:

a. Treating any other psychological co-morbidities—that is, other mental illnesses as defined by DSM-5 (separation anxiety disorder, attention deficit hyperactivity disorder, autism spectrum disorder, obsessive compulsive disorder, etc), or subthreshold for diagnosis but behavioral problems that the child may exhibit (school avoidance, bedwetting, inability to make friends, aggression/defiance) without a focus on gender **(model #1);** and

b. No treatment at all for anything but a regular follow-up appointment. This might be labeled a "hands off" approach **(model #2).**

(2) The psychotherapy model: Alleviate distress by identifying and addressing causes (model #3)

44. One of the foundational principles of psychotherapy has long been to work with a patient to identify the causes of observed psychological distress and then to address those causes as a means of alleviating the distress. The National Institute of Mental Health has promulgated the

idea that 75% of adult psychopathology has its origins in childhood experience.

45. Many experienced practitioners in the field of gender dysphoria, including myself, have believed that it makes sense to employ these long-standing tools of psychotherapy for patients suffering gender dysphoria, asking the question as to what factors in the patient's life are the determinants of the patient's repudiation of his or her natal sex. (Levine 2017 at 8; Levine 2021.) I and others have reported success in alleviating distress in this way for at least some patients, whether the patient's sense of discomfort or incongruence with his or her natal sex entirely disappeared or not. Relieving accompanying psychological co-morbidities leaves the patient freer to consider the pros and cons of transition as he or she matures.

46. Among other things, the psychotherapist who is applying traditional methods of psychotherapy may help—for example—the male patient appreciate the wide range of masculine emotional and behavioral patterns as he grows older. He may discuss with his patient, for example, that one does not have to become a "woman" in order to be kind, compassionate, caring, noncompetitive, to love the arts, and to be devoted to others' feelings and needs. (Levine 2017 at 7.) Many biologically male trans individuals, from childhood to older ages, speak of their perceptions of femaleness as enabling them to discuss their feelings openly, whereas they perceive boys and men to be constrained from emotional expression within the family and larger culture, and to be aggressive. Men, of course, can be emotionally expressive, just as they can wear pink. Converse examples can be given for girls and women. These types of ideas regularly arise during psychotherapies.

47. As I note above, many gender-nonconforming children and adolescents in recent years derive from minority and vulnerable groups who have reasons to feel isolated and have an uncomfortable sense of self. A trans identity may be a hopeful attempt to redefine the self in a manner that increases their comfort and decreases their anxiety. The clinician who uses traditional methods of psychotherapy may not focus on their gender identity, but instead work to help them to address the actual sources of their discomfort. Success in this effort may remove or reduce the desire for a redefined identity. This often involves a focus on disruptions in their attachment to parents in vulnerable children, for instance, those in the foster care system.

48. Because "watchful waiting" can include treatment of accompanying psychological co-morbidities, and the psychotherapist who hopes to relieve gender dysphoria may focus on potentially causal sources of psychological distress rather than on the gender dysphoria itself, there is no sharp line between "watchful waiting" and the psychotherapy model in the case of prepubescent children.

49. To my knowledge, there is no evidence beyond anecdotal reports that psychotherapy can enable a return to male identification for genetically male boys, adolescents, and men, or return to female identification for genetically female girls, adolescents, and women. On the other hand, anecdotal evidence of such outcomes does exist; I and other clinicians have witnessed reinvestment in the patient's biological sex in some individual patients who are undergoing psychotherapy. The Internet contains many such reports, and I have published a paper on a patient who sought my therapeutic assistance to reclaim his male gender identity after 30 years living as a woman and is in fact living as a man today. (Levine 2019.) I have seen

children desist even before puberty in response to thoughtful parental interactions and a few meetings of the child with a therapist. There are now a series of articles and at least one major book on the psychological treatment of adolescents. (D'Angelo et al. 2021 at 7-16; Evans & Evans 2021.)

(3) The affirmation therapy model (model #4)

50. While it is widely agreed that the therapist should not directly challenge a claimed transgender identity in a child, some advocates and practitioners go much further, and promote and recommend that any expression of transgender identity should be immediately accepted as decisive, and thoroughly affirmed by means of consistent use of clothing, toys, pronouns, etc., associated with transgender identity. They argue that the child should be comprehensively re-socialized in grade school in their aspired-to gender. As I understand it, this is asserted as a reason why male students who assert a female gender identity must be permitted to compete in girls' or women's athletic events. These advocates treat any question about the causes of the child's transgender identification as inappropriate. They may not recognize the child's ambivalence. They assume that observed psychological co-morbidities in the children or their families are unrelated or will get better with transition, and need not be addressed by the MHP who is providing supportive guidance concerning the child's gender identity.

51. Some advocates, indeed, assert that unquestioning affirmation of any claim of transgender identity in children is essential, and that the child will otherwise face a high risk of suicide or severe psychological damage. Dr. Adkins appears to follow this line, asserting that "My clinical experience . . . has been that [patients] suffer and

experience worse health outcomes" when they are not permitted to enter all spaces and participate in all activities in a manner "consistent with gender identity." (Adkins at 9.) This claim is simply not supported by the clinical data we have available to us. Indeed, available long-term data contradicts Dr. Adkins' claim. I address physical and mental health outcomes in Section VII below, and suicide in Section VIII below.

52. Dr. Adkins also asserts that fully supported social transition is the "only treatment for prepubertal children." (Adkins at 6.) As I review in the next section, this is not correct. This may be the only treatment that Dr. Adkins considers, but my own conversations and contacts lead me to believe that Dr. James Cantor was correct when he wrote that "almost all clinics and professional associations in the world" do not use "gender affirmation" for prepubescent children and instead "delay any transitions after the onset of puberty." (Cantor 2019 at 1.)

53. I do not know what proportion of practitioners are using which model. However, in my opinion, in the case of young children, prompt and thorough affirmation of a transgender identity disregards the principles of child development and family dynamics and is not supported by science. Instead of science, this approach is currently being reinforced by an echo-chamber of approval from other like-minded child-oriented professionals who do not sufficiently consider the known negative medical and psychiatric outcomes of trans adults. Rather than recommend social transition in grade school, the MHP must focus attention on the child's underlying internal and familial issues. Ongoing relationships between the MHP and the parents, and the MHP and the child, are vital to help the parents, child, other family members, and the MHP to understand

over time the issues that need to be dealt with by each of them.

54. Likewise, since the child's sense of gender develops in interaction with his parents and their own gender roles and relationships, the responsible MHP will almost certainly need to delve into family and marital dynamics.

III. THERE IS NO CONSENSUS OR AGREED "STANDARD OF CARE" CONCERNING THERAPEUTIC APPROACHES TO CHILD OR ADOLESCENT GENDER DYSPHORIA.

55. Dr. Adkins states that "[t]he only treatment to avoid [ ] serious harm is to recognize the gender identity of patients with gender dysphoria and follow appropriate treatment protocols to affirm gender identity and alleviate distress," and appears to believe that transition and affirmation of children who suffer from gender dysphoria is a generally accepted "standard of care." (Adkins at 5.) It is not.

56. As I review in separate sections later, there is far too little firm clinical evidence in this field to permit any evidence-based standard of care. Given the lack of scientific evidence, it is neither surprising nor improper that—as I detailed in Section II—there is a diversity of views among practitioners as to as to the best therapeutic response for the child, adolescent, or young adult who suffers from gender dysphoria. Dr. Adkins is unwittingly confusing therapeutic precedent among those who agree with her views, armed with ideas promulgated by WPATH, with careful scientific documentation of her concepts. She presumes that her views have been scientifically established even though much has been published highlighting the lack of supportive definitive evidence.

57. Reviewing the state of opinion and practice in 2021, the Royal Australian and New Zealand College of Psychiatrists observed that "There are polarised views and mixed evidence regarding treatment options for people presenting with gender identity concerns, especially children and young people." (RANZCP, 2021.) Similarly, a few years earlier prominent Dutch researchers noted: "[T]here is currently no general consensus about the best approach to dealing with the (uncertain) future development of children with GD, and making decisions that may influence the function and/or development of the child — such as social transition." (Ristori & Steensma 2016 at 18.)[2] In this Section, I comment on some of the more important areas of disagreement within the field.

A. Experts and organizations disagree as to whether "distress" is a necessary element for diagnoses that justifies treatment for gender identity issues.

58. As outlined in Section II.B above, "clinically significant distress" is one of the criteria used in DSM-5 to identify gender dysphoria. This indicates a heightened level of distress that rises beyond a threshold level of social awkwardness or discomfort with the changing body. It is known that many trans-identified youth with incongruence between their sexed bodies and their gender identity choose not to take hormones; their incongruence is quite tolerable as they further clarify their sexual identity elements. This population raises the questions of what distress is being measured when DSM-5 criteria are met and what else might be done about it.

59. I note that there is no "clinically significant distress" requirement in World Health Organization's International

[2] *See also* Zucker 2020 which questions the merit of social transition as a first-line treatment.

Classification of Diseases (ICD-11) criteria for gender incongruence, which rather indicates "a marked and persistent incongruence between an individual's experienced gender and the assigned sex." (World Health Organization 2019.)

60. Therefore, even between these two committee-based authorities, there is a significant disagreement as to what constitutes a gender condition justifying life-changing interventions. To my knowledge, some American gender clinics and practitioners are essentially operating under the ICD-11 criteria rather than the APA's DSM-5 criteria, prescribing transition for children, hormonal interventions for slightly older children, and different hormones for adolescents who assert a desire for a transgender identity whether or not they are exhibiting "clinically significant distress." Others adhere to the DSM-5 diagnostic standard.

61. I will add that even from within one "school of thought," such as embodied by Dr. Adkins, it is not responsible to make a single, categorical statement about the proper treatment of children or adolescents presenting with gender dysphoria or other gender-related issues. There is no single pathway to the development of a trans identity and no reasonably uniform short- or long-term outcome of medically treating it. As individuals grow physically, mature psychologically, and experience or fail to experience satisfying romantic relationships, their life course depends on their differing psychological, social, familial, and life experiences. There should be no trust in assertions that trans identified youth must be treated in a particular manner to avoid harm for two reasons: first, there is no systematic data on the nature of, and the rate of harms of either affirmative treatment, no treatment, or psychological only treatment. Second, as in other youthful psychiatric and other challenges, outcomes vary.

B. Opinions and practices vary widely about the utilization of social transition for children and adolescents.

62. Dr. Adkins notes that she is a member of the World Professional Association for Transgender Health (WPATH), invokes a guidance document that that organization has chosen to publish under the title of "standards of care," and asserts that the WPATH Standards of Care are "widely accepted." (Adkins at 3, 5.) Below, I will provide some explanation of WPATH and its "Standards of Care," which are not the product of a strictly scientific organization, and are by no means accepted by all or even most practitioners as setting out best practices.

63. Here, however, I will note that WPATH does not take a position concerning whether or when social transition may be appropriate for pre-pubertal children. Instead, the WPATH "Standards of Care" states that the question of social transition for children is a "controversial issue" and calls for mental health professionals to support families in what it describes as "difficult decisions" concerning social transition.

64. Dr. Erica Anderson is a prominent practitioner in this area who identifies as a transgender woman, who was the first transgender president of USPATH, and who is a former board member of WPATH. Dr. Anderson recently resigned from those organizations and has condemned automatic approval of transition upon the request of a child or adolescent, noting that "adolescents . . . are notoriously susceptible to peer influence," that transition "doesn't cure depression, doesn't cure anxiety disorders, doesn't cure autism-spectrum disorder, doesn't cure ADHD," and instead that "a comprehensive biopsychosocial evaluation" should proceed allowing a child to transition. (Davis 2022.) And as I have explained previously, my own view based on

50 years of experience in this area favors strong caution before approving life-altering interventions such as social transition, puberty blockers, or cross-sex hormones.

C. The WPATH "Standards of Care" is not an impartial or evidence-based document.

65. Because WPATH is frequently cited by advocates of social, hormonal, and surgical transition, I provide some context concerning that private organization and its "Standards of Care."

66. I was a member of the Harry Benjamin International Gender Dysphoria Association from 1974 until 2001. From 1997 through 1998, I served as the Chairman of the eight-person International Standards of Care Committee that issued the fifth version of the Standards of Care. I resigned my membership in 2002 due to my regretful conclusion that the organization and its recommendations had become dominated by politics and ideology, rather than by scientific process, as it was years earlier. In approximately 2007, the Harry Benjamin International Gender Dysphoria Association changed its name to the World Professional Association for Transgender Health.

67. WPATH is a voluntary membership organization. Since at least 2002, attendance at its biennial meetings has been open to trans individuals who are not licensed professionals. While this ensures taking patients' needs into consideration, it limits the ability for honest and scientific debate, and means that WPATH can no longer be considered a purely professional organization.

68. WPATH takes a decided view on issues as to which there is a wide range of opinion among professionals. WPATH explicitly views itself as not merely a scientific organization, but also as an advocacy organization. (Levine 2016 at 240.) WPATH is supportive to those who want sex

reassignment surgery ("SRS"). Skepticism as to the benefits of SRS to patients, and strong alternate views, are not well tolerated in discussions within the organization or their educational outreach programs. Such views have been known to be shouted down and effectively silenced by the large numbers of nonprofessional adults who attend the organization's biennial meetings. Two groups of individuals that I regularly work with have attended recent and separate WPATH continuing education sessions. There, questions about alternative approaches were quickly dismissed with "There are none. This is how it is done." Such a response does not accurately reflect what is known, what is unknown, and the diversity of clinical approaches in this complex field.

69. The Standards of Care ("SOC") document is the product of an effort to be balanced, but it is not politically neutral. WPATH aspires to be both a scientific organization and an advocacy group for the transgendered. These aspirations sometimes conflict. The limitations of the Standards of Care, however, are not primarily political. They are caused by the lack of rigorous research in the field, which allows room for passionate convictions on how to care for the transgendered. And, of course, once individuals have socially, medically, and surgically transitioned, WPATH members and the trans people themselves at the meetings are committed to supporting others in their transitions. Not only have some trans participants been distrustful or hostile to those who question the wisdom of these interventions, their presence makes it difficult for professionals to raise their concerns. Vocal trans rights advocates have a worrisome track record of attacking those who have alternative views. (Dreger 2015.)

70. In recent years, WPATH has fully adopted some mix of the medical and civil rights paradigms. It has downgraded the role of counseling or psychotherapy as a requirement for these life-changing processes. WPATH no longer considers preoperative psychotherapy to be a requirement. It is important to WPATH that the person has gender dysphoria; the pathway to the development of this state is not. (Levine 2016 at 240.) The trans person is assumed to have thoughtfully considered his or her options before seeking hormones, for instance.

71. Most psychiatrists and psychologists who treat patients suffering sufficiently severe distress from gender dysphoria to seek inpatient psychiatric care are not members of WPATH. Many psychiatrists, psychologists, and pediatricians who treat some patients suffering gender dysphoria on an outpatient basis are not members of WPATH. WPATH represents a self-selected subset of the profession along with its many non-professional members; it does not capture the clinical experiences of others. WPATH claims to speak for the medical profession; however, it does not welcome skepticism and therefore, deviates from the philosophical core of medical science. There are pediatricians, psychiatrists, endocrinologists, and surgeons who object strongly, on professional grounds, to transitioning children and providing affirmation in a transgender identity as the first treatment option. WPATH does not speak for all of the medical profession.

72. In 2010 the WPATH Board of Directors issued a statement advocating that incongruence between sex and felt gender identity should cease to be identified in the DSM as a pathology.[3] This position was debated but not adopted by the (much larger) American Psychiatric

[3] WPATH *De-Psychopathologisation Statement* (May 26, 2010), available at wpath.org/policies (last accessed January 21, 2020).

Association, which maintained the definitions and diagnoses of gender dysphoria as a pathology in the DSM-5 manual issued in 2013.

73. In my experience some current members of WPATH have little ongoing experience with the mentally ill, and many trans care facilities are staffed by MHPs who are not deeply experienced with recognizing and treating frequently associated psychiatric co-morbidities. Further, being a mental health professional, per se, does not guarantee experience and skill in recognizing and effectively intervening in serious or subtle patterns. Because the 7th version of the WPATH SOC deleted the requirement for therapy, trans care facilities that consider these Standards sufficient are permitting patients to be counseled to transition by means of social presentation, hormones, and surgery by individuals with masters rather than medical degrees.

D. Opinions and practices differ widely with respect to the proper role of psychological counseling before, as part of, or after a diagnosis of gender dysphoria.

74. In Version 7 of its Standards of Care, released in 2012, WPATH downgraded the role of counseling or psychotherapy, and the organization no longer sees psychotherapy without transition and hormonal interventions as a potential path to eliminate gender dysphoria by enabling a patient to return to or achieve comfort with the gender identity aligned with his or her biology.

75. Around the world, many prominent voices and practitioners disagree. For example, renowned gender therapists Dr. Laura Edwards-Leeper and Dr. Erica Anderson (who, as mentioned above, identifies as a transgender woman) have recently spoken out arguing that

children and adolescents are being subjected to puberty blockers and hormonal intervention far too quickly, when careful and extended psychotherapy and investigation for potential causes of feelings of dysphoria (such as prior sexual abuse) should be the first port of call and might resolve the dysphoria. (Edwards-Leeper & Anderson 2021; Davis 2022.)

76. In a recently published position statement on gender dysphoria, the Royal Australian and New Zealand College of Psychiatrists emphasized the critical nature of mental health treatment for gender dysphoric minors, stressing "the importance of the psychiatrist's role to undertake thorough assessment and evidence-based treatment ideally as part of a multidisciplinary team, especially highlighting co-existing issues which may need addressing and treating." The Royal College also emphasized the importance of assessing the "psychological state and context in which Gender Dysphoria has arisen," before any treatment decisions are made. (RANZCP, 2021.)

77. Dr. Paul Hruz of the University of Washington St. Louis Medical School has noted, "The WPATH has rejected psychological counseling as a viable means to address sex—gender discordance with the claim that this approach has been proven to be unsuccessful and is harmful (Coleman et al. 2012). Yet the evidence cited to support this assertion, mostly from case reports published over forty years ago, includes data showing patients who benefited from this approach (Cohen-Kettenis and Kuiper 1984)." (Hruz 2020.)

E. Opinions and practices vary widely with respect to the administration of puberty blockers and cross-sex hormones.

78. There is likewise no broadly accepted standard of care with respect to use of puberty blockers. The WPATH Standards of Care explicitly recognize the lack of any consensus on this important point, stating: "Among adolescents who are referred to gender identity clinics, the number considered eligible for early medical treatment—starting with GnRH analogues to suppress puberty in the first Tanner stages—differs among countries and centers. Not all clinics offer puberty suppression. . . The percentages of treated adolescents are likely influenced by the organization of health care, insurance aspects, cultural differences, opinions of health professionals, and diagnostic procedures offered in different settings."

79. The use of puberty blockers as a therapeutic intervention for gender dysphoria is often justified by reference to the seminal work of a respected Dutch research team that developed a protocol that administered puberty blockers to children no younger than age 14. However, it is well known that many clinics in North America now administer puberty blockers to children at much younger ages than the "Dutch Protocol" allows. (Zucker 2019.) The Dutch protocol only treated children with these characteristics: a stable cross gender identity from early childhood; dysphoria that worsened with the onset of puberty; were otherwise psychologically healthy; had healthy families; the patient and family agreed to individual and family counselling throughout the protocol. But the experience and results of the Dutch model is being used as a justification for giving puberty blockers to children who differ considerably from these criteria. Its authors have also recently noted this fact. (de Vries 2020.)

80. However, Zucker notes that "it is well known" that clinicians are administering cross-sex hormones, and

approving surgery, at ages lower than the minimum age thresholds set by that "Dutch Protocol." (Zucker 2019 at 5.)

81. Similarly, at least one prominent clinic—that of Dr. Safer at Columbia's Mt. Sinai Medical Center—is quite openly admitting patients for even *surgical* transition who are not eligible under the criteria set out in WPATH's Standards of Care. A recent study published by Dr. Safer and colleagues revealed that of a sample of 139 individuals, 45% were eligible for surgery "immediately" under the center's own criteria, while only 15% were eligible under WPATH's criteria. That is, *three times* as many patients immediately qualified for surgery under the center's loose standards than would have qualified under WPATH criteria. (Lichenstein et al. 2020.)

82. Internationally, there has been a recent marked trend *against* use of puberty blockers, as a result of extensive evidence reviews by national medical bodies, which I discuss later. The main gender clinic in Sweden has declared that it will no longer authorize use of puberty blockers for minors below the age of 16. Finland has similarly reversed its course, issuing new guidelines that allow puberty blockers only on a case-by-case basis after an extensive psychiatric assessment. A landmark legal challenge against the UK's National Health Service in 2020 by "detransitioner" Keira Bell led to the suspension of the use of puberty blockers and new procedures to ensure better psychological care, as well as prompting a thorough evidence review by the National Institute for Health and Care Excellence (NICE 2021a; NICE 2021b).[4]

[4] The decision requiring court approval for administration of hormones to any person younger than age 16 was later reversed on procedural grounds by the Court of Appeal and is currently under consideration by the UK Supreme Court.

83. In this country, some voices in the field are now publicly arguing that *no* comprehensive mental health assessment at all should be required before putting teens on puberty blockers or cross-sex hormones (Ghorayshi 2022), while Dr. Anderson and Dr. Edwards-Leeper argue that U.S. practitioners are already moving too quickly to hormonal interventions. (Edwards-Leeper & Anderson 2021; Davis 2022.) It is evident that opinions and practices are all over the map.

84. It is true that a committee of the American Academy of Pediatricians has issued a statement supporting administration of puberty blockers to children diagnosed with gender dysphoria. It is also true that no other American medical association has endorsed the use of puberty blockers, and that pediatricians are neither endocrinologists nor psychiatrists. Dr. James Cantor published a peer-reviewed paper detailing that the Academy's statement is not evidence-based and misdescribed the few scientific sources it did reference. (Cantor 2019.) It has been well noted in the field that the AAP has declined invitations to publish any rebuttal to Dr. Cantor's analysis. But this is all part of ongoing debate, simply highlighting the absence of any generally agreed standard of care.

85. Dr. Adkins asserts that the Society's 2017 Practice Guidelines on Endocrine Treatment of Gender-Dysphoric/Gender-Incongruent Persons (Hembree et al. 2017) amount to "widely accepted standards of care" that were "developed through rigorous scientific processes." (Adkins at 2, 5 and 6.)

86. Contrary to Dr. Adkins' assertion, the 2017 Endocrine Society Guidelines themselves expressly state that they are *not* "standards of care." The document states: "The guidelines cannot guarantee any specific outcome,

nor do they establish a standard of care. The guidelines are not intended to dictate the treatment of a particular patient." (Hembree et al. 2017 at 3895 (emphasis added).) Nor do the Guidelines claim to be the result of a "rigorous scientific process." Rather, they expressly advise that their recommendations concerning use of puberty blockers are based only on "low quality" evidence.

87. Dr. Adkins notes that the 2017 Guidelines assert that: "patients with gender dysphoria often must be treated with `a safe and effective hormone regimen. . .'" (Adkins at 6.) Notably, however, the Guidelines do not make any firm statement that use of puberty blockers for this purpose *is* safe, and the Guidelines go no further than "suggest[ing]" use of puberty blockers—language the Guidelines warn represents only a "weak recommendation." (Hembree 2017 at 3872.) Several authors have pointed out that not only were the Endocrine Society suggestions regarding use of puberty blockers reached on the basis of "low quality" evidence, but its not-quite claims of `safety' and `efficacy' are starkly contradicted by several in-depth evidence reviews. (Laidlaw et al., 2019; Malone et al. 2021.) I detail these contradictory findings in more detail in Section VII below.

88. While there is too little meaningful clinical data and no consensus concerning best practices or a "standard of care" this area, there are long-standing ethical principles that do or should bind all medical and mental health professionals as they work with, counsel, and prescribe for these individuals.

89. One of the oldest and most fundamental principles guiding medical and psychological care—part of the Hippocratic Oath—is that the physician must "do no harm." This states an ethical responsibility that cannot be delegated to the patient. Physicians themselves must weigh

the risks of treatment against the harm of not treating. If the risks of treatment outweigh the benefits, principles of medical ethics prohibit the treatment.

IV. TRANSGENDER IDENTITY IS NOT BIOLOGICALLY BASED.

90. Dr. Safer asserts that "Although the detailed mechanisms are unknown, there is a medical consensus that there is a significant biologic component underlying gender identity" and that gender identity is a "largely biological phenomenon." (Safer at 5, 6.) Many advocates of affirmative care assert this belief.

91. However, it is not true. There is no medical consensus that transgender identity has any biological basis. Furthermore, there is considerable well-documented evidence that is inconsistent with the hypothesis of a biological basis for gender identity—at least in the large majority of currently-presenting patients.

A. No theory of biological basis has been scientifically validated.

92. At the outset, the attempt to identify a single "typically . . . biological" cause for psychiatric conditions (including gender dysphoria) has been strongly criticized as "out of step with the rest of medicine" and as a lingering "ghost" of an understanding of the nature of psychiatric conditions that is now broadly disproven. (Kendler 2019 at 1088-1089.) Gender dysphoria is defined and diagnosed only as a psychiatric, not a medical, condition.

93. Nonetheless, in a published article, Dr. Safer has referred to data that he asserts supports the existence of "a fixed, biologic basis for gender identity." (Saraswat et al. 2015 at 199.) But on the contrary, this article itself states that studies attempting to find an association between

genetics and transgender identification "have been contradictory," and that "no statistically significant association between particular genes [and transgender identity] has been described." (Saraswat 2015 at 202.)

94. Similarly, while some have pointed to very small brain scan studies as evidence of a biological basis, no studies of brain structure of individuals identifying as transgender have found any statistically significant correlation between any distinct structure or pattern and transgender identification, after controlling for sexual orientation and exposure to exogenous hormones. (Sarawat et al. 2015 at 202; Frigerio et al. 2021.)

95. Indeed, the Endocrine Society 2017 Guidelines recognizes: "With current knowledge, we cannot predict the psychosexual outcome for any specific child" and "there are currently no criteria to identify the GD/gender-incongruent children to whom this applies. At the present time, clinical experience suggests that persistence of GD/gender incongruence can only be reliably assessed after the first signs of puberty." (Hembree et al. 2017 at 3876.)

96. In short, no biological test or measurement has been identified that provides any ability to predict which children will exhibit, and which children will persist in, gender dysphoria or a transgender identification. Unless and until such a test is identified, the theory of a biological basis is a hypothesis still searching for support. A hypothesis is not a fact, and responsible scientists will not confuse hypothesis with fact.

B. Large changes across time and geography in the epidemiology of transgender identification are inconsistent with the hypothesis of a biological basis for transgender identity.

97. In fact, there is substantial evidence that the "biological basis" theory is incorrect, at least with respect to the large majority of patients presenting with gender dysphoria today.

98. **Vast changes in incidence:** Historically, there were very low reported rates of gender dysphoria or transgender identification. In 2013, the DSM-5 estimated the incidence of gender dysphoria in adults to be at 2-14 per 100,000, or between 0.002% and 0.014%. (APA 2013 at 454.) Recently however, these numbers have increased dramatically, particularly in adolescent populations. Recent surveys estimate that between 2-9% of high school students self-identify as transgender or "gender non-conforming." with a significantly large increase in adolescents claiming "nonbinary" gender identity as well. (Johns et al. 2019; Kidd et al. 2021.) Consistent with these surveys, gender clinics around the world have seen numbers of referrals increase rapidly in the last decade, with the Tavistock clinic in London seeing a 30-fold increase in the last decade (GIDS 2019), and similar increases being observed in Finland (Kaltiala-Heino et al. 2018), the Netherlands (de Vries 2020), and Canada (Zucker 2019). The rapid change in the number of individuals experiencing gender dysphoria points to social and cultural, not biological, causes.

99. **Large change in sex ratio:** In recent years there has been a marked shift in the sex ratio of patients presenting with gender dysphoria or transgender identification. The Tavistock clinic in London saw a ratio of 4 biological females(F):5 biological males(M) shift to essentially 11F:4M in a decade. (GIDS 2019.) One researcher summarizing multiple sources documented a swing of 1F:2M or 1F:1.4M through 2005 to 2F:1M generally (but as high as 7F:1M) in more recent samples. (Zucker 2019 at 2.)

This phenomenon has been noted by Dr. Erica Anderson, who said: "The data are very clear that adolescent girls are coming to gender clinics in greater proportion than adolescent boys. And this is a change in the last couple of years. And it's an open question: What do we make of that? We don't really know what's going on. And we should be concerned about it." (Davis 2022.) Again, this large and rapid change in who is experiencing gender dysphoria points to social, not biological, causes.

100. **Clustering:** Dr. Littman's recent study documented "clustering" of new presentations of gender dysphoria among natal females in specific schools and among specific friend groups. This again points strongly to social causes for gender dysphoria at least among the adolescent female population. (Littman 2018.)

101. **Desistance:** As I discuss later, there are very high levels of desistance among children diagnosed with gender dysphoria, as well as increasing (or at least increasingly vocal) numbers of individuals who first asserted a transgender identity during or after adolescence, underwent substantial medical interventions to "affirm" that trans-identity, and then "desisted" and reverted to a gender identity congruent with their sex. (See Section V.B below.) These narratives, too, point to a social and/or psychological cause, rather than a biological one.

102. **"Fluid" gender identification:** Advocates and some practitioners assert that gender identity is not binary, but can span an almost endless range of gender identity self-labels, which a given individual may try on, inhabit, and often discard. (A recent article identifies 72.[5]) I have not

[5] Allarakha, *What Are the 72 Other Genders?,* MedicineNet, available at:https://www.medicinenet.com/whatarethe_72_other_genders/article.htm

heard any theory offered for how there is or could be a biological basis for gender identity as now expansively defined.

103. I frequently read attempts to explain away the points in this Section IV. They include: these problems always existed, but children are now learning that there are effective treatments for their dilemma and are simply seeking them. And; children have hidden their trans identity throughout childhood and now that trans people are recognized and accepted, they are presenting themselves. And; now pediatricians realize that girls can have gender dysphoria and are referring them to gender clinics. But these are all mere hypotheses unsupported by concrete evidence. One set of unproven hypotheses cannot provide support for the unproven hypothesis of biological basis. And none of these hypotheses could even potentially explain the failure of science thus far to identify any predictive biological marker of transgender identification.

104. **Therapies affect gender identity outcomes:** Finally, the evidence shows that therapeutic choices can have a powerful effect on whether and how gender identity does change, or gender dysphoria desists. Social transition of juveniles, for instance, strongly influences gender identity outcomes to such an extent that it has been described a "unique predictor of persistence." (See Section V.B below.) Again, this observation cuts against the hypothesis of biological origin.

C. Disorders of sexual development (or DSDs) and gender identity are very different phenomena, and it is an error to conflate the two.

105. Dr. Adkins spends much of her report discussing individuals who suffer from disorders of sexual development (DSDs), apparently as evidence that sex is not

binary or clearly defined, or as somehow supporting the idea that transgender identification has a biological basis. (Adkins at 9.) I have extensively detailed that sex is clear, binary, and determined at conception. (Section II.) Here I explain that gender dysphoria is an entirely different phenomenon than DSDs—which unlike transgender identity are indeed biological phenomena. It is an error to conflate the two distinct concepts.

106. Every DSD reflects a genetic enzymatic defect with negative anatomic and physiological consequences. As the Endocrine Society recognized in a 2021 statement: "Given the complexities of the biology of sexual determination and differentiation, it is not surprising that there are dozens of examples of variations or errors in these pathways associated with genetic mutations that are now well known to endocrinologists and geneticists; in medicine, these situations are generally termed *disorders of sexual development* (DSD) or *differences in sexual development.*" Gender Identity on the other hand is uniformly defined as a subjective "sense" of being, a feeling or state of mind. (Section II.C.)

107. The vast majority of those who experience gender dysphoria or a transgender identity do not suffer from any DSD, nor from any genetic enzymatic disorder at all. Conversely, many who suffer from a DSD do not experience a gender identity different from their chromosomal sex (although some may). In short, those who suffer from gender dysphoria are not a subset of those who suffer from a DSD, nor are those who suffer from a DSD a subset of those who suffer from gender dysphoria. The two are simply different phenomena, one physical, the other mental, defined only as a psychiatric condition. The issue here is not whether biological forces play a role in personality development; it is whether there is strong

evidence that it is determinative. Science has come too far to revert to single explanations for gender dysphoria or any psychiatric diagnosis.

108. The importance of this distinction is evident from the scientific literature. For example, in a recent study of clinical outcomes for gender dysphoric patients, Tavistock Clinic researchers *excluded* from their analysis any patients who did not have "normal endocrine function and karyotype consistent with birth registered sex." (Carmichael et al. 2021 at 4.) In other words, the researchers specifically *excluded* from their study anyone who suffered from genetic-based DSD, or a DSD comprising any serious defect in hormonal use pathways, in order to ensure the study was focused only on individuals experiencing the psychological effects of what we might call "ordinary" gender dysphoria.

D. Studies of individuals born with DSDs suggest that there may be a biological predisposition towards *typical* gender identifications, but provide no support for a biological basis for transgender identification.

109. Studies of individuals born with serious DSDs have been pointed to as evidence of a biological basis for transgender identification. They provide no such support.

110. One well-known study by Meyer-Bahlburg reviewed the case histories of a number of XY (i.e. biologically male) individuals born with severe DSDs who were surgically "feminized" in infancy and raised as girls. (Meyer-Bahlburg 2005.) The majority of these individuals nevertheless later adopted male gender identity—suggesting a strong biological predisposition towards identification aligned with genetic sex, even in the face of feminized genitalia from earliest childhood, and parental

"affirmation" in a transgender identity. But at the same time, the fact that some of these genetically male individuals did *not* later adopt male gender identity serves as evidence that medical and social influences can indeed encourage and sustain transgender identification.

111. Importantly, the Meyer-Bahlburg study did *not* include any individuals who were assigned a gender identity congruent with their genetic sex who subsequently adopted a transgender identity. Therefore, the study can provide no evidence of any kind that supports the hypothesis of a biological basis for transgender identity. A second study in this area (Reiner & Gearhart 2004) likewise considered exclusively XY subjects, and similarly provides evidence only for a biological bias towards a gender identity congruent with one's genetic sex, even in the face of medical and social "transition" interventions. None of this provides any evidence at all of a biological basis for transgender identity.

V. GENDER IDENTITY IS EMPIRICALLY NOT FIXED FOR MANY INDIVIDUALS.

112. Dr. Safer states that gender identity is "durable and cannot be changed by medical intervention." (Safer at 5.) Dr. Adkins likewise states that gender identity "cannot be voluntarily changed." (Adkins at 4.) There is extensive evidence that this is not correct. Instead, gender identity changes over time for many individuals.[6] I summarize their two opinions as: they assert that a trans identity in a child or adolescent is immutable—unchangeable by medical, psychotherapeutic, or developmental processes.

[6] See n1 *supra.*

A. Most children who experience gender dysphoria ultimately "desist" and resolve to cisgender identification.

113. A distinctive and critical characteristic of juvenile gender dysphoria is that multiple studies from separate groups and at different times have reported that in the large majority of patients, absent a substantial intervention such as social transition or puberty blocking hormone therapy, it does *not* persist through puberty.

114. A recent article reviewed all existing follow-up studies that the author could identify of children diagnosed with gender dysphoria (11 studies), and reported that "every follow-up study of GD children, without exception, found the same thing: By puberty, the majority of GD children ceased to want to transition." (Cantor 2019 at 1.) Another author reviewed the existing studies and reported that in "prepubertal boys with gender discordance . . . the cross gender wishes usually fade over time and do not persist into adulthood, with only 2.2% to 11.9% continuing to experience gender discordance." (Adelson et al. 2012 at 963; see also Cohen-Kettinis 2008 at 1895.) The Endocrine Society recognized this important baseline fact in its 2017 Guidelines. (Hembree 2017 at 3879.) It should be noted that the reason that the Dutch Protocol waited until age 14 to initiate puberty blockers was that it was well known that many children would desist if left free of hormonal intervention until that age.

115. Findings of high levels of desistance among children who experience gender dysphoria or incongruence have been reaffirmed in the face of critiques through thorough reanalysis of the underlying data. (Zucker 2018.)

116. As I explained in detail in Section IV above, it is not yet known how to distinguish those children who will

desist from that small minority whose trans identity will persist.

117. It does appear that prevailing circumstances during particularly formative years can have a significant impact on the outcome of a juvenile's gender dysphoria. A 2016 study reviewing the follow-up literature noted that "the period between 10 and 13 years" was "crucial" in that "both persisters and desisters stated that the changes in their social environment, the anticipated and actual feminization or masculinization of their bodies, and the first experiences of falling in love and sexual attraction in this period, contributed to an increase (in the persisters) or decrease (in the desisters) of their gender related interests, behaviors, and feelings of gender discomfort." (Ristori & Steensma 2016 at 16.) As I discuss in Section VI below, there is considerable evidence that early transition and affirmation causes far more children to persist in a transgender identity.

B. Desistance is increasingly observed among teens and young adults who first manifest GD during or after adolescence.

118. Desistance within a relatively short period may also be a common outcome for post-pubertal youths who exhibit recently described "rapid onset gender disorder." I have observed an increasingly vocal online community of young women who have reclaimed a female identity after claiming a male gender identity at some point during their teen years, and young "detransitioners" (individuals in the process of reidentifying with their birth sex after having undergone a gender transition) are now receiving increasing attention in both clinical literature and social media channels. (It is my understanding that March 12, 2022, is scheduled to be Detransition Awareness Day.)

119. Almost all scientific articles on this topic have appeared within the last few years. Perhaps this historic lack of coverage is not entirely surprising — one academic who undertook an extensive review of the available scientific literature in 2021 noted that the phenomenon was "socially controversial" in that it "poses significant professional and bioethical challenges for those clinicians working in the field of gender dysphoria." (Exposit° Campos 2021 at 270.) This review reported on multifarious reasons for why individuals were motivated to detransition, which included coming to "understand[ ] how past trauma, internalized sexism, and other psychological difficulties influenced the experience of GD."

120. In 2021, Lisa Littman of Brown University conducted a ground-breaking study of 100 teenage and young adults who had transitioned and lived in a transgender identity for a number of years, and then "detransitioned" or changed back to a gender identity matching their sex. Littman noted that the "visibility of individuals who have detransitioned is new and may be rapidly growing." (Littman 2021 at 1.) Of the 100 detransitioners included in Littman's study, 60% reported that their decision to detransition was motivated (at least in part) by the fact that they had become more comfortable identifying as their natal sex, and 38% had concluded that their gender dysphoria was caused by something specific such as trauma, abuse, or a mental health condition. (Littman 2021 at 9.)

121. A significant majority (76%) did not inform their clinicians of their detransition. (Littman 2021 at 11.)

122. A similar study that recruited a sample of 237 detransitioners (the large majority of whom had initially transitioned in their teens or early twenties) similarly reported that a common reason for detransitioning was the

subject's conclusion that his or her gender dysphoria was related to other issues (70% of the sample). (Vandenbussche 2021.)

123. The existence of increasing numbers of youth or young adult detransitioners has also been recently noted by Dr. Edwards-Leeper and Dr. Anderson. (Edwards-Leeper & Anderson 2021.) Edwards-Leeper and Anderson noted "the rising number of detransitioners that clinicians report seeing (they are forming support groups online)" which are "typically youth who experienced gender dysphoria and other complex mental health issues, rushed to medicalize their bodies and regretted it." Other clinicians working with detransitioners have also noted the recent phenomenon. (Marchiano 2020.)

124. A growing body of evidence suggests that for many teens and young adults, a post-pubertal onset of transgender identification can be a transient phase of identity exploration, rather than a permanent identity, as evidenced by a growing number of young detransitioners (Entwistle 2020; Littman 2021; Vandenbussche 2021). Previously, the rate of detransition and regret was reported to be very low, although these estimates suffered from significant limitations and were likely undercounting true regret (D'Angelo 2018). As gender-affirmative care has become popularized, the rate of detransition appears to be accelerating.

125. A recent study from a UK adult gender clinic observed that 6.9% of those treated with gender-affirmative interventions detransitioned within 16 months, and another 3.4% had a pattern of care suggestive of detransition, yielding a rate of probable detransition in excess of 10%. Another 21.7%, however, disengaged from the clinic without completing their treatment plan. While some of these individuals later re-engaged with the gender

service, the authors concluded, "detransitioning might be more frequent than previously reported." (Hall et al. 2021).

126. Another study from a UK primary care practice found that 12.2% of those who had started hormonal treatments either detransitioned or documented regret, while the total of 20% stopped the treatments for a wider range of reasons. The mean age of their presentation with gender dysphoria was 20, and the patients had been taking gender-affirming hormones for an average 5 years (17 months-10 years) prior to discontinuing. Comparing these much higher rates of treatment discontinuation and detransition to the significantly lower rates reported by the older studies, the researchers noted: "Thus, the detransition rate found in this population is novel and questions may be raised about the phenomenon of overdiagnosis, overtreatment, or iatrogenic harm as found in other medical fields" (Boyd et al. 2022 at 15.) Indeed, given that regret may take up to 8-11 years to materialize (Dhejne et al., 2014; Wiepjes et al., 2018), many more detransitioners are likely to emerge in the coming years. Detransitioner research is still in its infancy, but the Littman and Vandenbussche studies in 2021 both report that detransitioners from the recently transitioning cohorts feel they were rushed into medical gender-affirmative interventions with irreversible effects, often without the benefit of appropriate, or in some instances any, psychologic exploration.

VI. TRANSITION AND AFFIRMATION IS AN IMPORTANT PSYCHOLOGICAL AND MEDICAL INTERVENTION THAT CHANGES GENDER IDENTITY OUTCOMES.

A. If both a typical gender or a transgender long-term gender identity outcome are possible for a

particular patient, the alternatives are not medically neutral.

127. Where a juvenile experiences gender dysphoria, the gender identity that is stabilized will have a significant impact on the course of their life. Living in a transgender identity for a time will make desistance, if it is ever considered, more difficult to accomplish.

128. If the juvenile desists from the gender dysphoria and becomes reasonably comfortable with a gender identity congruent with their sex—the most likely outcome from a statistical perspective absent affirming intervention—the child will not require ongoing pharmaceutical maintenance and will not have their fertility destroyed post-puberty.

129. However, if the juvenile persists in a transgender identity, under current practices, the child is most likely to require regular administration of hormones for the rest of their lives, exposing them to significant physical, mental health, and relational risks (which I detail in Section IX below), as well as being irreversibly sterilized chemically and/or surgically. The child is therefore rendered a "patient for life" with complex medical implications further to a scientifically unproven course of treatment.

B. Social transition of young children is a powerful psychotherapeutic intervention that radically changes outcomes, almost eliminating desistance.

130. Dr. Adkins asserts that social transition is a "a critical part" of the treatment of gender dysphoria. (Adkins at 6, 7). Rather, social transition has a critical *effect* on the persistence of gender dysphoria. It is evident from the scientific literature that engaging in therapy that encourages social transition before or during puberty—which would include participation on athletic teams

designated for the opposite sex—is a psychotherapeutic intervention that dramatically changes outcomes. A prominent group of authors has written that "The gender identity affirmed during puberty appears to predict the gender identity that will persist into adulthood." (Guss et al. 2015 at 421.) Similarly, a comparison of recent and older studies suggests that when an "affirming" methodology is used with children, a substantial proportion of children who would otherwise have desisted by adolescence—that is, achieved comfort identifying with their natal sex—instead persist in a transgender identity. (Zucker 2018 at 7.)

131. Indeed, a review of multiple studies of children treated for gender dysphoria across the last three decades found that early social transition to living as the opposite sex severely reduces the likelihood that the child will revert to identifying with the child's natal sex, at least in the case of boys. That is, while, as I review above, studies conducted before the widespread use of social transition for young children reported desistance rates in the range of 80-98%, a more recent study reported that fewer than 20% of boys who engaged in a partial or complete social transition before puberty had desisted when surveyed at age 15 or older. (Zucker 2018 at 7[7]; Steensma et al. 2013.)[8] Another researcher observed that a partial or complete gender social transition prior to puberty "proved to be a unique predictor of persistence." (Singh et al. 2021 at 14.)

---

[7] Zucker found social transition by the child to be strongly correlated with persistence for natal boys, but not for girls. (Zucker 2018 at 5.)

[8] Only 2 (3.6%) of 56 of the male desisters observed by Steensma et al. had made a complete or partial transition prior to puberty, and of the twelve males who made a complete or partial transition prior to puberty, only two had desisted when surveyed at age 15 or older. Steensma 2013 at 584.

132. Some vocal practitioners of prompt affirmation and social transition even proudly claim that essentially *no* children who come to their clinics exhibiting gender dysphoria or cross-gender identification desist in that identification and return to a gender identity consistent with their biological sex.[9] This is a very large change as compared to the desistance rates documented apart from social transition.

133. Even voices generally supportive of prompt affirmation and social transition are acknowledging a causal connection between social transition and this change in outcomes. As the Endocrine Society recognized in its 2017 Guidelines: "If children have completely socially transitioned, they may have great difficulty in returning to the original gender role upon entering puberty. . . [S]ocial transition (in addition to GD/gender incongruence) has been found to contribute to the likelihood of persistence." (Hembree et al. 2017 at 3879.) The fact is that these unproven interventions with the lives of kids and their families have systematically documented outcomes. Given this observed phenomenon, I agree with Dr. Ken Zucker who has written that social transition in children must be considered "a form of psychosocial treatment." (Zucker 2020 at 1.)

134. Moreover, as I review below, social transition cannot be considered or decided alone. Studies show that engaging in social transition starts a juvenile on a "conveyor belt" path that almost inevitably leads to the administration of puberty blockers, which in turn almost

---

[9] *See, e.g.,* Ehrensaft 2015 at 34: "In my own clinical practice . . . of those children who are carefully assessed as transgender and who are allowed to transition to their affirmed gender, we have no documentation of a child who has `desisted' and asked to return to his or her assigned gender."

inevitably leads to the administration of cross-sex hormones. The emergence of this well-documented path means that the implications of taking puberty blockers *and* cross-sex hormones must be taken into account even where "only" social transition is being considered or requested by the child or family. As a result, there are a number of important "known risks" associated with social transition.

C. Administration of puberty blockers is a powerful medical and psychotherapeutic intervention that radically changes outcomes, almost eliminating desistance on the historically observed timeline.

135. Dr. Adkins speaks of the use of puberty blockers as though this major hormonal disruption of some of the most basic aspects of ordinary human development were entirely benign, acting as a "pause." (Adkins at 7.) This optimistic view is not based on science. In fact, it should be understood that puberty blockers are usually administered to early-stage adolescents as part of a path that includes social transition. Moreover, medicine does not know what the longterm health effects on bone, brain, and other organs are of a "pause" between ages 11-16. Medicine also does not know if the long-term effects of these compounds are different in boys than in girls. The mental health professional establishment likewise does not know the long-term effects on coping skills, interpersonal comfort, and intimate relationships of this "pause" while one's peers are undergoing their maturational gains in these vital arenas of future mental health. I address medical, social, and mental health risks associated with the use of puberty blockers in Section IX. Here, I note that the data strongly suggests that the administration of puberty blockers, too, must be considered to be a component of a "psychosocial treatment" with complex implications, rather than a "pause."

136. Multiple studies show that the large majority of children who begin puberty blockers go on to receive cross-sex hormones. (de Vries 2020 at 2.) A recent study by the Tavistock and Portman NHS Gender Identity Development Service (UK)—the world's largest gender clinic—found that 98% of adolescents who underwent puberty suppression continued on to cross-sex hormones. (Carmichael et al 2021 at 12.)[10]

137. These studies demonstrate that going on puberty blockers virtually eliminates the possibility of desistance in juveniles. Rather than a "pause," puberty blockers appear to act as a psychosocial "switch," decisively shifting many children to a persistent transgender identity. Therefore, as a practical and ethical matter the decision to put a child on puberty blockers must be considered as the equivalent of a decision to put that child on cross-sex hormones, with all the considerations and informed consent obligations implicit in that decision.

VII. TRANSITION AND AFFIRMATION ARE EXPERIMENTAL THERAPIES THAT HAVE NOT BEEN SHOWN TO IMPROVE MENTAL OR PHYSICAL HEALTH OUTCOMES BY YOUNG ADULTHOOD.

138. It is undisputed that children and adolescents who present with gender dysphoria exhibit a very high level of mental health comorbidities. (Section II.C.) Whether the gender dysphoria is cause or effect of other diagnosed or undiagnosed mental health conditions, or whether these are merely coincident comorbidities, is hotly disputed, but the basic fact is not.

---

[10] *See also* Brik 2020 where Dutch researchers found nearly 97% of adolescents who received puberty blockers proceeded to cross-sex hormones.

139. Dr. Adkins asserts that when the "transition, affirmation, and hormones" therapy that she advocates is followed, "gender dysphoria is easily managed" (Adkins at 5), implying that transition and hormone therapy have been proven to be effective in relieving gender dysphoria and the general mental health distress that broadly afflicts these children and adolescents. This is scientifically incorrect. It ignores both what is known and what is unknown.

A. The knowledge base concerning therapies for gender dysphoria is "very low quality."

140. At the outset, it is important for all sides to admit that the knowledge base concerning the causes and treatment of gender dysphoria has low scientific quality.

141. In evaluating claims of scientific or medical knowledge, it is axiomatic in science that no knowledge is absolute, and to recognize the widely accepted hierarchy of reliability when it comes to "knowledge" about medical or psychiatric phenomena and treatments. Unfortunately, in this field opinion is too often confused with knowledge, rather than clearly locating what exactly is scientifically known. In order of increasing confidence, such "knowledge" may be based upon data comprising:

a. Expert opinion—it is perhaps surprising to educated laypersons that expert opinion standing alone is the lowest form of knowledge, the least likely to be proven correct in the future, and therefore does not garner as much respect from professionals as what follows;

b. A single case or series of cases (what could be called anecdotal evidence) (Levine 2016 at 239.);

c. A series of cases with a control group;

d. A cohort study;

e. A randomized double-blind clinical trial;

f. A review of multiple trials;

g. A meta-analysis of multiple trials that maximizes the number of patients treated despite their methodological differences to detect trends from larger data sets.

142. Prominent voices in the field have emphasized the severe lack of scientific knowledge in this field. The American Academy of Child and Adolescent Psychiatry has recognized that "Different clinical approaches have been advocated for childhood gender discordance. . . . There have been no randomized controlled trials of any treatment. . . . [T]he proposed benefits of treatment to eliminate gender discordance ... must be carefully weighed against ... possible deleterious effects." (Adelson et al. at 968-69.) Similarly, the American Psychological Association has stated, "because no approach to working with [transgender and gender nonconforming] children has been adequately, empirically validated, consensus does not exist regarding best practice with pre-pubertal children." (APA 2015 at 842.)

143. Critically, "there are no randomized control trials with regard to treatment of children with gender dysphoria." (Zucker 2018 at 8.) On numerous critical questions relating to cause, developmental path if untreated, and the effect of alternative treatments, the knowledge base remains primarily at the level of the practitioner's exposure to individual cases, or multiple individual cases. As a result, claims to certainty are not justifiable. (Levine 2016 at 239.)

144. Within the last two years, at least three formal evidence reviews concerning hormonal interventions for gender dysphoria have been conducted. All three found all of the available clinical evidence to be very low quality.

145. The British National Health Service (NHS) commissioned formal "evidence reviews" of all clinical papers concerning the efficacy and safety of puberty blockers and cross-sex hormones as treatments for gender dysphoria. These evidence reviews were performed by the U.K. National Institute for Health and Care Excellence (NICE), applying the respected "GRADE" criteria for evaluating the strength of clinical evidence.

146. Both the review of evidence concerning puberty blockers and the review of evidence concerning cross-sex hormones were published in 2020, and both found that *all available* evidence as to both efficacy and safety was "very low quality" according to the GRADE criteria. (NICE 2021a; NICE 202 1 b.) "Very low quality" according to GRADE means there is a high likelihood that the patient *will not experience* the hypothesized benefits of the treatment. (Balshem et al. 2011.)

147. Similarly, the highly respected Cochrane Library—the leading source of independent systematic evidence reviews in health care—commissioned an evidence review concerning the efficacy and safety of hormonal treatments now commonly administered to "transitioning transgender women" (i.e., testosterone suppression and estrogen administration to biological males). That review, also published in 2020, concluded that "We found insufficient evidence to determine the efficacy or safety of hormonal treatment approaches for transgender women in transition." (Haupt et al. 2020 at 2.) It must be understood that both the NICE and the Cochrane reviews considered *all* published scientific studies concerning these treatments.

148. As to social transition, as **I** have noted above, considerable evidence suggests that socially transitioning a pre-pubertal child puts him or her on a path from which

very few children escape—a path which includes puberty blockers and cross-sex hormones before age 18. As a practical matter, then, a decision about social transition for a child must be made in light of what is known and what is unknown about the effects of those expected hormonal interventions.

149. I discuss safety considerations in Section IX below. Here, I detail what is known about the effectiveness of social and hormonal transition and affirmation to improve the mental health of individuals diagnosed with gender dysphoria.

B. Youth who adopt a transgender identity show no durable improvement in mental health after social, hormonal, or surgical transition and affirmation.

150. As I noted above, the evidence reviews for the efficacy and safety of hormonal interventions published in 2020 concluded that the supporting evidence is so poor that there is "a high likelihood that the patient will not experience the hypothesized benefits of the treatment." There is now some concrete evidence that on average they do not experience those benefits.

151. An important paper published in 2021 by Tavistock clinic clinicians provided the results of the first longitudinal study that measured widely used metrics of general psychological function and suicidality before commencement of puberty blockers, and then at least annually after commencing puberty blockers. After up to three years, they "found no evidence of change in psychological function with GnRHa treatment as indicated by parent report (CBCL) or self-report (YSR) of overall problems, internalizing or externalizing problems or self-harm" as compared to the pre-puberty-blocker baseline evaluations. "Outcomes that were not formally tested also

showed little change." (Carmichael at al. 2021 at 18-19.) Similarly, a study by Branstrom and Pachankis of the case histories of a set of individuals diagnosed with GD in Sweden found no positive effect on mental health from hormonal treatment. (Landen 2020.)

152. A cohort study by authors from Harvard and Boston Children's Hospital found that youth and young adults (ages 12-29) who self-identified as transgender had an elevated risk of depression (50.6% vs. 20.6%) and anxiety (26.7% vs. 10.0%); a higher risk of suicidal ideation (31.1% vs. 11.1%), suicide attempts (17.2% vs. 6.1%), and self-harm without lethal intent (16.7% vs. 4.4%) relative to the matched controls; and a significantly greater proportion of transgender youth accessed inpatient mental health care (22.8% vs. 11.1%) and outpatient mental health care (45.6% vs. 16.1%) services. (Reisner et al. 2015 at 6.) Similarly, a recent longitudinal study of transgender and gender diverse youth and young adults in Chicago found rates of alcohol and substance abuse "substantially higher than those reported by large population-based studies of youth and adults." (Newcomb et al. 2020 at 14.) Members of the clinical and research team at the prominent Dutch VU University gender dysphoria center recently compared mental health metrics of two groups of subjects before (mean age 14.5) and after (mean age 16.8) puberty blockers. But they acknowledged that the structure of their study meant that it "can . . . not provide evidence about . . . long-term mental health outcomes," and that based on what continues to be extremely limited scientific data, "Conclusions about the long-term benefits of puberty suppression should . . . be made with extreme caution." In other words, we just don't know. (van der Miesen et al. 2020 at 703.)

153. Kiera Bell, who was diagnosed with gender dysphoria at the Tavistock Clinic, given cross-sex hormones, and subjected to a mastectomy, before desisting and reclaiming her female gender identity, and a Swedish teen girl who appeared in a recent documentary after walking that same path, have both stated that they feel that they were treated "like guinea pigs," experimental subjects. They are not wrong.

C. Long-term mental health outcomes for individuals who persist in a transgender identity are poor.

154. The responsible MHP cannot focus narrowly on the short-term happiness of the young patient, but must instead consider the happiness and health of the patient from a "life course" perspective. When we look at the available studies of individuals who continue to inhabit a transgender identity across adult years, the results are strongly negative.

155. In the United States, the death rates of trans veterans are comparable to those with schizophrenia and bipolar diagnoses-20 years earlier than expected. These crude death rates include significantly elevated rates of substance abuse as well as suicide. (Levine 2017 at 10.) Similarly, researchers in Sweden and Denmark have reported on almost all individuals who underwent sex-reassignment surgery over a 30-year period. (Dhejne et al. 2011; Simonsen et al. 2016.) The Swedish follow-up study similarly found a suicide rate in the post-SRS population 19.1 times greater than that of the controls; both studies demonstrated elevated mortality rates from medical and psychiatric conditions. (Levine 2017 at 10.)

156. A recent study in the American Journal of Psychiatry reported high mental health utilization patterns

of adults for ten years after surgery for approximately 35% of patients. (Branstrom & Panchankis, 2020.) Indeed, earlier Swedish researchers in a long-term study of all patients provided with SRS over a 30-year period (median time since SRS of > 10 years) concluded that individuals who have SRS exhibit such poor mental health that they should be provided very long-term psychiatric care as the "final" transition step of SRS. (Dhejne et al. 2011, at 6-7.) Unfortunately, across the succeeding decade, in Sweden and elsewhere their suggestion has been ignored.

157. I will note that these studies do not tell us whether the subjects first experienced gender dysphoria as children, adolescents, or adults, so we cannot be certain how their findings apply to each of these subpopulations which represent quite different pathways. But in the absence of knowledge, we should be cautious.

158. Meanwhile, no studies show that affirmation of pre-pubescent children or adolescents leads to more positive outcomes (mental, physical, social, or romantic) by, e.g., age 25 or older than does "watchful waiting" or ordinary therapy.

159. The many studies that I have cited here warn us that as we look ahead to the patient's life as a young adult and adult, the prognosis for the physical health, mental health, and social well-being of the child or adolescent who transitions to live in a transgender identity is not good. Gender dysphoria is not "easily managed" when one understands the marginalized, vulnerable physical, social, and psychological status of adult trans populations.

VIII. TRANSITION AND AFFIRMATION DO NOT DECREASE, AND MAY INCREASE, THE RISK OF SUICIDE.

A. The risk of suicide among transgender youth is confused and exaggerated in the public mind.

160. While suicide is closely linked to mental health, I comment on it separately because rhetoric relating to suicide figures so prominently in debates about responses to gender dysphoria.

161. At the outset, I will note that any discussion of suicide when considering younger children involves very long-range and very uncertain prediction. Suicide in pre-pubescent children is extremely rare, and the existing studies of gender identity issues in pre-pubescent children do not report significant incidents of suicide. Any suggestion otherwise is misinformed. Our focus for this topic, then, is on adolescents and adults.

162. Some authors have reported rates of suicidal thoughts and behaviors among trans-identifying teens or adults ranging from 25% to as high as 52%, generally through non-longitudinal self-reports obtained from non-representative survey samples. (Toomey et al. 2018.) Dr. Adkins asserted in her declaration submitted in support of Plaintiff's preliminary injunction motion that "Attempted suicide rates in the transgender community are over 40%," and that "[t]he only treatment to avoid this serious harm is to . . . affirm gender identity." (Adkins at 6.) Contrary to these assertions, no studies show that affirmation of children (or anyone else) reduces suicide, prevents suicidal ideation, or improves long-term outcomes, as compared to either a "watchful waiting" or a psychotherapeutic model of response, as I have described above. Rhetorical references to figures such as 40%—and some published studies—confuse suicidal thoughts and actions that represent a cry for help, manipulation, or expression of rage with serious attempts to end life. Such statements or studies ignore a crucial and long-recognized distinction.

163. I have included suicidality in my discussion of mental health above. Here, I focus on actual suicide. Too often, in public comment suicidal thoughts are blurred with suicide. Yet the available data tells us that suicide among children and youth suffering from gender dysphoria is extremely rare.

164. An important new analysis of data covering patients as well as those on the waiting list (and thus untreated) at the UK Tavistock gender clinic—the world's largest gender clinic—found a total of only four completed suicides across 11 years' worth of patient data, reflecting an estimated cumulative 30,000 patient-years spent by patients under the clinic's care or on its waiting list. This corresponded to an annual suicide rate of 0.013%. The proportion of individual patients who died by suicide was 0.03%, which is orders of magnitude smaller than trans adolescents who self-report suicidal behavior or thoughts on surveys. (Biggs 2022b.)

165. Thus, only a minute fraction of trans-identifying adolescents who report thoughts or conduct considered to represent "suicidality" actually commit suicide. I agree with the statement by Dr. Zucker that the assertion by, for example, Karasic and Ehrensaft (2015) that completed suicides among transgender youth are "alarmingly high" "has no formal and systematic empirical basis." (Zucker 2019 at 3.)

166. Professor Biggs of Oxford, author of the study of incidence of suicide among Tavistock clinic patients, rightly cautions that it is "irresponsible to exaggerate the prevalence of suicide." (Biggs 2022b at 4.) It is my opinion that telling parents—or even allowing them to believe from their internet reading—that they face a choice between "a live son or a dead daughter" is both factually wrong and unethical. Informed consent requires clinicians to tell the

truth and ensure that their patients understand the truth. To be kind, the clinicians who believe such figures represent high risk of ultimate suicide in adolescence simply do not know the truth; they are ill-informed.

B. Transition of any sort has not been shown to reduce levels of suicide.

167. Every suicide is a tragedy, and steps that reduce suicide should be adopted. I have noted above that suicidality (that is, suicidal thoughts or behaviors, rather than suicide) is common among transgender adolescents and young adults before, during, and after social and medical transition. If a medical or mental health professional believes that an individual he or she is diagnosing or treating for gender dysphoria presents a suicide risk, in my view it is unethical for that professional merely to proceed with treatment for gender dysphoria and hope that "solves the problem." Rather, that professional has an obligation to provide or refer the patient for evidence-based therapies for addressing depression and suicidal thoughts that are well-known to the profession. (Levine 2016 at 242.)

168. This is all the more true because there is in fact no evidence that social and/or medical transition reduces the risk or incidence of actual suicide. On the contrary, in his analysis of those who were patients of or on the waiting list of the Tavistock clinic, Professor Biggs found that the suicide rate was not higher among those on the clinic's waiting list (and thus as-yet untreated), than for those who were patients under care. (Biggs 2022b.) And as corrected, Branstrom and Pachankis similarly acknowledge that their review of records of GD patients "demonstrated no advantage of surgery in relation to . . . hospitalizations following suicide attempts." (I assume for this purpose that attempts that result in hospitalization are judged to be so

serious as to predict a high rate of future suicide if not successfully addressed.")[11]

C. Long-term life in a transgender identity correlates with very high rates of completed suicide.

169. As with mental health generally, the patient, parent, or clinician fearing the risk of suicide must consider not just the next month or year, but a life course perspective.

170. There are now four long-term studies that analyze completed suicide among those living in transgender identities into adulthood. The results vary significantly, but are uniformly highly negative.

171. Dhejne reported a long-term follow-up study of subjects after sex reassignment surgery. Across the multi-year study, subjects who had undergone SRS committed suicide at 19.1 times the expected rate compared to general population controls matched by age and both sexes. MtF subjects committed suicide at 13.9 times the expected rate, and FtM subjects committed suicide at 40.0 times the expected rate. (Dhejne et al. 2011 Supplemental Table Si.)

172. Asscheman, also writing in 2011, reported results of a long-term follow-up of all transsexual subjects of the Netherlands' leading gender medicine clinic who started cross-sex hormones before July 1, 1997, a total of 1331 patients. Due to the Dutch system of medical and death records, extensive follow-up was achieved. Median follow-up period was 18.5 years. The mortality rate among MtF patients was 51% higher than among the age-matched general population; the rate of completed suicide among

[11] Turban et al. (2020) has been described in press reports as demonstrating that administration of puberty suppressing hormones to transgender adolescents reduces suicide or suicidal ideation. The paper itself does not make that claim, nor permit that conclusion.

MtF patients was six times that of the age-matched general population. (Asscheman et al. 2011.)

173. Importantly, Asscheman et al. found that "No suicides occurred within the first 2 years of hormone treatment, while there were six suicides after 2-5 years, seven after 5-10 years, and four after more than 10 years of CSH treatment at a mean age of 41.5 years." (Asscheman et al. 2011 at 637-638.) This suggests that studies that follow patients for only a year or two after treatment are insufficient. Asscheman et al.'s data suggest that such short-term follow-up is engaging only with an initial period of optimism, and will simply miss the feelings of disillusion and the increase in completed suicide that follows in later years.

174. A retrospective, long-term study published in 2020 of a very large cohort (8263) of patients referred to the Amsterdam University gender clinic between 1972 and 2017 found that the annual rate of completed suicides among the transgender subjects was "three to four times higher than the general Dutch population." "[T]he incidence of observed suicide deaths was almost equally distributed over the different stages of treatment." The authors concluded that "vulnerability for suicide occurs similarly in the different stages of transition." (Wiepjes et al. 2020.) In other words, neither social nor medical transition reduced the rate of suicide.

175. As with Asscheman et al., Wiepj es et al. found that the median time between start of hormones and suicide (when suicide occurred) was 6.1 years for natal males, and 6.9 years for natal females. Again, short- or even medium-term studies will miss this suicide phenomenon.

176. A 2021 study analyzed the case histories of a cohort of 175 gender dysphoria patients treated at one of

the seven UK adult gender clinics who were "discharged" (discontinued as patients) within a selected one-year period. The authors reported the rather shocking result that 7.7% (3/39) of natal males who were diagnosed and admitted for treatment, and who were between 17 and 24 years old, were "discharged" because they committed suicide *during* treatment. (Hall et al. 2021, Table 2.)

177. None of these studies demonstrates that the hormonal or surgical intervention *caused* suicide. That is possible, but as we have seen, the population that identifies as transgender suffers from a high incidence of comorbidities that correlate with suicide. What these studies demonstrate—at the least—is that this remains a troubled population in need of extensive and careful psychological care that they generally do not receive, and that neither hormonal nor surgical transition and "affirmation" resolve their underlying problems and put them on the path to a stable and healthy life.

178. In sum, claims that affirmation will reduce the risk of suicide for children and adolescents are not based on science. Instead, transition of any sort must be justified, if at all, as a life-enhancing measure, not a lifesaving measure. (Levine 2016 at 242.) In my opinion, this is an important fact that patients, parents, and even many MHPs fail to understand.

IX. HORMONAL INTERVENTIONS ARE EXPERIMENTAL PROCEDURES THAT HAVE NOT BEEN PROVEN SAFE.

179. Dr. Adkins also appears to assert as a fact—but without citation to peer-reviewed literature—that social transition, puberty blockers, and cross-sex hormones are known to be "safe." (Adkins at 5-6, 8.) This is not true. And Dr. Adkins, along with a number of voices in the field, also

asserts that puberty blockers act merely as a "pause" in the process of puberty-driven maturation, suggesting that this hormonal intervention has been proven to be fully reversible. This is also an unproven belief

180. On the contrary, no studies have been done that meaningfully demonstrate that either puberty blockers or cross-sex hormones, as prescribed for gender dysphoria, are safe in other than the short run. No studies have attempted to determine whether the effects of puberty blockers, as currently being prescribed for gender dysphoria, are fully reversible. Neither Dr. Adkins nor Dr. Safer cites any such studies, and there are none. There are only pronouncements. In fact, there are substantial reasons for concern that these hormonal interventions are not safe. Multiple researchers have expressed concern that the full range of possible harms have not even been correctly conceptualized.

181. Because, as I have explained in Section VI, recent evidence demonstrates that prepubertal social transition almost always leads to progression on to puberty blockers which in turn almost always leads to the use of cross-sex hormones, physicians bear the ethical responsibility for a thorough informed consent process for parents and patients that includes this fact and its full implications. Informed consent does not mean sharing with the parents and patients what the doctor believes: it means sharing what is known and what is not known about the intervention. So much of what doctors believe is based on mere trust in what they have been taught. Neither they themselves nor their teachers may be aware of the scientific foundation and scientific limitations of what they are recommending.

A. Use of puberty blockers has not been shown to be safe or reversible for gender dysphoria.

182. As I noted above, the recent very thorough literature review performed for the British NHS concluded that *all* available clinical evidence relating to "safety outcomes" from administration of puberty blockers for gender dysphoria is of "very low certainty." (NHS 2020a at 6.)

183. In its 2017 Guidelines, the Endocrine Society cautioned that "in the future we need more rigorous evaluations of the effectiveness and safety of endocrine and surgical protocols" including "careful assessment of . . . the effects of prolonged delay of puberty in adolescents on bone health, gonadal function, and the brain (including effects on cognitive, emotional, social, and sexual development)." (Hembree et al. 2017 at 3874.) No such "careful" or "rigorous" evaluation of these very serious safety questions has yet been done.

184. Some advocates appear to assume that puberty blockers are "safe" because they have been approved by the Food and Drug Administration (FDA) for use to treat precocious puberty—a rare condition in which the puberty process may start at eight or younger. No such conclusion can be drawn. As the "label" for Lupron (one of the most widely prescribed puberty blockers) explains, the FDA approved the drug only *until* the "age was appropriate for entry into puberty." The study provides no information at all as to the safety or reversibility of instead *blocking* healthy, normally-timed puberty's beginning, and *throughout* the years that body-wide continuing changes normally occur. Given the physical, social, and psychological dangers to the child with precocious puberty, drugs like Lupron are effective in returning the child to a puerile state without a high incidence of significant side effects—that is, they are "safe" to reverse the condition. But use of drugs to suppress normal puberty has multiple

organ system effects whose long-term consequences have not been investigated.

185. **Fertility**: The Endocrine Society Guidelines rightly say that research is needed into the effect of puberty blockade on "gonadal function" and "sexual development." The core purpose and function of puberty blockers is to prevent the maturation of the ovaries or testes, the sources of female hormones and male hormones when stimulated by the pituitary gland. From this predictable process fertility is accomplished within a few years. Despite widespread assertions that puberty blockers are "fully reversible," there has been no study published on the critical question of whether patients ever develop normal levels of fertility if puberty blockers are terminated after a "prolonged delay of puberty." The 2017 Endocrine Society Guidelines are correct that are no data on achievement of fertility "following prolonged gonadotropin suppression" (that is, puberty blockade). (Hembree et al. 2017 at 3880.)

186. **Bone strength:** Multiple studies have documented adverse effects from puberty blockers on bone density. (Klink et al. 2015; Vlot et al. 2016; Joseph et al. 2019.) The most recent found that after two years on puberty blockers, the bone density measurements for a significant minority of the children had declined to clinically concerning levels. Density in the spines of some subjects fell to a level found in only 0.13% of the population. (Biggs 2021.) Some other studies have found less concerning effects on bone density. While the available evidence remains limited and conflicting, it is not possible to conclude that the treatment is "safe."

187. **Brain development:** Important neurological growth and development in the brain occurs across puberty. The anatomic and functional effect on brain

development of blocking the natural puberty process has not been well studied. A prominent Australian clinical team recently expressed concern that "no data were (or are) available on whether delaying the exposure of the brain to a sex steroid affects psychosexual, cognitive, emotional, or other neuropsychological maturation." (Kozlowska et al. 2021 at 89.) In my opinion, given the observed correlation between puberty and brain development, the default hypothesis must be that there *would* be a negative impact. For the purpose of protecting patients all over the world, the burden of proof should be on advocates to first demonstrate to a reasonable degree of certainty that brain structure and its measurable cognitive and affect processing are not negatively affected. This recalls the ethical principle: Above All Do No Harm.

188. The Endocrine Society Guidelines acknowledge as much, stating that side effects of pubertal suppression "may include . . . unknown effects on brain development," that "we need more rigorous evaluations of . . . the effects of prolonged delay of puberty in adolescents on . . . the brain (including effects on cognitive, emotional, social, and sexual development)," and stating that "animal data suggests there may be an effect of GnRH analogs [puberty blockers] on cognitive function." (Hembree et al. 2017 at 3874, 3882, 3883.) Given this concern, one can only wonder why this relevant question has not been scientifically investigated in a large group of natal males and females.

189. There has been a longitudinal study of one natal male child, assessed before, and again 20 months after, puberty suppression was commenced. It reported a reduction in the patient's "global IQ," measured an anomalous absence of certain structural brain development expected during normal male puberty, and hypothesized that "a plausible explanation for the G[lobal] IQ decrease

should consider a disruption of the synchronic [i.e., appropriately timed] development of brain areas by pubertal suppression." (Schneider et al. 2017 at 7.) This should cause parents and practitioners serious concern.

190. Whether any impairment of brain development is "reversed" upon later termination of puberty blockade has, to my knowledge, not been studied at all. As a result, assertions by medical or mental health professionals that puberty blockade is "fully reversible" are unjustified and based on hope rather than science.

191. Without a number of additional case studies—or preferably statistically significant clinical studies—two questions remain unanswered: Are there brain anatomic or functional impairment from puberty blockers? And are the documented changes reversed over time when puberty blockers are stopped? With these questions unanswered, it is impossible to assert with certainty that the effects of this class of medications are "fully reversible." Such an assertion is another example of ideas based on beliefs rather than on documentation, on hope not science.

192. **Psycho-social harm: Puberty** is a time of stress, anxiety, bodily discomfort during physical development, and identity formation for *all* humans. No careful study has been done of the long-term impact on the young person's coping skills, interpersonal comfort, and intimate relationships from remaining puerile for, e.g., two to five years while one's peers are undergoing pubertal transformations, and of then undergoing an artificial puberty at an older age. However, pediatricians and mental health professionals hear of distress, concern, and social awkwardness in those who naturally have a delayed onset of puberty. In my opinion, individuals in whom puberty is delayed multiple years are likely to suffer at least subtle negative psychosocial and self-confidence effects as they

stand on the sidelines witnessing their peers developing the social relationships (and attendant painful social learning experiences) that come with adolescence. (Levine 2018 at 9.) Social anxiety and social avoidance are common findings in the evaluation of trans-identified children and teens. Are we expected to believe that creating years of being further different than their peers has no lasting internal consequences? Do we ignore Adolescent Psychiatry's knowledge of the importance of peer groups among adolescents?

193. We simply do not know what all the psychological impacts of NOT grappling with puberty at the ordinary time may be, because it has not been studied. And we have no information as to whether that impact is "fully reversible."

194. In addition, since the overwhelming proportion of children who begin puberty blockers continue on to cross-sex hormones, it appears that there is an important element of "psychological irreversibility" in play. The question of to what extent the physical and developmental impacts of puberty blockers might be reversible is an academic one, if psycho-social realities mean that very few patients well ever be able to make that choice once they have started down the road of social transition and puberty blockers.

B. Use of cross-sex hormones in adolescents for gender dysphoria has not been shown to be medically safe except in the short term.

195. As with puberty blockers, all evidence concerning the safety of extended use of cross-sex hormones is of "very low quality." The U.K. NICE evidence review cautioned that "the safety profiles" of cross-sex hormone treatments are "largely unknown," and that several of the limited studies that do exist reported high numbers of subjects

"lost to follow-up," without explanation—a worrying indicator. (NICE 2020b.)

196. The 2020 Cochrane Review reported that: "We found insufficient evidence to determine the . . . safety of hormonal treatment approaches for transgender women in transition." (Haupt et al. 2020 at 4.) Even the Endocrine Society tagged all its recommendations for the administration of cross-sex hormones as based on "low quality evidence." (Hembree et al. 2017 at 3889.)

197. **Sterilization:** It is undisputed, however, that harm to the gonads is an expected effect, to the extent that it must be assumed that cross-sex hormones will sterilize the patient. Thus, the Endocrine Society 2017 Guidelines caution that "[p]rolonged exposure of the testes to estrogen has been associated with testicular damage," that "[r]estoration of spermatogenesis after prolonged estrogen treatment has not been studied," and that "[i]n biological females, the effect of prolonged treatment with exogenous testosterone upon ovarian function is uncertain." (Hembree et al. 2017 at 3880.)[12]

198. The Guidelines go on to recommend that the practitioner counsel the patient about the (problematic and uncertain) options available to collect and preserve fertile sperm or ova before beginning cross-sex hormones. The life-long negative emotional impact of infertility on both men and women has been well studied. While this impact has not been studied specifically within the transgender population, the opportunity to be a parent is likely a human, emotional need, and so should be considered an important

[12] *See also* Guss et al. 2015 at 4 ("a side effect [of cross-sex hormones] may be infertility") and at 5 ("cross-sex hormones . . . may have irreversible effects"); Tishelman et al. 2015 at 8 (Cross-sex hormones are "irreversible interventions" with "significant ramifications for fertility").

risk factor when considering gender transition for any patient.

199. Sexual response: Puberty blockers prevent maturation of the sexual organs and response. Some, and perhaps many, transgender individuals who did not go through puberty consistent with their sex and are then put on cross-sex hormones face significantly diminished sexual response as they enter adulthood and are unable ever to experience orgasm. In the case of males, the cross-sex administration of estrogen limits penile genital growth and function. In the case of females, prolonged exposure to exogenous testosterone impairs vaginal function. Much has been written about the negative psychological and relational consequences of anorgasmia among non-transgender individuals that is ultimately applicable to the transgendered. (Levine 2018 at 6.) At the same time, prolonged exposure of females to exogenous testosterone often increases sexual drive to a distracting degree. It is likely that parents and physicians are uncomfortable discussing any aspects of genital sexual activity with patients.

200. **Cardiovascular harm:** Several researchers have reported that cross-sex hormones increase the occurrence of various types of cardiovascular disease, including strokes, blood clots, and other acute cardiovascular events. (Getahun et al. 2018; Guss et al. 2015; Asscheman et al. 2011.) With that said, I agree with the conclusion of the Endocrine Society committee (like that of the NICE Evidence Review) that: "A systematic review of the literature found that data were insufficient (due to very low—quality evidence) to allow a meaningful assessment of patient-important outcomes, such as death, stroke, myocardial infarction, or venous thromboembolism in transgender males. Future research is needed to ascertain

the potential harm of hormonal therapies." (Hembree et al. 2017 at 3891.) Future research questions concerning long-term harms need to be far more precisely defined. The question of whether cross-sex hormones are safe for adolescents and young adults cannot be answered by analogies to hormone replacement therapy in menopausal women (which is not a cross-sex usage). Medicine has answered safety questions for menopausal women in terms of cancer and cardiovascular safety: at what dose, for what duration, and at what age range. The science of endocrine treatment of gender dysphoric youth is being bypassed by short-term clinical impressions of safety even though physicians know that cardiovascular and cancer processes often develop over many years.

201. Further, in contrast to administration for menopausal women, hormones begun in adolescence are likely to be administered for four to six decades. The published evidence of adverse impact, coupled with the lack of data sufficient to reach a firm conclusion, make it irresponsible to assert that cross-sex hormones "are safe."

202. **Harm to family and friendship relationships:** As a psychiatrist, I recognize that mental health is a critical part of health generally, and that relationships cannot be separated from and profoundly impact mental health. Gender transition routinely leads to isolation from at least a significant portion of one's family in adulthood. In the case of a juvenile transition, this will be less dramatic while the child is young, but commonly increases over time as siblings who marry and have children of their own do not wish the transgender individual to be in contact with those children. By adulthood, the friendships of transgender individuals tend to be confined to other transgender individuals (often "virtual" friends known only online) and the generally limited set of others who are comfortable

interacting with transgender individuals. (Levine 2017 at 5.) My concerns about this are based on decades of observations in my professional work with patients.

203. **Sexual-romantic harms associated with transition:** After adolescence, transgender individuals find the pool of individuals willing to develop a romantic and intimate relationship with them to be greatly diminished. When a trans person who passes well reveals his or her natal sex, many potential mates lose interest. When a trans person does not pass well, options are likely further diminished. But regardless of a person's appearance, these adults soon learn that many of their dates are looking for exotic sexual experiences rather than genuinely loving relationships. (Levine 2017 at 5, 13; Levine 2013 at 40.)

C. The timing of harms.

204. The multi-year delay between start of hormones and the spike in completed suicide observed by Professor Biggs in the Tavistock data (as discussed in Section VIII above) warns us that the safety and beneficence of these treatments cannot be judged based on short-term studies, or studies that do not continue into adulthood. Similarly, several of the harms that I discuss above would not be expected to manifest until the patients reaches at least middle-age. For example, stroke or other serious cardiovascular event is a complication that is unlikely to manifest during teen years even if its likelihood over the patient's lifetime has been materially increased via obesity, lipid abnormalities, and smoking. Regret over sterilization or over an inability to form a stable romantic relationship may occur sooner. Psychological challenges of being a trans adult may become manifest after the medical profession is only doing routine follow up care—or, in many cases, has lost contact with the patient altogether. Because few, if any, clinics in this country are conducting systematic long-term

follow-up with their child and adolescent patients, the doctors who counsel, prescribe, or perform hormonal and surgical therapies are unlikely ever to become aware of the later negative life impacts, however severe. These concerns are compounded by the findings in the recent "detransitioner" research that 76% did not inform their clinicians of their detransition. (Littman 2021.)

205. The possibility that steps along the transition and affirmation pathway, while lessening the pain of gender dysphoria in the short term, could lead to additional sources of crippling emotional and psychological pain, are too often not considered by advocates of social transition and not considered at all by the trans child. (Levine 2016 at 243.) Clinicians must distinguish the apparent short-term safety of hormones from likely or possible long-term consequences, and help the patient or parents understand these implications as well. The young patient may feel, "I don't care if I die young, just as long I get to live as a woman." The mature adult may take a different view. Hopefully, so will the child's physician.

206. Individual patients often pin excessive hope in transition, believing that transition will solve what are in fact ordinary social stresses associated with maturation, or mental health co-morbidities. In this way, transition can prevent them from mastering personal challenges at the appropriate time or directly addressing conditions that require treatment. When the hoped-for "vanishing" of other mental health or social difficulties does not occur, disappointment, distress, and depression may ensue. It is noteworthy that half of the respondents to the larger "detransitioner" survey reported that their transition had not helped the gender dysphoria, and 70% had concluded that their gender dysphoria was related to other issues. (Vandenbussche 2021.) Without the clinical experience of

monitoring the psychosocial outcomes of these young patients as they age into adulthood, many such professionals experience no challenge to their affirmative beliefs. But medical and mental health professionals who deliver trans affirmative care for those with previous and co-existing mental health problems have an ethical obligation to inform themselves, and to inform patients and parents, that these dramatic treatments are not a panacea.

207. In sum, whether we consider physical or mental health, science does not permit us to say that either puberty blockers or cross-sex hormones are "safe," and the data concerning the mental health of patients before, during, and after such treatments strongly contradict the assertion that gender dysphoria is "easily managed."

Bibliography

Adelson, S. & American Academy of Child & Adolescent Psychiatry (2012). *Practice Parameter on Gay, Lesbian, or Bisexual Sexual Orientation, Gender Nonconformity, and Gender Discordance in Children and Adolescents.* JOURNAL OF THE AMERICAN ACADEMY OF CHILD & ADOLESCENT PSYCHIATRY 51(9) 957.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). https://doi.org/10.1176/appi.books.9780890425596

American Psychological Association. *Guidelines for Psychological Practice with Transgender & Gender Nonconforming People* (2015). AMERICAN PSYCHOLOGIST 70(9) 832.

Anderson, E. (2022, January 3). *Opinion: When it comes to trans youth, we're in danger of losing our way.* THE SAN FRANCISCO EXAMINER. Accessed January 5,2022 http://www.sfexaminer.com/opinion/are-we-seeing-a-phenomenon-of-trans-youth-social-contagion/

Anzani, A., Lindley, L., Tognasso, G., Galupo, M. & Prunas, A. (2021). *"Being Talked to Like I Was a Sex Toy, Like Being Transgender Was Simply for the Enjoyment of Someone Else": Fetishization and Sexualization of Transgender and Nonbinary Individuals.* ARCHIVES OF SEXUAL BEHAVIOR 50(3) 897-911..

Asscheman, H., Giltay, E. J., Megens, J. A. J., de Ronde, W. (Pim), van Trotsenburg, M. A. A., & Gooren, L. J. G. (2011). *A long-term follow-up study of mortality in transsexuals receiving treatment with cross-sex*

hormones. EUROPEAN JOURNAL OF ENDOCRINOLOGY *164(4)* 635-642.

Balshem, H., Helfand, M., Schiinemann, H. J., Oxman, A. D., Kunz, R., Brozek, J., Vist, G. E., Falck-Ytter, Y., Meerpohl, J., & Norris, S. (2011). *GRADE guidelines: 3. Rating the quality of evidence.* JOURNAL OF CLINICAL EPIDEMIOLOGY *64(4),* 401-406.

Becerra-Culqui, T. et. al. (2018). *Mental Health of Transgender and Gender Nonconforming Youth Compared with Their Peers.* PEDIATRICS 141(5).

Bhargava, A., et al. (2021). *Considering Sex as a Biological Variable in Basic and Clinical Studies: An Endocrine Society Scientific Statement.* ENDOCRINE REVIEWS 42(3) 219158.

Biggs, M. (2021). *Revisiting the effect of GnRH analogue treatment on bone mineral density in young adolescents with gender dysphoria.* JOURNAL OF PEDIATRIC ENDOCRINOLOGY AND METABOLISM 34(7), 937-939.

Biggs, M. (2022a). *Estrogen is Associated with Greater Suicidality among Transgender Males, and Puberty Suppression is not Associated with Better Mental Health Outcomes for Either Sex.* Journals.plos.org/plosone/article/comment?id=10.1371/annotation/dcc6a58e-592a-49d4-9b65-ff65df2aa8f6.

Biggs, M. (2022b). *Suicide by Clinic-Referred Transgender Adolescents in the United Kingdom.* ARCHIVES OF SEXUAL BEHAVIOR. Doi.org/10.1007/s10508-022-02287-7.

Blakemore, S., Burnett, S., and Dahl, R. (2010). *The Role of Puberty in the Developing Adolescent Brain.* HUMAN BRAIN MAPPING 31:926.933.

Boyd, I., Hackett, T. &, Bewley, S. (2022).. *Care of Transgender Patients: A General Practice Quality Improvement Approach.* HEALTHCARE. 10(1):121.

Branstrom, R., & Pachankis, J. E. (2020a). *Reduction in Mental Health Treatment Utilization*

Among Transgender Individuals After Gender-Affirming Surgeries: A Total Population Study. AMERICAN JOURNAL OF PSYCHIATRY 177(8) 727-734.

Branstrom, R., & Pachankis, J. E. (2020b). *Correction to Briinstrom and Pachankis.* (2020). AMERICAN JOURNAL OF PSYCHIATRY, 177(8), 734-734. https://doi.org/10.1176/appi.ajp.2020.1778correction

Brik, T. et al. (2020). *Trajectories of Adolescents Treated with Gonadotropin-Releasing Hormone Analogues for Gender Dysphoria.* ARCHIVES OF SEXUAL BEHAVIOR. https://doi.org/10.1007/s10508-020-01660-8.

Cantor, J. (2019). *Transgender and Gender Diverse Children and Adolescents: Fact-Checking of AAP Policy.* JOURNAL OF SEX & MARITAL THERAPY, *46(4),* 307-313.

Carmichael, P., Butler, G., Masic, U., Cole, T. J., De Stavola, B. L., Davidson, S., Skageberg, E. M., Khadr, S., & Viner, R. M. (2021). *Short-term outcomes of pubertal suppression in a selected cohort of 12- to 15-year-old young people with persistent gender dysphoria in the UK.* PLOS ONE, 16(2), e0243894.

Cohen-Kettenis, P. and Kuiper, B. (1984). *Transsexuality and Psychotherapy.* TIJDSCHRIFT VOOR PSYCHOTHERAPIE 10 (153-166).

Cohen-Kettenis, P. T., Delemarre-van de Waal, H. A., & Gooren, L. J. G. (2008). *The treatment of adolescent transsexuals: Changing insights.* THE JOURNAL OF SEXUAL MEDICINE, 5(8), 1892-1897.

D'Angelo, R. (2018). *Psychiatry's ethical involvement in gender-affirming care.* AUSTRALASIAN PSYCHIATRY *26(5),* 460-463.

D'Angelo, R., Syrulnik, El, Ayad, S., Marchiano, L., Kenny, D.T., & Clarke, P. (2021). *One Size Does Not Fit All: In Support of Psychotherapy for Gender Dysphoria.* ARCHIVES OF SEXUAL BEHAVIOR 50(1) 7-16.

Davis, L. (2022). *A Trans Pioneer Explains Her Resignation from the US Professional Association for Transgender Health.* QUILETTE. Accessed February 1, 2022. https://quillette.com/2022/01/06/a-transgender-pioneer-explains-why-she-stepped-down-from-uspath-and-wpath/

de Vries, A. L. C. (2020). *Challenges in Timing Puberty Suppression for Gender-Nonconforming Adolescents.* PEDIATRICS 146(4), e2020010611.

Dhejne, C., Lichtenstein, P., Boman, M., Johansson, A. L. V., Langstrom, N., & Landen, M. (2011). *Long-Term Follow-Up of Transsexual Persons Undergoing Sex Reassignment Surgery: Cohort Study in Sweden.* PLoS ONE 6(2), e16885.

Dhejne, C., Oberg, K., Arver, S., & Landen, M. (2014). *An Analysis of All Applications for Sex Reassignment Surgery in Sweden, 1960-2010: Prevalence, Incidence, and Regrets.* ARCHIVES OF SEXUAL BEHAVIOR, 43(8), 1535-1545.

Dreger, A. (2015) *Galileo's Middle Finger: Heretics, Activists, and One Scholar's Search for Justice Paperback.* PENGUIN BOOKS.

Edwards-Leeper, L. and Anderson, E. (November 24, 2021). *The Mental Health Establishment is Failing Trans Kids.* THE WASHINGTON POST. Accessed February 1, 2022. https://www.washingtonpost.com/outlook/2021/11/24/trans-kids-therapy-psychologist/

Edwards-Leeper, L. et al. (2017). *Psychological Profile of the First Sample of Transgender Youth Presenting for Medical Intervention in a U.S. Pediatric Gender Center.* PSYCHOLOGY OF SEXUAL ORIENTATION AND GENDER DIVERSITY 4(3) 374.

Ehrensaft, B.(2015). *Listening and Learning from Gender-Nonconforming Children.* THE PSYCHOANALYTIC STUDY OF THE CHILD 68(1) 28.

Entwistle, K. (2020). *Debate: Reality check — Detransitioners' testimonies require us to rethink gender dysphoria.* CHILD AND ADOLESCENT MENTAL HEALTH camh.12380.

Evans, M. and Evans, S. (2021). *Psychotherapy of Gender Dysphoria of Children and Young Adults.* PHOENIX PUBLICATION, UK.

Expósito-Campos, P. (2021). *A Typology of Gender Detransition and Its Implications for Healthcare Providers.* JOURNAL OF SEX & MARITAL THERAPY. https://doi.org/10.1080/0092623X.2020.1869126.

Frigerio, A. et al. (2021). *Structural, Functional, and Metabolic Brain Differences as a Function of Gender*

Identity or Sexual Orientation: A Systematic Review of the Human Neuroimaging Literature. ARCHIVES OF SEXUAL BEHAVIOR 50:3329-3352.

Getahun, D., Nash, R., Flanders, W. D., Baird, T. C., Becerra-Culqui, T. A., Cromwell, L., Hunkeler, E., Lash, T. L., Millman, A., Quinn, V. P., Robinson, B., Roblin, D.,

Silverberg, M. J., Safer, J., Slovis, J., Tangpricha, V., & Goodman, M. (2018). *Cross-sex*

Hormones and Acute Cardiovascular Events in Transgender Persons: A Cohort Study. ANNALS OF INTERNAL MEDICINE, *169(4),* 205.

Gender Identity Development Service of the NHS (2019). *Referrals to the Gender Identity Development Service (GIDS) Level Off in 2018-19.* https://tavistockandportman.nhg.uk/about-us/news/stories/referrals-gender-identity-development-service-gids-level-2018-19.

Ghorayshi, A. (2022, January 13). *Doctors Debate Whether Trans Teens Need Therapy Before Hormones.* THE NEW YORK TIMES. Accessed February 1, 2022. https://www.nytimes.com/2022/01/13/health/transgender-teens-hormones.html.

Griffin, L., Clyde, K., Byng, R., & Bewley, S. (2021). *Sex, Gender and Gender Identity: A Reevaluation of the Evidence.* BJPSYCH BULLETIN, 45(5), 291-299.

Guss, C. et al. (2015). *Transgender and Gender Nonconforming Adolescent Care: Psychosocial and Medical Considerations.* CURRENT OPINIONS IN PEDIATRICS 26(4) 421.

Hall, R., Mitchell, L., & Sachdeva, J. (2021). *Access to care and frequency of detransition among a cohort*

discharged by a UK national adult gender identity clinic: Retrospective case-note review. BJPSYCH OPEN, 7(6), el84.

Haupt, C. et al. (2020). *Antiandrogen or Estradiol Treatment or Both During Hormone Therapy in Transitioning Transgender Women (Review).* COCHRANE DATABASE OF SYSTEMATIC REVIEWS 11. DOI: 10.1002/14651858. CD013138.pub2.

Hembree, W. C., Cohen-Kettenis, P. T., Gooren, L., Hannema, S. E., Meyer, W. J., Murad, M. H., Rosenthal, S. M., Safer, J. **D.,** Tangpricha, V., & T'Sjoen, G. G. (2017). *Endocrine Treatment of Gender-Dysphoric/Gender-Incongruent Persons: An Endocrine Society* Clinical Practice Guideline.* THE JOURNAL OF CLINICAL ENDOCRINOLOGY & METABOLISM *102(11),* 3869-3903.

Hruz, P. (2020). *Deficiencies in Scientific Evidence for Medical Management of Gender Dysphoria.* THE LINACRE QUARTERLY 87(1):34-42.

Johns, M. M., Lowry, R., Andrzejewski, J., Barrios, L. C., Demissie, Z., McManus, T., Rasberry, C. N., Robin, L., & Underwood, J. M. (2019). *Transgender Identity and Experiences of Violence Victimization, Substance Use, Suicide Risk, and Sexual Risk Behaviors Among High School Students-19 States and Large Urban School Districts, 2017.* MORBIDITY AND MORTALITY WEEKLY REPORT *68(3)* 67-71.

Joseph, T., Ting, J., & Butler, G. (2019). *The effect of GnRH analogue treatment on bone mineral density in young adolescents with gender dysphoria: findings from a large national cohort.* JOURNAL OF

PEDIATRIC ENDOCRINOLOGY METABOLISM 32(10):10771081.

Kaltiala-Heino, R., Bergman, H., Tyolajarvi, M., & Frisen, L. (2018). *Gender dysphoria in adolescence: Current perspectives.* ADOLESCENT HEALTH, MEDICINE AND THERAPEUTICS *9* (31-41).

Kaltiala-Heino, R., Sumia, M., Tyolajarvi, M., & Lindberg, N. (2015). *Two years of gender identity service for minors: Overrepresentation of natal girls with severe problems in adolescent development.* CHILD AND ADOLESCENT PSYCHIATRY AND MENTAL HEALTH, 9(1), 9.

Kendler K. S. (2019). *From Many to One to Many-the Search for Causes of Psychiatric Illness. JAMA PSYCHIATRY,* 76(10) 1085-1091.

Kidd, K. M., Sequeira, G. M., Douglas, C., Paglisotti, T., Inwards-Breland, D. J., Miller, E., & Coulter, R. W. S. (2021). *Prevalence of Gender-Diverse Youth in an Urban School District.* PEDIATRICS, 147(6) e2020049823.

Klink, D. et al. (2015). *Bone mass in young adulthood following gonadotropin-releasing hormone analog treatment and cross-sex hormone treatment in adolescents with gender dysphoria.* JOURNAL OF CLINICAL ENDOCRINOLOGY METABOLIAM 100(2):E270-5.

Kozlowska, K., Chudleigh, C., McClure, G., Maguire, A. M., & Ambler, G. R. (2021).

Attachment Patterns in Children and Adolescents with Gender Dysphoria. FRONTIERS IN PSYCHOLOGY 11. https://doi.org/10.3389/fpsyg.2020.582688.

Laidlaw, M. K., Van Meter, Q. L., Hruz, P. W., Van Mol, A., & Malone, W. J. (2019). *Letter to the Editor: "Endocrine Treatment of Gender-Dysphoric/Gender-Incongruent Persons: An Endocrine Society Clinical Practice Guideline".* THE JOURNAL OF CLINICAL ENDOCRINOLOGY AND METABOLISM. 104(3), 686-687.

Landen, M. (2020). *The Effect of Gender-Affirming Treatment on Psychiatric Morbidity Is Still Undecided.* AMERICAN JOURNAL OF PSYCHIATRY. 177(8):767-768.

Levine, S. (2013). *Barriers to Loving: A Clinician's Perspective.* (Routledge, New York 2013).

Levine, S. (2016). *Reflections on the Legal Battles Over Prisoners with Gender Dysphoria.* JOURNAL OF THE AMERICAN ACADEMY OF PSYCHIATRY LAW 44,236.

Levine, S. (2017). *Ethical Concerns About Emerging Treatment Paradigms for Gender Dysphoria.* JOURNAL OF SEX & MARITAL THERAPY at 7. DOI: 10.1080/0092623X.2017.1309482.

Levine, S. (2019). *Informed Consent for Transgender Patients,* JOURNAL OF SEX & MARITAL THERAPY 45(3):218-229.

Levine, S. (2021). *Reflections on the Clinician's Role with Individuals Who Self-identify as Transgender.* ARCHIVES OF SEXUAL BEHAVIOR. https://doi.org/10.1007/s10508-021-02142-1

Lichtenstein M, Stein L, Connolly E, Goldstein ZG, Martinson T, Tiersten L, Shin SJ, Pang JH, Safer JD (2020). *The Mount Sinai patient-centered preoperative criteria meant to optimize outcomes are less of a*

barrier to care than WPATH SOC 7 criteria before transgender-specific surgery. TRANSGENDER HEALTH 5:3, 166-172.

Littman, L. (2018). *Parent reports of adolescents and young adults perceived to show signs of a rapid onset of gender dysphoria.* PLoS ONE 13(8): e0202330.

Littman, L. (2021). *Individuals Treated for Gender Dysphoria with Medical and/or Surgical Transition Who Subsequently Detransitioned: A Survey of 100 Detransitioners.* ARCHIVES OF SEXUAL BEHAVIOR. https://doi.org/10.1007/s10508-021-02163-w

Malone, W., Hruz, P., Mason, J., Beck, S., (2021). *Letter to the Editor from William J. Malone et al: "Proper Care of Transgender and Gender-diverse Persons in the Setting of Proposed Discrimination: A Policy Perspective".* THE JOURNAL OF CLINICAL ENDOCRINOLOGY & METABOLISM Volume 106, Issue 8, August 2021, Pages e3287—e3288.

Marchiano, L. (2021). *Gender detransition: a case study.* JOURNAL OF ANALYTICAL PSYCHOLOGY. 66:813— 832.

Meyer-Bahlburg H. F. (2005). *Gender identity outcome in female-raised 46,XY persons with penile agenesis, cloacal exstrophy of the bladder, or penile ablation.* ARCHIVES OF SEXUAL BEHAVIOR, 34(4), 423-438.

National Institute for Health and Care Excellence (2021a). *Evidence review: Gonadotrophin releasing hormone analogues for children and adolescents with gender dysphoria.* https://arms.nice.org.uk/resources/hub/1070905/attachment

National Institute for Health and Care Excellence. (202 lb). *Evidence review: Gender-affirming hormones for children and adolescents with gender dysphoria.* https://arms.nice.org.uldresources/hub/1070871/attachment

National Institutes of Health. *NIH Policy and Guidelines on The Inclusion of Women and Minorities as Subjects in Clinical Research.* Notice Number NOT-OD-02-001 released 10-09-2001. https://grants.nih.gov/policy/inclusion/women-and-minorities/guidelines.htm

National Institutes of Health. *Consideration of Sex as a Biological Variable in NIH-Funded Research.* Notice Number NOT-OD-15-102 released 06-09-2015. https://grants.nih.gov/grants/guide/notice-files/NOT-OD-15-102.html

National Institutes of Health, Office of Research on Women's Health. *How Sex and Gender Influence Health and Disease.* Downloaded 2-11-2022 https://orwh.od.nih.gov/sites/orwh/files/docs/SexGenderInfographic 11x17 508.pdf.

Newcomb, M. et al. (2020). *High Burden of Mental Health Problems, Substance Use, Violence, and Related Psychosocial Factors in Transgender, Non-Binary, and Gender Diverse Youth and Young Adults.* ARCHIVES OF SEXUAL BEHAVIOR 49(2) 645-659.

Reiner, W. G., & Gearhart, J. P. (2004). *Discordant sexual identity in some genetic males with cloacal exstrophy assigned to female sex at birth.* THE NEW ENGLAND JOURNAL OF MEDICINE 350(4), 333-341.

Reisner, S. et al. (2015), *Mental Health of Transgender Youth in Care at an Adolescent Urban Community Health Center: A Matched Retrospective Cohort Study,* JOURNAL OF ADOLESCENT HEALTH 56(3) at 6.

Rider, G. et al. (2018), *Health and Care Utilization of Transgender/Gender Non-Conforming Youth: A Population Based Study.* PEDIATRICS at 4, DOI: 10.1542/peds.2017-1683.

Ristori, J., & Steensma, T. D. (2016). *Gender dysphoria in childhood.* INTERNATIONAL REVIEW OF PSYCHIATRY, 28(1), 13-20.

Royal Australian and New Zealand College of Psychiatrists. (2021) *Statement: Recognising and addressing the mental health needs of people experiencing Gender Dysphoria / Gender Incongruence.* https://www.ranzcp.org/news-policy/policy-and-advocacy/position-statements/gender-dysphoria

Saraswat, A. et al. (2015). *Evidence Supporting the Biologic Nature of Gender Identity.* ENDOCRINE PRACTICE 21(2) 199.

Schneider, M. et al. (2017). *Brain Maturation, Cognition and Voice Pattern in a Gender Dysphoria Case Under Pubertal Suppression.* FRONTIERS IN HUMAN NEUROSCIENCE 11:528.

Shumer, D. & Tishelman, A. (2015). *The Role of Assent in the Treatment of Transgender Adolescents,* INTERNATIONAL JOURNAL OF TRANSGENDERISM at 1. DOI: 10.1080/15532739.2015.1075929.

Shumer, D. et al. (2016), *Evaluation of Asperger Syndrome in Youth Presenting to a Gender Dysphoria Clinic,* LGBT HEALTH 3(5) 387.

Shumer, D. et al. (2017), *Overrepresentation of Adopted Adolescents at a Hospital-Based Gender Dysphoria Clinic,* TRANSGENDER HEALTH Vol. 2(1) 76.

Simonsen, R.K. et al. (2016), *Long-Term Follow-Up of Individuals Undergoing Sex Reassignment Surgery: Psychiatric Morbidity & Mortality,* NORDIC JOURNAL OF PSYCHIATRY 70(4).

Singh, D., Bradley, S. J., & Zucker, K. J. (2021). *A Follow-Up Study of Boys with Gender Identity Disorder.* FRONTIERS IN PSYCHIATRY, *12.* https://doi.org/10.3389/fpsyt.2021.632784

Steensma, T. D., McGuire, J. K., Kreukels, B. P. C., Beekman, A. J., & Cohen-Kettenis, P. T. (2013). *Factors Associated with Desistence and Persistence of Childhood Gender Dysphoria: A Quantitative Follow-Up Study.* JOURNAL OF THE AMERICAN ACADEMY OF CHILD & ADOLESCENT PSYCHIATRY, 52(6), 582-590.

Thoma, B. et al. (2021). *Disparities in Childhood Abuse Between Transgender and Cisgender Adolescents.* PEDIATRICS 148(2).

Tishelman, A. C., Kaufman, R., Edwards-Leeper, L., Mandel, F. H., Shumer, D. E., & Spack, N. P. (2015). *Serving Transgender Youth: Challenges, Dilemmas and Clinical Examples.* PROFESSIONAL PSYCHOLOGY, RESEARCH AND PRACTICE 46(1), 37-45.

Toomey R. B., Syvertsen A. K., Shramko M. (2018). *Transgender Adolescent Suicide Behavior.* PEDIATRics.142(4):e20174218.

Turban, J. L., King, D., Carswell, J. M., & Keuroghlian, A. S. (2020). *Pubertal Suppression for Transgender Youth and Risk of Suicidal Ideation.* PEDIATRICS *145(2),* e20191725,,

Vandenbussche, E. (2021). *Detransition-Related Needs and Support: A Cross-Sectional Online Survey.* JOURNAL OF HOMOSEXUALITY 20. https://doi.org/10.1080/00918369.2021.1919479.

van der Miesen, A. I. R., Cohen-Kettenis, P. T., & de Vries, A. L. C. (2018). *Is There a Link Between Gender Dysphoria and Autism Spectrum Disorder?* JOURNAL OF THE AMERICAN ACADEMY OF CHILD & ADOLESCENT PSYCHIATRY 57(11), 884-885.

van der Miesen, A. I. R. et al. (2020). *Psychological Functioning in Transgender Adolescents Before and After Gender-Affirmative Care Compared With Cisgender General Population Peers.* JOURNAL OF ADOLESCENT HEALTH, Volume 66, Issue 6,699-704.

Vlot, M. et al. (2016). *Effect of pubertal suppression and cross-sex hormone therapy on bone turnover markers and bone mineral apparent density (BMAD) in transgender adolescents.* BONE 95:11-19.

Wiepjes, C. M., Nota, N. M., de Blok, C. J. M., Klaver, M., de Vries, A. L. C., Wensing-Kruger, S. A., de Jongh, R. T., Bouman, M.-B., Steensma, T. D., Cohen-Kettenis, P., Gooren, L. J. G., Kreukels, B. P. C., & den Heijer, M. (2018). *The Amsterdam Cohort of Gender*

Dysphoria Study (1972-2015): Trends in Prevalence, Treatment, and Regrets. THE JOURNAL OF SEXUAL MEDICINE, 15(4), 582-590.

Wiepjes, C. M., den Heijer, M., Bremmer, M. A., Nota, N. M., Blok, C. J. M., Coumou, B. J. G., & Steensma, T. D. (2020). *Trends in suicide death risk in transgender people: Results from the Amsterdam Cohort of Gender Dysphoria study (1972-2017).* ACTA PSYCHIATRICA SCANDINAVICA *141(6)* 486-491.

World Health Organization. Gender and Health. https://www.who.int/health-topics/gender#tab=tab 1. Downloaded 2-11-2022.

World Health Organization (2019). *International statistical classification of diseases and related health problems (11th ed.).* https://icd.who.int/.

WPATH *De-Psychopathologisation Statement* (May 26, 2010), available at wpath.org/policies_(last accessed January 21, 2020).

Zucker, K. (2018). *The myth of persistence: Response to "A critical commentary on follow-up studies and 'desistance' theories about transgender and gender non-conforming children" by Temple Newhook et al.* (2018). INTERNATIONAL JOURNAL OF TRANSGENDERISM *19(2)* 231-245.

Zucker, K. (2019). *Adolescents with Gender Dysphoria: Reflections on Some Contemporary Clinical and Research Issues.* ARCHIVES OF SEXUAL BEHAVIOR 48(7) 1983-1992.

Zucker, K. (2020). *Different strokes for different folks.* CHILD ADOLESC MENT HEALTH 25(1): 36-37. https://doi:10.1111/camh.12330.

LEVINE EXPERT REPORT
EXHIBIT A

Stephen B. Levine, M.D. Curriculum Vita

February, 2022

Brief Introduction

Dr. Levine is Clinical Professor of Psychiatry at Case Western Reserve University School of Medicine. He is the author or coauthor of numerous books on topics relating to human sexuality and related relationship and mental health issues. Dr. Levine has been teaching, providing clinical care, and writing since 1973, and has generated original research, invited papers, commentaries, chapters, and book reviews. He has served as a journal manuscript and book prospectus reviewer for many years. Dr. Levine has been co-director of the Center for Marital and Sexual Health/ Levine, Risen & Associates, Inc. in Beachwood, Ohio from 1992 to the present. He received a lifetime achievement Masters and Johnson's Award from the Society for Sex Therapy and Research in March 2005.

Personal Information

Date of birth 1/14/42

Medical license no. Ohio 35-03-0234-L

Board Certification 6/76 American Board of Neurology and Psychiatry

Education

1963 BA Washington and Jefferson College

1967 MD Case Western Reserve University School of Medicine

1967-68 internship in Internal Medicine University Hospitals of Cleveland

1968-70 Research associate, National Institute of Arthritis and Metabolic Diseases, Epidemiology Field Studies Unit, Phoenix, Arizona, United States Public Health Service

1970-73 Psychiatric Residency, University Hospitals of Cleveland

1974-77 Robert Wood Johnson Foundation Clinical Scholar

Appointments at Case Western Reserve University School of Medicine

1973- Assistant Professor of Psychiatry

1979- Associate Professor

1982- Awarded tenure

1985- Full Professor

1993- Clinical Professor

Honors

Summa Cum Laude, Washington & Jefferson

Teaching Excellence Award-1990 and 2010 (Residency program)

Visiting Professorships

- Stanford University-Pfizer Professorship program (3 days)-1995
- St. Elizabeth's Hospital, Washington, DC —1998
- St. Elizabeth's Hospital, Washington, DC--2002

Named to America's Top Doctors consecutively since 2001

Invitations to present various Grand Rounds at Departments of Psychiatry and Continuing Education Lectures and Workshops

Masters and Johnson Lifetime Achievement Award from the Society of Sex Therapy and Research, April 2005 along with Candace Risen and Stanley Althof

2006 SSTAR Book Award for The Handbook of Clinical Sexuality for Mental Health Professionals: Exceptional Merit

2018—Albert Marquis Lifetime Achievement Award from Marquis Who's Who. (Excelling in one's field for at least twenty years)

Professional Societies

1971- American Psychiatric Association; fellow; #19909

2005- American Psychiatric Association, Distinguished Life Fellow

1973- Cleveland Psychiatric Society

1973- Cleveland Medical Library Association

- 1985 - Life Fellow
- 2003- Distinguished Life Fellow

1974-Society for Sex Therapy and Research

- 1987-89-President

1983- International Academy of Sex Research

1983- Harry Benjamin International Gender Dysphoria Association

- 1997-8 Chairman, Standards of Care Committee

1994- 1999 Society for Scientific Study of Sex

Community Boards

1999-2002 Case Western Reserve University Medical Alumni Association

1996-2001 Bellefaire Jewish Children's Bureau

1999-2001 Physicians' Advisory Committee, The Gathering Place (cancer rehabilitation)

Editorial Boards

1978-80 Book Review Editor Journal Sex and Marital Therapy

Manuscript Reviewer for:

a. Archives of Sexual Behavior
b. Annals of Internal Medicine
c. British Journal of Obstetrics and Gynecology
d. JAMA
e. Diabetes Care
f. American Journal of Psychiatry
g. Maturitas
h. Psychosomatic Medicine
i. Sexuality and Disability
j. Journal of Nervous and Mental Diseases

k. Journal of Neuropsychiatry and Clinical Neurosciences

l. Neurology

m. Journal Sex and Marital Therapy

n. Journal Sex Education and Therapy

o. Social Behavior and Personality: an international journal (New Zealand)

p. International Journal of Psychoanalysis

q. International Journal of Transgenderism

r. Journal of Urology

s. Journal of Sexual Medicine

t. Current Psychiatry

u. International Journal of Impotence Research

v. Postgraduate medical journal

w. Academic Psychiatry

Prospectus Reviewer

a. Guilford

b. Oxford University Press

c. Brunner/Routledge

d. Routledge

Administrative Responsibilities

Principal Investigator of approximately 70 separate studies involving pharmacological interventions for sexual dysfunction since 1989.

Co-leader of case conferences at DELRLLC.com

Expert testimony at trial or by deposition within the last 4 years

Provided expert testimony for Massachusetts Dept. of Corrections in its defense of a lawsuit brought by prisoner Katheena Soneeya, including by deposition in October 2018, and in-court testimony in 2019.

Provided expert testimony by deposition and at trial in *In the Interests of the Younger Children* (Dallas, TX), 2019.

Testified in an administrative hearing in *In the matter of Rhys & Lynn Crawford* (Washington State), March 2021.

Testified multiple times in juvenile court in *In the matter of Asha Kerwin* (Tucson, Arizona), 2021.

Provided expert testimony by deposition in *Kadel et al v. Folwell et al.* (North Carolina), 2021.

Consultancies

Massachusetts Department of Corrections—evaluation of 12 transsexual prisoners and the development of a Gender Identity Disorders Program for the state prison system. Monthly consultation with the GID treatment team since February 2009 and the GID policy committee since February 2010.

California Department of Corrections and Rehabilitation; 2012-2015; education, inmate evaluation, commentary on inmate circumstances, suggestions on future policies.

Virginia Department of Corrections —evaluation of an inmate.
New Jersey Department of Corrections—evaluation of an inmate.

Idaho Department of Corrections—workshop 2016.

Grant Support/Research Studies

TAP—studies of Apomorphine sublingual in treatment of erectile dysfunction.

Pfizer—Sertraline for premature ejaculation.

Pfizer—Viagra and depression; Viagra and female sexual dysfunction; Viagra as a treatment for SSRI-induced erectile dysfunction.

NIH- Systemic lupus erythematosis and sexuality in women.

Sihler Mental Health Foundation

a. Program for Professionals

b. Setting up of Center for Marital and Sexual Health

c. Clomipramine and Premature ejaculation

d. Follow-up study of clergy accused of sexual impropriety

e. Establishment of services for women with breast cancer

Alza—controlled study of a novel SSRI for rapid ejaculation.

Pfizer—Viagra and self-esteem.

Pfizer- double-blind placebo control studies of a compound for premature ejaculation.

Johnson & Johnson — controlled studies of Dapoxetine for rapid ejaculation.

Proctor and Gamble: multiple studies to test testosterone patch for post menopausal sexual

dysfunction for women on and off estrogen replacement.

Lilly-Icos—study of Cialis for erectile dysfunction. VIVUS — study for premenopausal women with FSAD.

Palatin Technologies- studies of bremelanotide in female sexual dysfunction—first intranasal then subcutaneous administration.

Medtap — interview validation questionnaire studies.

HRA- quantitative debriefing study for Female partners os men with premature ejaculation, Validation of a New Distress Measure for FSD.

Boehringer-Ingelheim- double blind and open label studies of a prosexual agent for hypoactive female sexual desire disorder.

Biosante- studies of testosterone gel administration for post menopausal women with HSDD.

J&J a single-blind, multi-center, in home use study to evaluate sexual enhancement effects of a product in females.

UBC-Content validity study of an electronic FSEP-R and FSDS-DAO and usability of study PRO measures in premenopausal women with FSAD, HSDD or Mixed FSAD/HSDD.

National registry trial for women with HSDD.

Endoceutics—two studies of DHEA for vaginal atrophy and dryness in post menopausal women.

Palatin—study of SQ Bremelanotide for HSDD and FSAD.

Trimel- a double-blind, placebo controlled study for women with acquired female orgasmic disorder.

Si Biopharma- a phase 1-B non-blinded study of safety, tolerability and efficacy of Lorexys in premenopausal women with HSDD.

HRA — qualitative and cognitive interview study for men experiencing PE.

Publications

A) Books

1) Pariser SR, Levine SB, McDowell M (eds.), Clinical Sexuality, Marcel Dekker, New York, 1985

2) Sex Is Not Simple, Ohio Psychological Publishing Company, 1988; Reissued in paperback as: Solving Common Sexual Problems: Toward a Problem Free Sexual Life, Jason Aronson, Livingston, NJ. 1997

3) Sexual Life: A Clinician's Guide. Plenum Publishing Corporation. New York, 1992

4) Sexuality in Midlife. Plenum Publishing Corporation. New York, 1998

5) Editor, Clinical Sexuality. Psychiatric Clinics of North America, March, 1995.

6) Editor, (Candace Risen and Stanley Althof, associate editors) Handbook of Clinical Sexuality for Mental Health Professionals. Routledge, New York, 2003

1. 2006 S STAR Book Award: Exceptional Merit

7) Demystifying Love: Plain Talk For The Mental Health Professional. Routledge, New York, 2006

8) Senior editor, (Candace B. Risen and Stanley E. Althof, Associate editors), Handbook of Clinical Sexuality for Mental Health Professionals, r[d] edition. Routledge, New York, 2010.

9) Barriers to Loving: A Clinician's Perspective. Routledge, New York, 2014.

10) Senior editor Candace B. Risen and Stanley E. Althof, Associate editors), Handbook of Clinical Sexuality for Mental Health Professionals. 3r[d] edition Routledge, New York, 2016

B) Research and Invited Papers

When his name is not listed in a citation, Dr. Levine is either the solo or the senior author.

1) Sampliner R. Parotid enlargement in Pima Indians. Annals of Internal Medicine 1970; 73:571-73

2) Confrontation and residency activism: A technique for assisting residency change: World Journal of Psychosynthesis 1974; 6: 23-26

3) Activism and confrontation: A technique to spur reform. Resident and Intern Consultant 173; 2

4) Medicine and Sexuality. Case Western Reserve Medical Alumni Bulletin 1974:37:9-11.

5) Some thoughts on the pathogenesis of premature ejaculation. J. Sex & Marital Therapy 1975; 1:326-334

6) Marital Sexual Dysfunction: Introductory Concepts. Annals of Internal Medicine 1976;84:448-453

7) Marital Sexual Dysfunction: Ejaculation Disturbances 1976; 84:575-579

8) Yost MA: Frequency of female sexual dysfunction in a gynecology clinic: An epidemiological approach. Archives of Sexual Behavior 1976;5:229-238

9) Engel IM, Resnick PJ, Levine SB: Use of programmed patients and videotape in teaching medical students to take a sexual history. Journal of Medical Education 1976;51:425-427

10) Marital Sexual Dysfunction: Erectile dysfunction. Annals of Internal Medicine 1976;85:342-350

11) Male Sexual Problems. Resident and Staff Physician 1981:2:90-5

12) Female Sexual Problems. Resident and Staff Physician 1981:3:79-92

13) How can I determine whether a recent depression in a 40 year old married man is due to organic loss of erectile function or whether the depression is the source of the dysfunction? Sexual Medicine Today 1977;1:13

14) Corradi RB, Resnick PJ Levine SB, Gold F. For chronic psychologic impotence: sex therapy or psychotherapy? I & II Roche Reports; 1977

15) Marital Sexual Dysfunction: Female dysfunctions 1977; 86:588-597

16) Current problems in the diagnosis and treatment of psychogenic impotence. Journal of Sex & Marital Therapy 1977;3:177-186

17) Resnick PJ, Engel IM. Sexuality curriculum for gynecology residents. Journal of Medical Education 1978; 53:510-15

18) Agle DP. Effectiveness of sex therapy for chronic secondary psychological impotence Journal of Sex & Marital Therapy 1978;4:235-258

19) DePalma RG, Levine SB, Feldman S. Preservation of erectile function after aortoiliac reconstruction. Archives of Surgery 1978;113-958-962

20) Conceptual suggestions for outcome research in sex therapy Journal of Sex & Marital Therapy 1981;6:102-108

21) Lothstein LM. Transsexualism or the gender dysphoria syndrome. Journal of Sex & Marital Therapy 1982; 7:85-113

22) Lothstein LM, Levine SB. Expressive psychotherapy with gender dysphoria patients Archives General Psychiatry 1981; 38:924-929

23) Stern RG Sexual function in cystic fibrosis. Chest 1982; 81:422-8

24) Shumaker R. Increasingly Ruth: Towards understanding sex reassignment surgery Archives of Sexual Behavior 1983;12:247-61

25) Psychiatric diagnosis of patients requesting sex reassignment surgery. Journal of Sex & Marital Therapy 1980; 6:164-173

26) Problem solving in sexual medicine I. British Journal of Sexual Medicine 1982;9:21-28

27) A modern perspective on nymphomania. Journal of Sex & Marital Therapy 1982;8:316-324

28) Nymphomania. Female Patient 1982;7:47-54

29) Commentary on Beverly Mead's article: When your patient fears impotence. Patient Care 1982;16:135-9

30) Relation of sexual problems to sexual enlightenment. Physician and Patient 1983 2:62

31) Clinical overview of impotence. Physician and Patient 1983; 8:52-55.

32) An analytical approach to problem-solving in sexual medicine: a clinical introduction to the psychological sexual dysfunctions. II. British Journal of Sexual Medicine

33) Coffman CB, Levine SB, Althof SE, Stern RG Sexual Adaptation among single young adults with cystic fibrosis. Chest 1984;86:412-418

34) Althof SE, Coffman CB, Levine SB. The effects of coronary bypass in female sexual, psychological, and vocational adaptation. Journal of Sex & Marital Therapy 1984;10:176-184

35) Letter to the editor: Follow-up on Increasingly Ruth. Archives of Sexual Behavior 1984;13:287-9

36) Essay on the nature of sexual desire Journal of Sex & Marital Therapy 1984; 10:83-96

37) Introduction to the sexual consequences of hemophilia. Scandanavian Journal of Haemology 1984; 33:(supplement 40).75-

38) Agle DP, Heine P. Hemophila and Acquired Immune Deficiency Syndrome: Intimacy and Sexual Behavior. National Hemophilia Foundation; July, 1985

39) Turner LA, Althof SE, Levine SB, Bodner DR, Kursh ED, Resnick MI. External vacuum devices in the treatment of erectile dysfunction: a one-year study of sexual and psychosocial impact. Journal of Sex & Marital Therapy

40) Schein M, Zyzanski SJ, Levine SB, Medalie JH, Dickman RL, Alemagno SA. The frequency of sexual problems among family practice patients. Family Practice Research Journal 1988; 7:122-134

41) More on the nature of sexual desire. Journal of Sex & Marital Therapy 1987;13:35-44

42) Waltz G, Risen CB, Levine SB. Antiandrogen treatment of male sex offenders. Health Matrix 1987; V.51-55.

43) Lets talk about sex. National Hemophilia Foundation January, 1988

44) Sexuality, Intimacy, and Hemophilia: questions and answers. National Hemophilia Foundation January, 1988

45) Prevalence of sexual problems. Journal Clinical Practice in Sexuality 1988;4:14-16.

46) Kursh E, Bodner D, Resnick MI, Althof SE, Turner L, Risen CB, Levine SB. Injection

Therapy for Impotence. Urologic Clinics of North America 1988; 15(4):625-630

47) Bradley SJ, Blanchard R, Coates S, Green R, Levine S, Meyer-Bahlburg H, Pauly I, Zucker KJ. Interim report of the DSM-IV Subcommittee for Gender Identity Disorders. Archives of Sexual Behavior 1991;;20(4):333-43.

48) Sexual passion in mid-life. Journal of Clinical Practice in Sexuality 1991 6(8):13-19

49) Althof SE, Turner LA, Levine SB, Risen CB, Bodner DR, Resnick MI. Intracavernosal injections in the treatment of impotence: A prospective study of sexual, psychological, and marital functioning. Journal of Sex & Marital Therapy 1987; 13:155-167

50) Althof SE, Turner LA, Risen CB, Bodner DR, Kursh ED, Resnick MI. Side effects of self-administration of intracavernosal injection of papaverine and phentolamine for treatment of impotence. Journal of Urology 1989;141:54-7

51) Turner LA, Froman SL, Althof SE, Levine SB, Tobias TR, Kursh ED, Bodner DR. Intracavernous injection in the management of diabetic impotence. Journal of Sexual Education and Therapy 16(2):126-36, 1989

52) Is it time for sexual mental health centers? Journal of Sex & Marital Therapy 1989

53) Althof SE, Turner LA, Levine SB, Risen CB, Bodner D, Kursh ED, Resnick MI. Sexual, psychological, and marital impact of self injection of papaverine and phentolamine: a long-term

prospective study. Journal of Sex & Marital Therapy

54) Althof SE, Turner LA, Levine SB, Risen CB, Bodner D, Kursh ED, Resnick MI. Why do so many men drop out of intracavernosal treatment? Journal of Sex & Marital Therapy. 1989;15:121-9

55) Turner LA, Althof SE, Levine SB, Risen CB, Bodner D, Kursh ED, Resnick MI. Self injection of papaverine and phentolamine in the treatment of psychogenic impotence. Journal of Sex & Marital Therapy. 1989; 15(3):163-78

56) Turner LA, Althof SE, Levine SB, Risen CB, Bodner D, Kursh ED, Resnick MI. Treating erectile dysfunction with external vacuum devices: impact upon sexual, psychological, and marital functioning. Journal of Urology 1990;141(1):7982

57) Risen CB, Althof SE. An essay on the diagnosis and nature of paraphilia Journal of Sex & Marital Therapy 1990; 16(2):89-102.

58) Althof SE, Turner LA, Levine SB, Risen CB, Bodner DB, Kursh ED, Resnick MI. Through the eyes of women: the sexual and psychological responses of women to their partners' treatment with self-injection or vacuum constriction therapy. International Journal of Impotence Research (supplement 2)1990;346-7.

59) Althof SE, Turner LA, Levine SB, Risen CB, Bodner DB, Kursh ED, Resnick MI. A comparison of the effectiveness of two treatments for erectile dysfunction: self injection vs. external vacuum devices. . International Journal of Impotence Research (supplement 2)1990;289-90

60) Kursh E, Turner L, Bodner D, Althof S, Levine S. A prospective study on the use of the vacuum pump for the treatment of impotence.International Journal of Impotence Research (supplement 2)1990;340-1.

61) Althof SE, Turner LA, Levine SB, Risen CB, Bodner DB, Kursh ED, Resnick MI. Long term use of intracavernous therapy in the treatment of erectile dysfunction in Journal of Sex & Marital Therapy 1991; 17(2):101-112

62) Althof SE, Turner LA, Levine SB, Risen CB, Bodner DB, Kursh ED, Resnick MI. Long term use of vacuum pump devices in the treatment of erectile dsyfunction in Journal of Sex & Marital Therapy 1991;17(2):81-93

63) Turner LA, Althof SE, Levine SB, Bodner DB, Kursh ED, Resnick MI. A 12-month comparison of the effectiveness of two treatments for erectile dysfunction: self injection vs. external vacuum devices. Urology 1992;39(2):139-44

64) Althof SE, The pathogenesis of psychogenic impotence. J. Sex Education and Therapy. 1991; 17(4):251-66

65) Mehta P, Bedell WH, Cumming W, Bussing R, Warner R, Levine SB. Letter to the editor. Reflections on hemophilia camp. Clinical Pediatrics 1991; 30(4):259-260

66) Successful Sexuality. Belonging/Hemophilia. (Caremark Therapeutic Services), Autumn, 1991

67) Psychological intimacy. Journal of Sex & Marital Therapy 1991; 17(4):25968

68) Male sexual problems and the general physician, Georgia State Medical Journal 1992; 81(5): 211-6

69) Althof SE, Turner LA, Levine SB, Bodner DB, Kursh E, Resnick MI. Through the eyes of women: The sexual and psychological responses of women to their partner's treatment with self-injection or vacuum constriction devices. Journal of Urology 1992; 147(4):1024-7

70) Curry SL, Levine SB, Jones PK, Kurit DM. Medical and Psychosocial predictors of sexual outcome among women with systemic lupus erythematosis. Arthritis Care and Research 1993; 6:23-30

71) Althof SE, Levine SB. Clinical approach to sexuality of patients with spinal cord injury. Urological Clinics of North America 1993; 20(3):527-34

72) Gender-disturbed males. Journal of Sex & Marital Therapy 19(2):131-141, 1993

73) Curry SL, Levine SB, Jones PK, Kurit DM. The impact of systemic lupus erythematosis on women's sexual functioning. Journal of Rheumatology 1994; 21(12):2254-60

74) Althof SE, Levine SB, Corty E, Risen CB, Stern EB, Kurit D. Clomipramine as a treatment for rapid ejaculation: a double-blind crossover trial of 15 couples. Journal of Clinical Psychiatry 1995;56(9):402-7

75) Risen CB, Althof SE. Professionals who sexually offend: evaluation procedures and

preliminary findings. Journal of Sex & Marital Therapy 1994; 20(4):288-302

76) On Love, Journal of Sex & Marital Therapy 1995; 21(3):183-191

77) What is clinical sexuality? Psychiatric Clinics of North America 1995; 18(1):1-6

78) "Love" and the mental health professions: Towards an understanding of adult love. Journal of Sex & Marital Therapy 1996; 22(3)191-202

79) The role of Psychiatry in erectile dysfunction: a cautionary essay on the emerging treatments. Medscape Mental Health 2(8):1997 on the Internet. September, 1997.

80) Discussion of Dr. Derek Polonsky's SSTAR presentation on Countertransference. Journal of Sex Education and Therapy 1998; 22(3):13-17

81) Understanding the sexual consequences of the menopause. Women's Health in Primary Care, 1998

82) Fones CSL, Levine SB. Psychological aspects at the interface of diabetes and erectile dysfunction. Diabetes Reviews 1998; 6(1):1-8

83) Guay AT, Levine SB, Montague DK. New treatments for erectile dysfunction. Patient Care March 15, 1998

84) Extramarital Affairs. Journal of Sex & Marital Therapy 1998; 24(3):207-216

85) Levine SB (chairman), Brown G, Cohen-Kettenis P, Coleman E, Hage JJ, Petersen M, Pfafflin F, Shaeffer L, van Masdam J, Standards of Care of the Harry Benjamin International

Gender Dysphoria Association, 5th revision, 1998. International Journal of Transgenderism at http://www.symposion.com/ijt

• Reprinted by the Harry Benjamin International Gender Dysphoria Association, Minneapolis, Minnesota

86) Althof SE, Corty E, Levine SB, Levine F, Burnett A, McVary K, Stecher V, Seftel. The EDITS: the development of questionnaires for evaluating satisfaction with treatments for erectile dysfunction. Urology 1999;53:793-799

87) Fones CSL, Levine SB, Althof SE, Risen CB. The sexual struggles of 23 clergymen: a follow-up study. Journal of Sex & Marital Therapy 1999

88) The Newly Devised Standards of Care for Gender Identity Disorders. Journal of Sex Education and Therapy 24(3):1-11,1999

89) Levine, S. B. (1999). The newly revised standards of care for gender identity disorders. Journal of Sex Education & Therapy, 24, 117-127.

90) Melman A, Levine SB, Sachs B, Segraves RT, Van Driel MF. Psychological Issues in Diagnosis of Treatment (committee 11) in Erectile Dysfunction (A. Jarden, G. Wagner, S. Khoury, F. Guiliano, H. Padma-nathan, R. Rosen, eds.) Plymbridge Distributors Limited, London, 2000

91) Pallas J, Levine SB, Althof SE, Risen CB. A study using Viagra in a mental health practice. J Sex&Marital Therapy.26(1):41-50, 2000

92) Levine SB, Stagno S. Informed Consent for Case Reports: the ethical dilemma between right to privacy and pedagogical freedom. Journal of

Psychotherapy: Practice and Research, 2001, 10 (3): 193-201.

93) Alloggiamento T., Zipp C., Raxwal VK, Ashley E, Dey S. Levine SB, Froelicher VF. Sex, the Heart, and Sildenafil. Current Problems in Cardiology 26 June 2001(6):381-416

94) Re-exploring The Nature of Sexual Desire. Journal of Sex and Marital Therapy 28(1):39-51, 2002.

95) Understanding Male Heterosexuality and Its Disorders in Psychiatric Times XIX(2):13-14, February, 2002

96) Erectile Dysfunction: Why drug therapy isn't always enough. (2003) Cleveland Clinic Journal of Medicine, 70(3): 241-246.

97) The Nature of Sexual Desire: A Clinician's Perspective. Archives of Sexual Behavior 32(3):279-286, 2003 .

98) Laura Davis. What I Did For Love: Temporary Returns to the Male Gender Role. International Journal of Transgenderism, 6(4), 2002 and http://www.symposion.com/ijt

99) Risen C.B., The Crisis in the Church: Dealing with the Many Faces of Cultural Hysteria in The International Journal of Applied Psychoanalytic Studies, 1(4):364-370, 2004

100) Althof SE, Leiblum SR (chairpersons), Chevert-Measson M. Hartman U., Levine SB, McCabe M., Plaut M, Rodrigues 0, Wylie K., Psychological and Interpersonal Dimensions of Sexual Function and Dysfunction in World Health Organization Conference Proceedings on Sexual

Dysfunctions, Paris, 2003. Published in a book issued in 2004.

101) Commentary on Ejaculatory Restrictions as a Factor in the Treatment of Haredi (Ultra-Orthodox) Jewish Couples: How Does Therapy Work? Archives of Sexual Behavior, 33(3):June 2004

102) What is love anyway? J Sex & Marital Therapy 31(2):143-152,2005.

103) A Slightly Different Idea, Commentary on Y. M. Binik's Should Dyspareunia Be Retained as a Sexual Dysfunction in DSM-V? A Painful Classification Decision. Archives of Sexual Behavior 34(1):38-39, 2005. http://dx.doi.org/10.1007/s10508-005-7469-3

104) Commentary: Pharmacologic Treatment of Erectile Dysfunction: Not always a simple matter. BJM USA; Primary Care Medicine for the American Physician, 4(6):325-326, July 2004

105) Leading Comment: A Clinical Perspective on Infidelity. Journal of Sexual and Relationship Therapy, 20(2):143-153, May 2005.

106) Multiple authors. Efficacy and safety of sildenafil citrate (Viagra) in men with serotonergic antidepressant-associated erectile dysfunction: Results from a randomized, double-blind, placebo-controlled trial. Submitted to Journal of Clinical Psychiatry Feb 2005

107) Althof SE, Leiblum SR, Chevert-Measson M, Hartman U, Levine SB, McCabe M, Plaut M, Rodrigues 0, Wylie K. Psychological and Interpersonal Dimensions of Sexual Function and

Dysfunction. Journal of Sexual Medicine, 2(6): 793-800, November, 2005

108) Shifren JL, Davis SR, Moreau M, Waldbaum A, Bouchard C., DeRogatis L., Derzko C., Bearnson P., Kakos N., O'Neill S., Levine S., Wekselman K., Buch A., Rodenberg C., Kroll R. Testosterone Patch for the Treatment of Hypoactive Sexual Desire Disorder in Naturally Menopausal Women: Results for the INTIMATE NM1 Study. Menopause: The Journal of the North American Menopause Society 13(5) 2006.

109) Reintroduction to Clinical Sexuality. Focus: A Journal of Lifelong Learning in Psychiatry Fall 2005. III (4):526-531

110) PDE-5 Inhibitors and Psychiatry in J Psychiatric Practice 12 (1): 46-49, 2006.

111) Sexual Dysfunction: What does love have to do with it? Current Psychiatry 5(7):59-68, 2006.

112) How to take a Sexual History (Without Blushing), Current Psychiatry 5(8): August, 2006.

113) Linking Depression and ED: Impact on sexual function and relationships in Sexual Function and Men's Health Through the Life Cycle under the auspices of the Consortium for Improvement of Erectile Function (CIEF),12-19, November, 2006.

114) The First Principle of Clinical Sexuality. Editorial. Journal of Sexual Medicine,4:853-854, 2007

115) Commentary on David Rowland's editorial, "Will Medical Solutions to Sexual Problems Make

Sexological Care and Science Obsolete?" Journal of Sex and Marital Therapy, 33(5), 2007

116) Real-Life Test Experience: Recommendations for Revisions to the Standards of Care of the World Professional Association for Transgender Health International Journal of Transgenderism, Volume 11 Issue 3, 186-193, 2009

117) Sexual Disorders: Psychiatrists and Clinical Sexuality. Psychiatric Times XXIV (9), 42-43, August 2007

118) I am not a sex therapist! Commentary to I. Binik and M. Meana's article Sex Therapy: Is there a future in this outfit? Archives of Sexual Behavior, Volume 38, Issue 6 (2009), 1033-1034

119) Solomon A (2009) Meanings and Political Implications of "Psychopathology" in a Gender Identity Clinic: Report of 10 cases. Journal of Sex and Marital Therapy 35(1): 40-57.

120) Perelman, MA., Levine SB, Fischkoff SA. Randomized, Placebo-Controlled, Crossover Study to Evaluate the Effects of Intranasal Bremelanotide on Perceptions of Desire and Arousal in Postmenopausal Women with Sexual Arousal Disorder submitted to Journal of Sexual Medicine July 2009, rejected

121) What is Sexual Addiction? Journal of Sex and Marital Therapy.2010 May;36(3):261 -75

122) David Scott (2010) Sexual Education of Psychiatric Residents. Academic Psychiatry, 34(5) 349-352.

123) Chris G. McMahon, Stanley E. Althof, Joel M. Kaufman, Jacques Buvat, Stephen B. Levine,

Joseph W. Aquilina, Fisseha Tesfaye, Margaret Rothman, David A. Rivas, Hartmut Porst. Efficacy and Safety of Dapoxetine for the

Treatment of Premature Ejaculation: Integrated Analysis of Results From 5 Phase 3 Trials Journal of Sexual Medicine 2011 Feb;8(2):524-39.

124) Commentary on Consideration of Diagnostic Criteria for Erectile Dysfunction in DSM V. Journal of Sexual Medicine July 2010

125) Hypoactive Sexual Desire Disorder in Men: Basic types, causes, and treatment. Psychiatric Times 27(6)4-34. 2010

126) Male Sexual Dysfunctions, an audio lecture, American Physician Institute 2013

127) Fashions in Genital Fashion: Where is the line for physicians? Commentary on David Veale and Joe Daniels' Cosmetic Clitoridectomy in a 33-year-old woman. Arch Sex Behav (2012) 41:735-736 DOI 10.1007/s10508-011-9849-7

128) Review: Problematic Sexual Excess. Neuropsychiatry 2(1):1-12, 2012

129) The Essence of Psychotherapy. Psychiatric Times 28 (2): August 2, 2012 t

130) Parran TV, Pisman, AR, Youngner SJ, Levine SB.Evolution of remedial CME course in professionalism: Addressing learner needs, developing content, and evaluating outcomes. *Journal of Continuing Education in the Health Professions,* 33(3): 174-179, 2013.

131) Love and Psychiatry. Psychiatric Times November 2013

132) Orgasmic Disorders, Sexual Pain Disorders, and Sexual Dysfunction Due to a Medical Condition. Board Review Psychiatry 2013-2014 Audio Digest CD 27. Audio recording of a one-hour lecture available October 2013.

133) Towards a Compendium of the Psychopathologies of Love. Archives of Sexual Behavior Online First December 25, 2013 DOI 10.1007/s10508-013-0242-6 43(1)213-220.

134) Flibanserin. (editorial) Archives of Sexual Behavior 44 (8), 2015 November 2015. DOI: 10.1007/s10508-015-0617-y

135) Martel C, Labrie F, Archer DF, Ke Y, Gonthier R, Simard JN, Lavoie L, Vaillancourt M, Montesino M, Balser J, Moyneur E; other participating members of the Prasterone Clinical Research Group. (2016) Serum steroid concentrations remain within normal postmenopausal values in women receiving daily 6.5mg intravaginal prasterone for 12 weeks.J Steroid Biochem Mol Biol. 2016 May;159:142-53. doi: 10.1016/j.jsbmb.2016.03.016

136) Reflections of an Expert on the Legal Battles Over Prisoners with Gender Dysphoria. J Am Acad Psychiatry Law 44:236-45, 2016

137) Cooper E, McBride J, Levine SB. Does Flibanserin have a future? Psychiatric Times accepted October 23, 2015.

138) Levine SB, Sheridan DL, Cooper EB. The Quest for a Prosexual Medication for Women, Current Sexual Health Reports (2016) 8: 129. doi:10.1007/s11930-016-0085-y

139) Why Sex Is Important: Background for Helping Patients with Their Sexual Lives., British Journal of Psychiatry Advances (2017), vol. 23(5) 300-306; DOI: 10.1192/apt.bp.116.016428

140) Commentary on "Asexuality: Orientation, paraphilia, dysfunction, or none of the above? Archives Sexual Behavior, Archives of Sexual Behavior April 2017, Volume 46, Issue 3, pp. 639-642 DOI: 10.1007/s10508-017-0947-z

141) Sexual Dysfunction in Clinical Psychiatry, Psychiatric Times, March 2017

142) Ethical Concerns About the Emerging Treatment of Gender Dysphoria, Journal of Sex and Marital Therapy, 44(1):29-44. 2017. DOI 10.1080/0092623X.2017.1309482

143) The Psychiatrist's Role in Managing Transgender Youth: Navigating Today's Politicized Terrain. CMEtoGO Audio Lecture Series, May 2017

144) Transitioning Back to Maleness, Archives of Sexual Behavior, 2017 Dec 20. doi: 10.1007/s10508-017-1136-9; 47(4), 1295-1300, May 2018

145) Informed Consent for Transgender Patients, Journal of Sex and Marital Therapy, 2018 Dec 22:1-12. doi: 10.1080/0092623X.2018.1518885.

146) Reflections On The Clinician's Role with Individuals Who Self-Identify as Transgender (2021) Archives Sexual Behavior, 50(8):3527-3536. doi: 10.1007/s10508-021-02142-1.

147) Levine SB, Abbruzzese E, Mason J. Reconsideration of Informed Consent for Trans-

identified Children, Adolescents, and Young Adults. J. Sex and Marital Therapy, in press 2022.

C) Book Chapters

1) Overview of Sex Therapy. In Sholevar GP (ed) The Handbook of Marriage and Marital Therapy. New York. Spectrum Publications, 1981 pp. 417-41

2) Why study sexual functioning in diabetes? In Hamburg BA, Lipsett LF, Inoff GE, Drash A (eds) Behavioral & Psychosocial Issues in Diabetes: Proceedings of a National conference. Washington, DC. US Dept. of Health & Human Services. PHS NIH, Pub. #80-1933

3) Sexual Problems in the Diabetic in Bleicher SJ, Brodoff B (eds) Diabetes Mellitus and Obesity. Williams and Wilkins, 1992

4) Clinical Introduction to Human Sexual Dysfunction. In Pariser SF, Levine SB, McDowell M (eds) Clinical Sexuality. New York, Marcel Dekker Publisher, 1983.

5) Psychodynamically-oriented clinician's overview of psychogenic impotence. In RT Segraves (ed) Impotence. New York, Plenum, 1985

6) Origins of sexual preferences. In Shelp EE (ed) Sexuality and Medicine. D. Reidel Publishing co. 1987. pp. 39-54.

7) Hypoactive Sexual Desire and Other Problems of Sexual Desire. In H. Lief (ed). The Treatment of Psychosexual Dysfunctions/ III. American Psychiatric Press, chapter 207, pp. 2264-79, 1989

8) Psychological Sexual Dysfunction. In Sudak H (ed) Clinical Psychiatry. Warren H. Green. St. Louis, 1985

9) Male sexual dysfunction. In Sudak H (ed) Clinical Psychiatry. Warren H. Green. St. Louis, 1985

10) Sexuality and Aging. In Sudak H (ed) Clinical Psychiatry. Warren H. Green. St. Louis, 1985

11) Homosexuality. In Sudak H (ed) Clinical Psychiatry. Warren H. Green. St. Louis, 1985

12) Individual and intrapsychic factors in sexual desire. In Leiblum SR, Rosen RC (eds). Clinical Perspectives on Sexual Desire Disorders. Guilford Press, New York, 1988, pp. 21-44

13) Gender Identity Disorders. In Sadock B, Kaplan H(eds). Comprehensive Textbook of Psychiatry, Baltimore, William and Wilkins, 1989, pp. 1061-9

14) Intrapsychic and Interpersonal Aspects of Impotence: Psychogenic Erectile Dysfunction. In Leiblum SR, Rosen RC (eds). Erectile Disorders: Assessment and Treatment. Guilford Press, New York, 1992

15) Psychological Factors in Impotence. In Resnick MI, Kursh ED, (eds.) Current Therapy in Genitourinary Surgery, 2nd edition. BC Decker, 1991, pp. 54951

16) The Vagaries of Sexual Desire. In Leiblum SR, Rosen RC (eds). In Case Studies in Sex Therapy. Guilford Press, New York, 1995

17) Rosenblatt EA. Sexual Disorders (chapter 62). In Tasman A, Kay J, Liberman JA (eds). Psychiatry Volume II, W.B.Saunders, Philadelphia. 1997, pp. 1173-2000.

18) Althof SE. Psychological Evaluation and Sex Therapy. In Mulcahy JJ (ed) Diagnosis and Management of Male Sexual Dysfunction Igaku-Shoin, New York, 1996, pp. 74-88

19) Althof SE, Levine SB. Psychological Aspects of Erectile Dysfunction. In Hellstrum WJG (ed) Male Infertility and Dysfunction. Springer-Verlag, New York, 1997. pp. 468-73

20) Paraphilias. In Comprehensive Textbook of Psychiatry/VII. Sadock BJ, Sadock VA (eds.) Lippincott Williams & Wilkins, Baltimore, 1999, pp. 1631-1645.

21) Women's Sexual Capacities at Mid-Life in The Menopause: Comprehensive Management B. Eskind (ed). Parthenon Publishing, Carnforth, UK, 2000.

22) Male Heterosexuality in Masculinity and Sexuality:Selected Topics in the Psychology of Men, (Richard C. Friedman and Jennifer I. Downey, eds) Annual Review of Psychiatry, American Psychiatric Press, Washington, DC, W-18. pp. 2954.

23) R.T.Segraves. Introduction to section on Sexuality: Treatment of Psychiatric Disorders-III (G.O.Gabbard, ed), American Psychiatric Press, Washington, DC, 2001

24) Sexual Disorders (2003) in Tasman A, Kay J, Liberman JA (eds). Psychiatry 2nd edition,

Volume II, W.B.Saunders, Philadelphia. Chapter 74

25) What Patients Mean by Love, Psychological Intimacy, and Sexual Desire (2003) in SB Levine, CB Risen, SE Althof (eds) Handbook of Clinical Sexuality for Mental Health Professionals, Brunner-Routledge, New York, pp. .21-36.

26) Infidelity (2003) in SB Levine, CB Risen, SE Althof (eds) Handbook of Clinical Sexuality for Mental Health Professionals, Brunner-Routledge, New York, pp. 57-74

27) Preface (2003) in SB Levine, CB Risen, SE Althof (eds) Handbook of Clinical Sexuality for Mental Health Professionals, Brunner-Routledge, New York, pp. xiii-xviii

28) A Psychiatric Perspective on Psychogenic Erectile Dysfunction (2004) in T.F. Lue (ed) Atlas of Male Sexual Dysfunction, Current Medicine, Philadelphia Chapter 5

29) Levine, SB., Seagraves, RT. Introduction to Sexuality Section, Treatment of Psychiatric Disorders, 3rd edition (Gabbard GO, editor), American Psychiatric Press, 2007

30) Risen CB, (2009)Professionals Who Are Accused of Sexual Boundary Violations hi Sex Offenders: Identification, Risk Assessment, Treatment, and Legal Issues edited by Fabian M. Saleh, Albert J. Grudzinskas, Jr., and John M. Bradford, Oxford University Press, 2009

31) What Patients Mean by Love, Intimacy, and Sexual Desire, in Handbook of Clinical Sexuality for Mental Health Professionals edited by Levine

SB, Risen, CB, and Althof, SE, Routledge, New York, 2010

32) Infidelity in Handbook of Clinical Sexuality for Mental Health Professionals edited by Levine SB, Risen, CB, and Althof, SE, Routledge, New York, 2010

33) Scott DL, Levine, SB. Understanding Gay and Lesbian Life in Handbook of Clinical Sexuality for Mental Health Professionals edited by Levine SB, Risen, CB, and Althof, SE, Routledge, New York, 2010

34) Levine, SB, Hasan, S., Boraz M. (2009) Male Hypoactive Sexual Desire Disorder (HSDD) in Clinical Manual of Sexual Disorders (R. Balon and RT Segraves, eds), American Psychiatric Press, Washington, DC.

35) Levine, SB. Sexual Disorders in Fundamentals of Psychiatry (by Allan Tasman and Wanda Mohr, eds.) <http://eu.wiley.com/WileyCDA/WileyTitle/productCd-0470665777.html>, .

36) Infidelity in Principles and Practices of Sex Therapy (I Binik, K. Hall, editors), 5th edition, Guilford Press, New York, 2014.

37) Why is Sex Important? In Handbook of Clinical Sexuality for Mental Health Professionals 3rd ed. [SB Levine, CB Risen, SE Althof, eds] New York. Routledge, 2016, Chapter 1

38) The Rich Ambiguity of Key Terms: Making Distinctions. In Handbook of Clinical Sexuality for Mental Health Professionals 3rd ed. [SB Levine,

CB Risen, SE Althof, eds] New York. Routledge, 2016. Chapter 4

39) The Mental Health Professional's Treatment of Erection Problems . In Handbook of Clinical Sexuality for Mental Health Professionals 3rd ed. [SB Levine, CB Risen, SE Althof, eds] New York. Routledge, 2016 Chapter 11

40) Why is Sex Important? In Sexual Health in the Couple: Management of Sexual Dysfunction in Men and Women [L Lipshultz, A Pastuszak, M Perelman, A Giraldi, J Buster, eds.] New York, Springer, 2016.

41) Sommers, B., Levine, S.B., Physician's Attitude Towards Sexuality, in Psychiatry and Sexual Medicine: A Comprehensive Guide for Clinical Practitioners, 2020.

42) Boundaries And The Ethics Of Professional Misconduct in A. Steinberg, J. L. Alpert, C A. Courtois(Eds.) Sexual Boundary Violations In Psychotherapy: Therapist Indiscretions, & Transgressions, & Misconduct American Psychological Association, 2021.

D) Book Reviews

1) Homosexualities: A Study of Diversity Among Men and Women by Alan P. Bell and Martin S. Weinberg, Simon and Schuster, New York, 1978. In Journal of Sex & Marital Therapy 1979; 5:

2) Marriage and Marital Therapies: Psychoanalytic, Behavioral & System Theory Perspectives by TJ Paolino and BS McCrady.

Brunner/Mazel, New York, 1978. In Journal of Sex & Marital Therapy 1979; 5:

3) Management of Male Impotence. Volume 5 International Perspectives in Urology AH Bennett, (ed) Williams and Wilkins, Baltimore, 1992. In American Journal of Psychiatry, 1984

4) The Sexual Relationship by DE Scharff, Routledge & Kegan Paul, 1982 in Family Process 1983;22:556-8

5) Phenomenology and Treatment of Psychosexual Disorders, by WE Fann, I Karacan, AD Pokorny, RL Williams (eds). Spectrum Publications, New York, 1983. In American Journal of Psychiatry 1985;142:512-6

6) The Treatment of Sexual Disorders: Concepts and Techniques of Couple Therapy, G Arentewicz and G Schmidt. Basic Books, New York, 1983. In American Journal of Psychiatry 1985;142:983-5

7) Gender Dysphoria: Development, Research, Management. BN Steiner (ed). Plenum Press, 1985 in Journal of Clinical Psychiatry, 1986

8) Gender Dysphoria: Development, Research, Management. BN Steiner (ed). Plenum Press, 1985 in Contemporary Psychology 1986:31:421-2 [titled, The Limitations of Science, the Limitations of Understanding]

9) Psychopharmacology of Sexual Disorders by M Segal (ed) John Libbey & Co Ltd, London, 1987 in American Journal of Psychiatry 1987;144:1093

10) "The Sissy Boy Syndrome" and the Development of Homosexuality by R Green. Yale

University Press, New Haven, 1987. In American Journal of Psychiatry 1988;145:1028

11) Male Homosexuality: A contemporary psychoanalytic perspective by RC Friedman, Yale University Press, New Haven, 1988 in Journal of Clinical Psychiatry 1989;50:4, 149

12) Sexual Landscapes: Why we are what we are, why we love whom we love. By JD Weinrich, Charles Schribner's Sons, New York, 1987 in Archives of Sexual Behavior 21 (3):323-26, 1991

13) How to Overcome Premature Ejaculation by HS Kaplan, Brunner/Mazel, New York, 1989 in Journal of Clinical Psychiatry 51(3):130, 1990

14) Clinical Management of Gender Identity Disorders in Children and Adults R. Blanchard, BN Steiner (eds) American Psychiatry Press, Washington, DC, 1990. In Journal of Clinical Psychiatry 52(6):283, 1991

15) Psychiatric Aspects of Modern Reproductive Technologies. NL Stotland (ed) American Psychiatric Press, Washington DC, 1990. In Journal of Clinical Psychiatry 1991;52(9):390

16) Homosexualities: Reality, Fantasy, and the Arts. CW Socarides, VD Volkan (eds). International Universities Press, Madison, Connecticut, 1990. In Journal of Clinical Psychiatry 1992;(10)

17) Reparative Therapy of Male Homosexuality: A New Clinical Approach. J Nicolosi, Jason Aronson, Northvale NJ, 1992. In Contemporary Psychology 38(2):165-6, 1993 [entitled Is Evidence Required?]

18) Male Victims of Sexual Assault, GC Mezey, MB King (eds) Oxford University Press, New York, 1992. In Journal of Clinical Psychiatry 1993;54(9):358,

19) AIDS and Sex: An Integrated Biomedical and Biobehavioral Approach. B Voeller, JM Reinisch, M Gottlieb, Oxford University Press, New York, 1990. In American Journal of Psychiatry

20) Porn: Myths for the Twentieth Century by RI Stoller, Yale University Press, New Haven, 1991. In Archives of Sexual Behavior 1995;24(6):663-668

21) Sexual Dysfunction: Neurologic, Urologic, and Gynecologic Aspects. R Lechtenberg, DA Ohl (eds) Lea & Febiger, Philiadelphia, 1994. In Neurology

22) The Sexual Desire Disorders: Dysfunctional Regulation of Sexual Motivation. HS Kaplan Brunner/Mazel, New York, 1995. In Neurology 1996; 47:316

23) Femininities, Masculinities, Sexualities: Freud and Beyond. N. Chodorow. The University Press of Kentucky, Lexington, 1994. Archives of Sexual Behavior 28(5):397-400,1999

24) Sexual Function in People with Disability and Chronic Illness: A Health Professional's Guide by ML Sipski, CJ Alexander. Aspen Publishers, Gaitersburg, Md, 1997. In Journal of Sex Education and Therapy, 1998;23(2):171-2

25) Sexual Aggression by J Shaw (ed). American Psychiatric Press, Washington, DC, 1998. In American Journal of Psychiatry, May, 1999

26) The *Wounded* Healer: Addiction-Sensitive Approach to the Sexually Exploitative Professional by Richard Irons and Jennifer P. Schneider. Jason Aronson, Northvale, N.J., 1999 in American Journal of Psychiatry 157(5):8-9,2000.

27) Culture of the Internet by Sara Kiesler (editor), Lawrence Erlbaum Associates, Mahway, New Jersey, 1997. 463pp in Journal of Sex Research, 2001

28) Psychological Perspectives on Human Sexuality. Lenore T. Szuchman and Frank Muscarella (editors), Wiley and Sons, New York, American Journal of Psychiatry, April, 2002

29) "How Sexual Science Operates" a review of Sex, Love, and Health in America: Private Choices and Public Policies. EO Laumann and RT Michael, editors. Chicago, University of Chicago, 2001 in Second Opinion, The Park Ridge Center for the Study of Health, Faith, and Ethics, 11:82-3, April, 2004.

30) Sexual Orientation and Psychoanalysis: Sexual Science and Clinical Practice. R.C. Friedman and J.I. Downey (eds). New York. Columbia University Press. in Archives of Sexual Behavior (2003) 31(5):473-474

31) Prozac on the Couch: Prescribing Gender in the Era of Wonder Drugs, Jonathon Michel Metzl. Duke University Press, Durham, 2003 in American Journal of Psychiatry, November, 2004.

32) Sex and Gender by M. Diamond and A. Yates Child Psychiatric Clinics of North America W. B. Saunders, Philadelphia, Pennsylvania, 2004, 268 pp. in Archives of Sexual Behavior April 2007

online publication in Dec.2006 at http://dx.doi.org/10.1007/s10508-006-9114-7

33) Getting Past the Affair: A program to help you cope, heal, and move on—together or apart by Douglas K. Snyder, Ph.D, Donald H. Baucom, Ph.D, and Kristina Coop Gordon, Ph.D, New York, Guilford Press, 2007 in Journal of Sex and Marital Therapy,34:1-3, 2007

34) Dancing with Science, Ideology and Technique. A review of Sexual Desire Disorders: A casebook Sandra R. Leiblum editor, Guilford Press, New York, 2010. In Journal of Sex Research 2011.

35) What is more bizarre: the transsexual or transsexual politics? A review of Men Trapped in Men's Bodies: Narratives of Autogynephilic Transsexualism by Anne A. Lawrence, New York, Springer, 2014. In Sex Roles: a Journal of Research, 70, Issue 3 (2014), Page 158-160, 2014. DOI: 10.1007/s11199-013-0341-9

36) There Are Different Ways of Knowing. A review of: How Sexual Desire Works: The Enigmatic Urge by Frederick Toates, Cambridge, UK, Cambridge University Press, in Sexuality and Culture (2015) 19:407-409 DOI 10.1007/s12119-015-9279-0

37) The Dynamics of Infidelity: Applying Relationship Science to Clinical Practice by Lawrence Josephs, American Psychological Association, Washington, DC, 2018, pp. . 287, $69.95 in Journal of Sex and Marital Therapy10.1080/0092623X.2018.1466954, 2018.

For free access: https://www.tandfonline.com/eprint/UgilHbWbpdedbsXWXpNf/full

38) Transgender Mental Health by Eric Yarbrough, American Psychiatric Association Publications, 2018, Journal and Marital & Sexual Therapy, https://doi.org/10.1080/0092623X.2018.1563345 .

IN THE UNITED STATES DISTRICT COURT FOR THE SOUTHERN DISTRICT OF WEST VIRGINIA

CHARLESTON DIVISION

B. P. J., et al.,

Plaintiffs,

v. CIVIL ACTION NO. 2:21-cv-00316
Hon. Joseph R. Goodwin

WEST VIRGINIA STATE BOARD OF EDUCATION, et al.,

Defendants,

and

LAINEY ARMISTEAD,

Defendant-Intervenor.

Plaintiff B.P.J. respectfully submits this memorandum of law in support of her motion to exclude the proffered expert testimony of Gregory Brown, Ph.D., FACSM from consideration at summary judgment or trial.

INTRODUCTION AND BACKGROUND

Plaintiff B.P.J. is an 11-year-old girl who is transgender. Because she is transgender, B.P.J. is categorically prohibited from participating with other girls on her middle school's cross-country or track and field teams as a result of H.B. 3293. B.P.J. brought this lawsuit to challenge this categorical exclusion as violating B.P.J.'s right to be free from discrimination under Title IX of the Education Amendments of 1972 and the Equal Protection Clause.

As part of their defense of H.B. 3293, Defendant the State of West Virginia and Defendant-Intervenor Lainey Armistead ("Intervenor") identified and disclosed an expert report from Gregory Brown, Ph.D., FACSM. According to Dr. Brown, girls and women who are transgender have an inherent athletic advantage over cisgender girls even when they receive puberty-delaying medication and gender-affirming hormones, and even when they reduce their levels of circulating testosterone after puberty. (*See generally* Dkt. No. 289-30 (Brown Rep.)) Dr. Brown has not been qualified by the court as an expert witness in any other litigation. He submitted an expert report in *Soule by Stanescu v. Connecticut Ass'n of Sch., Inc.*, No. 3:20-CV-00201 (RNC) (D. Conn.) before that case was dismissed, and he submitted declarations in support of a motion for preliminary injunction in *Soule* and in opposition to a motion for preliminary injunction in *Hecox v. Little*, No. 1:20-cv-00184-DCN (D. Idaho). (*See* Block Decl. Ex. A.)

As discussed below, Dr. Brown's report is an advocacy piece that is not grounded in reliable data and does not reflect the application of reliable principles and methods. Although Dr. Brown has expertise in discussing the physiological differences between cisgender men and women that relate to athletic performance, his report ventures far beyond his areas of expertise to offer sweeping and speculative conclusions about the biological determinants of sex, the athletic performance of prepubertal children, and the impact of puberty-delaying medication and gender affirming hormones. While purporting to provide a review of the relevant literature, Dr. Brown misleadingly quotes excerpts from sources that suit his theories while ignoring other portions of the same articles that directly undermine his claims. These omissions are not small or isolated; they are multiple, egregious, and so significant that they present a fundamentally inaccurate description of the sources he purports to summarize. Such "[r]esult-driven analysis, or cherry-picking, undermines principles of the scientific method and is a quintessential example of applying methodologies (valid or otherwise) in an unreliable fashion." *In re Lipitor (Atorvastatin Calcium) Mktg., Sales Pracs. & Prod. Liab. Litig. (No II) MDL 2502*, 892 F.3d 624, 634 (4th Cir. 2018).

To take just one example, Dr. Brown states in his report that a consensus statement "signed by more than 60 sports medicine experts from prestigious institutions around the world" supports his view that suppressing circulating levels of testosterone after puberty is insufficient to mitigate the alleged athletic advantages of transgender women. (Dkt. No. 289-30 (Brown Rep.) ¶ 167) (citing Hamilton, B. et al, Integrating transwomen and female athletes with differences of sex development (DSD) into elite competition: the FIMS 2021 consensus

statement. Sports Med (2021).) Brown quotes the consensus statement for the proposition that "[t]ranswomen have the right to compete in sports. However, cisgender women have the right to compete in a protected category." (*Id.* at ¶ 12.) But Dr. Brown never discloses that the consensus statement prominently and repeatedly *rejects* the opinions he offers in this case. A summary of "Key Points" at the beginning of the consensus statement emphasizes that "[t]he use of testosterone concentration limits of 5 nmol/L in transwomen and DSD women athletes is a justifiable threshold based on the best available scientific evidence." (Block Decl. Ex. G (Hamilton 2021) at 1402.) When asked during his deposition why he failed to disclose this critical information in his report, Dr. Brown stated, "I disagree with that key point," and explained that in deciding what portions of the article to mention in his report, "I cited the information that I agree with." (Dkt. No. 289-31 (Brown Dep. Tr.) 231:2-13.) That is virtually the same response given by one of the experts who was excluded from the *In re Lipitor* litigation when confronted with the fact that he had excluded important studies from his analysis. In that case, Dr. Quon testified, "I only wrote things that I believe. And I don't believe these studies." *In re Lipitor (Atorvastatin Calcium) Mktg., Sales Pracs. & Prod. Liab. Litig.*, 174 F. Supp. 3d 911, 930–31 (D.S.C. 2016). Disagreement does not give Dr. Brown a license to omit contradictory findings from a study that he cites to, and these omissions underscore the unreliability of his report more broadly.

Dr. Brown's result-driven analysis reflects the fact that he is not a passive bystander in this case. Rather, Dr. Brown proactively sought out the opportunity to be involved in supporting exclusionary laws like H.B. 3293. Several years ago, after learning that Intervenor's

counsel, the Alliance Defending Freedom ("ADF"), was attempting to exclude two transgender girls in Connecticut from competing on their high school girls' track-and-field team, Dr. Brown contacted ADF to volunteer his services. (Dkt. No. 289-31 (Brown Dep. Tr.) 35:22–36:7.) Dr. Brown had not previously engaged in similar solicitation for any other topic. (*Id.* at 36:15–37:13.) Since then, Dr. Brown has actively lobbied across the country for the passage of legislation categorically banning girls and women who are transgender from participating on girls' and women's athletic teams, often at the invitation of groups who oppose legal protections for transgender people. Dr. Brown testified in support of legislation in Ohio at the request of the Center for Christian Virtue, (Dkt. No. 289-31 (Brown Dep. Tr.) 32:17-18); in Texas at the request of Texas Values, (*id.* at 32:19-20); in North Carolina at the request of North Carolina Values, (*id.* at 32:22–33:1); and in Pennsylvania at the request of the Pennsylvania Family Alliance, (*id.* at 32:2-4.)

Because Dr. Brown's testimony is not "based on sufficient facts or data" and is not "the product of reliable principles and methods," his proffered opinions do not qualify under Federal Rule of Evidence 702 as admissible expert testimony. The court should exercise its "special gatekeeping obligation" and exclude his testimony from consideration at summary judgment or trial. *Sardis v. Overhead Door Corp.*, 10 F.4th 268, 281 (4th Cir. 2021).

LEGAL STANDARD

Federal Rule of Evidence 702 "permits an expert to testify where the expert's 'scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue,' so long as the expert's opinion is 'based on sufficient facts

or data,' 'is the product of reliable principles and methods,' and the expert 'has reliably applied the principles and methods to the facts of the case.'" *In re Lipitor*, 892 F.3d at 631 (quoting Fed. R. Evid. 702). "Rule 702 thus imposes a special gatekeeping obligation on the trial judge to ensur[e] that an expert's testimony both rests on a *reliable* foundation and is *relevant* to the task at hand." *Sardis*, 10 F.4th at 281 (internal quotation marks and citations omitted). If an expert's testimony is "alleged to be unreliable, then the trial judge must determine whether the testimony has a reliable basis in the knowledge and experience of the relevant discipline. While district courts have broad discretion in analyzing reliability, such discretion does not include the decision to abandon the gatekeeping function." *Id.* at 282 (internal quotation marks and citations omitted).

Rule 702 applies with full force when ruling on a motion for summary judgment even when the case is scheduled for bench trial. Summary judgment cannot be granted or denied based on evidentiary material that "cannot be presented in a form that would be admissible in evidence." Fed. R. Civ. P. 56(c)(2); *see Humphreys & Partners Architects, L.P. v. Lessard Design, Inc.*, 790 F.3d 532, 538 (4th Cir. 2015). Thus, when evidence related to a material fact comes in the form of expert testimony, "the propriety of summary judgment hinges on whether [the] expert evidence is admissible before this Court" under Rule 702. *Rover Pipeline LLC v. Rover Tract No(s). WV-MA-ML-056.500-ROW & WV-MA-ML-056.500-ATWS*, No. 5:18-CV-68, 2021 WL 3424270, at *3 (N.D.W. Va. Aug. 5, 2021); *accord Bellitto v. Snipes*, 302 F. Supp. 3d 1335, 1347 (S.D. Fla. 2017).

I. Dr. Brown's Opinion Regarding the Definition of "Biological Sex" Should Be Excluded.

One of the issues in this litigation is whether H.B. 3293's definition of "biological sex"— which the statute defines as "an individual's physical form as a male or female based solely on the individual's reproductive biology and genetics at birth"—reflects an accurate medical or scientific understanding of the term. W. Va. Code § 18-2-25d(b)(1). B.P.J. has submitted expert declarations from Dr. Joshua Safer, an endocrinologist who specializes in transgender medicine, and Dr. Deanna Adkins, a pediatric endocrinologist who specializes in the treatment of transgender adolescents and of children and adolescents with differences of sexual development ("DSD"). As experts in their fields, Dr. Safer and Dr. Adkins have explained that biological sex encompasses the sum of several different biological attributes, including sex chromosomes, certain genes, gonads, sex hormone levels, internal and external genitalia, other secondary sex characteristics, and gender identity, which itself has biological roots. (*See* Dkt. No. 289-25 (Safer Rep.) ¶ 48; Dkt. No. 289-26 (Safer Rebuttal) ¶¶ 5–7 (and sources cited therein); Dkt. No. 289-23 (Adkins Rep.) ¶ 41.) For these reasons, the Endocrine Society cautions that the term "biological sex" is "imprecise and should be avoided" in the context of discussing transgender people and people with DSDs. (Dkt. No. 289-23 (Adkins Rep. ¶ 41) (citing Block Decl. Ex. C (Hembree (2017)).

In Section I of his report, Dr. Brown purports to offer a contrary expert opinion regarding the definition of "biological sex," but Dr. Brown has no qualifications to offer an expert opinion on this topic. And the opinions he does offer are cherry-picked, taking quotations out of

context while ignoring other portions of the articles that directly contradict his assertions.

First, Dr. Brown lacks qualification to discuss the medical and scientific communities' understanding of sex's biological elements. An expert witness must possess requisite "knowledge, skill, experience, training, or education" that would assist a trier of fact. *Kopf v. Skyrm*, 993 F.2d 374, 377 (4th Cir. 1993). Moreover, "an expert's qualifications must be within the same technical area as the subject matter of the expert's testimony; in other words, a person with expertise may only testify as to matters within that person's expertise." *Martinez v. Sakurai Graphic Sys. Corp.*, No. 04 C 1274, 2007 WL 2570362, at *2 (N.D. Ill. Aug. 30, 2007). "Generalized knowledge of a particular subject will not necessarily enable an expert to testify as to a specific subset of the general field of the expert's knowledge." *Id.* "For example, no medical doctor is automatically an expert in every medical issue merely because he or she has graduated from medical school or has achieved certification in a medical specialty." *O'Conner v. Commonwealth Edison Co.*, 807 F. Supp. 1376, 1390 (C.D. Ill. 1992), *aff'd*, 13 F.3d 1090 (7th Cir. 1994).

Dr. Brown is a professor of Exercise Science. He is not an endocrinologist or a geneticist. The opinion in his report regarding the biological basis of sex consists almost entirely of quotations from an Endocrine Society article. (*See* Block Decl. Ex. D (Bhargava et al. (2021)). Instead of relying on any expertise or experience of his own, Dr. Brown merely stitches together selected excerpts from the Bhargava 2021 article to discuss matters on which he has no independent expertise. Rule 702 requires more. *See Dura Auto. Sys. of Ind., Inc. v. CTS Corp.*, 285 F.3d 609, 614 (7th Cir. 2002) ("A scientist, however well credentialed

he may be, is not permitted to be the mouthpiece of a scientist in a different specialty.").

Moreover, although Dr. Brown's report addressed DSDs, (*see* Dkt. No. 289-30 (Brown Rep.) ¶ 4), Dr. Brown disclaimed at deposition that he was offering any expert testimony regarding the biological bases of sex for people with DSDs, including people with complete androgen insensitive syndrome ("CAIS"). (Dkt. No. 289-31 (Brown Dep. Tr.) at 44:15–49:11.) Dr. Brown stated that he "stand[s] by" a sentence in his report quoting Bhargava 2021 for the proposition that "[m]any DSDs are associated with genetic mutations that are now well known to endocrinologist and geneticists," which he said represented the "full extent of [his] expert testimony about DSDs." (*Id.* at 46:8–47:15.) But Dr. Brown could not answer whether CAIS is caused by a genetic mutation. (*Id.* at 47:16–48:3.) Dr. Brown also disclaimed any expertise on the athletic participation of women with CAIS generally. (*See id.* at 45:4-10 ("I have been retained as an expert witness in this matter primarily dealing with biological male and biological female and not as an expert on disorders or differences of sexual development. And so I would say I probably would not be the best person to offer a statement on where someone with CAIS should participate.")

Second, even if Dr. Brown were qualified to provide an expert opinion based on the Bhargava 2021 article, Dr. Brown does not employ any reliable methodology in forming his opinion that sex is determined at conception based on chromosomes. Dr. Brown simply plucks out isolated quotes from the Bhargava 2021 to paint a misleading picture that the article supports his pre-determined conclusions about chromosomes. In reality, the article directly undermines Dr. Brown's claims. The

introduction of the article explains that "[s]ex differences are caused by 3 major factors—sex hormones, genes, and environment." (Block Decl. Ex. D (Bhargava 2021) at 220.) The article has a few subsections describing the role of chromosome kayrotypes, while cautioning that "karyotypic analysis may be misleading, as there are well-described 46,XX males" and " 46,XY females." (*Id.* at 221.) The article then explains how physical sexual differentiation occurs when genes interact with hormones and environmental factors in utero and during puberty. (*See id.* at 222 (discussing "Sexual Differentiation Caused by Gonadal and Non-Gonadal Hormones); *id.* at 223 (discussing "Influence of Gonadal Steroid Hormones and Nongonadal Hormones in Brain Development"); *id.* at 225 ("Given that the critical and sensitive periods for sexual differentiation are defined by the production and response to gonadal steroids, it is not surprising that steroids are the primary drivers of developmental origins of sex differences in brain (and probably other tissues) and behavior."); *id.* at 227 (discussing "Hormonal Versus Sex Chromosome Effects" and explaining that "[s]ex differences are caused by 3 major factors—sex hormones, genes on sex chromosomes/autosomes, and environment").)

Dr. Brown also misrepresents what the Bhargava 2021 article says about the biological roots of gender identity. Dr. Brown quotes Bhargava for the proposition that "a clear biological causative underpinning of gender identity remains to be demonstrated." (Dkt. No. 289-30 (Brown Rep.) ¶ 4.) But the article goes on to explain that, while the precise causative factor is unknown, "there is ample but incomplete evidence for biological substrates—neuroanatomic, genetic, and hormonal—for gender orientation." (Block Decl. Ex. D (Bhargava 2021) at 227.)

Whether due to a lack of familiarity with the materials or as a result of deliberate cherry-picking, Dr. Brown's alleged expert opinion about the meaning of "biological sex" fundamentally misrepresents the article he purports to summarize and lacks "a reliable basis in the knowledge and experience of the relevant discipline." *Sardis*, 10 F.4th at 282 (internal quotation marks and citations omitted).

II. Dr. Brown's Opinions Regarding Prepubertal Children and the Alleged Athletic Advantages of Transgender Girls Who Receive Puberty-Delaying Medication Should Be Excluded.

The Court should also exclude Dr. Brown's opinions regarding alleged advantages of transgender girls who receive puberty-delaying medication. There is a broad consensus in the scientific literature that the primary biological basis for differences in athletic performance between men and women is the rise in circulating levels of testosterone beginning in endogenous male puberty. (*See* Dkt. No. 289-27 (Handelsmann 2018).) The average differences in athletic performance between boys and girls before puberty are generally between 0 and 6% depending on the sport, and are routinely described as "minimal" or nonexistent.[1] In light of this scientific

[1] (*See, e.g.*, Dkt. No. 289-27 (Handelsman et al. 2018) ("Age-grade competitive sports records show minimal or no female disadvantage prior to puberty"); *id.* at fig.1 (showing average performance gaps of 6% or less for running, jumping, and swimming); Block Decl. Ex. I (Tønnessen 2015) at 1 (reporting that "[m]ale and female athletes perform almost equally in running and jumping events up to the age of 12" and calculating differences for 11-year-olds at less than 5%); *id.* Ex. N (Coleman 2020) at 95 (summarizing competitive swimming data showing that "pre-pubertal children of both sexes are competitive for the win in co-ed events, with females having some advantage in the six to eight-year-old age brackets").)

consensus, it is widely acknowledged that transgender girls who never go through endogenous puberty as a result of puberty-delaying medication do not have any average athletic advantages compared with cisgender girls.[2]

Until his expert report in this case, Dr. Brown did not dispute this consensus. In the expert declaration he submitted to this Court in opposition to Plaintiff's Motion for a Preliminary Injunction, Dr. Brown repeatedly acknowledged and accepted the scientific consensus that prepubertal boys do not have any meaningful athletic advantage over prepubertal girls, and that the physiological characteristics that create athletic advantages do not arise until circulating levels of testosterone rise during a typically male endogenous puberty.[3] But after this Court granted Plaintiff's Motion

---

[2] (*See* Block Decl. Ex. J (World Rugby Guidelines) ("Transgender women who transitioned pre-puberty and have not experienced the biological effects of testosterone during puberty and adolescence can play women's rugby."); *id.* Ex. Q (Briefing Book) at 8 ("Because the onset of male puberty—normally around ages 11–12 in boys—is the physical justification for separate sex sport, trans girls and women who have never experienced the onset of male puberty should be included without condition." (footnote omitted).)

[3] (*See* Block Decl. Ex. A (Brown Hecox Rep.) ¶ 25 (describing "male athletic performances" before puberty as "being equal on average on those of age-matched females") (quoting Handelsmann 2018); ¶ 90 ("As with muscle, sex differences in bone are absent prior to puberty but then accrue progressively from the onset of male puberty due to the sex difference in exposure to adult male circulating testosterone concentrations.") (citing Handelsman 2018); ¶ 95 ("Before puberty, boys and girls hardly differ in height, muscle and bone mass."); ¶ 109 ("[S]ex differences in physical capacities (assessed as [maximal oxygen uptake] or isometric strength in the majority of cases) are negligible prior to the onset of puberty.") (citing Tønnessen 2015); ¶ 113 ("[B]efore puberty, boys and girls do not differ in height, muscle and bone mass.") (citing Gooren 114); ¶ 114 (explaining that "physical advantage in

for a Preliminary Injunction and highlighted the fact that B.P.J. is receiving puberty blocking medication, Dr. Brown dramatically shifted gears and developed a newfound expert opinion regarding the athletic performance of prepubertal youth, without any acknowledgment of his about-face or effort to explain his change in position. In his most recent expert report, Dr. Brown revises his previous opinion that "men, and adolescent boys, perform better in almost all sports than women, and adolescent girls because of their inherent physiological advantages that develop during male puberty" and asserts for the first time that "men, adolescent boys, ***and prepubertal male children*** perform better in almost all sports than women, adolescent girls, and prepubertal." (Dkt. No. 289-30 (Brown Rep.) at 4 (emphasis added).) Dr. Brown then further speculates that these alleged advantages persist even after transgender girls and women receive puberty-delaying medication and gender affirming hormones.

As discussed below, Dr. Brown's newfound opinions should be excluded. An "expert's testimony must be reliable at each and every step or else it is inadmissible. The reliability analysis applies to all aspects of an expert's testimony: the methodology, the facts underlying the expert's opinion, the link between the facts and the conclusion, et alia." *Knight v. Kirby Inland Marine Inc.*, 482 F.3d 347, 355 (5th Cir. 2007) (quotation marks

---

performance arises during early adolescence when male puberty commences after which men acquire larger muscle mass and greater strength, larger and stronger bones, higher circulating haemoglobin as well as mental and/or psychological differences."); ¶ 119 ("It is concluded that the gender divergence in athletic performance begins at the age of 12-13 years and reaches adult plateau in the late teenage years."))

omitted). Dr. Brown's proffered testimony about prepubertal children and puberty-delaying medication fails this reliability analysis at each step of the process. To support his newfound opinion, Dr. Brown engages in a result-oriented search for materials, while ignoring contrary information he found to be inconvenient, including contrary information he cited in previous reports but deleted from the one submitted in this case. Instead of acknowledging the peer-reviewed literature finding no significant differences in athletic performance, Dr. Brown relies on physical fitness tests of the general population and on raw data he personally downloaded from the internet without subjecting to peer review. (Dkt. No. 289-30 (Brown Rep.) ¶¶ 71–109.) He then goes beyond that shaky foundation to engage in pure speculation that the alleged advantages he found will persist even when a transgender girl receives puberty blockers and then undergoes a typically female puberty through gender-affirming hormones. (*Id.* at ¶¶ 110–13.) Each of these missteps—whether alone or in combination—require that the testimony be excluded. *See In re Lipitor*, 892 F.3d at 637–38 ("[C]ourts must look to the entire process that produced an opinion to determine whether the expert's work satisfies *Daubert*'s fundamental command: that expert testimony be reliable and relevant.")

A. Dr. Brown's Assertions Regarding Prepubertal Physiological Differences Are Not Reliable.

First, Dr. Brown attempts to show that "much data and multiple studies show that significant physiological differences" exist between prepubertal boys and prepubertal girls. (Dkt. No. 289-30 (Brown Rep.) ¶ 72.) But, as with his discussion of "biological sex," Dr. Brown uses selective quotations to present a fundamentally inaccurate description of the sources he purports to

summarize. "Result-driven analysis, or cherry-picking, undermines principles of the scientific method and is a quintessential example of applying methodologies (valid or otherwise) in an unreliable fashion." *In re Lipitor*, 892 F.3d at 634. "[J]ust as omitting data might distort the result by overlooking unfavorable data, cherry-picking data produces a misleadingly favorable result by looking only to 'good" outcomes.'" *EEOC v. Freeman*, 778 F.3d 463, 469–70 (4th Cir. 2015) (Agee, J., concurring).

To justify his claims, Dr. Brown focuses on what he calls a "seminal work" by McManus and Armstrong, which states that there is a "small but detectable" difference in lean body mass "throughout childhood with about a 10% greater lean mass in boys than girls prior to puberty." (Dkt. No. 289-30 (Brown Rep.) ¶ 71 (quoting Block Decl. Ex. L (McManus 2011) 56:23-46)).) Plucking out that single fact, Dr. Brown ignores the article's remaining findings that there are no significant differences between prepubertal boys and girls across a range of characteristics relevant to athletic performance. (*See* Block Decl. Ex. L (McManus 2011) at 24 ("Prior to 11 years of age differences in average speed are minimal"); *id.* at 27 ("small sex difference in fat mass and percent body fat are evident from mid-childhood"); *id.* at 29 ("bone characteristics differ little between boys and girls prior to puberty"); *id.* at 32 ("There is little evidence that prior to puberty pulmonary structure or function limits oxygen uptake"); *id.* at 34 ("[N]o sex differences in arterial compliance have been noted in pre- and early- pubertal children").

Dr. Brown similarly misrepresents his other sources. Dr. Brown states that "[i]n a review of 22 peer reviewed publications on the topic, Staiano and Katzmarzyk (2012) conclude that girls have more T[otal]B[ody]F[at] than

boys throughout childhood and adolescence." (Dkt. No. 28930 (Brown Rep.) ¶ 73.) Dr. Brown thus gives the false impression that all 22 of the peer-reviewed publications demonstrated differences on total body fact. To the contrary, as Staiano and Katzmarzyk's expressly note, "not all studies demonstrate sex differences in T[otal]B[ody]F[at] before puberty."[4] (Block Decl. Ex. M (Staiano 2012).)

Instead of providing a reliable accounting of the alleged "significant physiological differences" between prepubertal boys and girls, Dr. Brown was "selective in his choice of supporting data, focusing only on those fragments of data which tend to lend credence to his theory." *In re Hanford Nuclear Reservation Litig.*, 894 F. Supp. 1436, 1450 (E.D. Wash. 1995). Indeed, Dr. Brown admitted that he does not think the opinions he expressed in his expert report should be held to "the same standards of peer-reviewed article[s]" or "the same rigor as a peer-reviewed article." (Dkt. No. 289-31 (Brown Dep.) 134:17-22, 135:15-17.) According to Dr. Brown, "in a peer-reviewed article, you are not providing opinions; you are summarizing literature," and "the writing style is so phenomenally different." (*Id.* at 136:10-13, 137:16-17.)

[4] For example, "[a] multi-year longitudinal study of American boys and girls aged 8.1±1.6 years found similar TBF. There were no significant sex differences for TBF measured by bioelectrical resistance in a study of 4 boys and 12 girls aged 6.4±1.2 years in the US.41 A study of 129 African American and white 10–12-year-olds indicated no difference in TBF measured by DXA across sexes, though boys had a bimodal distribution of TBF whereas girls' TBF was skewed to higher values. Additionally, there were no sex differences in total abdominal fat measured by CT in 31 6–7-year-olds in the Netherlands." (Block Decl. Ex. N (Staiano 2012) at 5.)

But regardless of what writing style an expert uses, their opinion must still derive from a reliable application of scientific principles or methods. Whether in the courtroom or in a peer-reviewed article, cherry-picking fails that test. *See Barber v. United Airlines, Inc.*, 17 Fed. Appx. 433, 437 (7th Cir. 2001) (rejecting expert who did not explain why he ignored certain data, accepted only testimony and data that suited his theory, and "cherry-picked" supporting facts); *In re Bextra & Celebrex Mktg. Sales Practices & Prod. Liab. Litig.*, 524 F. Supp. 2d 1166, 1176 (N.D. Cal. 2007) (excluding expert's testimony where expert "reache[d] his opinion by first identifying his conclusion … and then cherry-picking observational studies that support his conclusion and rejecting or ignoring the great weight of the evidence that contradicts his conclusion."); *Carnegie Mellon Univ. v. Hoffmann–LaRoche. Inc.*, 55 F. Supp. 2d 1024, 1039 (N.D. Cal. 1999) ("The Ninth Circuit has upheld the exclusion of expert testimony where the expert selectively chose his support from the scientific landscape.") (citing *Lust v. Merrell Dow Pharms., Inc.*, 89 F.3d 594, 598 (9th Cir. 1996)).

B. Dr. Brown's Assertions That Prepubertal Boys Have Athletic Advantages Due to Innate Physiology Are Unreliable.

Second, Dr. Brown argues that the "small but detectable" differences in lean body mass sometimes found in prepubertal boys and girls creates an inherent biological athletic advantage for prepubertal boys in "almost all athletic events." (Dkt. No. 289-30 (Brown Rep.) at 4, 56.) Dr. Brown could not identify any studies that purport to calculate how much a 10% difference in lean body mass enhances athletic performance. (Dkt. No. 289-31 (Brown Dep. Tr.) 89:4-6.)

Instead, to support his sweeping claim that prepubertal boys have an advantage in "almost all athletic events," Dr. Brown relies on population-based data from physical fitness tests, not studies of people who have chosen to participate in competitive athletics. (Dkt. No. 289-30 (Brown Rep.) ¶¶ 75–100.) Because these epidemiological studies do not compare athletes with athletes, there is no reliable basis for Dr. Brown to attribute those differences among the general population to innate biology instead of to social factors such as greater societal encouragement of athleticism in boys and greater opportunities for boys to play sports. (Dkt. No. 289-26 (Safer Rebuttal) ¶ 9.) Indeed, Dr. Brown conceded at deposition that he could not find a single study that purported to "quantify[] the effects of social causes" versus "physiological factors" on differences in athletic performance between prepubertal boys and girls. (Dkt. No. 289-31 (Brown Dep. Tr.) 94:13-23.)

Beyond the physical fitness surveys, Dr. Brown also relies on a single year's worth of data about track-and-field competitions that he personally downloaded from the Athletic.net website. (Dkt. No. 289-30 (Brown Rep.) App. 1.) Dr. Brown has not attempted to publish this raw data or subject it to peer review. (Dkt. No. 289-31 (Brown Dep. Tr.) 95:15-24.) Unsurprisingly, the raw data has many anomalies: in many of the events, the average differences in performance reported by Dr. Brown are in the low single-digits for 7–8-year-olds, spike to double digits for 9–10-year-olds and then return to single-digits for 11-12-year-olds. (Dkt. No. 289-30 (Brown Rep.) App. 1.) Aside from these anomalous spikes, the majority of the average differences in performance reported by Dr. Brown are below 7% and often below 5%. (*See id.*) As noted above,

extensive peer-reviewed literature characterizes difference at 6% or less as minimal or insignificant.[5]

While he relies on inapposite physical fitness surveys and his own collection of raw data, Dr. Brown simply ignores the extensive peer-reviewed studies of competitive age-grade sports that found minimal or no differences before prepubertal boys and girls, with the differences in performance for various sports all being 6% or less.[6] Dr. Brown's omission is particularly glaring because Dr. Brown previously relied on those findings in an earlier draft of his own expert report,[7] and even continues to cite to portions of those studies in the latest version.[8] "[F]ailing to adequately account for contrary evidence is not reliable or scientifically sound." *In re*

---

[5] *See supra* note 1.

[6] *See supra* note 1. Unlike the raw data Dr. Brown downloaded, the Tønnessen 2015 study examined the "100 all-time best male and female 60m, 800m, long jump and high jump athletes in each age category from 11 to 18" from a dataset going back to 1975. (Block Decl. Ex. I (Tønnessen 2015).) A study by Handelsmann (2017) examined four different sources of data: (1) the US Age Group Swimming time standards which lists the prevailing time standard for entry to the top level of all boys and girls events for individual years from 1981 to 2016; (2) the current world records for boys and girls between the ages of 5 and 19 years in running events from 50 m to 2 miles, and in high jump, pole vault, long jump, triple jump, and standing long jump. (Block Decl. Ex. E (Handelsmann 2017).)

[7] *See supra* note 3.

[8] (*See* Dkt. No. 289-30 (Brown Rep.) ¶¶ 8, 12, 14–15, 18, 22, 29, 45–48, 50, 52, 54–55, 64, 66, 115–16, 120, 146, 156 (citing Handelsmann 2018); *id.* at ¶¶ 17, 22, 29, 64, 110 (citing Handelsmann 2017); *id.* at ¶¶ 22, 29, 59, 115 (citing Tønnessen 2015); *id.* at ¶ 8 (citing Coleman, D. L. et al., Re-affirming the value of the sports exception to Title IX's general non-discrimination rule. Duke J. of Gender and Law Policy 27(69):69-134 2020).)

Lipitor, 174 F. Supp. 3d 911, 932 (D.S.C. 2016); *see McEwen v. Baltimore Washington Med. Ctr. Inc.*, 404 Fed.Appx. 789, 791–92 (4th Cir. 2010) (upholding exclusion of expert testimony where experts "failed to meaningfully account for . . . literature at odds with their testimony"); *In re Zoloft (Sertraline Hydrochloride) Products Liab. Litig.*, 26 F. Supp. 3d 449, 460–61 (E.D. Pa. 2014) ("The Court finds that the expert report . . . does selectively discuss studies most supportive of her conclusions . . . and fails to account adequately for contrary evidence, and that this methodology is not reliable or scientifically sound.").

C. Dr. Brown's Assumption That Prepubertal Transgender Girls Will Have the Same Physiology as Prepubertal Cisgender Boys Is Unreliable.

Third, Dr. Brown assumes without evidence that prepubertal transgender girls will tend to have the same average body composition and performance on physical fitness tests as prepubertal cisgender boys. But, as Dr. Brown admits, he is not aware of any studies purporting to measure the athletic performance or physical fitness of transgender girls. (Dkt. No. 289-31 (Brown Dep. Tr.) 99:8-11.) Moreover, one of the sources Dr. Brown cites in support of his position specifically observed that even before receiving puberty-blocking medication, a cohort of transgender girls already had a percentage of body fat that was more similar to cisgender girls than to cisgender boys.[9] Other articles cited by Dr. Brown also expressly

[9] (*See* Block Decl. Ex. O (Klaver 2018) at 251–60) (reporting that "[b]efore the start of GnRHa, . . . transwomen had a percentage of body fat closer to that of ciswomen (SDS = -0.9) than to that of cismen (SDS =1.6)" and explaining that "[t]he cause of the increased percentage of body fat and BMI in transwomen is unknown, but it can

caution that "hormone-naïve transwomen may not, on average, have the same athletic attributes as cisgender men" and state that "[t]he need to move beyond simple comparisons of cisgender men and women to assess the sporting capabilities of transwomen is imperative." (Block Decl. Ex. F (Harper 2021) at 7.)[10] Despite purporting to base his opinions on these articles, (*see* Dkt. No. 289-30 (Brown Rep.) ¶ 8), Dr. Brown ignored these explicit limitations communicated by the articles' authors.

D. Dr. Brown's Assumption that Alleged Physiological Differences Before Puberty Will Persist After Puberty-Delaying Medication and Gender-Affirming Hormones Is Unreliable.

Fourth, Dr. Brown assumes that alleged advantages for transgender girls that he claims exist pre-puberty will persist after a transgender girl receives puberty-blocking medication followed by gender affirming hormones to stimulate a typically female puberty. (Dkt. No. 289-30 (Brown Rep.) ¶¶ 110–13 & p. 56.) Dr. Brown has no independent qualifications or experience regarding endocrine treatments for transgender people. He has never conducted primary research involving transgender individuals, and to the best of his knowledge none of his subjects has been transgender. (Dkt. No. 289-31 (Brown

---

be postulated that psychological stress from gender dysphoria and an inactive lifestyle could have contributed") (footnote omitted).)

[10] (*See also* Block Decl. Ex. G (Hamilton 2021) at 1407 (noting problematic nature of inferring that transwomen and cisgender males are the same); Block Decl. Ex. H (Hilton 2020) at 205 ("[T]ransgender women often have low baseline (pre-intervention) bone mineral density (BMD), attributed to low levels of physical activity, especially weight-bearing exercise, and low vitamin D levels."); *id.* at 208 (noting that "cohorts of transgender women often have slightly lower baseline measurements of muscle and strength than control males.").)

Dep.) 55:21-22, 56:17-18.) He has never conducted a formal literature review or meta-analysis about treatment of transgender people. (*Id.* at 51:23– 56:5.) His only knowledge has come from "[t]rying to keep up with the legislation in sports regarding the participation of transgender individuals and then on seeing the legislation, out of [his] own curiosity, looking to see what research was informing that legislation." (*Id.* at 56:6-12.)

Dr. Brown wrongly assumes that puberty-delaying medication followed by gender-affirming hormones will freeze in place any alleged advantages that exist before puberty. (Dkt. No. 289-30 (Brown Rep.) ¶¶ 110–13 & p.56.) But a transgender woman who receives puberty-delaying medication followed by gender-affirming hormones does not have the physiology of a prepubertal boy. (*See* Dkt. No. 289-26 (Safer Rebuttal) ¶ 17.) Following administration of puberty blockers, transgender girls and women will have also received gender-affirming care to allow them to go through puberty consistent with their female gender identity. As a result of a typically female puberty, these transgender girls and women will develop many of the same physiological and anatomical characteristics of cisgender girls and women, including bone size (Dkt. No. 289-30 (Brown Rep.) ¶¶ 46–48), skeletal structure (*id.* at ¶ 49), and "distinctive aspects of the female pelvis geometry [that] cut against athletic performance" (*id.* at ¶ 50.)

Dr. Brown's only authority for his contrary claim is an article, the Klaver 2018 study, measuring the body composition of a cohort of transgender women who received puberty blocking medication at about age 13.5, approximately two years after puberty typically begins.

(Dkt. No. 289-30 (Brown Rep.) ¶¶ 112–13.)[11] That study reported its findings along three metrics: lean body mass, body fat, and waist-hip ratio. After receiving puberty-delaying medication and gender-affirming hormones, the transgender women in the Klaver 2018 study had a higher percentage of lean body mass than comparable cisgender women, the same amount of body fat as comparable cisgender women, and overall body compositions that were more similar to cisgender women than to cisgender men. (Block Decl. Ex. O (Klaver 2018) at 255–56.) Instead of reporting the entirety of the study's findings, Dr. Brown reported only the finding about lean body mass. He did not mention the other findings about body fat and overall body composition. When asked why he selectively quoted findings from Klaver 2018 to omit those findings that showed similarities between transgender women and cisgender women, Dr. Brown had no explanation; he testified that his discussion of the Klaver 2018 article "is not intended to be a summary of the article in its entirety." (Dkt. No. 289-31 (Brown Dep. Tr.) 157:23-24.)[12]

---

[11] As part of its discussion of puberty blockers, Dr. Brown's expert report also cites to a study by Tack et al. (*See* Brown Rep. ¶ 111 (citing Tack 2018).) But Dr. Brown admitted during his deposition that the subjects of study did not actually receive puberty blockers and were not prepubertal. (Dkt. No. 289-31 (Brown Dep. Tr.) 140:4-24, 149:3-5.)

[12] Moreover, even if Dr. Brown had accurately reported the findings of Klaver 2018 in their entirety, the transgender women in that study had already experienced approximately two years of endogenous puberty. Those women would not be representative of transgender girls who receive puberty blocking medication at the beginning of Tanner 2 in accordance with the Endocrine Society Guidelines. Dr. Brown admits in his report that the timing of when puberty blockers are administered is "outside [his] area of expertise," (Dkt. No. 289-30 (Brown Rep.) ¶ 110), but that lack of expertise did not dissuade him from offering an expert opinion based on the mistaken premise that puberty-delaying medication is administered between Tanner 2 and

Even more fundamentally, Dr. Brown presents no data to support the assumption that the transgender women in the Klaver study he references have any athletic advantages compared with cisgender women. In other words, he offers no scientific basis to conclude that there is a connection between lean body mass and athletic advantage, either generally or in the context of particular sports. Indeed, he admits that he is not aware of *any* research whatever concerning the athletic performance of transgender women who have received puberty-delaying medication. (Dkt. No. 289-30 (Brown Rep.) ¶ 110.) "[N]othing in either *Daubert* or the Federal Rules of Evidence requires a district court to admit opinion evidence that is connected to existing data only by the *ipse dixit* of the expert. A court may conclude that there is simply too great an analytical gap between the data and the opinion proffered." *Gen. Elec. Co. v. Joiner*, 522 U.S. 136, 146 (1997). "[D]istrict courts must ensure that an expert's opinion is 'based on scientific, technical, or other specialized *knowledge* and not on belief or speculation.' And to the extent an expert makes inferences based on the facts presented to him, the court must ensure that those inferences were 'derived using scientific or other valid methods.'" *Sardis*, 10 F.4th at 281 (quoting *Oglesby v. Gen. Motors Corp.*, 190 F.3d 244, 250 (4th Cir. 1999) (citations omitted)).

***

In short, Dr. Brown's newfound opinions about the athletic advantages of transgender girls and women who never go through endogenous puberty as a result of puberty-delaying medication are built on cherry-picked

---

Tanner 3 or making broad statements about the impact of puberty-delaying medication.

surveys of the literature, raw data never subjected to peer review, a failure to discuss contrary studies on which Dr. Brown previously relied, and a long chain of speculation. Because such testimony "has a greater potential to mislead than to enlighten" it "should be excluded." *In re Lipitor*, 892 F.3d at 632.

III. Dr. Brown's Opinions Regarding the Inclusion of Transgender Women Who Suppress Testosterone After Endogenous Puberty Should Be Excluded.

In the final section of his expert report, Dr. Brown advances sweeping conclusions about the participation of transgender women who have suppressed circulating testosterone based on an extremely limited set of actual data. (Dkt. No. 289-30 (Brown Rep.) ¶¶ 119–77.) There are only two studies that actually measure the athletic performance of transgender women after suppressing testosterone. (Dkt. No. 289-26 (Safer Rebuttal) ¶ 19.) The other studies measure discrete characteristics such as muscle size or grip strength. (Dkt. No. 289-30 (Brown Rep.) ¶¶ 153–56.) When describing this small universe of data in a blog post for the Physiology Educators Community Practice Blog, Dr. Brown expressed appropriate caution about drawing strong conclusions from the limited data. In his blog post, Dr. Brown warned:

> It is also important to note that the effects of male-to-female hormone treatment on important determinants of athletic performance remain largely unknown. Measurements of VO2max in transwomen using direct or indirect calorimetry are not available. Measurements of muscle strength in standard lifts (e.g., bench press, leg press, squat, deadlift, etc.) in transwomen are not available. Nor have there been evaluations of the effects of male-

> to-female hormone therapy on agility, flexibility, or reaction time. There has been no controlled research evaluating how male-to-female hormone treatment influences the adaptations to aerobic or resistance training. And there are only anecdotal reports of the competitive athletic performance of transwomen before and after using male-to-female hormone treatment.

(Block Decl. Ex. P (Brown GA).) Dr. Brown concluded that "[i]n the end, whether it is safe and fair to include transgender athletes and athletes with DSD in women's sports comes down a few facts that can be extrapolated, lots of opinions, and an interesting but complicated discussion." *Id.*

But Dr. Brown takes a different approach in his expert report, abandoning nuance and instead offering the sweeping and unequivocal opinions that including transgender women in athletics is irreconcilable with ensuring fairness and that the alleged differences in athletic performance justify an across-the-board rule prohibiting all transgender women from competing in all women's sports under all circumstances regardless of how much and how long they suppress their circulating levels of testosterone because the "policy goals" of "fairness, safety, and full transgender inclusion . . . are irreconcilable for many or most sports." (Dkt. No. 289-30 (Brown Rep.) at 57.) This striking difference between Dr. Brown's public writings and his expert report calls into question the reliability of Dr. Brown's expert testimony because it suggests that he "has not employed in the courtroom the same level of intellectual rigor that characterizes the practice of an expert in the relevant field." *In re Lipitor*, 174 F. Supp. 3d at 932 (quoting *Kumho Tire Co. v.*

Carmichael, 526 U.S. 137, 152 (1999)) (internal quotation marks and brackets omitted).

Although he has no independent experience in crafting athletic policies, (Dkt. No. 289-31 (Brown Dep. Tr.) 110:4-7), Dr. Brown claims that the sweeping opinions in his expert report are supported by other "peer-reviewed analyses of the scientific literature" and "respected voices." (Dkt. No. 289-30 (Brown Rep.) ¶ 168.) But, as discussed below, Dr. Brown was forced to admit during his deposition that those peer-reviewed analyses and respected voices explicitly *reject* the appropriateness of a categorical ban on the participation of transgender women and girls on women's and girls' sports teams. (*See e.g.*, Dkt. No. 289-31 (Brown Dep. Tr.) 209:8-9.) Indeed, as discussed below, Dr. Brown openly admitted that, in summarizing those articles, he selectively quoted only from portions of the articles that he agreed with, while ignoring other portions of the article in which the authors rejected the positions Dr. Brown was advocating. (*See* Dkt. No. 28931 (Brown Dep. Tr.) 200:2-12; 209:8-9; 231:2-13.) "[W]hen an expert purports to apply principles and methods in accordance with professional standards, and yet reaches a conclusion that other experts in the field would not reach, the trial court may fairly suspect that the principles and methods have not been faithfully applied." Rule 702 advisory committee notes.

For example, Dr. Brown relies on a Consensus Statement from the International Federation of Sports Medicine ("FIMS"). Dr. Brown notes that the FIMS Consensus Statement is "signed by more than 60 sports medicine experts from prestigious institutions around the world," (Dkt. No. 289-30 (Brown Rep.) ¶ 12) and quotes the article for the proposition that "[t]ranswomen have the right to compete in sports. However, cisgender women

have the right to compete in a protected category[.]" (*Id.* at ¶ 167.) But Dr. Brown never discloses that the FIMS Consensus Statement prominently and repeatedly *rejects* the opinions he offers in this case. A summary of "Key Points" at the beginning of the FIMS Consensus Statement further emphasizes that "[t]he use of testosterone concentration limits of 5 nmol/L in transwomen and DSD women athletes is a justifiable threshold based on the best available scientific evidence." (Block Decl. Ex. G (Hamilton 2021) at 1402.) The official list of "consensus statements" further provide that "[u]se of serum testosterone concentrations as the primary biomarker to regulate the inclusion of athletes into male and female categories is currently the most justified solution as it is supported by the available scientific literature and should be implemented at the elite level, where there is an emphasis on performance enhancement." (*Id.* at 1409.) The FIMS consensus statement also argued against an across-the board rule, explaining that "[a]s each sport can vary greatly in terms of physiological demands, we support the view held also by others stating that individual sport's governing bodies should develop their own individual policies based on broader guidelines developed on the best available scientific evidence, determined experimentally from a variety of sources with a particular preference for studies on transwomen and DSD women athletes." (*Id.*)

When asked why he failed to disclose this critical information in his report, Dr. Brown stated, "I disagree with that key point," and explained that in deciding what portions of the article to mention, "I cited the information that I agree with." (Dkt. No. 289-31 (Brown Dep. Tr.) 231:213.) That is virtually the same response given by one of the experts who was excluded from the *In re Lipitor* litigation when confronted with the fact that he had

excluded important studies from his analysis. In that case, Dr. Quon testified, "I only wrote things that I believe. And I don't believe these studies." *In re Lipitor*, 174 F. Supp. 3d at 930–31 (internal citations omitted). Again, these omissions further underscore the unreliability of Dr. Brown's report more broadly.

Dr. Brown engaged in similarly deceptive tactics when describing the views of Professor Dorianne Coleman and the Women's Sports Policy Working Group. Dr. Brown claimed that Dr. Coleman's 2020 article supported his views, but the Coleman 2020 article states that there should be "unconditional inclusion" of transgender girls on girls' sports teams in "high school intramural, junior varsity, and regular season play, where institutional goals are primarily related to health and fitness and to the development of social skills." (Block Decl. Ex. N (Coleman 2020) at 130.) Dr. Brown disagrees with that recommendation and therefore omitted it from his expert report. The Coleman 2020 article also advocates that transgender women should be allowed to participate in more competitive sports events if they suppress circulating testosterone. *Id.* When asked why he did not include that information, Dr. Brown stated in his deposition that the article "is kind of confusing on that" point, but he nevertheless cited the article in alleged support of his position. (Dkt. No. 289-31 (Brown Dep. Tr.) 209:8-9.)

Dr. Brown repeats the same pattern when claiming that a "briefing book" from Professor Coleman's organization, the Women's Sports Policy Working Group, supported Dr. Brown's views. (Dkt. No. 289-30 (Brown Rep.) ¶¶ 169–70.) The "briefing book" proposes Title IX regulations that are similar to the positions advocated in the Coleman 2020 article. (*See* Block Decl. Ex. Q (Briefing

Book).) The proposed regulations state that: "Because trans girls/women who have not begun male puberty do not have significant male sex-linked advantages, they shall be included in girls' and women's sports without conditions or limitations." (*Id.* at 12.) The proposed regulation further provides that "transgender girls who have experienced puberty and who have sufficiently mitigated their male sex-linked advantages—through surgery and/or gender affirming hormones consistent with the rules of their international federations—may participate in girls'/women's sport without additional conditions or limitations." (*Id.* at 12–13.) Dr. Brown ignores those recommendations while claiming Dr. Coleman's organization as one of the "respected voices" supporting his views.

Dr. Brown misrepresented his sources again in his discussion of the Hilton 2021 article, which specifically advocates against an across-the-board rule. (*See* Block Decl. Ex. H (Hilton 2021).) The article states that "it is clear that different sports differ vastly in terms of physiological determinants of success, which may create safety considerations and may alter the importance of retained performance advantages. Thus, we argue against universal guidelines for transgender athletes in sport and instead propose that each individual sports federation evaluate their own conditions for inclusivity, fairness and safety." (*Id.* at 211.) The article also specifically notes that given testosterone suppression's effects in endurance-based sports, "the balance between inclusion and fairness is likely closer to equilibrium in weight-bearing endurance-based sports compared with strength-based sports." (*Id.* at 209.) Dr. Brown does not mention these recommendations. At his deposition, Dr. Brown testified incorrectly that the article supported a categorical across-

the-board exclusion for all sports. (Dkt. No. 289-30 (Brown Dep. Tr.) 200:2-12.)

A 2021 article from Harper received the same treatment from Dr. Brown. Like the Hilton 2021 article, the Harper 2021 article distinguishes between endurance sports and strength sports and states that "sport-specific regulations for transwomen in endurance versus strength sports may be needed." (Block Decl. Ex. F (Harper 2021) at 8.) The Harper 2021 article also cautions that: "Whether transgender and cisgender women can engage in meaningful sport, even after gender-affirming hormone therapy, is a highly debated question. However, before this question can be answered with any certainty, the intricacies and complexity of factors that feed into the development of high-performance athletes warrant further investigation of attributes beyond those assessed herein." (*Id.*) While purporting to rely on Harper 2021, (*see* Brown Rep. ¶¶ 8, 12, 128, 143, 151, 164), Dr. Brown ignores these inconvenient portions of the article that directly undermine his opinion that an across-the-board ban on the participation of transgender women is justified by the current science.

A one-sided advocacy piece is neither helpful nor reliable for a finder of fact. With all of these articles, Dr. Brown purported to summarize the opinions of respected voices in the scientific community by in reality chose only to "cite[] the information that I agree with." (Dkt. No. 289-31 (Brown Dep. Tr.) 231:2-13.) Under Rule 702, such "[r]esult-driven analysis, or cherry-picking, undermines principles of the scientific method and is a quintessential example of applying methodologies (valid or otherwise) in an unreliable fashion." *In re Lipitor*, 892 F.3d at 634.

CONCLUSION

For the foregoing reasons, the Court should enter an order excluding the proffered expert testimony of Gregory Brown, Ph.D., FACSM from consideration at summary judgment or trial.

LAWRENCE G. WASDEN
ATTORNEY GENERAL

STEVEN L. OLSEN, ISB #3586
W. SCOTT ZANZIG, ISB #9361
DAYTON P. REED, ISB #10775
Deputy Attorneys General
954 W Jefferson, 2nd Floor
P. O. Box 83720

Boise, ID 83720-0010

Telephone: (208) 334-2400

Facsimile: (208) 854-8073
steven.olsen@ag.idaho.gov
scott.zanzig@ag.idaho.gov
dayton.reed@ag.idaho.gov

Attorneys for Defendants

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF IDAHO

LINDSAY HECOX, and JANE DOE with her next friends JEAN DOE and JOHN DOE,

Plaintiffs,

v. Case No. 1:20-cv-00184-DCN

BRADLEY LITTLE, in his official capacity as Governor of the State of Idaho, *et al.*,

Defendants.

EXPERT DECLARATION OF GREGORY A. BROWN, Ph.D. FACSM

I, Dr. Gregory A. Brown, declare as follows:

Qualifications

1. I serve as Professor of Exercise Science in the Department of Kinesiology and Sport Sciences at the University of Nebraska Kearney. I have served as a tenured (and non-tenured) professor at universities since 2002.

2. I teach classes in Exercise Physiology and in Research Methods. I have previously taught courses in Human Anatomy & Physiology and in Sports Nutrition.

3. In August 2002, I received a Doctor of Philosophy degree from Iowa State University, where I majored in Health and Human Performance, with an emphasis in the Biological Bases of Physical Activity. In May 1999, I received a Master of Science degree from Iowa State University, where I majored in Exercise and Sport Science, with an emphasis in Exercise Physiology.

4. I have received many awards over the years, including the Mortar Board Faculty Excellence Honors Award, College of Education Outstanding Scholarship / Research Award, and the College of Education Award for Faculty Mentoring of Undergraduate Student Research.

5. I have authored more than 40 refereed publications and more than 50 refereed presentations in the field of Exercise Science. And I have served as a peer reviewer for over 25 professional journals, including The American Journal of Physiology, the International Journal of Exercise Science, the Journal of Strength and

Conditioning Research, and The Journal of Applied Physiology.

6. My areas of research have included the endocrine response to testosterone prohormone supplements in men and women, the effects of testosterone prohormone supplements on health and the adaptations to strength training in men, the effects of energy drinks on the physiological response to exercise, and assessment of various athletic training modes in males and females. Articles that I have published that are closely related to topics that I discuss in this declaration, and to articles by other researchers that I cite and discuss in this declaration, include:

a. Studies of the effect of ingestion of a testosterone precursor on circulating testosterone levels in young men. Douglas S. King, Rick L. Sharp, Matthew D. Vukovich, Gregory A. Brown, et al., *Effect of Oral Androstenedione on Serum Testosterone and Adaptations to Resistance Training in Young Men: A Randomized Controlled Trial*, JAMA 281: 2020-2028 (1999); G. A. Brown, M. A. Vukovich, et al., *Effects of Anabolic Precursors on Serum Testosterone Concentrations and Adaptations to Resistance Training in Young Men*, INT J SPORT NUTR EXERC METAB 10: 340-359 (2000).

b. A study of the effect of ingestion of that same testosterone precursor on circulating testosterone levels in young women. G. A. Brown, J. C. Dewey, et al., *Changes in Serum Testosterone and Estradiol Concentrations Following Acute Androstenedione Ingestion in Young Women*, HORM METAB RES 36: 62-66 (2004).

c. A study finding (among other things) that body height, body mass, vertical jump height, maximal oxygen consumption, and leg press maximal strength were higher

in a group of physically active men than comparably active women, while the women had higher percent body fat. G. A. Brown, Michael W. Ray, et al., *Oxygen Consumption, Heart Rate, and Blood Lactate Responses to an Acute Bout of Plyometric Depth Jumps in College-Aged Men And Women*, J. STRENGTH COND RES 24: 2475-2482 (2010).

d. A study finding (among other things) that height, body mass, and maximal oxygen consumption were higher in a group of male NCAA Division 2 distance runners, while women NCAA Division 2 distance runners had higher percent body fat. Furthermore, these male athletes had a faster mean competitive running speed (~3.44 min/km) than women (~3.88 km/min), even though the men ran 10 km while the women ran 6 km. Katherine Semin, Alvah C. Stahlnecker, Kate A. Heelan, G. A. Brown, et al, *Discrepancy Between Training, Competition and Laboratory Measures of Maximum Heart Rate in NCAA Division 2 Distance Runners*, JOURNAL OF SPORTS SCIENCE AND MEDICINE 7: 455-460 (2008).

7. I attach a copy of my current Professional Vita, which lists my education, appointments, publications, research, and other professional experience. I am also currently providing expert information on a case similar to this one in the state of Connecticut.

8. I have been asked by counsel for defendants in the matter of *Hecox et al. v. Little et al.* to offer my opinions about whether males have inherent advantages in athletic performance over females, and if so the scale and physiological basis of those advantages, to the extent currently understood by science. I have also been asked to offer my opinion as to whether the sex-based performance advantage enjoyed by males is eliminated if feminizing

hormones are administered to male athletes who identify as transgender.

9. The opinions in this declaration are my own, and do not necessarily reflect the opinions of my employer, the University of Nebraska.

10. I have been compensated for my time spent in preparing this declaration at the rate of $150 per hour, and may be further compensated for time spent in subsequent testimony in this action.

Overview

11. Based on my professional familiarity with exercise physiology and my review of the currently available science, including that contained in the sources I cite in this declaration, and the competition results and records presented here, I offer three primary professional opinions:

a. At the level of elite, college, high school, and recreational competition, men or boys have an advantage over comparably aged women or girls, in almost all athletic contests;

b. Biological male physiology and anatomy is the basis for the performance advantage that men or boys have over women or girls, in almost all athletic contests; and

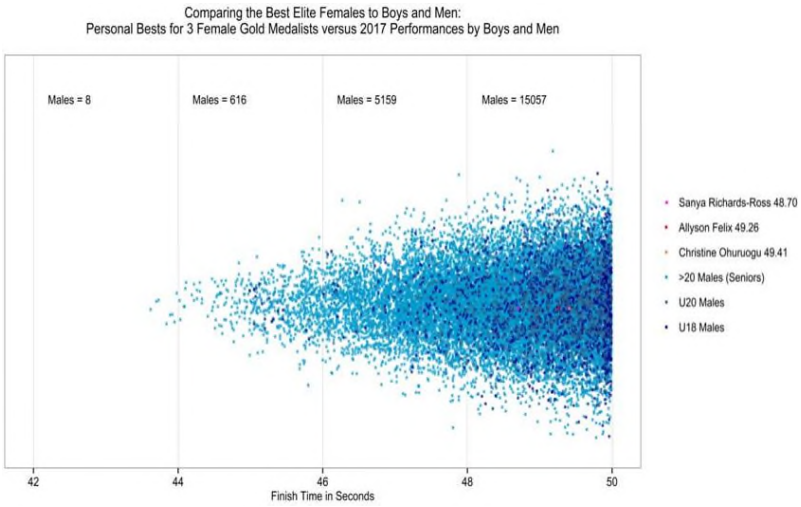
c. Administration of androgen inhibitors and cross-sex hormones to men, or adolescent boys, after male puberty, and administration of testosterone to women or adolescent girls, after female puberty, does not eliminate the performance advantage of men or adolescent boys over women or adolescent girls in almost all athletic contests.

In this declaration, I also provide supporting details, facts, and opinions relating to each of these primary opinions . Each of these opinions is based on my general professional expertise and experience, as well as on particular academic articles, and the competition results and records, that I refer to herein.

12. In short summary, men, and adolescent boys, perform better in almost all sports than women, and adolescent girls, because of their inherent physiological advantages that develop during male puberty. In general, men, and adolescent boys, can run faster, output more physical power, jump higher, and exercise greater physical endurance than women, and adolescent girls.

13. Indeed, while after the onset of puberty males are on average taller and heavier than females, a male performance advantage over females has been measured in weightlifting competitions even between males and females matched for body mass.

14. These performance advantages are also very substantial, such that large numbers of men and even adolescent boys are able to outperform the very top-performing women. To illustrate, Doriane Coleman, Jeff Wald, Wickliffe Shreve, and Richard Clark created the figure below (last accessed on Monday, December 23, 2019 at https://bit.ly/35yOyS4), which shows that the *lifetime best performances* of three female Olympic champions in the 400m event— including Team USA's Sanya Richards-Ross and Allyson Felix—would not match the performances of literally thousands of boys and men, *just in 2017 alone*, including many who would not be considered top tier male performers:



15. Coleman and Shreve also created the table below (last accessed on Monday, December 23, 2019 at https://bit.ly/37E1s2X), which "compares the number of boys—males under the age of 18—whose results in each event in 2017 would rank them above the single very best elite [adult] woman that year:"

TABLE 1 – World's Best Woman v. Under 18 Boys

Event	Best Women's Result	Best Boys' Result	# of Boys Outperforming
100 Meters	10.71	10.15	124+
200 Meters	21.77	20.51	182
400 Meters	49.46	45.38	285
800 Meters	1:55.16*	1:46.3	201+
1500 Meters	3:56.14	3:37.43	101+
3000 Meters	8:23.14	7:38.90	30
5000 Meters	14:18.37	12:55.58	15
High Jump	2.06 meters	2.25 meters	28
Pole Vault	4.91 meters	5.31 meters	10
Long Jump	7.13 meters	7.88 meters	74
Triple Jump	14.96 meters	17.30 meters	47

16. Coleman and Shreve also created the table below (last accessed on Monday, December 23, 2019 at https://bit.ly/37E1s2X), which compares the number of men—males over 18—whose results in each event in 2017

would have ranked them above the very best elite woman that year.

TABLE 2 – World's Best Woman v. Number of Men Outperforming			
Event	Best Women's Result	Best Men's Result	# of Men Outperforming
100 Meters	10.71	9.69	2,474
200 Meters	21.77	19.77	2,920
400 Meters	49.46	43.62	4,341
800 Meters	1:55.16*	1:43.10	3,992+
1500 Meters	3:56.14	3:28.80	3,216+
3000 Meters	8:23.14	7:28.73	1307+
5000 Meters	14:18.37	12:55.23	1,243
High Jump	2.06 meters	2.40 meters	777
Pole Vault	4.91 meters	6.00 meters	684
Long Jump	7.13 meters	8.65 meters	1,652
Triple Jump	14.96 meters	18.11 meters	969

17. These advantages result, in large part (but not exclusively), from higher testosterone concentrations in men, and adolescent boys, after the onset of male puberty. Higher testosterone levels cause men, and adolescent boys, to develop more muscle mass, greater muscle strength, less body fat, higher bone mineral density, greater bone strength, higher hemoglobin concentrations, larger hearts and larger coronary blood vessels, and larger overall statures than women, and adolescent girls. In addition, maximal oxygen consumption (VO2max), which correlates to ~30-40% of success in endurance sports, is higher in both elite and average men and boys than in comparable women and girls when measured in regards to absolute volume of oxygen consumed and when measured relative to body mass. Testosterone is also associated with increased aggressiveness, which may offer competitive advantages for men over women.

18. Although androgen deprivation may modestly decrease some physiological advantages that men and adolescent boys have over women and adolescent girls, it cannot fully eliminate those physiological advantages once an individual has passed through male puberty. For example, androgen deprivation does not reduce bone size,

does not alter bone structure, and does not decrease lung volume or heart size. Nor does androgen deprivation in adult men completely reverse the increased muscle mass acquired during male puberty.

19. In this declaration, I present, in the headings marked with Roman numerals, certain of my opinions about sex-based differences in human physiology and the impact of those differences on the athletic performance of men and women. For each of these opinions, I then provide a brief overview, and a non-exhaustive summary of studies published in science journals or other respected sources that support and provide in part the basis of my opinion, also quoting relevant findings of each article.

20. In particular, in addition to the article by Coleman and Schreve that I discuss above, I cite twenty-two articles published in scientific journals. I provide capsule summaries of those articles below. These studies form part of the basis of the opinions I set forth in this declaration, which are also informed by my general professional expertise and experience. In support of the opinions I offer, I expect to explain and testify concerning the findings and conclusions of these articles that I detail in this declaration. I expect to use any or all of the tables and charts that I have reproduced in this declaration, as well as any other tables or charts contained in the articles I reference, to present and explain my opinions to the court.

a. The first resource I cite is David J. Handelsman, Angelica L. Hirschberg, et al., *Circulating Testosterone as the Hormonal Basis of Sex Differences in Athletic Performance*, 39:5 ENDOCRINE REVIEWS 803 (2018). This article correlates data about performance differences between males and females with data from over 15

liquid chromatography-mass spectrometry studies of circulating testosterone in adults, as a function of age. The authors conclude, among other things, that "[f]rom male puberty onward, the sex difference in athletic performance emerges as circulating concentrations rise as the testes produce 30 times more testosterone than before puberty, resulting in men having 15- to 20-fold greater circulating testosterone than children or women at any age." (804)

b. The second resource I cite is Valerie Thibault, Marion Guillaume, et al., *Women & Men in Sport Performance: The Gender Gap Has Not Evolved Since 1983*, 9 J. OF SPORTS SCIENCE & MEDICINE 214 (2010). This article analyzes results from 82 athletic events since the beginning of the modern Olympic era, and concludes in part that while a wide sex-based performance gap existed before 1983, due to a likely combination of physiological and non-physiological reasons, the sex-based performance gap stabilized in 1983, at a mean difference of 10.0 % ± 2.94 between men and women for all events. (214)

c. The third resource I cite is Beat Knechtle, Pantelis T. Nikolaidis, et al., *World Single Age Records in Running from 5 km to Marathon*, 9 FRONTIERS IN PSYCHOLOGY 1 (2013). This article analyzes results from a study of the relationship between performance and age in races of several lengths, and reports in part that "[i]n all races [studied], women were significantly slower than men." (7)

d. The fourth resource I cite is Romuald Lepers, Beat Knechtle, et al., *Trends in Triathlon Performance: Effects of Sex & Age*, 43 SPORTS MED 851 (2013).

This article analyzes results from various triathlon events over the course of about 15 years, and reports in part a sex-based performance gap between the sexes of no less than 10% in every component event, with this sex-based performance gap increasing with age.

e. The fifth resource I cite is Espen Tønnessen, Ida Siobhan Svendsen, et al., *Performance Development in Adolescent Track & Field Athletes According to Age, Sex, and Sport Discipline*, 10:6 PLOS ONE 1 (2015). This article analyzes the 100 all-time best Norwegian male and female track and field results (in persons aged 11 to 18) from the 60m and 800m races, and the long jump and high jump events. The results show that sex-specific differences that arise during puberty significantly affect event results, with males regularly outperforming females after age 12.

f. The sixth resource I cite is David J. Handelsman, *Sex Differences in Athletic Performance Emerge Coinciding with the Onset of Male Puberty*, 87 CLINICAL ENDOCRINOLOGY 68 (2017). This article analyzes results from a secondary quantitative analysis of four published sources that report performance measures in swimming meets, track and field events, and hand-grip strength. The results show in part that the onset and tempo of sex-based performance divergence were very similar for all performance measures, and that this divergence closely paralleled the rise of circulating testosterone in adolescent boys.

g. The seventh article I cite is Moran Gershoni & Shmuel Pietrokovski, *The landscape of sex-differential transcriptome and its consequent*

selection in human adults, 15 BMC BIOL 7 (2017). This article details the results of an evaluation of the differences in genetic expression between men and women. The results show that in humans, out of 18,670 protein coding genes that were evaluated, over 6,500 are differentially expressed based on the sex of the person. The main relevance of this article to the case at hand is to help illustrate that the differences between males and females cannot be eliminated by reducing testosterone and increasing estrogen concentrations in a biological male.

h. The eighth article I cite is K. M. Haizlip, et al., *Sex-based differences in skeletal muscle kinetics and fiber-type composition*, 30 PHYSIOLOGY (BETHESDA) 30 (2015). This is a review article summarizing the findings of 56 other articles evaluating the differential expression of genes in skeletal muscles in males and females and how these differences in gene expression influence (among many things) muscle mass, muscle fiber type, and muscle function. The main relevance of this article to the case at hand is to help illustrate that the current scientific evidence indicates that the genetic differences in skeletal muscle size and function between males and females that give males an athletic performance advantage cannot be eliminated by reducing testosterone and increasing estrogen concentrations in a biological male.

i. The ninth, tenth, and eleventh resources I cite are Konstantinos D. Tambalis, et al., *Physical fitness normative values for 6-18-year-old Greek boys and girls, using the empirical distribution and the lambda, mu, and sigma statistical method*, 16 EUR J SPORT SCI 736 (2016). Mark J. Catley &

G. R. Tomkinson, *Normative health-related fitness values for children: analysis of 85347 test results on 9-17-year-old Australians since 1985*, 47 BR J SPORTS MED 98 (2013).Grant R. Tomkinson, et al., *European normative values for physical fitness in children and adolescents aged 9-17 years: results from 2 779 165 Eurofit performances representing 30 countries*, 52 BR J SPORTS MED 1445 (2018). Individually and combined these articles illustrate that boys as young as six years old perform better than comparable age matched girls in health related measures of physical fitness including strength, speed, endurance, and jumping ability. These advantages in health related measures of fitness translate to improved athletic performance in boys when compared to girls likely before and certainly during and after puberty.

j. The twelfth and thirteenth resources I cite are Daniel M. Fessler, et al., *Sexual dimorphism in foot length proportionate to stature*, 32 ANN HUM BIOL 44 (2005). Roshna E. Wunderlich & P. R. Cavanagh, *Gender differences in adult foot shape: implications for shoe design*, 33 MED SCI SPORTS EXERC 605 (2001). These articles evaluate and describe the differences in the feet of men and women, particularly noting that the differences between the sexes are not just a matter of stature but also include morphological traits that can influence runner performance.

k. The fourteenth, fifteenth, and sixteenth resources I cite are Daichi Tomita, et al., *A pilot study on the importance of forefoot bone length in male 400-m sprinters: is there a key morphological factor for superior long sprint performance?,* 11 BMC RES

NOTES 583 (2018). Hiromasa Ueno, et al., *The Potential Relationship Between Leg Bone Length and Running Performance in Well-Trained Endurance Runners*, 70 J HUM KINET 165 (2019). Hiromasa Ueno, et al., *Association between Forefoot Bone Length and Performance in Male Endurance Runners*, 39 INT J SPORTS MED 275 (2018). Building upon the information from Fessler (2005) and Wunderlich (2001), these studies collectively illustrate that the length of the bones in the foot and lower leg can contribute to successful competitive running performance, which likely gives men a performance advantage over women in running due to the differences in lower limb sizes described by Fessler et al. (2005) and Wunderlich and Cavanaugh (2001).

l. The seventeenth resource I cite is Louis Gooren, *The Significance of Testosterone for Fair Participation of the Female Sex in Competitive Sports*, 13 ASIAN J. OF ANDROLOGY 653 (2011). This article highlights specific research that indicates pubertal testosterone increases result in significant physiological advantages for men and adolescent boys, compared to women and adolescent girls, after the onset of male puberty.

m. The eighteenth resource I cite is Taryn Knox, Lynley C. Anderson, et al., *Transwomen in Elite Sport: Scientific & Ethical Considerations*, 45 J. MED ETHICS 395 (2019). This article confirms from available science that higher testosterone levels provide an all-purpose benefit in sport, and that the current International Olympic Guidelines rule requiring males who identify as transgender to keep testosterone levels under 10 nmol/L for one

year does not eliminate (or even come close to eliminating) the performance advantage of their male physiology.

n. The nineteenth resource I cite is Louis J. G. Gooren & Mathijs C. M. Bunck, *Transsexuals & Competitive Sports*, 151 EUROPEAN J. OF ENDOCRINOLOGY 425 (2004). This article analyzes results from a study that compared pretreatment physiological measurements in 17 female-to-male transsexuals with the measurements after one year of cross-sexual treatment in 19 male-to-female transsexuals undergoing sex reassignment therapy. The results in part confirmed that androgen deprivation in male-to-female transsexuals decreases muscle mass to some extent but does not eliminate the male muscular advantage and does not reverse certain other effects of androgenization that had occurred during male puberty.

o. The twentieth resource I cite is Anna Wiik et al., *Muscle Strength, Size, and Composition Following 12 Months of Gender-affirming Treatment in Transgender Individuals*, J. CLIN. METAB., 105(3):e805-e813 (2020). This article analyzes the impact of (a) suppression of endogenous hormones and (b) hormone replacement therapy on metrics of transgender individuals including strength, muscle size, and radiological density. After 12 months, strength in male-to-female subjects did not decrease, and muscle volume remained higher in male-to-female subjects than in female-to-male subjects after the latter subjects had undergone 12 months of testosterone injections.

p. The twenty-first resource I cite is Miranda Scharff et al., *Change in Grip Strength in Trans People and Its Association with Lean Body Mass and Bone Density,* ENDOCRINE CONNECTIONS (2019) 8, 1020-1028. This article measured grip strength and multiple parameters of lean body mass and bone density in both male-to-female and female-to-male populations across their first year of hormone therapy. After 12 months, "the median grip strength in [male-to-female] subjects still [fell] into the 95th percentile for age-matched females."

q. The twenty-second resource I cite is Johanna Harper. *Race Times for Transgender Athletes.* J Sporting Cultures and Identities 6 (2019) 1. This article is oft cited as evidence supporting a lack of performance advantage for male-to-female transgender athletes. Herein I provide a critique of the methodological shortcomings of this study for the purpose of demonstrating the extreme lack of scientific validity or reliability of the results.

21. I explain my opinions and the results of these studies in more detail below.

Opinions

I. Biological men or boys have an advantage over women or girls, in almost all athletic contests.

22. As one team of researchers has recently written, "Virtually all elite sports are segregated into male and female competitions. The main justification is to allow women a chance to win, as women have major disadvantages against men who are, on average, taller, stronger, and faster and have greater endurance due to their larger, stronger, muscles and bones as well as a

higher circulating hemoglobin level." David J. Handelsman, Angelic L. Hirschberg, et al., *Circulating Testosterone as the Hormonal Basis of Sex Differences in Athletic Performance*, 39:5 ENDOCRINE REVIEWS 803 (2018).

23. In fact, biological men, and adolescent boys, substantially outperform comparably aged women, and adolescent girls, in competitions involving running speed, swimming speed, cycling speed, jumping height, jumping distance, and strength (to name a few, but not all, of the performance differences). These performance advantages for men, and adolescent boys, are inherent to the biological differences between the sexes and are not due to social or cultural factors, as evidenced by minimal to no change in the percentage differences between males and females in world class and record setting performances in the past 40 years. In addition, a number of studies indicate that males' athletic advantages over females begin before puberty, and may be apparent as early as six years of age.

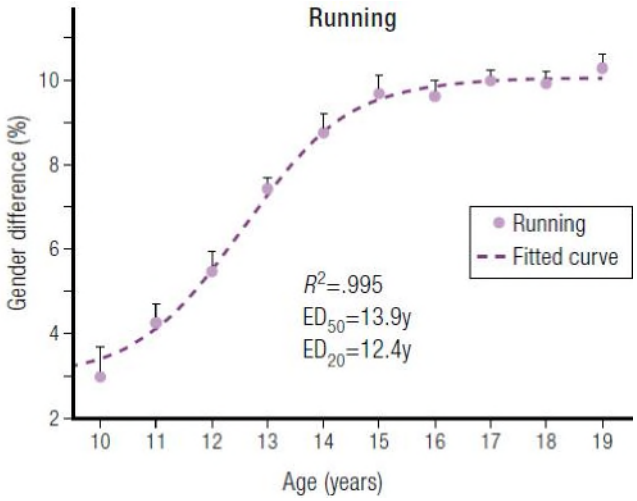
24. I highlight below key findings about male performance advantages from eighteen studies or datasets.

A. David J. Handelsman, Angelica L. Hirschberg, et al., Circulating Testosterone as the Hormonal Basis of Sex Differences in Athletic Performance, 39:5 ENDOCRINE REVIEWS 803 (2018):

25. The Handelsman et al. (2018) authors demonstrate a consistent pattern of divergence of athletic performance, in favor of males, across the years of puberty and strongly correlating to increasing testosterone levels in adolescent males. The pattern is observed in events exercising a variety of muscle systems. In sum, the Handelsman et al.

(2018) authors report: "Corresponding to the endogenous circulating testosterone increasing in males after puberty to 15 to 20 nmol/L (sharply diverging from the circulating levels that remain <2 nmol/L in females), male athletic performances go from being equal on average to those of age-matched females to 10% to 20% better in running and swimming events, and 20% better in jumping events." (812)

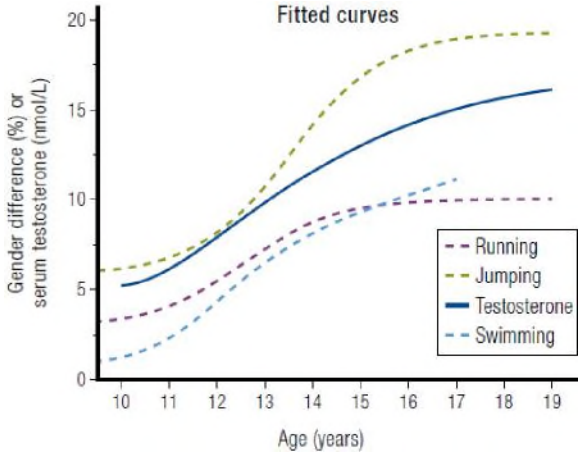
26. Taken from Handelsman's Figure 1, the chart below indicates "sex differences in performance (in percentage) according to age (in years) in running events, including 50m to 2 miles." (813)



27. Taken from Handelsman's Figure 1, the chart below indicates "sex differences in performance (in percentage) according to age (in years) ... in jumping events, including high jump, pole vault, triple jump, long jump, and standing jump." (813)

28. Taken from Handelsman's Figure 1, the chart below indicates "a fitted sigmoidal curve plot of sex

differences in performance (in percentage) according to age (in years) in running, jumping, and swimming events, as well as the rising serum testosterone concentrations from a large dataset of serum testosterone of males. Note that in the same dataset, female serum testosterone concentrations did not change over those ages, remaining the same as in prepubertal boys and girls. Data are shown as mean and SEM of the pooled sex differences by age." (813)



29. These authors also note the significance, for athletic competition, of the subjective nature of "gender identity" in current understanding: "Prompted by biological, personal, and societal factors, volitional expression of gender can take on virtually any form limited only by the imagination, with some individuals asserting they have not just a single natal gender but two genders, none, a distinct third gender, or gender that varies (fluidly) from time to time...." For this reason, the authors conclude: "[I]f gender identity were the basis for eligibility for female sports, an athlete could conceivably be eligible to compete at the same Olympics in both female and male events. These features render the

unassailable personal assertion of gender identity incapable of forming a fair, consistent sex classification in elite sports." (804)

B. Valérie Thibault, Marion Guillaume, et al., *Women & Men in Sport Performance: The Gender Gap has not Evolved Since 1983,* 9 J. OF SPORTS SCIENCE & MEDICINE 214 (2010):

30. The Thibault et al. (2010) authors note that there was a large but narrowing sex-based performance gap between men's and women's Olympic athletic performances before 1983, which could hypothetically be attributed to a combination of social, political, or other non-physiological reasons, in addition to physiological reasons. However, "the gender gap in Olympic sport performance has been stable since 1983" (219) "at a mean difference of 10.0% ± 2.94 between men and women for all [Olympic] events." (222)

31. Since then, even when performances improve, the "progressions are proportional for each gender." (219-20)

32. The results of this study "suggest that women's performances at the high level will never match those of men" (219) and that "women will not run, jump, swim or ride as fast as men." (222) The authors conclude that this gap, now stable for 30+ years, is likely attributable to physiology, and thus that "[s]ex is a major factor influencing best performances and world records." (222)

33. Breaking these performance advantages out by event, the authors report the following sex-based performance gaps in Olympic sport competitions since 1983:

a. "The gender gap ranges from 5.5% (800-m freestyle, swimming) to 36.8% (weightlifting)." (222)

b. Olympic world records in running events indicate that men perform "10.7% (± 1.85)" better than women since gender gap stabilization. (217)

c. Olympic world records in jumping events indicate that men perform "17.5% (± 1.11)" better than women since gender gap stabilization. (217)

d. Olympic world records in swimming events indicate that men perform "8.9 % (± 1.54)" better than women since gender gap stabilization. (218)

e. Olympic world records in cycling sprint events indicate that men perform "6.95% (± 0.16)" better than women since gender gap stabilization. (219)

f. Olympic world records in weightlifting events indicate that men perform "36.8% (± 6.2)" better than women since gender gap stabilization. Note that the Olympics first introduced women's weightlifting events in 1998, and "no breakpoint date has been detected yet." (219)

34. "The top ten performers' analysis reveals a similar gender gap trend with a stabilization in 1982 at 11.7%" when averaged across all events. (222)

C. Beat Knechtle, Pantelis T. Nikolaidis, et al., *World Single Age Records in Running from 5 km to Marathon*, 9 FRONTIERS IN PSYCHOLOGY 1 (2013):

35. A comparison of performances in races of a variety of distances showed that "[i]n all races, women were significantly slower than men. The estimated sex

differences ... were increasing" as race distances increased from 8 km.[1]

D. Romuald Lepers, Beat Knechtle, et al., *Trends in Triathlon Performance: Effects of Sex & Age*, 43 SPORTS MED 851 (2013):

36. Based on data from a variety of elite triathlon and ultra-triathlon events spanning 22 years, the Lepers et al. (2013) authors reported that "elite males appear to run approximately 10–12 % faster than elite females across all endurance running race distances up to marathon, with the sex difference narrowing as the race distance increases. However, at distances greater than 100 km, such as the 161-km ultramarathon, the difference seems even larger, with females 20–30 % slower than males." (853)

37. Lepers and Knechtle Table 1 below shows the "[m]ean sex differences in time performance for swimming, cycling, running and total time at different national and international triathlons." (854)

[1] Throughout this declaration, in the interest of readability I have omitted internal citations from my quotations from the articles I cite. The sources cited by these authors may of course be found by reference to those articles.

Event	Sex difference in time performance (%)			
	Swim	Cycle	Run	Total
Short distance (1.5–40–10 km): [30, 79]				
Zurich (Switzerland) from 2000 to 2010				
Top five elite overall	15.2	13.4	17.1	14.8
Top five AG, from 18 to 54 years	18.5	15.5	18.5	17.1
World Championship from 2009 to 2011				
Top ten AG, from 18 to 64 years	13.3	10.7	7.5	12.0
Half Ironman (1.9–90–21 km): [31, 79]				
Rapperswil (Switzerland) from 2007 to 2010				
Top five elite overall	14.1	12.3	12.5	12.6
Top five AG, from 18 to 54 years	22.3	16.4	19.2	17.6
World Championship from 2009 to 2011				
Top ten AG, from 18 to 64 years	12.4	11.2	14.5	12.6
Off-road triathlon (1.5–30–10 km): [9]				
World championship (Maui, USA) from 2007 to 2009				
Top ten elite overall	12.4	19.6	18.4	18.2
Ironman (3.8–180–42 km): [2, 32, 34]				
World championship (Kona, Hawaii, USA) from 1988 to 2007				
Top ten elite overall	9.8	12.7	13.3	12.6
Top ten AG, from 18 to 64 years	12.1	15.4	18.2	15.8
Zurich (Switzerland) from 1995 to 2010				
Top ten elite overall	14.0	13.2	18.2	14.9

38. "[F]or ultratriathlons, it has been shown that with increasing length of the event, the best females became relatively slower compared with the best males. Indeed, if the world's best performances are considered, males were 19 % faster than the females in both Double and Triple Ironman distance, and 30 % faster in the Deca-Ironman distance." (854)

39. "The average sex difference in swimming performance during triathlon for race distances between 1.5 and 3.8 km ranged between approximately 10 and 15 % for elite triathletes." (854)

40. Lepers and Knechtle Table 2 below shows the "[m]ean percentage differences in times for swimming, cycling, running and total event between the top ten

females and males ... in 2012 at four international triathlons:" (855)

Event	Sex difference in performance in top ten athletes in 2012 (mean ± SD)			
	Swim	Cycle	Run	Total
Hawaii Ironman Triathlon (3.8–180–42 km)	14.1 ± 7.9	13.1 ± 2.3	7.3 ± 2.9	11.3 ± 0.5
Olympics Triathlon (1.5–40–10 km) with drafting	11.8 ± 2.0	11.3 ± 0.6	14.7 ± 0.8	14.1 ± 7.9
Hy-Vee Triathlon (1.5–40–10 km) without drafting	8.6 ± 4.8	10.2 ± 3.5	8.6 ± 4.4	9.3 ± 0.5
World Championship Off-Road Triathlon (1.5–30–10 km)	15.2 ± 15.5	22.6 ± 4.4	15.1 ± 6.7	17.3 ± 2.9

41. "[T]he sex difference in performance between the best male and female ultraswimmers is more generally close to 11–12 %, which corresponds to values observed for swimming in triathlon." (855)

42. "Sex differences in triathlon cycling vary from 12 to 16% according to the level of expertise of participating triathletes for road-based triathlons." (855)

43. "In track cycling, where females are generally weaker than males in terms of power/weight ratios, the performance gap between males and females appears to be constant (<11 %) and independent of the race distance from 200 to 1,000 m." (855)

44. "In ultra-cycling events, such as the 'Race Across America,' sex difference in performance was around 15 % among top competitors. Greater muscle mass and aerobic capacity in males, even expressed relative to the lean body mass, may represent an advantage during long-distance cycling, especially on a relatively flat course such as Ironman cycling, where cycling approximates to a non-weight-bearing sport. Indeed, it has been shown that absolute power output (which is greater for males than for females) is associated with successful cycling endurance performance because the primary force inhibiting forward motion on a flat course is air resistance." (855-56)

45. "Interestingly, for elite triathletes, the sex difference in mountain bike cycling during off-road triathlon (<20 %) is greater than cycling sex differences in conventional road-based events. Mountain biking differs in many ways from road cycling. Factors other than aerobic power and capacity, such as off-road cycling economy, anaerobic power and capacity, and technical ability might influence off-road cycling performance. Bouts of high-intensity exercise frequently encountered during the mountain biking leg of off-road triathlon (lasting <1 h 30 min for elite males and <2 h for elite females) can result from (1) having to overcome the constraints of gravity associated with steep climbs, (2) variable terrain necessitating wider tires and thus greater rolling resistance, and (3) isometric muscle contractions associated with the needs of more skilled bike-handling skills, not so often encountered in road cycling. However, in particular, lower power-to-weight ratios for female than for male triathletes inevitably leave them at a disadvantage during steep climbs." (856)

46. "During the 1988–2007 period, the top ten elite males have run the Hawaii Ironman marathon on average 13.3 % faster than the top ten females." (856)

E. Espen Tønnessen, Ida Siobhan Svendsen, et al., *Performance Development in Adolescent Track & Field Athletes According to Age, Sex & Sport Discipline*, 10:6 PLOS ONE 1 (2015):

47. While both sexes increase performance across the teen years, the Tønnessen et al. (2015) authors found performance advantages for male athletes associated with the onset of puberty and becoming increasingly larger across the years of puberty, in a chronological progression that was closely similar across diverse track and field events.

48. "The current results indicate that the sex difference evolves from < 5% to 10–18% in all the analyzed disciplines from age 11 to 18 yr. The gap widens considerably during early adolescence before gradually stabilizing when approaching the age of 18. This evolution is practically identical for the running and jumping disciplines. The observed sex differences at the age of 18 are in line with previous studies of world-class athletes where a sex difference of 10– 12% for running events and ~19% for jumping events has been reported." (8)

49. "Male and female athletes perform almost equally in running and jumping events up to the age of 12. Beyond this age, males outperform females. Relative annual performance development in females gradually decreases throughout the analyzed age period. In males, annual relative performance development accelerates up to the age of 13 (for running events) or 14 (for jumping events) and then gradually declines when approaching 18 years of age. The relative improvement from age 11 to 18 was twice as high in jumping events compared to running events. For all of the analyzed disciplines, overall improvement rates were >50% higher for males than for females. The performance sex difference evolves from < 5% to 10-18% in all the analyzed disciplines from age 11 to 18 yr." (1)

50. "Recent studies of world-class athletes indicate that the sex difference is 10–12% for running events and ~19% for jumping events." (2)

51. Tønnessen and Svendsen's Table 1 below shows the "[e]xpected progressions in running and jumping performance for 11-18 [year] old males and females," as deduced from "[t]he 100 all-time best Norwegian male and female 60-m, 800-m, long jump and high jump athletes in each age category . . . ." (1, 4)

Table 1. Expected progressions in running and jumping performance for 11–18 yr old males and females.

Age (yr)	60 m		800 m		Long Jump		High Jump	
	Boys Progression (s and %)	Girls Progression (s and %)	Boys Progression (s and %)	Girls Progression (s and %)	Boys Progression m (%)	Girls Progression m (%)	Boys Progression m (%)	Girls Progression m (%)
11–12	-0.35 (4.1)	-0.35 (4.0)	-6.4 (4.4)	-7.3 (4.8)	+0.35 (7.4)	+0.36 (7.9)	+0.11 (7.4)	+0.10 (7.2)
12–13	-0.48 (5.8)	-0.25 (2.9)	-8.7 (6.2)	-5.5 (3.8)	+0.43 (8.6)	+0.30 (6.0)	+0.12 (7.9)	+0.09 (6.3)
13–14	-0.29 (3.7)	-0.16 (2.0)	-5.9 (4.5)	-3.6 (2.6)	+0.50 (9.0)	+0.21 (4.1)	+0.13 (8.1)	+0.06 (3.6)
14–15	-0.10 (1.3)	-0.02 (0.2)	-5.2 (4.1)	-2.2 (1.6)	+0.34 (5.6)	+0.13 (2.4)	+0.08 (4.3)	+0.04 (2.4)
15–16	-0.17 (2.3)	-0.08 (1.0)	-3.2 (2.7)	-1.6 (1.2)	+0.28 (4.4)	+0.10 (1.8)	+0.07 (3.6)	+0.03 (1.8)
16–17	-0.10 (1.4)	-0.07 (0.8)	-2.3 (1.9)	-1.5 (1.2)	+0.19 (2.9)	+0.06 (1.1)	+0.05 (2.5)	+0.01 (0.6)
17–18	-0.05 (0.7)	-0.02 (0.2)	-1.5 (1.4)	-0.6 (0.4)	+0.17 (2.5)	+0.02 (0.4)	+0.04 (1.9)	+0.01 (0.5)

Data are mean (standard deviation) for top 100 Norwegian male and female performers in each discipline.

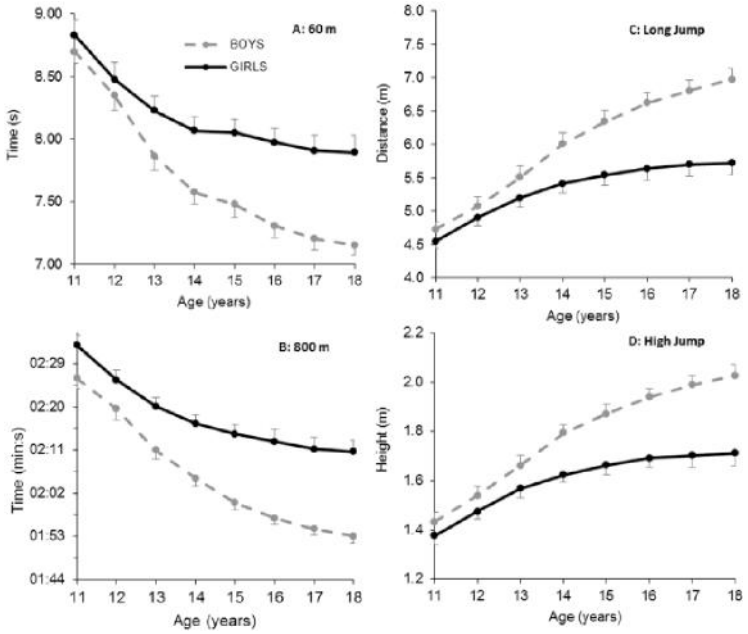
52. Tønnessen and Svendsen's Table 2 below shows the "[s]ex ratio in running and jumping performance for 11-18 [year] old males and females," as deduced from "[t]he 100 all-time best Norwegian male and female 60-m, 800-m, long jump and high jump athletes in each age category . . . ." (1, 6)

Table 2. Sex ratio in running and jumping performance for 11–18 yr old males and females.

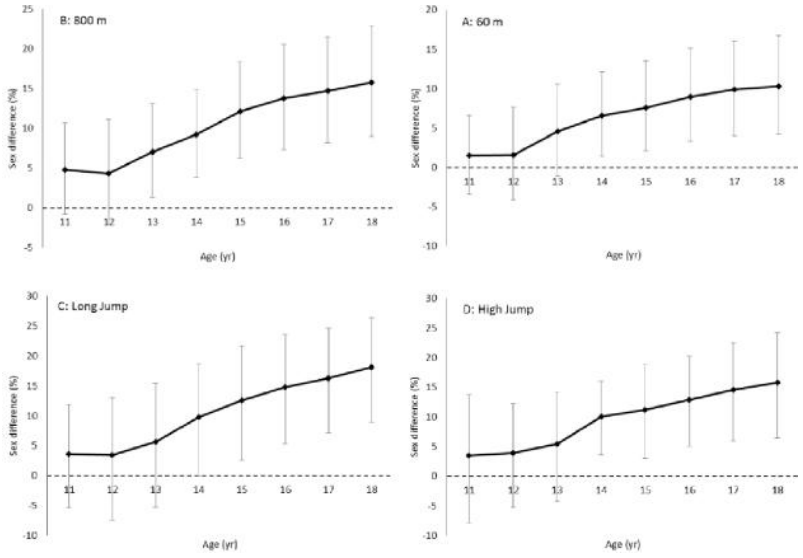
	60 m	800 m	Long Jump	High Jump
11	0.99	0.95	0.96	0.97
12	0.98	0.96	0.97	0.96
13	0.96	0.93	0.94	0.95
14	0.94	0.92	0.90	0.90
15	0.93	0.89	0.87	0.89
16	0.92	0.88	0.85	0.87
17	0.91	0.87	0.84	0.85
18	0.91	0.86	0.82	0.84

Data are calculated from mean results of top 100 Norwegian male and female performers in each discipline.

53. Tønnessen and Svendsen's Figure 1 below shows "[p]erformance development from age 11 to 18 in running and jumping disciplines. Data are mean ± [standard deviation] for 60 m, 600 m, long jump, and high jump for top 100 Norwegian male and female performers in each discipline:" (4)



54. Tønnessen and Svendsen's Figure 3 below shows the "[s]ex difference for performance in running and jumping disciplines from age 11 to 18. Data are mean and 95% [confidence intervals] for 60 m, 600 m, long jump, and high jump for top 100 Norwegian male and female performers in each discipline:" (6)



55. As for the 60m race, the tables and charts above illustrate:

a. "[B]oys improve 0.3–0.5 [seconds] over 60 m sprint each year up to the age of 14 [years] (very large to nearly perfect annual effect), 0.1–0.2 [seconds] annually from 14 to 17 [years] (moderate to large annual effect), and 0.05 [seconds] from age 17 to 18 [years] (moderate effect). Relative annual improvement peaks between 12 and 13 [years] (5.8%; nearly perfect effect), and then gradually declines to 0.7% between age 17 and 18 [years] (moderate effect)." (3)

b. "On average, boys improve their 60 m performance by 18% from age 11 to 18 [years]. Girls improve 0.35 [seconds] over 60 m from age 11 to 12 [years] (4%; very large effect). Then, absolute and relative annual improvement gradually slows and almost plateaus between age 14 and 15 (0.02 s; 0.2%; trivial effect). From age 15 to 17, annual improvement increases somewhat to 0.07–0.08 [seconds] (~1%;

> moderate effect) before plateauing again between age 17 and 18 (0.02 s; 0.2%; trivial effect). In total, girls improve their 60-m performance by 11% from age 11 to 18 [years].... [T]he sex difference for 60 m sprint evolves from 1.5% at age 11 to 10.3% at the age of 18.... [T]he sex ratio for 60 m running performance develops from 0.99 at age 11 to 0.91 at age 18." (4-5)

56. As for the 800m race, the tables and charts above illustrate:

a. "[B]oys improve 6–9 [seconds] over 800 m each year up to age 14 [years] (very large to nearly perfect annual effect). Relative annual improvement peaks between age 12 and 13 (6.2%; nearly perfect effect), then gradually decreases to 1.5 [seconds] between age 17 and 18 (1.4%; moderate effect)." (5)

b. "On average, boys enhance their 800-m performance by 23% from age 11 to 18. For girls, both absolute and relative annual performance development gradually decreases across the analysed age stages. The improvement is slightly above 7 [seconds] between age 11 and 12 [years] (4.8%: very large effect), decreasing to only 0.6 [seconds] from age 17 to 18 (0.4%; small effect).... [G]irls enhance their 800-m performance by 15% from age 11 to 18. The 800 m performance sex difference evolves from 4.8% at the age of 11 to 15.7% at the age of 18.... [T]he sex ratio for 800 m running performance develops from 0.95 at age 11 to 0.86 at age 18." (5)

57. As for the long jump, the tables and charts above illustrate:

a. "[A]nnual long jump improvement among boys gradually increases from 35 cm between age 11 and 12 [years] (7.4%; very large effect) to 50 cm between age 13 and 14 (9%; very large effect). Both absolute and relative annual development then gradually falls to 17 cm between age 17 and 18 (2.5%; moderate effect)." (5)

b. "[B]oys, on average, improve their long jump performance by 48% from age 11 to 18 yr. For girls, both absolute and relative annual performance enhancement gradually falls from age 11 to 12 [years] (36 cm; 7.9%; very large effect) until nearly plateauing between 17 and 18 [years] (2 cm; 0.4%; trivial effect). Overall, girls typically improve their long jump performance by 26% throughout the analysed age stages. The sex difference in long jump evolves from 3.6% at the age of 11 to 18% at the age of 18.... [T]he sex ratio for long jump performance develops from 0.96 at age 11 to 0.82 at age 18." (5)

58. As for high jump, the tables and charts above illustrate:

a. "[B]oys improve their high jump performance by 11–13 cm each year up to the age of 14 (7–8%; very large annual effects). Both absolute and relative annual improvement peaks between age 13 and 14 (13 cm; 8.1%; very large effect), then gradually decreases to 4cm from age 17 to 18 (1.9%; moderate annual effect." (6)

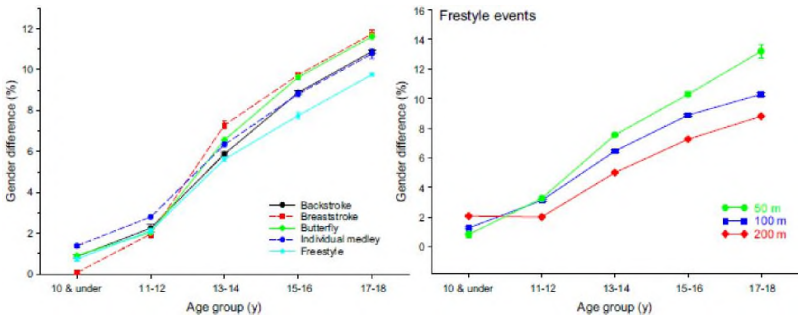
b. "Overall, boys improve their high jump performance by, on average, 41% from age 11 to 18. For girls, both absolute and relative annual improvement decreases from 10 cm from age 11 to

> 12 [years] (7.2%; very large effect) until it plateaus from age 16 (1 cm; ~0.5%; small annual effects). Overall, girls typically improve their high jump performance by 24% from age 11 to 18. The sex difference in high jump performance evolves from 3.5% at the age of 11 to 16% at the age of 18.... [T]he sex ratio for high jump performance develops from 0.97 at age 11 to 0.84 at age 18." (6-7)

F. David J. Handelsman, *Sex Differences in Athletic Performance Emerge Coinciding with the Onset of Male Puberty*, 87 CLINICAL ENDOCRINOLOGY 68 (2017):

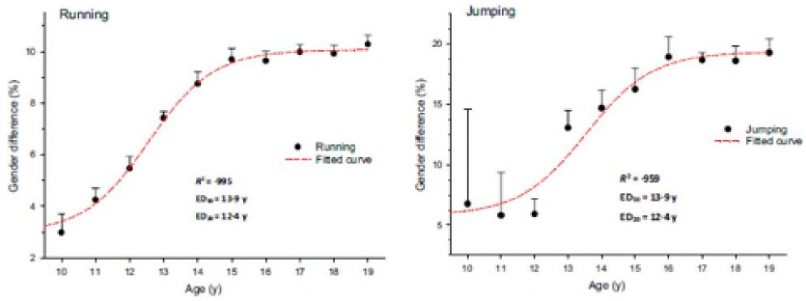
59. Analyzing four separate studies, Handelsman (2017) found very closely similar trajectories of divergence of athletic performance between the sexes across the adolescent years, in all measured events.

60. As illustrated by Figure 1 of Handelsman (2017) below, study results showed that "[i]n swimming performance, the overall gender differences were highly significant . . . ." (69)

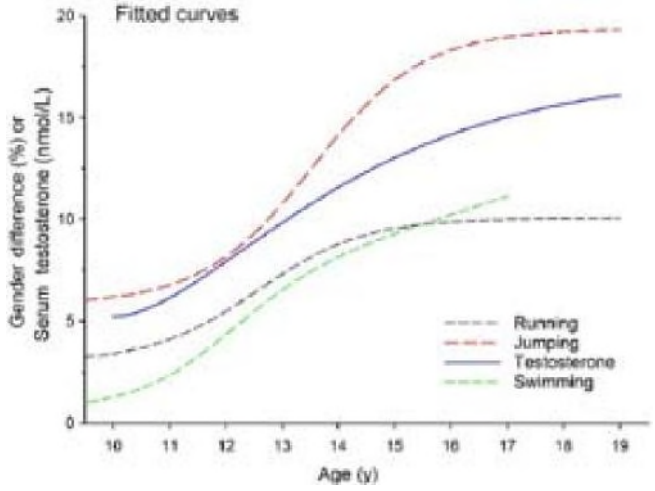


61. As illustrated by Figure 2 of Handelsman (2017) below, "[i]n track and field athletics, the effects of age on

running performance showed that the prepubertal differences of 3.0% increased to a plateau of 10.1% with an onset (ED20) at 12.4 years and reaching midway (ED50) at 13.9 years. For jumping, the prepubertal difference of 5.8% increased to 19.4% starting at 12.4 years and reaching midway at 13.9 years." (70)



62. As also illustrated in Figure 2 of Handelsman (2017), the author found a strong correlation between the increasing male performance advantage and blood serum testosterone levels, and reported: "The timing of the male advantage in running, jumping and swimming was similar [across events] and corresponded to the increases in serum testosterone in males." (70)



G. Moran Gershoni & Shmuel Pietrokovski, *The landscape of sex-differential transcriptome and its consequent selection in human adults*, 15 BMC BIOL 7 (2017):

63. The authors of this article evaluated "18,670 out of 19,644 informative protein-coding genes in men versus women" (2) and reported that "there are over 6500 protein-coding genes with significant S[ex-]D[ifferential]E[xpression] in at least one tissue. Most of these genes have SDE in just one tissue, but about 650 have SDE in two or more tissues, 31 have SDE in more than five tissues, and 22 have SDE in nine or more tissues." (2) Some examples of tissues identified by these authors that have SDE genes include breast mammary tissue, skeletal muscle, skin, thyroid gland, pituitary gland, subcutaneous adipose, lung, and heart left ventricle. Based on these observations the authors state "As expected, Y-linked genes that are normally carried only by men show SDE in many tissues." (3) This evaluation of SDE in protein coding genes helps illustrate that the differences between men and women are intrinsically part of the chromosomal and genetic makeup

of humans which can influence many tissues that are inherent to the athletic competitive advantages of men compared to women.

H. K. M. Haizlip, et al., Sex-based differences in skeletal muscle kinetics and fiber-type composition, 30 PHYSIOLOGY (BETHESDA) 30 (2015):

64. In a review of 56 articles on the topic of sex-based differences in skeletal muscle, the authors state that "More than 3,000 genes have been identified as being differentially expressed between male and female skeletal muscle []." (30) Furthermore, the authors state that "Overall, evidence to date suggests that skeletal muscle fiber-type composition is dependent on species, anatomical location/function, and sex." (30) The differences in genetic expression between males and females influence the skeletal muscle fiber composition (i.e. fast twitch and fast twitch sub-type and slow twitch), the skeletal muscle fiber size, the muscle contractile rate, and other aspects of muscle function that influence athletic performance. As the authors review the differences in skeletal muscle between males and females they conclude "Additionally, all of the fibers measured in men have significantly larger cross-sectional areas (CSA) compared with women []." (31) The authors also explore the effects of thyroid hormone, estrogen, and testosterone on gene expression and skeletal muscle function in males and females. One major conclusion by the authors is that "The complexity of skeletal muscle and the role of sex adding to that complexity cannot be overlooked." (37).

I. Konstantinos D. Tambalis, et al., Physical fitness normative values for 6-18-year-old Greek boys and girls, using the empirical distribution and the lambda, mu, and sigma

statistical method, 16 EUR J SPORT SCI 736 (2016). Mark J. Catley & G. R. Tomkinson, Normative health-related fitness values for children: analysis of 85347 test results on 9-17-year-old Australians since 1985, 47 BR J SPORTS MED 98 (2013). Grant R. Tomkinson, et al., *European normative values for physical fitness in children and adolescents aged 9-17 years: results from 2 779 165 Eurofit performances representing 30 countries*. 52 Br J Sports Med. 1445 (2018):

65. The purpose in citing these sources is to illustrate that males possess physical fitness traits that likely provide an advantage in athletic performance, that these male advantages may be apparent in children starting as young as six years of age, and in agreement with previously cited sources the differences become more apparent at the onset of puberty.

66. Tambalis et al. (2016) states that "based on a large data set comprising 424,328 test performances" (736) using standing long jump to measure lower body explosive power, sit and reach to measure flexibility, timed 30 second sit ups to measure abdominal and hip flexor muscle endurance, 10 X 5 meter shuttle run to evaluate speed and agility, and multi-stage 20 meter shuttle run test to estimate aerobic performance (738) "For each of the fitness tests, performance was better in boys compared with girls ($p < 0.001$), except for the S[it and] R[each] test ($p < 0.001$)." (739) In order to illustrate that the findings of Tambalis (2016) are not unique to children in Greece, the authors state "Our findings are in accordance with recent studies from Latvia [ ] Portugal [ ] and Australia [Catley & Tomkinson (2013)].(744)

67. Catley & Tomkinson (2013) observed that "Boys consistently scored higher than girls on health-related fitness tests, except on the sit-and-reach test, with the magnitude of the differences typically increasing with age and often accelerating from about 12 years of age. Overall, the magnitude of differences between boys and girls was large for the 1.6 km run, 20 m shuttle run, basketball throw and push-ups; moderate for the 50-m sprint, standing broad jump and sit-and-reach; and small for sit-ups and hand-grip strength." (106)

68. Evaluating performance on the "Eurofit tests (measuring balance, muscular strength, muscular endurance, muscular power, flexibility, speed, speed-agility and cardiorespiratory fitness)" in "2,779,165 results on children and adolescents [ages 9-17 years] from 30 European countries" Tomkinson et al. (2018) observed that "On average, boys performed substantially better than girls at each age group on muscular strength (E[ffect]S[ize]: large), muscular power (E[ffect]S[ize]: large), muscular endurance (E[ffect]S[ize]: moderate to large), speed-agility (E[ffect]S[ize]: moderate) and C[ardio]R[espiratory]F[itness] (E[ffect]S[ize]: large) tests, with the magnitude of the sex-specific differences increasing with age and accelerating from about 12 years"" (1451). Given the number of subjects analyzed and that the data represent 30 different European countries, these findings particularly highlight the sex related differences in athletic performance potential between boys and girls both before and during adolescence.

J. Daniel M. Fessler, et al., *Sexual dimorphism in foot length proportionate to stature*, 32 ANN HUM BIOL 44 (2005). Roshna E. Wunderlich & P. R. Cavanagh, *Gender differences in adult foot*

***shape: implications for shoe design*, 33 MED SCI SPORTS EXERC (2001):**

69. Combined, these two articles evaluate and demonstrate clear differences in the foot length and structure of men and women. Of relevance to the case at hand is that to the best of my knowledge, no data are available demonstrating that male-to-female transgender hormone or surgical treatment alters the inherent sex related difference in foot structure.

70. Fessler et al. (2005) observes that "female foot length is consistently smaller than male foot length" (44) and conclude that "proportionate foot length is smaller in women"(51) with an overall conclusion that "Our analyses of genetically disparate populations reveal a clear pattern of sexual dimorphism, with women consistently having smaller feet proportionate to stature than men." (53)

71. Wunderlich & Cavanaugh (2001) observe that "a foot length of 257 mm represents a value that is ... approximately the 20th percentile men's foot lengths and the 80th percentile women's foot lengths." (607) and "For a man and a woman, both with statures of 170 cm (5 feet 7 inches), the man would have a foot that was approximately 5 mm longer and 2 mm wider than the woman" (608). Based on these, and other analyses, they conclude that "female feet and legs are not simply scaled-down versions of male feet but rather differ in a number of shape characteristics, particularly at the arch, the lateral side of the foot, the first toe, and the ball of the foot." (605)

K. Daichi. Tomita, et al., *A pilot study on the importance of forefoot bone length in male 400-m sprinters: is there a key morphological factor for superior long sprint performance*?, 11 BMC RES NOTES 583 (2018). Hiromasa Ueno, et al.,

***The Potential Relationship Between Leg Bone Length and Running Performance in Well-Trained Endurance Runners*, 70 J HUM KINET 165 (2019). Hiromasa Ueno, et al., *Association between Forefoot Bone Length and Performance in Male Endurance Runners*, 39 INT J SPORTS MED 275 (2018):**

72. As men have longer feet and legs than women as part of their overall larger body stature, collectively these articles build upon the work of Fessler et al. (2005) and Wunderlich & Cavanaugh (2001) by providing some evidence that "morphological factors such as long forefoot bones may play an important role in achieving superior long sprinting performance" (Tomito, 583), "longer forefoot bones may be advantageous for achieving higher running performance in endurance runners" (Ueno 2018, 275)" and "the leg bone length, especially of the tibia, may be a potential morphological factor for achieving superior running performance in well-trained endurance runners." (Ueno 2019, 165)

L. International Weightlifting Federation "World Records"

73. I accessed weightlifting records as posted by the International Weightlifting Federation at https://www.iwf.net/results/world-records/. The records collected below are as of November 1, 2019.

74. As the chart below illustrates, junior men's and women's world records (age 1520) for clean and jerk lifts indicate that boys or men perform better than girls or women even when they are matched for body mass. Similar sex differences can be found for the snatch event on the International Weightlifting Federation website.

Junior Men's and Women's World Records (ages 15-20) for Clean and Jerk			
Men's weight (kg)	Record (kg)	Women's weight (kg)	Record (kg)
56	171	58	142
62	183	63	147
69	198	69	157
77	214	75	164
85	220	90	160
94	233	+90	193

M. Selected Results from the 2019 NCAA Division 1 and Division 2 Track & Field Championships

75. I accessed the results for the NCAA 2019 Division 1 Track and Field Championships at https://www.flotrack.org/results/6515701-2019-D1-ncaa-outdoor-championships/26635 on May 14, 2020. I also accessed the results for the NCAA Divisions 2 Track and Field Championships at http://leonetiming.com/2019/Outdoor/NCAAD2/Results.htm on May 14, 2020.

76. As shown in the table below, in this small sampling of Track & Field events at the elite collegiate level of Division 1, the men's eighth place finisher and often all 24 men's qualifiers, outperformed the first place women's athlete in the same event. Furthermore, at the Division 2 level, which is arguably a less elite level of performance than Division 1, in most (if not all) events, the top eight men's finishers outperformed the first place division 1 woman in the same event.

Comparison of selected performance in Men's and Women's events in the 2019 NCAA Division 1 and Division 2 Track and Field Championships.		
100 meter run (seconds)		
D1 Women	D1 Men	D2 Men
10.75	9.86	10.17
10.95	9.93	10.22
10.98	9.97	10.32
11.00	10.01	10.38
11.02	10.06	10.47
11.04	10.06	10.48
11.12	10.12	10.53
11.65	10.12	FS
D1 Men's slowest time in 100 m prelims: 10.67 (23rd place; 24th place DNS)		
D1 Women's fastest time in 100 m prelims: 10.99		
1500 m run (minutes: seconds)		
D1 Women	D1 Men	D2 Men
4:05.98	3:41.39	3:58.24
4:06.27	3:41.39	3:58.74
4:11.96	3:42.14	3:58.90
4:13.02	3:42.29	3:59.02
4:13.57	3:42.32	3:59.47
4:13.62	3:42.73	3:59.55
4:14.30	3:42.77	3:59.65

4:14.73	3:42.81	3:59.93
D1 Men's slowest time in 1500 m prelims: 3:53.53 (24th place)		
D1 Women's fastest time in 1500 m prelims: 4:12.02		
10,000 m run (minutes: Seconds)		
D1 Women	D1 Men	D2 Men
33:10.84	29:16.60	30:12.3
33:11.56	29:18.10	30:59.78
33:17.81	29:19.85	31:05.87
33:20.68	29:19.93	31:07.37
33:20.70	29:20.73	31:11.07
33:25.91	29:25.35	31:13.39
33:32.80	29:26.34	31:14.69
33:34.20	29:30.88	31:18.75
D1 Men's slowest time in 10,000 m prelims: 31:20.16 (24th place)		
Long Jump (meters)		
D1 Women	D1 Men	DII Men
6.84	8.2	8.16
6.71	8.18	8.08
6.63	8.12	7.96
6.55	8.05	7.86
6.49	8.00	7.79
6.44	7.88	7.72

6.43	7.87	7.72
6.40	7.83	7.71
D1 Men's 21st place longest jump 7.38 m (22nd foul, 23rd & 24th DNS)		
Shot Put (meters) Note that men use 7.26 kg (16 lbs.) shot, women use 4 kg (8.82 lbs.) shot		
D1 Women	D1 Men	D II Men
18.14	21.11	21.47
18.11	20.77	19.58
17.88	20.31	18.71
17.67	19.89	18.62
17.46	19.73	18.43
17.24	19.65	18.34
17.13	19.65	18.30
16.94	19.52	18.03
D1 Men's 23rd place longest put 16.90 m (24th Foul)		

II. Biological male physiology is the basis for the performance advantage that men, or adolescent boys, have over women, or adolescent girls, in almost all athletic contests.

77. Common observation and knowledge tell us that, across the years of puberty, boys experience distinctive physical developments that largely explain the performance advantages I have detailed above. These

well-known physical developments have now also been the subject of scientific measurement and study.

78. At the onset of male puberty the testes begin to secrete greatly increased amounts of testosterone. Testosterone is the primary "androgenic" hormone. It causes the physical traits associated with males such as facial and body hair growth, deepening of the voice, enlargement of the genitalia, increased bone mineral density, increased bone length in the long bones, and enhanced muscle growth (to name just a few of testosterone's effects). The enhanced muscle growth caused by testosterone is the "anabolic" effect often discussed when testosterone is called an anabolic steroid.

79. Women lack testes and instead have ovaries, so they do not experience similar increases in testosterone secretion. Instead, puberty in women is associated with the onset of menstruation and increased secretion of "estrogens." Estrogens, most notably estradiol, cause the feminizing effects associated with puberty in women which include increased fat tissue growth in the hips, thighs, and buttocks, development of the mammary glands, and closure of the growth plates in long bones. The smaller amount of muscle growth typically seen in women during puberty explains in part the athletic performance gap between men, and boys after the onset of puberty, and women and girls.

A. H

andelsman, Hirschberg, et al. (2018):

80. In addition to documenting objective performance advantages enjoyed by males as I have reviewed above, Handelsman and his co-authors also detail physiological differences caused by male puberty—and by developments during puberty under the influence of male levels of testosterone in particular—that account for those

advantages. These authors state: "The striking male postpubertal increase in circulating testosterone provides a major, ongoing, cumulative, and durable physical advantage in sporting contests by creating larger and stronger bones, greater muscle mass and strength, and higher circulating hemoglobin as well as possible psychological (behavioral) differences. In concert, these render women, on average, unable to compete effectively against men in power-based or endurance-based sports." (805)

81. First, Handelsman et al. explain that all of these physiological differences appear to be driven by male levels of circulating testosterone. "The available, albeit incomplete, evidence makes it highly likely that the sex difference in circulating testosterone of adults explains most, if not all, of the sex differences in sporting performance. This is based on the dose-response effects of circulating testosterone to increase muscle mass and strength, bone size and strength (density), and circulating hemoglobin, each of which alone increases athletic capacity, as well as other possible sex dichotomous, androgen-sensitive contributors such as mental effects (mood, motivation, aggression) and muscle myoglobin content. These facts explain the clear sex difference in athletic performance in most sports, on which basis it is commonly accepted that competition has to be divided into male and female categories." (823)

82. "Prior to puberty, levels of circulating testosterone as determined by LC-MS are the same in boys and girls . . . . They remain lower than 2 nmol/L in women of all ages. However, from the onset of male puberty the testes secrete 20 times more testosterone resulting in circulating testosterone levels that are 15 times greater in healthy young men than in age-similar women." (806) "[T]he

circulating testosterone of most women never reaches consistently >5 nmol/L, a level that boys must sustain for some time to exhibit the masculinizing effects of male puberty." (808)

83. "The characteristic clinical features of masculinization (e.g., muscle growth, increased height, increased hemoglobin, body hair distribution, voice change) appear only if and when circulating testosterone concentrations rise into the range of males at mid-puberty, which are higher than in women at any age even after the rise in circulating testosterone in female puberty." (810)

84. "[The] order-of-magnitude difference in circulating testosterone concentrations is the key factor in the sex difference in athletic performance due to androgen effects principally on muscle, bone, and hemoglobin." (811)

85. "Modern knowledge of the molecular and cellular basis for androgen effects on skeletal muscle involves effects due to androgen (testosterone, DHT) binding to the AR that then releases chaperone proteins, dimerizes, and translocates into the nucleus to bind to androgen response elements in the promoter DNA of androgen-sensitive genes. This leads to increases in (1) muscle fiber numbers and size, (2) muscle satellite cell numbers, (3) numbers of myonuclei, and (4) size of motor neurons. Additionally, there is experimental evidence that testosterone increases skeletal muscle myostatin expression, mitochondrial biogenesis, myoglobin expression, and IGF-1 content, which may augment energetic and power generation of skeletal muscular activity." (811)

86. **Muscle mass** is perhaps the most obvious driver of male athletic advantage. "On average, women have 50% to

60% of men's upper arm muscle cross-sectional area and 65% to 70% of men's thigh muscle cross-sectional area, and women have 50% to 60% of men's upper limb strength and 60% to 80% of men's leg strength. Young men have on average a skeletal muscle mass of >12 kg greater than age-matched women at any given body weight. Whereas numerous genes and environmental factors (including genetics, physical activity, and diet) may contribute to muscle mass, the major cause of the sex difference in muscle mass and strength is the sex difference in circulating testosterone." (812)

87. "Dose-response studies show that in men whose endogenous testosterone is fully suppressed, add-back administration of increasing doses of testosterone that produce graded increases in circulating testosterone causes a dose-dependent (whether expressed according to testosterone dose or circulating levels) increase in muscle mass (measured as lean body mass) and strength. Taken together, these studies prove that testosterone doses leading to circulating concentrations from well below to well above the normal male range have unequivocal dose-dependent effects on muscle mass and strength. These data strongly and consistently suggest that the sex difference in lean body mass (muscle) is largely, if not exclusively, due to the differences in circulating testosterone between men and women. These findings have strong implications for power dependent sport performance and largely explain the potent efficacy of androgen doping in sports." (813)

88. "Muscle growth, as well as the increase in strength and power it brings, has an obvious performance enhancing effect, in particular in sports that depend on strength and (explosive) power, such as track and field events. There is convincing evidence that the sex

differences in muscle mass and strength are sufficient to account for the increased strength and aerobic performance of men compared with women and is in keeping with the differences in world records between the sexes." (816)

89. Men and adolescent boys also have distinct athletic advantages in **bone size, strength, and configuration**.

90. "Sex differences in height have been the most thoroughly investigated measure of bone size, as adult height is a stable, easily quantified measure in large population samples. Extensive twin studies show that adult height is highly heritable with predominantly additive genetic effects that diverge in a sex-specific manner from the age of puberty onwards, the effects of which are likely to be due to sex differences in adult circulating testosterone concentrations." "Men have distinctively greater bone size, strength, and density than do women of the same age. As with muscle, sex differences in bone are absent prior to puberty but then accrue progressively from the onset of male puberty due to the sex difference in exposure to adult male circulating testosterone concentrations." (818)

91. "The earlier onset of puberty and the related growth spurt in girls as well as earlier estrogen-dependent epiphyseal fusion explains shorter stature of girls than boys. As a result, on average men are 7% to 8% taller with longer, denser, and stronger bones, whereas women have shorter humerus and femur cross-sectional areas being 65% to 75% and 85%, respectively, those of men. These changes create an advantage of greater bone strength and stronger fulcrum power from longer bones." (818)

92. **Male bone geometry** also provides mechanical advantages. "The major effects of men's larger and stronger bones would be manifest via their taller stature as well as the larger fulcrum with greater leverage for muscular limb power exerted in jumping, throwing, or other explosive power activities." (818) Further, "the widening of the female pelvis during puberty, balancing the evolutionary demands of obstetrics and locomotion, retards the improvement in female physical performance, possibly driven by ovarian hormones rather than the absence of testosterone." (818)

93. Beyond simple performance, the greater density and strength of male bones provides higher protection against stresses associated with extreme physical effort: "[S]tress fractures in athletes, mostly involving the legs, are more frequent in females with the male protection attributable to their larger and thicker bones." (818)

94. In addition to advantages in muscle mass and strength, and bone size and strength, men and adolescent boys have **greater hemoglobin levels** in their blood as compared to women and girls, and thus a greater capability to transport oxygen within the blood, which then provides bioenergetic benefits. "It is well known that levels of circulating hemoglobin are androgen-dependent and consequently higher in men than in women by 12% on average.... Increasing the amount of hemoglobin in the blood has the biological effect of increasing oxygen transport from lungs to tissues, where the increased availability of oxygen enhances aerobic energy expenditure." (816) "It may be estimated that as a result the average maximal oxygen transfer will be ~10% greater in men than in women, which has a direct impact on their respective athletic capacities." (816)

B. Louis Gooren, *The Significance of Testosterone for Fair Participation of the Female Sex in Competitive Sports*, 13 Asian J. of Andrology 653 (2011):

95. Gooren et al. like Handelsman et al., link male advantages in height, bone size, muscle mass, strength, and oxygen carrying capacity to exposure to male testosterone levels: "Before puberty, boys and girls hardly differ in height, muscle and bone mass. Pubertal testosterone exposure leads to an ultimate average greater height in men of 12–15 centimeters, larger bones, greater muscle mass, increased strength and higher hemoglobin levels." (653)

C. Thibault, Guillaume, et al. (2010):

96. In addition to the testosterone-linked advantages examined by Handelsman et al. (2018), Thibault et al. note sex-linked differences in body fat as impacting athletic performance: "Sex has been identified as a major determinant of athletic performance through the impact of height, weight, body fat, muscle mass, aerobic capacity or anaerobic threshold as a result of genetic and hormonal differences []." (214)

D. Taryn Knox, Lynley C. Anderson, et al., *Transwomen in Elite Sport: Scientific & Ethical Considerations*, 45 J. MED ETHICS 395 (2019):

97. Knox et al. analyze specific testosterone-linked physiological differences between men and women that provide advantages in athletic capability, and conclude that "[E]lite male athletes have a performance advantage over their female counterparts due to physiological differences." (395) "Combining all of this information, testosterone has profound effects on key physiological parameters that underlie athletic performance in men. There is substantial evidence regarding the effects on

muscle gain, bone strength, and the cardiovascular and respiratory system, all of which drive enhanced strength, speed and recovery. Together the scientific data point to testosterone providing an all-purpose benefit across a range of body systems that contribute to athletic performance for almost all sports." (397-98)

98. "It is well recognised that testosterone contributes to physiological factors including body composition, skeletal structure, and the cardiovascular and respiratory systems across the life span, with significant influence during the pubertal period. These physiological factors underpin strength, speed and recovery with all three elements required to be competitive in almost all sports. An exception is equestrian, and for this reason, elite equestrian competition is not gender-segregated. As testosterone underpins strength, speed and recovery, it follows that testosterone benefits athletic performance." (397)

99. "High testosterone levels and prior male physiology provide an all-purpose benefit, and a substantial advantage. As the IAAF says, 'To the best of our knowledge, there is no other genetic or biological trait encountered in female athletics that confers such a huge performance advantage.'" (399)

100. These authors, like others, describe sex-linked advantages relating to **bone size and muscle mass.** "Testosterone also has a strong influence on bone structure and strength. From puberty onwards, men have, on average, 10% more bone providing more surface area. The larger surface area of bone accommodates more skeletal muscle so, for example, men have broader shoulders allowing more muscle to build. This translates into 44% less upper body strength for women, providing men an advantage for sports like boxing, weightlifting and

skiing. In similar fashion, muscle mass differences lead to decreased trunk and lower body strength by 64% and 72%, respectively in women. These differences in body strength can have a significant impact on athletic performance, and largely underwrite the significant differences in world record times and distances set by men and women." (397)

101. Knox et al. also identify the relatively higher percentage of **body fat** in women as both inherently sex-linked, and a disadvantage with respect to athletic performance. "Oestrogens also affect body composition by influencing fat deposition. Women, on average, have higher percentage body fat, and this holds true even for highly trained healthy athletes (men 5%–10%, women 8%–15%). Fat is needed in women for normal reproduction and fertility, but it is not performance enhancing. This means men with higher muscle mass and less body fat will normally be stronger kilogram for kilogram than women." (397)

102. Knox et al. detail the relative performance disadvantage arising from the oestrogen-linked **female pelvis shape**: "[T]he major female hormones, oestrogens, can have effects that disadvantage female athletic performance. For example, women have a wider pelvis changing the hip structure significantly between the sexes. Pelvis shape is established during puberty and is driven by oestrogen. The different angles resulting from the female pelvis leads to decreased joint rotation and muscle recruitment ultimately making them slower." (397)

103. "In short, higher testosterone levels lead to larger and stronger bones as well as more muscle mass providing a body composition-related performance advantage for men for almost all sports. In contrast, higher oestrogen levels lead to changes in skeletal structure and more fat

mass that can disadvantage female athletes, in sports in which speed, strength and recovery are important." (397)

104. Knox et al. break out multiple sex-linked contributions to a male advantage in **oxygen intake and delivery**, and thus to energy delivery to muscles. "Testosterone also influences the cardiovascular and respiratory systems such that men have a more efficient system for delivering oxygen to active skeletal muscle. Three key components required for oxygen delivery include lungs, heart and blood haemoglobin levels. Inherent sex differences in the lung are apparent from early in life and throughout the life span with lung capacity larger in men because of a lower diaphragm placement due to Y-chromosome genetic determinants. The greater lung volume is complemented by testosterone-driven **enhanced alveolar multiplication rate** during the early years of life." (397)

105. "Oxygen exchange takes place between the air we breathe and the bloodstream at the alveoli, so more alveoli allows more oxygen to pass into the bloodstream. Therefore, the greater lung capacity allows more air to be inhaled with each breath. This is coupled with an improved uptake system allowing men to absorb more oxygen. Once in the blood, oxygen is carried by haemoglobin. Haemoglobin concentrations are directly modulated by testosterone so men have higher levels and can carry more oxygen than women. Oxygenated blood is pumped to the active skeletal muscle by the heart. The left ventricle chamber of the heart is the reservoir from which blood is pumped to the body. The larger the left ventricle, the more blood it can hold, and therefore, the more blood can be pumped to the body with each heartbeat, a physiological parameter called 'stroke volume'. The female heart size is, on average, 85% that of a male

resulting in the stroke volume of women being around 33% less. Putting all of this together, men have a much more efficient cardiovascular and respiratory system, with testosterone being a major driver of enhanced aerobic capacity." (397)

E. Lepers, Kneuchtle, et al. (2013):

106. Lepers et al. point to some of these same physiological differences as explaining the large performance advantage they found for men in triathlon performance. "Current explanations for sex differences in [maximal oxygen uptake] among elite athletes, when expressed relative to body mass, provide two major findings. First, elite females have more (<13 vs. <5 %) body fat than males. Indeed, much of the difference in [maximal oxygen uptake] between males and females disappears when it is expressed relative to lean body mass. Second, the hemoglobin concentration of elite athletes is 5–10 % lower in females than in males." (853)

107. "Males possess on average 7–9 % less percent body fat than females, which is likely an advantage for males. Therefore, it appears that sex differences in percentage body fat, oxygen-carrying capacity and muscle mass may be major factors for sex differences in overall triathlon performance. Menstrual cycle, and possibly pregnancy, may also impact training and racing in female athletes, factors that do not affect males." (853)

F. Tønnessen, Svendsen, et al. (2015):

108. Tønnessen et al. likewise point to some of the same puberty and testosterone-triggered physiological differences discussed above to explain the increasing performance advantage of boys across the adolescent years, noting that "[T]here appears to be a strong mechanistic connection between the observed sex-specific

performance developments and hormone-dependent changes in body composition during puberty." (7) "Beyond [age 12], males outperform females because maturation results in a shift in body composition. Our results are in line with previous investigations exploring physical capacities such as [maximal oxygen uptake] and isometric strength in non-competitive or non-specialized adolescents." (7)

109. "[S]ex differences in physical capacities (assessed as [maximal oxygen uptake] or isometric strength in the majority of cases) are negligible prior to the onset of puberty. During the adolescent growth spurt, however, marked sex differences develop. This can primarily be explained by hormone dependent changes in body composition and increased red blood cell mass in boys." (2)

110. "Sexual dimorphism during puberty is highly relevant for understanding sex-specific performance developments in sports. The initiation of the growth spurt in well-nourished girls occurs at about 9–10 yrs of age. Age at peak height velocity (PHV) and peak weight velocity (PWV) in girls is 11–12 and 12–13 yrs, respectively, with an average 7–9 cm and 6–9 kg annual increase. The growth spurt and PHV in girls occurs approximately 2 years earlier than for boys. However, the magnitude of the growth spurt is typically greater in boys, as they on average gain 8–10 cm and 9–10 kg annually at PHV and PWV, respectively. Girls experience an escalation in fat mass compared to boys. Fat free mass (FFM) (also termed lean muscle mass) is nearly identical in males and females up to the age of 12–13 yrs. FFM plateaus in females at 15– 16 years of age, but continues increasing in males up to the age of 19–20 yrs. On average, boys and girls increase their FFM by 7.2 and 3.5 kg/year^{-1}, respectively, during the interval near peak height velocity.

Corresponding estimates for changes in absolute fat mass are 0.7 and 1.4 kg/year^{-1}, while estimates for relative fatness are -0.5% and +0.9%/year^{-1} in boys and girls, respectively." (2)

111. "During puberty, boys begin to produce higher levels of circulating testosterone. This affects the production of muscle fibers through direct stimulation of protein synthesis. Higher testosterone levels result in more muscle mass, which in turn facilitates greater power production and more advantageous ground reaction forces during running and jumping. Adolescent weight gain in boys is principally due to increased height (skeletal tissue) and muscle mass, while fat mass remains relatively stable. In contrast, during puberty girls begin to produce higher levels of circulating estrogen and other female sex hormones. Compared to their male counterparts, they experience a less pronounced growth spurt and a smaller increase in muscle mass, but a continuous increase in fat mass, thereby lowering the critical ratio between muscular power and total body mass." (7)

112. "The relatively greater progress in jumping exercises can also be explained by growth and increased body height during puberty. The increase in body height means that the center of gravity will be higher, providing better mechanical conditions for performance in jumping events." (8)

G. Louis J. G. Gooren & Mathijs C. M. Bunck, *Transsexuals & Competitive Sports*, 151 EUROPEAN J. OF ENDOCRINOLOGY 425 (2004):

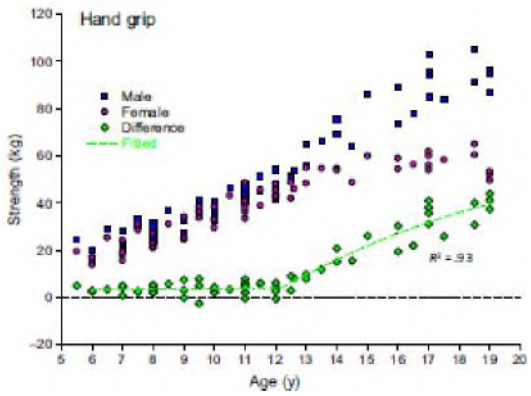
113. In their study of performance of transsexual athletes, Louis et al. note that "[b]efore puberty, boys and girls do not differ in height, muscle and bone mass. Recent

information shows convincingly that actual levels of circulating testosterone determine largely muscle mass and strength." (425) "Testosterone exposure during puberty leads ultimately to an average greater height in men of 12–15 cm, larger bones and muscle mass, and greater strength." (425)

H. Handelsman (2017):

114. Handelsman (2017) notes the existence of a "stable and robust" performance gap between males and females, with no narrowing "over more than three decades" (71), observing that "[i]t is well known that men's athletic performance exceeds that of women especially in power sports because of men's greater strength, speed and endurance. This biological physical advantage of mature males forms the basis for gender segregation in many competitive sports to allow females a realistic chance of winning events. This physical advantage in performance arises during early adolescence when male puberty commences after which men acquire larger muscle mass and greater strength, larger and stronger bones, higher circulating haemoglobin as well as mental and/or psychological differences. After completion of male puberty, circulating testosterone levels in men are consistently 10-15 times higher than in children or women at any age." (68)

115. To illustrate, Figure 3 of Handelsman (2017) below indicates, "the age trends in hand-grip strength showed a difference in hand-grip strength commencing from the age of 12.8 years onwards (Figure 3). Prior to the age of 13 years, boys had a marginally significant greater grip strength than girls ($n=45$, $t=2.0$, $P=.026$), but after the age of 13 years, there was a strong significant relationship between age and difference in grip strength ($n=18$, $r=.89$, $P<.001$)." (70)



116. Handelsman (2017) in particular focuses on the correlation between the development of this performance gap and the progress of male adolescence and circulating testosterone levels in boys. "The strength of the present study is that it includes a wide range of swimming as well as track and field running and jumping events as well as strength for nonathletes for males and females across the ages spanning the onset of male puberty. The similar timing of the gender divergence in each of these settings to that of the rise in circulating testosterone to adult male levels strongly suggests that they all reflect the increase in muscular size and strength although the impact of other androgen-dependent effects on bone, haemoglobin and psychology may also contribute." (71-72)

117. "In this study, the timing and tempo of male puberty effects on running and jumping performance were virtually identical and very similar to those in swimming events. Furthermore, these coincided with the timing of the rise in circulating testosterone due to male puberty. In addition to the strikingly similar timing and tempo, the magnitude of the effects on performance by the end of this study was 10.0% for running and 19.3% for jumping, both consistent with the gender differences in

performance of adult athletes previously reported to be 10%-12% for running and 19% for jumping." (71)

118. "In the swimming events, despite the continued progressive improvements in individual male and female event records, the stability of the gender difference over 35 years shown in this study suggests that the gender differences in performance are stable and robust." (71)

119. "The similar time course of the rise in circulating testosterone with that of the gender divergences in swimming and track and field sports is strongly suggestive that these effects arise from the increase in circulating testosterone from the start of male puberty." (71) "It is concluded that the gender divergence in athletic performance begins at the age of 12-13 years and reaches adult plateau in the late teenage years. Although the magnitude of the divergence varies between athletic skills, the timing and tempo are closely parallel with each other and with the rise in circulating testosterone in boys during puberty to reach adult male levels." (72)

120. Handelsman (2017) notes several specific physiological effects of male levels of circulating testosterone that are relevant to athletic performance:

a. "Adult male circulating testosterone also has marked effects on bone development leading to longer, stronger and denser bone than in age-matched females." (71)

b. "A further biological advantage of adult male circulating testosterone concentrations is the increased circulating haemoglobin. Men have ~10 g/L greater haemoglobin than women with the gender differences also evident from the age of 13-14 years." (71)

121. Handelsman (2017) also observes that "exposure to adult male testosterone concentrations is likely to produce some mental or psychological effects. However, the precise nature of these remains controversial and it is not clear whether, or to what extent, this contributes to the superior elite sporting performance of men in power sports compared with the predominant effects on muscle mass and function." (71)

I. Centers for Disease Control & Prevention, "National Health Statistics Reports Number 122," CDC (2018):

122. To obtain data on height, weight, and body mass differences between men and women, I accessed the "National Health Statistics Reports Number 122" published by the Centers for Disease Control & Prevention, at https://www.cdc.gov/nchs/data/nhsr/nhsr122-508.pdf, which is based on data through 2016.

123. The average height for a U.S. adult man is 5 feet 9 inches and for a U.S. adult woman the average height is 5 feet 4 inches. (3)

124. The average weight for a U.S. adult man is 197.8 lbs. and for a U.S. adult woman the average weight is 170.5 lbs. (6)

125. The average body mass index for a U.S. adult man is 29.1 kg/m^2, and the average body mass index for a U.S. adult woman is 29.6 kg/m^2. (3)

III. Administration of cross-sex hormones to men, or adolescent boys, after male puberty does not eliminate their performance advantage over women, or adolescent girls, in almost all athletic contests.

126. At the collegiate level, the "NCAA Policy on Transgender Student-Athlete Participation" requires only that such males be on unspecified and unquantified "testosterone suppression treatment" for "one calendar year" prior to competing in women's events.

127. Studies have demonstrated that hormone administration of testosterone suppression does not eliminate the physical advantages males have over females in athletics. Although such studies have not focused specifically on elite athletes, there is no scientific evidence or principle suggesting that the effects of hormone administration of testosterone suppression on elite athletes should be different than they are in the general population.

128. It is obvious that some effects of male puberty that confer advantages for athletic performance—in particular bone size and configuration—cannot be reversed once they have occurred.

129. In addition, some studies have now determined that other physiological advantages conferred by male puberty are also not fully reversed by later hormonal treatments associated with gender transition. Specifically, studies have shown that the effects of puberty in males including increased muscle mass, increased bone mineral density, increased lung size, and increased heart size, are not completely reversed by suppressing testosterone secretion and administering estrogen during gender transition procedures in males.

130. For example, suppressing testosterone secretion and administering estrogen in post pubescent males does not shrink body height to that of a comparably aged female, nor does it reduce lung size or heart size. Indeed, while testosterone suppression and estrogen

administration reduce the size and density of skeletal muscles, the muscles remain larger than would be expected in a typical female even when matched for body height or mass. A general tenet of exercise science is that larger muscles are stronger muscles due to larger muscles containing more contractile proteins. Thus, while gender transition procedures may impair a male's athletic potential, in my opinion it is still highly unlikely to be reduced to that of a comparably aged and trained female due to these physiological factors.

131. Supporting my opinion in this regard, at least two recent prospective studies involving substantial numbers of subjects have found that measured strength did not decrease, or decreased very little, in male-to-female subjects after a full year of hormone therapy including testosterone suppression, leaving these populations with a large strength advantage over baseline female strength.

132. I review relevant findings in more detail below.

A. Handelsman, Hirschberg, et al. (2018):

133. Handelsman et al. (2018) note that in "transgender individuals, the developmental effects of adult male circulating testosterone concentrations will have established the sex difference in muscle, hemoglobin, and bone, some of which is fixed and irreversible (bone size) and some of which is maintained by the male circulating testosterone concentrations (muscle, hemoglobin)." (824)

134. "[D]evelopmental bone effects of androgens are likely to be irreversible." (818)

135. With respect to muscle mass and strength, Handelsman et al. (2018) observe that suppression of testosterone in males to levels currently accepted for transgender qualification to compete in women's events

will still leave those males with a large strength advantage. "Based on the established dose-response relationships, suppression of circulating testosterone to <10 nmol/L would not eliminate all ergogenic benefits of testosterone for athletes competing in female events. For example, according to the Huang *et al.* [] study, reducing circulating testosterone to a mean of 7.3 nmol/L would still deliver a 4.4% increase in muscle size and a 12% to 26% increase in muscle strength compared with circulating testosterone at the normal female mean value of 0.9 nmol/L. Similarly, according to the Karunasena *et al.* [] study, reducing circulating testosterone concentration to 7 nmol/L would still deliver 7.8% more circulating hemoglobin than the normal female mean value. Hence, the magnitude of the athletic performance advantage in DSD athletes, which depends on the magnitude of elevated circulating testosterone concentrations, is considerably greater than the 5% to 9% difference observed in reducing levels to <10 nmol/L." (821)

B. Gooren (2011):

136. In addition to noting that the length and diameter of bones is unchanged by postpubertal suppression of androgens (including testosterone) (653), Gooren found that "[i]n spite of muscle surface area reduction induced by androgen deprivation, after 1 year the mean muscle surface area in male-to- female transsexuals remained significantly greater than in untreated female-to-male transsexuals." (653) "Untreated female-to-male transsexuals" refers to biological females, who will have hormonal levels ordinarily associated with women.

137. As I have explained above, greater muscle surface area translates into greater strength assuming comparable levels of fitness.

C. Knox, Anderson, et al. (2019):

138. In their recent article, Knox et al. reviewed the physiological effects of reducing circulating testosterone levels below 10nmol/L, the level current accepted by the International Olympic Committee (IOC) (2015) guidelines as adequate to permit males to enter as women in Olympic competition.

139. Knox et al. note the unarguable fact that 10nmol/L is a far higher level of circulating testosterone than occurs in women, including elite women athletes. "Transwomen [meet IOC guidelines] to compete with testosterone levels just under 10 nmol/L. This is more than five times the upper testosterone level (1.7 nmol/L) of healthy, premenopausal elite cis-women athletes. Given that testosterone (as well as other elements stemming from Y-chromosome-dependent male physiology) provides an all-purpose benefit in sport, suggests that transwomen have a performance advantage." (398)

140. As to **bone strength**, Knox et al. report that a "recent meta-analysis shows that hormone therapy provided to transwomen over 2 years maintains bone density so bone strength is unlikely to fall to levels of cis-women, especially in an elite athlete competing and training at high intensity. Increased bone strength also translates into protection against trauma, helping with recovery and prevention of injury." (398)

141. Based on a review of multiple studies, Knox et al. report that, in addition to bone size, configuration, and strength, "hormone therapy will not alter ... **lung volume or heart size** of the transwoman athlete, especially if [that athlete] transitions postpuberty, so natural advantages including joint articulation, stroke volume and maximal oxygen uptake will be maintained." (398)

142. With respect to **muscle mass and strength**, Knox et al. found that "healthy young men did not lose significant muscle mass (or power) when their circulating testosterone levels were reduced to 8.8 nmol/L (lower than the IOC guideline of 10 nmol/L) for 20 weeks. Moreover, retention of muscle mass could be compensated for by training or other ergogenic methods. In addition, the phenomenon of muscle memory means muscle mass and strength can be rebuilt with previous strength exercise making it easier to regain muscle mass later in life even after long intervening periods of inactivity and mass loss." (398)

143. Indeed, Knox et al. observe that oestradiol—routinely administered as part of hormone therapy for transwomen—is actually known to *increase* muscle mass, potentially providing an *additional* advantage for these athletes over women. "While testosterone is the well-recognised stimulator of muscle mass gain, administration of oestradiol has also been shown to activate muscle gain via oestrogen receptor-β activation. The combination of oestradiol therapy and a baseline testosterone of 10 nmol/L arguably provides transwomen athletes with an added advantage of increased muscle mass, and therefore power." (398)

144. Summing up these facts, Knox et al. observe: "A transwoman athlete with testosterone levels under 10 nmol/L for 1 year will retain at least some of the physiological parameters that underpin athletic performance. This, coupled with the fact that [under IOC rules] transwomen athletes are allowed to compete with more than five times the testosterone level of a cis-woman, suggests transwomen have a performance advantage." (398) Indeed, considering the magnitude of the advantages involved, Knox et al. conclude that the

physiological advantages resulting from male puberty that are not negated by post-pubertal hormonal therapy "provide a strong argument that transwomen have an intolerable advantage over cis-women." (399)

D. Gooren & Numck (2004):

145. Measuring the concrete significance of the fact that bone size and configuration cannot be changed after puberty, Gooren and Bunk reported that "[Male-to-female transsexuals] were on average 10.7 cm taller (95% CI 5.4–16.0 cm) than [female-to-male transsexuals] (7)." (427)

146. With respect to muscle mass, Gooren and Bunk reported what other authors have since described in more detail: "After 1 year of androgen deprivation, mean muscle area in [male-to-female transsexuals] had decreased significantly but remained significantly greater than in [female-to-male transsexuals] before testosterone treatment." (427) To be clear, female-to-male transsexuals "before testosterone treatment" are biological females with natural female hormone levels.

> "The conclusion is that androgen deprivation in [male-to-female transsexuals] increases the overlap in muscle mass with women but does not reverse it, statistically." (425) In other words, for the overall sample of 19 male-to female transsexuals, before ("306.9 ± 46.5 cm^2") and after ("277.8 ± 37.0 cm^2") 1 year of cross-sex hormone administration these subjects had statistically significantly more muscle mass than the 17 untreated females ("238.8 ± 33.1 cm^2") (427). Before treatment, an unstated number of male-to-female transsexuals on the low end of the range for muscle mass in this sample were similar to an unstated number of untreated females on the high end of the range for muscle mass. As the

> muscle mass decreased in male-to-female transsexuals due to cross-sex hormone treatment there were an unstated number of male-to-female subjects whose muscle mass was similar to the untreated women on the high end of the range for muscle mass. But, the overlap in muscle mass between male-to-female and untreated female subjects was insufficient to alter the statistical analysis.

147. Gooren and Bunk provide an insightful conclusion regarding whether it is fair for male-to-female transgender individuals to compete with biological females "The question of whether reassigned M–F can fairly compete with [biological] women depends on what degree of arbitrariness one wishes to accept". (425)

E. Wiik et al. (2020):

148. Taking measurements one month after start of testosterone-suppression in male-to-female subjects, and again 3 and 11 months after start of feminizing hormone replacement therapy in these subjects, Wiik et al. found that total lean tissue (i.e. primarily muscle) did not decrease significantly across the entire period. And even though they observed a small decrease in thigh muscle mass, they found that isometric strength levels measured at the knee "were maintained over the [study period]." (e808) "At T12 [the conclusion of the one-year study], the absolute levels of strength and muscle volume were greater in [male-to-female subjects] than in [female-to-male subjects] and CW [women who had not undergone any hormonal therapy]." (e808)

149. While female-to-male subjects "experienced robust changes in lower-limb muscle mass and strength" after 11 months of testosterone injection (e812), even after

the female-to-male subjects had undergone testosterone injection, and the male-to-female subjects had undergone testosterone suppression and feminizing hormone replacement therapy, the male-to-female subjects "still had larger muscle volumes and quadriceps area" (e811).

150. In other words, biologically male subjects remained stronger than biologically female subjects after undergoing a year of testosterone suppression, and even remained stronger than biologically female subjects who had undergone 11 months of testosterone-driven "robust" increases in muscle mass and strength. I note that outside the context of transgender athletes, the testosterone-driven increase in strength enjoyed by these female-to-male subjects would constitute a disqualifying doping violation under all league anti-doping rules with which I am familiar.

F. Scharff et al. (2019):

151. Scharff et al. measured grip strength in a large cohort of male-to-female subjects from before the start of hormone therapy through one year of hormone therapy. The hormone therapy included suppression of testosterone to less than 2 nml/L "in the majority of the transwomen," (1024), as well as administration of estradiol (1021). These researchers observed a small decrease in grip strength in these subjects over that time, but mean grip strength of this group remained far higher than mean grip strength of females—specifically, "After 12 months, the median grip strength of transwomen [male-to-female subjects] still falls in the 95th percentile for age-matched females." (1026)

152. As further evidence that male-to-female transgender treatment does not negate the inherent athletic performance advantages of a post-pubertal male,

I present race times for the well-publicized sports performance of Cece Telfer. In 2016 and 2017 Cece Telfer competed as Craig Telfer on the Franklin Pierce University men's track team being ranked 200th and 390th (respectively) against other NCAA Division 2 men and did not qualify for the National Championships in any events. Cece Telfer did not compete in the 2018 season while undergoing male-to-female transgender treatment (per NCAA policy). In 2019 Cece Telfer competed on the Franklin Pierce University women's team, qualified for the NCAA Division 2 Track and Field National Championships, and placed 1st in the women's 400 meter hurdles and placed third in the women's 100 meter hurdles. (for examples of the media coverage of this please see https://www.washingtontimes.com/news/2019/jun/3/cece-telfer-franklin-pierce-transgender-hurdler-wi/ last accessed May 29, 2020. https://www.newshub.co.nz/home/sport/2019/06/athletics-transgender-woman-cece-telfer-who-previously-competed-as-a-man-wins-ncaa-track-championship.html last accessed May 29, 2020.)

153. 153. The table below shows the best collegiate performance times from the combined 2015 and 2016 seasons for Cece Telfer when competing as a man (Craig Telfer) in men's events, and the best collegiate performance times from the 2019 season when competing as a woman in women's event. Comparing the times for the running events (in which male and female athletes run the same distance) using a two tailed paired sample test there is no statistical difference (P=0.51) between the times. Calculating the difference in time between the male and female times for the best performances in the same running events and dividing that difference by the male performance times, as a female Cece Telfer performed an average of 0.22% *faster* as a female. (Comparing the performance for the hurdle events (marked with H) is of

questionable validity due to differences between men's and women's events in hurdle heights and spacing, and distance for the 110m vs. 100 m.) While this is simply one example, and does not represent a controlled experimental analysis, this information provides some evidence that male-to-female transgender treatment does not negate the inherent athletic performance advantages of a postpubertal male. (these times were obtained from https://www.tfrrs.org/athletes/6994616/Franklin_Pierce/CeCe_Telfer.html and https://www.tfrrs.org/athletes/5108308.html, last accessed May 29, 2020)

As Craig Telfer (male athlete)		**As Cece Telfer (female athlete)**	
Event	Time (seconds)	Event	Time (seconds)
55	7.01	55	7.02
60	7.67	60	7.63
100	12.17	100	12.24
200	24.03	200	24.30
400	55.77	400	54.41
55 H †	7.98	55 H†	7.91
60 H †	8.52	60 H†	8.33
110 H†	15.17	100 H†	13.41 *
400 H‡	57.34	400 H‡	57.53 **

* women's 3rd place, NCAA Division 2 National Championships
** women's 1st place, NCAA Division I2 National Championships
† men's hurdle height is 42 inches with differences in hurdle spacing between men and women
‡ men's hurdle height is 36 inches, women's height is 30 inches with the same spacing between
hurdles

G. Johanna Harper. (2015):

154. This article is oft cited as evidence supporting a lack of performance advantage for male-to-female transgender athletes (*for an example see the Expert Declaration by Joshua D. Safer, MD, FACP, FACE. Case 1:20-cv-00184-CWD Document 22-9, point 51*). This article purports to show that male-to-female transgender distance runners do not retain post-pubertal athletic advantages over biological females. However, this paper has numerous methodical shortcomings rendering the data and conclusions to be of little to no scientific validity. Herein I provide a detailed critique of a number of the methodical shortcomings of this paper.

155. Of major concern is that the paper does not mention any type of approval from a research ethics committee, documentation of informed consent from the participants, or otherwise state that the study was conducted in accordance with the ethical principles of the World Medical Association Declaration of Helsinki, which raises the specter of overall ethical concerns with this paper (This may simply be an oversight on the part of the journal in not requiring such a statement, but such an oversight is very unusual given the publication date of 2015). As the data were gathered with the intent of

contributing to the scientific knowledge, and there was interaction between the researcher and the subjects with exchange of identifiable and sensitive information, Institutional Review Board approval and documentation of consent are necessary for this type of project.

156. The author states that "The first problem is how to formulate a study to create a meaningful measurement of athletic performance, both before and after testosterone suppression. No methodology has been previously devised to make meaningful measurements." (2) This statement is not correct as there are innumerable publications with validated methodology for comparing physical fitness and/or athletic performance between people of different ages, sexes (some of which have previously been discussed), medical conditions, and before and after medical treatment, any of which could easily have been used with minimal or no adaptation for the purposes of this study (many even before the initiation of the Harper study, which apparently started in 2006).

157. The overall methods as explained within the manuscript are of limited scientific validity and reliability, starting with subject recruitment. The author states "The collection process consisted of seeking out female transgender distance runners, mostly online, and then asking them to submit race times. Even in 2014 few people are open about being transgender, so the submission of race times represented a large leap of faith for the participants." (3) There is no further information regarding how the subjects were recruited (i.e. sampling techniques). Furthermore, based on this description of sampling techniques there is no way to know if these 8 subjects are in any way representative of any population of men, women, or transgender individuals, and especially the overall transgender distance running population. For

example, what websites were used to identify possible subjects? How were the subjects solicited to participate? Was any compensation or coercion offered to the subjects? What inclusion or exclusion criteria were used in subject selection? How were the subjects who were not recruited online identified and enrolled into the research? How many were recruited online vs. not online? Furthermore, no indication is given if the subjects have undergone only hormone treatment, surgical treatment, or both. Furthermore, there is no indication of any verification of testosterone concentrations, compliance with hormone treatments, or other relevant endocrine or transgender treatment information. Lastly, no descriptive data are provided for the subjects' body height, body mass, or other relevant anthropometric characteristics.

158. Similar to the sampling techniques the methods for collecting race times are lacking in validity, reliability, or detailed description. The author states "Race times from eight transgender women runners were collected over a period of seven years and, when possible, verified." And "When possible, race times were then verified using online services listing race results. For six of the eight runners, online checking made it possible to verify approximately half of the submitted times. Two of the subjects, runners three and four, would only participate anonymously, creating an ethical dilemma over the use of their times, versus respect their privacy." (3) No further information regarding which race times were verified is presented, thus the verified race times could be only pre-transition, only post transition, all coming from 3 of the subjects, or some combination thereof. The validity and reliability of self-reported data are overall very questionable, which the author acknowledges by stating "The times submitted by the eight runners were self-selected and self-reported. The self- reporting by the

subjects certainly affects the strength of the findings. As mentioned previously, almost half of the race times were double checked by the author for accuracy. None of the subjects incorrectly reported any result" (6). However, verifying "almost half" of the race times does not validate the other "almost half." The author does not state which race times the runners were asked to self-report (i.e. these could have been the slowest times as a man and the fastest times as a woman, or vice versa. Or the reported races time could be some form of non-representative sample of the subjects' race times). As some of the data represent a span of 29 years between reported race times, and the mean time between reported race times is 7.3 ± 8.4 years the accuracy of the non-verified self-reported race times are very questionable [The means ± sd are not presented in the paper; they were calculated by the author of this declaration]. The author further states that only three of the pairs of race times "were run over the same course within three years' time and represent the best comparison points" (5) (i.e. Runner No. 4 provided one pair of pre-post transition 5K times, Runner No. 6 provided one pair of pre-post transition 10K times, and Runner No 6 provided one pair of pre-post transition Half-marathon times). Runner No 4 was one of the previously described "ethical dilemma" (3) subjects with no verified race times. Once again, it is not stated if any of "the best comparison points" (5) represents verified data. Furthermore, while the race may have been run over the same course, no mention of environmental conditions for the comparison performance is made. To put this in perspective, the 2018 Boston Marathon was run in rain and headwinds resulting in a men's winning time of 2:15:54 (the slowest time since 1976) and a women's winning time of 2:39:54 (the slowest time for a women's winner since 1978). To help further illustrate the challenges in year to

year comparison of race time that may be exacerbated by weather, in 2017 the men's winning time for the Boston Marathon was 2:09:37 and the women's winning time was 2:21:52.

159. The author notes that "both runner two and runner six reported stable training patterns over this time range" (5), but once again, there is no indication of how these data were collected or verified. Furthermore, what does a "stable training pattern mean"? Is it mileage, or pace, or combination of training techniques? This also further illustrates the methodological weaknesses in the study as runner two did not provide times for the "same course within three years' time", which, to quote the author "represent the best comparison points".

160. There is no experimental control for, or mention of, habitual nutrition, pre-event or during-event nutrition, any which (especially hydration and carbohydrate intake) can have a major impact on the outcome of endurance competition.

161. The description of the statistical analysis is insufficient. The author states that "Two tailed t tests were run on both the mean and peak AGs." (5) This is an ambiguous statement. Typically an author would report what kind of t-test was performed. Were these paired sample t-tests, independent sample t-tests, or one-sample t-tests?

162. Despite these methodological shortcomings, the author makes some insightful statements in the discussion. In the discussion section of the paper the author states "Transgender women are taller and larger, on average, than 46,XX women [], and these differences probably would result in performance advantages in events in which height and strength are obvious

precursors to success" (7). The author further reasonably states that "It should be noted that this conclusion only applies to distance running and the author makes no claims as to the equality of performances, pre and post gender transition, in any other sport. As such, the study cannot, unequivocally, state that it is fair to allow transgender women to compete against 46,XX women in all sports..." to which the author adds "...although the study does make a powerful statement in favor of such a position."(8) This latter statement cannot be supported based on the data contained in this paper or any presently known research.

Conclusion

163. Once again, based on my professional familiarity with exercise physiology and my review of the currently available science, including that contained in the sources I cite and summarize in this declaration, and the competition results and records presented here, I offer three primary professional opinions:

a. At the level of elite, sub elite, high school, and recreational competition, men or boys have an advantage over comparably aged women or girls, in almost all athletic contests;

b. Biological male physiology and anatomy is the basis for the performance advantage that men or boys have over women or girls, in almost all athletic contests; and

c. Administration of androgen inhibitors and cross-sex hormones to men, or adolescent boys, after male puberty, and administration of testosterone to women or adolescent girls, after female puberty, does not eliminate the performance advantage of

men or adolescent boys over women or adolescent girls in almost all athletic contests.

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Executed this 3rd day of June, 2020.

/s/ Gregory A. Brown
Professor Gregory A. Brown Ph.D.

ATTACHMENT

EXPERT DECLARATION OF GREGORY A. BROWN, Ph.D. FACSM *Hecox, et al. v. Little, et al.* Case No. 1:20-cv-00184-DCN

Gregory Allen Brown, Ph.D. FACSM

Wellness Center 221, Cushing Building
Department of Kinesiology & Sport Sciences
University of Nebraska Kearney
1410 W 26th St
Kearney, NE 68849
(308) 865 - 8333
browngа@unk.edu

Academic Preparation

Doctor of Philosophy, Iowa State University. August 2002 -- Major in Health and Human Performance, Emphasis in the Biological Bases of Physical Activity, dissertation title: "Androgenic supplementation in men: Effects of age, herbal extracts, and mode of delivery."

Master of Science, Iowa State University, May 1999 -- Major in Exercise and Sport Science, Emphasis in Exercise Physiology, thesis title: "Oral anabolic-androgenic supplements during resistance training: Effects on glucose tolerance, insulin action, and blood lipids."

Bachelor of Science, Utah State University, June 1997 -- Major in Physical Education, Emphasis in Pre-physical Therapy.

Awards

College of Education Outstanding Faculty Teaching Award. University of Nebraska at Kearney 2019

Mortar Board Faculty Excellence Honors. Xi Phi Chapter, University of Nebraska at Kearney, Honored in 2006, 2007, 2008, 2012, 2013, 2015, and 2019

Profiled in New Frontiers, the University of Nebraska Kearney annual publication highlighting excellence in research, scholarship, and creative activity. 2009, 2017

College of Education Outstanding Scholarship / Research Award. University of Nebraska at Kearney 2009, 2014

College of Education Award for Faculty Mentoring of Undergraduate Student Research University of Nebraska at Kearney, 2007, 2010, & 2013

"Pink Tie" award from the Susan G. Komen Nebraska Affiliate, for outstanding service to the Central Nebraska Race for the Cure, 2013

Star Reviewer for the American Physiological Society and Advances in Physiology Education. 2010.

Fellow of the American College of Sports Medicine. Awarded April 23, 2008 **UNK Senior Appreciation Program honoree,** the University of Nebraska at Kearney **Iowa State University Research Excellence Award,** Iowa State University, 2002 **The Zaffarano Prize for Graduate Student Research,** Iowa State University, 2002

Helen Hilton Lebaron Excellence in Research Award, Dept. of Health and Human Performance, Iowa State University, 2002

Best Paper Award, 2nd Annual Education Research Exchange. Iowa State University Education Research Exchange, 2001

Helen Hilton Lebaron Excellence in Research Award, Dept. of Health and Human Performance, Iowa State University, 2000

Professional Experience

Professor: University of Nebraska Kearney, Dept. of Kinesiology and Sport Sciences (2012-) **Associate Professor:** University of Nebraska Kearney, HPERLS Dept. (2007-2012)

Assistant Professor: University of Nebraska Kearney, HPERLS Dept. (2004- 2007) Full Graduate Faculty status awarded on hire, 2004

Assistant Professor: Georgia Southern University, Jiann-Ping Hsu School of Public Health. (2002-2004) Full Graduate Faculty status awarded Nov. 26, 2002

Laboratory Director: Human Performance Laboratory, Georgia Southern University, Jiann-Ping Hsu School of Public Health. (2002-2004)

Research Assistant: Exercise Biochemistry and Physiology Laboratory, Iowa State University, Department of Health and Human Performance. (1997-2002)

Graduate Teaching Assistant: Iowa State University, Department of Health and Human Performance. (1997-2002)

Temporary Instructor: Iowa State University, Department of Health and Human Performance. (1999-2002)

Temporary Adjunct Faculty: Des Moines Area Community College. (2000)

Undergraduate Teaching Intern: Department of Biology, Utah State University. (1995-1996)

Refereed Publications

1. Schneider KM and Brown GA (as Faculty Mentor). What's at Stake: Is it a Vampire or a Virus? International Journal of Undergraduate Research and Creative Activities. 11, Article 4. 2019.

2. Christner C and Brown GA (as Faculty Mentor). Explaining the Vampire Legend through Disease. UNK Undergraduate Research Journal. 23(1), 2019. *this is an on campus publication

3. Schneekloth B and Brown GA. Comparison of Physical Activity during Zumba with a Human or Video Game Instructor. 11(4):1019-1030. International Journal of Exercise Science, 2018.

4. Bice MR, Hollman A, Bickford S, Bickford N, Ball JW, Wiedenman EM, Brown GA, Dinkel D, and Adkins M. Kinesiology in 360 Degrees. International Journal of Kinesiology in Higher Education, 1: 9-17, 2017

5. Shaw I, Shaw BS, Brown GA, and Shariat A. Review of the Role of Resistance Training and Musculoskeletal Injury Prevention and Rehabilitation. Gavin Journal of Orthopedic Research and Therapy. 1: 5-9, 2016

6. Kahle A, Brown GA, Shaw I, & Shaw BS. Mechanical and Physiological Analysis of Minimalist versus Traditionally Shod Running. J Sports Med Phys Fitness. 56(9):974-9, 2016

7. Bice MR, Carey J, Brown GA, Adkins M, and Ball JW. The Use of Mobile Applications to Enhance Learning of the Skeletal System in Introductory Anatomy & Physiology Students. Int J Kines Higher Educ 27(1) 16-22, 2016

8. Shaw BS, Shaw I, & Brown GA. Resistance Exercise is Medicine. Int J Ther Rehab. 22: 233-237, 2015.

9. Brown GA, Bice MR, Shaw BS, & Shaw I. Online Quizzes Promote Inconsistent Improvements on In-Class Test Performance in Introductory Anatomy & Physiology. Adv. Physiol. Educ. 39: 63-6, 2015

10. Brown GA, Heiserman K, Shaw BS, & Shaw I. Rectus abdominis and rectus femoris muscle activity while performing conventional unweighted and weighted seated abdominal trunk curls. Medicina dello Sport. 68: 9-18. 2015

11. Botha DM, Shaw BS, Shaw I & Brown GA. Role of hyperbaric oxygen therapy in the promotion of cardiopulmonary health and rehabilitation. African Journal for Physical, Health Education, Recreation and Dance (AJPHERD). Supplement 2 (September), 20: 62-73, 2014

12. Abbey BA, Heelan KA, Brown, GA, & Bartee RT. Validity of HydraTrendTM Reagent Strips for the Assessment of Hydration Status. J Strength Cond Res. 28: 2634-9. 2014

13. Scheer KC, Siebrandt SM, Brown GA, Shaw BS, & Shaw I. Wii, Kinect, & Move. Heart Rate, Oxygen Consumption, Energy Expenditure, and Ventilation due to Different Physically Active Video Game Systems in College Students. International Journal of Exercise Science: 7: 22-32, 2014

14. Shaw BS, Shaw I, & Brown GA. Effect of concurrent aerobic and resistive breathing training on respiratory muscle length and spirometry in asthmatics. African Journal for Physical, Health Education, Recreation and Dance (AJPHERD). Supplement 1 (November), 170-183, 2013

15. Adkins M, Brown GA, Heelan K, Ansorge C, Shaw BS & Shaw I. Can dance exergaming contribute to improving physical activity levels in elementary school children? African Journal for Physical, Health Education, Recreation and Dance (AJPHERD). 19: 576-585, 2013

16. Jarvi MB, Brown GA, Shaw BS & Shaw I. Measurements of Heart Rate and Accelerometry to Determine the Physical Activity Level in Boys Playing Paintball. International Journal of Exercise Science: 6: 199-207, 2013

17. Brown GA, Krueger RD, Cook CM, Heelan KA, Shaw BS & Shaw I. A prediction equation for the estimation of cardiorespiratory fitness using an elliptical motion trainer. West Indian Medical Journal. 61: 114-117, 2013.

18. Shaw BS, Shaw I, & Brown GA. Body composition variation following diaphragmatic breathing. African Journal for Physical, Health Education, Recreation and Dance (AJPHERD). 18: 787-794, 2012.

19. Shaw I, Shaw BS, & Brown GA. Concurrent Training and Pulmonary Function in Smokers. Int J Sports Med. 32:776-80, 2011

20. Nienhueser J, Brown, GA, Shaw BS & I Shaw. Effects of Energy Drinks on Metabolism at Rest and During Submaximal Treadmill Exercise in College Age Males. Int J Exerc Sci 4: 321-332, 2011

21. Shaw I, Shaw BS, & Brown GA. Relationship between Resistance Training and Self-Reported Habitual Nutrient Intake. South African Journal for Research in Sport, Physical Education and Recreation. 32: 109-116, 2010

22. Brown GA, Swendener AM, Shaw I, & Shaw BS. Comparison of anthropometric and metabolic responses to a short term carbohydrate restricted diet and exercise versus a traditional diet and exercise. African Journal for Physical, Health Education, Recreation and Dance (AJPHERD). 16: 535-544, 2010

23. Brown GA, Ray M, Abbey BA, Shaw BS, & Shaw I. Oxygen Consumption, Heart Rate and Blood Lactate Responses to an Acute Bout of Plyometric Depth Jumps in College Aged Men and Women. J Strength Cond Res. 24:275-82. 2010

24. Shaw I, Shaw BS, Brown GA, & Cilliers JF. Concurrent Resistance and Aerobic Training as Protection against Heart Disease. Cardiovasc J Afr 21: 196-199, 2010

25. Brown GA, Cook CM, Krueger RD, & Heelan KA Comparison of energy expenditure on a treadmill vs. an elliptical device at a self-selected exercise intensity. J Str Cond Res 24:1643-9, 2010

26. Shaw I, Shaw BS, & Brown GA. Role of Diaphragmatic Breathing and Aerobic Exercise in Improving Maximal Oxygen Consumption in Asthmatics. Science & Sports 25:139-145, 2010

27. Shaw I, Shaw BS, & Brown GA. Comparison of Resistance and Concurrent Resistance and Endurance Training Regimes in the Development of Strength. J Str Cond Res. 23: 25072514, 2009

28. Castell LM, Burke LM, Stear SJ, Wolfe RR, Newsholme EA, Trudeau F, Curi R, Brown GA, Vukovich MD, and DS King. BJSM reviews: A–Z of supplements: dietary supplements, sports nutrition foods and ergogenic aids for health and performance Part 2. Br. J. Sports Med. 43:807-810. 2009

29. Shaw BS, Shaw I, & Brown GA. Resistance Training and its Effect on Total, Central and Abdominal Adiposity. South African Journal for Research in Sport, Physical Education and Recreation. 31: 97-108. 2009

30. Shaw I, Shaw BS, & Brown GA. Influence of Strength Training on Cardiac Risk Prevention in Individuals without Cardiovascular Disease. African Journal for Physical, Health Education, Recreation and Dance (AJPHERD). 15: 424-432. 2009

31. Shaw BS, Shaw I, & Brown GA. Resistance Training and Predicted Risk of Coronary Heart Disease in Sedentary Males. African Journal for Physical, Health Education, Recreation and Dance (AJPHERD). Supplement: 247-257. 2009

32. Stahlnecker IV AC, Brown GA, Shaw BS, & Shaw I. Acute Effects of a Weight Loss Supplement on Resting Metabolic Rate and Anaerobic Exercise Performance. African Journal for Physical, Health Education, Recreation and Dance (AJPHERD). Supplement: 237-247. 2009

33. McWha JA, Horst S, Brown GA, Shaw I, & Shaw BS. Metabolic Changes Associated with Playing an Active Video Game Against a Human and Computer Opponent. African Journal for Physical, Health Education, Recreation and Dance (AJPHERD). Supplement: 219-228. 2009

34. Semin K, Stahlnecker IV AC, Heelan KA, Brown GA, Shaw BS, & Shaw I. Discrepancy between Training, Competition and Laboratory Measures of Maximum Heart Rate in NCAA Division 2 Distance Runners. J Sports Sci & Med. 7: 455 – 460, 2008

35. Brown GA, Rebok MP, Scott ML, Harris III J, Colaluca MK, Shaw I, & Shaw BS. Physiological and

Biomechanical Responses of Running with and Without a Stroller. African Journal for Physical, Health Education, Recreation and Dance (AJPHERD). 14: 240249, 2008

36. Brown GA, McFarland SP, Ray MW, Abbey BM, Shaw I, & Shaw BS. A Single Session of Brisk Walking Does Not Alter Blood Glucose Homeostasis in Overweight Young Men. African Journal for Physical, Health Education, Recreation and Dance (AJPHERD). 14: 250-264, 2008

37. Brown GA, Lynott F, & Heelan KA. A Service Learning Model for Teaching Fitness Assessment and Research Techniques to Undergraduate Exercise Science Students. Adv Physiol Educ. 32: 212-218, 2008

38. Carstensen C, Brown GA, Shaw I, & Shaw BS. Freely-Paced Walking in Healthy Adults Does Not Meet Minimum Intensity Guidelines for Health Improvement. African Journal for Physical, Health Education, Recreation and Dance (AJPHERD), 14: 178-187, 2008

39. Shaw BS, Shaw I, and Brown GA. Self-Reported Dietary Intake Following Endurance, Resistance And Concurrent Endurance And Resistance Training. J Sports Sci & Med 7: 255259, 2008

40. Brown, GA. Teaching skeletal muscle adaptations to aerobic exercise using an APS classic paper by Dr. Philip Gollnick and colleagues. Adv Physiol Educ. 30: 113-118, 2006

41. Brown GA, Vukovich MD, & King DS. Testosterone Prohomone Supplements. Med. Sci. Sports Exerc. Med Sci Sports Exerc. 38: 1451-1461, 2006

42. Brown GA, & MacKenzie D. Resistance Exercise Does Not Change The Hormonal Response To Sublingual Androstenediol. Eur J Appl Physiol. 97:404-412, 2006

43. Brown GA, Vukovich MD, and King DS. Urinary excretion of steroid metabolites following chronic androstenedione ingestion. J. Clin. Endocrinol. Metab. 12:6235 – 6338, 2004

44. Brown GA, Dewey JC, Brunkhorst J, Vukovich MD, & King DS. Changes in serum testosterone and estradiol concentrations following acute androstenedione ingestion in young women. Horm Metab Res. 1:62-66, 2004

45. Kohut ML, Thompson JR, Campbell J, Brown GA, Vukovich MD, Jackson DA, & King DS. Ingestion of a Dietary Supplement Containing Dehydroepiandrosterone (DHEA) and Androstenedione Has Minimal Effect on Immune Function in Middle-Aged Men. J Am Coll Nutr. 22: 363-71, 2003

46. Brown GA, Martini ER, Roberts BS, Vukovich MD, & King DS. Acute hormonal responses to sublingual androstenediol intake in young men. J Appl Physiol. 92: 142-146, 2002.

47. Brown GA, Vukovich MD, Martini ER, Kohut ML, Franke WL, Jackson DA, & King DS. Effects of androstenedione-herbal supplements on serum sex hormone concentrations in 3059 year old men. Int J Vitam Nutr Res. 71: 293-301, 2001

48. Brown GA, Vukovich MD, Martini ER, Kohut ML, Franke WL, Jackson DA, & King DS. Endocrine and lipid responses to chronic androstenediol-herbal supplementation in 30 to 58 year old men. J Am Coll Nutr. 20: 520-528, 2001.

49. Brown GA, Vukovich MD, Martini ER, Kohut ML, Franke ML, Jackson DA, & King DS. Endocrine response to chronic androstenedione intake in 30-56 year old men. J Clin Endocrinol Metab. 85: 4074-4080, 2000.

50. Brown GA, Vukovich MD, Reifenrath TA, Uhl NL, Parsons KA, Sharp RL, & King DS. Effects of anabolic precursors on serum testosterone concentrations and adaptations to resistance training in young men. Int J Sport Nutr Exerc Metab. 10: 342-362, 2000.

51. Brown GA, Vukovich MD, Sharp RL, Reifenrath TA, Parsons KA, & King DS. Effect of oral DHEA on serum testosterone and adaptations to resistance training in young men. J Appl Physiol. 87: 2274-2283, 1999.

52. King DS, Sharp RL, Vukovich MD, Brown GA, Reifenrath TA, Uhl NL, & Parsons KA. Effect of oral androstenedione on serum testosterone and adaptations to resistance training in young men: a randomized controlled trial. JAMA. 281: 2020-2028, 1999.

Refereed Presentations

1. Brown GA, Jackson B, Szekely B, Schramm T, Shaw BS, Shaw I. A Pre-Workout Supplement Does Not Improve 400 M Sprint Running or Bicycle Wingate Test Performance in Recreationally Trained Individuals. Med Sci Sport Exerc. 50(5), 2932. 65th Annual Meeting of the American College of Sports Medicine. Minneapolis, MN. June 2018.

2. Paulsen SM, Brown GA. Neither Coffee Nor A Stimulant Containing "Pre-workout" Drink Alter Cardiovascular Drift During Walking In Young Men. Med Sci Sport Exerc. 50(5), 2409. 65th Annual Meeting of the American College of Sports Medicine. Minneapolis, MN. June 2018.

3. Adkins M, Bice M, Bickford N, Brown GA. Farm to Fresh! A Multidisciplinary Approach to Teaching Health and Physical Activity. 2018 spring SHAPE

America central district conference. Sioux Falls, SD. January 2018.

4. Shaw I, Kinsey JE, Richards R, Shaw BS, and Brown GA. Effect Of Resistance Training During Nebulization In Adults With Cystic Fibrosis. International Journal of Arts & Sciences' (IJAS). International Conference for Physical, Life and Health Sciences which will be held at FHWien University of Applied Sciences of WKW, at Währinger Gürtel 97, Vienna, Austria, from 25-29 June 2017.

5. Bongers M, Abbey BM, Heelan K, Steele JE, Brown GA. Nutrition Education Improves Nutrition Knowledge, Not Dietary Habits In Female Collegiate Distance Runners. Med Sci Sport Exerc. 49(5), 389. 64th Annual Meeting of the American College of Sports Medicine. Denver, CO. May 2017.

6. Brown GA, Steele JE, Shaw I, Shaw BS. Using Elisa to Enhance the Biochemistry Laboratory Experience for Exercise Science Students. Med Sci Sport Exerc. 49(5), 1108. 64th Annual Meeting of the American College of Sports Medicine. Denver, CO. May 2017.

7. Brown GA, Shaw BS, and Shaw I. Effects of a 6 Week Conditioning Program on Jumping, Sprinting, and Agility Performance In Youth. Med Sci Sport Exerc. 48(5), 3730. 63rd Annual Meeting of the American College of Sports Medicine. Boston, MA. June 2016.

8. Shaw I, Shaw BS, Boshoff VE, Coetzee S, and Brown GA. Kinanthropometric Responses To Callisthenic Strength Training In Children. Med Sci Sport Exerc. 48(5), 3221. 63rd Annual Meeting of the American College of Sports Medicine. Boston, MA. June 2016.

9. Shaw BS, Shaw I, Gouveia M, McIntyre S, and Brown GA. Kinanthropometric Responses To Moderate-

intensity Resistance Training In Postmenopausal Women. Med Sci Sport Exerc. 48(5), 2127. 63rd Annual Meeting of the American College of Sports Medicine. Boston, MA. June 2016.

10. Bice MR, Cary JD, Brown GA, Adkins M, and Ball JW. The use of mobile applications to enhance introductory anatomy & physiology student performance on topic specific in-class tests. National Association for Kinesiology in Higher Education National Conference. January 8, 2016.

11. Shaw I, Shaw BS, Lawrence KE, Brown GA, and Shariat A. Concurrent Resistance and Aerobic Exercise Training Improves Hemodynamics in Normotensive Overweight and Obese Individuals. Med Sci Sport Exerc. 47(5), 559. 62nd Annual Meeting of the American College of Sports Medicine. San Diego, CA. May 2015.

12. Shaw BS, Shaw I, McCrorie C, Turner S., Schnetler A, and Brown GA. Concurrent Resistance and Aerobic Training in the Prevention of Overweight and Obesity in Young Adults. Med Sci Sport Exerc. 47(5), 223. 62nd Annual Meeting of the American College of Sports Medicine. San Diego, CA. May 2015.

13. Schneekloth B, Shaw I, Shaw BS, and Brown GA. Physical Activity Levels Using KinectTM Zumba Fitness versus Zumba Fitness with a Human Instructor. Med Sci Sport Exerc. 46(5), 326. 61st Annual Meeting of the American College of Sports Medicine. Orlando, FL. June 2014.

14. Shaw I, Lawrence KE, Shaw BS, and Brown GA. Callisthenic Exercise-related Changes in Body Composition in Overweight and Obese Adults. Med Sci Sport Exerc. 46(5), 394. 61st Annual Meeting of the

American College of Sports Medicine. Orlando, FL June 2014.

15. Shaw BS, Shaw I, Fourie M, Gildenhuys M, and Brown GA. Variances In The Body Composition Of Elderly Woman Following Progressive Mat Pilates. Med Sci Sport Exerc. 46(5), 558. 61st Annual Meeting of the American College of Sports Medicine. Orlando, FL June 2014.

16. Brown GA, Shaw I, Shaw BS, and Bice M. Online Quizzes Enhance Introductory Anatomy & Physiology Performance on Subsequent Tests, But Not Examinations. Med Sci Sport Exerc. 46(5), 1655. 61st Annual Meeting of the American College of Sports Medicine. Orlando, FL June 2014.

17. Kahle, A. and Brown, G.A. Electromyography in the Gastrocnemius and Tibialis Anterior, and Oxygen Consumption, Ventilation, and Heart Rate During Minimalist versus Traditionally Shod Running. 27th National Conference on Undergraduate Research (NCUR). La Crosse, Wisconsin USA. April 11-13, 2013

18. Shaw, I., Shaw, B.S., and Brown, G.A. Resistive Breathing Effects on Pulmonary Function, Aerobic Capacity and Medication Usage in Adult Asthmatics Med Sci Sports Exerc 45 (5). S1602 2013. 60th Annual Meeting of the American College of Sports Medicine, Indianapolis, IN USA, May 26-30 3013

19. Shaw, B.S. Gildenhuys, G.A., Fourie, M. Shaw I, and Brown, G.A. Function Changes In The Aged Following Pilates Exercise Training. Med Sci Sports Exerc 45 (5). S1566 60th Annual Meeting of the American College of Sports Medicine, Indianapolis, IN USA, May 26-30 2013

20. Brown, G.A., Abbey, B.M., Ray, M.W., Shaw B.S., & Shaw, I. Changes in Plasma Free Testosterone and Cortisol Concentrations During Plyometric Depth Jumps. Med Sci Sports Exerc 44 (5). S598, 2012. 59th Annual Meeting of the American College of Sports Medicine. May 29 - June 2, 2012; San Francisco, California

21. Shaw, I., Fourie, M., Gildenhuys, G.M., Shaw B.S., & Brown, G.A. Group Pilates Program and Muscular Strength and Endurance Among Elderly Woman. Med Sci Sports Exerc 44 (5). S1426. 59th Annual Meeting of the American College of Sports Medicine. May 29 - June 2, 2012; San Francisco, California

22. Shaw B.S., Shaw, I., & Brown, G.A. Concurrent Inspiratory-Expiratory and Aerobic Training Effects On Respiratory Muscle Strength In Asthmatics. Med Sci Sports Exerc 44 (5). S2163. 59th Annual Meeting of the American College of Sports Medicine. May 29 - June 2, 2012; San Francisco, California

23. Scheer, K., Siebrandt, S., Brown, G.A, Shaw B.S., & Shaw, I. Heart Rate, Oxygen Consumption, and Ventilation due to Different Physically Active Video Game Systems. Med Sci Sports Exerc 44 (5). S1763. 59th Annual Meeting of the American College of Sports Medicine. May 29 - June 2, 2012; San Francisco, California

24. Jarvi M.B., Shaw B.S., Shaw, I., & Brown, G.A. (2012) Paintball Is A Blast, But Is It Exercise? Heart Rate and Accelerometry In Boys Playing Paintball. Med Sci Sports Exerc 44 (5). S3503. 59th Annual Meeting of the American College of Sports Medicine. May 29 - June 2, 2012; San Francisco, California

25. Shaw, I., Shaw, B.S., and Brown G.A. Effort-dependent Pulmonary Variable Improvements Following A Novel Breathing Retraining Technique In Asthmatics.

Med Sci Sports Exerc 43 (5). S617, 2011. 58th Annual Meeting of the American College of Sports Medicine. May 31-June 4, 2011 Denver, Colorado

26. Brown G.A. Shaw, B.S., and Shaw, I. Exercise and a Low Carbohydrate Diet Reduce Body Fat but Not PYY and Leptin Concentrations. Med Sci Sports Exerc 43 (5). S4627, 2011. 58th Annual Meeting of the American College of Sports Medicine. May 31-June 4, 2011 Denver, Colorado

27. Shaw, B.S., Shaw, I, and Brown G.A. Pulmonary Function Changes In Response To Combined Aerobic And Resistance Training In Sedentary Male Smokers. Med Sci Sports Exerc 43 (5). S492, 2011. 58th Annual Meeting of the American College of Sports Medicine. May 31-June 4, 2011 Denver, Colorado

28. Heiserman, K., Brown G.A., Shaw, I., and Shaw, B.S. Seated Weighted Abdominal Exercise Activates the Hip Flexors, But Not Abdominals, More Than Unweighted Crunches. A Med Sci Sports Exerc 43 (5). S277, 2011 58th Annual Meeting of the American College of Sports Medicine. May 31-June 4, 2011 Denver, Colorado

29. Brown, G.A., Nienhueser, J., Shaw, I., and Shaw, B.S. Energy Drinks Alter Metabolism at Rest but not During Submaximal Exercise in College Age Males. Med Sci Sports Exerc. 42 (5): S1930. 57th Annual Meeting American College of Sports Medicine, June 1-5, 2010. Baltimore, MD

30. Shaw, I, Shaw, B.S., and Brown G.A. Abdominal and Chest Wall Compliance in Asthmatics: Effects of Different Training Modes. Med Sci Sports Exerc. 42 (5): S1588. 57th Annual Meeting American College of Sports Medicine, June 1-5, 2010. Baltimore, MD.

31. Shaw, B.S., Shaw, I, and Brown G.A. Exercise Effects on Lipoprotein Lipids in the Prevention of Cardiovascular Disease in Sedentary Males Smokers. Med Sci Sports Exerc. 42 (5): S1586. 57th Annual Meeting American College of Sports Medicine, June 1-5, 2010. Baltimore, MD.

32. Brown, G.A. Collaborative Research at a Primarily Undergraduate University. Med Sci Sports Exerc. 42 (5): S424. 57th Annual Meeting American College of Sports Medicine, June 1-5, 2010. Baltimore, MD.

33. Nienhueser, J., Brown, G.A., Effects of Energy Drinks on Resting and Submaximal Metabolism in College Age Males. NCUR 24 (24th National Conference on Undergraduate Research). Missoula, MT. April 15-17, 2010

34. Brown, G.A., N. Dickmeyer, A. Glidden, C. Smith, M. Beckman, B. Malicky, B.S. Shaw and I. Shaw. Relationship of Regional Adipose Tissue Distribution to Fasting Plasma PYY Concentrations in College Aged Females. 56th Annual Meeting American College of Sports Medicine, May 27-30, 2009. Seattle, WA. Med Sci Sports Exerc. 41 (5): S1333

35. Shaw, B.S., I. Shaw, and G.A. Brown. Contrasting Effects Of Exercise On Total And Intra-abdominal Visceral Fat. 56th Annual Meeting American College of Sports Medicine, May 27-30, 2009. Seattle, WA. Med Sci Sports Exerc. 41 (5): S1718

36. Shaw, I., B.S. Shaw, and G.A. Brown. Role of Endurance and Inspiratory Resistive Diaphragmatic Breathing Training In Improving Asthmatic Symptomology. 56th Annual Meeting American College of Sports Medicine, May 27-30, 2009. Seattle, WA. Med Sci Sports Exerc. 41 (5): S2713

37. McWha, J., S. Horst, G.A. Brown, B.S. Shaw, and I. Shaw. Energy Cost of Physically Active Video Gaming Against a Human or Computer Opponent. 56th Annual Meeting American College of Sports Medicine, May 27-30, 2009. Seattle, WA. Med Sci Sports Exerc. 41 (5): S3069

38. Horst, S., J. McWha, G.A. Brown, B.S. Shaw, and I. Shaw. Salivary Cortisol and Blood Lactate Responses to Physically Active Video Gaming in Young Adults. 56th Annual Meeting American College of Sports Medicine, May 27-30, 2009. Seattle, WA. Med Sci Sports Exerc. 41 (5): S3070

39. Glidden A., M. Beckman, B. Malciky, C. Smith, and G.A. Brown. Peptide YY Levels in Young Women: Correlations with Dietary Macronutrient Intake and Blood Glucose Levels. 55th Annual Meeting American College of Sports Medicine, May 28-31, 2008. Indianapolis, IN. Med Sci Sports Exerc. 40 (5): S741

40. Smith C., Glidden A. M. Beckman, B. Malciky, and G.A. Brown. Peptide YY Levels in Young Women: Correlations with Aerobic Fitness & Resting Metabolic Rate. 55th Annual Meeting American College of Sports Medicine, May 28-31, 2008. Indianapolis, IN. Med Sci Sports Exerc. 40 (5): S742

41. Brown, G.A. M. Holoubeck, B. Nylander, N. Watanabe, P. Janulewicz, M. Costello, K.A. Heelan, and B. Abbey. Energy Costs of Physically Active Video Gaming in Children: Wii Boxing, Wii tennis, and Dance Dance Revolution. 55th Annual Meeting American College of Sports Medicine, May 28-31, 2008. Indianapolis, IN. Med Sci Sports Exerc. 40 (5): S2243

42. McFarland, S.P. and G.A. Brown. One Session of Brisk Walking Does Not Alter Blood Glucose Homeostasis In Overweight Young Men. 53rd annual

meeting of the American College of Sports Medicine, Denver, CO. Med Sci Sports Exerc 38: S205, 2006

43. Stahlnecker IV, A.C. and G.A. Brown Acute Effects of a Weight Loss Supplement on Resting Metabolic Rate and Anaerobic Exercise Performance. 53rd annual meeting of the American College of Sports Medicine, Denver, CO. Med Sci Sports Exerc 38: S403, 2006

44. Brown, G.A. and A. Swendener. Effects of Exercise and a Low Carbohydrate Diet on Serum PYY Concentrations 53rd annual meeting of the American College of Sports Medicine, Denver, CO.. Med Sci Sports Exerc 38: s461, 2006

45. Swendener, A.M. and G.A. Brown. Effects of Exercise Combined with a Low Carbohydrate Diet on Health. 53rd annual meeting of the American College of Sports Medicine, Denver, CO. Med Sci Sports Exerc 38: s460, 2006

46. Swendener, A.M. and G.A. Brown. Effects Of Exercise Combined With A Low Carbohydrate Diet On Health. NCUR® 20, 2006

47. Stahlnecker IV, A.C. and G.A. Brown. Acute Effects Of A Weight Loss Supplement On Resting Metabolic Rate And Anaerobic Exercise. NCUR® 20, 2006

48. Eck, L. M. and G.A. Brown. Preliminary Analysis of Physical Fitness Levels in Kinesiology Students. Southern Regional Undergraduate Honors Conference. March 31, 2005.

49. Brown, G.A., J.N. Drouin, and D. MacKenzie. Resistance Exercise Does Not Change The Hormonal Response To Sublingual Androstenediol. 52nd Annual

Meeting of the American College of Sports Medicine, June 1-4, 2005, Nashville, TN. Med Sci Sports Exerc 37(5): S40, 2005

50. Brown, G.A., M.P Rebok, M.L. Scott, M.K. Colaluca, and J Harris III. Economy of Jogging Stroller Use During Running. 51st Annual Meeting of the American College of Sports Medicine, June 2-5, 2004, Indianapolis, IN. Med Sci Sports Exerc 36(5): S1714, 2004

51. M.P. Rebok, M.L. Scott, J. Harris III, M.K. Colaluca, and G.A. Brown. Economy of Jogging Stroller use During Running. Georgia Southern University Legislative Wild Game Supper, 2004.

52. M.P. Rebok, M.L. Scott, J. Harris III, M.K. Colaluca, and G.A. Brown. Energy cost of jogging stroller use during running. Annual Meeting of the Southeastern Chapter of the American College of Sports Medicine, 2004.

53. Brown, G.A., Effect of 8 weeks androstenedione supplementation and weight training on glucose tolerance and isokinetic strength. Annual Meeting of the Southeastern Chapter of the American College of Sports Medicine, 2004.

54. Brown, G.A., Vukovich, M.D., Kohut, M.L., Franke, W.D., Jackson, D.A., King, D.S., and Bowers, L.D. Urinary excretion of steroid metabolites following chronic androstenedione ingestion. 50th Annual Meeting of the American College of Sports Medicine, May 27-31 2003, San Francisco, CA. Med Sci Sports Exerc 35(5): S1835

55. Brown, G.A., E.R. Martini, B.S. Roberts, M.D. Vukovich, and D.S. King. Effects of Sublingual androstenediol-cyclodextrin on serum sex hormones in young men. 48th Annual Meeting American College of

Sports Medicine, May 30 – June 2, 2001. Baltimore, MD. Med Sci Sports Exerc. 33(5): S1650

56. Kohut, M.L., J.R. Thompson, J. Campbell, G.A. Brown, and D.S. King. Ingestion of a dietary supplement containing androstenedione and dehydroepiandrosterone (DHEA) has a minimal effect on immune response. International Society of Exercise and Immunology, 3rd Annual Convention May 29-30, 2001. Baltimore, MD. Med. Sci. Sports Exerc. 33(5): SISEI12

57. Brown, G.A., E.R. Martini, B.S. Roberts, and D.S. King. Effects of Sublingual androstenediol-cyclodextrin on serum sex hormones in young men. Iowa State University Educational Research Exchange, March 24, 2001. Ames, IA.

58. Martini, E.R., G.A. Brown, M.D. Vukovich, M.L. Kohut, W.D. Franke, D.A. Jackson, and D.S. King. Effects of androstenedione-herbal supplementation on serum sex hormone concentrations in 30-59 year old men. Iowa State University Educational Research Exchange, March 24, 2001. Ames, IA.

59. King, D.S., G.A. Brown, M.D. Vukovich, M.L. Kohut, W.D. Franke, and D.A. Jackson. Effects of Chronic Oral Androstenedione Intake in 30-58 year Old Men. 11th International Conference on the Biochemistry of Exercise. June 4-7, 2000. Little Rock, Arkansas

60. Brown, G.A., M.L. Kohut, W.D. Franke, D. Jackson, M.D. Vukovich, and D.S. King. Serum Hormonal and Lipid Responses to Androgenic supplementation in 30 –59 year old men. 47TH Annual Meeting American College of Sports Medicine, May 31-June 3, 2000. Indianapolis, IN. Med Sci Sports Exerc. 32(5): S486

61. Brown, G.A., T.A. Reifenrath, N.L. Uhl, R.L. Sharp, and D.S. King. Oral anabolic-androgenic

supplements during resistance training: Effects on glucose tolerance, insulin action, and blood lipids. 1999 Annual Meeting American College of Sports Medicine, Seattle, WA. Med Sci Sports Exerc. 31(5): S1293

62. Reifenrath, T.A., R.L. Sharp, G.A. Brown, N.L. Uhl, and D.S. King. Oral anabolic-androgenic supplements during resistance training: Effects on body composition and muscle strength. 1999 Annual Meeting American College of Sports Medicine, Seattle, WA. Med Sci Sports Exerc. 31(5): S1292

63. King, D.S., R.L. Sharp, G.A. Brown, T.A. Reifenrath, and N.L. Uhl. Oral anabolic-androgenic supplements during resistance training: Effects on serum testosterone and estrogen concentrations. 1999 Annual Meeting American College of Sports Medicine, Seattle, WA. Med Sci Sports Exerc. 31(5): S1291

64. Parsons, K.A., R.L. Sharp, G.A. Brown, T.A. Reifenrath, N.L. Uhl, and D.S. King. Acute effects of oral anabolic-androgenic supplements on blood androgen and estrogen levels in man. 1999 Annual Meeting American College of Sports Medicine, Seattle, WA. Med Sci Sports Exerc. 31(5): S1290

Book Chapters

Brown, G.A. Chapters on Androstenedione and DHEA. In: Nutritional Supplements in Sport, Exercise and Health an A-Z Guide. edited by Linda M. Castell, Samantha J. Stear, Louise M. Burke. Routledge 2015.

Brown, G.A. Evaluating a Nutritional Supplement with SOAP Notes to Develop Critical Thinking Skills. In: Teaching Critical Thinking and Clinical Reasoning in the Health Sciences, edited by Facione NC and Facione PA. Millbrae, CA: California Academic Press 2008

Non Refereed Publications

Brown, G.A. and King, D.S. Sport Dietary Supplement Update on DHEA supplementation. Human Kinetics Publishers, Inc. October, 2000.

Brown, G.A. Getting in Shape for Paintball in the Winter. Paintball Sports International, January, 1999

Invited Presentations

Brown G.A. Collaborative experiences with researchers in South Africa. Africa Summit 2019 (March 28, 2019). Presented by the University of Nebraska and the University of Nebraska Medical Center.

Peer Reviewer for the Following Journals

Advances in Physiology Education.
http://www.theaps.org/publications/advan/

African Journal For Physical, Health Education, Recreation and Dance (AJPHERD). ISSN: 1117-4315
http://www.ajol.info/journal_index.php?jid=153

Anatomical Sciences Education.
http://www.asejournal.com

Asian Journal of Sports Medicine.
http://asjsm.tums.ac.ir/index.php/asjsm

CardioVascular Journal of Africa. http://www.cvjsa.co.za/

Complementary Therapies in Medicine.
http://ees.elsevier.com/ctim/

European Journal of Sport Science.
http://www.tandf.co.uk/journals/titles/17461391.asp

Games for Health Journal.
http://www.liebertpub.com/overview/games-for-health-journal/588/

Global Journal of Health and Physical Education Pedagogy. http://js.sagamorepub.com/gjhpep

Interactive Learning Environments. https://www.tandfonline.com/toc/nile20/current

International Journal of Exercise Science. http://digitalcommons.wku.edu/ijes/

Journal of Sports Sciences. http://www.tandf.co.uk/journals/titles/02640414.html

Journal of Strength and Conditioning Research. http://journals.lww.com/nsca-jscr/pages/default.aspx

Lung. http://www.springer.com/medicine/internal/journal/408
Pediatrics. http://pediatrics.aappublications.org/

Scandinavian Journal of Medicine and Science in Sports. http://www.blackwellpublishing.com/journal.asp?ref=0905-7188

South African Journal of Diabetes and Vascular Disease http://www.diabetesjournal.co.za/

The American Journal of Physiology - Endocrinology and Metabolism. http://ajpendo.physiology.org/

The American Journal of Physiology - Heart and Circulatory Physiology. http://ajpheart.physiology.org/

The American Journal of Physiology - Regulatory, Integrative and Comparative Physiology. http://ajpregu.physiology.org/

The International Journal of Sport Nutrition & Exercise Metabolism.

http://www.humankinetics.com/IJSNEM/journalAbout.cfm

The Journal of Sports Science and Medicine (JSSM)
http://www.jssm.org/

The International Journal of Nutrition and Metabolism
ww.academicjournals.org/IJNAM

The Open Sports Sciences Journal.
http://benthamscience.com/open/tossj/index.htm

The Journal of Applied Physiology.
http://jap.physiology.org/

African Health Sciences.
http://www.ajol.info/index.php/ahs

Menopause.
http://journals.lww.com/menopausejournal/pages/default.aspx

Membership in Professional Organizations

American College of Sports Medicine

American Physiological Society

National Strength and Conditioning Association

Graduate Student Advisement/Mentoring

Kourtney Woracek. MAEd Thesis Committee. in progress

Marissa Bongers. MAEd Thesis Committee Director. Dietary Habits and Nutrition Knowledge in Female Collegiate Distance Runners. Degree Awarded Spring 2016.

Justin Thiel. MAEd Advisor. Degree Awarded Spring 2016.

Mitchell Sasek. MAEd Advisor. Degree Awarded Summer 2015

Chad Keller. MAEd Advisor. Degree Awarded Summer 2014

Faron Klingehoffer. MAEd Advisor. Degree Awarded Summer 2014

Joe Scharfenkamp. MAEd Internship Advisor. Degree Awarded Summer 2014

Andrew Hudson. MAEd Thesis Committee. Thesis Title. valuation of Weight Loss in Parents Participating in a Pediatric Obesity Treatment Intervention Degree Awarded Fall 2012

Megan Adkins. Doctoral Dissertation Committee. An Examination of Changes in Sedentary Time with the Integration of Technology for Children Participating in a Morning Fitness Program. Degree Awarded Summer 2011

Christopher Campbell. MAEd Advisor. Degree Awarded Spring 2011

Logan Brodine. MAEd Advisor. Degree Awarded Spring 2010

Megan Costello. MAEd Thesis Committee. Changes in the Prevalence of at risk of overweight or overweight in children. Degree Awarded Spring 2009

Pamela Janulewciz, MAEd Thesis Committee. Effects of Exercise Balls as Chair Replacements in a Fourth Grade Classroom. Degree Awarded Spring 2008

Melissa Shelden. MAEd Advisor.

Michael Bell. MAEd Advisor.

Karen DeDonder. MAEd Thesis Committee. Confidence Levels of Certified Athletic Trainers Regarding Female Athlete Triad Syndrome. Degree Awarded Spring 2008

Benjamin Nylander. MAEd Comprehensive Project Director. Degree Awarded Summer 2007 Eme Ferro. MAEd advisor. Degree Awarded Summer 2007

Julie McAlpin. MAEd Thesis Committee. Children Escorted to School; effect on Parental Physical Activity Degree awarded fall 2006

Michael Ray. MAEd Comprehensive Project Director. Degree Awarded Summer 2006

Seth McFarland. MAEd Thesis Committee Director. The Effects of Exercise Duration on Glucose Tolerance and Insulin Sensitivity in Mildly Overweight Men. Degree Awarded Summer 2005

Drew McKenzie. MS Academic Advisor. Degree Awarded Spring 2005

Matthew Luckie. MS Academic Advisor. Degree Awarded Spring 2005

Todd Lane. MS Academic Advisor

Leilani Lowery. MS Internship committee, Degree Awarded Spring 2003

Johnna Ware. MS Internship committee, Degree Awarded Spring 2003

David Bass. MS Internship committee, Degree Awarded Spring 2003

Crystal Smith. MS Internship committee, Degree Awarded Summer 2003

Undergraduate Student Research Mentoring

Cassidy Johnson. Project to be determined. Undergraduate Research Fellowship (Fall 2019 -)

Taylor Wilson. A comparison of High Intensity Interval Exercise on a bicycle ergometer to a treadmill on Resting Metabolic Rate the next day. Undergraduate Research Fellowship (Fall 2018 -)

Dakota Waddell. The effect of yoga versus mindful meditation on stress in physically active and non-physically active female college-aged students Undergraduate Research Fellowship (Fall 2018 -)

Dakota Waddell. A case study of the effects of the *osteostrong* program on bone mineral density and lean body mass in a paraplegic male. Undergraduate Research Fellowship (Fall 2017 – Spring 2018)

Andrew Fields. The effects of retraining running cadence on oxygen consumption in experienced runners. Undergraduate Research Fellowship. (Fall 2017 – Spring 2019)

Logan Engel. The effects of Tart Cherry Juice on Delayed Onset Muscle Soreness following Eccentric Exercise. Undergraduate Research Fellowship. Fall 2017 -

Stephanie Paulsen. Comparing the effects of coffee to a pre-workout drink on cardiovascular drift. Summer Student Research Program. University of Nebraska Kearney. Summer 2017.

Stephanie Paulsen. Comparing the effects of coffee to a pre-workout drink on resting and exercise metabolic rate. Undergraduate Research Fellowship. Spring 2017 - .

Rachael Ernest. Comparing the effects of coffee to a pre-workout drink on resting and exercise metabolic rate. Undergraduate Research Fellowship. Fall 2016 - Spring 2017.

Aleesha Olena. Evaluating the role of body composition on abdominal muscle definition. Undergraduate Research Fellowship. University of Nebraska Kearney. Fall 2016 - Spring 2017.

Marco Escalera. Evaluating the role of body composition on abdominal muscle definition. Undergraduate Research Fellowship. University of Nebraska Kearney. Fall 2015 - Spring 2017.

Trevor Schramm. Effects of "pre-workout' drinks on 400m sprint performance and salivary cortisol concentrations. Undergraduate Research Fellowship. University of Nebraska Kearney. Spring 2016.

Taylor Turek. Evaluating the role of body composition on abdominal muscle definition. Undergraduate Research Fellowship. University of Nebraska Kearney. Fall 2015 - Spring 2016.

Brian Szekely. Effects of "pre-workout" drinks on Wingate test performance and blood lactate concentrations. Undergraduate Research Fellowship. University of Nebraska Kearney. Fall 2014 - Spring 2016.

Brianna Jackson. Effects of "pre-workout' drinks on 400 m sprint performance and salivary cortisol concentrations. Undergraduate Research Fellowship. University of Nebraska Kearney. Fall 2014 – Fall 2015.

Ashley Pearson. Changes in resting metabolic rate over a semester in undergraduate students. Undergraduate Research Fellowship. University of Nebraska Kearney. Fall 2013 - Spring 2015.

Tricia Young. Changes in resting metabolic rate over a semester in undergraduate students. Undergraduate Research Fellowship. University of Nebraska Kearney. Fall 2013 - Spring 2014.

Gavin Schneider. Effects of “pre-workout” drinks on resistance training performance. Undergraduate Research Fellowship. University of Nebraska Kearney. Fall 2013 - Spring 2014.

Bridgette Schneekloth. Physical Activity while engaging in a Zumba dance class or Microsoft Kinect Zumba. Summer Student Research Program. University of Nebraska Kearney. Summer 2013.

Bridgette Schneekloth. Physical Activity while engaging in Microsoft Kinect Track & Field running vs. free running on an indoor track. Undergraduate Research Fellowship. University of Nebraska Kearney. Fall 2012 - Spring 2014.

Adam Kahle. Evaluating changes in running mechanics with “barefoot” footwear. Summer Student Research Program. University of Nebraska Kearney. Summer 2012

Michelle Jarvi. Quantifying paintball as a form of physical activity in Boys. Undergraduate Research Fellowship. University of Nebraska Kearney. Fall 2011 - Spring 2012.

Benjamin Lentz, Krista Scheer, & Sarah Siebrandt. Wii, Kinect, and Move for Physical Activity: Analysis of Energy Expenditure, Heart Rate, and Ventilation. Undergraduate Research Fellowship. University of Nebraska Kearney. Fall 2010 - Spring 2012.

Katlyn Heiserman. Comparison of EMG activity in the rectus abdominis and rectus femoris during supine un-weighted abdominal crunch exercise and a seated abdominal crunch exercise weight machine. Summer Student Research Program. University of Nebraska Kearney. Summer 2010

Janae Nienhueser. Effects of Energy drink on resting and submaximal exercise metabolism in college age men.

Summer Student Research Program. University of Nebraska Kearney. Summer 2009

Jessica McWha. Metabolic changes while playing active video gaming against a human and computer opponent. Summer Student Research Program and Undergraduate Research Fellowship. University of Nebraska Kearney. Summer 2008 – Spring 2009

Sarah Horst. Changes in blood lactate and salivary cortisol concentrations while "exergaming" against a human or computer opponent. Summer Student Research Program. University of Nebraska Kearney. Summer 2008

Craig Carstensen. Differences in the Physiological Response to Treadmill versus Freely Paced Walking. Summer Student Research Program. University of Nebraska Kearney. Summer 2006

Alvah Stahlnecker Acute effects of a weight loss supplement on resting metabolic rate and anaerobic exercise performance. Summer Student Research Program. University of Nebraska Kearney. Summer 2005

Allison Swendener. Effects of exercise combined with a low carbohydrate diet on health. Summer Student Research Program. University of Nebraska Kearney. Summer 2005

Kamilah Whipple. A measurement of the physical activity and fitness of undergraduate Georgia Southern University students. Ronald E. McNair Post-Baccalaureate Achievement Program. Georgia Southern University. Summer 2004.

Lindsey Eck. Preliminary Analysis of Physical Fitness Levels in Kinesiology Students. Independent undergraduate research project. Georgia Southern University. Summer 2004.

Description of Graduate Courses Taught

PE 870: Advanced Exercise Physiology Course presumes a student has had a basic course in exercise physiology. The content of cardiorespiratory fitness, body composition, muscular strength/flexibility, body fluids and metabolism is presented beyond the introductory level. (University of Nebraska at Kearney)

PE 866P: Nutrition for Health and Sport. (Dual listed/taught with PE 469) Metabolism and metabolic regulation, the influence of dietary practices on health and human performance, and mechanisms and consequences of weight loss and gain.. (University of Nebraska Kearney)

PE 861P: Physiology of Exercise. (Dual listed/taught with PE 461) Physiological processes of body as pertain to physical activity. How trained and untrained individuals differ, and importance of training. (University of Nebraska at Kearney)

TE 800: Education Research. This introductory web-based course in educational research focuses on evaluating and interpreting educational research and applying its findings to educational practice. (University of Nebraska at Kearney)

KINS 7230: Exercise Physiology. Focuses on the study of the effects of exercise on the physiological functions of the human organism with emphasis on theoretical orientations. (Georgia Southern University)

KINS 7231: Laboratory Techniques in Exercise Physiology. Acquaints the student with the use of typical laboratory equipment used in exercise physiology. (Georgia Southern University)

KINS 7238: Human Performance and Nutrition. Examines the interaction between nutrition and physical activity, including exercise and athletic performance. (Georgia Southern University)

KINS 7431: Applied Sport Physiology. Focuses on the study of exercise physiology principles applied to developing training and conditioning programs for enhancing health related fitness and performance (Georgia Southern University)

KINS 7899: Directed Independent Study. Provides the student with an opportunity to investigate an area of interest under the direction of faculty mentor (Georgia Southern University)

EXSP 551: Advanced Exercise Physiology 2. Analysis of factors affecting work capacity and performance. Human energy metabolism concepts and measurement. (Iowa State University)

Description of Undergraduate Courses Taught

PE 498: Special Topics. (University of Nebraska at Kearney)

PE 475: Research Methods in Exercise Science. This course is designed to introduce advanced undergraduate students to the processes of research in the field of Exercise Science including the processes of finding, reading and understanding Exercise Science research; data collection; data analysis; and data interpretation. (University of Nebraska at Kearney)

PE 469: Sports Nutrition. Metabolism and metabolic regulation, the influence of dietary practices on human performance. (University of Nebraska at Kearney)

PE 461: Physiology of Exercise. Physiological processes of body as pertain to physical

activity. How trained and untrained individuals differ, and importance of training. (University of Nebraska at Kearney)

PE 388: General Studies Capstone - The Living Dead in Fact & Fiction. The Living Dead, such as Zombies and Vampires, are pervasive in fictional literature, television, and movies. During this course, novels, television episodes, and movies will be used to identify disease symptoms displayed by the living dead, and these symptoms will then be evaluated regarding what type of medical condition might cause the symptoms.

PE 310: Introduction to Exercise Physiology. Provides a foundation of scientific basis for understanding the body's anatomical structures and physiologic responses to acute exercise, as well as its adaptations to chronic exercise. (University of Nebraska at Kearney)

PE 107. This course is designed to introduce students to the field of Exercise Science as an area of academic study and as a professional career. Students majoring in Exercise Science should take this course in their first year. (University of Nebraska at Kearney)

KINS 4231: Fitness Evaluation and Exercise Prescription. Provides the student with an in-depth study of fitness appraisal and exercise prescription and the development, interpretation, implementation and management of fitness programs (with laboratory). (Georgia Southern University)

KINS 3133: Physiological Aspects of Exercise. Provides an in-depth perspective of physiological and biochemical responses of the human body when subjected to exercise (with laboratory). (Georgia Southern University)

GSU 1210: University Orientation 1. Designed to help first year students understand the purpose of a college education, learn about college requirements, explore values and interests, learn to make decisions and realistic choices, explore career objectives and programs of study, and establish supportive relationships with faculty and staff. Required of all new students during their first semester. (Georgia Southern University)

EX SP 462: Medical Aspect of Exercise. The role of exercise in preventive medicine. Impact of exercise on various diseases, and the effect of various medical conditions on the ability to participate in vigorous exercise and competitive sports. Principles of exercise testing and prescription for individuals with these conditions. Environmental and nutritional aspects of exercise. (Iowa State University)

EX SP 458: Principles of Exercise Testing and Prescription. Physiological principles of physical fitness; design and administration of fitness programs; testing, evaluation, and prescription; cardiac risk factor modification. (Iowa State University)

EX SP 455 (Renumbered as EX SP 358 for Fall 2001). Physiology of Exercise. Physiological basis of human performance; effects of physical activity on body functions (with laboratory). (Iowa State University)

EX SP 355: Biomechanics (Laboratory). Mechanical basis of human performance;

application of mechanical principles to exercise, sport and other physical activities. (Iowa State University)

EX SP 258: Physical Fitness and Conditioning. Development of personal fitness using a variety of conditioning and exercise techniques such as aerobics,

weight training, and aquatic fitness. Introduction to acute and chronic responses to exercise, and the role of exercise in health promotion and weight management. (Iowa State University)

EX SP 236: Fundamentals of Archery, Badminton, Bowling (Archery Segment). (Iowa State University)

EX SP 119: Archery 1. (Iowa State University)

EX SP 220: Physical Fitness and Conditioning. Development of personal fitness using a variety of conditioning and exercise techniques such as aerobics, weight training, and aquatic fitness. Introduction to acute and chronic responses to exercise, and the role of exercise in health promotion and weight management. (Des Moines Area Community College)

PE 157: Introduction to Athletic training. Introduction to methods of prevention and immediate care of athletic injuries. Basic information concerning health supervision of athletes, and some basic wrapping and strapping techniques for common injuries. (Des Moines Area Community College)

PE 144: Introduction to Physical Education. History and development of physical education as an academic discipline. Principles and current practices of teaching physical education. (Des Moines Area Community College)

PHYSL 130: Human Physiology. Principles of the regulation and maintenance of human physiology. (Utah State University; Volunteer Undergraduate TA)

PHYSL 103 Human Anatomy. Introduction to the structure and location of bones, muscles, and organs in the human body. (Utah State University; Volunteer Undergraduate TA)

Service

Service to the Profession

Associate Editor, Asian Journal of Sports Medicine (2019-).

Director, North American Chapter, International Physical Activity Projects (IPAP) (2009-)

Fellow, American College of Sports Medicine (2008-)

National Research Foundation (South Africa) peer evaluator for grant applicants

National Research Foundation (South Africa) evaluator of applications for funding in Thuthuka Programme

External Evaluator for Master's Theses and Doctoral Dissertations, University of Johannesburg, Johannesburg South Africa.

Grant proposal reviewer for NASPE/ING Run for Something Better School Awards Program.

Session Chair. Special Event. Undergraduate Research Experiences in Exercise Science. ACSM Annual Meeting, 2010

Session Chair. 2nd Annual Education Research Exchange. Iowa State University Education Research Exchange, 2001

Current Service at the University of Nebraska at Kearney

University Wide

Faculty Senate Parliamentarian (April 2019 – April 2022)

Faculty Senate Oversight Committee Chair (April 2019 – April 2022)

Faculty Senate Executive Committee (April 2019 – April 2022)

Faculty Senate, At Large representative (Fall 2018-)

University Student Conduct Appeals Board (Fall 2019 - May 2020)

General Studies Council (fall 2013-)

University Safety Committee (Fall 2018 -)

University Student Travel Policy Committee (Fall 2019-)

University Retention Council (Fall 2019 -)

External Evaluator, Promotion Committee, Department of Social Work & Criminal Justice (Fall 2019-)

College of Education Dean Search Committee Member (Fall 2019 -)

College of Education

College of Education Promotion and Tenure Committee, Chair (Fall 2012 – present) Member (fall 2008 – spring 2012)

Department of Kinesiology and Sport Sciences

Kinesiology Lecturer Search Committee Member (Fall 2019 -)

Nebraska Kids Fitness and Nutrition Day, volunteer educator and student coordinator. (fall 2005-present)

Academic Advisor for Undergraduate exercise Science Students (Fall 2005 - present)

Previous Service at the University of Nebraska at Kearney

Recreation Faculty Search Committee Member (Spring 2019)

University Student Conduct Board (Fall 2016- May 2017, Fall 2018 – May 2019)

Faculty Senate Athletic Committee (Fall 2018-May 2019)

External Evaluator, Promotion & Tenure, Department of Social Work & Criminal Justice (Fall 2018)

External Evaluator, Faculty Annual Performance Reviews, Department of Social Work & Criminal Justice (Spring 2018)

University Graduate Council. (Fall 2014 – spring 2017)

University Graduate Council Standing Committee I: Policy & Planning Committee (fall 2014 – spring 2017)

Faculty Senate (April 2012- April 2016)

Faculty Senate Executive Council, (April 2014 – April 2016)

Faculty Senate representative to the Oversight Committee (September 2014 – April 2016)

Faculty Senate representative to the Grievance Committee (September 2014 – April 2016)

Faculty Senate representative to the Professional Conduct committee (September 2013 - April 2016)

Youth Agility Speed & Quickness program director (2011-2015)

Faculty Senate ad-hoc committee on best practices in peer evaluation (2013-2014)

Director of General Studies search committee, committee member (2013-2014)

Director of the Office of Sponsored Programs search committee member (2012-2013; 20132014)

College peer mentor for implementing Critical Thinking in the classroom (2013-2014)

Chair, Ad-hoc committee for the evaluation of a new Student Evaluation of Instruction survey (2012-2014 academic years)

Ad-hoc committee to enhance communication effectiveness within department faculty and staff (2013-2014)

Exercise Science faculty search (2012-2013)

Undergraduate Research and Creative Activity program review team (2011-2012)

Institutional Review Board for the protection of Human Research Subjects. (Service period 2006 - 2011)

Undergraduate Research Committee (Service fall 2008 – spring 2011)
University Graduate Council. (Service period 2006 - 2010)

Homecoming Hustle (HPERLS Fun Run) Race Director and Coordinator (Service period beginning Fall 2007 – fall 2009)

Ad-hoc Committee on Enhancing Enrollment and Course Offerings in PE 110 Dept. of HPERLS (Service period beginning fall 2006)

Graduate Council Standing Committee 1: Policy and Planning Committee. (Service period beginning fall 2006; Chair in 2007 – 2008 and 2009-2010)

General Studies Roundtable 2 (spring 2006-spring 2007)

Academic Affairs Committee on Teaching Continuity (Service period beginning fall 2006)

Health Science Program Assistant Director Search Committee, University of Nebraska at Kearney. (Service period summer 2006)

Graduate Program Chair, HPERLS Department, University of Nebraska at Kearney (Service period beginning summer 2006 - 2010)

Graduate Dean Search Committee. University of Nebraska at Kearney (Service period 2005 – 2006 academic year)

Assistant HPERLS Department Graduate Coordinator. (Service period 2005 – 2006 academic year)

University of Nebraska at Kearney Centennial Run committee. (Service period fall 2005)

Senior College of Central Nebraska, Fit after 50 course coordinator. (Service period 2005 – 2006 academic year)

Health Science Program Assistant Advisor Search Committee. (Service period summer 2005) HPERLS Furniture Committee (Service period spring 2005)

Academic Advisor for Undergraduate exercise Science Students (Service period Beginning Fall 2005 academic year; ongoing)

Other Prior University Service

Institutional Review Board, Georgia Southern University (2003- 2004)

GSU Exercise Science undergraduate student advisor (2002 – 2004)

GSU Jiann-Ping Hsu School of Public Health extramural funding task force (2003-2004)

GSU Jiann-Ping Hsu School of Public Health Curriculum Committee (2003-2004)

GSU Jiann-Ping Hsu School of Public Health Assistant Graduate program director (2003-2004)

GSU Jiann-Ping Hsu School of Public Health Laboratory Director's Committee (2002-2004)

GSU Jiann-Ping Hsu School of Public Health Exercise Science Graduate program coordinator (2003-2004)

GSU Recreation and Athletic Center advisor to the personal training program (2003-2004) Institutional Biosafety Committee, Georgia Southern University (2003-2004)

Kinesiology Cluster Area, Georgia Southern University, Jiann-Ping Hsu School of Public Health (2002-2004)

Biostatistics Faculty Search Committee. Georgia Southern University, Jiann-Ping Hsu School of Public Health (2002-2003, 2003-2004)

Computer Advisory Committee, Iowa State University, University-Wide, College of Education, and Dept. of Health and Human Performance (2000-2002)

Computer Fee Allocation Committee, Iowa State University (2000-2001)

Dept. of Health and Human Performance Graduate Student Association (Founding Officer and 1st President; 2001-2002)

Sport Management Faculty Search Committee, Iowa State University Dept. of Health and Human Performance (2001-2002)

Previous Community Involvement

Race Director, Central Nebraska Susan G. Komen Race for the Cure (2011, 2012, 2013 events)

Webelos Den Leader, Boy Scouts of America Pack 132, Kearney, NE. Chartered to the Church of Jesus Christ of Latter Day Saints

Scoutmaster, Boy Scouts of America Troop 132, Kearney, NE. Chartered to the Church of Jesus Christ of Latter Day Saints

Tiger Den Coach, Boy Scouts of America Pack 135, Kearney, NE. Chartered to Faith United Methodist Church.

Personal Fitness Merit Badge Counselor. Boy Scouts of America, Overland Trails Council Covered wagon District.

Certifications

American College of Sports Medicine: ACSM Certified Exercise Physiologist (05/21/1998 - 12/31/2021)

USA Track and Field: Level One Coach

American Red Cross: Community First Aid and CPR

Funding

Research Funding

Brown GA, Bice MR, Abbey BM. Shaw I, Shaw BS. Effects of aerobic exercise, resistance exercise, and combined aerobic & resistance exercise on food choices and endocrine signals of satiety in middle aged adults. Submitted 6/26/2017 to National Institutes of Health [PA16-200] - Academic Research Enhancement Award (Parent R15) (Application #1R15DK117436-01). Total Amount Requested: $367,708. (Resubmission of revised proposal; Pending Review.)

Brown GA, Bice MR, Abbey BM. Shaw I, Shaw BS. Effects of aerobic exercise, resistance exercise, and

combined aerobic & resistance exercise on food choices and endocrine signals of satiety in middle aged adults. Submitted 6/26/2017 to National Institutes of Health [PA16-200] - Academic Research Enhancement Award (Parent R15) (Application #1R15DK117436-01). Total Amount Requested: $351,708. Pending Review.

Brown GA, Bice MR, Adkins MM, Hollman A, Bickford S, Bickford N, Ranglack D. HEAT it up (Health, Exercise, Aquaponics, Technology) summer camps to grow future health professionals in Rural Nebraska. Submitted 5/25/2017 to National Institutes of Health [PAR17-183] - NICHD Research Education Programs (R25) (Application # 1R25 HD094673-01) Total Amount Requested: $777,006. Pending Review.

Brown GA, Bice MR, Adkins MM, Hollman A, Bickford S, Bickford N, Ranglack D. Teaching Health, Exercise, Technology, & Aquaponics (THETA) Day Camps to Grow Future Health Professionals. University of Nebraska Rural Futures Institutes (RFI) $20,000 – Funded (July 1, 2017 – June 30, 2019)

Brown GA, Bice MR, Adkins MM, Hollman A, Bickford S, Bickford N, Ranglack D. Teaching Health, Exercise, Technology, & Aquaponics (THETA) Day Camps to Grow Future Health Professionals. University of Nebraska Rural Futures Institutes (RFI) and McCook Economic Development Council $11,400 – Funded (May 1, 2017 – August 30, 2017)

Brown GA, Abbey BM, Bice MR. **"**Is milk an effective rehydration beverage during repeated days of dehydrating exercise?" to the Dairy Research Institute® (DRI) $125,560 – Not funded.

Brown GA & Steele J. "Biochemistry Laboratory Experiences for Exercise Science Students" to the Kelly

Fund, University of Nebraska. $23,947. Funded. August 2014- June 2016

Brown GA. "Horizon After School Quickness Program" to Blue Cross & Blue Shield of Nebraska for a Community Wellness grant. $14,106. Not funded

Brown GA. "Effects of chocolate milk taken immediately post exercise on the adaptations to strength training in men" to the Dairy Research Institute® (DRI) $123,192 – not funded.

Brown GA., Heelan KA, Bartee RT, & Maughan S. "Active Video Games as an Alternative to Traditional Group Exercise Classes" to the Robert Wood Johnson Health Games Research program. $297,201 – not funded

Brown GA., Nylander B, Heelan KA. Energy Expenditure for Active Video Game Systems: Dance Dance Revolution and Nintendo Wii. University of Nebraska at Kearney Research Services Council. $3,432. Funded

Brown G.A. Effects of green tea extract on fasting plasma insulin, glucose, leptin, and PYY concentrations in humans. University of Nebraska at Kearney Research Services Council. $3,822. Funded

Brown G.A. Dose response relationship between resistance exercise and changes in the hormonal regulation of blood glucose homeostasis. American Diabetes Association Junior faculty Award. $443,293. Not Funded.

Brown G.A., and K. Heelan. Health benefits of green tea extract in women. NIH NCCAM Exploratory/Developmental Grant for Clinical Studies (R21), PAR-03-153. $485,163. Not Funded.

Brown, G.A. Changes In Biomarkers Of Satiety, Aerobic Fitness, And Body Composition While On A Low Fat Or Low Carbohydrate Diet. University of Nebraska at Kearney Research

Services Council. $3,750. Funded

Lynott, F., **Brown, G.A**., and K. Heelan. Health and Fitness of HPERLS Students. University of Nebraska at Kearney Research Services Council. $4,000. Funded

Brown G.A., K. Heelan and D.S. King. Pharmacokinetics & Efficacy of Sublingual Androstenediol for Treating Andropause. NIH NCCAM Exploratory/Developmental Grant for Clinical Studies (R21), PAR-03-153. $477,000. Not Funded.

Maughan S.L., D.P.Snider, and **G.A. Brown,** Physical Health and Social Factors Influencing Educational Success Among Hispanic Immigrant Children, University of Nebraska at Kearney Research Services Council. $4,214.60. Funded

McFarland S.P. and **G.A. Brown,** Effects of Exercise Duration on Glucose Tolerance In Mildly Overweight Men, University of Nebraska at Kearney Research Services Council. $750. Funded

Brown, G.A. Effects of Exercise Duration on Insulin Sensitivity In Mildly Overweight Men, University of Nebraska at Kearney Research Services Council. $2,000. Funded

McFarland S.P. and **G.A.Brown,** Effects of Exercise Duration on Glucose Tolerance In Mildly Overweight Men, Gatorade Sports Sciences Institute. $1,500. Not Funded

Brown, G.A. Effects of Exercise Duration on Glucose Tolerance and Insulin Sensitivity in Mildly Overweight Men. Life fitness Academy. $5,000. not funded

Brown, G.A. American College of Sports Medicine Foundation Grant. Endocrinology of weight lifting & androgen supplementation, $10,000. Not Funded.

Brown, G.A. and J.L. McMillan. Experimental and Applied Sciences. Effects of Green Tea Extract on Insulin Sensitivity and Adaptations to Exercise. $71,075. Not Funded.

Brown, G.A. American College of Sports Medicine Foundation Grant. Endocrinology of weight training & androgen supplementation, $10,000. Not Funded.

Brown, G.A. and J. Drouin. Georgia Southern University Faculty Research Grant. Effects of Resistance Training on the Hormonal response to Sublingual Androstenediol Intake. $5,000. Funded

King D.S. and **G.A. Brown.** *World Anti Doping Agency.* Effects of Testosterone Precursors on the Muscular and Hormonal Response to Resistance Training in Men. $464,634. Not Funded.

Brown, G.A. *American College of Sports Medicin*e Foundation Grant. Effect of Raisin Ingestion on Substrate Use During Exercise. $5,000. Not Funded.

King D.S. and **G.A. Brown.** *California Raisin Marketing Board.* The Glycemic Index Of Raisins Fed To Normal People And Non-Insulin Dependent Diabetics. $110,869. Not Funded.

King D.S. and **G.A. Brown.** *California Raisin Marketing Board.* The Effects Of Raisin Ingestion On Substrate Utilization and Endurance Exercise Performance In Trained Cyclists. $ 84,258. Not Funded.

Brown, G.A., E.R. Martini, and B.S. Roberts. Effect of Androstenediol on Serum Sex Hormone Concentrations. Iowa State University Professional Advancement Grant. Graduate Student Senate and Iowa State University Dept. of Health and Human Performance. $700. Funded

Instructional Development Funding

Brown G.A. and K.A. Heelan. University of Nebraska at Kearney. Proposal for the purchase of upgraded resistance exercise equipment in the Human Performance Laboratory. $21,100. Funded.

Brown G.A. and K.A. Heelan. University of Nebraska at Kearney. Proposal for the purchase of a new metabolic cart for the Human Performance Laboratory. $24,560. Funded

Brown, G.A. Georgia Southern University, Center for Excellence in Teaching Instructional Development Grant. Proposal for purchase of heart rate monitors, manual sphygmomanometers, and automated sphygmomanometers. $2,820. Funded.

Brown, G.A. Georgia Southern University, Center for Excellence in Teaching Innovative Teaching Strategies Retreat. Provides $2,000 in instructional technology funds to the participant. Funded.

Brown, G.A. Georgia Southern University, Center for Excellence in Teaching Travel Grant. $750. Funded.

Brown, G.A. Georgia Southern University student technology fee proposal. Proposal for purchase of Molecular Devices SpectraMax 250 plate reader. $17,000. Funded

Brown, G.A. Georgia Southern University student technology fee proposal. Proposal for purchase of Lode

Excalibur Sport Bicycle Ergometer and Physiodyne Max 2 Metabolic Cart. $29,577. Funded

Brown, G.A. Georgia Southern University student technology fee proposal. Proposal for purchase of Packard Cobra 2 Automated Gamma Counter. $14,000. Not funded

References

Dr. Ina Shaw
+27 12 671 8810
ina.shaw@momentum.co.za
MMI Client Engagement Solutions
Visiting Professor - University of Johannesburg
Adjunct Professor - University of Venda
President: International Physical Activity Projects (IPAP)

Dr. Kenya Taylor
(308) 865-8843
taylorks@unk.edu
Dean, Graduate Studies & Research
University of Nebraska Kearney

Dr. Matthew R. Bice
(308) 865-8052
bicemr@unk.edu
Assistant Professor, Dept of Kinesiology & Sports Sciences
University of Nebraska Kearney

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF
WEST VIRGINIA

B.P.J., by her next friend and
mother, HEATHER JACKSON,
Plaintiffs

vs. Case No. 2:21-CV-00316

WEST VIRGINIA STATE BOARD OF
EDUCATION, HARRISON COUNTY BOARD OF
EDUCATION, WEST VIRGINIA SECONDARY
SCHOOL ACTIVITIES COMMISSION, W.
CLAYTON BURCH in his official
capacity as State Superintendent,
and DORA STUTLER in her official
capacity as Harrison County
Superintendent, PATRICK MORRISEY in
his official capacity as Attorney
General, and THE STATE OF WEST VIRGINIA,
Defendants,

LAINEY ARMISTEAD,
Defendant-Intervenor

VIDEOTAPED DEPOSITION OF
JAMES M. CANTOR, PhD
Monday, March 21, 2022
Volume I

***

[15] James M. Cantor, PhD,

having been administered an oath, was examined and testified as follows:

EXAMINATION

BY COUNSEL SWAMINATHAN:

Q Good morning, Dr. Cantor. Thank you again **[16]** for your time today. As I said, my name is Sruti Swaminathan, and I'm an attorney with Lambda Legal.

I use they/them pronouns, so if you have any need to refer to me specifically, feel free to call me Counsel Swaminathan or Attorney Swaminathan.

I represent B.P.J., the plaintiff in this matter. And, yeah, again, thank you for – for bearing with me today.

So how are you?

A I'm fine. Thank you.

Q And would you please state and spell your name for the record.

A Dr. James Michael Cantor, J-a-m-e-s M-i-c-h-a-e-l C-a-n-t-o-r.

Q Thank you.

And, Dr. Cantor, what pronouns do you use?

A He/him.

Q Great. So let me explain some ground rules so that the court reporter can establish a clean transcript today.

I'll ask you questions, and you must answer unless your counsel instructs you otherwise.

Do you understand?

A Yes, I do.

[17] Q And I will note, I might be looking above you, as you can see me, the camera is just a little bit below me, so apologies for that.

Okay. And so, again, if your counsel objects to my questions, you still need to answer my questions unless they specifically instruct you not to answer.

Do you understand that?

A I do.

Q Great. If you don't understand my question, please let me know. I'm happy to try to rephrase it or make it clear for you.

If you do answer my question, I will assume that you understood. Is that fair?

A Yes.

Q We can take a break whenever you need. I will try to naturally break every hour or so.

However, if I've asked a question or if I'm in the middle of a line of questions, I'd appreciate if you can provide me with an answer before we take a break.

Do you understand that?

A Yes.

Q Great. Let's do our best not to speak over each other today. And as you are doing right now, **[18]** please use verbal answers so that the court reporter can transcribe your answers accurately.

Q Unfortunately, nodding your head or shaking your head cannot be captured by the court reporter.

Do you understand that?

A Yes, I do.

Q Great. And so before we too -- get too far along today in the -- the substantive portion, I want to note for you that we're going to be talking quite a bit about healthcare that's

commonly used to treat gender dysphoria for transgender people.

For the purposes of this deposition, when I say "cisgender," I mean someone whose gender identity matches the sex they were assigned at birth. Do you understand?

A Yes, I do.

Q For the purposes of this deposition, when I say "transgender," I mean someone whose gender identity does not match the sex they were assigned at birth.

Do you understand?

MR. TRYON: Objection; terminology.

BY COUNSEL SWAMINATHAN:

Q You can answer.

[19]

A I understand what you mean, yes.

Q Great. So if I refer to "care" as gender-affirming care or gender-confirming care, I am referring to medical care provided to transgender people to treat gender dysphoria.

Do you understand?

MR. TRYON: Objection; terminology.

THE WITNESS: To clarify, so when you say "care," you mean specifically medical care?

BY COUNSEL SWAMINATHAN:

Q I mean medical care.

A I understand.

Q Great. And, again, when I say "B.P.J.," I am referring to the plaintiff in the case.

Do you understand?

A Yes, I do.

Q Great. So you understand that you are testifying under oath today, just as if you were testifying in court; correct?

A Yes, I do.

Q Is there anything that would prevent you from testifying truthfully today?

A No.

Is there any reason you're aware of that would prevent you from completely and accurately **[20]** answering my questions?

A No.

Q Are you taking notes during this deposition?

A I wrote down one note to remind myself that when you use the word "care," you're referring specifically to medical care.

Q Okay. Have you been deposed before, Dr. Cantor?

A Yes.

Q How many times?

A About a dozen.

Q About a dozen.

Let's go each -- through each occurrence individually, starting with the first time you were deposed.

When was that, to your recollection?

A It would have been about eight to ten years ago.

Q And what was the nature of the case?

A What the diagnostic cutoffs are for -- for aformal diagnosis of pedophilia or related conditions.

Q And what was your role in the case?

A I was summarizing the science indicating that sexual interest in a particular age range, 11 to **[21]** 14 years old, is diagnosable as a mental illness. Q And what course -- court was this in?

A Oh, I don't remember the city. It was in the state of Illinois.

Q Do you, by chance, happen to remember the name of the case, either the plaintiff or the defendant?

A No, not offhand.

Q Okay. How about the second time you were deposed?

A The same situation. There were about six such cases in Illinois.

Q And so six out of the 12 or a dozen or so cases that you mentioned deal with the same subject?

A Roughly, yes.

Q What about the other six?

A Of those, roughly three more were a similar kind of question, but in New York State. Another one, also in New York, was pertaining to whether BDSM would count as a mental illness, but that case did not go through to completion. And then the remaining cases were about trans issues.

Q So about how many cases were about transgender issues?

A I think it's two others.

[22] Q Could you tell me more about those two specific instances of your testimony?

A One was a -- the Josephson case, and one is the Cross case.

Q And tell me about the Josephson case.

When -- when did you provide -- or when were you deposed in that case?

A Roughly a year ago.

Q Roughly a year ago.

And what was your role in connection with that deposition?

A To summarize the science on gender identity issues.

Q Okay. And what court was that case in?

A It was in -- I -- I believe that one was Loudoun County.

Q And then the second case you mentioned was the Cross case.

A Correct.

Q And what was the nature of that case?

A Similar, to summarize the science on gender identity issues.

Q Was that also within the past year that you provided --

A Yes.

[23] Q – that testimony?

A Yes.

Q And was that in the same court as the Josephson case or a different court?

A A different court.

Q Do you remember which court that was?

A No, I don't.

Q And so we just spoke about times that you've been deposed. In any of these cases, did it require you to testify in court as well?

A Yes.

Q In which cases were you required to testify in court?

A Hold on. I take that back. It was one of the two New York cases that required me to testify in court.

Q So not either of the cases related to transgender individuals?

A Correct.

Q Okay. And so we just spoke about testimony that you've given. Have you provided expert testimony in any other litigation?

A No.

Q This is the first case in which you've provided expert testimony?

[24] A I think I might have misunderstood your question. In each of these cases, I was serving as an expert witness.

Q Oh, in each of these cases, you were an expert witness, not a fact witness --

A Correct.

Q -- correct? Okay.

But other than these cases, there are no other cases in which you've provided expert testimony; right?

A Correct.

Q Okay. Has anyone ever tried to exclude the testimony that you've provided in a case?

A The opposing counsel, but that's -- only the opposing counsel.

Q In how many of the 12 cases that you just mentioned to me has opposing counsel tried to exclude your testimony?

A All of them.

Q All of them? So let's go through them.

Sorry, apologies. I think I cut you off there.

A I guess I'm wondering about how you're using the word "tried" to exclude. When you say that, I mean, you know, try to verify my credentials and **[25]** determine whether I'm qualified to comment at all, but not any extraordinary, in other words, outside of routine, ensuring that I qualify as an expert.

Q So in your mind, what -- what would you categorize as extraordinary in your verse?

A Anything other than the questioning that we're going through right now.

Q Okay. And, to your knowledge, on what grounds did opposing counsel in these cases try to exclude your testimony?

A I don't --

MR. BARHAM: Objection as to form.

THE WITNESS: I don't recall the details.

BY COUNSEL SWAMINATHAN:

Q Okay. But it is your understanding that some form of this effort has happened in all 12 of the cases that you've provided expert testimony?

A Some form, yes.

Q Has any testimony you provided been successfully excluded in any of these 12 cases?

A No.

Q Okay. Did any of these cases involve prepubertal or adolescent transgender children?

A Not specific -- children, no.

Q Who did they involve in terms of transgender **[26]** individuals?

You spoke of two cases, correct, that focused on transgender people?

A Correct. My role was to summarize the science of those issues, not anything about a specific person.

Q Okay. In terms of summarizing the science, did the science that you provided testimony on focus on prepubertal or adolescent transgender children?

A It included that, but wasn't limited to prepubertal children.

Q Would you say that it was the focus of your testimony?

MR. BARHAM: Objection; form.

THE WITNESS: I wouldn't say focus, no.

BY COUNSEL SWAMINATHAN:

Q Have you ever testified regarding athletics?

A No.

Q Have you ever testified regarding transgender or gender-dysphoric athletes?

A No.

Q Have you ever testified regarding transgender adolescents who are participating in athletics?

MR. BARHAM: Objection; terminology.

THE WITNESS: Not as -- not specifically, but **[27]** they would be included as part of my summarizing the science overall.

BY COUNSEL SWAMINATHAN:

Q And how would -- or how has your summary of the science focused on transgender – transgender adolescents in athletics?

A I don't think I understand the question.

Q You said that your testimony or, you know, the -- the research that you have produced in connection with your testimony on the science may encompass transgender adolescents participating in athletics; is that correct?

A I --

MR. BARHAM: Objection; terminology.

THE WITNESS: I don't recall the subject of athletics being relevant to any of the prior cases, no.

BY COUNSEL SWAMINATHAN:

Q Okay. So my apologies, I must have misunderstood.

So you're saying that the science that you've provided testimony on may encompass matters related to transgender adolescents; is that right?

A The topic was broadly the science of transsexuality and everything within it. So it **[28]** could include that, but it wasn't the topic relevant to any of those cases.

Q To your understanding, did it include that? Did your testimony focus on anything specific to transgender adolescents?

A No, it didn't.

Q Okay. And just to be sure --

MR. BARHAM: I'm sorry, I -- I think there may have been -- I -- I didn't catch the last word of your question, so could you kindly repeat that.

COUNSEL SWAMINATHAN: I apologize.

Court reporter, can you please repeat the question that I just posed to Dr. Cantor?

(Record read.)

COUNSEL SWAMINATHAN: Are you okay with that, Counsel?

THE WITNESS: It -- it included transgender adolescents, but not specifically athletes.

BY COUNSEL SWAMINATHAN:

Q Right. I understand. I -- I just want to make sure your counsel is okay, has understood the question.

MR. BARHAM: Thank you.

COUNSEL SWAMINATHAN: Great.

///

[29]

BY COUNSEL SWAMINATHAN:

Q And, again, Dr. Cantor, you've not been retained as an expert witness in any other case that we haven't already talked about; right?

A Correct.

Q Great. Did you prepare for this deposition today?

A Yes, I did.

Q Without disclosing any communications you may have had with counsel, what did you do to prepare for today's deposition?

A Reread my notes, which I've been accumulating for many years, reread individual papers that were relevant and ensured that I was including anything new that came out since the last time I went through the literature.

Q So who provided you with the documents that you just mentioned?

I heard your own notes and then new articles that may have come out in the -- in the past few years on this literature.

And apologies, could you remind me what else you said you reviewed?

A It was my -- oh, and a scan of the literature to see if there was anything new.

[30] Q And so was this all research that you independently conducted, or did anyone provide you with any of the materials that you reviewed?

A All me.

Q Did you meet with your defense counsel?

A We met in rehearsal for today, but not over the material -- of my research of the material.

Q Who are your attorneys, by the way?

A Who are my attorneys?

Q Who is your attorney today? Who is representing you in connection with this deposition?

A Just Travis.

Q Just Travis.

And so you said you've met with Travis once in preparation for this deposition; right?

A We met briefly yesterday, and then there was a meeting on Friday to rehearse today.

MR. TRYON: Counsel, I would also -- this is David Tryon. I will also note that I also represent Dr. Cantor in this deposition.

COUNSEL SWAMINATHAN: Great. Thank you, Mr. Tryon.

And did you meet with Dr. Cantor at all in preparation for this deposition?

MR. TRYON: I'm sorry, are you asking me that **[31]** question?

COUNSEL SWAMINATHAN: Yes.

MR. TRYON: I think you should direct your questions to Dr. Cantor.

BY COUNSEL SWAMINATHAN:

Q Dr. Cantor, did you meet with Mr. Tryon in preparation for this deposition?

A Yes. He was present, virtually, on Friday.

Q On Friday, but not yesterday?

A Correct.

Q So beyond the scan of research that you've done in preparation for this deposition, did you review any specific documents?

A Yes. The documents are noted in my report.

Q What were those documents?

A As best as I can recall, they were the declarations of Dr. Adkins, Jensen, Safer and the related rebuttals.

Q Did you review any documents beyond those that you just listed that are not cited in your expert report?

A No.

Q Did you conduct any additional research to prepare for this deposition beyond what you did for your expert report?

[32] A No.

Q Did you discuss this case with anyone other than your attorneys?

A No.

Q Did you bring anything with you today?

A A blank notepad, the aforementioned documents so I could refer to them on the way, and the details of the address to how to get here.

Q Did anyone get you a water bottle?

A And a water bottle.

Q Great. I'm glad you have that.

Okay. So if you could please go into the "Marked Exhibits" folder, I'm going to introduce tab 2, which is a document that has been marked as Exhibit 45 -- 44, apologies.

(Exhibit 44 was marked for identification by the court reporter and is attached hereto.)

MR. BARHAM: Counsel, I'm in the "Marked Exhibits" folder, and I'm not seeing this document.

COUNSEL SWAMINATHAN: Apologies, my -- I'll -- I'll let you know when -- when it's in there, and then you might need to give the – the page a little bit of a refresh. It's -- it takes a moment to load.

Counsel, are you able to see the document and **[33]** is the witness able to see the document now?

Yes.

COUNSEL SWAMINATHAN: Great.

BY COUNSEL SWAMINATHAN:

Q Dr. Cantor, why don't you take a moment to review what the document is.

A I'm sorry, this is a 100-page document?

Q Take a look at the first few pages to get your understanding of what it is.

So have you seen this document before?

A Yes. This is my -- the report I prepared for today.

Q Did you author this document?

A Yes, I did.

Q Did anyone else help you draft this document?

A No.

Q When was this document created?

A Both -- primarily, over the course of the last two years or so.

Q Is there an execution date on the document?

I believe it might be on page 2.

A I see a date on page 46, 31 March 2021.

Q On page 6, you said?

A 36 (sic), I think that was.

And the date of execution is 22 June 2021.

[34] Q Great. Thank you so much.

And, Dr. Cantor, why was this document created?

A In preparation for today, that was the request put to me from the attorneys of West Virginia.

Q Thank you.

And if you could please go into the "Marked Exhibits" folder, I'd like you -- I'd like to introduce tab 1, which has been marked as Exhibit 45.

(Exhibit 45 was marked for identification by the court reporter and is attached hereto.)

COUNSEL SWAMINATHAN: Counsel and Dr. Cantor, let me know when you're able to -- to see that document.

BY COUNSEL SWAMINATHAN:

Q Do you have it up in front of you?

A Yes, I do.

Q Great. Have you seen this document before?

A Yes, I have.

Q What is it?

A This is the report I prepared for today.

Q Did you author this document?

A Yes, I did.

[35] Q Did anyone else help you draft this document?

MR. BARHAM: Counsel, I'm going to interrupt -- interrupt you because I'm confused why -- how this document differs from the prior one that we just reviewed.

COUNSEL SWAMINATHAN: So my understanding is that this is Dr. Cantor's report executed on February 23rd, 2022, and the prior document was Dr. Cantor's expert report submitted in conjunction -- in connection with the preliminary injunction motion, dated June 22nd, 2021.

MR. BARHAM: Thank you.

BY COUNSEL SWAMINATHAN:

Q So, Dr. Cantor, when was this document created?

A This was executed on February 23, 2022.

Q And why was this document created?

A In preparation for today, at the request of the attorneys.

Q Great. And if you can, can you please turn to page 69 of this PDF. Apologies for the long scroll.

So what you should see on page 69 is the start of Appendix 1 to your expert report.

A Yes.

[36] Q Are you there?

Have you seen --

A Yes.

Q -- this document before?

A Yes, I have.

Q What is it?

A That's my CV.

Q And did you author this document?

A Yes, I did.

Q Did anyone assist you in authoring this document?

A No.

Q When was it created?

A It's been accumulating over the course of my career.

Q And is there anything in this copy of your CV that needs to be updated or corrected?

A One second.

Q Yeah, please take a moment to review. I believe there are 32 pages. You've done a lot over the course of your career.

A Nothing to add. It's current.

Q Great. So I want to talk to you a bit about your education history.

So, Dr. Cantor, where did you complete your **[37]** undergraduate education?

A Rensselaer Polytechnic Institute.

Q It's commonly known as RPI; right?

A Yes, it is.

Q Did you enjoy your time at RPI?

A Yes.

Q What did you study?

A Interdisciplinary science, with concentrations in computer science, mathematics and physics.

Q And so my next set of questions pertain just to your undergraduate education at RPI.

As a part of your formal education for your undergraduate degree, did you ever take any courses focused on child psychology?

A As an undergraduate, no.

Q As an undergraduate.

A No.

Q How about adolescent psychology?

A No.

Q Did you conduct any research on those subjects?

A No.

Q As a part of your formal education for your undergraduate degree, did you ever take any courses [38] regarding transgender or gender-dysphoric people?

A No.

Q Did you ever conduct any research concerning transgender or gender-dysphoric people?

A No.

Q Did you have any other educational training related to transgender or gender-dysphoric people at RPI?

A No.

Q Okay. What did you study next?

A After that, I did start studying psychology at the graduate level.

Q And where did you complete -- I see here a Master's of Arts; correct?

A Correct.

Q Where did you complete your Master's of Arts?

A Boston University.

Q And so I believe you said you studied psychology; is that correct?

A Correct.

Q So apologies for my naivety here, but as you were getting your Master's of Arts, would that be a major in psychology or a psychology focus?

A At the graduate level, there are no majors. The degree is in that subject matter specifically. **[39]** So it would be a Master of Arts in psychology.

Q I appreciate that clarification. Thank you.

When did you graduate?

A 1992.

Q And so my next set of questions are going to pertain solely to your Master's education.

So as part of your formal education for your Master's of Arts, did you ever take any courses focused on child psychology?

A Yes.

Q Can you describe those courses to me?

A The course specifically was in cognitive development and testing.

Q And how about adolescent psychology?

A It was blended in.

Q Okay. And so beyond this one course in cognitive development, were there any other courses focused on child or adolescent psychology?

A Not focused on them, no.

Q Okay. Did you conduct any research on those subjects, specifically speaking about child and adolescent psychology?

A No.

Q As a part of your formal education for your Master's of Arts, did you ever take any courses **[40]** regarding transgender or gender-dysphoric people?

A No.

Q Did you ever conduct any research concerning transgender or gender-dysphoric people?

A No.

Q And so what did you study next after your time at Boston University?

A I worked for several years as a research assistant in neuropsychology and then began my doctoral studies in psychology.

Q So how long were you a research assistant in neuropsychology?

A About three years.

Q So you took a three-year gap between pursuing your doctorate degree, after completing your Master's of Arts?

A Roughly, yes.

Q And where did you spend those three years as a research assistant?

A I remained in Boston -- remained in Boston -- remained in Boston.

COUNSEL SWAMINATHAN: I apologize. Did anyone else hear that a few times or --

BY COUNSEL SWAMINATHAN:

Q Are you able to hear me clearly, Dr. Cantor?

[41]

A I I think so.

Q Okay. Cool. Great. Thank you.

And so where -- where in Boston did you complete that research assistant three-year position?

A It was the -- it's listed on my CV. I don't immediately recall the formal name of the hospital.

Q Okay. Would it be the Queen Elizabeth Hospital?

A No.

Q No?

A It was the Boston VA, part of their Memory Disorders Research Center, which predates when I began recording my jobs on my CV.

Q Okay. So that -- that job is --

(Simultaneous speaking.)

A Correct. It was -- it was at the Boston VA, which has a formal name that I don't recall, and I was in the Memory Disorders Research Center.

Q Great. And just for -- for my clarity, it is not listed on your CV; correct?

A Correct.

Q Okay. And so you said you -- after you finished your research assistant in neuropsychology, three-year experience, you went on to get your **[42]** doctorate degree; is that right?

A Yes.

Q Again, apologies if I botch the – the language here, but what did you focus on as a part of your doctorate degree?

A Clinical psychology.

Q Clinical psychology.

And where did you complete your doctorate degree?

A McGill University.

Q So, again, my next set of questions pertain solely to your time at McGill.

So as part of your formal education for your doctorate degree in clinical psychology, did you ever take any courses focused on child psychology?

A Not courses focused on it, no. The design of the program at McGill often blended child, adolescent and adult psychology together.

Q I see. Can you describe that a bit more?

A For example, in learning to do testing, one would be trained both in the standard intelligence test for adults as well as the standard intelligence test for children.

Q Thank you. I appreciate that.

And so, you know, my question pertaining to **[43]** adolescent psychology, it's your understanding that the courses were a blend of child, adolescent and adult psychology; correct?

A Many of them, yes.

Q Many of them.

And you have never specifically taken a course that focused solely on adolescent psychology at McGill; right?

A Correct.

Q Okay. Did you, as a part of your normal education, ever take any courses regarding transgender or gender-dysphoric people at McGill?

A Not any courses focused on it, but there were courses focused on human sexuality, which, of course, included transsexuality.

Q Can you describe that a bit more? Why would your course on human sexuality include transsexuality?

A Why would it include?

Q Let me rephrase it. How did it include?

A By summarizing the existing research at the time and what was thought in the field at the time.

Q And how many courses would you say you took that focused on human sexuality?

MR. BARHAM: Objection; terminology.

[44] MR. TRYON: Objection. Dave Tryon speaking.

THE WITNESS: The organization – the organization of a doctoral program wasn't around courses at all. The primary focus of -- at the doctoral level is on performing research, learning how to perform research and proper research methodology in whatever field the student is pursuing.

In my case, that was sexuality. So everything I did at the doctoral level was one way or another targeted towards sexuality, even though there were -- even if not as part of the formal course.

BY COUNSEL SWAMINATHAN:

Q That is very helpful. I obviously do not have a doctorate degree, so that's a helpful explanation for me to understand how the program is structured.

So let me ask another question.

How much of your research, in your study of sexuality, concerned transgender and gender-dysphoric people in particular?

MR. BARHAM: Objection; terminology.

You can answer, if you can.

THE WITNESS: It's a little hard to estimate. **[45]** Roughly 10 to 20 percent was specifically on trans-related issues, and in others, because trans populations were -- were included one way or another, there was a little bit of all of them.

BY COUNSEL SWAMINATHAN:

Q And what was the nature of that research, typically, in the 10 to 20 percent that you had just mentioned?

A Primarily brain development, cognitive development, and I'm also called upon, very frequently, to consult in the statistics and how to analyze existing data.

Q Okay. Did you have any other educational training at the doctorate level related to transgender people?

A What do you mean, educational training?

Q Beyond the independent research that you conducted or the research that you conducted with supervision at McGill, did you have any other educational training, such as a practicum, related to transgender people?

MR. TRYON: Objection; form of the -- form of the question.

THE WITNESS: Not practicum related specifically to transgender people, but I did **[46]** practicum related to

human sexuality, which necessarily included transgender people.

BY COUNSEL SWAMINATHAN:

Q Can you describe that practicum?

A I was seeing patients for -- mostly for one-on-one therapy, regardless of the issue that they came in with. That can be anything from sexual dysfunctions, curiosities about their own sexual interests, and dysphoric transgender issues.

Q Got it. And you said you were seeing patients. How old were these patients, typically?

A Young adults and up.

Q And what do you understand "young adults" to mean, in terms of an age?

A Late teens.

Q So late teens and onward you would --

A Yes.

Q Okay. About how many patients do you think you've seen during your time at McGill in – in these practica that you just spoke about?

A Roughly 30.

Q Okay. Thank you.

And so what did you do after obtaining your doctorate degree?

A I continued as a postdoctoral researcher at **[47]** the University of Toronto and at the Centre for Addiction and Mental Health.

Q Is it okay with you if I refer to the Centre for Addiction and Mental Health, as CAMH?

A Yes.

Q Is it commonly known as CAMH, or am I –

A Usually they pronounce it CAMH.

Q CAMH. I will do the same.

COUNSEL SWAMINATHAN: And, Court Reporter, that is C-A-M-H when I refer to "CAMH."

BY COUNSEL SWAMINATHAN:

Q Okay. Can you describe your fellowship experience at CAMH?

A I started at -- there was an overlap year between the doctoral studies and my postdoctoral studies. The final year of a Ph.D. is an internship program, which is very much like an advanced practicum program.

Within the internship, I was half-time of the entire year in their Gender Identity Clinic and half-time for a full year in their Sexual Behaviours Clinic, which worked primarily with sexual offenders. I continued that work and continued the related research then for the seven years after receiving my doctorate, staying at the same [48] institution.

The -- the projects themselves were primarily focussed on brain function and development of each of the sexual issues.

Q Got it. And so you said during your internship period you had a position with the Gender Identity Clinic and then separately the Sexual Behaviours Clinic; is that correct?

A Yes.

Q What responsibilities did you have during your time in those clinics?

A I was conducting one-on-one therapy with individual people, pursuing or wondering if they should pursue medical transition, group therapy of people just living their lives as trans people and requiring support, and among the sexual -- in the SBC, in the Sexual Behaviours Clinic, with the sex offenders, it was rehabilitation.

Q And what qualified you to provide the one-on-one therapy that you just spoke about for individuals pursuing medical transition and group therapy? Was there any additional certificate or training that you needed in order to provide this therapy?

A The training of those issues was -- for those **[49]** issues issues is -- it's a lot of reading and then one-on-one study with other experts who are extremely experienced with -- with trans issues. I studied under Ray Blanchard at CAMH.

Q Did you study under anyone else besides Ray Blanchard?

A There were other instructors. He ran the lab. The other primary input to my education was a trans clin- -- she herself was a trans clinician, Maxine Petersen.

Q And so did either Ray Blanchard or Maxine Petersen serve as a supervisor to you in each of those positions?

A Yes. Both of them.

Q Okay. Did you have anyone to supervise under you in those positions at the Gender Identity Clinic and the Sexual Behaviours Clinic?

A Not while I was an intern or -- not while I was an intern and not while I was a postdoc.

Q What did you do next, after interning at those clinics?

A After the internship and I received my doctorate, then I was appointed as a postdoctoral fellow at CAMH.

Q So my next set of questions pertain to your **[50]** fellowship.

So as a part of your fellowship, did your work focus on child psychology?

A Did my focus -- it didn't focus on child psychology, no.

Q And apologies, can we go back one minute to -- you -- you had stated that you provided one-on-one therapy to individuals pursuing medical transition/group therapy.

What was the average age of those patients that you provided the one-on-one therapy to?

A Average age?

Q Yeah.

A Early 40s.

Q What do you think was the youngest age of the patient, to your recollection? I understand it was a bit of time ago.

A Youngest would have been late teens, early 20s.

Q Okay. Great. And, sorry, back to your fellowship. We just spoke about child psychology, and you mentioned that it did not focus on child psychology; correct?

A Correct.

Q How about adolescent psychology?

[51] A Again, it didn't focus on adolescent psychology, but most of the assessments that we were doing and the research we were doing was entire lifespan. So, of course,

childhood and adolescence is a predominant part of that, but not the focus of it.

Q I see. And so, again, you'll have to educate me a bit, but as a part of your postdoctoral fellowship, do you take any courses?

A No.

Q No? It's --

A Oh, I should take that back. There are no courses built into the program itself, but I often opted to take extra courses just to fill in extra material that I needed, such as in neuroscience or similar advanced statistics.

Q So beyond neuroscience, what other courses did you elect to take during your postdoctoral fellowship?

A Just those two deals, neuroscience and statistics.

Q And statistics. Okay.

And were those, like, online courses, or were they courses offered through CAMH?

A They were courses through the Univer- - - **[52]** through the University of Toronto. CAMH is a teaching hospital of the University of Toronto.

Q Great. And so, as part of your fellowship, did any of your work focus on transgender or gender-dysphoric adults?

A Not at that time, no.

Q What about transgender or gender-dysphoric adolescents?

A Not at that time, no.

Q Okay. Have you completed any other studies?

A Altogether, I -- oh, when you say "studies," you don't mean published studies; you mean --

Q Right. Educational pursuits of degrees and things like that.

A No. That's my full formal education.

Q And I don't mean to say that you haven't done so much already. I just wanted to make sure that we've covered all of the bases.

And what is your current occupation right now?

A I'm in private practice as a clinical psychologist.

Q And where do you conduct your private practice?

A In Toronto.

[53] Q In Toronto. Okay.

So I see on page 1 and 2 of your CV, which hopefully you still have in front of you, you list your employment history. I would love to walk through your employment history, but if it's okay with you, in chronological order. So if we can turn to page 2.

A Yes.

Q I see that you completed predoctoral practicum at the Queen Elizabeth Hospital in Montreal, Canada; is that correct?

A Yes.

Q And that was in the department of psychiatry?

A Yes.

Q And you were there from May 1994 to December 1994; is that correct?

A Yes.

Q What was your title in this position?

A They used a French word that I don't remember. A "stagiaire." A -- a local Montreal, Quebec, term. The best English translation would be trainee in psychology.

Q Do you speak French?

A No, I don't.

Q Trainee. Okay. Great.

[54] Can you tell me a bit about your work in this position?

A My focus then was general psychotherapy with outpatients who would typically come in to that clinic with a series of disorders, mainly depressions and anxieties.

Q And did you work in this position focus on children?

A No.

Q What about adolescents?

A Didn't focus on them, no.

Q No. So you predominantly worked with adults who came in with depression and anxiety disorders?

A Correct.

Q Okay. And then I see that you completed a predoctoral practicum at the Royal Victoria Hospital in Montreal; is that right?

A Yes.

Q And this was in the sex and couples therapy

unit?

A That's correct.

Q And you were there for a little under four years. It says September 1993 to June 1997; is that right?

A Correct. I continued seeing clients there **[55]** over the course of my doctoral studies.

Q Got it. Okay.

So can you tell me about your work in this position and whether you had a similar French title there?

What -- what was your title?

A My -- I don't remember -- I don't remember my title.

Q Okay. No problem.

A It was in English. It's an English-speaking hospital. My functions there were sex therapy and couples therapy, the full range of sexual disorders and the range of issues that -- that interfere with romantic relationships.

Q Got it. So did the majority of your work in this position focus on adults?

A Yes.

Q Okay. And in this position, did you conduct any research or, you know, have any, like, work experience in the field of transgender or gender-dysphoric people?

A Not specific to them, no.

Q Okay. And then I see that you were a teaching assistant at McGill in the Department of Psychology; is that right?

[56] A Yes.

Q And was this during your doctorate degree as well?

A Yes.

Q Okay. And so that was from September 1993 to May 1998 --

A Yes.

Q -- is that right?

Okay. Who were you a teaching assistant for?

Was it for a professor, or were you a general teaching assistant for the program?

A Two different professors. One was Rhonda Amsel for statistics courses, and the other was Iry Binik for sexuality courses.

Q Can you repeat the name of the professor who focused on sexuality courses?

A Irv, I-r-v, Binik, B-i-n-i-k.

Q And so what courses within sexuality did Iry Binik teach?

A The name of the course itself was Human Sexuality.

Q It was called Human Sexuality. Okay.

And has he taught any other courses at McGill, to your knowledge, or during the time that you were there?

[57] A I think that's the only course he taught while I was there, yes.

Q So in your role as a teaching assistant, were you required to conduct any research on transgender or gender-dysphoric people?

A As a part of that course, no.

Q As a part of that course. No?

A Correct. Not as part of that course.

Q Okay. And then you went on to work as a clinical psychology intern, as we spoke about, at CAMH; right?

A Correct.

MR. BARHAM: Counsel, we've been going about an hour. Would this be a natural time for a five-minute break?

COUNSEL SWAMINATHAN: Absolutely. Let's take a break, and we can come back at 10:05, if that works.

Do you want to take a seven-minute break?

MR. BARHAM: Sure. That sounds good.

COUNSEL SWAMINATHAN: Okay. We can go off the record.

THE VIDEOGRAPHER: Yes, we are going off the record at 9:57 a.m., and this is the end of Media Unit No. 1.

[58] (Recess.)

THE VIDEOGRAPHER: All right. We are back on the record at 10:08 a.m., and this is the beginning of Media Unit No. 2.

Go ahead, please.

BY COUNSEL SWAMINATHAN:

Q Okay. Dr. Cantor, before the break, you testified that you had studied under two individuals, Blanchard and Petersen; is that correct?

A Yes.

Q And that's Ray Blanchard and Maxine Petersen; right?

A Yes.

Q And you mentioned that they are extremely knowledgeable on issues of transgender identities and gender-dysphoric people; right?

A Yes.

Q And their focus is -- they -- they focus on adults who identify as transgender or who suffer from gender dysphoria; right?

A Their writings and their careers have spanned the entire lifespan, but most of their work was with adults.

Q Adults. Okay.

[59] And so we spoke about your time at the -- at CAMH as a clinical psychology intern, but then you moved to the law and mental health program, is that correct, at CAMH?

A The Sexual Behaviours Clinic is part of the law and mental health program.

Q Oh, okay. So let me ask it a different way. What did you do after you were a clinical psychology intern at CAMH?

A After I was an intern was when I started my postdoctoral -- postdoctoral studies.

Q And so this is when you were a psychologist within the law and mental health program?

A Yes.

Q Okay. Can you tell me about your work in that position?

A That's when I began my brain-based research on the development of atypical human sexualities.

Q And did your work in this position focus on child psychology?

A It's a little hard to say. What I was researching on was brain development, which begins at conception, continues, of course, quite dramatically over the course of gestation, continues to develop over the course of childhood and **[60]** adolescence and ends in adulthood.

Q Got it. So this brain development research that you did, did you focus only on brain development as it relates to atypical sexualities?

A Although the questions I was asking were about human sexuality, I simultaneously needed to account for all of the other possible things that were going on in the brain; and so, therefore, they became related, even though those weren't the topics of my specific efforts.

Q Your work in this position didn't focus on children and adolescents with gender dysphoria; right?

A It's a little tough to say. It's tough to say. Everything I look at in a brain scan is an accumulation of everything that happens over life, very much of which happens in childhood and before childhood. So I was looking at the effects in the brain of everything that happened over childhood accumulated -- accumulating, but I wasn't looking during childhood.

Q It's fair to say that it didn't focus on child (sic) and adolescents with gender dysphoria; right?

MR. BARHAM: Objection; terminology.

[61] THE WITNESS: It depends on what one means by "focus."

BY COUNSEL SWAMINATHAN:

Q You didn't work with children and adolescents with gender dysphoria in this position directly, did you?

A Not while they were children and adolescents, no.

Q Okay. Did you conduct research specifically related to children and adolescents with gender dysphoria, or did you focus more holistically on brain development from birth to adulthood?

MR. TRYON: Objection; form.

THE WITNESS: I didn't -- my research subjects, while they were research subjects, were no longer children, but we would often focus on events that happened during childhood and adolescence.

BY COUNSEL SWAMINATHAN

Q I see. So what approximate -- or age – or what was the average age of the research subjects that you worked with?

A The research subjects then ran the – the gamut from 18 to simulating.

Q Okay. And, again, this research was related to brain development as connected to atypical **[62]** sexualities, right, the research you --

A Yes.

Q -- you just mentioned?

Okay. Thank you.

And then you went on to be the research section head at CAMH; right?

A Correct.

Q And you were the section head from December 2009 to September 2012; right?

A Correct.

Q Great. What was your title beyond research section head in this position? Did you hold any other titles?

A Psychologist.

Q Psychologist. Okay.

Can you tell me about your work in this position?

Mainly what I'm trying to understand is how much of your practice was research versus clinical psychology.

A It's -- it's tough to pull them apart at that level. I was simultaneously doing frontline clinical work but also systematically recording the results of that work, those of my colleagues, those of my then-students in order to analyze patterns in **[63]** the data of what everybody was seeing.

So what was done for research purposes was also done for clinical purposes and vice versa.

Q I see. And so during your time as research section head, did any of your research involve, specifically, gender dysphoria or transgender medicine?

MR. BARHAM: Objection; form.

THE WITNESS: I would hesitate -- it didn't focus, but was repeatedly included. In order to do any of the -- or in order to do research on any of these topics, because they interrelate, we also -- at least indirectly, also include the other atypical sexualities.

BY COUNSEL SWAMINATHAN:

Q I see. So what was your work primarily focused on, though, during your time as research section head?

A My work, as I said, was primarily focused on how atypical sexualities develop.

Q And in your understanding, how do they develop?

A Well, that could be any atypical sexuality.

Some -- those include pedophilia, other paraphilias, transsexuality, people who call themselves **[64]** hypersexual.

I also participated in research and the development of what I'll call ordinary – the development of sexual orientation.

Q So would you say that your work was primarily focused on pedophilia and hypersexuality?

MR. TRYON: Objection; form.

THE WITNESS: Primarily, sure.

BY COUNSEL SWAMINATHAN:

Q And then you went on to become the head of research at the Sexual Behaviours Clinic; right?

A Yes.

Q And that was from November 2010 to April 2014; correct?

A Yes.

Q And you were still at CAMH?

A Yes.

Q Great. So can you tell me about your work in this position?

A Only my position title changed.

Q So your work remained the same, but you were promoted to head of research?

A Correct.

Q What is the difference between research section head and head of research?

[65] A There isn't one. There was a reorganization of the departments. The titles in the department were realigned to match those in other departments.

Q I see. Thank you.

And so in this position, as you continued on, am I correct to say that your work still focused primarily on pedophilia, hypersexuality and your work with sex offenders? Is that correct?

A Yes.

Q Okay. And did your work, in terms of the patients you saw, at all focus on children and adolescents?

MR. BARHAM: Objection; form.

THE WITNESS: Not --

MR. TRYON: Objection.

THE WITNESS: Not while they were children and adolescents, but very many of the issues that we were dealing with were issues that occurred during childhood and adolescence.

BY COUNSEL SWAMINATHAN:

Q I see. But the patients themselves, at the time you saw them, were not children or adolescents; right?

A Correct.

Q Got it. And then you were a senior scientist **[66]** as a part of the complex mental illness program; right?

A Correct.

Q And that was from January 2012 to May 2018?

A Correct.

Q What was your responsibility or, you know, what were you duties under the title of senior scientist?

A The duties were the same as before, but, again, in the administrative structure of the hospital, one often had dual titles.

Q I see. So when you adopted the title of senior scientist, you were still the head of research; is that correct?

A Yes.

Q So why did they give you this additional title?

A That was a higher rank than psychologist.

Q I see. And did your roles change at all from head of research to then adopting this dual role as senior scientist and head of research?

A No. My functions were the same.

Q Did you have a change in supervision at all?

A I'm not sure what you mean.

Whom I was supervising or whom I was **[67]** supervised by?

Q Apologies. Was who you reported to in your prior role as head of research still the same person or group of people you reported to as senior scientist?

A Yes.

Q Who were those individuals?

A Oh, I don't recall his name. He was the head of the law and mental health program.

Q So the head of the law and mental health program in the 2012 to 2018 timeframe. Is that fair to say?

A Yes.

Q And I take it from your slight misunderstanding of my prior question that you have supervised people in those positions as well; right?

A Yes.

Q And so when you were a senior scientist, who did you supervise in that position?

A Students whom I was training at the time.

Q And so these are students of the University of Toronto?

A No. They were usually students really coming to CAMH from all over the world for their internships and their training.

[68] Q I see. Okay.

And so at any given time, how many students would you say, on average, you supervise?

A Three to five.

Q Okay. And what kind of work were those students typically engaging in when they were under your supervision?

A A lot of the cognitive testing and treatment with people with atypical sexualities.

Q And what did -- what did their assignments look like? What -- what did they work on, when you say that they focused on cognitive treatment and atypical sexualities?

A There was a great deal of -- of testing. Our object was to try to record, objectively, what other clinicians were perceiving subjectively.

Q And how did you do that? How did you – how did your clinic test objectively?

A Sometimes through document checks. Sometimes through formal testing, using standardized instruments.

Q Okay. And so in your position as senior scientist and, you know, under -- while you were supervising these

CAMH interns, did you ever work directly with children or adolescents with gender **[69]** dysphoria?

A Directly, no.

Q Did your testing ever involve issues pertaining to child or adolescent psychology?

A Issues pertaining to, yes.

Q What would you describe those issues as?

A Events occurring during those periods of life.

Q And how would you obtain data on those events?

A Sometimes through interview with the patient. Sometimes through review of documents.

Q Got it. And so when you say you've interviewed the patients, you're interviewing them as adults, and they're recounting their childhood experiences; correct?

A Yes.

Q And when you say "records," who provides you with the medical records of these patients?

A Typically, they were provided by a court, parole or probation officers or the patients' lawyers.

Q I see. Okay. So how -- how do these patients come to you? How do you -- or a better question is, how do you find these patients that you **[70]** work with?

A Well, I didn't really find them at all. Typically, these would be assigned to the hospital, and then the hospital would get them to the appropriate clinic, and then I saw everybody who came to that clinic, or I was ultimately responsible for the research going on with everybody in that clinic.

Q I see. So how -- or why would these patients be referred to your hospital?

MR. TRYON: Objection.

THE WITNESS: Either through --

MR. BARHAM: Objection as to form.

THE WITNESS: Typically, they were – they had committed a sexual offense and served their sentence and were being released to parole and probation, and so the parole and probation system wanted as much information as possible in order to put the person -- to help maximize the person's benefit from their -- from their rehabilitation time and from their parole and probation time.

Other people self-referred because they had a question or concern with some issue and there was nobody else with the expertise to be able to answer it -- to be able to address it.

[71]

BY COUNSEL SWAMINATHAN:

Q Two quick follow-up questions.

So what was most typically the offense that these patients had committed when they came to your hospital?

MR. TRYON: Objection.

THE WITNESS: I would hesitate to say to the hospital. But the ones who ended up in my clinic were there specifically for a sex-related -- sex-related reason. Roughly two-thirds of those would be related to or potentially related to a sexual offense.

BY COUNSEL SWAMINATHAN:

Q Can you describe for me what you mean by "sexual offense"? What does sexual offense encompass?

MR. TRYON: Objection.

And before you answer, I just -- I don't know what HIPAA laws are in Canada, but I just want to caution the witness to make sure that you're not violating any confidentiality requirements of – of Canadian law.

COUNSEL SWAMINATHAN: Thank you, Counsel.

Your objection is noted.

///

[72]

BY COUNSEL SWAMINATHAN:

Q You can answer, Dr. Cantor.

A I understand.

Typically, these were touching of a child or child pornog- -- or child pornography possession.

Q Thank you. I appreciate that.

So you also said that some of these patients were self-referred; right?

A Yes.

Q Approximately what percentage of your patients were self-referred as opposed to coming to you from a different -- coming to the hospital from a different method?

A Roughly a quarter to a third.

Q I appreciate it.

And then your position has changed again, but maybe you can let me know if -- was there any difference between your role as a senior scientist and a senior scientist, inaugural member, as noted on your resume?

A No, there was no difference.

Q What -- what does it mean to be an inaugural member?

A It was -- it was an inaugural -- an inaugural member of that now newly formed institution. It was **[73]** a large donation to the hospital, which, again, triggered a another reorganization.

Q Oh, okay. So what was the Campbell Family Mental Health Research Institute previously known an as?

A It wasn't previously known. The Campbell family was the source of the large donation which triggered the renaming and the reorganization.

Q I see. So it was -- it's completely separate from the complex mental illness program or the Sexual Behaviours Clinic?

A I don't recall the administrative details, but as I say, it was a shuffling rather than a – it was more a shuffling than anything else.

Q So were the people that you worked with in that position largely the same as previous positions, in terms of your coworkers?

A Yes. Nothing from my day-to-day work changed.

Q Got it. And the -- the work that you had just described to me, that you had done in your role as senior scientist, that work was the same as senior scientist, inaugural member?

A Correct.

Q Okay. And you were there until May 2018; **[74]** right?

A Yes.

Q And then finally, I think we're getting to where you are presently, which is the director of the Toronto Sexuality Centre; correct?

A Yes.

Q And so you are currently the director of the Toronto Sexuality Centre, but you're also conducting your own private practice; is that right?

A That is my private practice.

Q Oh, that is your private practice. Okay.

And so can you tell me about your private practice? Approximately how many patients do you have as a part of your private practice?

A Roughly 50, currently.

Q So you have about 50 patients. Does this fluctuate a lot, or is it typically around 50?

A I do my best to keep the number pretty constant.

Q Okay. And why is that?

A Oh, for the -- for the workload.

Q Got it. And so you've been in your private practice for about five years now; is that right?

A Yes.

Q When you first started your private practice, **[75]** approximately how many patients did you have?

A I want to say zero, and then I worked it up from there.

Q And how are patients typically finding you or coming to you for -- for your treatment?

A Generally from routine advertising. Perhaps a quarter of them are referred specifically from other clinicians who feel that they're not qualified to deal with, whatever sexual issues, will send their client to me.

Q You said "routine advertising." what does routine advertising for your practice look like?

A An ad in Psychology Today and websites.

Q Any social media?

A No.

Q And you said sometimes other clinicians refer patients to you because they are unable to meet the needs of what the patient is looking for; right?

A Correct.

Q And so what would you describe your specialty to be that these other clinicians don't possess?

A Human sexuality, which is left out of most mental health training programs altogether.

Q And I know we've spoken about this briefly before, but what all do you understand to fall under **[76]** human sexuality again?

A Sexual functioning, sexual attraction -- sexual functioning and sexual attraction patterns.

Q And so of your 50 patients, approximately -- you know, what's the average age of your 50 patients?

A Average? 30 to 35.

Q How old is your youngest patient, without disclosing any HIPAA violative information?

A Youngest would be, I think, early 20s.

Q Early 20s. And how about the oldest?

A Oldest would be late 60s.

Q So as your role as director, is it -- am I correct that it's solely just your private practice, not your research? There's no -- no more research component of this position?

A Not paid.

Q So at the Toronto Sexuality Centre, you're praid -- you're paid for the work that you do in conjunction with your private practice; right?

A Correct.

Q And any other research you do, there's no payment from this entity for that research; right?

A Correct.

Q Okay. So in any of these positions that **[77]** we've spoken about, have you provided care directly to transgender people?

A I'm sorry, would you ask that again?

Q Sure. So in any of these positions, have you provided care to transgender people?

MR. BARHAM: Objection; form.

THE WITNESS: Yes.

BY COUNSEL SWAMINATHAN:

Q Which positions have you provided care to transgender people?

A Right now, asking as to the Toronto Sexuality Centre?

Q Any others?

A I -- I don't have any other clinical positions. I'm -- again, I'm checking your question.

When you asked me about my experiences with trans people, you mean the -- my clinical experiences within the Toronto Sexuality Centre?

Q Exactly. And I'm just trying to ensure that I haven't missed any other practices that, you know, you may have had with respect to, you know, providing direct care to -- to transgender people.

So I understand your answer to be the Toronto Sexuality Centre; is that correct?

[78]

A Yes, I -- I -- that includes trans people and people with transitions.

Q Okay. And, again, none of this care was provided to transgender prepubertal kids; right?

A Correct.

Q And none of this care was provided to transgender adolescents; right?

A Some would be adolescents. I -- I see clients at ages 16 and up.

Q 16 and up.

And you said your youngest client at the moment is in their early 20s, but you have seen clients who have been under the age of 18; is that right?

A Yes.

Q How many transgender people under the age of 18 have you provided care to?

A Six to eight.

Q Okay.

A While they were in that age.

Q Got it. And what about under the age 16, have you ever provided care to any transgender adolescent or prepubertal kid under the age of 16?

A No.

Q Okay. Did any of the care that you provided **[79]** to transgender and gender-dysphoric people involve prescribing puberty-delaying treatment?

A No. I'm not licensed for providing medical care.

Q And so you're not licensed to provide -- or, sorry, prescribe hormone therapy; right?

A That is correct.

Q Okay. So your care primarily involved counseling; right?

A Yes.

Q So with respect to any employment that you've held, have you ever been subject to discipline by your employer?

A No.

Q No? And you've spent a significant portion of your career at CAMH; right?

A Yes.

Q Okay. How have you gotten along with your colleagues over the span of -- it looks like over 20 -- 20 years? 22 years? How have you gotten along with your colleagues there?

A In general, very well.

Q And apologies, just one -- one clarification.

So you said that you're not licensed to prescribe puberty-delaying treatment or cross-sex **[80]** hormones; right?

A Correct.

Q Are you qualified to refer patients to providers who are licensed to provide that care?

A I'm not -- the question doesn't quite make sense to me.

Q Great. I'm -- I'm happy to rephrase.

Have you ever provided a referral for one of your patients to obtain puberty-delaying treatment or cross-sex hormones from, let's say, an endocrinologist?

A It's tough to say. Again, the Canadian medical system doesn't work quite the same way as the American way does. A letter from me would generally be sufficient for a medical provider who is looking for a licensed mental healthcare provider to say that a person is mentally healthy and ready to engage in a medical treatment, but we don't send the referral -- but -- but in the U.S., I understand there are certain legal ramifications how that referral happens, which isn't necessarily relevant to where I am.

Q I see. So you would provide a letter to another mental health provider who works with a patient, who would then be able to provide a **[81]** referral to the medical doctor to prescribe these treatments; right?

A No. I would be that other mental health provider.

Q So you would receive a letter from another practitioner and then that -- you would be the decision-maker as to whether the person is ready for a referral to

a medical doctor to receive these treatments; is that correct?

A No. Usually, I would be the initiator. I mean, a -- a -- any given patient might come to me through another provider, but that doesn't require anything -- anything formal or anything in writing. If the request or the -- if what is appropriate to the case is that the person does go on for medical treatment, then I would write a letter indicating that patient's preparedness for that medical treatment.

Q I see. And so how often have you written such a letter? How -- how many times, to your approximate recollection?

A Two, three dozen.

Q Two, three dozen.

And do you typically write these letters for those who are above the age of 16?

[82]

A Yes.

Q Have you ever written a letter for a patient of yours who was under the age of 16 to receive puberty-delaying treatment or hormone therapy?

A No.

Q Has any patient under the age of 16 come to you with that request?

A I don't see patients under 16.

Q How about under 18? Has any patient between the ages of 16 and 18 come to you with a request seeking puberty-delaying treatment or, sorry, at that point cross-sex hormones?

A I haven't had such a request, no.

Q Okay. Sorry, we were just speaking about your colleagues at CAMH, and I was asking you, you know, how have you gotten along with your colleagues there, and you said fine; is that correct?

A Generally, quite well, yes.

Q Generally, quite well.

Did you ever have any disagreements with other employees of CAMH?

A Yes.

Q What kinds of disagreements have you had?

MR. BARHAM: I'm going to object and advise not to disclose any confidential information.

[83]

THE WITNESS: Generally, these were, you know, minor administrative disagreements about how something should be done or -- or efficiency.

The largest disagreement I had was not related to gender -- to gender issues at all, but it ultimately was what motivated my leaving the hospital.

BY COUNSEL SWAMINATHAN:

Q It was not related to issues of gender dysphoria or related to transgender people?

A Correct.

Q And it caused you to leave the hospital.

And was that in 2018?

A Yes.

Q Okay. So you've never had any issue come up relating to the topic of transgender people; right?

A When you now say "never had any issue come up," we're -- we're still talking in which – in which context?

Q Apologies. Let me -- let me clarify.

So you said that there was a disagreement in 2018 that caused you to leave CAMH; right?

A I wouldn't say that there was a disagreement in 2018. It took me several years to -- to get to -- to get to that point, but that certainly – [84] but that was the formal date of when -- when I left CAMH.

Q I understand.

What was that disagreement?

A It had become very apparent to me that the psychiatric staff was misusing hospital time for their own private practices, and I was ultimately unable to change that from happening in a substantial way. I thought it was grossly unethical and no longer wanted any part of a clinic that would -- that would allow that.

Q And were these psychiatric staff individuals that you supervised?

A No.

Q No? And to your knowledge, if -- if you know, how were they misusing hospital time?

A They were seeing private patients and using hospital resources for those private patients.

Q And would those patients be coming to the hospital, or would these be virtual sessions?

A Coming to the hospital.

Q Yeah, I'm just trying to get a better understanding of whether, you know, these psychiatric staff were seeing these patients and the patients were not registered in the hospital [85] records.

Is -- is that what happened?

A The --

MR. BARHAM: I'm going to object and caution you about resealing confidential information.

COUNSEL SWAMINATHAN: Objection noted. Thank you.

THE WITNESS: That's not how the system exactly was set up. Because of the nature of the laboratory, it was permitted to see nonhospital patients, but hour by hour and patient by patient, they were encroaching on hours that should have been reserved for hospital patients, but hospital patients were getting displaced for the private patients.

Q And how, exactly, did this -- this misuse of time lead you to your decision to leave the hospital entirely?

A It became apparent -- it became apparent that some money resources had been bled away from the clinic that there were no -- at one time, the – the regular patients who were regularly getting referred ceased being referred. The referral sources realized that the delays got so long, they didn't bother referring anybody anymore, and if there are [86] no people, then -- if there are no referrals, there's no clinic. If there's no clinic, there's no research.

I was able to correct it for a time, but I was unable to get the hospital to change its policy to make it permanent.

Q I see. And so your disagreement with how the hospital handled that situation is what caused you to leave; right?

A Yes.

Q And prior to that, I think you testified that you've had no other disagreements during your time at CAMH with respect to topics concerning transgender people; right?

MR. TRYON: Objection; form.

THE WITNESS: Correct.

BY COUNSEL SWAMINATHAN:

Q You've never disagreed with any employee as to what proper care for transgender individuals should be?

MR. TRYON: Objection.

THE WITNESS: Not that I recall, no.

BY COUNSEL SWAMINATHAN:

Q Okay. So let's move to page 3 of your CV, if you still have that up in front of you.

[87]

A Yes.

Q Great. Can you take a moment to review?

I -- I believe pages 3 through 7 list publications that you have authored and coauthored; right?

A Yes.

Q Okay. Approximately how long have you been authoring publications?

A You said three pages? I'm counting five.

Q 3 through 7, sorry. 3, 4, 5, 6 --

A Oh, pages 3 through 7?

Q Yes, yes.

A I understand.

Yes, I'm sorry, what was your question again?

Q Approximately how long have you been authoring publications?

A Oh, almost 30 years.

Q Almost 30 years.

And what topics do you predominantly write about?

A Human sexuality and atypical sexualities.

Q And within human sexuality and atypical sexuality, what subjects do you primarily focus on?

A Sexual orientation, paraphilias and gender identity.

[88]

Q And you have 64 articles listed here under "Publications"; right?

A That's -- yes.

Q When did you start writing and researching about paraphilias?

A Specifically about the paraphilias, soon after I arrived at CAMH.

Q Okay. So that would be around 1998, '99 timeframe?

A Roughly, yes.

Q Okay. And how many of these publications focus on transgender and gender-dysphoric people?

A I have listed them on my CV. I'd have to count. It's roughly a half dozen.

Q Why don't we go through these pages together.

So your first publication titled "Transgender and gender diverse children and adolescents: Fact-checking of AAP policy," authored by J. Cantor in 2020; is that correct?

A Yes.

Q And you would say that publication pertains to issues of transgender and gender dysphoria in people; right?

A Yes.

Q Great. I'm looking down the list now.

[89]

Is there anything else on page 3, any other publication listed on page 3 that deals specifically with transgender individuals or individuals diagnosed with gender dysphoria?

A No.

Q Okay. Let's go to page 4. Can we go through this same exercise?

Is this there any publication on this page that relates specifically to transgender individuals or individuals with gender dysphoria?

A Only indirectly, number 26, Fazio and Cantor.

Q What do you mean by "indirectly"?

A One of the ways -- left-handedness is more common among people who are trans or gay, for that matter, than -- than not.

Q And that's the only -- that's the only way that this article is connected to issues concerning people who are transgender and gender dysphoric; right?

A Yes.

Q Okay. Great. Let's go to page 5 of your list of publications.

A Yes.

Q Can we go through that same exercise?

I can see that number 30 concerns paraphilia, **[90]** gender dysphoria and hypersexuality, so I assume that article relates to transgender or gender-dysphoric people in some regard; right?

A Yes.

Q Is there any other article on that page that relates to what we're speaking about?

A That particular one, that's a -- the relevant chapter in the Oxford Textbook of Psychopathology. I just finished writing the new version of that, but it's not yet in my CV. The book hasn't come out yet.

Q Okay. Great. So just number 30; right?

And then can we --

A Hang on. I'm going through the rest of the list.

Q Oh, apologies.

A Again, indirectly, number 37, Cantor, 2012, "Is homosexuality a paraphilia?" Again, gender identity factors indirectly, in answering that question.

Q So, again, your testimony is that 37 indirectly focuses on transgender people and gender identity disorders as related to homosexuality as a paraphilia; is that right?

A The evidence -- exactly as the -- the title **[91]** states, reviewing the evidence and the arguments that have been posed for each side.

Q So how does this article specifically address issues of transgender people and gender dysphoria individuals?

A There is a specific paraphilia called "autogynephilia" which is strongly related to the motivator -- which is strongly -- which is one of the strongest motivatives for adults who want to transition, specifically from male to female.

Q So --

A Whether they --

Q Apologies. Continue.

A Whether they consider themselves heterosexual or homosexual is often rooted at what their stage of transition is. So it makes the question of whether -- sexual orientations of paraphilia a little more complicated.

Q Got it. And as you just testified, autogynephilia applies to adults; right?

A That's not exactly it, no. Usually in a clinic, autogynephilia is the primary motivator behind most -- most people who start becoming gender dysphoric in adulthood, but that doesn't mean it's limited to adulthood.

[92]

Q Got it. Are there any other articles on this page that relate to transgender --

A Yes.

Q -- or gender dysphoria?

A Yes. Number 40, which is the then prior version of that chapter for the Oxford Textbook of Psychopathology, but the chapter was retitled, so the phrase "gender identity" doesn't appear in the title in that -- in that title. Or it doesn't appear in the title in that version.

Q So this chapter titled "Sexual disorders" encompasses information about transgender identities and gender dysphoria; is that right?

A Yes.

Q Okay. Anything else on this page?

A No.

Q Okay. We're almost done with this exercise.

Page 6. Are there any articles on page 6 of your CV that focus --

A Yes. Number 53, Zucker, et al.

Q Okay. "The Recalled Childhood Gender Identity/Gender Role Questionnaire: Psychometric properties."

So this publication focuses on issues pertaining to transgender and gender-dysphoric **[93]** individuals; right?

A Children specifically, yes.

Q Children specifically. Okay.

Anything else on this page?

A No.

Q And the last page, page 7, are there any articles on this page that pertain to transgender individuals or gender-dysphoric individuals?

A No.

Q Great. So you've identified six articles for me, and, if you don't mind, I'd like to go through those six articles in a little bit more depth. So if you could turn back to page 3.

Would it be fair to describe your work that you've done in connection with these articles as research?

A Broadly speaking, in different contexts, people use the word "research" different ways.

Q I don't want to misrepresent your work, so how -- how would you describe what goes into the publication of these articles? Would you call it research or study?

Is "study" a more appropriate word?

A Again, these mean different things in science, and we would use different words in **[94]** different contexts.

Usually when I use the word "research," we're talking about actually collecting original data, analyzing patterns and then reporting the results of those analyses.

Q Okay.

A In science, of course, when there are many such -- many such observations reported, we then go through and read -- read those, accumulate those and find patterns in those sets of observations.

So some people would call that research; others, not. There also exists people who just refer -- review all of the research and summarize it all into one. That also would legitimately be called research.

Q Okay. So why don't we go through these and you can correct me if I'm mischaracterizing anything.

But article 1, to me, seems like a review; is that correct?

A That would be fair to say. In -- as I say, some people would call that research.

Q Okay. So why did you author this article?

A When the AAP first published its paper, it very obviously, to me, contained glaring error after **[95]** glaring error. It repeatedly said whatever original studies made such a claim. I was well aware of that original study and

knew that it made no such claim. At that time, especially, there were relatively few people who knew any of the research on gender identity, so I simply conducted a fact-check of all the claims that were made by the AAP.

Q So this article doesn't include any original research of yours; right?

A I did not collect data for it.

Q Okay. Who requested that you write this article?

A No one.

Q No one?

So it was your decision to fact-check the AAP policy; right?

A Yes.

Q It wasn't at the request of any other entity?

A Correct.

Q Okay. And let's go on to number 26, which I believe is the next publication, on page 4.

A Yes.

Q So this is an article that you authored along with Fazio; is that correct?

[96]

A Yes.

Q Who is Fazio?

A She was a graduate student who was studying under me for her internship and then --

Q Got it.

A -- and then post-doc.

MR. TRYON: Pardon me, Counsel, which number

are we on?

COUNSEL SWAMINATHAN: Apologies. We are on page 4 of Dr. Cantor's CV and Article No. 26.

MR. TRYON: Thank you.

COUNSEL SWAMINATHAN: No worries.

BY COUNSEL SWAMINATHAN:

Q Okay. And so this is the article that you mentioned tangentially related to transgender people and gender identity disorders because of the left-handed association; is that correct?

A Yes.

Q Okay. And did you author this article out of your own volition, or were you requested by a certain entity to -- to research this issue?

A Neither. It was Fazio's initially.

Q Okay. And so you were supervising Fazio's research; is that correct?

A This portion of it, yes.

[97]

Q Okay. Great.

And can we go to number 30 now, which is at the top of page 5 of your CV?

A Yes.

Q You mention that there is a new version of this Oxford textbook that is in the works right now; right?

A Yes.

Q And in this current version, you wrote this chapter with Sutton, K. S.; is that right?

A Yes.

Q Who is Sutton?

A He was a postdoctoral fellow of mine at the time.

Q I see. And you coauthored this article in 2014; is that right?

A That's the year it came out. I don't remember the date when we submitted the manuscript.

Q Okay. A quick clarifying question.

Is there a reason that your name is first in this article and Sutton's is second, but in the prior article we were looking at, Fazio's name was first and your name was second?

A Just reflecting proportion of -- of effort into it. As I say, I -- with Fazio, I was [98] participating only in a particular portion. And with Sutton, I was the primary author and Sutton added in other details.

Q Got it. Okay.

And so, can you remind me again, how exactly does this article relate to transgender people or people with gender dysphoria?

A A section of that chapter is specifically about transgenderism.

Q What is that chapter focused on?

A I'm sorry, I'm no longer sure that we're talking about the same chapter. I'm talking about the chapter with Sutton.

Q What -- what -- you mentioned that a portion of the chapter focuses on transgender identities; right?

A Yes.

Q I'm asking you to describe that portion a little bit more for me.

A Oh. In that portion, we reviewed what, until then, was known about gender -- gender identity, gender dysphoria and transsexualism in children and adults.

Q And this was independent research that you and Sutton conducted?

[99]

A It was a review, as I said, of what was already known about those topics at that time.

Q Got it. And were there any findings that you presented that were separate from what data was already existing in this review that you mentioned?

Was there any new finding that came out of this article?

A Not an empirical finding. When we saw patterns in the research or comparisons between different kinds of atypical sexualities and so on, we would -- we would add those, but the focus of the chapter and the purpose of the textbook was to convey to readers what was already established in the science.

Q And -- and I assume this chapter was reviewed by others; right?

A Yes. That particular book, the Oxford Textbook of Psychopathology, is one of the best known such texts in the world.

Q Assume that it's a peer-reviewed text; right?

A I would hesitate to call it peer reviewed. It's not peer reviewed in the way that journal articles are peer reviewed. In journal articles, it's initiated by the author, sent into the journal and the journal can either publish or not publish **[100]** it.

Q Uh-huh.

A Book chapters are by invitation. The book editors then select topic experts and -- and invite them to submit a chapter for the book.

Q Got it.

A That chapter gets peer reviewed in the way that it's sent to other topic experts for – for feedback, but it's not reviewed in the same should we consider this at all, I don't know anything about this topic and then need an expert to tell me, which would happen in the journal peer review system.

Q Understood. So you were invited to author this chapter by Blaney and Millon; is that correct?

A Correct.

Q Okay. And when did they extend this invitation to you? Because previously when I said that, you know, it was published in 2014, you mentioned that the work that has been put into it was ongoing prior to 2014.

So when -- when did they approach you about authoring this chapter?

A I don't recall exactly. It would have been about a year and a half to two years ahead of time.

Q Okay. Great.

[101]

And then you mentioned number 37, article 37, is related to transgender identities and gender dysphoria as related to autogynephilia; is that correct?

A The -- yes, the nexus between the topics is autogynephilia. In order to answer the questions that I had set for myself requires that people know each chunks of that literature.

Q Got it. Okay.

And article 40, you also mention that the title is "Sexual disorders," but that's only because it's a previous version of the title that did not include issues of gender identity; is that correct?

A Yes.

Q And the textbook actually includes information pertinent to transgender individuals and gender identity disorders; is that right?

A Correct. In the years after that, it became -- it became more and more uncontested whether gender identity should automatically be called a -- a disorder at all. So by parsing out the title, we removed the word "disorder" altogether.

Q I see. And this -- this came out in 2009; is that right?

[102]

A Correct.

Q And then the last one you mentioned was on page 6 of 32 of your CV, and it's Article No. 53, the Zucker article. And you mentioned that this article focuses on children with gender identity disorders; is that right?

A Yes.

Q Can you tell me more about this – and however you call it, a study or research that went into this article?

A I provided primarily statistical input into the article. The topic on it was how to find the most objective and reliable way to ask about events in childhood and how cross-gender they were.

Q So what do you mean by "statistical input"?

A Because I have a substantial background in statistics, I'm often asked to -- to add to the statistical analyses that -- or to double-check the statistical analyses that any researcher is doing.

Q So is this Zucker article a compilation of original research?

A It is an original piece of research, yes.

Q It is an original piece of research.

And your contribution to the article was to ensure that the statistical analysis was sound; is **[103]** that correct?

A I don't think it's fair to limit my contribution to that, but that was my predominant role.

Q Fair to say it was your predominant contribution; right?

A Yes.

COUNSEL SWAMINATHAN: I just want to check in because I think it's been about an hour. So I was wondering if you need a break. Or, Counsel Travis, if -- if you want to take another short five-minute break.

THE WITNESS: I'm okay.

COUNSEL SWAMINATHAN: You're okay --

MR. BARHAM: I'm fine with continuing.

COUNSEL SWAMINATHAN: Okay. Sounds good.

BY COUNSEL SWAMINATHAN:

Q So of these six publications that we just talked about, none of these publications focus on transgender people in athletics; right?

A Correct.

Q Do any of these publications relate to the issues in this case?

MR. TRYON: Objection.

THE WITNESS: Do they relate? I -- I'm **[104]** not -- I'm not sure I know how to answer that question.

BY COUNSEL SWAMINATHAN:

Q Sure. Let me ask a better question.

What is your understanding of what this case is about?

A Well, there's what the case is about and there's what I've been asked to contribute –

Q Sure. My question is, what is your understanding of what this case is about?

A Is whether it's fair and appropriate for biological males to participate in -- on biological female teams.

Q And do any of these publications inform your opinion on the issues that you just identified?

A I --

MR. BARHAM: Objection; form.

THE WITNESS: I would hesitate to say "inform" because several of my publications in turn reflect what's in the rest of the empirical literature, and it's the entire empirical literature that informs my opinion. It can't

really be separated. But none -- none of my opinion about this case developed from my publications. Rather, my publications and my opinion both come from the **[105]** sum of the scientific literature.

BY COUNSEL SWAMINATHAN:

Q I appreciate that explanation. Thank you.

Let's go on to the next section of your CV.

So on, let's see, page 8, you have a list of letters and commentaries that you have authored and coauthored; right?

A Yes.

Q Approximately how long have you been offering letters and commentaries?

A Roughly 20 years.

Q And what topics do you predominantly comment on?

A Atypical sexuality in humans.

Q When did you start commenting on atypical sexualities?

A The first publication on it was in 2000.

Q And is that the -- Publication No. 14 that was listed -- that's listed here on page 8?

A Yes, it is.

Q And do any of these publications focus on transgender people or people with gender dysphoria?

A Yes.

Q Which ones?

A Numbers 6, 9, 10, 11. And I don't recall if **[106]** number 12 did, but I think not.

Q Okay. So we're working with number 6, 9, 10 and 11, right, under "Letters and Commentaries"?

A Yes.

Q And Letter No. -- or Letter or Commentary No. 6, this is a comment that you wrote in response to Italiano's 2012 comment on an article that you had written in 2011; is that right?

A Yes.

Q Does this comment have anything to do with transgender children and adolescents playing sports?

A No.

Q Let's turn to number 9, which is -- is this a letter, or is this commentary?

A A letter.

Q A letter.

A The difference -- there really -- it's a general standard whether they say "commentary" or "letter." There's no rigorous or systematic difference between the terms.

Q Got it. Thank you.

And so this was in 2011, entitled "New MRI studies support the Blanchard typology of male-to-female transsexualism."

Did I read that accurately?

[107]

A I'm sorry, say that again.

Q The -- it's titled "New MRI studies support the Blanchard typology of male-to-female transsexualism."

Did I read that accurately?

A Yes.

Q Okay. And did this letter have anything to do with transgender children or adolescents playing sports?

A No.

Q No? Let's look at number 10. This is -- this is authored by Zucker, Bradley, Own-Anderson, Kibblewhite and yourself; is that correct?

A Yes.

Q And it's titled "Is gender identity disorder in adolescents coming out of the closet?"; correct?

A Yes.

Q Can you tell me a bit about this letter or commentary? Why was it written?

A So we were observing, in those days -- we're now going back almost 15 years -- seeing the beginnings of the great increase in the number of adolescents presenting to clinics expressing gender dysphoria.

Q Okay. And is this a piece of original **[108]** research, or is this a review of existing research?

A Original research.

Q Who funded this research?

A It wasn't funded in a direct way. It required no -- it required no funding. It wasn't the kind of a study that required hiring new people or equipment.

Q I see. So there was no grant application process or something similar associated with this publication; right?

A Correct.

Q How did the authors of this study, including yourself, come together to conduct this research?

A They were already colleagues at CAMH.

Q Got it. So these are all employees of CAMH?

A At that time, yes.

Q Were any of these authors students or -- sorry, fellows?

A I don't recall if Kibblewhite was. They may have been.

Q Okay. And you said that this study was not directly funded. Was it indirectly funded in any way?

A It would be reasonable to say that the hospital's salary support of the staff was an **[109]** indirect funding, but it wasn't related to any -- any one particular study at all.

Q Got it. And just to clarify, this is a study that you-all came together to carry out on – on your own, not at the request of anyone?

A Correct.

Q Okay. And is this study related to transgender children or adolescents participating in athletics specifically?

A No.

Q Okay. And then you said, finally, number 11 under "Letters and Commentaries." It's a review, in 2003, of the book The Man Who Would Be Queen by J. Michael Bailey. Did I read that accurate?

A Yes.

Q What is The Man Who Would Be Queen?

A It was a book by J. Michael Bailey, published at the time, describing for the lay public gender identity and transsexualism in children -- well, in children and adults.

Q Did the book focus on children or adults?

A I don't think it's fair to say it focused on either. It spanned a lifetime.

Q Understood. I'm just trying to understand because it says "The Man Who Would Be Queen," **[110]** instead of "The Boy." So I was just wondering how old the protagonist of this book is, to your recollection.

A There wasn't a single protagonist. There were multiple protagonists.

Q What was the average age of the multiple protagonists in this book?

A Oh, I don't recall, and I'm not sure that that's meaningful. That is, in the book, Bailey was describing the phenomena of transsexuality and gender dysphoria and then used individual cases and describes people in order to -- in order to help, you know, color the -- the issue for -- for the audience, but it wasn't -- it wasn't of a number of people by which one could calculate an average. He described a couple of children, and he described a couple of adults, and he tried to -- did his best to describe people who were transitioning in each direction.

Q I understand. I'm -- sorry. I was just trying to clarify whether this was book was similar to, you know, the clinical work that you do, where you speak to adults or people over the age of 16 and, you know, retroactively gain their childhood -- gain knowledge of their childhood experiences or if **[111]** this book, the individual cases that you mentioned, were actually children versus adults.

And you say it's a mix of both; right?

A It includes cases of both.

Q Yeah. Okay. That -- that's all I was wondering. Thank -- thank you.

And so why did you review this book?

A For the same reason I -- I -- for the same reason that I wrote the AAP study. The book was fascinating, well written, very informative, useful -- and useful to society, but also very controversial. So I thought it would be useful, as one of the few people qualified to -- to do so, to compare the book with -- with the actual research at the time.

Q Did anyone request you to write this review?

A No.

Q Did you speak to Michael Bailey while writing this review?

A I don't recall. I had already met him before I wrote the review. I don't recall contacting him at all while I was writing.

Q And so to your recollection and speaking about it more generally, this book has to do with the full age range of transgender identities, and, **[112]** in your testimony, it does not focus solely on adult transitioners; right?

A It's not limited -- it's not at all limited to adults.

Q It's not at all limited to adults, but more generally, it speaks to adults as opposed to children?

MR. TRYON: Objection; form.

THE WITNESS: I hesitate to say that it speaks to either one any more than the other.

BY COUNSEL SWAMINATHAN:

Q Okay. That's fair.

And then at the bottom of the page and then the next page, you have a list of your publications, specifically your editorials, and that is your CV page 8 and 9.

A Yes.

Q Okay. And so approximately how long have you been authoring editorials?

A About 20 years.

Q 20 years. And what topics do you predominantly write on in terms of your editorial publications?

A Primarily on the editorial process itself. I'm on the editorial board for the Archives of **[112]** Sexual Behavior, and I serve as editor in chief for the journal Sexual Abuse.

So it's routine for editors and editorial board members to comment on the structure and recurrences within the journal itself.

Q When did you start sitting on the board, the editor -- as -- as the editor in chief of the journal Sexual Abuse?

A It's on my CV. I don't recall the year.

Q Approximately how long do you remember sitting on the board for or sitting in that position?

A Roughly 15 to 20 years.

Q Okay. And so you have ten publications listed here under "Editorials"; is that right?

A Yes.

Q And from my view of the ten editorials, is it fair to say that you predominantly comment on sexual abuse?

A I wasn't -- no, I wasn't commenting on sexual abuse itself. I was commenting on the journal entitled Sexual Abuse.

Q Okay. So when you're commenting on the journal entitled Sexual Abuse, what is the nature of this commentary?

[114]

A Number of publications, people coming and leaving the editorial board, my plans for the journal for the future. We weren't talking about the topic within the journal. We were talking about the journal as the topic.

Q I see. Okay. So these are -- these are comments on kind of the -- the structure or the future of the journal itself, not specific substantive reviews of the articles contained within these journals; is that right?

A Yes.

Q Okay. And then on page 10 of your CV, you've listed your funding history; is that right?

A Yes.

Q And so these two pages list the funding that you've been the recipient of over the course of your career; right?

A Yes.

Q Is this a comprehensive list of the grants you've received?

A Yes.

Q And you were a co-investigator for four out of the seven times that you received funding for a study; right?

A Just checking.

[115]

Q No problem.

A Yes, that's correct.

Q And you were a principal investigator, then, for three out of the seven times you received funding for a study; correct?

A Yes.

Q Were any of these seven awards of funds related to the study or treatment of gender dysphoria for transgender people?

A Yes.

Q Can you point me to which ones, please?

A The first one, "Brain function and connectomics following sex hormone treatment in adolescents experience gender dysphoria."

Q Uh-huh.

A And Effects of hormone treatment on brain development: A magnetic resonance imaging of -- study of adolescents with gender dysphoria.

Q Great. Thank you.

I would love to talk about those two studies a bit further. So if we could start with the first one, which I understand to believe was granted in July of 2018.

So I see that it says $650,000 and -- sorry, $650,250, and then it has a forward slash, 5 years.

[116]

So is that the amount of funds that were awarded over a period of five years?

A Yes, that's correct.

Q Not each year; right? It's a totality of the funds received over five years?

A Correct.

Q Okay. And when it says "July, 2018," does it mean that you -- like, the funds started coming in in July 2018 and continue on to, presumably, July 2023; is that correct?

A June 2023, but yes.

Q Okay. June 2023.

And so can you describe the study to me?

A The study itself is to take brain scans of kids throughout the process of -- throughout their process of transitions.

Q Okay. And how did you discover this opportunity?

A I had worked, at least indirectly, with some of these authors before. It's -- they're -- they -- they're running the study, but, of course, they needed somebody with a background in brain imaging, in statistics and in human sexuality, including gender identity.

Q So who are Doug VanderLaan and **[117]** Meng-Chuan Lai?

A They now are two sex researcher neuroscientists specializing in child gender identity.

Q They specialize in child gender identity disorders; is that right?

A Yes.

Q What about Megha Mallar Chakravarty, Nancy Lobaugh, M. Palmert and Skorska?

Apologies if I mispronounced any of those.

A No problem.

They're other statisticians and neuroscientists involved in the data collection for MRI research.

Q Are those folks also focused on child gender dysphoria identities?

A No.

Q No? Okay.

And who applied for the funding for this study?

A Dr. VanderLaan.

Q VanderLaan.

And are you aware of what papers were submitted in connection with that application?

A I don't understand the question. Papers **[118]** submitted for an application?

Q I assume that to apply for a grant, there's some sort of application process; is that correct?

A Yes.

Q Were you involved in that application process, or was that solely done by Doug VanderLaan?

A I was involved in relevant parts of it.

Q What was your involvement?

A To review, check and add to the sections on statistics, neuro- -- and neuroimaging research methods.

Q Got it. Okay.

And I assume the study is still ongoing; right?

A Yes, it is.

Q It is.

And you don't have any findings to report right now; right?

A No, not yet.

Q Okay. And just to check in -- or is this study at all related to the participation of transgender children and adolescents in athletics specifically?

A It's not a topic of the study.

Q Okay. And it looks like you said there was **[119]** another study where the principal investigator, Doug VanderLaan, and co-investigators, Bain, Cantor Chakravarty, Chavez, Lobaugh and Zucker, bas- -- or the date is September 2015. That's the other study that you mentioned is relevant to transgender and gender-dysphoric individuals; right?

A It's a grant, not a study.

Q Sorry, grant. Apologies.

Can you tell me about that grant?

A It was very similar to the first one. In fact -- well, the one we first discussed, even though it, chronologically, is first. The chronologically first one bled into or ran into or became the second one, which is continuing the first.

Q I see. So were there independent results that were obtained from -- from this research, or did that research continue on into the grant that we just spoke about?

A That research is continuing on into the current one.

Q Great. And so it looks like it's the same agency that awarded both grants; right?

A Correct.

Q And this time, they provided you $952,955, **[119]** again, over the course of five years, starting from September 2015; is that right?

MR. TRYON: Objection; form of the question.

THE WITNESS: Yes.

BY COUNSEL SWAMINATHAN:

Q So am I correct that your team of investigators applied for a second grant to continue the research that they were doing as a part of this initial awarding?

A Correct.

Q Is there a reason that they gave you less money the second time?

A Less was needed.

Q Less was needed?

A Yes.

Q Why was less needed the second time around?

A Changes in staff and then -- and student needs, just the size of the lab that needed to be -- needed to be supported.

Also, in the second stage of the study, there are now ongoing participants who require brain scanning at regular intervals, which is unlike the earlier part of the study where it was a much wider range of people getting scanned.

Q I see. And, again, did this first stage of **[121]** the study involve the participation of transgender children or adolescents in athletics?

A The -- the way you phrased your question is a little funny. The -- the topic of the study wasn't focused on it,

but I would not be at all surprised if some of the participants in the study were in turn involved in athletics.

Q Do you anticipate reporting specifically on athletic performance of transgender athletes in these studies?

A I don't anticipate reporting on that, no.

Q No? And you don't know for sure that these study participants may or may not be athletes as well; right?

A Correct.

Q Okay.

COUNSEL SWAMINATHAN: Okay. How about we take a five-minute break.

MR. BARHAM: Sounds good.

COUNSEL SWAMINATHAN: Can we go off the record?

THE VIDEOGRAPHER: Yes. We are going off the record at 11:31 a.m., and this is the end of Media Unit No. 2.

(Recess.)

[122]

THE VIDEOGRAPHER: All right. We are back on the record at 11:47 a.m., and this is the beginning of Media Unit No. 3.

Go ahead, please.

BY COUNSEL SWAMINATHAN:

Q Okay. So, Dr. Cantor, can you please turn to page 16 of your CV.

A I'm there.

Q Awesome. So page 16 through 18, I understand, lists your paper presentations and symposia; is that correct?

A Yes.

Q What topics do you predominantly present on?

A The same topics that -- that I research on, atypical human sexuality.

Q And when did you start presenting on atypical human sexuality?

A In the 1990s, I believe it was. Roughly 30 years.

Q And it looks like you have 38 presentations listed here; right?

A Yes.

Q We're going to go through a similar exercise.

Would you please look at page 16 and tell me whether any of these paper presentations and **[123]** symposia focus on transgendered people or gender-dysphoric people.

A Yes. Number 1. And that's the only one on this page.

Q Great. And then can we do that same exercise for page 17 of 32, please, which are 14 through 25.

A Number 23 and number 25.

Q Great. And then the last page, on page 18, please.

A None on that page.

Q Great. So if we can turn back to page 16 and look at the first presentation that you have listed.

So I understand it's a presentation given by yourself in April 2020, and it's titled "I'd rather have a trans kid than a dead kid: Critical assessment of reported rates of suicidality in trans kids."

Did I read that correctly?

A Yes.

Q And this was presented at the annual meeting of the Society for the Sex Therapy and Research; right?

A Yes.

Q And I assume it was online due to COVID?

A That's correct.

[124]

Q Okay. Who were you asked to present at this annual meeting by?

MR. BARHAM: Objection; form.

MR. TRYON: Objection; vague.

THE WITNESS: I wasn't -- I wasn't asked.

BY COUNSEL SWAMINATHAN:

Q You weren't asked?

A Correct. I submitted a proposal to – to present, and it was accepted.

Q When was it accepted?

A Oh, I don't remember the date. In general, they were four to six months ahead of the date of the conference itself.

Q Got it. And what did you have to submit in order to vie for a spot to present at this annual meeting?

A A form and a, roughly, one-paragraph summary.

Q And to the best of your recollection, what did you say in that one-paragraph summary?

A Roughly the same material that's contained in my report.

Q Can you give me a brief summary of what you mean by that?

A That very many people exaggerate the amount of suicide and suicidality that occur- -- that's **[125]** reported amongst trans populations.

Q Got it. And were you paid to give that presentation?

A No.

Q No? And you said this presentation focuses on transgender children and adolescents or some other population?

A Transgender children and adolescents.

Q Does this -- did the presentation you give at all focus on transgender children and adolescents participating in athletics?

A No.

Q No? Okay.

Then you told me that number 23 also focuses on transgender people and gender-dysphoric people; right?

It's a presentation from August 2003. And I take it where you're the only person listed in the front, you are the only presenter; is that right?

A Yes.

Q Okay. And so this presentation was titled "Sex reassignment on demand: The clinician's dilemma." And this paper was presented at the 111th annual meeting of the American Psychological Association in Toronto, Canada; is that correct?

[126]

A Yes.

Q So was this an American Psychological Association annual meeting in Canada?

A Yes.

Q Do they typically have their annual meetings in Canada?

A Oddly, more -- more frequently than you would think. A -- Toronto is a very popular city for -- for the APA.

Q Interesting. Okay.

And so you testified that in the previous presentation that we spoke about, you submitted a form requesting to present at that meeting.

Did you do the same for this annual meeting?

A I don't remember the exact process anymore, but it was roughly the same.

Q So you requested your -- your participation in this meeting as opposed to someone reaching out to you, asking you to present at this meeting; right?

A Correct.

Q Okay. And what were you presenting on?

A I was presenting on my experiences, now having had the first several years of my experience working with people, in turn working with their **[127]** gender identities.

Q So you were presenting on your own experience; right?

A I was couching everything in my experience, but it was meant to be a tutorial to help other clinicians who were preparing to do the same thing.

Q Did you present any data at this annual meeting?

A No, I did not.

Q No? Did you present any original research of yours at this annual meeting?

A No, I did not.

Q Okay. And at this meeting, did any portion of your presentation focus on transgender children or adolescents?

A No.

Q Okay. 25, I believe you said, was the – the last one that focuses on transgender identities and people with gender dysphoria; right?

A That sounds right, yes.

Q Okay. And so this was a presentation given in 2002, August 2002. And, again, you were a sole presenter here. And your presentation -- or your -- title of your paper that was presented at the 110th annual meeting of the American Psychological **[128]** Association, this time in Chicago, was titled "Gender role in autogynephilic transsexuals: The more things change..."; is that correct? Did I read that correctly?

A Yes.

Q Is there anything after that ellipses that was just left out because of lack of space, or is that --

A No. The ellipses were part of the title.

Q Part of the tile. Okay.

And did you submit a similar form to present at the 110th annual meeting of the -- are you okay if I call it the APA? Is that an acronym you're familiar with?

A I'm familiar with it. I'm fine in this context. My single hesitation is that it's easy to confuse the American Psychological Association with the American Psychiatric Association since both get abbreviated APA.

Q I will go through the process of saying the whole term.

So for the 110th annual meeting of the American Psychological Association, were you asked to present at this meeting, or did you submit a form, similar to the 111th?

[129]

A I submitted an application to present.

Q Okay. And I assume that application was accepted?

A Yes.

Q Were you paid to give that presentation?

A No.

Q No? And can you tell me a bit about the substance of that presentation?

A Yes. I was presenting to the audience the existence of autogynephilia, which most people, especially then, were very unfamiliar with.

Q So you said most people were unfamiliar with it then.

Do you know of anyone else who was as familiar or similarly familiar with autogynephilia, at the time, as you were?

A Yes.

Q Any prominent researches come to mind? Would you be able to -- to name a few?

A Certainly. Even the names that have been mentioned already, J. Michael Bailey, Ray Blanchard and Maxine Petersen.

Q Any others come to mind?

A Again, it's a large literature. Many people have published on it. The largest other name that **[130]** quickly comes to mind is Anne Lawrence. Again, herself an openly trans woman.

Q And, again, you said that at the time, though, it wasn't a very well-known subject for most people at this conference?

A Correct.

Q And, again, this presentation did not focus on transgender children and adolescents with gender dysphoria; right?

A Correct.

Q And it didn't focus on transgender children and adolescents participating in athletics, did it?

A Correct, it did not.

Q Okay. And then if you could turn to page 25 of your CV. I think it's PDF page 93.

A Yes.

Q I understand that this is a list of teaching and training, and so I assume that to mean that you were the supervisor of these students or fellows listed on this page; right?

A Correct.

Q Is this a comprehensive list, in addition to the back, which says -- on page 26, which continues the list at CAMH clinical supervision, doctoral- and masters-level

practice, do these two pages cover **[131]** your teaching and training experience?

A Yes.

Q Okay. So did you ever provide educational training to the individuals that you supervised related to transgender people?

A One second. I'm just running through them in my head.

Q No problem.

A Some of the students had some trans clients or a gender dysphoria-related question over the course of a specific case, but none -- and some of my students were co-supervised by other supervisors who took the lead role, specifically in their gender -- in cases that they did have with gender dysphoria, but I myself didn't do the primary supervision of a case specifically about gender dysphoria.

Q Got it. So you did not specifically take the lead role in supervising them on issues of gender dysphoria; right?

A Correct.

Q Okay. Did your supervision of these students ever involve providing care to transgender adults?

A Yes.

Q Can you tell me about that?

[132]

A Again, some of the -- although some of the clients weren't in to talk about trans issues themselves, some of them happened to have been trans. So it was related, but not a primary focus of the treatment.

Q Got it. So it was not a primary focus of the treatment, but their identities might have been relevant to transgender issues and gender dysphoria; is that correct?

A Yes, that's correct.

Q Okay. Did your supervision ever involve research around puberty-delaying treatment prescribed to transgender children?

A No.

Q What about transgender adolescents?

A No.

Q Did your supervision ever involve research around prescribing hormones to transgender adults?

A No.

Q Did your supervision ever involve research and -- sorry, strike that.

Did your supervision ever involve prescribing hormones to transgender adults?

A No.

Q Okay. We're finally through your resume, [**133**] which may provide some sense of relief, and I want to talk more about your involvement in this case.

So how did you first learn about this case?

A I was contacted by the lawyers, who informed me.

Q Who were those lawyers?

A The ADF team. I don't -- oh, no, no, no. I'm sorry. No, I was contacted by the attorney general's office in West Virginia, who -- who told me about the case and asked if I would be willing to participate.

Q And when did that contact occur?

A I don't recall exactly. Roughly six months ago.

Q Okay. And had you worked with anyone from the AG office of West Virginia before?

A Before this --

MR. BARHAM: Objection; form.

BY COUNSEL SWAMINATHAN:

Q I'm sorry, before --

A No, I hadn't.

Q Had you spoken to anyone at the AG's office of West Virginia before this case?

A No.

Q Okay. And why did you agree to serve as an [**134**] expert in this case?

MR. TRYON: Objection to the extent that it calls for any attorney-client information.

You can answer to the extent you do not reveal any communications with your attorneys.

COUNSEL SWAMINATHAN: Objection noted.

Thank you, Counsel.

THE WITNESS: I felt interested and qualified.

BY COUNSEL SWAMINATHAN:

Q Okay. And, again, you said that you were first reached out to by the AG's office of West Virginia.

When did you hear from ADF, again?

MR. BARHAM: Objection. To the extent that it calls for any communication between the witness and legal

staff, I'm going to instruct him not to answer so as to preserve the attorney-client privilege.

COUNSEL SWAMINATHAN: Sure. I'm -- I'm not asking the witness to disclose any attorney-client communications. I'm simply asking him when he was first contacted by any member of the Alliance Defending Freedom team.

MR. BARHAM: You can answer.

[135]

THE WITNESS: A few months after I was contacted by the West Virginia AG's office.

BY COUNSEL SWAMINATHAN:

Q So that would put you at about three months ago, right, since you said it was about six months ago that you were contacted by the West Virginia AG's office?

A That's roughly correct.

Q Roughly correct. Okay.

And who reached out to you?

A Oh, I don't remember who from the team. I believe it was Roger Brooks.

Q Okay. And, again, I am not seeking any communications you had with counsel, but I just wanted to know the timing of that.

And so you said you agreed to serve as an expert in the case, as you were interested and qualified; correct?

A Yes.

Q What is your understanding of why you were qualified to serve as an expert in this case?

A Because I have a very substantial background in the relevant subject matter and science.

Q And can you describe your interest more, in this case?

[136]

A My interest is indeed in the science and in any opportunity that I have to provide that science so it can be used for public policy.

Q Got it. Okay.

And so you said the AG's office reached out to you about six months ago, but if you remember, the document that we reviewed, which is marked Exhibit 44, which is the declaration that you submitted in conjunction with the preliminary injunction motion, that motion was dated -- or sorry, that declaration was dated June 22nd, 2021; right?

A Yes, that's the date.

Q So if the AG's office of West Virginia contacted you about six months ago, which is about October, who contacted you in connection with drafting this declaration in June of 2021?

A Again, I believe the person I was contacted by was Roger Brooks.

Q So during the period of June 2021, you had only spoken to Roger Brooks, not anyone at the AG's office of West Virginia; right?

MR. TRYON: Objection.

THE WITNESS: I think –

MR. BARHAM: Object -- objection as to form.

[137]

THE WITNESS: Unless I misunderstood your question, the original question was contacted for this case. I had received contact from the ADF team regarding prior cases. And the other exhibit is from a deposition I gave in a prior case that was then reused for this case.

So the date of the prior document I prepared is dated for -- from the prior case rather than when I was contacted for this case.

COUNSEL SWAMINATHAN: Court reporter, can you please read back my original question?

THE REPORTER: Yes. So the last one was "Q So during the period of June 2021..."

Is that the question you want read back?

COUNSEL SWAMINATHAN: Actually, I think it's either the question before that -- it's the one pertaining to when he was first contacted about this case.

(Record read.)

BY COUNSEL SWAMINATHAN:

Q And, Dr. Cantor, you testified that, you know, this was an expert report in connection with another case, but I presume someone contacted you about the declaration that you submitted on June 22nd, 2021, in this case, which has your [138] signature on the second page of the PDF; right?

A It has my signature, yes.

The AG in West Virginia already had a copy of my prior report and asked me if it would be okay for them to use that, to which I agreed.

Q Yeah. So who contacted you and asked you whether it was agreeable for them to use this prior expert report?

A The AG's office.

Q And when did that contact happen?

A That's what was about six months ago.

Q How could that possibly be about six months ago if it was executed with your signature on June 22nd, 2021?

A Oh, now I'm seeing it -- okay. Now I got it.

So it would have been older than six months ago. As I said, it was really only -- only rough, my estimation of the time.

Q Got it. And so -- I appreciate that.

And so this report was not tailored to this

case at all?

A The prior case? The --

Q I apologize. I can be more clear. So this report that was attached to the declaration of the June 22nd, 2021, executed **[139]** document was not changed at all when used in this case; am I right?

A The submission to -- to the prior case wasn't changed at all when it was submitted for use in this case, and then I updated it for -- to submit a report specific to this case.

Q Right. I'm just trying to understand that this expert report that was attached to the declaration on June 22nd, 2021, was not changed at all from its prior use in the Allan Josephson case; is that right?

A Correct.

Q Okay. Thank you.

And so you testified earlier that your main area of expertise is studying atypical sexual patterns -- or atypical sexualities and paraphilias; right?

A Yes.

Q What is your understanding of a paraphilia?

A Oh, goodness. The term "paraphilia" is used different ways by different people in different contexts. Most broadly it refers to the highly atypical sexual interest that dominate a person's life and interact with or prevent them from having a -- an otherwise typical sexual life.

[140]

Q So do you view being transgender as a paraphilia?

A No.

Q No. Okay.

And how much time do you spend researching paraphilias?

A Oh, currently?

Q Currently, yes.

A About half my time.

Q Okay. And you said that you also focus on atypical sexualities. And would that include hypersexuality? Is that an atypical sexuality?

A Yes.

Q What is hypersexuality?

A Generally, these are people who are trying to reduce their sexual behaviors in one way or another.

There is no formal definition.

Q And how much time do you spend researching hypersexuality?

A These days, roughly 10 percent.

Q Okay. And I think you mentioned that you also spend time researching sex addiction; is that correct?

A Yes.

Q What is sex addiction?

[141]

A "Sex addiction" is a popular term. It's essentially a synonym for hypersexuality.

Q Oh, okay. So would you say that you spend about 10 percent of your time, in that same 10 percent that we spoke about for hypersexuality, researching sex addiction?

A Yes.

Q Okay. And I understand that you also research pedophilia; correct?

A Yes.

Q What do you understand pedophilia to be?

A The sexual attraction to children. The formal diagnosis is more rigid.

Q Apologies, I -- the formal diagnosis is what?

A More rigid.

Q More rigid.

What -- what is the formal diagnosis?

A The formal diagnosis of pedophilic disorder is somebody who's sexually attracted to prepubescent children more than they are attracted to adults.

Q Thank you.

And so how much time do you spend researching pedophilic disorders?

A Currently, roughly 10 to 20 percent.

Q Okay. And so we were speaking earlier about **[142]** autogynephilia, and I just want to get a clear understanding.

So is autogynephilia a paraphilia?

A Yes, it is.

Q Why is it a paraphilia?

A It's a highly atypical sexual interest pattern that can interfere or interact with a person's usual sexual life.

Q Okay. But being transgender is not a paraphilia; right?

MR. BARHAM: Objection.

THE WITNESS: Correct.

BY COUNSEL SWAMINATHAN:

Q Okay. So we've got about, I think, 80 percent of your time covered now with -- with what we've spoken about, about what your research focuses on.

What does the other 20 percent focus on?

A I wouldn't add the percentages quite so easily because these topics overlap so much. For example, a person with -- with autogynephilia, but doesn't want to be autogynephilic, might refer to themselves as a sexual addict because they feel like that they're addicted to the related pornography.

So which way it gets classified depends on **[143]** what classification system a person -- a person is using.

Q And so you testified earlier that autogynephilia is a paraphilia, but being transgender is not a paraphilia.

Why is a transgender identity not a paraphilia?

A More than one thing can motivate a person to want to live as the other sex. Autogynephilia is only one of them.

Q So being transgender is not a paraphilia because there are multiple -- multiple reasons for why an individual can identify as transgender; is that right?

A Yes, that's correct.

Q Okay. And what are the other reasons behind autogynephilia that go into that?

A The other primary one that's been identified is sexual orientation, homosexuality.

Q So homosexuality is, in your mind, a contributing factor to someone identifying as transgender?

A It can motivate a person to feel gender dysphoric, yes.

Q What do you mean by "motivate"?

[144]

A Be the source of the desire to change.

Q Is there anything else that comes to mind when you said that there are multiple contributing factors that prevent -- or that in your mind do not categorize transgender -- diagnoses of gender dysphoria as paraphilias?

We mentioned autogynephilia, and we mentioned homosexuality. Are there any others?

A The remaining predominant one I would describe, as I described them in my report, individuals, typically young, who mistake the emotions that they're having to be gender dysphoria when they're actually motivated by something else, for example, a desire not to be associated

with the sex that they would be biologically associated with.

Q And so beyond what you just described, what other emotions are these young individuals feeling that would make them want to be the other sex?

A That's a subject of ongoing – ongoing investigation. We have some educated guesses, but I can't say that the question has been entirely -- entirely answered.

Q And so similar to autogynephilia or homosexuality, is there a term to describe these -- the experiences of these young individuals who **[145]** mistake emotions that they are having for gender dysphoria?

A I can't think of a widespread term, no.

Q Is there any term that you use for it, to describe that phenomenon?

A No, I don't think so.

Q Okay. So is it your testimony that anyone who is transgender is transgender either due to autogynephilia, homosexuality or a mistake they've made as a -- as a younger individual and the emotions that they are misconstruing as gender-dysphoric feelings? Is that your understanding?

A That's the best summary we have of the – of the existing research, yes.

Q Okay. When did you become interested in sex research?

A Oh, I think I was probably always interested in sex research, and then I just found a way to make a living at it.

Q Okay. So I'm going to introduce tab 4, which will be marked as Exhibit 46. And it will take one minute to show up, so please give the system a second.

(Exhibit 46 was marked for identification **[146]** by the court reporter and is attached hereto.)

COUNSEL SWAMINATHAN: And, Travis, we can break after this -- after this exhibit.

BY COUNSEL SWAMINATHAN:

Q Can you see it there, Dr. Cantor?

A Not yet. Ooh. Oh, yeah.

Q Great. Okay.

And so this is an -- my -- my understanding of this document is that the Kinsey Institute, which is associated with Indiana University, has an interview series, and they had a conversation with Dr. James Cantor, which I presume is you, in this context; is that true?

A Yes, it is.

Q Do you remember this interview?

A I can't say that I remember it specifically. I give a lot of interviews. But I remember its author, Justin Lehmiller, and I remember, roughly, the -- the kind of interview. But as I say, I can't take this specific interview out of the many that I do.

Q That's fair.

I would love to give you just a -- a moment to review, if you want to reflesh -- refresh your recollection.

[147]

And I believe the question on the first page, by Lehmiller, is (as read):

"As a sex researcher, one of the most common questions you get asked is how you got into this line of work in the first place. So let's start there—what is it that drew you to this field of study? What's the story behind how you became a sex researcher?"

Did I read that correctly?

A Yes.

Q And when you answered, it says (as read):

"Cantor: I think it was mostly dumb luck."

Did I read that correctly?

A Yes.

Q What do you mean when you say that it was mostly dumb luck that you got into the sex researcher line of work?

A I was referring, at that point, specifically to the people who were my supervisors when I started my clinical internship. It's because they had a -- it's because they were doing active sex research and the atypical sexualities that I got exposed to it **[148]** with the depth that I did, with, you know – with experts as well known as -- as they were.

I didn't pick that internship site because of the research that was going on there. I went for a relatively usual clinical experience where I thought my clinical experience with the trans patients would be the most relevant to my career.

And it's just because the other half of my exposure was with sex offenders and sex offender research that I realized that there was an opportunity there for me to think and research more broadly than I was -- than I had planned.

Q And you said you have done a number of these interviews, correct, over the course of your career?

A Yes.

Q And, you know, you strive to give accurate information in these interviews to the questions you're asked; right?

A Yes.

Q Yes. Okay.

Can you turn to the next page, please? I think it's page 2 of the document. And Lehmiller asks you what your primary area of research and what methods do you typically use to answer your research questions.

[149]

Lehmiller asks you this question right after the first paragraph at the top.

And your response is, quote, (as read):

"My primary research opportunities have involved studying sex offenders, mostly pedophiles and persons with other atypical sexualities whose behaviours led them into the legal system."

Did I read that correctly?

A Yes.

Q And would it be fair for me to say that most of the patients that you work with are those who have had contact with the legal system?

A Depending on how you count them.

Q Can you tell me a bit more about that? I think I'm -- I'm trying to understand. Because you mentioned you

have about 50 patients in your private practice at any given point in time. Of those --

A Right.

Q -- patients, are -- are they mostly folks who have had some contact with the legal system?

A No, they are not. And that's why, as I say, it's difficult to be able to count this way.

When I was doing research on sex offenders at **[150]** CAMH, my clinical contact was largely limited to roughly an hour or two per person, focused very specifically on history-taking and very specifically on the elements that would be useful in getting that person into the right kind of a treatment program.

So those people count in very many thousands because it's an hour or two per person.

Q Got it.

A Actual ongoing treatment with a psychotherapy patient is an hour with that person per week, going on for many months.

Q So --

A So just counting number of people is incomparable unless you're counting the number of people in a comparable situation.

Q Totally understood.

So the distinction there is that the population that you worked with at CAMH is different than the population that you're currently working with in your private practice; is that right?

A Correct.

Q Okay. And is it accurate to say that your primary research opportunities have involved studying sex offenders?

A That would be fair, yes.

[151]

Q So how many of your current patients, without violating any HIPAA laws, have been adjudicated as sex offenders?

A Current patients?

Q Yes.

A None.

Q None? And how many, approximately, if you can give me a percentage, of the patients that you saw at CAMH have been adjudicated as sex offenders?

A 80 percent --

Q 80 --

A -- ish.

Q Okay.

COUNSEL SWAMINATHAN: So this might be a good place for us to break, for you to get lunch.

If we can go off the record.

THE VIDEOGRAPHER: Yep. We are going off the record at 12:28 p.m., and this is the end of Media Unit No. 3.

(Recess.)

THE VIDEOGRAPHER: All right. We are back on the record at 1:20 p.m., and this is the beginning of Media Unit No. 4.

Go ahead, please.

///

[152]

BY COUNSEL SWAMINATHAN:

Q So, Dr. Cantor, I understand you just had your lunch break. Did you have any conversations with your counsel during the lunch break?

A Not about the case, no.

Q They -- to clarify, they weren't about the substance of the deposition; right?

A Correct.

Q Great. So earlier this morning, you testified that in preparing for this deposition, you did a review to find updates in the literature; is that correct?

A Yes.

Q When did you complete this review?

A Oh, I would hesitate to say that I ever completed it or ever would complete it. I'm, you know, often scouring the literature, and I'm often made aware of new papers as they come out, and I keep a list to go -- to go back through them.

Q Understood. I -- I think --

A So --

Q -- a better question then is, when did you conduct your review in preparation for this deposition?

A Right up through, let's say, a few weeks **[153]** before I submitted the final version. I don't remember the exact date.

Q Got it. And did you indeed find any updates in the literature that you thought to include in your updated report?

A I don't recall specifically. As I say, I keep a reading pile and a reading list, and every time I need to produce a document, I go through it and -- and update it. I can't say that I have a specific recollection of the size of that pile before this specific report.

Q Got it. So would you be able to give me a more general understanding of whether there was new literature that you reviewed in connection with drafting your second report?

A Yes, there -- there was a -- it had -- yes, there's been a pretty substantial increase relative to the very slow rate at which this literature was -- was growing. So there was a substantial amount published in 2020 and 2021 that -- that I needed to -- to include and -- that I needed to include.

Q And sitting here right now, you just can't remember the names of the specific articles or literature; right?

[154]

A No, I can't. Generally, I do it chronologically.

Q Okay. I'm going to ask you a bit about the individual plaintiff in this case.

So do you know who B.P.J. is?

A Only in theory. I've never met the person. I couldn't -- and, of course, I have no direct contact with the -- with the client themself.

Q And you've never spoken to anyone in her family either; right?

A Correct.

Q You've personally not spoken to anyone at her school; right?

A Correct.

Q Have you reviewed any of B.P.J.'s medical records?

A If I have, I'm not recalling. In general, I go through a medical record to take note of anything, you know, specific of relevance. If I did in this, I would have made such a note, and I don't recall doing so.

Q So it's your testimony today that you – you have not reviewed any of B.P.J.'s medical records; right?

A Yes.

[155]

Q Okay. Did you read B.P.J.'s declaration in this case?

A Not that I recall, no.

Q You read the intervenor's declaration in this case; right?

A The interview?

Q The intervenor. My apologies.

A I'm sorry, who is this?

Q Lainey Armistead, the intervenor in this case.

A I'm -- did I see a copy of that?

Q I'm just trying to get an understanding of whether you read her declaration or not.

If you -- what might be helpful is if you turn to Exhibit 45, which is your expert report that you prepared in 2022, and on page 4 of that expert report -- I'll -- I'll wait for you to -- to get there so we can review.

A Oh, yes.

Q So fair to say number 9 on page 4 of your expert report says (as read):

"To prepare the expert report, I reviewed the following resources related to this litigation." And A is H.B. 3293. **[156]** B, amended complaint in this litigation. C, Ms. Armistead's declaration.

Do you see that?

A Yes, I do.

Q Why did you read the intervenor's declaration?

A I was provided each of those documents in the beginning. I reviewed the documents to see if there's anything -- if there's anything relevant. There wasn't anything relevant that I could -- that I anticipated being in the report, so, of course, I concentrated on the materials that were relevant.

Q Got it. And is there any reason that you were not provided the plaintiff's declaration in this case, to your knowledge?

A I -- I couldn't say why I -- I have no idea why I wouldn't have been given something. I -- no, I have no idea why I wouldn't have been supplied with a -- with a copy.

Q That's fair. Okay.

So we're going to continue with Exhibit 45, which is your report, and can you please turn to page 3, which is just the page before the one you were on.

Can you please take a moment to review this **[157]** page and let me know when you're ready.

A Okay.

Q So the last paragraph on the page reads, quote, (as read):

"In addition, I have been asked to provide an expert opinion on how relevant professional organizations have addressed these questions and whether any of them have taken any meritorious position that would undermine West Virginia's Protect Women's Sport Act (H.B. 3293) ('Act'). As I explain in detail in this report, it is my opinion that Plaintiffs' expert reports display a wide variety of flaws that call their conclusions into question and that no professional organization has articulated a meritorious position that calls into question the basis for the Act."

Did I read that correctly?

A Yes.

Q So with respect to the Act, your role in this case is to review the opinions of various **[158]** professional organizations and determine if they have taken any meritorious positions that would undermine the Act; right?

A That included that, yes.

Q Are you offering any positions in support of the Act?

A I don't think I can be said to be offering any opinions in support or against the Act so much as providing the information that's in the science, and then the political and legal process need to integrate it into policy in the way that they do, but I'm not making any specific recommendation about any specific act.

Q So it's fair to say that you're not offering any positions in support of H.B. 3293; right?

MR. TRYON: Objection to form.

A Not in support of it. I can only say what elements of it are consistent or inconsistent with the existing science.

BY COUNSEL SWAMINATHAN:

Q And are those opinions of whether they are consistent or inconsistent included in your report?

A Yes.

Q So is your main role here today to show that the organizations have not, in your view, undermined **[159]** the Act?

A I'm sorry, say that again.

Q Is your role in providing your expert testimony to show that the professional organizations have not, in your view, undermined the Act?

MR. BARHAM: Objection to form.

THE WITNESS: Is my position -- I'm sorry, one more time.

BY COUNSEL SWAMINATHAN:

Q No problem. I want to make this as clear as possible for you.

I'm just trying to understand that your role is to show that no professional organization has articulated a meritorious position that calls into question the basis for the Act; right?

MR. TRYON: Objection.

MR. BARHAM: Objection to form.

THE WITNESS: I -- I don't think I can say that that is my purpose, although I'm aware of the legal context in which the questions are being asked of me. But I'm not -- being asked of me. But -- but my only opinions are -- can

be about -- can only be about what is or is not supported by the science. Where it goes from there is up to the -- it's up to **[160]** others.

BY COUNSEL SWAMINATHAN:

Q Understood. So rather than your purpose, just one, you know, objective that you achieved via drafting this report is to opine on whether any professional organization has articulated a meritorious position that calls into question the basis for the Act; right?

MR. TRYON: Objection.

THE WITNESS: If I'm understanding properly the way you're asking the question, it's am I only going to give opinions one side versus the other, which is not correct. My role has been to assess altogether the role of the science regardless of which way those facts fall, not to cite the facts merely on one side of the argument.

BY COUNSEL SWAMINATHAN:

Q Right. And so you spoke about the science. So how do you believe that the Act is supported by the science that you're referring to?

MR. BARHAM: Objection as to form.

THE WITNESS: That question -- that question goes outside what I was -- what I've been asked to do. I was -- I'm not and did not include in my report the science specific to athletic performance. **[161]** As my report contains, it is an overview and -- describing the science of gender identity in general, which, of course, will get adopted into the question, but I am not offering an opinion on the amount, for example, by which being born male might serve as an athletic advantage relative to other females. I was not asked that question, and that question

is not in my report, but that's the part that's most pertinent to the -- to the long question.

BY COUNSEL SWAMINATHAN:

Q So how is the science that you discuss in the report relevant to the Act?

MR. BARHAM: Objection to the scope and form.

THE WITNESS: In order for any government to institute policies that best integrate the science into whatever they do, they need to know that science. The same for Courts. So in order to balance whatever a Court perceives as the relevant issues, they need that information before them to make the -- to make any decision.

BY COUNSEL SWAMINATHAN:

Q But you're not a lawmaker; correct?

A Correct.

Q And you're not offering an expert opinion **[162]** regarding whether science supports the Act; right?

A I wasn't asked to review the part of the science that is most directly involved in the Act, that is to say, specifically differences in athletic performance between the genders -- sexes, I should say.

Q But it's fire say that you're not offering an expert opinion regarding whether science supports the Act; right?

MR. TRYON: Objection.

THE WITNESS: I -- the questions, as posed to me and as phrased in my report, are neither to support nor to detract from the law but merely summarize the science and indicate parts of overlap and parts of contradiction.

None of it is in -- is in -- is a means to accomplish any specific end.

BY COUNSEL SWAMINATHAN:

Q Dr. Cantor, I think my question might be a yes-or-no question. I am just asking, you know, whether you believe that you're offering testimony today and in connection with your report as to whether science supports this act.

I understand that earlier you said you were not offering an opinion on whether -- on – on either side, whether to support or not support **[163]** the Act.

So I think my question might be a yes-or-no question.

A I don't think it is a yes-or-no question. Science is, you know, complicated. There are -- this issue is complicated. And it's quite feasible that, you know, pieces of science will support some aspects and not others.

Q Okay. So, again, if you can clarify, what in your report is relevant to the Act? What testimony that you've offered in your report is relevant to the Act?

A All of it.

Q How is all of what you offer relevant to the Act?

A In a decision made to affect trans people, one needs to be, as much as possible, aware of the science of trans people.

Q Okay. And so it's your testimony that all of the opinions that you offer in your report are opinions related to H.B. 3293; is that correct?

A Yes.

Q Okay. And you agree that the Act is a decision that's made to affect trans people; correct?

[164]

A I'm not a lawyer, but --

MR. TRYON: Objection.

THE WITNESS: I'm not a lawyer myself, but I think that's fair for me to say, yes.

BY COUNSEL SWAMINATHAN:

Q Okay. And what is your understanding of H.B. 3293?

A That it requires people who were born male to play -- it forbids people who were born male from playing on female teams.

Q And have you read the text of the Act?

A Yes, I have.

Q You've read it from top to bottom?

A From what I believe to be the top and what I believe to be the bottom, yes.

Q Okay. So what is your understanding of what the, quote, basis for the Act is?

MR. BARHAM: Objection as to form and the scope.

THE WITNESS: To ask for the basis of the Act I think is to ask what is on the minds of the political system and the politicians who created it, which, of course, I can't know.

BY COUNSEL SWAMINATHAN:

Q I'm -- I'm definitely not asking you to read **[165]** into the minds of the politicians.

I'm -- I'm going to read again the last sentence on page 3 of your expert report that says (as read):

"As I explain in detail in this report, it is my opinion that Plaintiffs' expert reports display a wide variety of

flaws that call their conclusions into question and that no professional organization has articulated a meritorious position that calls into question the basis for the Act."

So I am simply asking you what your understanding of the basis for the Act is.

A That the Act was necessary to improve the lives of the students on these teams.

Q Can you be more specific about "the students on these teams"? What do you mean by that?

A To balance the rights, needs and privileges of each of the groups.

Q Who are the groups that we're speaking about?

A The people on the teams, the – the competitors, the trans students and then their, typically, non-trans teammates.

[166]

Q And which teams are we specifically talking about?

A I wasn't -- I wasn't talking about any particular sport, but this -- this would be any sex-segregated teams.

Q Okay. And how did you develop the understanding that you just shared with me?

A I take it on general principles as the purpose behind any law is to improve the situation for the citizens relevant to it.

Q And how does this act impact the live -- lives of trans students?

A I have no direct knowledge of that kind of impact outside of what's reported in the science, and I'm not aware of there being any objective signs measuring such an outcome.

COUNSEL SWAMINATHAN: Court Reporter, can you please read back Dr. Cantor's answer before this one?

(Recess.)

BY COUNSEL SWAMINATHAN:

Q So, Dr. Cantor, do you think that the Act improves the lives of trans students?

A There's no way for me to know that without data, and we don't have any.

[167]

Q Do you have data on how it improves the lives of non-transgender students?

A No. The topic hasn't been studied.

Q So your report discusses prepubertal kids; right?

A In part, yes.

Q A portion of your report discusses prepubertal kids; right?

A Yes.

Q That discussion does not pertain to the population affected by H.B. 3293; correct?

MR. BARHAM: Objection; form, scope and terminology.

MR. TRYON: Objection.

THE WITNESS: No, that's not correct.

BY COUNSEL SWAMINATHAN:

Q How does your discussion about prepubertal kids pertain to the population affected by H.B. 3293?

A The prepubertal kids become pubertal kids, then become adolescents, even though they are participating in

these teams. For example, in teenagehood, they still are members of -- they are still a member of the demographic group where they were. So they would still represent a phenomenon of **[168]** child-onset gender dysphoria even after they cease to be a child.

Q What is your understanding of who is impacted by H.B. 3293?

A Participant -- everyone who participates and follows in the -- the relevant sports.

Q And you said that prepubertal kids -- your -- your discussion on prepubertal kids pertains to the population affected by H.B. 3293 because prepubertal kids become pubertal kids who become adolescents; right?

A Correct. The classifications are according to when the -- the dysphoria starts, not where it currently is.

Q So is it your opinion that adolescents are still prepubertal kids?

A No, they are not.

Q Your report discusses adult-onset gender dysphoria; right?

A Yes, it does.

Q That discussion also does not pertain to the population affected by H.B. 3293; right?

A That is not correct.

Q Can you explain to me how adult-onset gender dysphoria pertains to the population affected by **[169]** H.B. 3293?

A That's now a different question. You're now asking me about adult onset rather than adult trans people who may or may not have been dysphoric earlier.

Q Can you explain that difference to me?

A The -- the science demonstrates over and over again that the age -- the age of development at which one starts to feel highly dysphoric allows us to predict the -- predict many other phenomena and the life trajectory that the person is on.

If a person is adult onset, which not always, but in most of the literature is midlife, 30s and 40s, this would be past the student athletics age, but if the person has -- but that's different from people who had childhood-onset dysphoria, continue to have that dysphoria and then eventually become adults.

Q What studies are you talking about when you just mentioned that there are studies with data that show over and over?

A The -- the -- the studies that show over and over -- which specific point?

Q Well, you just -- you tell me. You – you were just talking about studies that show that **[170]** adult-onset gender -- the differences between adult-onset gender dysphoria and gender dysphoria in adults; right?

A Right.

Q I'm -- I'm just trying to understand what studies you were relying on when you just gave me that explanation of the differences.

A Oh. There are many dozen such studies, including those cited in my report. These are the studies that demonstrate that it's the adult onset, not the childhood onset which experience, for example, autogynephilia.

Q So you say there are dozens, and I absolutely do not expect you to recant every study cited in your report, but can you name a few studies that you're referring to?

A I can't recite their titles. The original author who started most of those were Ray Blanchard, and then many others have continued, such as Anne Lawrence, who I mentioned earlier.

Q And you've cited -- cited these studies in your report; is that correct?

A I don't recall exactly which of those studies that I mentioned, but in the section on adult-onset gender dysphoria, I provide the appropriate topic -- **[171]** provide the appropriate summary, with references.

Q Okay. And the discussion of adult-onset gender dysphoria is not relevant to the Act; correct?

MR. BARHAM: Objection; asked and answered.

MR. TRYON: Objection.

THE WITNESS: It -- no, it -- it is relevant -- no, it is relevant.

BY COUNSEL SWAMINATHAN:

Q I'm sorry, I don't think I heard an answer as to why it is relevant.

A Oh, I'm sorry. It's relevant in order to help understand, especially with so much misinformation being circulated today, which facts apply to which group.

Q Which groups are you speaking about?

A Which onset -- which age -- which type of onset of gender dysphoria we're talking about.

Q And --

A But --

Q I'm sorry, go -- I apologize for cutting you off.

A Adult-onset gender-dysphoric individuals who come in and are otherwise mentally healthy are shown to do very, very well after transition. But one **[172]** needs to know that phenomenon is limited to the adult onset type so as to not misapply it to the childhood onset types.

So even though the law would not directly pertain to the behaviors of the adult onset type, one needs to understand the functioning of the adult onset type so as not to confuse the information about it with information about the childhood onset type.

Q But we agree that the Act does not apply to the adults that we're speaking about; right?

MR. TRYON: Objection.

THE WITNESS: As I -- as I've just -- as I just explained, it's not relevant in a direct way, but in order to understand the information about childhood onset, one requires information about adult onset with which to contrast it.

BY COUNSEL SWAMINATHAN:

Q Okay. And your report also discusses people with the female sex assigned at birth?

A Yes.

MR. TRYON: Objection; terminology.

BY COUNSEL SWAMINATHAN:

Q That discussion also does not pertain to the population affected by H.B. 3293; right?

[173]

MR. TRYON: Objection.

MR. BARHAM: Objection; form, scope, terminology.

THE WITNESS: No, that is not correct either.

BY COUNSEL SWAMINATHAN:

Q So how does -- how does your report's discussion about people with a female sex assigned at birth pertain to the population effected by H.B. 3293?

MR. BARHAM: Objection; terminology.

THE WITNESS: For the same reason. There's a great deal of information being offered – being offered which pertains only to a certain subtype of gender dysphoria, and in order to make sure that like goes with like, one needs to understand all of them so information about one kind of transition doesn't get confused with other kinds of transition.

BY COUNSEL SWAMINATHAN:

Q Is it fair for me to say that H.B. 3293 does not determine whether a person with the female sex assigned at birth can play on any specific sports team; correct?

MR. BARHAM: Objection --

MR. TRYON: Objection.

MR. BARHAM: -- form, scope and terminology.

[174]

THE WITNESS: As I read the law, it doesn't alter directly or doesn't affect the – the behaviors available for -- it is a one-way ban, not -- it bans people born as male to play on female teams, but not people born female to play on male teams, is my understanding of the law.

BY COUNSEL SWAMINATHAN:

Q Got it. And are you offering an expert opinion on whether transgender girls and women should be allowed to play on sports teams consistent with their gender identity?

A I'm not -- not offering such an opinion of my own. I'm just evaluating what's been circulating relative to the existing science.

Q So would you agree that H.B. 3293 is a one-way ban?

MR. TRYON: Objection.

MR. BARHAM: Objection; form and scope.

THE WITNESS: Again, I'm not a lawyer. I'm not aware of a technical definition for one way, but it certainly seems to fit that.

BY COUNSEL SWAMINATHAN:

Q So the population of people affected are not people with adult-onset gender dysphoria; right? We agree -- we discussed that; right?

[175]

MR. TRYON: Objection.

THE WITNESS: The law doesn't pertain to their behavior specifically, correct.

BY COUNSEL SWAMINATHAN:

Q And are you offering an opinion on whether an 11-year-old transgender girl who has been on puberty blockers since Tanner stage II should be allowed to play on the girls' cross-country team consistent with her gender identity?

A I'm not offering a specific opinion like that, no.

Q Okay. Are you opining that H.B. 3293 is justified because it discourages children and adolescents from being on a pathway toward life as a transgender person?

MR. TRYON: Objection.

THE WITNESS: No, that -- no, I'm not.

BY COUNSEL SWAMINATHAN:

Q Do you believe that H.B. 3293 discourages children and adolescents from being on a pathway toward life as a transgender person?

MR. BARHAM: Objection.

MR. TRYON: Objection.

THE WITNESS: There's no way for me to know that.

[176]

BY COUNSEL SWAMINATHAN:

Q What is your understanding of the impact on -- of H.B. 3293 on the decision to transition for children and adolescents suffering from gender dysphoria?

A I'm not aware of that ever having been studied.

COUNSEL SWAMINATHAN: Okay. I'm going to introduce tab 5, which has been marked as Exhibit 47.

(Exhibit 47 was marked for identification by the court reporter and is attached hereto.)

BY COUNSEL SWAMINATHAN:

Q Again, it takes a moment to refresh and load, so please let me know when you have it.

A I have it.

Q Great. And have you seen this document before, Dr. Cantor?

A It's not looking familiar to me, no.

Q It's not looking familiar to you.

You did not help author this document, then, I understand; right?

A No.

Q Okay. I will represent to you that these are the State of West Virginia's responses to plaintiff **[177]** B.P.J.'s first set of interrogatories, dated November 23rd, 2021.

I'm going to be focusing on page 9 of the document, if you are able to turn to page 9.

A One moment.

Q No problem. Take your time.

A Got it.

Q Great. And so Interrogatory No. 6, which is at the top of the document, asks the State to "Identify all governmental interests that YOU" -- the State of West Virginia -- "believe are advanced by H.B. 3293."

Do you see that?

A Yes, I do.

Q And the state, in its response, says (as read):

"Without waiver of any objections, the State asserts the following interests, primarily and in general, which are advanced by the Protection of Women's Sports Act."

And there are three items listed under there. The first is "To protect Women's Sports." The second, "To follow Title IX." And the third, "To protect women's safety in female athletic sports."

[178]

Do you see that?

A Yes, I do.

Q Okay. So are you offering an expert opinion with respect to whether H.B. 3293 serves the interest of protecting women's sports?

A I haven't been asked that, no.

Q Okay. And are you offering an opinion with respect to whether H.B. 3293 serves the interest of following Title IX?

A I haven't been asked that, no.

Q Okay. And are you offering an opinion with respect to whether H.B. 3293 serves the interest of protecting women's safety in female athletic sports?

A I have not been asked that, no.

Q And are you aware that H.B. 3293 applies to college athletes as well?

A Yes.

Q Do you have any opinions on whether H.B. 3293 should apply to college athletes?

A I have no opinion in any direction.

Q Okay. So it's -- it's fair to say that you don't have an opinion on -- on that issue; right?

A Yes.

Q Okay. So I want to talk a bit about your experience with the treatment of gender dysphoria.

[179]

I understand earlier that you testified that you're not an endocrinologist; right?

A Yes.

Q And you personally have not diagnosed any child or adolescent with gender dysphoria; right?

A Correct.

Q And you personally have never treated any child or adolescent for gender dysphoria; right?

A Correct.

Q Okay. And you don't provide psychotherapy counseling to children or adolescents with gender dysphoria; right?

A Age 16 or above, I do. Under age 16, I do not.

Q And so it was your testimony earlier that you see about six to eight patients age 16 to 18; correct?

A Roughly, yes.

Q Roughly. And so roughly, of those six to eight patients, how many of those patients come to you suffering from gender dysphoria?

A Those -- those people come to me -- I'm sorry, could you ask that again?

Q Sure. I -- I must have phrased it poorly.

So of the six to eight patients that you see, **[180]** on average, who are ages 16 to 18, how many of them have a gender dysphoria diagnosis?

A I don't recall if they came in already with such a diagnosis or at least I don't recall how many would have had -- would have already been assigned such a diagnosis by another clinician before they got to me.

Q Would you be able to share with me roughly how many of them identify as transgender or gender dysphoric?

A When they come to me, they're not sure of what their identity is. That's often among their questions.

Q Okay. And what professional training or expertise do you possess to provide psychotherapy counseling to those adolescents who come to you questioning whether they have gender dysphoria or not?

A Do you mean my licensing or education?

Q Your licensing.

A My licensing is as a clinical psychologist, registered in Ontario, specifically for adults and adolescents age 16 and up.

Q Okay. And so that licensing does not pertain -- or allow you to provide psychotherapy **[181]** counseling to anyone under the age of 16; correct?

A Correct.

Q Okay. Are you familiar with the term "affirmation on demand"?

A Yes.

Q What does that term mean?

A It refers to permitting a person to engage in whatever available methods to acknowledge or to medically induce their transition with no other -- with no evaluation or supervision.

Q Has any patient ever come to you asking for affirmation on demand?

A No.

Q What is your basis for saying that providers are providing affirmation on demand to children and adolescents with gender dysphoria?

A Through several venues. I get that information from parents, from people, you know, in society who e-mail me asking for help. There's a large number of media reports of it happening throughout the world, U.S., Canada and Europe. And there's now been -- there are now several governmental entities, mostly in Europe, are now beginning more formal investiga- -- investigations of it.

[182]

Q Okay. So let me see if I understand this correctly.

You said parents, people who e-mail you, news sources and information put out by government entities, most commonly in Europe; is that correct? Those are the sources from which you've heard that providers are providing affirmation on demand?

A That question sounds slightly different to me. There's affirmation on demand as an idea.

Q Uh-huh.

A And then there are the actual processes that clinics are doing in which they're providing affirmation without sufficient evaluation. So it's starting to approach affirmation on demand, which would be the name for the most extreme version.

Q I see. And so have you spoken to providers who claim to provide affirmation on demand to children and adolescents with gender dysphoria?

A No. The people who are -- seem to be providing it deny that that's what they're doing.

Q Have you -- are you personally aware of any providers who fail to conduct the sufficient evaluation that you just mentioned that teeters on the edge of affirmation on demand?

[183]

A I'm not clear on what you mean by "personally aware" beyond the way that I already described how I become aware of it.

Q I think I'm just trying to understand more how that you know for certain providers are providing affirmation on demand.

A Again, that -- that seems to be the question you asked before, where it's a series of different kinds of sources.

Q But none of those sources are actual providers who provide this care; right?

A Again, as I said already, most of the people who seem to be providing something that would reasonably be called that deny that that's what they're doing.

Q Has anyone at your hospital, to your knowledge, provided affirmation on demand?

A When you say my hospital, I assume you mean my former affiliation at CAMH.

Q Yes. Apologies.

Has anyone, to your knowledge, at CAMH provided affirmation on demand?

A No. The clinic there is known for being cautious.

Q So you've not talked to any other providers **[184]** who have claimed to provide affirmation on demand; right?

A Correct. The people who seem to be providing it deny that that's what they're providing.

Q Okay. And your only evidence that affirmation on demand is being provided is from parents, from people and society directly e-mailing you, from news sources and from the government entity releases that you spoke about earlier; right?

A Correct.

Q Okay. Have you read any studies that show that providers are providing affirmation on demand to children and adolescents with gender dysphoria?

A No. No, I'm not. As I say, the – the providers don't acknowledge that that's what they're doing to begin with, leaving little opportunity to study it at all.

Q Okay. What do you understand desistance to mean in the context of gender dysphoria?

A Different people use the words in slightly different ways or with different cutoffs, but in general, they -- they refer to a person realizing that they weren't actually trans after all.

Q So you said different people have maybe different definitions.

[185]

What is your definition of desistance?

A I don't think I can really say that I have a definition so much as I do my best to understand what the person taking to me or the document that I'm reading, what they meant by it and then going with, you know, whatever meaning it is that – that they meant.

Q I guess I'm trying to understand.

So in your professional practice, what different variations of understanding of the word "desistance" have you encountered?

A Generally, they would differ according to how far along the transition process the person was to begin with. A person suspecting that they might be trans and then figuring out that they're not is very different from a person who transitions, socially changed a name and then changed it back, which is still again very different from somebody who has taken hormones or gone through surgery and then regrets that.

Q Okay. You spoke about regret.

What do you understand regret to mean in the context of desistance?

A Wishes that they had never gone through transition to begin with.

[186]

Q Okay. And are you aware of any studies tracking desistance in adolescents with gender dysphoria?

A I'm aware of studies that have included it inside of a larger study of the phenomenon -- of trans adolescents in general. There have -- I've seen that there exists now a small handful of studies trying to survey those kids. I haven't studied them yet in any depth, however.

Q Okay. Would you know the names of any of these small handful of studies you just mentioned?

A Not offhand, no.

Q Would you know any of the authors of these studies or the people who are in the process of collecting this data?

A Not offhand, no.

Q Okay. And are any of these studies cited in your report?

A No, they are not.

Q Okay. So I'm going to introduce tab 7, which is going to be marked as Exhibit 48. Give me one moment for it to show up on your end.

Are you --

(Exhibit 48 was marked for identification by the court reporter and is attached hereto.)

[187]

THE WITNESS: Yes.

BY COUNSEL SWAMINATHAN

Q Great. Do you recognize this blog post, Dr. Cantor?

A Yes, I do.

Q So this is a blog post entitled "Do trans kids stay trans when they grow up?"

You authored this post in Sexology Today!; correct?

A Correct.

Q And you wrote this in 2016. It says January 11th, 2016; correct?

A That's right.

Q Okay. And so I want to turn your attention to the -- the second paragraph of -- the top of the page. You write (as read):

"Only very few trans- kids still want to transition by the time they are adults. Instead, they generally turn out to be regular gay or lesbian folks."

Did I read that accurately?

A Yes.

Q What does "regular gay or lesbian folks" mean?

[188]

A No other sexual interest phenomena that would better account or better describe what they're interested -- what they're interested in.

Q What are non-regular gay or lesbian folks, then?

A For example, somebody with a -- with a paraphilia or with a fetish that makes the determination of their sexual orientation a bit moot.

Q What does that mean, to make it a bit moot?

A That their sexual interest pattern doesn't follow along what most people are generally familiar with in -- in discussing attraction to men or attraction to women.

Q Okay. So if a child's gender dysphoria were to persist and they continued to want to transition by the time they are adults, what are they, in your view?

A If -- they would most -- they would be in the running to qualify -- the emotion they would be describing would be gender dysphoria. Whether they qualify for the diagnosis depends on – would require a more fulsome assessment.

Q Would they be irregular, in your mind?

A They would be atypical in that it is **[189]** statistically a rarer phenomenon than cisgender is.

Q I heard you say, just a few seconds ago, they would be in the running for, and then you kind of cut off, I thought.

What did you mean to say when you said they would be in the running for? Would they be in the running for being transgender?

A Yes, that would be possible, but I can't make that kind of conclusion without the person undergoing, as I say, a more fulsome assessment, looking for other possible motivators for why they might feel gender dysphoria.

Q So what do you -- let's see.

Are you aware that gender identity and sexual orientation are distinct concepts?

A Yes.

Q Yes? Are you aware that someone can be transgender and gay?

A Yes, although the particular phrases become a little bit more complicated when a person is changing sex and you're trying to say what they're attracted to relative to the sex they are.

Q And is it equally as complicated for the understanding that someone can be transgender and a lesbian?

[190]

A Is it complicated? Yes.

Q Is it more complicated than someone being transgender and gay?

A No. This is the same complication.

Q The same complication. Okay. Dr. Cantor, do you believe that social transition for gender-dysphoric adolescents after age 12 is appropriate?

A That's an empirical question -- that's an empirical question, and the science unde- -- is still somewhat undecided about it.

Q I'm just asking for your opinion, though.

Do you believe that social transition for gender-dysphoric adolescents after age 12 is appropriate?

A It's not possible to have an opinion outside of the science.

COUNSEL SWAMINATHAN: Okay. I'm going to introduce tab 23, which is now going to be marked as Exhibit 49.

(Exhibit 49 was marked for identification by the court reporter and is attached hereto.)

THE WITNESS: I see it.

BY COUNSEL SWAMINATHAN:

Q Great. And if you can turn to the second **[191]** page of this article, which is an article titled "When is a 'TERF'" --

COUNSEL SWAMINATHAN: For the court reporter, that's T-E-R-F.

BY COUNSEL SWAMINATHAN:

Q -- "not a 'TERF'?" authored on July 20- -- July 8th, 2020.

And this is an article written by you, right,

Dr. Cantor?

A Yes, it is.

Q And if you turn to page 2, you'll see, around the middle of the page, the -- the third paragraph that begins with (as read):

"I support age 12, not for any ideological reason, but because that is what the (current) evidence supports: The majority of prepubescent kids cease to feel trans during puberty, but the majority of kids who continue to feel trans after puberty rarely cease."

Do you see that?

A Yes, I do.

Q So is it fair to say that you support social **[192]** transition for gender-dysphoric adolescents at age 12?

A No.

Q No? So this article is authored in July of 2020.

So has your opinion changed from July 2020 -- July 2020 to now?

A Science has changed, and as I say, my opinion just follows the science.

Q How has the science changed?

A The -- several of the papers that were being circulated in the late 2019s have turned out to be wrong. Some were retracted. Some were reanalyzed, and it was shown that their results were not correct to begin with. And it was recognized that those studies which did seem to be indicating an improvement over -- over transition, such kids were receiving psychotherapy in addition to receiving medical transition.

Once that was recognized, we could no longer conclude that it was any -- the medical transition -- that it was the medical transition or any other transition being the source of the benefit rather than the psychotherapy itself.

So once the evidence supporting earlier **[193]** transition evaporated, then one's opinion of that science has to change with it.

Q So you mentioned studies that have been changed or retracted. What studies are you talking about?

A It's a series of -- a series of studies, all of which have been -- are cited in my report.

Q Can you name a few of those studies?

A I'm better with names if I could have my report in front of me at the same time.

MR. BARHAM: The latest report is Exhibit 45; is that correct?

COUNSEL SWAMINATHAN: That is correct.

THE WITNESS: Branstrom and Pachankis 2019 became retracted.

BY COUNSEL SWAMINATHAN:

Q Any others?

A Olson, et al., was demonstrated to be incorrect.

The Costa study, although it came out earlier, it then became better known once the other studies started -- after the other studies started showing that they were in error.

Q And you're talking about the Costa 2015; is that correct?

[194]

A Yes.

Q Okay.

A So those are the --

Q Okay. Thank you, Dr. --

A Those are the ones -- okay.

Q So, Dr. Cantor, what is the Dutch protocol?

A The Dutch protocol started outside of Canada. The largest clinic for children's gender dysphoria was in the Netherlands. They also took a conservative method, like -- like the clinics in Canada, where children who were otherwise qualified would be allowed to begin taking puberty blockers at age 14 and then cross-sex hormones at age 16.

Q And the Dutch protocol allowed for a social transition after age 12; right?

A It was during adolescence. I don't recall the specific age.

Q Let me turn your attention to a page in your report that might help you reflect (sic) your recollection.

So if you could turn to page 19 of your report.

A One moment.

Q No problem.

And at the top of the page, it says that "The **[195]** components of the Dutch Approach are: no social transition at all considered before age 12..." which they describe as the watchful waiting period.

A Correct.

Q So is it fair to say that the Dutch protocol allows for social transition after age 12?

A Allows for it? Yes.

Q So is it your opinion as you testify today that you disagree with the Dutch protocol with respect to the age at which it allows for social transition?

A There were some pieces missing in that.

As I said, the Dutch protocol, at the time, was developed on the data that was available at that time. Both have changed -- well, the Dutch protocol, as we call it, hasn't changed, but the clinics themselves have -- are now becoming more conservative, as the original version of the Dutch protocol has not been as well replicated.

But instead of clinics raising their standards, like is happening throughout Europe, clinics in the U.S. who are receiving reports are lowering their standards.

Q I see. And so if you look at page 18 of your report, just the page before, and you look at **[196]** paragraph 46, in the last sentence of your paragraph, you state, quote, (as read):

"Internationally, the Dutch Approach is currently the most widely accepted and utilized method for treatment of children who present with gender dysphoria."

End quote.

Do you agree with that statement?

A Yes, that would -- that would still be fair to say.

Q Okay. Dr. Cantor, what puberty-blocking drugs are you aware of?

A Oh, I couldn't tell them to you by name so much as by function.

Q What are you aware of about the function of puberty-blocking treatment?

A Well, there are a series of signals in the brain that indicate to different parts of the brain and different parts of the body when to -- that they should be maturing. The puberty blocker stops -- stops that cycle.

Q And, again, you are not an expert in the different types of prescription drugs that are used as puberty-blocking agents; right?

[197]

A That is correct.

Q Okay. You have never obtained informed consent to provide puberty blockers; right?

A Correct.

Q And you've never had a patient sign an informed consent form relating to puberty blockers; right?

A Correct.

Q You personally have no experience with monitoring patients who are undergoing puberty-blocking treatment; right?

A Correct.

Q You don't know what type of monitoring is typically done or not done for those patients; right?

A That's part of medical practice.

Q That's not your practice; right?

A Correct.

Q Okay. Dr. Cantor, you know what cross-sex hormones are; correct?

A Yes.

Q For transgender women, estrogen is the hormone that's typically prescribed; correct?

MR. BARHAM: Objection as to terminology.

THE WITNESS: Yes.

[198]

BY COUNSEL SWAMINATHAN:

Q And for transgender men, testosterone is the hormone that's typically prescribed; correct?

MR. BARHAM: Objection; terminology.

THE WITNESS: Correct.

BY COUNSEL SWAMINATHAN:

Q Have you ever obtained informed consent to provide cross-sex hormones to anyone?

A No.

Q You've never had a patient sign an informed consent form relating to cross-sex hormones; right?

A Correct.

Q Okay. Have you advised patients about potential risks and benefits of cross-sex hormones?

A No, I have not.

Q Okay. Aside from the literature you have reviewed, you personally don't know what doctors tell their patients about cross-sex hormones; right?

MR. BARHAM: Objection as to form and scope.

THE WITNESS: That's not entirely true. For example, people who have detransitioned or people who have transitioned, when it's relevant, you know, will

discuss with me conversations that they've had with their physicians.

///

[199]

BY COUNSEL SWAMINATHAN:

Q Okay. So your knowledge of what doctors tell their patients about cross-sex hormones comes from what your patients who have detransitioned have told you; is that fair?

A In part. The other sources are the sources that I mentioned earlier, e-mails and other contacts from -- from family members, requests for – for consultation, media -- and media outlets.

Q Got it. Thank you. Okay.

Did you review --

COUNSEL SWAMINATHAN: Actually, I just want to check in. You're -- are you okay to keep going? But it has been about an hour and ten minutes. If you need a break, that's totally fine.

THE WITNESS: I'm good.

COUNSEL SWAMINATHAN: You're good? Okay.

BY COUNSEL SWAMINATHAN:

Q Did you review the 2017 Endocrine Society guidelines in full before forming your opinions in this case?

A Yes, I have.

Q You have? You've read them from top to bottom as well?

A Yes, I have.

[200]

Q When's the last time you've done that?

A Oh. Last week.

Q Last week. And are you aware that the Endocrine Society guidelines recommend treating gender-dysphoric and gender-incongruent adolescents who have entered puberty at Tanner stage II by suppression with gonadotropin-releasing hormone agonists?

A I'm aware that that's in that document, yes.

Q Okay. And if we can take a look back -- I -- I assume you still have your report pulled up. If you can take a look at page 3 of your report.

A I'm there.

Q And you look at paragraph 8, subset (e), you state that (as read):

"Affirmation of a transgender identity in minors who suffer from early-onset or adolescent-onset gender dysphoria is not an accepted 'standard of care.'"

Which is in quotes.

Is that correct?

A That's correct.

Q So this opinion conflicts with the Endocrine Society recommendations; right?

[201]

A Yes, it does.

Q And you yourself are not a part of the Endocrine Society; right?

A That is correct.

Q You've never advised the Endocrine Society in any capacity; right?

A That is correct.

Q You personally were not involved with the development of the original Endocrine Society guidelines back in 2009; right?

A Correct.

Q You were not involved with the development of the updated guidelines in 2017; right?

A Correct.

Q Do you know what kind of scientific literature review the Endocrine Society conducted in developing the 2017 updates?

A I'm not aware of its details, no.

Q Are you aware of what kind of outside experts the Endocrine Society may have consulted in developing the 2017 updates?

A I'm aware that they had such people whom they requested, yes.

Q Are you aware of any of these people by name?

A The only one I know by name is from his **[202]** involvement in this case, Dr. Jensen.

Q Okay. And you don't hold yourself out as an expert in how the Endocrine Society developed the original 2009 guidelines for treatment of gender dysphoria; right?

A It's a little hard to imagine such a question being used to determine whether a person can be called an expert on -- on anything. That's a very narrow topic. However, there has been systematic evaluation of the Endocrine Society's guidelines.

Q I guess my question is that you don't hold yourself out personally as an expert in how the Endocrine Society developed the original 2009 guidelines; right?

A Yes, that would be true.

Q Okay. And the same -- you don't hold yourself out as an expert in how the Endocrine Society developed the 2017 updates; right?

A That, again, would, I think, be true.

Q Okay. You know what the WPATH is, right, the World Professional Association for Transgender Health?

A Yes, I am.

Q Sorry, yes, you do or yes, you --

A Yes, I am aware.

[203]

Q Oh, okay. Do you know that WPATH publishes standards of care for the health of transgender people?

A Yes, I'm aware.

Q Are you aware that WPATH has been publishing these standards since 1979?

A Yes, I am.

Q Okay. To your knowledge, what is the latest standard of care available from WPATH?

A They're in the middle of revising them now. I don't remember the year of the current – current version, but --

Q Do you know the number of the current version?

A No. I don't recall.

Q Do you know when the most recent version was published?

A Not without looking it up. I don't remember the year, no.

Q So in your report, you express some opinions about the WPATH Standards of Care; right?

A Correct.

Q Before you wrote this report, did you sit down and review the WPATH Standards of Care?

A Yes. Yes, I did.

[204]

Q When did you review them?

A That was now three or four years ago.

Q And have you reviewed all of the articles cited in the "References" section of the WPATH Standards of Care?

A I haven't looked through the reference list to see how many of them I would have read, no.

Q So you haven't reviewed the reference list; right?

A Well, I haven't reviewed the reference list to see how many of those references I happened to know, no.

Q Okay. And you yourself are not a part of the WPATH; right?

A Correct.

Q Have you ever been a member of WPATH?

A No.

Q Have you ever advised the WPATH in any capacity?

A No.

Q Okay. You personally have not been involved with the development of WPATH Standards of Care, Version 7; right?

A Correct.

Q Okay. Do you know that WPATH is currently **[205]** working on Version 8 of their standards of care?

A Yes, I am.

Q You personally have not been involved in the development of WPATH Standards of Care, Version 8; right?

A Correct.

Q And you don't hold yourself out as an expert in how Version 8 is currently being developed; right?

A Again, I hesitate to say that that is a subject in which there exists expertise. It's within my topic of expertise, but I wouldn't say that I am an expert in that topic specifically.

Q Okay. And in this particular case, you're not offering any expert opinions on how Version 8 of the WPATH Standards of Care are currently being developed; right?

A Correct. The comments in my report included evaluation of Version 7.

Q Okay. So, Dr. Cantor, I would love for you to turn to page 16 of your expert report.

A Got it.

Q Great. If you could just have that open.

So do you agree that the number and percentage of prepubertal kids with gender dysphoria **[206]** who do not go on to identify as transgender is currently unknown?

A No, I don't think that's exactly fair to say. What --

Q So -- what do you base your opinion --

MR. BARHAM: I'd ask that -- I'd ask that you allow him to finish his answer before answer- -- asking the next question.

COUNSEL SWAMINATHAN: Apologies, Counsel.

BY COUNSEL SWAMINATHAN:

Q Please finish your answer, Dr. Cantor.

A There have been 11 studies, and all of them show that the large majority cease to want to transition by puberty, but the exact number changes study by study. So I can't say that the number is known, in that we haven't found the same number coming up over and over again, but it would be unfair to say that, you know, the entire range of possible numbers are equally possible. They're not. The studies have consistently even, even unanimously, said that it was the large majority desist, but we still can't give a -- a specific number better than a range.

Q So you agree that the number and percentage of prepubertal kids with gender dysphoria who do not **[207]** go on to identify as transgender is currently unknown; right?

MR. BARHAM: Objection; asked and answered.

MR. TRYON: Objection.

THE WITNESS: Again, I can't say that there is a specific number, but the range is unanimously, in every single study, the large majority.

BY COUNSEL SWAMINATHAN:

Q And which studies are you referring to?

A There were 11, and they were the -- the 11 studies listed on my blog, which you posted.

Q I think I have maybe shown you two blog posts now. Was it tab 40 -- sorry -- Exhibit 48? Is that the one you're referring to?

A I don't remember the tab number, but only one of those two had a list of studies, and the other was, you know, just text from me.

Q Okay. Do you agree that the number and percentage of adolescents with gender dysphoria who do not go on to identify as transgender is currently unknown?

A That is much less known, correct.

Q Okay. And I take it you are not offering any expert opinions on what number or percentage of adolescents with gender dysphoria do not go on to **[208]** identify as transgender; right?

A I don't -- no, I'm not off- -- I'm not offering such a percentage, no. We have -- we don't have the kind of prospective systematic studies to give us a better idea of the range. Instead, we have studies which retrospectively try to ask questions from these people, but those studies don't give us an estimate of how many people have already desisted and, therefore, never took the questionnaire to begin with.

Q Okay. And, Dr. Cantor, you agree that no study supports the withholding of gender-affirming treatment after the onset of puberty; right?

MR. BARHAM: Objection as to terminology.

THE WITNESS: Could you ask that again, please?

BY COUNSEL SWAMINATHAN:

Q Sure. You agree that no study supports the withholding of gender-affirming treatment after the onset of puberty; right?

A That no study supports the withholding.

MR. BARHAM: Objection --

THE WITNESS: That's --

MR. BARHAM: Objection as to terminology.

THE WITNESS: That's true in only a very **[209]** vacuous way in that that's not how science, never mind medical science, is conducted. In science, we begin with the null hypothesis. Everything starts with a null hypothesis. The onus of proof belongs to the person saying that doing something will do something. It's not possible to prove a null hypothesis. We start with it and wait for proof that doing something has whatever intended effect.

All of that is to say it's not possible to conduct a study that would prove what happens when you do nothing. We start with that point.

BY COUNSEL SWAMINATHAN:

Q So what is the basis for your opinion that it's not possible to prove what the effects of, quote, doing nothing are?

A That's a fundamental tenet of science. That's what I call the -- as I said, that's called the null hypothesis. It's a basic functioning of the scientific process.

Q And so there's -- I'm right, though, that there's no study that has tracked what you call as doing nothing in adolescents who are suffering from gender dysphoria; right?

MR. TRYON: Objection.

THE WITNESS: Correct, there is no such **[210]** study.

BY COUNSEL SWAMINATHAN:

Q Okay. You recognize that your theory of withholding social transition to see if prepubertal kids with gender dysphoria desist is an outlier in the scientific community?

MR. BARHAM: Objection as to form and terminology.

THE WITNESS: No, I would not say that at all.

BY COUNSEL SWAMINATHAN:

Q What do you base your -- that answer on?

A I'm in regular contact with a -- with very, very many scientists in my field, and they generally agree with me. It's -- and they generally agree with -- agree with me. It's the outliers who tend to speak most often, loudest and most publicly. So the public mind is very, very different from the collection of scientists.

Q So you said very, very many people agree with you. How many people are you talking about?

A Oh. Several scores. I -- of the ones I interact with, close to a hundred.

Q Can you define score for me?

A 20.

[211]

Q So several scores. Would you say 40 to 60 is an accurate capture of how many people you spoke to?

A Probably closer to a hundred.

Q Okay. And who are these hundred people? I'm not asking you to identify all 100 by name, but who, generally, are they?

A Sex researchers and sex therapists.

Q Okay. So beyond the conversations that you had with these scores of individuals, do you have any other basis for believing that practitioners support withholding social transition in prepubertal patients with gender disorder?

MR. BARHAM: Objection as to form and terminology.

THE WITNESS: No. That's my primary source.

BY COUNSEL SWAMINATHAN:

Q And do any of those hundred or so individuals actually treat transgender patients?

A Yes. None of them does it as a specific specialty, but very many of them, of the clinicians among them, have or have had trans clients among their patient base.

Q Okay. Can you please turn to page 18 of your report --

COUNSEL SWAMINATHAN: And, actually, I think **[212]** this might be a good time for a five-minute break.

I think we've been going for about an hour and 20 minutes now.

Can we go off the record?

THE VIDEOGRAPHER: Yep. We are going off the record and -- at, let's see, 2:39 p.m., and this is the end of Media Unit No. 4.

(Recess.)

THE VIDEOGRAPHER: All right. We are back on the record at 2:53 p.m., and this is the beginning of Media Unit No. 5.

Go ahead, please.

BY COUNSEL SWAMINATHAN:

Q Dr. Cantor, can you please turn to page 12 of your expert report, which is Exhibit 45.

A Got it.

Q Okay. So paragraph 29, on page 12, you state (as read):

"For example, there exist only very few cases of transition regret among adult transitioners, whereas the research has unanimously shown that the majority of children with gender dysphoria desist—that is, cease to experience such dysphoria by or **[213]** during puberty."

Did I read that correctly?

A Yes.

Q What is your basis for this assertion?

A The 11 studies that were also cited in my blog.

Q Is there a reason you didn't cite any of those studies here, in your report?

A I didn't include --

Q I just mean in this paragraph, on this page, is there a reason there's no footnotes --

A Oh, in that paragraph, on that page? No. Only because there was an introductory paragraph, you know, before the rest of the document.

Q And those 11 studies are the -- the same studies that you mentioned before that you said were on your blog?

A Correct.

Q Okay. And on page 18 of your expert report, on -- in paragraph 45 of page 18, you state (as read):

"Because only a minority of gender dysphoric children persist in feeling gender dysphoric in the first place, 'transition-on-demand' **[214]** increases the proba-" --

I assume you mean "probability." It says "probably" here.

A Oh, goodness. That's right.

Q That's right? Okay.

(As read):

-- "increases the probability of unnecessary transition and unnecessary medical risks."

Is that fair, as it's read?

A Yes.

Q Okay. What's your basis for this opinion?

A I want to say mathematics.

Q What do you mean by that?

A The -- if only few people regretted transition, then transitioning everybody would be the wrong decision for only few people. If most people cease to want to transition eventually, then transitioning all of them would be making a much larger number of errors.

Q What do you mean by "transitioning all of them"?

A If the people were given transition on demand.

Q So what do you understand the term **[215]** "transition on demand" to mean?

A That we give the person -- we recognize whatever element of that person as soon as they make that request.

Q So I just want to make sure I understand.

You are saying that your opinion for – or your basis for stating that a minority of gender-dysphoric children persist is based in math; is that correct?

A No. I'm saying that the -- the conclusion that we will have more errors and make more mistakes if we don't consider that statistic. That's math.

Q I guess I'm understanding what -- or trying to understand, what is the basis for that statistic, that only a minority of gender-dysphoric children persist?

A Those 11 studies, which were summarized -- which were summarized in my blog, together with the number -- the exact numbers of people who continue to want to transition after puberty and those which ceased to.

These people only came into the clinics when they started expressing their gender dysphoria. If they were transitioned after that first appointment, because we didn't yet know which ones were going to **[216]** persist and which ones were going to desist, then we would only know that if we transi- -- transitioned all of them that first day, most of those would end up being a mistake because we know that most of those will -- will have ceased to want to transition by puberty.

Q And is the reason that you don't state -- sorry, strike that.

To your knowledge, are people being transitioned on the first day?

A Those are the reports that we referred to earlier that there are becoming more and more cases getting reported to me or to the -- or via their families or in the media. Or, as I say, now that there are investigations going on in other countries, that's what they're continuing to find.

Q Okay.

A Transition on demand is the most extreme version of it, but -- but the difference is whether -- the meaningful part is whether these people are being transitioned before a meaningful assessment and a meaningful attempt to -- to estimate who might persist, who might not, or if we're even capable of doing that with enough precision to be risking the kind of medical risks that come into play.

[217]

Q Okay. And so, again, you have no direct knowledge of this, but the reports you refer to are the parental anecdotes that are communicated to you, the e-mails that you receive, the government entities putting out information and the news sources that you just mentioned; right?

A We're saying that people are being transitioned on demand, yes.

Q Yes.

A And when I say media reports, those are no longer, necessarily, individual cases. These are also administrators in schools and so on who are indicating what the policies are in that school or parents talking about policies in the -- in social groups and so on. So these are people not going to clinics at all; they're merely being socially transitioned by -- you know, within their social groups.

Q Can you tell me more about those media reports?

You know, you -- you mentioned an example of a school. Can you give me a more detail about that particular report from a school?

A No. I haven't recorded -- I don't recall particulars.

[218]

Q Of any of the media reports that you're referencing, you don't recall particulars?

A Not -- not at this time, no. Those, I haven't been accumulating.

Q Okay. Can you please turn to page 27 of your report?

A Got it.

Q Great. And so if you look at paragraph 69, you state the following, quote, (as read):

"...a child experiencing depression from social isolation might develop hope—" --

A I'm sorry, where did you say you were?

Q Oh, apologies. It's the end of page 26, top of page 27. It's the sentence beginning "For example."

A Got it.

Q Apologies. So let me read that again.

So you state, quote, (as read):

"For example, a child experiencing depression from social isolation might develop hope—and the unrealistic expectation—that transition will help them fit in, this time as and with the other **[219]** sex."

Did I read that accurately?

A Yes.

Q So what is the basis of this opinion?

MR. TRYON: This is Dave Tryon.

I'm just going to object that this is one sentence out of an entire paragraph.

COUNSEL SWAMINATHAN: Your objection is noted, Counsel.

BY COUNSEL SWAMINATHAN:

Q Dr. Cantor, you can answer.

A It's an explanation -- I offer it as a possible explanation which accounts for all of the existing observations.

Q Are you aware of any study that shows that a child experiencing depression from social isolation might develop hope and the unrealistic expectation that transition will help them fit in?

A No. That particular hypothesis hasn't been -- hasn't been tested.

Q Have you spoken to anyone about this hypothesis?

A Oh. Yes, relatively and commonly.

Q Okay. Can you please turn to page 53 of your expert report?

[220]

A Yes.

Q Great. And so do you see that it's titled "References" at the top of the page?

A Yes.

Q Great. And so pages 53 to 61 of your report includes a list of articles that you cite to in your report, and I've done my best to count them, but there are 106 articles cited in your report.

Do you see that?

A I didn't count them either, but that sounds about right.

Q Okay. How did you find these articles?

A Oh. I've been accumulating these articles throughout my career, starting with my education and the classic -- and the classic articles with them, and then I read new ones as they come out and get discussed within my field.

Q So you found every single one of these articles in your references list. Is that accurate?

A Yes. Yes. Yes, it is.

Q None of these articles were provided to you by some other source?

A Oh. I can't recall if there was a particular e-mail from a colleague who told me, have you seen this or that article. I would -- I can't remember **[221]** specifics, but I would not be at all surprised if I received one of these articles as a manuscript, as a peer reviewer, before even it was published.

Also, very commonly in science, it's a scientist spending many, many years releasing study after study, and before the study comes out, there are poster conferences and conference presentations. So I'm aware that they are coming even before -- long before they come in print.

So there are those indirect methods that -- that are possible.

Q But no one sent you any of these articles in connection with your preparation of this report; right?

A No. Yes, that is correct, no one has.

Q Okay. So you said you accumulated this list of articles over the course of your career; right?

A Yes.

Q You've known about the existence of many of these articles well before agreeing to serve as an expert in this case; right?

A Most of them, yes.

Q Most of them.

So when did you begin your research for drafting the expert report, version 2022?

[222]

A It would have been within a few days after I first received the -- the request to participate at all.

Q Okay. And so have you read every article included in this list?

A Yes, I have, with the caveat that some of them are standard reference texts where only certain portions of the text are relevant.

Q Okay. And so when you were looking for articles to include in your report, had you already formed an opinion about whether transgender women and girls have an athletic advantage over cisgender women?

MR. BARHAM: Objection as to scope and terminology.

THE WITNESS: I was already very, very well aware of the state of the literature before I received any notice of this particular case than when I -- so it was on the basis of the knowledge of the literature that I already had that gave me, you know, some idea of what the liter- -- literature had and then my searching for any other articles, including articles that weren't relevant or weren't part of this particular question that I continued to accumulate, and I found nothing that changed my mind **[223]** as I was doing research for this case.

BY COUNSEL SWAMINATHAN:

Q So prior to this case, what -- what was and, I guess, in your testimony now, continues to be your opinion on whether transgender women and girls have an athletic advantage over cisgender women?

A I wasn't --

MR. BARHAM: Objection as to scope.

THE WITNESS: I wasn't asked that question as part of this report.

BY COUNSEL SWAMINATHAN:

Q Do you have any opinion on that question outside of, you know, your involvement in this case?

A Only my other knowledge -- my other knowledge of the studies that had been done on male and female child performance.

Q Do any of these 106 or so articles relate to athletic performance?

A No. I wasn't asked to summarize that part of the literature.

Q Okay. And just to be clear, do you think this list of articles is comprehensive of the existing research on transgender children and adolescents?

A I would say comprehensive in scope and topic, **[224]** that is, the range of -- of the facts that are listed -- listed in it, but, again, I wasn't asked to do it specifically on athleticism.

Q Leaving aside athleticism, do you think this list of articles accurately captures the most reputable studies on transgender children and adolescents?

A Yes, I think that --

MR. TRYON: Objection.

A I think that would be fair to say, yes.

BY COUNSEL SWAMINATHAN:

Q Okay. Do you think these are articles that you have not included in this list that may present data that is contrary to your report?

A No, there isn't.

Q Okay. Do you think there are articles that you have not included in this list that may reach conclusions that are contrary to your report?

A There exists such conclusions, and they've been published. I would have to check to see to what extent those are merely opinions in – in letters and commentaries, for example, opposed to derived from -- derived as conclusions from specific data.

Q So your testimony is that there may be some **[225]** studies that reach conclusions that are contrary to your report?

MR. BARHAM: Objection as to form and scope.

THE WITNESS: No. The opposite. It's -- I'm not aware of any studies that are based on data that contradict these, although people may have expressed contradictory opinions.

BY COUNSEL SWAMINATHAN:

Q Via letter and commentary; is that correct?

A Correct.

Q Okay. Great.

Can you please turn to page 24 of the same exhibit, so continuing with your report.

A Got it.

Q Great. And so the heading above paragraph 62 of your report -- it starts with the letter "c" -- says, quote, (as read):

"Studies by other clinicians in other countries have failed to reliably replicate the positive components of the results reported by the Dutch clinicians in de Vries et al. 2011."

COUNSEL SWAMINATHAN: And for the court reporter, that's D-E, space, capital V-R-I-E-S.

[226]

BY COUNSEL SWAMINATHAN:

Q Do you see that?

A Oh, you're talking to me?

Yes, I do.

Q I'm sorry. Yes.

What did you mean by this?

A Exactly what it says. There was initially some research demonstrating improvement among these kids after transition, but when other countries and other facilities tried to do it, they were unable to replicate those results. They were not finding improvement.

Q So what are the positive components of the results reported by the Dutch clinicians in de Vries, et al., 2011?

A They reported some improvements in some psychological parameters and social function.

Q Any other positive components?

A I would have to reread the original to see if that's an exhaustive list, but they were essentially all of those.

Q Are you aware that there are additional scientific peer-reviewed studies showing the positive effects of gender-affirming care?

A Yes, there are.

[227]

Q Okay. So are you aware of the 2022 Tordoff, et al., study titled "Mental Health Outcomes in Transgender and Nonbinary Youths Receiving Gender-Affirming Care"?

A Yes, I am.

COUNSEL SWAMINATHAN: Okay. I'm going to introduce tab 8, which has been marked as Exhibit 50.

(Exhibit 50 was marked for identification by the court reporter and is attached hereto.)

BY COUNSEL SWAMINATHAN:

Q Let me know when you're able to see it, Dr. Cantor.

A I am.

Q Okay. Great.

And you can see at the top that this study was conducted by Diana Tordoff, Jonathon Wanta, Arin Collin, Cesalie Stepney, David Inwards-Breland, and Kim Ahrens; is that correct?

A Yes, that's what I see.

Q Are you familiar with any of these people?

A No, I'm not.

Q You don't have any personal connections to any of these people; right?

A Correct.

[228]

Q Okay. Do you agree that the Journal of American Medical Association is a highly respected publication?

A That's not this journal.

Q Oh, apologies. The JAMA Network.

Do you agree that the JAMA Network is a highly respected entity?

A No, it is not. It's relying on the fame of JAMA itself.

Q It's relying on the fame of what? I apologize.

A JAMA, the Journal of the American Medical Association. This is an online offshoot of that.

Q Okay. And you don't know whether these researchers are highly respected researchers in the field, right, because you don't know who they are?

A Correct.

Q Okay. Do you know whether this particular study is a peer-reviewed publication?

A To the best of my knowledge, it is.

Q Okay. Are you aware that this study found that gender-affirming care was associated with 60 percent lower odds of moderate or severe depression and 73 percent lower odds of suicidality over a 12-month follow-up?

[229]

A Not in the way that you said you were going to use the meaning of the word "care," no.

Q So what -- what did you understand this study to find in the way that you would identify care?

A Well, these kids were -- were receiving medical care, and 65 percent of them were also receiving psychotherapy at the same time.

Q So for purposes of the question I'm asking you, can you understand gender-affirming care to include psychotherapy and medical care? Is that fair?

A For the purpose of this question? Sure.

MR. BARHAM: Objection to terminology.

BY COUNSEL SWAMINATHAN:

Q Let me repeat my question, then. Are you aware that this study found that gender-affirming care, both psychotherapy and medical care, was associated with 60 percent lower odds of moderate or severe depression and 73 percent lower odds of suicidality over a 12-month follow-up?

A I'm aware that that was their conclusion, yes.

Q Okay. And at the time you authored your report, were you aware of those studies?

A No. It had not yet come out.

[230]

Q Okay. And are you aware of the 2021 Green,

et al., study titled "Association of Gender-Affirming Hormone Therapy With Depression, Thoughts of Suicide, and Attempted Suicide Among Transgender and Nonbinary Youth"?

A Yes, I am.

Q Great.

COUNSEL SWAMINATHAN: I'm going to introduce tab 9, which is going to be marked as Exhibit 51. It should pop up on your screen shortly.

(Exhibit 51 was marked for identification by the court reporter and is attached hereto.)

BY COUNSEL SWAMINATHAN:

Q And as you pull that up, Dr. Cantor, I just want to confirm, did you identify the Tordoff study as a part of your continued update to the literature that you were doing before sitting for this deposition?

A Well, as I say, that -- that study only just came out. It -- it wasn't available when I submitted my study. And then I became notified of its existence, you know, when it did -- first came out, but my -- but my -- I shouldn't have said "study." Report. I'm sorry. But my report was already submitted when it did come out. So –

[231]

Q I -- I --

A -- had my report been due in six months, it would have been edited.

Q I understand that. I just meant in the review that you said you did in preparing for this deposition, was this one of the studies that you had reviewed prior to sitting for this deposition?

A The Green study?

Q The Tordoff study.

A Oh, the -- the Tordoff study?

Again, didn't exist when I prepared.

Q Okay. So it's -- it didn't exist in the past few weeks?

A The --

Q Tordoff study.

A When you said in preparation, do you mean for sitting here physically today, or do you mean for my submitted report?

Q I mean for sitting here physically today.

A For sitting here physically today, I did -- I did review Tordoff, yes.

Q Got it. Okay. Thank you.

And now we can turn our attention to the 2021 Green study, and as you can see, the authors of this study are Amy Green, Jonah DeChants, Myeshia Price **[232]** and Carrie Davis.

Do you see that?

A Yes, I do.

Q Are you familiar with any of these individuals?

A Not meaningfully. Myeshia Price, I think I had a three e-mail exchange with a few years ago. Nothing substantive or relevant to today's case.

Q Your e-mails did not pertain to transgender people or gender dysphoria at all?

A They did pertain to transgender individuals, not athleticism, not today's case, but I couldn't -- I don't recall what aspects of gender dysphoria the discussion was.

Q Do you remember if the discussion was focused on adults suffering from gender dysphoria?

A I don't recall.

Q Okay. That's fair.

And so do you see that the study was published -- or accepted on October 28, 2021? And do you agree that the Journal of Adolescent Health is a highly respected publication?

A Yes, to the best of my knowledge.

Q Is it a peer-reviewed publication?

A So far as I know.

[233]

Q So are you aware that this study found that access to gender-affirming hormones during adolescence was associated with lower odds of recent depression and having attempted suicide in the past year?

A In a retrospective survey, I'm aware of that, yes.

Q Yes. At the time you authored your report, were you aware of this study?

A Yes, I was.

Q Did you cite this study in your report?

A No, I did not.

Q Why didn't you cite this Green 2021 study in your report?

A It's not -- it's not methodologically sound enough. This was a retrospective instead of a prospective study. Retrospective studies are not able to come to the kind of conclusions that – that are not -- retrospective studies are only able to produce correlations. We cannot, from a correlation, say anything about causality.

Q Do you cite any retrospective studies in your report?

A I would have to go through and check.

Q Off the top of your head, can you think of **[234]** any retrospective studies you may have cited in your report?

A I can't think of one offhand, no.

Q Were any of the 11 studies that you mentioned that support your theory of desistance retrospective studies?

A No. It was -- specifically was of prospective studies.

Q Okay. And so it's your testimony that none of the studies that you've cited in your report are retrospective; right?

MR. BARHAM: Objection as to form and terminology.

THE WITNESS: No. I just can't recall offhand if any were.

BY COUNSEL SWAMINATHAN:

Q So there may be some retrospective studies that you rely on in drafting your report?

MR. TRYON: Objection.

THE WITNESS: Yes. But not from making a causal conclusion.

BY COUNSEL SWAMINATHAN:

Q Okay. And are you aware of the 2012 Achille, et al., study titled "Longitudinal impact of gender-affirming endocrine intervention on the **[235]** mental health and well-being of transgender youths"?

A Yes, I am. It's cited in my report.

Q Great. Would --

COUNSEL SWAMINATHAN: I'm going to introduce tab 10, which I believe now marks Exhibit 52.

(Exhibit 52 was marked for identification by the court reporter and is attached hereto.)

BY COUNSEL SWAMINATHAN:

Q And let me know when you're able to see it, Dr. Cantor.

A Yes, I can see.

Q Okay. Great.

So this study is published in the International Journal of Pediatric Endocrinology; correct?

A Yes, it is.

Q And is -- the authors are Chris- - Christal Achille -- I apologize if I'm mispronouncing that -- Tenille Taggart, Nicholas Eaton, Jennifer Osipoff, Kimberly Tafuri, Andrew Lane and Thomas Wilson.

Do you see that?

A Yes, I do.

Q Are you familiar with any of these individuals?

[236]

A No, I'm not.

Q Okay. And it looks like this study was conducted in 2020, at some point. I don't see the date on it.

But is it fair to say that it was -- it came out in 2020?

A The -- the study was conducted between 2013 and 2018.

Q But the results were published, apologies, in 2020?

A It came out in print in 2020.

Q Okay. And have you read this study before?

A Yes, I have.

Q And are you aware that is study found that endocrine intervention was associated with decreased depression and suicidal ideation and improved quality of life for transgender youth?

A I'm aware that that's what the paper said, yes.

Q And at the time you authored your report, were you aware of this study?

A Yes, I was.

Q And you cite this study in your report; right?

A Correct.

[237]

Q Why didn't you cite this particular conclusion drawn from the study, that the endocrine intervention was associated with decreased depression and suicidal ideation and improved quality of life for transgender youth?

A Because the improvements are also plausibly attributed -- attributable to the psychotherapy that the clients were -- that the patients were getting.

Q But, Dr. Cantor, isn't it true that no study, including the Dutch study, had a control group of people who received solely therapy, but no blockers or hormones?

A That is not correct.

Q Which -- can you tell me what study has a control group of people who received therapy, but no blockers and hormones?

A Costa, et al., 2015.

Q Can you spell that for the court reporter?

A C-O-S-T-A --

Q Uh-huh.

A -- et al.

Q 2015?

A Yes.

Q Am I accurate in saying that the Dutch protocol did not have a control group of people who **[238]** received therapy, but no blockers and hormones?

A That is correct.

Q And so would you agree that this Achille study is similarly situated to the Dutch protocol, in terms of what -- in terms of the two interventions, both psychotherapy and hormone treatment, occurring at the same time? Is that fair to say?

A No, it's not. The research method being used is not related to the clinical method being used. The research method is how one analyzes what's been doing clinically.

Q Okay. So you mentioned that Costa, et al., 2015, does have a control group. Are there any other studies that you can think of?

A No, not offhand.

Q Okay. And are you aware of the 2020 Kuper, et al., study titled "Body Dissatisfaction and Mental Health Outcomes of Youth on Gender-Affirming Hormone Therapy"?

A I believe that one's in my report also.

Can I refer to it just a second?

Q Absolutely.

COUNSEL SWAMINATHAN: I will introduce it as tab 11, which is Exhibit 53.

[239]

(Exhibit 53 was marked for identification by the court reporter and is attached hereto.)

THE WITNESS: Oh, no, I meant my report.

BY COUNSEL SWAMINATHAN:

Q Oh, sure. Feel free to reference your report.

Do you see Exhibit 53, in the share?

MR. BARHAM: Counsel, the witness is still looking at his expert report, I see.

COUNSEL SWAMINATHAN: Oh, apologies. I'm unable to see his hands by the --

MR. BARHAM: It's okay.

THE WITNESS: All right. Got it. Okay.

Ready. Yes, Kuper.

BY COUNSEL SWAMINATHAN:

Q No problem.

So, again -- so this study is conducted by Laura Kuper, Sunita Stewart, Stephanie Preston, May Lau and Ximena Lopez.

Do you see that?

A One second. We need to switch windows.

Q No problem.

A Yes, I have it.

Q Okay. Are you familiar with any of those individuals?

[240]

A No, I am not.

Q And so this study was downloaded from the American Academy of Pediatrics; is that correct?

You can see that --

A It was published in the journal Pediatrics which is owned by the American Association of Pediatrics.

Q Yes, apologies.

I was just pointing towards the bottom of the page where it says this particular article was downloaded from www.aappublications.org/news, and it was accepted for publication on December 6, 2019.

Do you see that?

A Yes, I do.

Q Okay. Is this a peer-reviewed publication?

A Yes, it is.

Q Okay. And are you aware that the results of this study show that hormone therapy for youth is associated with reducing body dissatisfaction and modest improvements in mental health?

A That's not what I would call the whole truth.

Q What would you call the whole truth?

A That this group of patients were – were given many, many different mental health factors. The majority of those showed no differences, but the **[241]** report and the media reports about this are only talking about the positive ones, despite that there was no difference -- that there was generally no difference.

Q You said that this study has faced media criticisms. Is that fair?

A Media attention, I would say.

Q Media attention.

What outlets of media have reported that there were no positive results from this study?

A I didn't say that there were media reports saying no positive results. The reverse. The media had been reporting only the positive results.

Q So there were positive results as a result of this study; right?

MR. TRYON: Objection.

THE WITNESS: Some of the measures indicated positive results, but when one -- when one runs many, many, many statistical tests, some of them will always look like they're positive.

BY COUNSEL SWAMINATHAN:

Q I see. But it's fair to say that there were positive results reported from the study; right?

A No, I'm not sure that is fair to say. As I say, it's a statistical property that if you roll **[242]** the dice enough times, you will eventually get snake eyes. If you only report the snake eyes and fail to report everything else, it's not fair to say that you actually caused snake eyes.

Q Dr. Cantor, so it's your testimony today that there are no positive results from this Kuper 2020, et al., study?

MR. BARHAM: Objection as to form.

THE WITNESS: No, that's not my testimony either.

BY COUNSEL SWAMINATHAN:

Q So your testimony is what, that there – you just --

A The positive results they found are easily attributable to a statistical fluke or game plan rather than

an actual reflection of changes in the actual age and groups.

Q Okay. So that method also applies to studies showing negative reports; right?

A The principle applies to -- no, it does not. The problem of false positives only applies to positive results.

Q Interesting. So it then isn't true for the negative results of other studies, but it only applies to the false positives. Is that your **[243]** testimony?

A Not exactly. I think we're using the word "negative" in different ways.

Q Okay.

A In statistics, the word "negative" means we didn't find anything. Everything stays flat. Everything remains exactly where it was.

I'm wondering if you're using the word "negative" to mean unfortunate or deleterious.

Q No, I think -- I think I -- I understand your -- the way you've been using "negative," so --

A Okay. In statistics, it is indeed true that the methods used to find positive results are different from the ones that we use for analyzing negative results. They are not equal.

Q Okay. And are you aware of the 2020 van der Miesen, et al., study titled "Psychological Functioning in Transgender Adolescents Before and After Gender-Affirmative Care Compared With Cisgender General Population Peers"?

A Yes, I am. It also is in my report.

COUNSEL SWAMINATHAN: I'm going to introduce tab 12, which will be Exhibit 54.

(Exhibit 54 was marked for identification by the court reporter and is attached hereto.)

[244]

THE WITNESS: Hang on. If I can just refer to my report again for the van der Miesen section.

BY COUNSEL SWAMINATHAN:

Q No problem. I can speed it up for you and say that you have cited this report on page 25 and 26.

A Perfect. Thank you.

Q No problem.

Just a -- one more question regarding the -- the statistics we were just talking about. So --

A One second.

Okay. I'm ready.

Q Is your -- is it your understanding that data can be skewed or explained by alternate causation in all of these studies?

A I don't think you're using the word "skew" the way we use it in statistics.

Can you phrase the question a different way?

Q Sure. Isn't it possible that data can be represented or explained by alternative causation in all of these studies?

MR. TRYON: Objection; form of the question.

THE WITNESS: I don't know what you mean by alternative causality, was it, you said?

///

[245]

BY COUNSEL SWAMINATHAN:

Q Yeah, of -- you know, you said earlier that, you know, there -- there are alternate reasons for why some studies -- some of the results of certain studies may be misrepresented in how the results are presented; right?

A Some people will cherry-pick which results they report, yes.

Q Right. And so are you saying that, you know, if you roll the dice enough times, you can get results that you want and that's what some of these researches have done?

A Yes, that's true.

Q Yeah. And isn't that true that that's a possibility for all studies?

A Yes, it is.

MR. TRYON: Objection.

BY COUNSEL SWAMINATHAN:

Q Okay.

A Yes, it is. And in figuring out what the probability of that happening is for any particular study is itself an important branch of statistics.

Q And so I think you have Exhibit 54 up, is that correct, the van der Miesen study?

A Yes.

[246]

Q Great. So this study was conducted -- or it looks like it was a team of van der Miesen, Steensma, de Vries, Bos

and Popma, is that correct, as the -- the authors of this study?

A Yes, it is.

Q Okay. And do you know any of these folks?

A No. I've never met anybody.

Q Okay. And so this study was published in 2020 in the Journal of Adolescent Health; is that right?

A Yes, it is.

Q And are you aware that the results of this study showed fewer emotional and behavioral problems after puberty suppression and similar or fewer problems compared to same-age cisgender peers?

A Yes, I am.

Q Okay. And at the time you authored your report, were you aware of this study?

A Yes, I was. It's referenced in it.

Q Did you reference this finding in your report?

A I -- I referenced the finding and also then -- the people in this clinic also received psychotherapy along with their medical care.

Q Similar to the Dutch study; right?

[247]

A This is one of the Dutch studies.

Q This is a later version; correct?

A That's right.

Q 2020.

And are you -- actually, we -- we just spoke about the 2015 Costa, et al., article; right? So I assume you are

familiar with "Psychological Support, Puberty Suppression and Psychosocial Functioning in Adolescents with Gender Dysphoria"?

A That is correct.

Q Okay.

COUNSEL SWAMINATHAN: I'm going to introduce tab 13, which will be marked as Exhibit 55.

(Exhibit 55 was marked for identification by the court reporter and is attached hereto.)

BY COUNSEL SWAMINATHAN:

Q And I'll represent to you that you do cite this study as well in your report, on page 22, if -- if you would like to reference that, but I won't be referring to your report in asking my questions.

MR. BARHAM: Do you want the report?

THE WITNESS: No. I'm fine with this. I see it.

BY COUNSEL SWAMINATHAN:

Q Great. And so let's look at the authors of [248] this study. It's Rosalia Costa, Michael Dunsford, Elfin Skagerberg, Victoria Holt, Polly Carmichael and Marco Colizzi.

Do you see that?

A Yes, I do.

Q Do you know any of these folks?

A No, I don't.

Q Okay. And this study was published in the Journal of Sexual Medicine; is that correct?

A Yes, it is.

Q Do you agree that the Journal of Sexual Medicine is a highly respected publication?

A No, I don't.

Q Why do you disagree?

A I had interactions with not the current editor, but the prior editor of the journal. Together with reviews and instructions to peer reviewers, he asked specifically that authors increase the number of papers citing that particular journal and manuscripts sent to that journal which would elevate that journal's -- it's called an impact factor. The number of citations to studies in it is a measure of how important the journal is.

So the prior editor was trying to gain the system. So at that point, I refused any further **[249]** contact with the -- with the journal itself or that editor.

As I said, there's a new editor. I have had some contact with -- with the new editor, who no longer participates in that policy, but I remain rather skeptical of the journal itself.

Q Have you ever submitted any of your studies to be published in the Journal of Sexual Medicine?

A I don't recall. If I did, it would have been one soon after the journal started.

Q Okay. And is this Journal of Sexual Medicine a peer-reviewed publication?

A Yes, it is.

Q And are you aware that the results of this study found increased psychological function after six months of puberty suppression in adolescents with gender dysphoria?

A I'm aware that that's what it reported.

Q Did you include that finding in your report?

A Yes, I did, together with the caveat that becau- -- that they were also receiving mental healthcare at the same time.

This -- this paper didn't have a medical care -- medical care only.

Q Okay. And are you aware of the 2014 **[250]** de Vries, et al., study titled "Young Adult Psychological Outcome After Puberty Suppression and Gender Reassignment"?

A Yes, I am.

COUNSEL SWAMINATHAN: I'm going to introduce tab 14, which will be marked as Exhibit 56.

(Exhibit 56 was marked for identification by the court reporter and is attached hereto.)

THE WITNESS: I have it.

BY COUNSEL SWAMINATHAN:

Q Great. And so let's look at the authors.

There's Annelou de Vries, Jenifer McGuire, Thomas Steensma, Eva Wagenaar, Theo Doreleijers and Peggy Cohen-Kettenis.

Do you see that?

A Yes, I do.

Q Are you familiar with any of these folks?

A By reputation only.

Q Who are you familiar with by reputation?

A De Vries, because of the number of studies that -- that they've been involved with, and Dr. Cohen-Kettenis with her -- through her association with Dr. Zucker.

Q Have you met either de Vries or Cohen-Kettenis before?

[251]

A No, I have not.

Q Have you communicated with them via e-mail?

A No, I have not.

Q Or by phone?

A No.

Q Okay. And so this study was accepted for publication on July 7th, 2014, and it's published in the Pediatrics journal that we just referred to earlier.

Are you aware that this study followed a cohort of transgender young people in the Netherlands, from puberty suppression through surgical treatment?

A Yes, I am.

Q And, in fact, these are some of the same authors who wrote the Dutch study that you described, in great length, in your report; right?

A This is indeed the Dutch team, and it was on the basis of these results that they began forming what we're now calling the Dutch model.

Q And are you aware that this study found that the cohort had global functioning that was equivalent to the Dutch population?

A Yes, I am.

Q And you included this study in your report; **[252]** right?

A Yes, I did.

Q And did you take similar issue with the fact that this study did not have a control of folks who received psychotherapy only?

A The issue wasn't that it lacked a group of psychotherapy only; the problem is that the study had no method of separating how much of its result was due to psychotherapy versus due to medical intervention.

Q And that's typically done using a control group, though; right?

A That's one of the ways to do that, yes.

Q What are some of the other ways to do that?

A It's an advanced statistical technique called "allocation of variance," essentially.

Q Okay.

A Or there's a better term. I'll get it.

"Covariance analysis."

Q Covariance analysis.

And so is it fair to say that the positive findings of the Dutch study have indeed been replicated?

A No, not meaningfully.

Q What is the difference between having been **[253]** replicated and having been replicated meaningfully?

A Other studies that have attempted to replicate it have changed parts of the protocol in one way or another or changed the ways that they measure the outcomes in order to make direct comparison difficult.

Q So the de -- de Vries, as you pronounced it, 2014 study, in your opinion, did not replicate the positive findings of the Dutch study?

A De Vries, 2014, is the Dutch study.

Q This is -- so I believe we're talking about several Dutch studies at this -- at this point.

So you had testified earlier that, I believe, the Dutch study was replicated in 2020 as well; is that correct?

A Are you referring to the van der Miesen study?

Q I am, yes.

A No. The van der Miesen 2020 study, from the Dutch group, would not be fairly called a replication of their own 2011 and 2014 studies.

Q So why isn't it a fair replication?

A It's a different patient sample approaching the clinics now than in the years when -- when the first studies came out.

[254]

Q What would you say the primary difference in the patiel -- patient sample is?

A The psychological profiles, their ages, their sex ratios.

Q Any other differences?

A Those are the major ones.

Q Okay.

COUNSEL SWAMINATHAN: So I'm going to introduce tab 15, which has been marked as Exhibit 57.

(Exhibit 57 was marked for identification by the court reporter and is attached hereto.)

BY COUNSEL SWAMINATHAN:

Q Let me know when you're able to access it, please.

A Yes, I have it now.

Q Great. And so this is the 2011 Dhejne study; correct?

A It's Swedish.

Q How would you pronounce that?

A Oh, oh, oh, you mean the -- the author's name. I'm sorry. You said "Dane," and my brain registered Danish.

Q No. A Actually, I don't know how to pronounce this **[255]** author's name.

Q I've heard "Dhejne" for "Dhejne," so I'm going to go with "Dhejne" today.

But do you see that this study was conducted by Cecilia Dhejne, Paul Lichtenstein, Marcus Boman, Anna Johansson, Niklas IAngstrom and Mikael Landen?

Do you see that?

A Yes.

Q And it's titled "Long-Term Follow-Up of Transsexual Persons Undergoing Sex Reassignment Surgery: Cohort Study in Sweden."

Did I read that correctly?

A Yes.

Q You cite this study in your report; correct?

A Yes, I believe I do. Let me just refer to my own report with context.

Do you have the page number offhand.

Q I do. It's page 5 of your report.

A Thank you.

Yes, ready.

Q So one of the points for which you cite this study is to say that Swedish patients who underwent gender-affirming firming surgery had a 19.1 times greater suicide rate than the control group; right?

A Yes.

[256]

Q Okay. Beyond the Dhejne study, are you aware of any other authority for that claim?

A Not offhand, no.

Q Okay. And who is the control group for the Dhejne study?

A The Danish population, average.

Q And you understand that the control group consisted of patients without gender dysphoria; right?

A Yes.

Q Okay. So what this Dhejne study compared was the suicide rate for patients who underwent gender-affirming surgery against the general Swedish population; right?

A Correct.

Q Okay. And the suicide rate for patients who underwent gender-affirming surgery was not compared against patients who were transgender, but had no access to medical care; right?

A Correct.

Q Okay. So no one in the control group was transgender; right?

A There's no way to say that. I would hesitate to call the remain- -- the demographics of the remaining population a control group. They didn't **[257]** exactly participate at all except via government statistic.

Q And they were ten randomly selected control persons who were matched by sex and birth year; right?

A I would have to recheck the original study for the details, but that sounds about correct.

Q Okay. You know that there are studies that find that patients with gender dysphoria who don't undergo gender-affirming surgery have a higher risk of suicide compared to the general population. Are you aware of that?

A Yes, I am.

Q Okay. If you could please turn to page 7 of this study.

A Yes.

Q And the font size is quite small, but if you look at the left side of the page and the third full paragraph in that left column, it starts with "For the purpose of evaluating."

Can you take a moment to read that paragraph, please?

A Yes.

Q So the authors recognize that persons with gender dysphoria before sex reassignment may differ **[258]** from control patients who do not have gender dysphoria; right?

A I'm sorry, say that again.

Q Sure. The authors of this study recognize that people with gender dysphoria before sex reassignment may

differ from control patients who do not have gender dysphoria; right?

A That is correct.

Q They say "In other words" -- this is a quote directly from the study (as read):

"In other words, the results should not be interpreted such as sex reassignment per se increases morbidity and mortality."

Do you see that?

A Yes, I do.

Q You agree that this study does not support the conclusion that sex reassignment by itself increases the risk of suicide; right?

A That would be a bizarre conclusion, correct.

Q Okay. And this study does not support the conclusion that sex reassignment by itself increases risk of other morbidities; right?

A I'm sorry, ask that again.

Q Sure. This study does not support the **[259]** conclusion that sex reassignment by itself increases risks of other morbidities; right?

A By itself, no.

Q Okay. And the authors even go on to say "Things might have been even worse without sex reassignment."

Do you see that?

A Yes, I do.

Q Okay.

COUNSEL SWAMINATHAN: And I'm going to introduce tab 16, which has been marked as Exhibit 58.

(Exhibit 58 was marked for identification by the court reporter and is attached hereto.)

THE WITNESS: I have it.

BY COUNSEL SWAMINATHAN:

Q Great. And so I believe we referenced this study earlier in our conversation. This is a study titled "Mental Health of Transgender Children Who Are Supported in Their Identities," and the authors are Kristina Olson, Lily Durwood, Madeleine DeMeules and Katie McLaughlin.

Do you see that?

A Yes, I do.

Q Are you familiar with any of these authors?

[260]

A No, I am not.

Q Do you recognize this study?

A By title, I do. For content, I need to check my report again.

Q Okay. I'll represent to you that you do cite this study in your report, and if helpful, I can point you to the paragraph number. It's paragraph --

A Okay.

Q -- paragraph 15 of your report. And I'll get the page number for you. Pages 5 to 6 of your report.

A Hold on.

Yeah, I have it.

Q Great. And so in paragraph 15 of your report, you state, quote, (as read):

"Olson's report turned out to be incorrect. The Olson data were reanalyzed and after correcting for statistical errors in the original analysis, the data instead showed that the gender dysphoric children under Olson's care did, in fact, exhibit significantly lower mental health."

[261]

And the cite you have for -- for that statement is "Schumm & Crawford, 2020: Schumm, et al., 2019."

Did I read that accurately?

A Yes, that's correct.

Q Okay. And so is it your understanding that the Olson data was reanalyzed by Schumm and Crawford?

A Yes.

Q Have you independently conducted your own statistical analysis of the Olson data?

A No, I have not.

Q Okay. Have you asked any other statistician's opinion on whether Olson's statistical analysis was wrong?

A No, I have not.

Q Okay. Do you know if Schumm's statistical analysis has ever been questioned in a court of law?

A Not that I know of, no.

Q Okay.

COUNSEL SWAMINATHAN: So I'm going to introduce tab 17, which will be marked as Exhibit 59.

(Exhibit 59 was marked for identification by the court reporter and is attached hereto.)

[262]

BY COUNSEL SWAMINATHAN:

Q Let me know when you're able to see it.

A I can see it.

Q Great. And so I'll represent to you that this is a copy of an opinion from the District Court of Appeal of Florida, Third District, and the title of the case is Florida Department of Children and Families, Appellant, versus Adoption of -- in re Matter of Adoption of X.X.G. and N.R.G., Appellees.

Do you see that?

A Yes, I do.

Q Are you familiar with this case?

A No, I am not.

Q You don't know what it's about; right?

A Correct.

Q Okay. I'll represent to you that in this case, Dr. Schumm conducted a methodological analysis of the works of psychologists on homosexual parenting. So this is a case about the adoption of children by a gay parent. And I'll -- I'll make that representation to you, but also please feel free to review the document in further detail, if you -- if you need to. But if not, I would like to turn your attention to pages 7 and 8 of the PDF. Start on page 7:

[263]

A I'm there.

Q Great. And so if you could read from "We consider first the Department's experts." If you could read that paragraph and let me know when you are done.

A Just the one paragraph on that page?

Q Yes. Just on that page. I just want you to have the understanding that Dr. Schumm was one of the department's witnesses in this case.

And then if you turn to the next page, page 8. If you can read the paragraph -- it's a lengthy paragraph -- on the left-hand side of the page, along with the final paragraph at the bottom, and let me know when you're finished with that, that would be great.

A Okay.

Q Okay. And so what you just read, it states the following (as read):

"Dr. Schumm admitted that he applies statistical standards that depart from conventions in the field. In fact, Dr. Cochran and Dr. Lamb testified that Dr. Schumm's statistical re-analysis contained a number of fundamental errors. **[264]** Dr. Dr. Schumm ultimately concluded that based on his re-analysis of the data, there are statistically significant differences between children of gay and lesbian parents as compared to children of heterosexual parents. Dr. Schumm understands that much of the scientific community disagrees with his conclusions and concedes to the possibility that some gay parents may be beneficial to some children."

Did I read this correctly?

A Yes, as best I can see.

Q Had you previously been aware that Dr. Schumm admitted in a court of law that he applies statistical standards that depart from conventions in the field?

A I'm sorry, is that what I read?

Q You can see it says "Dr. Schumm admitted that he applies statistical standards that depart from conventions in the field," in the middle of page 8.

A Yes, I see it.

Q If you had known this information, would that have affected your thinking about whether Schumm was **[265]** a reliable source for the reanalysis of the Olson data?

A No, I don't think so.

Q Why not?

A Because of the lack of the response from the original team that he commented on.

Q What do you mean by that?

A Olson never replied to Schumm's correction, and Schumm's correction, in this instance, was published, unlike what's being described in the case you just put before me.

Q And are you aware that there was a correction issued for the 2016 Olson article?

A Yes, I am.

COUNSEL SWAMINATHAN: I'm going to introduce tab 18, which will be marked as Exhibit 60.

(Exhibit 60 was marked for identification by the court reporter and is attached hereto.)

BY COUNSEL SWAMINATHAN:

Q Let me know when you have the document up.

A I do.

Q Okay. So I'm going to represent to you that this is an errata of the Olson 2016 "Mental Health of Transgender Children Who Are Supported in Their Identities," and this errata was published in **[266]** August 2018, as you can see at the bottom of the page.

A Yes.

Q So if you read the second paragraph on that page, the only correcting to the article was a missing comma, not any changes to the statistics in the Olson analysis; correct?

A Correct.

Q And I'm going to ask you to look back at what was previously marked as Exhibit 44 -- sorry -- Exhibit 45, which is your report, again, and if you could please turn to page 6.

A Yes.

Q In paragraph 16 of your report, on page 6, you state, quote, (as read):

"I conducted an electronic search of the research literature to identify any responses from the Olson team regarding the Schumm and Crawford re-analysis of the Olson data and was not able to locate any. I contacted Professor Schumm by email on August 22, 2021 to verify that conclusion, to which he wrote there has been: 'No response [from **[267]** Olson]."'

End quote.

Did I read that correctly?

A Yes.

Q Did you ever reach out directly to Kristina Olson regarding the results of this study?

A No, I did not.

Q Why not?

A It wasn't pertinent to my analysis. Had she had a response, it should have been published.

Q Did you ever reach out to anyone else on the Olson team regarding the results of this study?

A No, I did not.

Q Okay. Are you aware of the 2021 Gibson, et al., study titled "Evaluation of Anxiety and Depression in a Community Sample of Transgender Youth"?

A Not by title. Did I cite that one?

Q I don't believe you have included this study in your report.

A Okay.

Q But as you said, you may have discovered it in your further research, but I will show it to you so that we are on the same page of what we're talking about.

[268]

COUNSEL SWAMINATHAN: So I'm going to introduce tab 19, which will be marked as Exhibit 61.

(Exhibit 61 was marked for identification by the court reporter and is attached hereto.)

BY COUNSEL SWAMINATHAN:

Q Also, while we're waiting for that exhibit to load, is there any reason that you felt the need to reach out to Professor Schumm, but not Kristina Olson, with respect to the Olson study?

A Only that given my known reputation, given that -- the great polarization in the field, I didn't anticipate a

cordial or appropriate response from Olson. It didn't seem to be -- there didn't seem to be a point to me.

Q What is your known reputation that you referred to in the field?

A I'm known as highly critical of a lot of the claims that people are making.

Q And is that what leads to what you refer to as the great polarization?

A Leads to, no. I think it's an element of.

Q What are the other elements?

A Well, that the same thing happens to anybody who says anything critical about anybody's thinking **[269]** on either side of such questions.

Q How do you know that?

A I'm frequently a target of it. I'm frequently in contact with other targets of it. It has become one of the most frequently discussed issues, not -- in the media and among academics.

Q So what evidence do you have that you are frequently a target of this -- you know, the polarization that you speak of?

A On social media, the way that my views are misrepresented in -- I wouldn't say mainstream media, but in minority media, I'm frequently misrepresented in -- in -- in similar ways.

Q Okay. And so please let me know if Exhibit 61 has entered your file share.

A Yes, I see it.

Q Okay. Great.

So this is a study conducted by Gibson -- Dominic Gibson, Jessica Glazier and Kristina Olson.

Do you see that?

A Yes, I do.

Q And this was a 2021 study.

Do you see that?

At the bottom of the page, you can --

A Yes, I do.

[270]

Q Great. And so do you see that Kristina Olson is an author -- one of the authors of this study?

A Yes, I see.

Q And you told me that you had not seen this study before; correct?

A Correct.

Q So I want to give you a second to review the introduction and perhaps the -- the first page, as much --

A Okay. Give me a moment.

Q Absolutely.

A Yes.

Q Great. So as you can see, this study has a bigger sample size than the 2016 Olson study; correct?

A Yes.

Q And you said you were not aware of this more recent study at the time you authored your report; right?

A I would hesitate to say that I was unaware entirely, but at least when I was going through the literature, it did not fit what I thought was relevant, so I passed it by.

Q Why didn't you think this study was relevant?

A Oh, I thought -- as I said, I imagine in the **[271]** mindset then, I still didn't see how it was relevant -- still don't see exactly how it was relevant or would add anything above the studies I already cited.

Q So it's your testimony that the study didn't add any new findings or new opinions to the studies that you had already relied on in offering your report; right?

A I would have to read it in full in order to be able to say that for sure. When you asked had I seen it before, I can't say whether I actually said (sic) it before and rejected it or if I, in fact, hadn't seen it before, for whatever reason.

Q And, Dr. Cantor, do you agree that transgender or gender-dysphoric youth experience significantly higher levels of anxiety and depression than their cisgender peers?

A That's what the science seems to indicate, yes.

Q So if you look at page 3 of this study, understanding that you have not had the time to fully review it, at the top of the page, the paragraph starting "Nonetheless," this study found that many socially transitioned transgender or gender-dysphoric youth experienced levels of anxiety **[272]** and depression in the normative range and equal to or only slightly higher than their sibling -- siblings and cisgender peers.

Do you see that?

A Yes, I do.

Q So are you aware of any studies showing that the existence of a Y chromosome provides an athletic advantage if a person does not go through endogenous male puberty?

MR. BARHAM: Objection as to form and scope.

MR. TRYON: Objection.

THE WITNESS: I'm sorry, could you say that again?

BY COUNSEL SWAMINATHAN:

Q Sure. Are you aware of any studies showing that the existence of a Y chromosome in an -- in an individual provides an athletic advantage if a person does not go through endogenous male puberty?

MR. TRYON: Objection.

THE WITNESS: I have seen such studies, but because that question was outside of the scope of what was -- of the questions posed to me, I didn't study them closely.

BY COUNSEL SWAMINATHAN:

Q Can you name some of those studies that **[273]** you've seen?

A No, not offhand.

Q Okay. Are you aware of any studies showing that the existence of genitalia associated with the male sex assigned at birth provides an athletic advantage?

MR. BARHAM: Objection as to form, scope and terminology.

MR. TRYON: Same objection.

THE WITNESS: The studies that I saw didn't break down sex into the various components or evidence that indicates sex.

BY COUNSEL SWAMINATHAN:

Q So it fair to say that you haven't seen a study showing that the existence of genitalia associated with the male sex assigned at birth specifically provides an athletic advantage?

A No --

MR. TRYON: Same objection.

THE WITNESS: No, that's not exactly the same thing. The studies typically compare boys versus girls. They didn't compare any of the components that led them to know or believe that the boys were boys and the girls were girls. They divided boys and girls, but they didn't analyze differences **[274]** specifically according to chromosomes or genitalia.

BY COUNSEL SWAMINATHAN:

Q Can you recall the names of any of those studies that you're referring to?

A No. I didn't study them as closely since they weren't part of the questions posed to me.

Q Okay.

COUNSEL SWAMINATHAN: I'm going to show you tab 21, which will be marked as Exhibit 62.

(Exhibit 62 was marked for identification by the court reporter and is attached hereto.)

THE WITNESS: I hit the wrong button.

MR. BARHAM: Is this a good break time?

COUNSEL SWAMINATHAN: Sure.

Do you need a break, Dr. Cantor?

Can we go off the record?

No problem.

THE VIDEOGRAPHER: Yes. We are going off the record at 4:19 p.m., and this is the end of Media Unit No. 5.

(Recess.)

THE VIDEOGRAPHER: Okay. We are back on the record, 4:31 p.m., and this is the beginning of Media Unit No. 6.

Go ahead, please.

[275]

COUNSEL SWAMINATHAN: Great.

BY COUNSEL SWAMINATHAN:

Q So, Dr. Cantor, I believe just before the break I was introducing tab 21, which is marked as Exhibit 62, into the Exhibit Share. Please let me know if you've been able to access it.

A Yes, I can see it.

Q Great. And have you seen this one page before?

A Yes. I wrote it.

Q Okay. And so JamesCantor.org is your website; right?

A Yes, it is.

Q Great. And why did you include this bill of transsexual rights on your website?

A Typically addressing the other pole of this highly polarized debate.

Q So the first bill of rights states that "People who are transsexual have the right to respect."

Do you agree with this statement?

A Yes, I do.

Q Great. And under the statement, it reads (as read):

"As societies and institutions **[276]** become increasingly aware of their transsexual members and participants, they become increasingly confronted by the needs to assimilate and accommodate what they used to ignore. Taking on these tasks from a position of basic respect will go a long way in establishing inclusive policies and healthy environments."

Did I read that accurately?

A Yes.

Q What inclusive policies are you referring to here on your website?

A I wasn't referring to any particular policy.

Q So when you say "Taking on these tasks from a position of basic respect will go a long way in establishing inclusive policies," what did you mean inclusive -- what did you mean when you wrote "inclusive policies"?

A Policies that would help transsexuals feel included in the rest of society.

Q Got it. And what did you understand – or what do you understand the phrase "healthy environments" to mean?

[277]

A I wasn't trying to make a -- I wasn't trying to be specific, certainly not when I wrote this, which, I think, now was more than ten years ago. I was referring in general to how caustic environments were -- were becoming for everybody in those days.

Unfortunately, environments have become all the more, as they say, polarized.

Q Do you still agree with this statement as it reads on your website?

A I -- I agree with the statement, but, of course, we're in a very different context now.

Society, I mean, is in a very different context now.

Q What's different about the context now as compared to when you authored this portion of your website?

A Oh, goodness. Most of the child transition issues have now become mainstream issues, and people are making extreme statements and cherry-picking and overstating the reality on both sides.

Q So I pulled this document, as you can see at the corner of the page, on March 17th, 2022, at 7:14 a.m. I was up early that day.

Is there a reason that you haven't updated your website in the last ten years?

A Oh, I just became involved in other projects. **[278]** It also became easier to communicate with the public in other venues. Again, ten years ago, we barely had any -- we barely had any social media. I'm not even sure we had Twitter then. So now there are just other venues by which to communicate these types of ideas.

Q Got it. Okay.

And so the second bill of rights states (as read):

"People considering transition have the right to be free from undue pressure to transition – to de-transition, or not to transition.

Do you agree that people considering transition have the right to be free from undue pressure to not transition?

A Yes.

Q And under this statement, it reads (as read):

"Some aspects of transition, such as medical interventions, affect only the person undergoing the process, and some aspects of transition directly affect other people in their lives. People considering and undergoing transition have the right **[279]** to make their choices on the basis of these only, and not for any political, religious, or societal statement that it might be perceived to be making."

Did I read that correctly?

A Yes.

Q Do you agree that medical interventions and transitioning affect only the person undergoing the process?

A That would depend on the medical intervention itself. That's not a -- medical interventions aren't one thing.

Q Got it. So it's a -- as your words say, "Some aspects of transition, such as medical interventions, affect only the person undergoing the process..."

What did you mean by that?

A I was allowing for the possibility, such as, for example, cosmetic -- purely cosmetic changes are for the person themselves, but someone who is going to be -- replace wearing false breasts with breast implants, to the outside world, it will look the same, but it will feel very different to the person.

Q So apologies, you said that medical [280] intervention such as cosmetic changes? So is – is a cosmetic change like wearing a, you know, fake breast-augmenting device a medical intervention?

A I didn't mean to and still don't mean to be that precise so much as to point out to readers that -- that there exists interventions which may have absolutely nothing to do with -- with anybody other than the transsexual person themselves. I didn't mean to try to enumerate or express an opinion about any particular one of them.

Q But you agree that those interventions can be medical, correct, as --

A Yes.

Q Okay. And you then go on to state that (as read):

"People considering and undergoing transition have the right to make their choices on the basis of these only, and not for any political, religious, or societal statement..."

Do you agree that it should be the transgender person's choice whether to go through medical treatment?

A Phrase that again, please.

Q Do you agree that it should be the [281] transgender or gender-dysphoric person's choice whether or not to go through medical treatment?

A Broadly speaking, yes. There can, however, and there do legitimately -- there will legitimately exist exceptions to that.

Q Okay. But broadly speaking, yes?

A In general, it is that person to -- it's up to that person to decide whether to do it. But, of course, if there's a medical reason not to do it that the person is ignoring, it is

indeed up to the actual medical staff to ensure that those procedures are not engaged in, even if it is the wishes of the patient.

Q Okay. And if you turn to the next page, page 2 of 3 of your bill of transsexual rights, number 5 states (as read):

"People in the process of transition have the right to health care that respects the gender in which they live, including to be addressed by pronouns and other language that acknowledges that gender."

Did I read that correctly?

A I'm sorry, which number are you reading from?

Q Number 5.

[282]

A Ah.

MR. TRYON: Counsel, I'm going to object to questions, continued questions, on this. It's outside the scope.

COUNSEL SWAMINATHAN: Thank you, Counsel.

Your objection is noted.

THE WITNESS: I'm sorry, I just reread it.

And, I'm sorry, what was your question again?

BY COUNSEL SWAMINATHAN:

Q I hadn't asked one yet, but I will --

A Oh.

Q -- ask it now.

Do you agree that people in the process of transition have the right to be addressed by pronouns and other

language that acknowledges the gender in which they live?

MR. BARHAM: Objection as to form and scope.

THE WITNESS: In the context in which I wrote it, yes. In today's context, where -- where the right is -- "exaggerated" isn't the right word, but being abused or used for disingenuous purposes would be a reasonable limit to that which really did not meaningfully exist when I first -- first wrote this.

BY COUNSEL SWAMINATHAN:

Q So do you agree, generally, that people in **[283]** the process of transition have the right to be addressed by pronouns and other language that acknowledges the gender in which they live, aside from these ulterior instances that you just referenced?

MR. BARHAM: Objection as to form and scope.

MR. TRYON: Same objection.

THE WITNESS: Again, in general, yes. But transition -- the word "transition" and the process of transition now is used and meant very differently from how it was a decade ago.

BY COUNSEL SWAMINATHAN:

Q How is it used differently?

A It's used more broadly, it's used prematurely, and it's used by people who are completely outside any healthcare context.

Q Is it always used more broadly and more prematurely now?

A I don't really understand the question.

Q Is it always the case that the language that you're taking issue with today is due to the fact that it's being used prematurely in individuals who are gender dysphoric?

MR. TRYON: Objection to the form.

THE WITNESS: I'm sorry, I'm still not quite [284] understanding the question.

COUNSEL SWAMINATHAN: Court Reporter, can you please read back Dr. Cantor's answer before, where he expresses the understanding issue?

(Record read.)

THE REPORTER: The one before that, do you want me to --

COUNSEL SWAMINATHAN: That's good.

THE REPORTER: Okay.

BY COUNSEL SWAMINATHAN:

Q So, Dr. Cantor, I was just saying, do you believe that it's always the case that the word is used more broadly and more prematurely?

A There are people who still use it properly, yes.

Q Okay. So you were a member of the Society for the Scientific Study of Sexuality; correct?

A Yes, that's correct.

Q What is the purpose of the society?

A Their stated purpose is to forward and promote the conduct and dissemination of sex research.

Q How did you get involved in that society?

A Oh, I joined when I was a student, as, in those days, it was -- it was a well-known large **[285]** organization, and it had -- it was relatively easy to get into. One, essentially, could get into it just by signing up.

Q Were there any fees associated with the society?

A Yes, there were.

Q Were they annual membership fees?

A Yes, they were.

Q Are you able to give me an approximation of what those fees were to be a member of the society?

A I don't really recall. They weren't substantial. And, of course, for students, even lower, when I first joined.

Q And how long have you been a member of this society?

A I would have to look it up. It was roughly 15 to 20 years before I resigned.

Q Okay. And what did your membership involve?

A Oh, at that point, really just membership and discussions going -- well, actually, technically, too, I suppose. One was participation, largely in their -- in their Listsery discussions with – with other sex researchers. And the other, I was on the editorial board of their journal, the Journal of Sex Research.

[286]

Q And so am I understanding it correctly that you had to be a member in order to access the Listsery for the Society for the Scientific Study of Sexuality?

A Yes, the Listsery was meant for members.

Q Okay. And you said that you resigned from the society; is that correct?

A That is correct.

Q When did you resign?

A I would have to look up the date. It was roughly two or three years ago now.

Q Okay.

COUNSEL SWAMINATHAN: I'm going to introduce tab 22, which has been marked as Exhibit 30 – or 63.

(Exhibit 63 was marked for identification by the court reporter and is attached hereto.)

BY COUNSEL SWAMINATHAN:

Q Please let me know when you're able to see it.

A Got it.

Q Great. And so this is a blog post in Sexology Today!; correct?

A Yes, it is.

Q And remind me again, what -- what is **[287]** Sexology Today!?

A It's my blog.

Q It's your blog. Okay.

And this blog post was published on August 10th, 2020; correct?

A Yes, that's correct.

Q And I'm not going to assume, but since it's your blog, I assume you authored this blog post; right?

A Yes.

Q Okay. And so I see here that you had a 27-year association with the Society for the Scientific Study of Sexuality.

Does that ring a bell?

A Yes. Longer than I remember.

Q And I see here that the society had removed you from the online forum; is that right?

A That's right.

Q It says (as read):

"I then received an unsigned email informing me that I had been suspended from the listserv."

Did I read that correctly?

A I'm not seeing that line, but it sounds familiar.

[288]

Q Apologies. It's toward the middle of the page. I think the fourth paragraph down.

A Yes.

Q Okay. Why were you removed from -- or why were you suspended from the Listserv?

A That's a good question. There's the reason they gave me, and there's the reason that everybody suspects, but nobody will say out loud.

Q Can you describe that a bit more?

A They believe -- or they told me that what I said they deemed to be disrespect- -- disrespectful.

Q What did you say that they deemed to be disrespectful?

A I sincerely don't remember.

Q Did -- to your recollection, did what you said -- did what you say deal with issues relating to transgender people or gender-dysphoric people?

A Yes. We were debating something about the science or findings that were reported in the science and whether it matched up with whatever it was somebody else was saying. That led to a – and that led to a debate. I don't remember without, you know, going back through my old e-mails exactly what it -- what it was.

Q Got it. Can you turn to the next page of the **[289]** exhibit, please?

A Got it.

Q Okay. And there's a footnote 1 at the bottom of the page. Can you please review that footnote?

A Yes.

Q So this is an e-mail that you received from the board of directors?

A Yes, it is.

Q Is the paragraph under the first sentence, the one beginning with "Nasty, discourteous, unkind, uncivil, attacking, inappropriate, unprofessional, harassing, threatening, hateful, racist, sexist, homophobic, erotophobic, derogatory, or objectionable remarks or jokes that might be offensive to other people, abusive, defamatory, libelous, pornographic, obscene, invasive of another's privacy, or otherwise torturous or un- - - torturous or unlawful messages will NOT be deemed appropriate. Courtesy is highly valued" -- is what I just read one of the Listserv's guidelines?

A Yes, I believe it is.

Q And did the Society for the Scientific Study of Sexuality believe that you violated one of these guidelines?

A There's no way to know what the society **[290]** thought. The board of directors voted that I did, but the enormous debate and the other resignations from the society at the -- at the same time suggested that was not the opinion of the society; it was just -- whichever relevant members of the board.

Q Does this e-mail reflesh -- refresh your recollection of what opinion you expressed that caused them to suspend your membership from the Listserv?

A No, it doesn't. I didn't express -- I never expressed anything on that Listsery that I hadn't expressed in many other venues, including with other professionals, with other sex researchers.

Q And so can you please look at the next page, at footnote 3?

And I believe footnote 3 spans three pages, from 3 of 9 to 5 of 9, of the exhibit.

And this looks like it's an e-mail from you to the Society of Scientific Study of Sexuality members dated July 20th, 2020, at 4:48 p.m.; is that correct?

A That time is correct. But, no, I did not write that.

Q This is not your e-mail?

[291]

A Footnote -- in footnote 3, no, it is not.

Q Whose e-mail is this?

A Zoe Peterson, then-president of quad S.

Q Okay. And --

A I believe she signed it at -- yes, that's her signature at the bottom of it.

Q Great. And so this e-mail was written by Zoe Peterson in response to your resignation from the society and your suspension from the Listserv?

A I hesitate to say what she wrote – I hesitate to say that she wrote it in response to me. I think she wrote it in response to the enormous discussion on the list that happened, saying that the society disagreed with what the board did in banning me from the Listserv.

Q I see. Okay.

And so this e-mail did go out after you were banned from the Listserv; right?

A Correct. Some of the other members continued to forward to me relevant e-mails about the debate that was going on which I then couldn't see.

Q Okay. And if you look at page 4 of the exhibit, at the bottom of the page.

A Yes.

Q There's a paragraph starting with "Finally, **[292]** and most importantly, to our transgender, non-binary, and gender nonconforming members who raised this issue and who have expressed that they have felt -- they have long felt hurt, disrespected, marginalized, and unprotected on our listsery and within our organization, I hear you and I thank you for sharing your experiences and reactions with such honesty and courage."

Do you see that?

A Yes, I do.

Q Do you know why Zoe Peterson included that in her e-mail?

A I assume that she was trying to demonstrate that people who were resigning should stop resigning and that she was on what she considered to be the politically correct avenue.

Q So when she says "Finally, and most importantly, to our transgender, non-binary, and gender nonconforming members who raised this issue," what issue is she talking about?

A That's a very good question.

Q Do you know the answer to that question?

A No, I don't.

Q Do you have any understanding that may inform what the issue that she is referring to may be?

[293]

A No. My experience is that people are misrepresenting issues and exaggerating them in order to come out with whatever political outcome they want. It is exactly because this is so vague that I can't come to any other conclusion but that this is another one of those.

Q So is it your testimony that this response from Zoe Peterson was not in reaction to your suspension from the Listserv?

A That's not exactly --

MR. BARHAM: Objection as to form.

THE WITNESS: That's not exactly true either. We had a long chain of events, each leading to the next, leading to the next, leading to the next. So there's an association, but not a direct association. And I have no

reason to think that she was writing to me. And she's a politician, president of the organization. I also can't easily discount that she's writing it for purely political purposes and the content -- I -- I -- I can't know how much she genuinely believes the content.

BY COUNSEL SWAMINATHAN:

Q So can you tell me more generally what the chain of issues was about?

A No. I honestly can't recall. I'm in many, **[294]** many debates on many, many different Listservs over the years, and I can't any longer recall which particular issue sparked this particular debate.

Q And you said that Zoe Peterson is a politician because she's the president of the Society for the Scientific Study of Sexuality. Why did you --

A She --

Q -- say that?

A She's writing as a politician, in her political capacity.

Q What is her political capacity as president for the Society for the Scientific Study of Sexuality?

A I don't understand that question outside of -- you answered it exactly within the question.

Q I guess I'm just trying to understand what makes Zoe Peterson a politician beyond her title as president of the society.

A That she is in charge of ensuring that the board of directors has sufficient respect in order to run the organization. They were losing an enormous amount of respect over their treatment of me, and she was trying to shore up what she could.

Q How did you know that they were losing an **[295]** enormous amount of respect as a result of your ban from the Listsery and your resignation?

A Oh, dozens and dozens and dozens of people were e-mailing me directly immediately afterwards. They were saying things to the list. Even though I couldn't see the list, they were cc'ing me on their responses so I could see it as they were sending it, as people --

Q You said --

A -- people who resigned.

Q Apologies, I interrupted your answer. Please continue.

A As people were resigning from the organization, they were e-mailing me to let me know that they were resigning from the organization.

Q You say dozens and dozens and dozens, does that mean about 36 people?

A Oh, again, I couldn't count. Somewhere on the order of under 50 would -- seems about – feels about right.

Q Did any members disagree with you in the Society for the Scientific Study of Sexuality?

A That I recall, three or four people who were post- -- if that many -- who were posting during the debate itself.

[296]

Q Do you remember the names of those individuals?

A No, I don't.

Q And how many members were are the society, in total?

A That's a good question. Only a relatively small number of members are on the Listserv, only a small number of those who are on the Listsery ever participate in the Listserv, but I don't know the numbers of each of those categories.

Q How many members would you say actively participate on the Listserv?

A I'd guess about a hundred.

Q Okay. And so of those hundred, you say only three or four of them would agree with your retracted access to the Listserv; is that correct?

A Well, no.

MR. TRYON: Objection.

THE WITNESS: We weren't disagreeing over my access to the Listserv; we were disagreeing over whatever scientific issue it was that we were disagreeing over.

BY COUNSEL SWAMINATHAN:

Q Were there folks who were in support of your resignation and your removal from the Listserv?

[297]

A The only ones I heard about were the people that Zoe Peterson referred to. I never knew their names. I don't know who reported me to whom, under what circumstances, the number of people.

Q Okay. And so if we -- so sitting here today, you're -- you're not aware of what the issue was that caused?

A I don't recall, no.

Q Okay. And remind me again -- so you said Sexology Today! is your blog; right?

A That's correct.

Q Do you control all the content of Sexology Today!?

A Yes, I do. Except sometimes people post comments.

Q So the actual blog posts are all your writing, but the comments came from other people; is that correct?

A Yes, that's correct.

Q Okay. About how many blog posts have you offered on Sexology Today!?

A Oh, 20ish, maybe.

Q And when did you start your website?

A Maybe 15 years ago.

Q And so why did you feel the need to write **[298]** this open letter of resignation from the Society for the Scientific Study of Sexuality on your blog post?

A Oh, because they were failing at their – at their own mission. I was promoting science. Again, I don't remember which particular issue within it, but it was science -- it was what was being shown in the science despite whether anybody else liked what was being shown in the science. By blocking me and what I was saying, they were blocking the progress of science -- of science itself and the purpose of the organization.

Q And I understand that you can't remember the incident that led to your resignation and your banning from the Listserv, but do you believe that you made any statements that would have been perceived as offensive to any members of the society?

A I can't automatically collapse together what is offensive and what is called offensive. I sincerely don't believe and I don't think that any objective observer would

label anything that I had ever said as offensive, but that's very different from whether somebody would call it offensive in order to keep me from saying it because they didn't like its implications.

[299]

Q I understand. So it's possible that they either didn't like your implications of what you said or they were actually taking offense with what you had said; is that correct? Those -- those are two plausible reactions?

MR. TRYON: Objection to the form of the question.

THE WITNESS: Yes, both of those are at least theoretically possible.

BY COUNSEL SWAMINATHAN:

Q Okay. And so, you know, we were talking earlier about what you understand gender-affirming care to mean versus how I use the phrase.

So it your opinion that the word "transition" can only be applied in the healthcare setting?

A It depends on the context. It is relatively recent that social transition has come to be called transition at all. So if one is reading older posts, older papers, older words, "transition" usually would refer to somebody who has embarked in a recognized program and is going through steps.

When -- people use the word "transition" today much, much more broadly.

Q Okay. And so as you sit here today, is it your understanding that the words -- the word **[300]** "transition" should only be applied in the healthcare setting?

MR. TRYON: Objection.

MR. BARHAM: Objection --

MR. TRYON: Objection.

MR. BARHAM: Objection as to form.

THE WITNESS: I can't say that I have any opinion about how it should be used. The only important criterion to me is that a term, any term, is used consistently and concretely and objectively -- and as objectively as possible.

If "transition" is going to continue to mean something very, very broad, then we are, once again, going to need a term to refer to the more specific situations, as long as we're involved in those specific situations.

BY COUNSEL SWAMINATHAN:

Q And, Dr. Cantor, what is your understanding of a competitive sport?

MR. BARHAM: Objection as to form and scope.

MR. TRYON: I also object.

THE WITNESS: I would have to say that I really have no understanding of "competitive sport" other than a layperson's.

///

[301]

BY COUNSEL SWAMINATHAN:

Q Do you have any understanding of what a physical advantage is in a sport?

MR. TRYON: Objection.

MR. BARHAM: Objection to form and scope.

THE WITNESS: Again, I know the particular terms in the same way that any -- that the lay public would, but when questions -- when questions are posed or an issue is -- arises where there is a quantitative or numeric answer to it, I now have a level of expertise for analyzing those statistics for answering the question that other people don't.

BY COUNSEL SWAMINATHAN:

Q Has anyone ever posed that question to you before me today?

A Not in a formal context, no.

Q Would you be able to tell me what your understanding is of a physical advantage in a competitive sport, as you sit here today?

MR. TRYON: Objection; scope and form.

MR. BARHAM: Same.

THE WITNESS: Too var- -- any variable that has a causal relationship with the outcome of how that sport is -- is evaluated.

///

[302]

BY COUNSEL SWAMINATHAN:

Q And do you agree that there are some competitive sports teams where physical size is an advantage?

A That would certainly seem so, yes.

Q Okay.

COUNSEL SWAMINATHAN: I'm going to introduce tab 23, which will -- which was previously marked as

Exhibit 49. And the article is another blog post from Sexology Today! titled "When is a 'TERF' not a TERF?"

THE WITNESS: Got it.

BY COUNSEL SWAMINATHAN:

Q Great. And you authored this article in July of 2020; correct?

A Correct.

Q And in this article, you write -- and I'll turn your attention to the middle of the post. It says (as read):

"I must first challenge the ironically binary premise that 'exclusion' is all or none. It's only in the current climate of extremism that no moderate views get discussed. Here is a range of some **[303]** areas in which sex/gender require protection:"

And you list employment, housing, public accommodation, with ellipses, locker rooms/showers, with nudity, and in parentheses, sauna, hottub, ellipses, close parentheses, locker room/washrooms, sex segregated. And the final item you list is competitive sports team, where physical size is an advantage.

Did I read that correctly?

A Yes.

Q Great. And so in this blog post, you say that sex/gender require protection in competitive sports teams where physical size is an advantage; is that correct?

A I offered it as more of an example of – of an extreme on a range, but it's hard to think of something that would be even more extreme than that, yes.

Q Is it your belief that cross-country is a sport where physical size is an advantage?

MR. TRYON: Objection; scope.

THE WITNESS: I don't know. I would have to -- I haven't read that part of the literature.

///

[304]

BY COUNSEL SWAMINATHAN:

Q Have you seen any evidence that shows that physical sides provide -- physical size provides an advantage in cross-country?

MR. TRYON: Objection; scope.

MR. BARHAM: Objection.

THE WITNESS: No, I haven't read those studies.

BY COUNSEL SWAMINATHAN:

Q Okay. Sitting here today, do you have any opinion whether or not the plaintiff in this case, B.P.J., should be allowed to run on the girls' cross-country team?

MR. BARHAM: Objection as to scope and form.

MR. TRYON: Same objection.

THE WITNESS: I have no opinion in the actual outcome.

COUNSEL SWAMINATHAN: Okay. I think this is a good point for a break. I'm just going to confer with my co-counsel and see if we have anything else left to discuss with Dr. Cantor.

But does regrouping at 5:120 work -- sorry -- 5:20 work for everyone, a ten-minute break?

MR. BARHAM: Sure.

COUNSEL SWAMINATHAN: Go off the record.

[305]

THE VIDEOGRAPHER: Yep. We're going off the record. The time is 5:10 p.m., and this is the end of Media Unit No. 6.

(Recess.)

THE VIDEOGRAPHER: All right. We are back on the record at 5:26 p.m., and this is the beginning of Media Unit No. 7.

Go ahead, please.

BY COUNSEL SWAMINATHAN:

Q Dr. Cantor, I'm going to ask you to take a look back at your 2022 expert report, page 3.

A I'm sorry, what page again?

Q Page 3.

A Got it.

Q Great. And before we conclude today, I just to confirm that you are offering no opinions beyond the principal opinions that you on this page of the report and the paragraph at the bottom of the page.

Is that accurate?

A Yes, it is.

Q Great.

COUNSEL SWAMINATHAN: Thank you so much for your time, Dr. Cantor.

I have no further questions right now. I'll tender the witness, but reserve my right to ask **[306]** questions should defense counsel ask questions.

So thank you so much.

EXAMINATION

BY MR. BARHAM:

Q I do have a few quick questions for you, Dr. Cantor.

I want to refer to your expert report and page 32 of your CV. Unfortunately, I don't know which page that is in the deck.

THE WITNESS: It's the last page of it, is it?

BY MR. BARHAM:

Q Correct.

A Goodness, next life, I get a shorter career. Here we go.

Q Earlier today, when we were discussing your expert testimony, were you referring -- did you have this page in front of you at the time?

A No, I did not.

Q On here, there is a 2019 case in probate and family court, a custody hearing in Boston, Massachusetts.

Do you see that line on page 32?

A Yes, I do.

[307]

Q Could you describe the general issue involving your expert testimony in that case?

A Yes. Two women, a lesbian couple, were divorcing. They had joint custody of their child whom they were fighting over. The child had gender dysphoria. Now it's a female. One parent believed that the child should transition; the other parent did not.

Q Earlier today, we were also discussing the instances in which you have provided care for transgender individuals.

Is it the case that you have only provided care for transgender individuals in your current clinic?

A No. I was also providing care while I was at CAMH.

COUNSEL SWAMINATHAN: Can I just interrupt you for one quick second, Dr. Cantor?

Travis, I'm having trouble hearing you.

MR. BARHAM: Oh, I apologize.

COUNSEL SWAMINATHAN: If you could get closer to the mic, I would greatly appreciate that.

And sorry, again, to disrupt.

MR. BARHAM: Court Reporter -- is the court reporter having similar issues, or have we been able [308] to get all those questions into the transcript?

THE REPORTER: I've been able to get them all. It is a little bit difficult to hear you, though.

MR. BARHAM: I apologize. I slid too far over to my binder.

THE REPORTER: Thank you.

MR. BARHAM: I will address that.

THE REPORTER: Thank you.

BY MR. BARHAM:

Q Dr. Cantor, we also were earlier discussing the different types of gender dysphoria, adult onset, adolescent onset and childhood onset. If we're dealing with -- if you're confronted with an individual in, say, his early -- his or her early 20s who is experiencing gender

dysphoria, which category would that individual likely fall into? What -- what categories would be possible?

A Both categories are possible. Early 20s, the adult onset would be more likely, but we can't be quite as sure today as we could, say, 10, 15 years ago. But they're -- until relatively recently, the children who came in were children, prepubescent, and the adults who came in were generally middle-aged. We didn't get anybody coming in during **[309]** their teens or 20s. And so the nicknames for these -- for these two groups simply became child onset and adult onset.

As years have gone on and more people started presenting, there's now a little bit more overlap in between.

So when age can't be used in order to provide very obvious categorization -- if somebody comes in clinically, we would start ask -- asking other questions that -- that would tell us what group they belong to, such as their sexual interest patterns, whether they were attracted to men, women, both and so on.

Q And when you said a moment ago that both categories would be possible, what are the two categories that you had in mind?

A It's possible that the --

COUNSEL SWAMINATHAN: Objection to the form.

THE WITNESS: It's possible that the person would be an adult-onset case, but coming into a clinic relatively early, especially now that trans issues are talked about so much more. Or as a childhood-onset case who didn't come in for the medical or other -- other care until atypically late.

[310]

MR. BARHAM: All right. I believe those are all the questions I need to ask.

Mr. Tryon, do you need to supplement?

MR. TRYON: Maybe I could ask just one question, Mr. -- Dr. Cantor.

EXAMINATION

BY MR. TRYON:

Q So in the event that you were to determine that someone in that age category, who was a college student, were suffering from adult-onset dysphoria, would then adult-onset dysphoria become relevant in connection with the statute which we have in place here, which we are discussing here?

COUNSEL SWAMINATHAN: Objection to form.

THE WITNESS: Yes, it would become relevant.

MR. TRYON: I have no other questions.

MS. DUPHILY: Should we go off the record?

COUNSEL SWAMINATHAN: Sounds great.

THE VIDEOGRAPHER: All right.

MR. BARHAM: Does this conclude the deposition, or are we taking a break?

THE VIDEOGRAPHER: This --

COUNSEL SWAMINATHAN: It concludes our questioning from plaintiff's side.

[311]

THE VIDEOGRAPHER: Everybody's had a chance; otherwise, we'll --

MS. GREEN: Actually -- this is Roberta Green on behalf of WVSSAC, and I would just like to note for the record that we have no questions.

THE VIDEOGRAPHER: Okay.

MR. CROPP: This is Jeffrey Cropp for the Harrison County Board of Education and Dora Stutler.

We have no questions.

THE VIDEOGRAPHER: Okay.

MS. MORGAN: This is Kelly Morgan on behalf of the West Virginia Board of Education and Superintendent Burch. I don't have any questions.

Thank you.

THE VIDEOGRAPHER: Okay. I think that's everyone now. So with -- with that, I will take us off the record.

Okay. We are off the record at 5:33 p.m., and this ends today's testimony given by Dr. Cantor. The total number of media used was seven and will be retained by Veritext Legal Solutions.

(TIME NOTED: 5:33 p.m.)