No. 18-658

In the Supreme Court of the United States

JOEL DOE ET AL.,
Petitioners,
v.
BOYERTOWN AREA SCHOOL DISTRICT ET AL.,
Respondents,
and
PENNSYLVANIA YOUTH CONGRESS FOUNDATION,
Respondent-Intervenor.

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

BRIEF OF *AMICI CURIAE* DRS. MIRIAM GROSSMAN, PAUL HRUZ, MICHAEL LAIDLAW, QUENTIN VAN METER, ANDRE VAN MOL IN SUPPORT OF PETITIONER

Parker Douglas
Counsel of Record
2057 Lakeway Drive
Holland, MI 49423
(801) 699-7746
parkerdouglas66@gmail.com

Counsel for *Amici Curiae*

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INTEREST OF *AMICI CURIAE*[1]

Amicus curiae Miriam Grossman holds an M.D. from New York University, where she interned in pediatrics, had a residency in adult psychiatry, and a fellowship in child and adolescent psychiatry. Dr. Grossman then worked at the Student Psychological services at UCLA for twelve years and in that capacity evaluated and treated students who were conflicted about their gender identity. She subsequently joined the Vista Del Mar clinic in Los Angeles, and in her private practice cares for patients who struggle with their identity as male or female.

Amicus curiae Paul W. Hruz, M.D., Ph.D. is Associate Professor of Pediatrics and immediate past Chief of Pediatric Endocrinology at Washington University School of Medicine. He also holds an appointment as Associate Professor of Cell Biology and Physiology. Dr. Hruz is an active member of the Washington University Disorders of Sexual Development ("DSD") Interdisciplinary Team. Over the past twenty years, Dr. Hruz has participated in the care of hundreds of youths with DSDs.

Amicus curiae Michael K. Laidlaw, M.D. is board certified in Endocrinology, Diabetes, and Metabolism. He works in private practice and is a contributing member of the international, professional work group

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[1] Pursuant to Rule 37.6, *amici* state that this brief was not authored in whole or in part by counsel for any party, and no person or entity other than *amici* and their counsel made a monetary contribution to the preparation or submission of this brief. In accordance with this Court's Rule 37.2, all parties were timely notified of *amici's* intent to file this brief and have provided their consent.

on childhood and adolescent gender dysphoria gdworkinggroup.org.

Amicus curiae Quentin L. Van Meter, M.D. is a board certified Pediatric Endocrinologist in private practice in Atlanta, Georgia, with extensive training in issues of transgender health over the past 40 years. Dr. Van Meter is currently President of the American College of Pediatricians, fellow of the Endocrine Society, member of the Pediatric Endocrine Society and the Endocrine Society. He has held positions as Associate Clinical/Adjunct Professor of Pediatrics at Emory University School of Medicine and the Morehouse Medical College.

Amicus curiae Andre Van Mol, M.D., is a Family Physician and Co-chair of the Committee on Adolescent Sexuality for the American College of Pediatricians.

Amici critically evaluate, based on their clinical and scientific expertise, the Third Circuit's assumptions in its decision, which have as a fundamental creed that "gender-affirming" policies and practices for students who identify as a gender that is different from their biological sex is both beneficial to students and an important governmental interest.

Amici do not in this Brief address what might be the central privacy issue in this case: the considerable distress some youth may experience if they are exposed in a bathroom, shower, or locker room to someone who identifies as being of her or his sex, but who is, according to all appearances, a member of the opposite sex. *Amici* instead focus on the youth that

policies – adopted in the reasoning of the Third Circuit – are intended to help: youth who are "transgendered" in that they have an insistent, persistent and consistent identification as the opposite sex. *Amici* do so because the assumptions inherent in the Third Circuit's opinion regarding how best to help transgender youth are mistaken at best, actually have no basis in science or fact, and are often harmful to the very youth the Third Circuit holds are helped by the court-endorsed "governmental interest".

Amici consider the medical and scientific evidence bearing upon the question: Does the Third Circuit's ruling help or harm these vulnerable and needy children?

SUMMARY OF ARGUMENT

Amici are physician-scientists who do not hold themselves out as experts in any area of the law. For instance, they proffer no account of what was being debated at the time of the passage of Title IX and its ban upon sex discrimination. *Amici* leave the legal arguments to others.

Amici nonetheless observe that the legal issues in this lawsuit center upon the meaning of the term sex in Title IX, added in 1972 to the federal Civil Rights Acts. *Amici* further observe that, for the duration of their long professional careers the term sex has almost invariably referred to one being male or female in the objective, biological sense. *Amici* note too that the term *gender* came into use to indicate something quite different from *sex* – namely, a society's expectations for how males and females should

behave. *Sex* is innate, fixed, and binary; *gender* is a fluid cultural construct.

With that background in mind, *amici* possess scientific expertise that may be of assistance to the Court in evaluating the Third Circuit's conclusory reasoning regarding both sex and gender. The Third Circuit correctly observed that: "Sex is determined at birth based on the appearance of external genitalia." App. 254a. It also correctly noted that what has come to be known as "gender identity" is a "subjective deep-core sense of self as being a particular gender." *Id.*

However, the Third Circuit's other conclusions are without solid scientific foundation when the court notes: "Policies that exclude transgender individuals from privacy facilities that are consistent with the [self-diagnosed] gender identities have detrimental effects on the physical and mental health, safety, and well-being of transgender individuals." App. 256a. While it is true that such persons may experience some stress, there is no credible evidence to suggest that those persons' overall mental-health is fortified by simply affirming gender dysphoria; as *amici* describe, the exact opposite is shown by the credible science available. Thus, there is no credible scientific support for the Third Circuit's conclusion that allowing choice of locker room access to youths experiencing gender dysphoria exacerbates those youths' mental-health issues. App. 257a.

Amici do not claim to know exactly how or why the Third Circuit came to so thoroughly confuse *sex* and *gender* (or to transpose them, as if gender was innate and fixed at birth, while sex was malleable and the body configurable to one's sense of gender identity).

But this confusion is surely founded, at least in part, upon a host of mostly unsupported pseudo-scientific studies that have little or no evidentiary support.

It seems true that *gender* is culturally defined. Currently in the United States, it is defined as a persistent identification with a set of norms promoted by society as the behaviors, attitudes, and preferences associated with each *sex*. The definition is not biological. Choosing a *gender* – i.e., deciding to live as one sex or the other – neither is caused by nor causes any biological changes. There is no credible scientific literature that suggests that a person's choice of gender affects their biology in any way, or the objective biological reality that one is male or female.

There is no doubt that some humans, including some youth in this case, experience disquiet with their sex. They struggle with the project of identifying with their sex. Some feel a distressing and persisting incongruity between their sex and their sense of themselves as male or female. But no matter how disturbing this condition of gender dysphoria may be, nothing about it affects the objective reality that those suffering from it remain the male or female persons that they were at conception, at birth, and thereafter – any more than an anorexic's belief that she or he is overweight changes the fact that she or he is, in reality, slender.

In this Brief, *amici* leave aside all questions about how best to treat gender dysphoria in adults. *Amici* focus instead on how to treat adolescents, like those the Third Circuit's policy observations cover, who suffer from this psychological disorder. Specifically, *amici* critically evaluate the scientific basis, if any, for

the gender-affirming policies the Third Circuit has required and endorsed.

According to the court below, school districts are authorized by law to treat students in accordance with their asserted *gender* identity instead of their biological *sex*. There is, however, no scientific evidence that such a gender-affirming mandate helps youths it aims to help.

In fact, and to the contrary, there is abundant scientific evidence that: (1) the Third Circuit's endorsed policy rationale does none of the youths it is meant to serve any real or lasting good; (2) rather, it harms the vast majority of them; and (3) it leads to catastrophic outcomes for many such youths.

Amici conclude, based upon decades of academic study and clinical experience in the fields of psychiatry, psychology, and the biological bases of both of those fields, that the Third Circuit has mandated a scientifically unwarranted, dangerous experiment upon our nation's youth, with no apparent consideration of its far-reaching implications.

ARGUMENT

I. A Child's Gender Identity Has No Bearing on His or Her Sex.

Sex and *gender* represent two very distinct features of our world. While *sex* is binary and objective, determined fundamentally by one's chromosomal constitution, and ultimately by clearly defined reproductive capacities, *gender* is a subjective sense of a social role generated by cultural norms. The Third Circuit endorsed, as a foundational

governmental interest, that it is beneficial that some students' self-assessment of her or his subjective sense of herself or himself – i.e., her or his gender identity – should be accepted as her or his actual sex. App. 270a-271a. That is simply not the case, and it is a mistaken and harmful premise.

The central underlying basis for sex is the distinction between the reproductive roles of males and females. *See* Lawrence S. Mayer and Paul R. McHugh, "Sexuality and Gender: Findings from the Biological, Psychological, and Social Sciences," New Atlantis, (Fall 2016) at 89-90. In biology, an organism is male or female if it is biologically and physiologically designed to perform one of the respective roles in reproduction. This definition does not depend upon amorphous physical characteristics or behaviors; nor does it hinge upon what an organism considers its sex to be, as in fact it simply requires and depends upon understanding the reproductive system and its processes.

Reproductive roles provide the conceptual basis for the differentiation of animals into the biological categories of male and female. There is no other widely accepted biological classification for the sexes. Sex is a physiological reality which permeates every cell of an organism containing a nucleus. Sex is thus innate and immutable; the genetic information directing development of male or female gonads and other primary sexual traits, which normally are encoded on chromosome pairs "XY" and "XX," are present immediately upon conception. As early as eight weeks' gestation, endogenously produced sex hormones cause prenatal brain imprinting that

ultimately influences postnatal behaviors. *See* Francisco I. Reyes *et al*., *Studies on Human Sexual Development*, 37 J. of Clin. Endocrinology & Metabolism 74-78 (1973); Michael Lombardo, *Fetal Testosterone Influences Sexually Dimorphic Gray Matter in the Human Brain*, 32 J. of Neuroscience 674-80 (2012); P.C. Sizonenko, *Human Sexual Differentiation*, Geneva Foundation for Medical Education and Research (2017).[2] It is therefore not the reproductive system alone that carries one's sexual identity. Every cell in the body containing a nucleus is marked with a sexual identity by its chromosomal constitution XX or XY. Thus, sex is not "assigned" at birth; rather, it "declares itself anatomically in utero and is acknowledged at birth." Michelle A. Cretella, *Gender Dysphoria in Children and Suppression of Debate*, 21 J. of Am. Physicians & Surgeons 50, 51 (2016).

In contrast, *gender* has come to refer to "the socially constructed roles, behaviors, activities, and attributes that a given society considers appropriate for boys and men or girls and women," which "influence the ways that people act, interact, and feel about themselves." American Psychological Association, *Answers to Your Questions About Transgender People, Gender Identity and Gender Expression* (2011).[3] A child's *gender* reflects the extent to which he or she conforms to or deviates from

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[2] Available at: http://www.gfmer.ch/Books/Reproductive_health/Human_sexual_differentiation.html

[3] Available at: http://www.apa.org/topics/lgbt/transgender.pdf

socially normative behavior for young males or females.

When it is defined in this manner, gender can seem mercurial. There is no objective definition for what it means to behave like a boy or a girl. Moreover, what is considered gender-typical behavior for boys and girls changes over time within a given culture[4] and varies between cultures. A girl who behaves like a "tomboy" may modify her behavior as she ages, and a boy who prefers quiet play imitating the domestic may eventually develop an interest in sports or hunting. Consequently, gender is a fluid concept with no truly objective meaning. Judith Butler, *Gender Trouble: Feminism and the Subversion of Identity* 6-7 (1990) (stating that "[g]ender is neither the causal result of sex nor as seemingly fixed as sex," but rather "a free-floating artifice, with the consequence that *man* and *masculine* might just as easily signify a female body as a male one, and *woman* and *feminine* a male body as easily as a female one") (emphases in original). Thus, nouns possess a *gender*; people possess given *sex*. *Id.* Gender is not simply a fluid perception; it also represents rules or grammar morphed onto false perceived categories of human beings. *See id.* And language may serve distinctly

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[4] Just a few decades ago, in the United States it would have been atypical for women to attend law school or medical school. It is projected that women will outnumber men in law schools in 2017. Debra Cassens Weiss, *Women Could Be a Majority of Law Students in 2017; These Schools Have 100-Plus Female Majorities*, ABA Journal, Mar. 16, 2016.

Available at:
http://www.abajournal.com/news/article/women_could_be_majority_of_law_students_in_2017_these_schools_have_100_plus.

ideological purposes untethered from scientific empirical data, as described *infra* and *supra*.

II. *Gender Dysphoria* Is a Psychological Disorder Distinguished by Confused and Distressed Thinking About the Reality of One's Sex.

A gender dysphoric youth – such as the ones in this case using locker rooms of their self-reported gender, as opposed to their sex[5] – experiences a sense of incongruity between the gender expectations linked to her or his biological sex and her or his biological sex itself. Tomer Shechner, *Gender Identity Disorder: A Literature Review from a Developmental Perspective*, 47 Isr. J. of Psychiatry & Related Sci. 132-38 (2010). As noted by one of the most judicially relied upon authorities regarding the science of mental states, gender dysphoric boys subjectively feel as if they are girls, and gender dysphoric girls subjectively feel as if they are boys – according to their sense of what that feeling of being a member of the opposite sex must be like. *See* American Psychological Association, *Diagnostic & Statistical Manual of Mental Disorders* [hereinafter, "DSM-5"] 452 (5th ed. 2013).

Yet subjective feelings, strong as they may be, cannot constitute (or transform) objective reality. Cretella, *supra*, at 51 ("[T]his 'alternate perspective' of an 'innate gender fluidity' arising from prenatally 'feminized' or 'masculinized' brains trapped in the wrong body is an ideological belief that has no basis in rigorous science."); J. Michael Bailey and Kiira Triea, *What Many Transsexual Activists Don't Want You to*

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[5] App. 7a-8a, 11a,24a, 44a, 72a-73a.

Know and Why You Should Know It Anyway, 50 Perspectives in Biology & Med. 521-34 (2007) (finding little scientific basis for the belief that male-to-female transsexuals are women trapped in men's bodies). A gender dysphoric girl is not a boy trapped in a girl's body, and a gender dysphoric boy is not a girl trapped in a boy's body.[6] The students treated in the Third Circuit's opinion retain their sex no matter their beliefs.

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[6] Studies of brain structure and function have not demonstrated any conclusive, biological basis for transgendered identity. *See* Giuseppina Rametti *et al.*, *White Matter Microstructure in Female to Male Transsexuals Before Cross-sex Hormonal Treatment. A Diffusion Tensor Imaging Study*, 45 J. of Psychiatric Res. 199-204 (2011) (offering no evidence to support the hypothesis that transgenderism is caused by differences in the structure of the brain); Giuseppina Rametti *et al.*, *The Microstructure of White Matter in Male to Female Transsexuals Before Cross-sex Hormonal Treatment. A DTI Study*, 45 J. of Psychiatric Res. 949-54 (2011) (same); Emiliano *Santarnecchi et al.*, *Intrinsic Cerebral Connectivity Analysis in an Untreated Female-to-Male Transsexual Subject: A First Attempt Using Resting-State fMRI*, 96 Neuroendoctrinology 188-93 (2012) (in a study of brain activity, finding that a transsexual's brain profile was more closely related to his biological sex than his desired one); Hans Berglund *et al.*, *Male-to-Female Transsexuals Show Sex-Atypical Hypothalamus Activation When Smelling Odorous Steroids*, 18 Cerebral Cortex 1900-08 (2008) (in a study of brain activity, finding no support for the hypothesis that transgenderism is caused by some innate, biological condition of the brain). Some researchers believe that transgenderism can be attributed to other biological causes, such as hormone exposure in utero. *See*, *e.g.*, Nancy Segal, *Two Monozygotic Twin Pairs Discordant for Female-to-Male Transsexualism*, 35 Archives of Sexual Behav. 347-58 (2006) (examining two sets of twins and hypothesizing, without evidence, that uneven prenatal androgen exposures led one twin in each set to be transsexual). Presently, no scientific evidence supports that conclusion.

III. There is No Scientific or Medical Support for Treating Gender Dysphoric Children in Accordance with Their *Gender Identity* Rather than Their Sex.

In standard medical and psychological practice, a youth who has a persistent, mistaken belief that is inconsistent with reality is not encouraged in his or her belief. *See* Cretella, *supra*, at 51 (listing other similar such conditions); Anne Lawrence, *Clinical and Theoretical Parallels Between Desire for Limb Amputation and Gender Identity Disorder*, 35 Archives of Sexual Behavior 263-78 (2006) (finding similarities between body integrity identity disorder and gender dysphoria). For instance, an anorexic child is not encouraged to lose weight. He or she is not treated with liposuction; instead, he or she is encouraged to align his or her belief with reality – i.e., to see himself or herself as he or she really is. Indeed, this approach is not just a good guide to sound medical practice. It is common sense.

Until quite recently these considerations predominated in how gender dysphoric children were treated. Dr. Kenneth Zucker, long acknowledged as one of the foremost authorities on gender dysphoria in children, spent years helping his patients align their subjective gender identity with their objective biological sex. He used psychosocial treatments (talk therapy, family counseling, etc.) to treat gender dysphoria and had much success.[7] *See* Cretella, *supra*,

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[7] In a follow-up study by Dr. Zucker and colleagues of children treated by them over the course of thirty years at the Center for Mental Health and Addiction in Toronto, they found that gender dysphoria persisted in only three of the twenty-five

at 51 (describing Zucker's work); Kenneth J. Zucker *et al.*, *A Developmental, Biopsychosocial Model for the Treatment of Children with Gender Identity Disorder*, 59 J. of Homosexuality 369-97 (2012).

Dr. Zucker's eminently sound practice is anchored by recognition of the ineradicable reality that each child is immutably either male or female. It is also influenced by the universally recognized fact that gender dysphoria in children is almost always transient: the vast majority of gender dysphoric youth naturally reconcile their gender identity with their biological sex. All competent authorities agree that between 80 and 95 percent of children who say that they are transgender naturally come to accept their sex and enjoy emotional health by late adolescence. *See*, *e.g.*, Peggy Cohen-Kettenis *et al.*, *The Treatment of Adolescent Transsexuals: Changing Insights*, 5 J. of Sexual Medicine 1892, 1893 (2008). The American College of Pediatricians, for example, recently concluded that as many as 98 percent of gender-confused boys, and 88 percent of gender-confused girls, naturally resolve.[8] *See also* DSM-5, *supra*, 455.

Traditional psychosocial treatments for gender dysphoria, such as those employed by Dr. Zucker, are therefore prudent; they work with and not against the

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girls they had treated. Kelley D. Drummond *et al.*, *A Follow-up Study of Girls with Gender Identity Disorder*, 44 Developmental Psychology 34-45 (2008).

[8] American College of Pediatricians, Gender Ideology Harms Children, Aug. 17, 2016.

Available at:
https://www.acpeds.org/the-college-speaks/positionstatements/gender-ideology-harms-children.

facts of science and the predictable rhythms of children's psycho-sexual development. They give gender dysphoric children the opportunity to reconcile their subjective gender identity with their objective biological sex without any irreversible effects or the use of harmful medical treatments.

Although some researchers report that they have identified certain factors which are associated with the persistence of gender dysphoria into adulthood,[9] there is no evidence that any clinician can identify the perhaps one-in-twenty children for whom gender dysphoria will last with any certainty. Because such a large majority of these children will naturally resolve their confusion, proper medical practice calls for a cautious, wait-and-see, approach for all gender dysphoric children. This approach can be and often is rightly supplemented by family or individual psychotherapy to identify and treat the underlying problems which present as the belief that one belongs to the opposite sex.

Policies and protocols that treat children who experience gender-atypical thoughts or behavior as if they belong to the opposite sex – exactly the policy adopted and endorsed by the Third Circuit, on the contrary, interfere with the natural progress of psycho-sexual development. Such treatments encourage a gender dysphoric youth, like the some in this case, to adhere to his or her false belief that he or

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[9] *See*, *e.g.*, Thomas D. Steensma *et al.*, *Factors Associated with Desistence and Persistence of Childhood Gender Dysphoria: A Quantitative Follow-up Study*, 52 J. of the Am. Acad. of Child & Adolescent Psychiatry 582-90 (2013).

she is the opposite sex.[10] These treatments would help the child to maintain his or her delusion but with less distress by, among other aspects, requiring others in the child's life to go along with the charade. This is essentially what the Third Circuit is requiring here. But this misses a crucial point and scientific truth. Importantly, there are no long-term, longitudinal, control studies that support the use of gender-affirming policies and treatments for gender dysphoria. Cretella, *supra*, at 52. This is particularly concerning as the treatment course moves from social and verbal affirmation to intrusive medical interventions. *See* Paul W. Hruz, Lawrence S. Mayer & Paul R. McHugh, *Growing Pains: Problems with Puberty Suppression in Treating Gender Dysphoria*, The New Atlantis, Spring 2017, at 6 (discussing the plasticity of youth gender identity and postulating that "[i]f the increasing use of gender-affirming care does cause children to persist with their identification as the opposite sex, then many children who would otherwise not need ongoing medical treatment would be exposed to hormonal and surgical interventions.").

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[10] Nonetheless, gender affirmance is on the rise – particularly among children. Chris Smyth, *Better Help Urged for Children With Signs of Gender Dysphoria,* The Times (London), October 25, 2013.

Available at:
http://www.thetimes.co.uk/tto/health/news/article3903783.ece (stating that the United Kingdom saw a fifty percent increase in the number of children referred to gender dysphoria clinics from 2011 to 2012). There are now forty gender clinics across the United States that provide and promote gender-affirming treatments. Cretella, *supra*, at 52.

The Third Circuit's mandated gender-affirming therapy, which it found to be a compelling governmental interest,[11] is therefore based on a novel – and largely dangerous – experiment with no objective scientific basis to support such conclusions. Considering all the existing scientific evidence – some more of which we shall explore – it amounts to bad medicine based upon ideology rather than sound scientific evidence.

IV. Gender-Affirming Policies Generally Harm, Rather than Help, Gender Dysphoric Children.

The Third Circuit would require those under its jurisdiction to affirm (at least implicitly, by action or inaction) that that a youth with gender dysphoria be treated without question or aid. A youth's false belief would thus be perpetuated through name and pronoun changes, the "successful" impersonation of the opposite sex, and "acceptance" (forced, from some) by others that she is really a male or he is really a female. This could be viewed by some as a necessary but basically harmless expedient, a bit of play-acting to help those like some in this case to feel better about themselves during a difficult time in their lives.

There is substantial evidence, however, that this approach is harmful – even when it is viewed on its own terms as a way to help the afflicted youth get through a tough time. The American College of Pediatricians recently declared:

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[11] App. 256a, 270a-271a.

> There is an obvious self-fulfilling nature to encouraging young [gender dysphoric] children to impersonate the opposite sex and then institute pubertal suppression. If a boy who questions whether or not he is a boy (who is meant to grow into a man) is treated as a girl, then has his natural pubertal progression to manhood suppressed, have we not set in motion an inevitable outcome? All of his same sex peers develop into young men, his opposite sex friends develop into young women, but he remains a pre-pubertal boy. He will be left psycho-socially isolated and alone.

American College of Pediatricians, *supra*; *c.f.* Hruz, Growing Pains, *supra*, at 23 (noting that when puberty-suppressing hormones are withdrawn in girls who have been treated for a condition that causes the early onset of puberty, menstruation began at "essentially the average age as the general population"—age 13—but noting that beginning to suppress puberty at age 12 for gender-dysphoric children may create physical or psychological challenges to "simply resum[ing] normal puberty down the road"). Indeed, the *American Psychological Association Handbook on Sexuality and Psychology* cautions against a rush to affirm and transition that "runs the risk of neglecting individual problems the child might be experiencing and may involve an early gender role transition that might be challenging to reverse if cross-gender feelings do not persist." W. Bockting, "Ch. 24: Transgender Identity Development," in D. Tolman & L. Diamond eds.,

American Psychological Association Handbook on Sexuality and Psychology, (vol. 1) (2014) at 744, 750.

It is well-recognized, too, that repetition has some effect on the structure and function of a person's brain. This phenomenon, known as *neuroplasticity*, means that a child who is encouraged to impersonate the opposite sex may be less likely to reverse course later in life.[12] For instance, if a boy repeatedly behaves as a girl, his brain is likely to develop in such a way that eventual alignment with his biological sex is less likely to occur. Cretella, *supra*, at 53. By rule of logic then, some number of gender dysphoric children who would naturally come to peacefully accept their sex at conception are prevented from doing so by gender-affirming policies like those mandated under the Third Circuit's jurisdiction.

Policies that compel social affirmation of gender dysphoric children do not exist in an ideological vacuum. Because they are not supported by medical or scientific evidence, one should not be surprised to discover that policies such as that endorsed by the Third Circuit are nested within a larger ideology about how to "help" children who believe that they are trapped in the wrong bodies. Although these gender-affirming policies do not themselves require medical

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[12] One study showed that the white matter microstructure of specific brain areas in female-to-male transsexuals was more similar to that of heterosexual males than to that of heterosexual females. *See* Giuseppina Rametti *et al*., *White Matter Microstructure in Female to Male Transsexuals Before Cross-sex Hormonal Treatment. A Diffusion Tensor Imaging Study*, 45 J. of Psychiatric Res. 199-204 (2011). The results of that study may be explained by neuroplasticity.

procedures, puberty suppression, hormone therapy, and surgical interventions are a common complement. The more that gender affirmance is promoted to children, the more that children can be expected to accept, and even to pursue, drastic medical courses.

The gender dysphoric youth surrounded by adults and peers who go along with his or her delusion is likely to perceive his natural biological development as a source of distress. Puberty suppressing hormones are often used, beginning at age eleven, to prevent the appearance of natural but (in this given case) unwanted characteristics of any maturing member of the youth's sex. Henriette A. Delemarre-van de Waal and Peggy T. Cohen-Kettenis, *Clinical Management of Gender Identity Disorder in Adolescents: A Protocol on Psychological and Pediatric Endocrinology Aspects*, 155 Eur. J. of Endocrinology S131, S132 (2006). Then, starting at age sixteen, cross-sex hormones are administered in order to induce something like the process of puberty that would normally occur for the opposite sex. *Id.* at S133.

Dr. Michelle Cretella, immediate past President of the American College of Pediatricians, has written that these medical treatments are "neither fully reversible nor harmless." Cretella, *supra*, at 53; *see also* Hruz, *supra* at 21-26 (analyzing claims of reversibility). Puberty suppression hormones prevent the development of secondary sex characteristics, arrest bone growth, prevent full organization and maturation of the brain, and inhibit fertility. Cretella, *supra*, at 53. Cross-gender hormones increase a child's risk for coronary disease and sterility. *Id.* at 50, 53. Oral estrogen, which is administered to gender

dysphoric boys, may cause thrombosis, cardiovascular disease, weight gain, hypertriglyceridemia, elevated blood pressure, decreased glucose tolerance, gallbladder disease, prolactinoma, and breast cancer. *Id*. at 53 (citing Eva Moore *et al*., *Endocrine Treatment of Transsexual People: A Review of Treatment Regimens, Outcomes, and Adverse Effects*, 88 J. of Clin. Endocrinology & Metabolism 3467-73 (2003)).

Similarly, testosterone administered to gender dysphoric girls may negatively affect their cholesterol; increase their homocysteine levels (a risk factor for heart disease); cause hepatotoxicity and polycythemia (an excess of red blood cells); increase their risk of sleep apnea; cause insulin resistance; and have unknown effects on breast, endometrial and ovarian tissues. *Id*. (citing Moore, *supra*, at 3467-73). Finally, girls may legally obtain a mastectomy at sixteen, which carries with it its own unique set of future problems, especially because it is irreversible. *Id*. (citing Lauren Schmidt, *Psychological Outcomes and Reproductive Issues Among Gender Dysphoric Individuals*, 44 Endocrinology Metabolism Clinics of N. Am. 773-85 (2015). The Hayes Directory reviewed all relevant literature on these treatments in 2014 and gave them its lowest possible rating: the research findings were "too sparse" and "too limited" to suggest conclusions. Hayes, Inc., "Hormone Therapy for the Treatment of Gender Dysphoria," *Hayes Medical Technology Directory* (2014). And there has been no FDA approval for this use of sex hormones and blocking agents.

One policy statement has endorsed a counter-approach. Jason Rafferty, *Ensuring Comprehensive Care and Support for Transgender and Gender-Diverse Children and Adolescents* Pediatrics. 2018

Oct; 142(4).[13] This although "almost all clinics and professional organizations in the world use … the watchful waiting approach," Dr. James Cantor persuasively critiques any counter-approach in his comprehensive analysis and dissection of Dr. Rafferty's policy statement. James Cantor, "American Academy of Pediatrics Policy and Trans-kids: Fact-checking," Sexology Today, Oct. 17, 2010.[14] In fact, he goes on to say that: "Not only did [Dr. Rafferty's article] fail to provide extraordinary evidence, it failed to provide the evidence at all" for requiring the affirmative therapy approach to the exclusion of all others. *Id*.

Recently a lead author of a Finnish study admonished: "In such situations [of adolescent gender incongruence] appropriate treatment for psychiatric comorbidity may be warranted before conclusions regarding gender identity can be drawn." Kaltiala-R. Heino, *et al*., *Gender dysphoria in adolescence: current perspectives*, 9 Adolescent Health, Medicine and Therpeutics 2018: 31-41. Again, The American Psychological Association *Handbook on Sexuality and Psychology* cautions against a rush to affirm and transition that "runs the risk of neglecting individual problems the child might be experiencing and may involve an early gender role transition that might be challenging to reverse if cross-gender feelings do not

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[13] Available at:
http://pediatrics.aappublications.org/content/pediatrics/142/4/e20182162.full.pdf

[14] Available at:
http://www.sexologytoday.org/2018/10/american-academy-of-pediatricspolicy.html

persist." Bockting, *supra* at 750. Indeed, children are not legally capable of assessing the severity of these risks or weighing the perceived benefits of gender affirmance (if any) against their many harms. A.C. Amanda C. Pustilnika & Leslie Meltzer Henry, *Adolescent Medical Decision Making and the Law of the Horse*. 15 J. Health Care L. & Pol'y 1 (2012). Neurologically, the adolescent brain is immature and lacks an adult capacity for risk assessment prior to the early to mid-20s. Cretella, *supra*, at 53. Yet, gender-affirming policies urge gender dysphoric children to forgo their fertility and jeopardize their physical health in order to avoid the distress of natural physical development.

Parents or guardians would of course have to consent to these interventions on behalf of their minor children. Even assuming that these adults have the true best interests of their children at heart, how many of them are going to be well-informed of the truth about gender dysphoria, especially where their children have already been treated (at school, and anywhere else that the Third Circuit's mandate runs) as members of the sex to which these interventions promise greater access?

Finally, gender-affirming policies aggressively promote the false notion that youths such as those treated by the endorsed policy below are trapped in the wrong body. Consequently, many gender dysphoric youths will seek (once they reach the age of maturity) the closest thing to their desired body which modern medicine can offer. Simply put: policies such as those at issue in this case will cause some young

adults who would have realigned with their sex to instead attempt to change it through surgery.

Sadly, there is no sound evidence that dramatic surgery produces lasting benefits.[15] Upon reviewing the evidence regarding sex reassignment surgery, the Hayes Directory stated that "only weak conclusions" were possible, due to "serious limitations" in the research to date. Hayes, Inc., "Sex Reassignment Surgery for the Treatment of Gender Dysphoria," Hayes Medical Technology Directory (2014); *see also* Cecilia Dhejne et al., *Long-Term Follow-up of Transsexual Persons Undergoing Sex Reassignment Surgery: Cohort Study in Sweden*, PLoS ONE, Feb. 22, 2011 (suggesting sex reassignment surgery may not rectify the comparatively poor health outcomes associated with transgender populations); Annette Kuhn *et al.*, *Quality of Life 15 Years After Sex Reassignment Surgery for Transsexualism*, 92 Fertility & Sterility 1685-89 (2009) (finding considerably lower general life satisfaction in post-surgical transsexuals as compared with females who had at least one pelvic surgery in the past).

It would appear that the most radical of treatments to the human body with exceedingly powerful hormones and permanently disfiguring and risky surgeries are done because of the child/adolescent's self-identification — effectively a

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[15] One study (Annelou L.C. de Vries *et al.*, "Young Adult Psychological Outcomes After Puberty Suppression and Gender Reassignment," 134 Pediatrics 696-704 (2014)) reported some short-term benefits. But the authors made no effort to assess long-term effects, and their study was, in any event, not properly controlled.

self-diagnosis – a policy implicitly if not explicitly mandated by the Third Circuit's decision. There is considerable evidence that "sex-change" surgery poses very serious health risks. *See* David Batty, *Mistaken Identity*, The Guardian, July 30, 2014 (in an assessment of more than 100 follow-up studies on post-operative transsexuals, concluding that none of the studies proved that sex reassignment is beneficial for patients or thoroughly investigated "[t]he potential complications of hormones and genital surgery, which include deep vein thrombosis and incontinence").[16] One "risk" is for sure: anyone who goes through with "sex-change" surgery will never be able to engage in a reproductive sexual act. *See* Hruz, *supra* at 25 ("medical technology does not make it possible for a patient to actually grow the sex organs of the opposite sex . . . [i]nfertility is therefore one of the major side effects of the course of treatment").

CONCLUSION

The Third Circuit has mandated an experimental "one-size-fits-all" policy of gender affirmance. Underlying that directive is the assumption that treating gender dysphoric children in accordance with their self-proclaimed gender identity rather than their biological sex is beneficial to them. But there is no scientific evidence to support that rosy presupposition; on the contrary, the evidence shows that affirming any child's mistaken belief that he or she is a prisoner of the wrong body is ultimately harmful to that child.

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[16] Available at: http://www.theguardian.com/society/2004/jul/31/health.socialcare

Amici agree with the American College of Pediatricians' conclusion that conditioning children into believing that a lifetime of impersonating someone of the opposite sex, achievable only through chemical and surgical interventions, is harmful to youths. This Court should grant the Petition in order to consider reversing the Third Circuit's unfounded scientific conclusions, as no judicial imprimatur ought to be given to such a harmful and scientifically unfounded policy.

Respectfully submitted,

Parker Douglas
Counsel of Record
2057 Lakeway Drive
Holland, MI 49423
(801) 699-7746
parkerdouglas66@gmail.com

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Counsel for *Amici Curiae*