From:	CAREL D VAN GEND
To:	Health, Communities, Disability Services and Domestic and Family Violence Prevention Committee
Subject:	Submission on the Health Legislation Amendment Bill 2019
Date:	Monday, 6 January 2020 11:18:53 AM
Attachments:	Submission on the Health Legislation Amendment Bill 2019 - David van Gend.pdf ATT00001.htm

Health, Communities, Disability Services and Domestic and Family Violence Prevention Committee

To the secretary,

I attach the PDF of my submission.
By separate email I will forward the four attachments to my submission, as described in the conclusion.

I ask to be able to address the committee in a public hearing.

Yours faithfully,

Dr David van Gend
[redacted]

Ph. [redacted]

Inquiry into the Health Legislation Amendment Bill 2019

Parliament of Queensland

Health, Communities, Disability Services and Domestic and Family Violence Prevention Committee

---

CONTENTS

Dr David van Gend

Medical Practitioner
[redacted]

January 6th, 2020

REASONS WHY SECTION 5B 'CONVERSION THERAPY' MUST BE REJECTED OR AMENDED

1. THE LIBERTY OF INDIVIDUALS MUST NOT BE VIOLATED BY THE STATE

It is acceptable to ban forms of therapy which are coercive or proven to carry excessive risk of harm. That would include archaic methods such as aversion therapy by electric shock.

It is unacceptable, however, to ban standard psychotherapy and family therapy where individuals, or parents on behalf of children, seek such therapy. Such therapy is not violent and has not been shown to be harmful above and beyond the usual rate of dissatisfaction reported with any form of psychological therapy.

A Government ban on standard psychological and family therapy tramples on the liberty of individuals, or parents on behalf of children, to pursue their own goals and seek their own happiness as they see fit.

Such overreach by the Government also intrudes on the professional liberty of doctors and counsellors to use established, ethical modes of psychological therapy that, in their judgement and on available evidence, will best achieve the wellbeing of their patient.

It is also unacceptable, on principle, for the Government to *dictate the goals of therapy on ideological grounds*: decreeing that therapy can only be used to affirm a child towards a 'transgender' identity but never to affirm a child towards being comfortable as their natal sex. The goals of therapy are properly a matter for the individual, or for parents on behalf of their child, not for the State.

Under this Bill, if a doctor discourages any move towards premature transitioning of gender, on the clinically rational ground that three quarters of such children will spontaneously overcome their confusion and become comfortable again as their own natal gender around the time of puberty, that doctor will be imprisoned for 18 months. To write that astonishing sentence is to see the deranged, oppressive nature of this piece of proposed legislation.

RECOMMENDATION 1

Section 5B of this Bill must be rejected – or at the very least amended:

1. **to ban only coercive and violent forms of 'therapy' but in no way inhibit standard psychotherapy and family therapy.**
2. **to remove any ideological coercion by the Government that would trample on the right of individuals, or of parents on behalf of their child, to determine their therapeutic goals.**

2. *PSYCHOTHERAPY FOR GENDER DYSPHORIA IS VALID AND ETHICAL*

The ethical, long-established modalities of psychological talk-therapy and family therapy for children with gender confusion has nothing whatsoever to do with coercion, electric shocks, or the other scaremongering associated with the spurious term "conversion therapy". It has nothing to do with the cases discussed in the Government's one supporting 'research' document from La Trobe University (analysed later), since that deals only with cases of same-sex attracted adults, not gender-dysphoric children.

Standard psychological and family therapy has proven to be ethical and beneficial over many years, as documented below. The Government has not given any substantial evidence that such psychotherapy and family therapy is harmful for children suffering gender dysphoria. Therefore, such therapy should not be banned for gender-dysphoric children.

Imagine what this Bill will mean in the everyday world of medical practice. A gender-confused child is brought into my clinic by his mother. He affirms that he is a girl and wants to be treated as such. I know that this boy has autistic traits, and that gender dysphoria is strongly over-represented in autistic children. I further know that this child's single-mother has her own emotional problems stemming from a violent relationship with the boy's father; perhaps as a result of this conflict (and consistent with a well-recognised pattern in gender dysphoric children) the mother has only affirmed her boy emotionally when he was dressing and acting in a more feminine way.

This Bill would criminalise me for doing exactly the right thing: exploring the underlying causes of this child's gender confusion and seeking to correct them. It would be my duty as a doctor to uncover what problematic and mistaken ideas might be occurring in the mind of an autistic child – see the examples reported by Zucker below. I would need to arrange in-depth family therapy for the mother and child to uncover to what extent the mother's emotional injuries are affecting the boy's self-affirmation as a girl.

This Bill proceeds in utter ignorance of this sort of clinical reality and seeks to compel doctors to neglect their duty to a troubled patient.

Listen to some senior clinicians, in order to understand that these sorts of presentations are real and require proper psychotherapy / family therapy to resolve them – not "compulsory affirmation towards gender transition" as this misguided Bill would demand.

First, a world authority on childhood gender dysphoria – in fact, the chair of the committee that oversaw the latest classification of gender dysphoria in the Diagnostic and Statistical Manual of Mental Disorders (DSM5) – Dr Kenneth Zucker. I attach a published statement of his clinic's guidelines for the treatment of gender-confused children, developed over some thirty years as the head of Canada's largest clinic caring for hundreds of such children, so that MPs can understand the depth and validity of psychological and family therapy for childhood gender dysphoria.

Zucker's clinic had a straightforward, ethical approach. First, engage the child in psychotherapy and family therapy to uncover any underlying problematic ideas or dynamics

that could be addressed, and so help the child along the simpler path of becoming more comfortable again with their natal sex. For the small percentage of children who persisted in their transgender identity after counselling and after reaching puberty (around 10%) his clinic would help them with the steps of 'transition' socially and medically to the desired gender role.

For now, let me quote a few simple examples of the strange ideas that underlie gender confusion in some of his paediatric clients. Zucker writes:

> When asked why he wanted to be a girl, one 7-year-old boy said that it was because he did not like to sweat and only boys sweat. He also commented that he wanted to be a girl because he liked to read and girls read better than boys. An 8-year-old boy commented that "girls are treated better than boys by their parents" and that "the teacher only yells at the boys." His view was that, if he was a girl, then his parents would be nicer to him and that he would get into less trouble at school. One 5-year-old boy talked about having a "girl's brain" because he only liked Barbie dolls.

Are the MPs behind this Bill really saying that we doctors should not look for these underlying false notions? That if we do, with a view to helping a child get over their muddle and be comfortable again in their own skin, we should go to prison? This is beyond surreal.

Second, listen to the former Director of Child and Adolescent Psychiatry Services in Western Australia, Dr Robert Kosky – and I attach his historically significant article from the *Medical Journal of Australia* where he describes the successful response of gender-confused children to standard psychological and family therapy (the sort of therapy that would have this respected psychiatrist imprisoned under Labor's Bill). [i]

Kosky found that "the essential disturbance in these cases was the inability of the parent of the opposite sex to accept the child, except on the conditional basis that the child met certain of their needs". The troubled parent would only accept the child when it was cross-dressed into the gender that the parent could relate to – usually a mother dressing a boy as a girl. This typically started around two years of age when the parent "with delight, found that, when the child was dressed in clothes of the opposite sex, play together was fun … when the child adopted these behaviours, the parent changed from a cold mechanical interaction with the child to warmth and affection." Later, under the influence of this powerful parental reinforcement, "the child cross dressed on his or her own".

That is a plausible psychodynamic cause of a child's disturbed gender identity. But under Labor, child psychiatrists like Kosky would be forbidden to uncover any such cause! Ask no questions, just give the kid hormones and, in due course, castrate them. That is medical madness.

As an example of the pathological family dynamics that Kosky describes, consider the case of Walt Heyer, a quietly spoken elderly gentleman whom I met in the USA. For many years Walt passed himself off as a woman before regretting that move and reverting, as best one can with a surgically damaged body, to his natural male sex. What led Walt to want to be a woman? He explains the strange form of abuse that messed with a little boy's sense of self:

> My mom and dad didn't have any idea that when they dropped their son off for a weekend at Grandma's that she was dressing their boy in girls' clothes. Grandma told me it was our little secret. My grandmother withheld affirmations of me as a boy, but she lavished delighted praise upon me when I was dressed as a girl. Feelings of euphoria swept over me with her praise, followed later by depression and insecurity about being a boy. Her actions planted the idea in me that I was born in the wrong body. She nourished and encouraged the idea, and over time it took on a life of its own.[ii]

Back to the Western Australia study: treatment for the confused cross-dressed kids involved in-patient psychotherapy while still attending the local school. Dr Kosky reports that "no conscious attempt was made by the staff members to encourage masculine or feminine behaviours" but with the programme of counselling and family insight therapy, cross dressing quickly ceased and improvement in mood was noted.

So the kids were gender-confused; the doctor uncovered the pathological cause and treated it; the kids got better. What is wrong with that? What was wrong with the therapist who finally helped Walt Heyer to understand that the cause of his gender confusion was the emotional manipulation by his grandmother? But that is the medical model which will be criminalized – with 18 months imprisonment for the likes of Zucker and Kosky - by this ill-informed, ideologically rigid Government, so beholden to Rainbow Labor and its gender fluidity fundamentalism.

Secondly, as further evidence of the valid, ethical role of normal talk-therapy (psychotherapy / family therapy) in treating gender dysphoria, I draw attention to an article by the professor of paediatrics at the University of Western Sydney, John Whitehall, entitled "Conversion Therapy and Gender Dysphoric Children". It reviews published studies showing how gender confusion in children has been treated successfully with psychotherapy (Quadrant, 2/19 [iii]).

Dr Whitehall states, "Until recently, non-medical psychotherapy for gender confused children and their families was standard, and many instances are reported to have been effective." He observes,

> Most earlier therapists emphasised family influences, especially the interaction of boys and mothers which had developed into a "symbiotic" relationship perpetuating the feminine identification of the boy. That emphasis, of course, confronts current ideology which insists gender identification arises within the child: irrelevant to chromosomes, there arises a kind of Gender Spirit which, sadly, may find itself in the wrong body.

Professor Whitehall gives examples from the professional literature, including:

> In 1971, Spensley and Barter reviewed eighteen adolescent boys with a mean age of 14.9, concluding that "all mothers and 77 per cent of fathers played active and passive roles … in encouraging their sons' crossdressing".
>
> In 1975, Bates et al reviewed experience with twenty-nine "gender-disturbed boys" and their families, during which they developed "procedures that seem to be effective" in improving a child's repertoire of masculine behaviours, social skills, and family relationships. They concluded "the behavioural problems … are often formed, and are almost always

> maintained as a function of family relationships". Eighteen months after treatment, seventeen mothers had reported "moderate increases in masculinity", and improvements in social skills and behaviour.
>
> In 1974, Pauly summarised world literature on eighty cases of female transsexualism, concluding: "Parents ought to be more aware of the need to positively reinforce all infants for those gender characteristics which are consistent with their biological identity. I can think of very few worse fates than to be the life-long victim of the kind of family discord or ignorance with breeds gender identity problems." Reinforcement of natal gender is, of course, anathema to the current belief in early affirmation of its opposite.
>
> In 1976, Stoller stated "simply … most feminine boys result from a mother who, whether with benign or malignant intent, is too protective, and a father who either is brutal or absent (literally or psychologically)". He concluded that, starting early, psychotherapy has "regularly been able to diminish or remove" cross-gender behaviour. Psychotherapy included "uncovering, interpretation and the resolution of conflict by insight" plus the encouragement of "masculinity" and discouragement of "femininity" in the child. This therapy might result in a mother coming to understand her dependency on a feminised son as "the only good male in the world", and a distant father increasing "commitment to his son, wife and family".
>
> In 1977, Davenport and Harrison reported a fourteen-and-a-half-year-old girl with marked gender dysphoria who "convincingly presented herself as a boy in dress, voice, movement, interests, and orientation", while hiding her developing breasts. She insisted on sex-change surgery (of which she understood little) but was admitted to a psychiatric hospital and underwent regular psychotherapy for some twenty months. "Geared specifically for adolescents", this psychotherapy included "active intervention, therapeutic school, recreational and occupational therapy". Gradually, she reorientated to her natal gender and two years after discharge "appeared to have adopted a feminine identity". "Understanding the family constellation" had been important in the treatment.
>
> In 1978, Zuger reported a ten-year follow-up of dysphoric boys who had undergone psychological and psychiatric care. He noted "a kind of 'decay' or burning out of these symptoms, completely in some, partially in others, and not at all in a few".
>
> In 1980, Lothstein reported a five-year follow-up of twenty-seven cross-dressing adolescents with a mean age of nearly seventeen .... He concluded that "gender dysphoria conflicts in adolescents have their roots in psychological conflicts" and, "given the irreversibility of surgery and perhaps even some hormone effects", a trial of psychotherapy is the initial treatment of choice. Lothstein warned that "surgery should only be considered towards the end of adolescence (age 21) after extensive psychological assessment, a lengthy evaluation and trial psychotherapy".

A third voice of reason is found in the recent clinical review of "Sexuality and Gender: Findings from the Biological, Psychological, and Social Sciences", co-authored by the Distinguished Service professor of Psychiatry at Johns Hopkins University, Paul McHugh, and Dr Lawrence Mayer, a physician and scholar in residence in the Department of Psychiatry at Johns Hopkins University.[iv] They write:

> In the course of their development, many children explore the idea of being of the opposite sex. Some children may have improved psychological well-being if they are encouraged and

> supported in their cross-gender identification, particularly if the identification is strong and persistent over time. But nearly all children ultimately identify with their biological sex. The notion that a two-year-old, having expressed thoughts or behaviors identified with the opposite sex, can be labeled for life as transgender has absolutely no support in science. Indeed, it is iniquitous to believe that all children who have gender-atypical thoughts or behavior at some point in their development, particularly before puberty, should be encouraged to become transgender.

Medical experts who recommend "watchful waiting" for gender-confused young children, rather than putting them on the path of gender transitioning, do so because we know as surely as we know anything in this field that the majority of young people who assert that they are "in the wrong body" will simply get over their confusion around puberty, when their body starts sending them clear signals about being a girl or being a boy.

This was the experience of British actor, Rupert Everett. He told the *Sunday Times* in June 2016 that, for a period of childhood, he dressed exclusively as a girl: "I really wanted to be a girl. Thank God the world of now wasn't then, because I'd be on hormones and I'd be a woman. After I was 15, I never wanted to be a woman again."[v]

Professor McHugh gives the figures: "When children who reported transgender feelings were tracked without medical or surgical treatment at both Vanderbilt University and London's Portman Clinic, 70%-80% of them spontaneously lost those feelings."[vi]

A review by Ristori and Steensma summarises the research evidence:[vii] "The conclusion from these studies is that childhood GD is strongly associated with a lesbian, gay, or bisexual outcome and that for the majority of the children (85.2%; 270 out of 317) the gender dysphoric feelings remitted around or after puberty."

In a Special Review in the *Journal of Homosexuality* concerning 'The treatment of gender dysphoric/gender variant children and adolescents' David Schwartz (2012),[viii] a child psychiatrist from New York, emphasised the lack of scientific data regarding medical intervention and concluded with the reassurance that many affected children would naturally desist. He declared, "the long term psychological and physiological consequences of ... (the medical pathway) ... are unknown and, as is the case with all self-selected populations, very difficult to assess owing to problems of (lack of experimental) control and limited sample numbers."

So the question to Minister Miles is this: if three quarters of young 'transgenders' will no longer think of themselves as transgender a few years later, <u>why does the Labor government want to imprison doctors who help the child "watch and wait"</u> until the time of likely resolution of their confusion?

RECOMMENDATION 2

The Government should acknowledge the clinical evidence that standard psychological and family therapy for childhood gender dysphoria has proven to be ethical and beneficial over many years. Therefore, the Government should not ban such therapy for gender-dysphoric children.

3. THE 'MEDICAL PATHWAY' FOR GENDER TRANSITION IS HARMFUL AND UNETHICAL

Harmful

The Government has ignored the substantial evidence of harm associated with its preferred "gender affirmation" medicalised model of care. Such harm includes adverse effects on the developing brain and body with increased risk of life-threatening medical conditions (such as vascular thrombosis in males administered oestrogen) and, long-term, a much higher risk of suicide. As noted above, given that gender confusion will spontaneously resolve in about 75% of children around the time of puberty, why is the Government pushing these children along an unnecessary, irreversible and dangerous medical pathway?

In a letter sent in October to the federal Health Minister Greg Hunt by professor of paediatrics, John Whitehall, and supported by a petition of 256 Australian medical practitioners (including 20 professors or associate professors, 14 paediatricians and 9 child psychiatrists), Dr Whitehall touches on some of the medical dangers of this little-understood practice of giving healthy children abnormal hormone and surgical treatment.[ix]

On the use of puberty-blocking drugs he observes that we find harm to the brain in animal models (such as impaired cognitive performance and increased anxiety in sheep) and have no confidence that similar harm will not be inflicted on children. Given the lack of proper research in this field, we are essentially experimenting on children with no evidence of what puberty blockers might do. He writes:

> Researchers in universities in Glasgow and Oslo have shown that the administration of blockers has resulted in demonstrative effects on the limbic system of sheep. On blockers, that important part of the brain has hypertrophied (enlarged), and actions of many of its genes have been disrupted. As a result, the cognitive performance of the sheep has been reduced, and its emotional lability increased ...
>
> How can proponents of the use of puberty blockers in gender dysphoria claim so confidently their effects are 'safe and entirely reversible' when their administration for 28 months to an 11 year old boy revealed interruption to the normal masculinization of white matter, associated with 'a decrease in…overall intellectual performance after the onset of pubertal block' [x] …
>
> Therefore, the claim of safety for the use of blockers in children is not substantiated by international research. It should not be overlooked that puberty is associated with a great development of cerebral anatomy, from organisation, to myelination, to apoptosis. Administration of any drug shown to affect neuronal tissue should be undertaken only with rigorous scientific basis.

On the use of opposite-sex hormones, he notes:

> The research by Hulshoff et al reveals a rate of shrinkage of the grey matter of the adult brain for a male on oestrogens at a rate 10 times that of ageing, after only four months of treatment[xi]. Others have also demonstrated anatomical changes on adult brains[xii,xiii]. There are no reports available on the effect of cross-sex hormones on the developing brains of children and adolescents. However, the Minister should be aware that opposite-sex hormones had a demonstrable effects on adult brains after only 4 months of treatment.

> Children are likely to be receiving them for life and throughout the period of great brain maturation which normally extends from puberty to early adulthood.

Unethical

Health Minister Miles should consider the question put by Professor Whitehall to Health Minister Hunt, as to the legal liability of Governments that promote unethical treatments - unproven, dangerous, essentially experimental treatment of healthy children:

> The Minister is pointed to the conclusions of the *Rogers vs Whittaker* legal case[xiv], which confirmed an obligation by a medical practitioner to reveal even a one in ten thousand possibility of a material side effect of therapy. Given public hospitals are involved in the administration of a drug with undisclosed but proven side effects as revealed in studies on laboratory animals, and strongly suggested by effects in humans, who will be responsible for compensation when these already vulnerable children claim handicaps to be the result of un-informed treatment?

Whitehall continues,

> A review of recent research by Fuss et. al. (2015) concluded that "more longitudinal research ... is needed to compare different strategies of care and to see long term results especially in those minors with co-morbid psychiatric disorders. The lack of evidence is even more pressing considering ... the dramatically increasing number of referrals to gender clinics …" [xv]
>
> It is my view that lack of evidence for effect and denial of side effects renders the Medical Pathway of treatment of childhood gender dysphoria experimental.

Professor of Jurisprudence at Princeton University, Robert George, co-authored an article in December entitled, "Physical Interventions on the Bodies of Children to 'Affirm' their "Gender Identity" Violate Sound Medical Ethics and Should be Prohibited".[xvi]

He outlines a few of the unethical aspects of the Government's preferred model of "gender-affirming treatment" for children, agreeing that it amounts to experimentation.

> **Experimental**
> First, these procedures are entirely experimental. There is not a single long-term prospective study of the long-term consequences of blocking an otherwise physically healthy child from undergoing normal pubertal development ...
>
> **Irreversible**
> Second, parents are told that these procedures are "fully reversible," but that is not true. Going off of puberty-blocking drugs, with the hope that development resumes, does nothing to reverse the delayed biologically appropriate development. You can't go back in time and reverse that delay. That said, as an empirical matter, virtually all children placed on puberty-blocking drugs as part of "gender affirmation" care go on to receive cross-sex hormones, continue to identify as of the opposite sex, and attempt to make their bodies appear as if of the opposite sex. The end result is sterilization. And so it is entirely accurate to say that placing a child on puberty-blocking drugs as part of a "gender affirming" intervention is to set that child on a

pathway to irreversible, permanent infertility. This is something no child can fully understand, let alone consent to …

No valid consent

[Third] while the diagnosis that someone "is" of the opposite sex is medically and scientifically baseless, it is particularly outrageous when applied to children. On what other issue do we allow a child's self-assertion to be the basis for such life-altering decisions, or to allow children to undergo such permanent changes to their bodies? Children lack the experience and cognitive abilities even to know what it means to be a boy or a girl, a man or a woman …

Lack of benefit

[Finally] not only is sex reassignment physically and metaphysically impossible, it doesn't even produce good psychosomatic results … an entirely experimental, self-fulfilling treatment protocol that is based on nonsensical diagnostic criteria doesn't even produce the desired outcomes of happiness and wholeness. Forty-one percent of all adults who identify as transgender attempt suicide at some point in their lives, and adults who have had sex reassignment surgery are nineteen times more likely than the general population to die by suicide. These outcomes are unacceptable. And the best research shows that reassignment procedures do little to nothing to improve well-being.

As even the Obama Administration reported in 2016, the best studies of sex-reassignment procedures "did not demonstrate clinically significant changes or differences in psychometric test results" after the reassignment. A large, long-term data set from Sweden released just this year (2019) shows a similar result: hormonal transition produced absolutely no mental health benefits for those patients. Meanwhile, the data from that study demonstrate that "the beneficial effect of surgery for transgender people is so small that a clinic may have to perform as many as 49 gender-affirming surgeries before they could expect to prevent one additional person from seeking subsequent mental health treatment." Imagine suffering so much, feeling so uncomfortable with your own body that you would contemplate "transitioning," and then receiving virtually no improvement. If these are the results of "transitioning," why would anyone encourage a child down this path?

RECOMMENDATION 3

The Government should recognise that its preferred "medical pathway" for gender dysphoria amounts to an experiment on healthy children causing known harm in animal models, probable harm in children, and uncertain long-term benefit. Such an approach is unethical. The traditional "watch and wait" approach, along with supportive psychotherapy and family therapy, is a more rational and ethical option for the majority of children – and should not be criminalised by this Bill.

4. PSYCHOTHERAPY FOR SEXUAL IDENTITY DYSPHORIA IS VALID AND ETHICAL

I move now to the second group of patients whose liberty will be violated by this proposed Bill and note again that the Government is acting on grounds of LGBT ideology, not scientific or ethical reasoning.

The Government has not proven that normal psychotherapy is harmful for adolescents and adults who seek assistance to minimise unwanted same-sex attraction and maximise their heterosexual potential. These are often people of faith seeking to align their behaviour more closely to their spiritual values, and their liberty to seek professional assistance should be respected. As noted below, many of these clients report significant benefit, not harm, from this therapeutic effort. Their right to access such therapy must not be banned by an ideological state.

The Government falsely labels this professional relationship as "conversion therapy" (a pejorative term no professional would use). Standard talk-therapy is entered into willingly by these clients with their professional counsellor, and it is mere slander to allege coercive methods in such a relationship.

Health Minister Miles falsely asserts that there is "overwhelming evidence" that what he calls "conversion therapy" for gay and lesbian people is harmful. If the Minister was referring only to archaic coercive methods like aversion therapy, one could concede his point, but he also uses the term to capture standard talk-therapy, and his assertion is therefore wrong.

The La Trobe study

Minister Miles' claim of "overwhelming evidence" of harm from such therapy is based on very poor evidence indeed: on one unrepresentative study co-authored by La Trobe University (which produced the contentious "Safe Schools" gender-fluidity programme) and the Human Rights Law Centre (which was a leading voice in the same-sex marriage debate).

This La Trobe document, which I have read, is entitled, *"Preventing Harm, Promoting Justice: Responding to LGBT conversion therapy in Australia"*. This piece of advocacy-research amounts to little more than an 80-page opinion piece, a one-sided polemic reporting on 15 (just 15) Australians with bad stories to tell about so-called "conversion therapy". At least one account, that of Jamie, stretches credibility to the point of credulity. She alleges that, in the 1980s after she entered a lesbian relationship she was taken to a psychiatric unit for two weeks where she was forced to sit in a bath full of ice cubes while Bible verses were read over her, being handcuffed to her bed at night and deprived of sleep, to being interrogated "by a man in a dog collar" and to "having an electrode attached to my labia, and images projected onto the ceiling; a lot of pain from the electrodes and being left there for quite a long time afterwards; exposed and alone". That is a remarkable psychiatric unit. The Health Minister apparently has no difficulty believing such a lurid and incredible tale if it serves his purpose of tarring standard, ethical talk-therapy with this nightmarish brush.

These 15 people were recruited, we are told, "through LGBT media reportage of the project and through various LGBT, queer and ex-gay-survivor networks". In other words, through

sources which were never going to find participants who were not disgruntled, who had happily left the LGBT world behind. There was no control group of 15 Australians who found benefit from psychological therapy for unwanted same-sex attraction. There was no attempt at balance or statistical validity.

Such a study was never going to hear from a man like Michael Glatze, who said a few years ago:

> Coming out of homosexuality has been the most liberating thing I have ever felt. I said before, seven years ago, that it was like coming out of a cave and breathing fresh air. Today I can say, being married, that it's entirely an inversion of homosexuality … It doesn't feel as though I've lost any of my sexuality, it just is working in the right alignment … I feel aligned with my mind, my body, my spirit, my sexuality, with creation... and that alignment is evidenced through the fact that my relationship with my wife is so real, so natural…[xvii]

The La Trobe study was never going to hear from men like Daniel describe his experience of the benefits of professional counselling for unwanted same-sex attraction:

> I wish I could say there is a "cure" for same-sex attraction, but there is no such thing. Same-sex attraction is something I will struggle with for the rest of my life. But I have been in control of it. It no longer tortures me. And I am attracted to women, when I never was before … There are those who will wish to silence me and protest the publication of my story. They will describe reparative therapy as a sham. I can only say that I wish someone had told me about it earlier.

The Queensland Government's proposed ban on the right of people like Michael or Daniel to seek help to modify their sexuality, as they see fit, is a totalitarian act. It is the state trampling on individual liberty on purely ideological grounds.

The question of harm

Then there is the claim by the Health Minister that "there is overwhelming evidence that conversion therapy is harmful", where he uses the term "conversion therapy" to include standard talk-therapy for clients who seek to minimise unwanted same-sex attraction and maximise their heterosexual potential. That claim by Minister Miles is not substantiated by the evidence.

All deep psychological interventions have an expected rate of harm in the range of 10%, so there are harmful anecdotes aplenty for any therapy. But anecdotes are no basis for public policy. We need statistically objective evidence of the relative benefits and harms of any intervention, and in the case of "sexual orientation change efforts" (SOCE, which includes various forms of talk-therapy), there is no such evidence.

Health Minister Miles relies heavily on the opinion of bodies such as the American Psychological Association to justify his claim of harm, but if Mr Miles were to read the actual text of the APA report from 2009, he would see that even the overtly biased APA task force (consisting of prominent activists in gay causes and excluding any clinicians, no matter how eminent, who practiced models of psychotherapy such as 'reparative therapy'[xviii]) admits there is no clear evidence of harm. The report states:

> Early and recent research studies provide no clear evidence of the prevalence of harmful outcomes among people who have undergone efforts to change their sexual orientation or the frequency of the occurrence of harm because no study to date of adequate scientific rigor has been explicitly designed to do so. Thus, we cannot conclude how likely it is that harm will occur from SOCE.[xix]

The science is unsettled, but that does not stop the APA recommending that this therapy should cease anyway! They admit that we simply do not have objective evidence of harm, but their ill-founded prejudice is good enough for progressive governments to act upon. That should dismay all clinicians who value dispassionate science and who defend a client's right to access professional care at times of distress.

The Health minister's assertion of "overwhelming evidence of harm" is based on a misrepresentation of the APA report and on La Trobe's spurious advocacy-science, which is unrepresentative, unbalanced and lacking in statistical validity. The Minister's claim amounts to little more than emphatic hand-waving.

'Verballing' therapists

The Government further alleges, without any supporting evidence, that therapists who help clients in this way hold the assumption that "being LGBTIQ is a disorder or deviant behaviour". That is a baseless allegation. Such therapists proceed with the assumption that sexual attraction has an element of fluidity and any client has the right to professional help in seeking to bring their sexual feelings and behaviour more into line with their personal values and beliefs.

The Health Minister slanders clinicians who assist such clients as being "immoral and unethical", implying there is coercion involved rather than a free and informed choice by the client. Nothing could be further from the truth.

Look at the practice guidelines of the world's leading practitioner in this field, the late Dr Joseph Nicolosi, with whom I spoke at length in 2015. As to the principles of this form of counselling, he writes that it "never involves coercion":

> The client has come to the therapist seeking assistance to reduce something distressing to him, and the RT psychotherapist agrees to share his professional experience and education to help the client meet his own goal. The therapist enters into a collaborative relationship, agreeing to work with the client to reduce his unwanted attractions and explore his heterosexual potential. This collaborative relationship could not, of course, include imposing methods or techniques attempting to "cause" sexual-orientation change - which would, anyway, be quite impossible.[xx]

On the sensitive question of young people being brought to the counsellor by worried parents, Nicolosi makes clear that the only thing that counts, the only thing that works, is the autonomous self-motivation of the person seeking help:

> Sometimes, the client does not know what he wants, as is often the case with the teenager asked to come into treatment by his parents. In those cases, if the teenager does decide to

> come in, we agree NOT to work on his homosexuality, and the therapeutic alliance is founded upon some other of the client's goals, such as managing parental disapproval without family breakup, or dealing with problems of peer rejection.

Another leading therapist I spoke with in 2015, Dr David Pickup, is as scathing as Nicolosi about any talk of "conversion" or shaming people about their homosexuality. He writes,

> Did you know that eliminating shame for having homosexual feelings is one of the very first priorities of authentic Reparative Therapy? Aversion techniques, behavioral-only changes, coercive attitudes, electroshock and the like are NOT a part of authentic Reparative Therapy. Truly effective therapy is hard work. Deep emotions are experienced, and wounds are healed. This can, in time, result in spontaneous and successful change.[xxi]

Testimony of benefit, not harm

One of Dr Nicolosi's clients writes: "If one thing angers me in life it is this: when gay apologists claim that to reject a 'gay identity'' is to be in denial of my true self. My personal experience tells me the opposite!" His life story is typical of the clients Dr Nicolosi sees: men who never felt they belonged as a boy among boys, as a man among men, and whose craving for male connection became sexualised at puberty. This client continues,

> Therapy has helped me to connect more with men as brothers to be trusted. For most of my adult life, I only felt fearful of and alienated around men - especially men of my own age group. When I feel masculine within, I have no emotional need to draw on the men 'out there' who are external to me. Was my therapy 'dangerous,' as some critics with an ideological axe to grind try to claim? Well, if growing in self-acceptance and feeling now that I belong around men is 'dangerous,' then I want more of it! [xxii]

Another client of Dr Nicolosi from Melbourne told me he had a new-found sense of belonging as a man among men, enjoying normal non-sexual relationships, since he started working with Dr Nicolosi on his unwanted homosexual compulsion.

Dr Pickup summarises the theory behind this therapeutic approach:

> Gender Identity Inferiority, especially during a young child's gender/sexuality developmental years, can be a traumatic experience that is reinforced with shame-based self-beliefs for many years. For the pre-homosexual boy, and for adult men, bullying and repetitive shaming of gender identity from primary male relationships frequently imbed this soul-wrenching shame into the mind of the struggler. The client experiences emotional wounds (often repressed) that prevent the journey from boyhood into manhood from being fully realized. Maleness becomes an object to the struggler instead of something wonderful that is subjectively experienced. The result? ... In puberty, when sexual hormones "kick in," masculinity is objectified and sexualized. Reparative Therapy helps a client resolve these wounds, which can result in the spontaneous lessening and/or dissipation of homosexual feelings.[xxiii]

One of his clients, Carey, had this to say about the repairing of emotional wounds:

> When I began reparative therapy, I took on the task of growing from a wounded little boy to a whole (and heterosexual) man. In my relationship with my therapist I have directly

> received the masculine mentoring that I needed but did not get as a child. Since I've been in therapy, my homosexual thoughts and feelings have decreased significantly both in frequency and in intensity. While I had already been celibate for a year and a half before I entered therapy, the therapy has made celibacy much less of a struggle. When I have sexual fantasies, they are almost always of sex with a woman, not another man.

It is not difficult to demonstrate, through clinical evidence and client testimony, that expert therapy does indeed help some people to reduce unwanted same-sex attraction and maximise their heterosexual potential; that calling such therapy "immoral and unethical", as Health minister Miles does, is untrue and intemperate.

Historical evidence of benefit, no harm

The Government ignores published evidence and professional opinion over nearly a century, as documented below, which demonstrates that normal psychotherapy is ethical and beneficial for those rare patients who seek professional help to explore the fluidity of their sexual attraction.

Therefore, such therapy should not be banned for these individuals.

The published evidence is decades deep for successful psychological therapy for sexual identity dysphoria and it shows that about a third of clients gained significant help from various psychological therapies, which is comparable to therapeutic intervention for other psychological conditions.[xxiv] You can read of clients under the care of Carl Jung in 1935 and Anna Freud in 1952. Bergler in 1956 reports a hundred men who successfully changed under psychoanalysis (a one-third success rate of all his clients); Bieber and his team of 77 therapists in 1962 treated over a hundred homosexual men and found 27 percent became "exclusively heterosexual".

Dozens of studies from the second half of the twentieth century demonstrate the typical 'one third' success rate.[xxv] More recently, a study published by Nicolosi and Byrd in the journal *Psychological Reports* (2000) found the same one-third level of significant change.[xxvi]

The number of individual cases not captured in formal studies is large but undefined. Dr Nicholas Cummings, past president of the American Psychological Association, reports his clinic's care for thousands of same-sex attracted clients, of whom (he says) some 2,400 successfully changed orientation:[xxvii]

> Most on presentation did not express a goal of reorienting, but came for a number of related issues and dissatisfactions concerning the [homosexual] lifestyle that eventually elicited a desire to change … When I say that 67% had satisfactory outcomes, the majority of these were able to attain a more happy and sane homosexual lifestyle with stable relationships. This would have been a bit more than 10,000 of the 18,000 presenting, with another 2400 actually reorienting.

There would need to be a lot of lying by clients and fraud by clinicians for all of these findings to be untrue. An alternative explanation is that there are, indeed, individuals who benefit to varying degrees from psychological therapy that helps them understand and modify unwanted same-sex attraction and maximise their heterosexual potential.

And who is Health Minister Miles to stand in their way?

There is a need for tolerance of different value systems here and different goals, not merely imposing the approved value system and LGBT ideology of the Queensland Government. As former lesbian Melinda Selmys observes,

> Gay and lesbian activists have long decried the interference of the "religious right" in their ability to live the sort of lives that they would like. In the process they have, perhaps unthinkingly, created an analogous situation in which psychologists are called to enforce a gay-affirming lifestyle on those who will not have it.[xxviii]

Bob will not have it, and should not be told by politicians where he can or cannot seek help:

> Before, I was powerfully attracted to men sexually, but I didn't like them as people … In therapy, I uncovered abuse issues and dealt with the lingering impact of peer abuse and bullying in my past, as well as my disaffection from my father and other men … Now I love being around guys, but have no desire to have sex with them … I have amazing friendships, very deep friendships that have resulted from me doing the inner healing work that I've done. My experience is far from unique. Countless people can share personal experiences similar to mine. Don't listen to so-called experts who are more interested in their own political agendas and winning professional accolades than they are in supporting you in what you want out of your own life. [xxix]

This submission is a plea for our Parliament to keep political agendas out of the path of such individuals; not to prohibit their liberty to seek professional help, just for the sake of enforcing Rainbow Labor's orthodoxy.

RECOMMENDATION 4

The Government should accept the evidence, over nearly a century, that standard psychological therapy has proven beneficial to clients who, for reasons of their own, seek to modify their unwanted same-sex attraction and maximise their heterosexual potential; that claims of undue harm are not substantiated by valid research; that the Government should not obstruct individuals from seeking professional help towards their goals.

5. *UNDERLYING FALLACY OF S.5B: THAT LGBT INDIVIDUALS ARE "BORN THAT WAY"*

The Government's Bill is premised on the false belief that being gay, lesbian, bisexual or transgender (LGBT) is an inborn and unchangeable condition. If that belief were correct, we could appreciate the Government's position that it is both futile and offensive to seek to change such a condition (even if we reject the overreach of making such efforts a criminal offence). However, that belief is factually false.

The 'inborn' myth

No professional organisation shares the Government's view that transgender or gay and lesbian people are 'born that way'. That view is scientifically untenable and should not be

enshrined in law by this misguided Bill. A more nuanced view is that sexuality is more fluid than fixed for some individuals, and some change in sexual attraction and behaviour is possible along a spectrum, for motivated clients.

The American Psychiatric Association admits our inability to declare that gay people are 'born that way': "the causes of sexual orientation (whether homosexual or heterosexual) are not known at this time and likely are multifactorial including biological and behavioural roots which may vary between different individuals and may even vary over time.."[xxx] Even the avowedly pro-gay American Psychological Association states, "No findings have emerged that permit scientists to conclude that sexual orientation is determined by any particular factor or factors."[xxxi] The director of the Human Genome Project, Francis Collins, notes, "sexual orientation is genetically influenced but not hardwired by DNA, and whatever genes are involved represent predispositions, not predeterminations."[xxxii] Finally, as studies of identical twins conclusively demonstrate, there is no simplistic gay gene.[xxxiii] One of the biggest and best studies used the Australian twin database (Bailey, 2000) and examined how often a homosexual person's identical twin was also homosexual.[xxxiv] If there is such a thing as a 'gay gene' then the concordance should be high, even 100%, since the two individuals have the same genes. However, the concordance was weak; so weak (just 20%) that the study "did not provide statistically significant support for the importance of genetic factors for that trait." The concordance was closely linked to a shared family environment, which is consistent with a complex nature-nurture cause of same-sex attraction, not a simplistic 'born that way' claim.

Two years later, a study of twins by Bearman and Bruckner drawing on the high quality US National Longitudinal Study of Adolescent Health (AddHealth) found "no evidence of genetic influence on same-sex preference".[xxxv] The concordance between identical twins was only 6.7%, similar to non-identical twins (7.2%) and ordinary siblings (5.5%) and the researchers observed, "Clearly, the observed concordance rates do not correspond to degrees of genetic similarity ... If same-sex romantic attraction has a genetic component, it is massively overwhelmed by other factors."

In the same way, psychological mechanisms are not sufficient to explain every case and for many individuals the causative factors of same-sex attraction remain obscure. All one can conclude is that the phenomenon is multi-factorial in origin, with predisposing and precipitating factors; a deeply ingrained but potentially modifiable condition, not an innate identity.[xxxvi] [xxxvii]

The 'unchangeable' myth

On the transgender question, we have already noted that around three quarters of all gender-confused children get over their confusion as the hormonal surge of puberty brings deep physical and emotional transformation. A transgender identity is not inborn and unchangeable for those children, since it spontaneously resolves. In the remaining cases where transgender ideas do not resolve, the causes of the child's confusion are often explicable in psychological terms and do not imply any "inborn" condition.

On the gay and lesbian question, we observe a similar degree of spontaneous resolution, with around two thirds of young people who consider themselves gay or lesbian no longer

identifying as gay or lesbian in later life. This is demonstrated in several lines of evidence.[xxxviii]

First, a large, representative study in 2007 by Savin-Williams, using the USA AddHealth database, looked at adolescents who described themselves as same-sex attracted around age 16 and found that about two thirds of them changed to describe themselves as opposite-sex attracted by their early twenties.[xxxix] There was negligible percentage drift in the other direction.

Second, a study of some 14,000 adolescents by Ott and Corliss in 2010 found that two thirds of those who initially thought they might be homosexual eventually became exclusively heterosexual.[xl]

Third, the US National Health and Social Life Survey in the 1990s found that around 8% of students age 16 identified as homosexual, but that halved to around 4% by age 18, and dropped again to 2.8% by age 25.[xli] That is more than a two-thirds drift away from a homosexual identity from age 16 to adulthood. This finding was referred to in the testimony of psychiatrist Dr Jeffrey Satinover to the Massachusetts Senate in 2003 during its enquiry into a State Bill for same-sex 'marriage'. He said, in part:

> The most comprehensive, most recent and most accurate study of sexuality, the National Health and Social Life Survey (NHSLS), was completed in 1994 by a large research team from the University of Chicago and funded by almost every large government agency and NGO with an interest in the AIDS epidemic. They studied every aspect of sexuality, but among their findings is the following, which I'm going to quote for you directly: "7.1 [to as much as 9.1] percent of the men [we studied, more than 1,500] had at least one same-gender partner since puberty. ... [But] almost 4 percent of the men [we studied] had sex with another male before turning eighteen but not after. These men…constitute 42 percent of the total number of men who report ever having a same gender experience." Let me put this in context: Roughly ten out of every 100 men have had sex with another man at some time - the origin of the 10% gay myth. Most of these will have identified themselves as gay before turning eighteen and will have acted on it. But by age 18, a full half of them no longer identify themselves as gay and will never again have a male sexual partner. And this is not a population of people selected because they went into therapy; it's just the general population. Furthermore, by age twenty-five, the percentage of gay identified men drops to 2.8%. This means that without any intervention whatsoever, three out of four boys who think they're gay at age l6 aren't by 25.[xlii]

As the fourth line of evidence of spontaneous change, compare two studies from La Trobe University, one establishing the percentage of homosexual identification among Australian adults and one among Australian students. The adult study, "Sex in Australia: Sexual identity, sexual attraction and sexual experience among a representative sample of adults", was published in the *Australian and New Zealand Journal of Public Health* in 2003.[xliii] It found that 97.5% of Australians identify as heterosexual. The number who identify as homosexual is 1.2% (being 1.6% men, 0.8% women). Bisexuality adds another 1.2%, giving a total same-or-both-sex identification of 2.4% among Australian adults. The prevalence of same-sex attraction among Australian students is claimed to be 10%, according to the Safe Schools Coalition Australia document, *All of Us*. That is based on the Latrobe research, *Writing Themselves In Three* and yes, it is certainly an exaggeration given the selection bias

of the study, but let's accept it for sake of argument. That 10% figure includes bisexual attraction, so we should compare it with the 2.4% combined homosexual/bisexual figure for Australian adults. That still confirms at least a two-thirds drift away from a homosexual/bisexual identity between the school years and adulthood. Spontaneously, without any intervention.

What these four lines of evidence show is that most same-sex identification in adolescence clears away by adulthood. These young people did not necessarily seek professional therapy; they did not need to be persuaded; they just changed the way they felt. LGBT people are clearly not 'born that way' if two-thirds of them don't 'stay that way' between school and adulthood.

Given the extent of change and fluidity in sexual self-identification, why is the Government seek to block the right of individuals to seek professional counsel to explore this fluidity, if that is what they choose to do - even if that involves moving in a direction the Government seems ideologically opposed to?

RECOMMENDATION 5

The Government should accept that same-sex attracted individuals are not 'born that way' and in many cases do not 'stay that way', and the Government should not use this Bill to ban the liberty of such individuals to seek professional help to bring their sexuality into closer alignment with their values.

CONCLUSION

Summary of Recommendations

RECOMMENDATION 1

Section 5B of this Bill must be rejected – or at the very least amended:

1. **to ban only coercive and violent forms of 'therapy' but in no way inhibit standard psychotherapy and family therapy.**
2. **to remove any ideological coercion by the Government that would trample on the right of individuals, or of parents on behalf of their child, to determine their therapeutic goals.**

RECOMMENDATION 2

The Government should acknowledge the clinical evidence that standard psychological and family therapy for childhood gender dysphoria has proven to be ethical and beneficial over many years. Therefore, the Government should not ban such therapy for gender-dysphoric children.

RECOMMENDATION 3

The Government should recognise that its preferred "medical pathway" for gender dysphoria amounts to an experiment on healthy children causing known harm in

animal models, probable harm in children, and uncertain long-term benefit. Such an approach is unethical. The traditional "watch and wait" approach, along with supportive psychotherapy and family therapy, is a more rational and ethical option for the majority of children – and should not be criminalised by this Bill.

RECOMMENDATION 4

The Government should accept the evidence, over nearly a century, that standard psychological therapy has proven beneficial to clients who, for reasons of their own, seek to modify their unwanted same-sex attraction and maximise their heterosexual potential; that claims of undue harm are not substantiated by valid research; that the Government should not obstruct individuals from seeking professional help towards their goals.

RECOMMENDATION 5

The Government should accept that same-sex attracted individuals are not 'born that way' and in many cases do not 'stay that way', and the Government should not use this Bill to ban the liberty of such individuals to seek professional help to bring their sexuality into closer alignment with their values.

It is a failure of transparency and public consultation for the Government to bury such a contentious proposal under the distractions of the December holidays, with such a brief period of public consultation, yet it is consistent with the strategy to shepherd trans-Bills through western parliaments with minimal press coverage and public discussion. For example, this piece of strategic advice from the trans-lobby's top legal advisor, Dentons, discussed in December's Spectator:

> *Another technique which has been used to great effect is the limitation of press coverage and exposure. In certain countries, like the UK, information on legal gender recognition reforms has been misinterpreted in the mainstream media, and opposition has arisen as a result. …. Against this background, many believe that public campaigning has been detrimental to progress, as much of the general public is not well informed about trans issues, and therefore misinterpretation can arise. In Ireland, activists have directly lobbied individual politicians and tried to keep press coverage to a minimum in order to avoid this issue.*[xliv]

Further, this process has not sought balanced input, just opinion that would confirm the ideological position taken by the Government. The process commenced with a ludicrously unbalanced "round table" with only the like-minded in attendance, appealing principally to ideologically prejudiced authorities like the American Psychological Association and the spurious La Trobe paper while excluding any alternative authority or study critical of the ideology of gender fluidity. This cynical process has produced a Bill with astonishing penalties of imprisonment for any clinician who dares disagree with Labor's contested and utterly unscientific belief that a boy can be born in girl's body.

This process, and this Bill, is utterly unworthy of the parliament of a free society.

It might be within the proper role of parliament to prohibit doctors using electro-aversion therapy for sexual/gender dysphoria or prohibit therapeutic *coercion*. But politicians must not ban necessary psychotherapy for troubled children and their families or ban the option of helping a child get more comfortable as their natal sex.

Further, politicians must not outlaw the fundamental liberty of adults to seek professional talk-therapy to achieve their own emotional goals. Such goals for rational adults might well include working through issues of gender dysphoria or sexual identity, as they see fit. There is absolutely no place for the State to prohibit that liberty and defame such counselling as some sort of coercive "conversion therapy".

This liberty is important, for example, for people of faith who want to bring their sexual impulses or gender identity into better alignment with their values and beliefs, and we have noted such people testifying to the benefit of talk-therapy in their lives.

As a medical practitioner, I reject the Queensland Government's move to force a deeply prejudiced and ill-informed ideology upon us and compel us to treat patents contrary to scientific criteria and contrary to what we consider to be the patient's best interests.

I attach the four documents mentioned above, after which any MP will, I trust, vote to scrap Labor's ideological and ill-informed foray into coercion of thought and liberty.

> First, the paper published in *Quadrant* this week by professor John Whitehall, condemning exactly this sort of ideological Bill. It is entitled "Banning Alternatives to Child Gender Experiments" and highlights the medical recklessness of Labor's preferred treatment pathway for confused kids, amounting to experimentation on children.
>
> Second, an article from the *Medical Journal of Australia* by Dr Robert Koske, former director of child & adolescent mental health services in Western Australia, demonstrating the effectiveness of talk-therapy and family therapy in restoring gender-confused children to feel comfortable again as their natal sex. Here is proof of an ethical and scientifically well-established practice that would have this doctor imprisoned by Queensland Labor!
>
> Third, the authoritative clinical position statement of Dr Kenneth Zucker's gender clinic in Canada, as the outstanding example of a balanced psychological and family therapy approach to gender-dysphoric children and adolescents.
>
> Fourth, the comprehensive recent study of both gender and sexuality by professors Mayer and McHugh, as a reference for MPs who need more detailed evidence of this Bill's lack of scientific or ethical grounding (see pages 25, 50 and 93 in particular).

I ask to be able to discuss these matters further with the committee during its public hearing on this Bill.

Yours faithfully,

Dr David van Gend
[redacted]

REFERENCES

[i] Kosky R.J., "Gender-disordered children: does inpatient treatment help?", Medical Journal of Australia Vol. 146, June 1, 1987, P. 565

[ii] Heyer W., "I was a transgender woman," Public Discourse, April 1, 2015, http://www.thepublicdiscourse.com/2015/04/14688/

[iii] Whitehall J., "Conversion Therapy, the ALP, and Gender-Confused Children", Quadrant Magazine, February 2019, https://quadrant.org.au/magazine/2019/03/conversion-therapy-and-gender-dysphoric-children/

[iv] Mayer L., McHugh P., "Sexuality and Gender: Findings from the Biological, Psychological and Social Sciences", The New Atlantis, August 19, 2016, 6. http://www.thenewatlantis.com/docLib/20160819_TNA50SexualityandGender.pdf

[v] "Rupert Everett: I really wanted to be a girl", The Telegraph, June 19, 2016, http://www.telegraph.co.uk/news/2016/06/19/rupert-everett-i-really-wanted-to-be-a-girl/

[vi] McHugh, "Transgender Surgery isn't the Solution," op. cit.

[vii] J. Ristori and T. Steensma, 'Gender Dysphoria in Childhood' (2016) 28 Int Review of Psychiatry 13 at 15.

[viii] Schwarz, Listening to children imagining gender: observing the inflation of an idea, Op. cit.

[ix] Whitehall leter to the Hon Greg Hunt at https://genderinquiry.files.wordpress.com/2019/09/whitehall-to-hunt-submission-re-gender-dysphoria-inquiry.pdf

[x] Schneider MA, Spritzer PM, Soll BM et al. Brain maturation, cognition and voice pattern in a gender dysphoria case under pubertal suppression. Front Hum Neurosci. 2017;11:528. Doi:10.3389/fnhum.2017.00528.

[xi] Hulshoff Pol HE, Cohen-Kettenis PT, Van Haren NE, et al. Changing your sex changes your brain: Influences of testosterone and estrogen on adult human brain structure. Eur J Endocrinol. 2006;155(1):S107–S111. Doi 10.1530/eje.1.02248

[xii] Zubiaurre-Elorza L, Junque C, Gomez-Gil E, & Guillamon A. (2014). Effects of cross-sex hormone treatment on cortical thickness in transsexual individuals. J Sex Med, 2014;11(5):1248–1261. Doi https://doi.org/10.1111/jsm.12491

[xiii] Rametti G, Carrillo, B, Gomez-Gil E, Junque C, Zubiaurre-Elorza L, Segovia S., Gomez A, Karadi K, Guillamon, A. Effects of androgenisation on the white matter microstructure of female-to-male transsexuals. A diffusion tensor imaging study. Psychoneuroendocrinology, 2012;37, 1261–1269. Doi 10.1016/j.psyneuen.2011.12.019

[xiv] Rogers v. Whitaker, High Court of Australia, Aust Law J. 1993 Jan;67(1):47-55. https://www.ncbi.nlm.nih.gov/pubmed/11648609

[xv] Fuss J, Auer MK, Briken P. Gender dysphoria in children and adolescents: a review of recent literature. Curr Opin Psychiatry. 2015;28(6):431-434.

[xvi] Robert P. George and Ryan T. Anderson, at https://www.thepublicdiscourse.com/2019/12/58839/

[xvii] "Interview With Former Gay Activist, Michael Glatze," Joseph Nicolosi website, February 2014, http://www.josephnicolosi.com/interview-with-former-gay-acti/

[xviii] On bias in the APA task force http://www.josephnicolosi.com/apa-task-force/

[xix] APA report http://www.apa.org/pi/lgbt/resources/therapeutic-response.pdf

[xx] Nicolosi J, "What is Reparative Therapy?", http://www.josephnicolosi.com/what-is-reparative-therapy-exa/

[xxi] Dr David Pickup at http://www.davidpickuplmft.com/#!what-does-real-change-mean/c2364

[xxii] Client stories, Nicolosi clinic, http://www.josephnicolosi.com/client-stories/

[xxiii] Pickup D, "What is reparative therapy?" http://www.davidpickuplmft.com/#!what-is-reparative-therapy/c14hq

[xxiv] "What Research Shows", NARTH review, https://static1.squarespace.com/static/5527394ae4b0ab26ec1c196b/t/557b0f80e4b08777d54df70c/1434128256329/What-research-shows-homosexuality.NARTH_.pdf

[xxv] ibid, 32

[xxvi] Nicolosi, J., Byrd, A. D., & Potts, R. W. (2000). Retrospective self-reports of changes in homosexual orientation: A consumer survey of conversion therapy clients. Psychological Reports, 86, 1071–1088.

[xxvii] Dr Cummings interview at http://www.voices-of-change.org/ (at section 'Therapist voices')

[xxviii] Selmys M, *Sexual Authenticity, An intimate reflection on Homosexuality and Catholicism* (Huntington IN, OSV 2009)

[xxix] Testimony excerpted from http://www.voicesofchange.net/ quoted with permission of the treating clinician.

[xxx] "Position Statement on Issues Related to Homosexuality", American Psychiatric Association, December 2013, Accessed August 1, 2016, https://www.psychiatry.org/File%20Library/About-APA/Organization-Documents-Policies/Policies/Position-2013-Homosexuality.pdf
[xxxi] "Sexual Orientation & Homosexuality," American Psychological Association, accessed August 20, 2016, http://www.apa.org/topics/lgbt/orientation.aspx
[xxxii] Byrd D., "'Homosexuality Is Not Hardwired,' Concludes Head of The Human Genome Project," *Life Site News*, March 20, 2007, accessed August 20, 2016, https://www.lifesitenews.com/news/homosexuality-is-not-hardwired-concludes-head-of-the-human-genome-project
[xxxiii] "Identical Twin Studies Demonstrate Homosexuality is Not Genetic," NARTH Institute, accessed August 20, 2016, http://www.narth.com/#!gay---born-that-way/cm6x
[xxxiv] Bailey J. M., et al., "Genetic and Environmental Influences on Sexual Orientation and Its Correlates in an Australian Twin Sample," *Journal of Personality and Social Psychology* 78, no.3 (2000): 524–536, https://genepi.qimr.edu.au/contents/p/staff/CV261Bailey_UQ_Copy.pdf
[xxxv] Bearman, P.S. and Bruckner H., "Opposite-sex twins and adolescent same-sex attraction," *American Journal of Sociology* 107, no.5 (March 2002): 1179–1205, http://www.soc.duke.edu/~jmoody77/205a/ecp/bearman_bruckner_ajs.pdf
[xxxvi] See also the summary of adolescent fluidity of sexual orientation: "Adolescents, Therapeutic Choice and Scientific Integrity," American College of Pediatricians, February 13, 2014, http://www.acpeds.org/adolescents-therapeutic-choice-and-scientific-integrity
[xxxvii] Mayer L., McHugh P., "Sexuality and Gender: Findings from the Biological, Psychological and Social Sciences", *The New Atlantis*, August 19, 2016, especially page 25 and following, http://www.thenewatlantis.com/docLib/20160819_TNA50SexualityandGender.pdf
[xxxviii] Mayer L., McHugh P., "Sexuality and Gender: Findings from the Biological, Psychological and Social Sciences", *The New Atlantis*, August 19, 2016, especially page 25 and following, http://www.thenewatlantis.com/docLib/20160819_TNA50SexualityandGender.pdf
[xxxix] Savin-Williams R.C. and Ream G.L., "Prevalence and Stability of Sexual Orientation Components During Adolescence and Young Adulthood," *Archives of Sexual Behavior* 36, no.3 (2007): 385-394, http://link.springer.com/article/10.1007/s10508-006-9088-5. Note: for the drift from same-sex to opposite-sex attraction see Table 2 (Wave 1 to Wave 3, 71.7% male, 55.3% female) and for behaviour see Table 3 (Wave 1 to Wave 3, 71.6% male, 76.8% female).
[xl] Ott M.Q., Corliss H.L., et al., "Stability and Change in Self-Reported Sexual Orientation Identity in Young People: Application of Mobility Metrics," *Archives of Sexual Behavior* 40, no.3 (June 2011): 519-532, http://link.springer.com/article/10.1007%2Fs10508-010-9691-3
[xli] "National Health and Social Life Survey," Population Research Center of the University of Chicago, http://popcenter.uchicago.edu/data/nhsls.shtml Also reviewed in book form at Laumann E. et al., *The Social Organization of Sexuality: Sexual Practices in the United States* (University of Chicago Press, 2000).
[xlii] Dr Satinover's full testimony is reproduced with permission at: Satinover J., "Testimony Before the Massachusett's Senate Committee Studying Gay Marriage," Catholic Education Resource Center, accessed August 20, 2016, http://www.catholiceducation.org/en/marriage-and-family/sexuality/testimony-before-the-massachusetts-senate-committee-studying-gay-marriage.html
[xliii] Anthony M.A. et al, "Sex in Australia: Sexual identity, sexual attraction and sexual experience among a representative sample of adults," *Australian and New Zealand Journal of Public Health* 27, no.2 (2003): 138–145, http://www.blackwell-synergy.com/doi/abs/10.1111/j.1467-842X.2003.tb00801.x
[xliv] Kirkup J, "The document that revelas the remarkable tactics of the trans lobbyists", *Spectator*, 2/12/2019

From:	CAREL D VAN GEND
To:	Health, Communities, Disability Services and Domestic and Family Violence Prevention Committee
Subject:	Attachments to my submission on the Health Legislation Amendment Bill 2019
Date:	Monday, 6 January 2020 11:21:29 AM
Attachments:	Whitehall, Quadrant Jan 2020.pdf ATT00001.htm Kosky - Gender-disturbed children - MJA.pdf ATT00002.htm Zucker Model for treatment of Gender Dysphoria in Children.pdf ATT00003.htm Meyer & McHugh - Atlantis - Sexuality and Gender - special report.pdf ATT00004.htm

---

Health, Communities, Disability Services and Domestic and Family Violence Prevention Committee

To the secretary,

I have previously sent the PDF of my submission.
As mentioned, I now forward the four attachments to my submission, as described in the conclusion.

Banning Alternatives to Child Gender Experiments

Quadrant Magazine
3rd January 2020

John Whitehall

The Labor government of Victoria is in the process of drafting legislation to ban so-called "conversion therapy", which it defines as "any practice or treatment that seeks to change, suppress or eliminate an individual's sexual orientation or gender identity".

On the face of it, this would appear to be a good thing, given the effect of the so-called "Safe Schools" program, and other initiatives, which, under the camouflage of anti-bullying, have planted seeds of primordial confusion in the minds of many children with their doctrine of gender fluidity, which preaches there is no such binary entity as a boy or a girl. The ideology asserts that everyone is somewhere on the intervening rainbow, depending on their feelings at the time.

The Victorian government could have been applauded had it decided its Education Department was no longer permitted to promote the ideology that has caused hundreds of Victorian children to be submitted to attempts by members of the Health Department to eliminate gender identity determined by chromosomes, and to change bodies to suit mental orientations.

But no: the Andrews government has no intention of stopping the evangelism and practices of the new ideology. To the contrary, with Orwellian Newspeak, it intends to ban any attempt to "convert" or re-orientate a confused child back to a gender identity congruent with its chromosomes.

Failure to comply with the ban will be punished by criminal or civil law, or both, whether committed by omission or commission. Omission will comprise failure of a therapist or teacher to refer a confused child to the Gender Service at the Royal Children's Hospital in Melbourne where it may undergo "affirmation" of a new gender by means of hormones and

surgery. Commission comprises attempts to "make the child comfortable in the skin in which it was born" by means of family and individual psychotherapy: the former mode of therapy that was associated with success, but is now derided as "abhorrent", and is to be banned as "conversion therapy".

The first step to the banning of "conversion therapy" in Victoria is found in the Health Complaints Act 2017, whose provisions, according to former Victorian Health Minister, now Attorney-General, Jill Hennessy, will "provide the means to deal with those who profit from the abhorrent practice of gay conversion therapy … which inflicts significant emotional trauma and damages the mental health of young members of our community".[1] Moreover, according to Ms Hennessy, the crime of conversion therapy is so grave it demands "reverse onus" in which "the accused is required to prove matters to establish, or raise evidence to suggest, that he or she is not guilty of an offence".

The second step was the release in October 2018 of a report titled *Preventing Harm, Promoting Justice: Responding to LGBT conversion therapy in Australia*[2] which was prepared by the Victorian Human Rights Law Centre and the Australian Research Centre in Sex, Health and Society at La Trobe University, with contributions from the Commissioners for Gender and Sexuality, Health Complaints, and Mental Health, and members of the Labor government's LGBTI task force.[3] The Research Centre at La Trobe was largely responsible for the Safe Schools program.

The report called for the Health Complaints Act to be strengthened and to become instructive for the rest of Australia: to consider "legislative and regulatory options to restrict the promotion and provision of conversion therapies and similar practices, including by faith communities and organisations and both registered and unregistered health practitioners"[4]. It calls for legislation "that categorically outlaws" conversion therapy; "that unequivocally prohibits [it] whether or not an individual complaint is made" and declares the need for "a legislator to intervene to protect children from conversion practices regardless of the setting or level of formality".

The report demands that therapists of gender-confused children undergo specific accreditation earned by special education that emphasises that attempts to convert a confused child back to a gender identity congruent with chromosomes are “not consistent with their professional obligations” and will invite “disciplinary actions”. Schools must have similar accreditation. Infraction invites de-funding.

The report demands that “public broadcasts” promoting “conversion therapy” also be banned. Given, therefore, this article argues against hormonal and surgical intervention in favour of traditional psychotherapy, it may be the last of its kind in Victoria!

The report coloured its arguments with declarations from fifteen respondents recruited from “various LGBTI, queer and ex-gay survival” and other networks, concluding it had found “overwhelming evidence” of harm from “conversion therapy” practised as “spiritual healing” in various religious institutions. The respondents were aged from eighteen to fifty-nine, nine identified as male and gay, two as transgender, one as female and bisexual, and one as non-binary. Thirteen were from Christian backgrounds, one Jewish and one Buddhist.

Therapy had included individual and group counselling, with theological discussion and prayer, but had failed to influence sexual orientation of the respondents. Worse, it was claimed to have increased misery through intensification of contradictions with traditional theological beliefs. Thus, conversion therapy is futile, harmful, deserves to be banned, and churches, especially Christian Protestant ones, should embrace differing sexual behaviours. Large graphics of crucifixes throughout the report maintain the focus on Christianity.

The story of one of the fifteen, Jamie, requires special attention because, frankly, it beggars belief that such sexual torture could have occurred and not been revealed in these days of publicity of abuse within the church and psychiatric institutions. Abuses in the church are daily fare in the media, and the travesties of “deep sleep” therapy in Chelmsford, and anarchy in Ward 10B in Townsville, must remain known in psychiatric circles: surely someone, somewhere, would have blown a whistle over Jamie.

Jamie's saga began when she was seventeen, in the late 1980s, after telling her parents she had "fallen in love with a Christian woman". In response, she was awakened one night and taken to a psychiatric institution where, for over two weeks, she was forced to "sit in a bath full of ice cubes while Bible verses were read over her, to being handcuffed to her bed at night and deprived of sleep, to being interrogated and baited by a man in a dog collar" and to then having been "restrained … having an electrode attached to my labia, and images projected onto the ceiling; a lot of pain from the electrodes and being left there for quite a long time afterwards; exposed and alone".

The La Trobe report rightly condemns this story and needlessly refers to international obligations against torture. But where is the evidence that the story is true? If it is true, the perpetrators should be in jail. If it is sincerely believed by Jamie, but untrue (as in the "repressed memory" debacle of psychiatry), she needs help. If the Andrews government is not concerned about its truth, the people of Victoria need help because it is part of the argument for major legislative change.

Apart from promoting a story of dubious veracity, there are other weaknesses in the La Trobe report. Given that the Australian Human Rights Commission declares 11 per cent of Australians to be "Lesbian, Gay, Bisexual, Trans and Intersex people",[5] fifteen complainants is not a convincing number, especially in the absence of a denominator: how many people have been helped with unwanted sexual preoccupations by means of "spiritual" counselling? How game would they have to be to go public? Do they and their therapists not have the human right to continue with such therapy if they both agree?

Also, self-selection from the established LGBTI community is not representative. Ironically, a review of experiences of American mothers of teenage daughters with Rapid Onset Gender Dysphoria,[6] which concluded they were suffering from a "social contagion" and not a biological disorder, was derided by gender activists, disowned by a university and pulled from a website for its "unscientific" recruitment from social media sites. Yet, based on similar methodology, the La Trobe study is fundamental to major legislative change by the Labor Party.

Lastly, the study extrapolates from adults to children, and from homosexuality to transgendering. It ignores the widely reported assurance that, as they grow, almost all gender-confused children will re-orientate to an identity that accords with their natal sex without the help of hormones and surgery, but with the help of the compassionate counselling Labor is intent on banning.

The next step towards the ban occurred in November 2018 when the Victorian government referred the La Trobe report to the Health Care Complaints Commissioner (HCCC) who quickly concurred with the need for "legislation that clearly and unequivocally denounces conversion practices and prohibits conversion practices from occurring in Victoria". In February 2019, the Andrews government publicly responded to the La Trobe study and the HCCC report with the announcement that "it will bring in laws to denounce and prohibit LGBTI conversion practices".

Finally, in October 2019, the Andrews government released a discussion paper titled "Legislative Options to implement a ban of conversion practices" in order "to seek the community's views on the best way/s to implement a ban of conversion practices". The discussion paper is not interested in discussion as to whether conversion therapy should be banned: it merely seeks affirmation over something it has already decided to do. Most likely it seeks replies, such as Jamie's, which can be used for publicity purposes.

The discussion paper wonders if the public would like to banish conversion therapy by criminal or civil law, or both. It suggests criminalisation would "send a clear message about the unacceptability of such behaviour" but warns "criminal offences are investigated by police, [and] this approach is not as reliant as some civil schemes on individuals coming forward with complaints". Citizens are invited to tick their reply in a drop-down box.

In similar boxes, citizens are asked, "Who do you think should be banned from providing conversion practices? Specific professionals or persons? Or everyone who offers conversion practices?" Don't waste words, just tick the box.

And they are asked, “Who do you think should be protected [from conversion therapy]? Should protection be limited to children and people experiencing vulnerability? Should protection be available to all members of the community?”

Ominously, citizens are asked, “In what ways do you think the issue of consent is relevant to determining who should be protected?” This little question has major importance that might as yet be unappreciated: it concerns the power of the Orwellian state to over-ride parental objections to the transgendering of children.

In November 2019, the Gender Service at the Melbourne Children’s Hospital published the protocol of a study, named Trans20, which it has been undertaking since February 2017 on “the health outcomes of trans and gender diverse young people”. The study will conclude in February 2020, by which date it expects to have enrolled a massive 600 children.

Why was the study initiated? Because, according to its authors, “specific healthcare for TGD [transgender and gender diverse] children and adolescents—including the use of medical interventions—is relatively new, having commenced only in the past two decades. Consequently, there is a need for more empirical data to inform best practice in important areas such as risk and protective factors and the long-term safety and outcomes of medical interventions.” The authors say “stronger evidence is required” regarding “the natural history of gender diversity” because “not all gender diverse children develop a transgender identity” with literature reporting that “45%–88% of children with gender concerns in childhood go on to identify with their birth-assigned sex in adolescence and adulthood … indicating that only some of these children report a transgender identity when older”.

The Gender Service had revealed details of its regime of medical intervention in guidelines published in 2018, but summarised its stages in the study. First, children are welcomed into the process of “affirmation” towards a gender of their choice, contrary to natal sex. This begins with “social transition” which may “involve adoption of gender-affirming hairstyles, clothing, names and pronouns”.

Then, the child may progress to medical interventions:

First, medications known as GnRH analogues ("puberty blockers") can help prevent the development of undesired physical changes during puberty, which can trigger and/or exacerbate GD [gender dysphoria]. Second, gender affirming hormones, namely oestrogen and testosterone, can help promote physical changes congruent with the young person's gender identity. Thirdly, surgical procedures, such as chest reconstructive surgery for transmasculine individuals ("top surgery"), are performed on adolescents in some centres, while genital surgery is generally only advised after the age of majority.

The article does not reveal which centres in Victoria are performing mastectomies on young people, and how many have occurred. But, before the Family Court of Australia abrogated its "gate keeping" role in December 2017, five such procedures had been reported: two in natal girls aged fifteen, one at sixteen, and two at seventeen. Nor does the article clarify the word *generally* with regard to genital surgery and its inherent castration.

The study will follow the outcome of children treated with hormones and surgery, but will provide no comparison with any alternative form of management. The authors claim it is "not ethically possible to incorporate an untreated control group in the Trans20 study design", implying that no other form of therapy exists, and, no doubt (because it is a ubiquitous claim), failure to get on with medical intervention will invite self-harm, including suicide.

Whereas few would insist on an "untreated" cohort for comparison, a review of the international literature would insist on comparison with a cohort treated by compassionate, individual and family psychotherapy, as has been shown to be effective in many places, including Australia, in the past.[7]

The study rejects the protocols for human experimentation which were hammered into various human rights documents after the travesties of "research" in Germany in the Second World War. The Melbourne researchers confess most children will not need the therapy

they are going to receive, the researchers must know that therapy is invasive, they admit they do not know whether it will work, or what side-effects may emerge, but, over the years, they think they can work it all out, without consideration of any alternatives which, in any case, will be banned by their supporting government. How did the prestigious Royal Children's Hospital in Melbourne come to approve of such experimentation? The machinations of its ethics committee should be made public. Who will be liable for litigation?

Normally, many conditions must be fulfilled before live experimentation is approved in Australia, even on rats, let alone children. There must be biological plausibility, an acceptable purpose, supporting review of literature, associated laboratory findings, supporting human experience, a pilot project, a control population, "blinded" intervention, analysis by disinterested assessment, full disclosure of possible side-effects resulting in informed consent, and the opportunity to withdraw at any time.

Trans20 offends at almost every point. The condition it is examining lacks biological plausibility. There is no blood test, X-ray or genetic analysis to suggest a physical basis for the current epidemic of childhood gender dysphoria: the epidemic displays features of a contagious psychological problem to which mentally vulnerable children and some parents seem prone. Even the authors of the study admit, "Serious psychiatric disorders are very common, with rates of self-reported depression and anxiety diagnoses in transgender and gender diverse (TGD) young people in Australia as high as 75% and 72%, respectively, and 80% reporting ever self-harming and 48% ever attempting suicide." The authors do not mention autism, which is a prominent co-morbidity in many international reviews, and is known for its distorted perceptions.

Proponents for hormonal intervention maintain that the psychiatric co-morbidities result from bullying. They deny the more likely explanation, that gender confusion is a secondary symptom of an underlying disorder. Proponents also argue the need for medical intervention to prevent suicide but there is no evidence, *per se*, that gender dysphoria leads to suicide. Certainly gender-confused children demand protection because all their

associated psychiatric morbidities and family disruptions are associated with increased propensity to self-harm. Given the propensity of transgendered adults to commit suicide, as discussed below, the best way to reduce the rate of suicide in children might be to stop transgendering them.

Mental disturbances in parents include personality disorders and marital disruption. One prominent study in Western Australia found a symbiotic relationship of pathology between unhappy mothers and young boys. The mothers had been mistreated by men, found their little boy more appealing in a dress, and he quickly learned that wearing it would bring a smile to his mother's face. These days, gender dysphoria appears more common in young, disturbed teenage girls whose parents are shocked by their daughter's unexpected psychological infection.

Hormonal and surgical management of a psychological problem lacks plausibility, and the study lacks acceptable purpose: the not dissimilar disorder of anorexia nervosa, in which feelings are incongruent with bodily facts, does not receive "affirmation" therapy. The healthy body is not altered to fit the disturbed mind, nor should it be in children confused over gender.

Review of the literature would have advised the researchers of the former rarity of the problem, of successful treatment by psychotherapy, of the widespread physiological role of the hormone they intend to "block", of the side-effects of that blocking, of the effects on the brain of cross-sex hormones, of the lack of evidence for positive outcome as revealed by the growing number of "detransitioners" and the high rate of suicide after transgendering in adults.

The rejection of a control arm to the study, and the associated evaluation of outcome by its "un-blinded" authors, desirous of seeing good in their work, is an egregious example of "observer bias". That the authors attest they have no conflicts of interest in the study is challenged by the dependence of reputation, livelihood and medico-legal protection on a desired outcome.

It is important to look more closely at the effects of “puberty blockers” and cross-sex hormones because their use is fundamental to the medical intervention in childhood gender dysphoria but offends medical ethics, especially because proponents maintain the effects of blockers are “safe and entirely reversible” when they are not, and are silent on the cerebral effects of cross-sex hormones.

Puberty is initiated by Gonadotrophic Releasing Hormone (GnRH) released from the hypothalamus to cause the nearby pituitary gland to release gonadotrophic hormones into the bloodstream to stimulate the maturation of the distant gonads and the release of their sex hormones, testosterone and oestrogen, which evoke secondary sex characteristics. Monthly injection of an analogue of GnRH blocks the pituitary from releasing gonadotrophins, causing puberty to stall.

The analogues may be administered at the early signs of puberty: their earliest known administration in Australia was to a natal boy aged ten and a half. Proponents claim delaying puberty provides more time for a child to contemplate its gender identity and procreative future. They also claim it avoids “unwanted” features of the rejected sex, and facilitates future surgery: a breast bud is easier to remove than the developed organ (but an undeveloped scrotum may offer insufficient skin for creation of an ersatz vagina, necessitating the transplantation of a length of intestine to permit receptive intercourse).

The role of GnRH is not, however, limited to the vertical axis from hypothalamus to gonads. GnRH has “horizontal” effects to other parts of the brain, and, perhaps, a widespread role in maintaining the integrity of nerve cells, even in the lining of the bowel.

Of particular importance to gender identity is the role of GnRH in the limbic system, and in sexualising centres in the middle of the brain. The limbic system co-ordinates emotions, cognition, memory and reward into a kind of internal worldview, including identity, which is pursued by “executive function” through ambition, behaviour and decisions.

Such cerebral function has been shown to be reduced in adults administered blockers to reduce the pathological effects of sex hormones, for example, of testosterone in stimulating prostate cancer, or oestrogen stimulating endometriosis in women. Of course, confounders in assessment of the effect of blocking GnRH in those situations include age, disease and treatment, as well as interruption of the normal effects of sex hormones on the brain, but a specific effect of GnRH blockage cannot be excluded.

Such effect was proven in veterinary laboratories in Glasgow and molecular laboratories in Oslo. Given to immature sheep, blockers were found to result in sustained damage to the limbic system, associated with alteration of the function of many of its genes, resulting in sustained reduction of ability in mazes and increase in emotional lability.

A specific role of GnRH in sexualising centres in the middle of the brain was shown by Pfaff *et al*[8] in the 1970s. Stimulated, immature rats respond with sexualised behaviour: the immature female prepares to be mounted, and the male to oblige.

It may be wondered if any child of ten and a half is capable of mature contemplation of gender identity, but more so when sexualisation has been neutered by the interruption of primary centres in the mid-brain, as well as the secondary effects of sex hormones, combined with disruption of the integrating limbic system. It is not plausible to claim that such a child can make a mature decision of such magnitude, and it is not right that someone could make that decision for the child.

Other studies on the effect of blocking GnRH should be mentioned: blockers given to an immature natal boy interfered with normal growth of cerebral white matter which was associated with reduced function. Blockers given to women with endometriosis were associated with increased gastro-intestinal problems and a 50 per cent reduction in intestinal nerve cells, suggesting a widespread role for GnRH in maintenance of neuronal health.

Traditional medical ethics demand full disclosure of possible side-effects: so does the High Court of Australia, which, in *Rogers v Whitaker*, ruled that even possibilities of side-effects as remote as one chance in thousands must be declared to a patient considering treatment and, by inference, participation in research.

While proponents for the use of blockers in "affirmation" refer to problems with bone growth, there is no evidence of the discussion of effects on the central and peripheral nervous systems. There is only assurance of safety and reversibility.

The use of cross-sex hormones to evoke the sexual characteristics of the desired sex used to be delayed until sixteen years of age, but the Melbourne guidelines have no such advice and the hormones now appear to be given much earlier, in accordance with a certain logic.

The development of the confused child is neutered by blockers while its peers are evolving socially and developing secondary sex characteristics. Thus, Jack believes he is a girl, a conviction fortified by authority figures, including the staff of the Gender Service. But his female peers are behaving as teenage girls and are developing breasts. It is cruel not to give oestrogen to help "her" keep apace.

While proponents of affirmation publicise the bone and cardio-vascular complications of cross-sex hormones, there is no evidence they provide information on the effects of these hormones on the brain. But Hulshoff Pol *et al*[9] have shown that the male brain administered oestrogens shrinks at a rate ten times faster than ageing after only four months. The female brain on testosterone hypertrophies. Thus, the effect of cross-sex hormones on a growing brain, organised before birth in a sex-specific way to await activation by appropriate hormones in puberty, can only be contemplated as deleterious, especially when continued for life. It is implausible to imagine otherwise.

There is no evidence that proponents of hormonal affirmation raise these issues with confused children and carers, but they should, perhaps especially in the context of the high rate of suicide in transgendered adults. Proponents argue that the high rate is due to

ostracism, even though it is derived from epidemiological studies in the most accepting of European societies. It is not implausible to wonder if the rate reflects the absence of gold at the foot of the transgendered rainbow, but also to wonder if the structural and functional effects of hormonal interruption of the cerebrum results in such disorder of mental processes that death is considered more preferable than life.

It is not known how much detail of side-effects of surgery is revealed to clients, but known euphemisms suggest unrealistic assurance. For example, mastectomies are described as "reversible" as if the function of the female breast can be reduced to a cosmetic appendage replaceable with a silicon implant. Castration is described as "reduced reproductive capacity" which may be avoided by preserving frozen biopsies of gonads or sperm: a process in which only expense is guaranteed, and in which there is an apparently undiscussed higher rate of foetal abnormality.

Faced with a confused child and parents, wherein lies the duty of care of a therapist or teacher? If the child is referred to a gender clinic which practises hormonal and surgical intervention, there is vicarious participation in an experiment involving massive intervention in the minds and bodies of children: one that is biologically implausible, unnecessary and associated with numerous side-effects, according to the international literature.

The excuse that emerged from Nazi Germany, that the "government made me to do it", is not generally accepted as valid. Yet, that obligation is what the Andrews government appears determined to inflict upon its citizenry. On pain of civil and, probably, criminal sanctions, carers and teachers of confused children will be obliged to entrain them to "affirmation".

Given that most confused children revert towards their natal sex without medical "affirmation", surely there is a greater "duty of care" to avoid the experiment. Such a campaign is needed in Victoria.

Dr John Whitehall is Professor of Paediatrics at Western Sydney University. He has written several articles for* Quadrant *on childhood gender dysphoria.

Notes

1. Jill Hennessy. Health Complaints Bill Second Reading. Parliament of Victoria. Hansard. February 10, 2016.
2. Jones, T., Brown, A., Carnie, L. *et al. Preventing Harm, Promoting Justice: Responding to LGBT Conversion Therapy in Australia*. Melbourne: GLHV@ARCHS and Human Rights Law Centre, 2018.
3. Ibid, p 9.
4. Ibid, p 3.
5. https://www.humanrights.gov.au/sites/default/files/FTFLGBTI.pdf Accessed November 20, 2019.
6. Littman, L. Rapid onset gender dysphoria in adolescents and young adults: A study of parental reports. PLoS ONE 13(8):e0202330. https://doi.org/10.1371/journal.pone.
7. A full review of the successes of non-hormonal therapy (with appropriate references) appeared in *Quadrant*, March 2019, "Conversion Therapy and Gender Dysphoric Children".
8. Pfaff, D., Luteinising hormone releasing factor potentiates lordosis behavior in hypophysectomised ovariectomised female rats. *Science*. 1973. 182:1148-1149.
9. Hulshoff Pol, H.E., Cohen-Kettenis, P.T., Van Haren, N.E., *et al*. Changing your sex changes your brain: Influences of testosterone and estrogen on adult human brain structure. *European Journal of Endocrinology*. (2006). 155:S107–S111.

ORIGINAL ARTICLES

Gender-disordered children: does inpatient treatment help?

(for editorial comment, see page 561)

Robert J. Kosky

ABSTRACT Treatment guide-lines for gender-disturbed children currently are unclear. This clinical report describes eight children with cross-gender behaviour who were treated in an inpatient unit for children. The short-term outcome and long-term clinical observations are provided, which indicate a generally good outcome. The findings may have both practical and theoretical significance because they suggest that some gender disorders may be determined by intrafamilial interactions which are correctable.

(Med J Aust 1987; 146: 565-569)

Outcome studies of children who have markedly inappropriate gender behaviour, or who reject their biological sex, indicate that many develop unhappily, with poor interpersonal relationships, homosexuality, transvestitism and transsexuality.[1-5] Clinical descriptions reveal that the children themselves are unhappy and lonely.[6] While such knowledge provides compelling reasons for early therapeutic intervention, guide-lines for the treatment of gender-disordered children are still unclear. Green described an eclectic approach that involved outpatient counselling of the child and parents, resocialization and behavioural modification.[7,8] Good results have been claimed for group therapy that is associated with behavioural modification.[6] Rekers et al. have reported a series of cases that were treated by behavioural modification.[9-11] Psychoanalysis[12] and intensive psychotherapy that are aimed at resolving conflicts over separation or individuation developmental tasks have been recommended.[13]

Over all, such managements have not been very successful. Of 138 treated cases which were culled from the literature by Zucker,[14] 97 cases had some postpubertal outcome data available. Of these, only 25% developed as heterosexual. Forty per cent of patients were homosexual and 6% were transsexual or transvestite, with the rest left in the "uncertain outcome" category.

In spite of consistent reports of grossly disordered family relationships and poor social skills among such children, there have, so far, been no reports on the use of therapy as an inpatient treatment. This report describes such an approach and provides information on short-term and postpubertal outcome.

Princess Margaret Hospital for Children, Thomas Street, Subiaco, WA 6008.
Robert J. Kosky, FRANZCP, Director, Psychiatric Services; and State Director, Child and Adolescent Psychiatry Services, Health Department of Western Australia.
Reprints: Dr R.J. Kosky.

Clinical records

Between 1975 and 1980, eight primary school-aged children with cross-gender behaviours were referred to the Child and Adolescent Psychiatry Services, Perth, Western Australia. Each child was examined by an experienced child psychiatrist; some were examined by me personally. The clinical features that are reported here were taken from psychiatric interviews and the clinical and nursing notes. The salient points are summarized in the Table.

By the term cross-gender behaviour, I refer to the attitudes, affectations, mannerisms and interests that were exhibited by the children as manifestations of the opposite sex. These behaviours included persistently dressing in clothes that are identified as those of the opposite sex and walking, talking and playing in ways that are commonly associated with the opposite sex. The cross-gender behaviours did not usually correspond to the child's age but involved behaviours that are generally associated with adults of the opposite sex; for example, a nine-year-old boy wearing high-heeled shoes, stockings, jewellery and make-up. The cross-gender behaviours sometimes centred on a few activities, such as sitting in front of a mirror and applying make-up for hours on end. Such extended occupations precluded the wide-ranging activities and interests that are characteristic of other children. The children denied their biological sex to a greater or lesser degree. The one female patient vehemently denied her sex and expressed disgust at the genital evidence of it. Others were less marked, but all said they wanted to be of the opposite sex and did not like their genitals. One boy sat to micturate. Other authors have provided similar descriptions of cross-gender behaviour,[6,8] and the criteria for the classification of gender identity disorder of childhood in the *Diagnostic and statistical manual of mental disorders* (3rd edition) encompass these features.[15,16]

The unhappiness of these children was noted in the initial psychiatric interviews. Some were noted to have suicidal ideas. Each expressed sadness and loneliness. All were of average or above average intelligence and had no physical abnormalities. There was no evidence of psychosis.

Their parents were unhappy, especially the parent of the opposite sex who seemed tied to the home, lonely, and with few social outlets. This parent usually described a close emotional bond between themselves and the child. The parent of the same sex was either absent from the home, away for long periods, or worked excessively long hours. Frequently, a grandparent appeared to be the dominating influence in the household.

In general, cross-dressing began when the child was very young, usually around two years of age. The parent of the opposite sex may have initiated this as a "joke" ("Doesn't he [or she] look lovely?") and, with delight, found that, when the child was dressed in clothes of the opposite sex, play together was fun. The child later cross-dressed on his or her own. This parent and the child undertook few activities outside the home. Most of the children had not attended kindergarten and school refusal had occurred in most cases. When at school, the child's cross-gender behaviour became very noticeable and was remarked upon negatively by teachers and other children. The parents became aware that their child had failed to develop age-appropriate peer relations or social skills and was friendless and unhappy.

Psychological assessments, including the "Draw a Person" Test and the It-Scale for Children[17,18] confirmed the clinical findings that these children denied or rejected their biological sex and identified with the opposite sex.

Case 1

David (a pseudonym), who was aged six years (IQ = 122), refused to go to school unless he were dressed in female clothes. When he arrived at school, after his mother had agreed to his demand, he was scorned by the other children. He was friendless, lonely and unhappy, except when playing "dress-ups" at home with his mother. His father was a truck driver and absent from home for long periods; his mother was a shy, introverted woman who had few acquaintances.

David's brother and sister were much older. David's mother had wanted another daughter. After David's birth she was depressed for nearly a year and felt that he was a "stranger". When he was about 18 months old she had dressed him in her daughter's old baby clothes, which she had kept. She had enjoyed this, "it was a joke, really", so she continued to indulge the whim and found that she and David played easily together during "dress-ups". Soon, David dressed himself in his sister's clothes and used his mother's make-up. He attended kindergarten sporadically. When he did, he headed straight for the "dress-up" box and spent his time there in solitary play. Such behaviour was not possible at school, and David's mother quickly became aware that he was isolated socially and incapable of mixing with other children.

Case 2

Reginald (a pseudonym) was seven years old (IQ = 105). He was an extremely unhappy child and had thought a lot about suicide. He had preferred girls' clothes since he was two years of age, when he became "attracted" to his older sister's underwear. He preferred to play with girls, but mostly liked to be at home with his mother. He expressed a strong desire to be a girl and preferred to sit to micturate. Normally he was uneasy and withdrawn in any social situation, but when dressed as a girl he showed off, affecting "girlish" mannerisms. The children at school ignored him and the teachers reported that he could cope only in a one-to-one situation.

Reginald was unplanned and born when his parents' marriage was unsatisfactory. His mother told us that from the time Reginald was born he was "bullied" and "dominated" by his older sister who would often say "if only he was a girl". However, after clinical observations of the family

TABLE: Clinical features and progress

Case no.	Age (years) and sex	Cross-gender behaviours	Other problems	Treatment length (weeks)	Follow-up at one year	Age last seen (years)	Postpubertal status
1	6M	Dresses in mother's and sister's clothes	School refusal. Enuresis	13	No cross-gender behaviour	16	No cross-gender behaviour. Male identified. Hetèro-sexual erotic attraction
2	7M	Expresses desire to be a girl. Cross-dresses. Plays only with girls	Unhappy. School failure. Friendless	10	No cross-gender behaviour. Mixes with both sexes. Parents undergoing sex therapy	13	"Quite well", has "ups and downs" in mood. Relates to both sexes. Erotic desires unknown. Parents' marriage "great"
3	8M	Effeminate. Cross-dresses. "Seductive" to men. Obsessional. Friendless	Unhappy. Aggressive. Night terrors	17	No cross-gender behaviour. Affectionate to men but aggressive towards girls	15	Telephone conversation: no cross-gender behaviour. Friendly relationships with both sexes. Mildly antisocial. Erotic desires unknown
4	10F	Objects to biological sex. Cross-dresses	Friendless. School refusal. Depressed	28	Accepts sex. No cross-gender behaviour. Successful at school and socially	21	Successful career. No strong male attachments. Rather "mannish", but accepts femaleness. Erotic desires unknown
5	10M	Wears female under-clothes. Wants to be a girl	Unhappy. Friendless. Lacks initiative	17	Happy, making friends. Involved in sport. No cross-gender behaviour. Some antisocial traits	18	"Very well now". Academi-cally sound. Not many friends. Cross-dressing recurred three years previ-ously but "stopped of its own accord"
6	10M	Cross-dresses. Effeminate. Objects to being male	Unhappy. Friendless	6	Discharged against medical advice	—	No further contact
7	11M	Cross-dresses. Effeminate. Dislikes male characteristics	Suicidal. Friendless	22	No cross-dressing but still effeminate. Involved in sport. Successful at school. Parents unhappy	19	Homosexual activity between ages of 14 and 17 years. Unhappy about this. Sought therapy. "Feels heterosexual" but no heterosexual activity yet. Very successful career
8	12M	Cross-dresses. Identifies with women. ? homosexual	Depressed and suicidal. Friendless. Nightmares	23	No cross-dressing. Still effeminate but good relationships with children of both sexes. Signs of heterosexual erotic desires	19	No cross-dressing. Mildly effeminate. Heterosexual. Younger brother admitted to hospital at age of 11 years — depressed

it was considered that the mother was projecting her own feelings into her description of her daughter's behaviour.

Reginald's mother was a lonely woman. Her husband spent much time at work or "out with the boys", and although he was superficially charming, he seemed an insecure man much dominated by his own mother. Both he and his wife loved one another, but both were immature and frightened of the opposite sex (later they benefited from sex therapy).

Case 3

Kevin (a pseudonym) was an eight-year-old boy (IQ = 120) who had insisted on wearing women's clothes since he was about two years old. There were grave problems after his birth because his mother developed a postpartum psychosis. Kevin suffered some bizarre and hurtful punishments at her hands during this period. On one occasion she bit through the flesh around his thumb. After 18 months, when she recovered, his mother was concerned about Kevin and felt guilty. During this time, when he dressed as a girl, she could play happily with him. His father was never involved, left the family when Kevin was aged four years, and had rarely liked to see his son. After a long financial battle, Kevin's mother had finally achieved some stability. However, Kevin's behaviour had become a social embarrassment to her at school and at home. She said "every time there's a man around, he [Kevin] wiggles his bum".

Kevin was a withdrawn, unhappy child, aggressive to his sister, friendless, who performed poorly at school, and cross-dressed whenever he could.

Case 4

Dorothy (a pseudonym) was 10 years old (IQ, superior range) when she was referred because of crying, unhappiness, complaints of aches and pains with no organic cause, and school refusal. She refused to wear her girls' school uniform and dressed only as a boy. At school she ignored girls and would, unsuccessfully, attempt to mix with boys. Although very bright, she avoided female teachers and refused to learn from them, thereby creating educational difficulties. She had a strong objection to being female and an overt desire to be a boy.

Her parents had separated two years earlier. Her older brother and sister lived with her father, while Dorothy lived with her mother. Her mother had objected to Dorothy going to live with her father because of his "influence". He had always wanted Dorothy to be a boy, had treated her as one and called her "Rocky". Dorothy's father made few efforts for his family, except for Dorothy. Her father had first bought male clothes for Dorothy when she was very young and usually gave her male attire or masculine games for birthday presents.

Dorothy's father accompanied her to the hospital. Dorothy was dressed in football clothes, including spiked football boots, and was carrying a football that her father had given her recently.

Cases 5–8

Patients 5 (IQ = 107), 6 (IQ = 106), 7 (IQ = 120) and 8 (IQ = 112) were four boys, aged 10 to 12 years. Their clinical features are summarized in the Table. Each cross-dressed and each was unhappy, the eldest child being quite suicidal at the time of his admission to hospital. Each was dominated by their mother and received little or no support from their father. In Cases 6, 7 and 8, the mothers had actively encouraged the children in interests in female clothes, jewellery and fashions. None of these children had friends, and all were failing to progress academically at school.

From these histories it becomes apparent that the cross-gender behaviour was not the only, or indeed the central, problem for most of the children. Unhappiness, anxiety, suicidal thoughts, aggressiveness and failure to learn adequately at school were features that were present in most. As were the cross-gender behaviours, these features appeared to be secondary to the pathological parent–child relationships.

Formulation and therapeutic goals

The essential disturbance in these cases was the inability of the parent of the opposite sex to accept the child, except on the conditional basis that the child met certain of their needs. The parent needed companionship from the child, free of the anxiety that was created in them by gender differences. The parent, to overcome his or her anxiety, developed a fantasy about the child. He or she denied the child's biological sex, and encouraged their notions of opposite gender behaviours in their child. When the child adopted these behaviours, the parent changed from a cold, mechanical interaction with the child to warmth and affection. In a few cases, overt rejection of the child had occurred in the early years, only to be compensated for when the child was "recreated" in the clothes of the opposite sex. Naturally, the child sought to maintain and extend the new relationship, so, spontaneously, adopted the behaviours that were desired of him or her.

Such a symbiotic relationship between parent and child, while possibly fulfilling the parent's emotional needs, was not one which could facilitate the child's developmental maturation, especially since the opportunity for "mucking around" with other children was denied and the behaviours cut the child off from his or her peers. In both parent and child, the mutually sustaining relationship precluded the development of ordinary social skills, reinforcing the dyadic dependence.

The parent had focused attention on the child because their own life was so unfulfilling, and the repertoire of their social skills relatively barren. The parent of the same sex was also socially impoverished, but avoided the anxiety of the relationship with the spouse by finding solace in work, absence from home, or separation.

Improvement in the parent–child relationship could only occur if the parents improved their social skills, developed more satisfying marital relationships, and found a wider variety of social outlets. The children also needed to increase social competence, to improve their self-confidence by mastering age-appropriate social relationships and activities, and to develop interests and activities to allow their own unique personalities to mature. To meet these needs, the warm encouragement and affectionate support of their parents would be necessary. The parents would have to accept their child for his or her own unique qualities, and to demonstrate this in mutually enjoyable, developmentally appropriate play with the child.

The choice of inpatient treatment was determined by the location of the primary problem in the family interactions and the unwitting, but pathological, influences of the parents. In addition, the need to develop the child's social skills so that he or she could make friends and cultivate resources outside the home seemed imperative.

The child's needs, it was felt, could best be met through day-to-day involvement in a therapeutic environment that was provided by the inpatient unit,[9] while those of the parents could be tackled during the times of their visits and by special outpatient appointments with psychiatrists and social workers.

The treatment programme

With their parents' permission, the children were admitted to Stubbs Terrace Hospital, a free-standing psychiatric unit for children, at different times between 1975 and 1980. Only one gender-disordered child was in the unit at any one time. The other children in the unit had a range of disorders including neurotic illnesses (depression, anxiety, conversion reactions, compulsions, and so on), psychosomatic problems (anorexia nervosa, eczema, asthma), adjustment reactions or reactions to chronic illnesses. None was delinquent or intellectually handicapped. Most were well enough to attend the local primary school each day and they joined in many play activities together.

At school and in the hospital, all children were encouraged to join in games with other children. A wide range of activities was provided at the hospital and the child chose what interested him or her. No conscious attempt was made by the staff members to encourage masculine or feminine role behaviours. The only prohibition that was placed on boys who cross-dressed was that they must respect the privacy of others and, therefore, not steal girls' underwear.

Age-appropriate behaviours were encouraged by the nursing staff members to replace the stereotyped inappropriate and isolating cross-gender behaviours. Children were encouraged to leave their rooms and join in play. Confidence and self-esteem were enhanced by the mastery of the new situations that arise continuously in the unit, by the actual achievement of set tasks or informal activities such as tennis, swings or jumps, and by developing friendships with other children.

Parents, with other family members, visited regularly, and during these times they were all encouraged to join in activities and play with the children. The children went home for some of the weekend, sleeping at home for one night. Parents saw either a psychiatrist or a social worker once a week, as well as the nursing staff members who were assigned to them for their visits, in order to discuss their child's progress and their marital relationships. They were given counselling about how to respond to their child and how to improve their own social life.

Results

Short-term outcome

Cross-dressing ceased very quickly after admission to hospital. Many of the other cross-gender behaviours, which had been present for years, vanished after several weeks. Such dramatic changes in the children's behaviour produced anxiety for all the parents. The mother of Patient 6 had panic attacks. As a result of this, her son then reverted to cross-dressing, wearing jewellery, perfumes, and so on, and she settled down. When he again ceased cross-dressing, she began sabotaging the treatment by bringing in female clothes for him and isolating herself with him in his room. In spite of our efforts she removed her son from the hospital. We have had no further contact with this child. The other seven children remained as inpatients for between 10 and 23 weeks (average, 18 weeks).

In general, nursing staff members and clinicians reported improvements in the general mood of the child after admission to hospital, although episodes of miserableness and anger were noted by staff members for several weeks. School achievements and social behaviour improved steadily during the period of inpatient treatment, and, by the time of discharge from hospital the children were functioning socially and educationally at approximately age-appropriate levels.

The parents showed variable degrees of willingness to change. Where change in the child was rapid, and consolidated early, we found that the father made a special effort to get involved with the child and the family, for example, by changing his working hours so that he could be with the family more often. Most parents were surprised when they enjoyed their time with the child during their visits. Although initially reluctant, they joined in activities and games when encouraged and guided by the staff members, who were required to demonstrate to the family how to play together. Once the parents began to enjoy being with their child, their motivation towards change accelerated. Sometimes a grandparent tried to induce the child to return to cross-dressing. Two grandmothers brought in female clothes for their grandsons. These acts caused confrontations between grandparents and parents, from which the former retreated.

Outcome at one year

The seven children who completed the treatment programme were seen regularly by their psychiatrist in the outpatient clinic for follow-up. One year after discharge from hospital, all the children were recorded as mixing well with others at school and clinically were observed to be happy. School reports were generally good. The children appeared to have maintained the age-appropriate social skills that had been achieved during their inpatient stay and had continued to mature appropriately. Their self-confidence and sense of mastery, which had been developed while at the hospital, had been maintained in spite of the usual vicissitudes of school and social life.

In one case (Case 1) recurrence of cross-gender behaviour occurred. This child began cross-dressing several months after his discharge from hospital. His father had returned to working excessively long hours and was again absent from home for long periods. The child was readmitted to hospital for two weeks. His father indicated that he was not coping with the marriage. Family discussions followed, changes were made, and the cross-dressing ceased.

Postpubertal status

At the time of the preparation of this report (December 1986), the seven children who completed the therapeutic programme successfully were then aged as follows: one child was 21 years old; two children were 19 years old; one child was 18 years old, one child was 16 years old; one child was 15 years old; and one child was 13 years old. The mean time that had elapsed since admission to hospital was eight years (range, six to 11 years). Contact had been maintained with all the families by the psychiatrist or through the hospital. One family had moved interstate and recent contact had been by telephone. Information was obtained at unstructured interviews with the child and

the parents, and from the examination of school reports.

One young man rereferred himself when he was 17 years old because he was "mixed up" about his sexuality. He had been actively homosexual since the age of 14 years. However, he did not believe that he was truly homosexual, but explained that he believed he had been "programmed into homosexuality by his mother". He wanted to explore his confusion and fears about women before trying to relate sexually to them. He already had a highly successful career in women's fashions. By the age of 19 years he considered himself to be heterosexual, but had not yet had a sexual relationship with a woman.

None of the other children, now adolescents, expressed homosexual feelings, was transvestite, or transsexual. All had performed reasonably well at school and had reasonable relationships with children of both sexes. All had maintained a sense of well-being. The mother of Patient 5 reported that her son had cross-dressed for a "few weeks" at the onset of his puberty. Some subtle pathological influences persisted. One boy (Case 1), aged 15 years, told us that his mother had recently asked him to buy tickets for them to attend a transvestite night club show, a request, he said, which made him feel "very apprehensive".

Discussion

This report can be criticized on a number of levels. The sample is small, and selected by referral to the government service. Because the referrals occurred over a five-year period, and because the follow-up time extends to 11 years, the report provides retrospective descriptions and is not the product of experimental design. Such criticisms could equally be applied to the previous studies of treatment and outcome that have been reported in the literature and are summarized by Zucker.[14]

With this qualification, the approach that is described in this report appeared successful in allowing most of the children to overcome their initial unhappiness and to mature in a satisfying manner as human beings at ease with themselves and their sexuality. The treatment brought about an immediate improvement in self-esteem and social functioning, and these aspects appear to have been sustained over many years. Of course, in the later semistructured follow-up interviews, the patients may have been overwilling to oblige their doctors by emphasizing their well-being, or may have been hesitant to communicate desires which they thought might be treated as abnormal. The erotic desires of the seven children who completed the programme, when "grown up", were not known in four cases, two boys (Cases 1 and 8) were heterosexual, and one boy (Case 7) was "mixed". However, all the children were reasonably good at social levels of functioning.

The type of disorders in the family interactions that are reported here, especially the symbiotic relationship with the parent of the opposite sex, are consistent with those that are remembered by gender-disordered adults.[20,21] While such consistency emphasizes the importance of intrafamilial social learning in the development of gender identity, caution is needed in the extrapolation of clinical findings from small samples of gender-disordered children in an attempt to understand normal psychosexual development. It was surprising how quickly the cross-gender behaviours of the children in our sample ceased once they were away from the home environment. Thereafter, age and sex-appropriate gender behaviours were exhibited by the children. Such a sudden transition suggests that gender behaviours are environmentally developed to a degree that has not been recognized previously. Alternatively, the processes that influence the development of aberrant gender behaviour may not be the same as those that underlie normal psychosexual development. The descriptions of disordered family relationships may illuminate the aetiology of the disordered behaviours, but normal psychosexual development may, for instance, be more influenced by biological factors.

Such distinctions may be important, since others have emphasized the contribution of biological or constitutional factors to the development of gender disorders.[22,23] For example, on the basis of a comparative study between parents of effeminate and non-effeminate boys, which failed to show distinctions between their attitudes and relationships, Zuger concluded that "the effeminate behaviour was inherent in the boys themselves".[24] This conclusion seems contrary to my findings.

An overemphasis on a biological model of gender disorder may also lead to therapeutic pessimism. Some of the parents of the subjects of this report had been advised by other professional persons that there was "no hope", or that their child would grow up "transsexual" or "homosexual" or, in one instance, that the child "would have to go to New York to have a sex-change operation". Such attitudes, which emphasize cross-gender behaviour as the central or only problem, or which are rigidly deterministic, serve only to deny the child's unhappiness and the desire of the parents to change. Advice that is based on such attitudes fails to provide options to make the lives of the parents and the children more enjoyable. Inpatient treatment is one such option.

Conclusions

The treatment of cross-gender behaviour by means of inpatient therapy seems effective. Long-term clinical evaluations suggest that initial changes can be maintained. These results may correct some previous pessimistic views about outcome. However, evidence about the systematic and objective outcome that would enable one to be more positive about the results is lacking, and the sample is a small one. Further evaluation of therapeutic methods in this area with untreated control families is needed. Such studies will need to be performed in major population centres, since the number of children who meet the diagnostic criteria is relatively few.

Nevertheless, the emphasis on the familial and social context of the disorders that is provided in this report should counteract undue emphasis on the aberrant behaviours themselves. The cross-gender behaviours seemed relatively superficial manifestations of disordered personal interactions and an inadequate repertoire of social skills on the part of both parents and child. Focus on the underlying mechanisms may reveal a great deal about these families, but may not necessarily illuminate the processes of normal psychosexual development.

Acknowledgements

My thanks are due to the staff members of Stubbs Terrace Hospital and of Graylands Primary School and to Dr Ross Kirkman, who helped with the data. I am especially grateful to Dr Ann Whitehead and the late Dr William E. Robinson for kindly allowing me access to their patients, clinical reports and discussions, and to the families and young persons who were good enough to cooperate with us.

References

1. Green R, Money J. Prepubertal morphologically normal boys demonstrating signs of cross-gender identity: five year follow up. *Am J Orthopsychiatry* 1964; 34: 365-366.
2. Zuger B. Effeminate behavior present in boys from early childhood. I. The clinical syndrome and follow-up studies. *J Pediatr* 1966; 69: 1098-1107.
3. Lebovitz PS. Feminine behavior in boys: aspects of its outcome. *Am J Psychiatry* 1972; 128: 1283-1289.
4. Zuger B. Effeminate behavior present in boys from childhood: ten additional years of follow-up. *Compr Psychiatry* 1978; 19: 363-369.
5. Green R. Childhood cross-gender behavior and subsequent sexual preference. *Am J Psychiatry* 1979; 136: 106-108.
6. Bates JE, Skillbeck WM, Smith KVR, et al. Intervention with families of gender disturbed boys. *Am J Orthopsychiatry* 1975; 45: 150-157.
7. Green R. Sexual identity conflict in children and adults. New York: Basic Books, 1974.
8. Green R. Atypical psychosexual development. In: Rutter M, Hersov L, eds. Child psychiatry: modern approaches. Oxford: Blackwell, 1976: 798-804.
9. Rekers GA, Lovaas OI. Behavioral treatment of deviant sex-role behaviors in a male child. *J Appl Behav Anal* 1974; 7: 173-190.
10. Rekers GA, Yates CE, Willis TJ, et al. Childhood gender identity change: operant control over sex typed play and mannerisms. *J Behav Ther Exp Psychiatry* 1976; 7: 51-57.
11. Rekers GA, Varni JW. Self-regulation of gender-role behaviors: a case study. *J Behav Ther Exp Psychiatry* 1977; 8: 427-432.
12. Stoller RJ. Boyhood gender aberrations: treatment issues. *J Am Psychoanal Assoc* 1978; 26: 541-558.
13. Pruett KD, Dahl EK. Psychotherapy of gender identity conflict in young boys. *J Am Acad Child Psychiatry* 1982; 21: 65-70.
14. Zucker KJ. Cross-gender identified children. In: Steiner BW, ed. Gender dysphoria: development, research, management. New York: Plenum Press, 1985: 75-174.
15. American Psychiatric Association. Diagnostic and statistical manual of mental disorders (DSM III). 3rd edn. Washington, DC: APA, 1980.
16. Zucker KJ. Childhood gender disturbance: diagnostic issues. *J Am Acad Child Psychiatry* 1982; 21: 274-280.
17. Machover K. Personality projection in the drawing

Journal of Homosexuality, 59:369–397, 2012

ISSN: 0091-8369 print/1540-3602 online
DOI: 10.1080/00918369.2012.653309

Routledge
Taylor & Francis Group

A Developmental, Biopsychosocial Model for the Treatment of Children with Gender Identity Disorder

KENNETH J. ZUCKER, PhD, HAYLEY WOOD, PhD, DEVITA SINGH, MA, and SUSAN J. BRADLEY, MD
Centre for Addiction and Mental Health, Toronto, Ontario, Canada

This article provides a summary of the therapeutic model and approach used in the Gender Identity Service at the Centre for Addiction and Mental Health in Toronto. The authors describe their assessment protocol, describe their current multifactorial case formulation model, including a strong emphasis on developmental factors, and provide clinical examples of how the model is used in the treatment.

KEYWORDS gender, gender identity, gender identity disorder, gender identity disorder of childhood, gender identity disorder of adolescence, gender variance, transgender, transsexual, treatment

In this article, we will outline the therapeutic approach for children that has evolved in the Gender Identity Service, Child, Youth, and Family Program at the Centre for Addiction and Mental Health in Toronto. Since our clinic was established in the mid-1970s, we have evaluated a total of 590 children (age range, 2–12 years) who were referred to our service. In organizing this article, we will attempt to address the majority of questions provided to the contributors by the guest editors.

WHAT CONSTITUTES AN ASSESSMENT?

Tables 1–2 show the assessment protocol that we currently use in our clinic. As is the case for most children referred for a psychiatric and psychologic

Address correspondence to Kenneth J. Zucker, Gender Identity Service, Child, Youth, and Family Program, Centre for Addiction and Mental Health, 250 College St., Toronto, ON M5T 1R8, Canada. E-mail: Ken_Zucker@camh.net

TABLE 1 Clinical assessment protocol

Interview schedule	Approximate duration
Telephone intake interview	.5–1.5 hours
Family interview	3 hours
Individual interviews with parents	2–5 hours/parent
Psychological testing of the child	4 hours
Individual interview with child	1 hour
Feedback session	1–2 hours

Note. In Canada, there is universal health care coverage. When a child is seen in a hospital setting, the Canadian health care plan covers the entire cost. A psychiatrist bills directly the health care system for all face-to-face contact. Psychologists who work in a hospital setting are paid an hourly rate, but do not bill the health care plan. For child psychiatrists in private practice, they also bill the health care plan for all face-to-face contact. Psychologists in private practice operate on a fee-for-service basis. Clients pay the psychologist directly. If they have private health insurance, at least some of the costs are covered by the individual health care plan.

TABLE 2 Psychological testing protocol and parent-completed questionnaires

Test/task/questionnaire	Comment/reference
Child measures	
IQ test	WPPSI-III or WISC-IV
Quality of attachment (mother-child observation)	Used with children 3–6 years of age. Cassidy and Marvin (1992)
Feelings, Attitudes, and Behaviors Scale for Children	Used with children 6–10 years of age. Beitchman (1996)
Youth Self-Report Form	Used with children 11–12 years of age. Achenbach and Edelbrock (1986a)
Rorschach	Zucker, Lozinski, Bradley, and Doering (1992)
Draw-a-Person test	Zucker, Finegan, Doering, and Bradley (1983)
Free play task	Zucker, Doering, Bradley, and Finegan (1982)
Playmate and Play Style Preferences Structured Interview	Fridell, Owen-Anderson, Johnson, Bradley, and Zucker (2006)
Color preference task	Chiu et al. (2006)
Gender Identity Interview for Children	Wallien et al. (2009) and Zucker et al. (1993)
Parent/teacher measures	
Separation Anxiety Interview schedule	Used for boys only. Zucker, Bradley, and Lowry Sullivan (1996)
Child Behavior Checklist	Achenbach and Edelbrock (1983)
Teacher's Report Form	Achenbach and Edelbrock (1986b)
Temperament questionnaire	Zucker and Bradley (1995)
Games Inventory	Bates and Bentler (1973)
Gender Identity Questionnaire for Children	Johnson et al. (2004)
Symptom Checklist-90	Derogatis (1983)
Dyadic Adjustment Scale	Spanier (1976)
Recalled Childhood Gender Identity/Gender Role Questionnaire	Zucker et al. (2006)

Note. We no longer use the two gender constancy assessment measures reported on by Zucker et al. (1999). The Children's Depression Inventory is used on an ad hoc basis.

assessment, a referral is invariably initiated on the part of parents or a health professional (e.g., the pediatrician, a family physician, a teacher or a mental health professional currently involved in the care of the child and the family). Upon receipt of the referral, the first phase in our assessment protocol is to conduct an intake telephone interview with a parent or another primary caregiver (e.g., a child protection worker). In this intake telephone interview, which varies between 30 and 90 minutes, parents provide information about why they have contacted us, their concerns, and their goals. We collect information about their child's gender development (asking questions about behaviors that correspond to the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV-TR, American Psychiatric Association, 2000) diagnosis of Gender Identity Disorder), whether there are other concerns about the child's socioemotional development (including other *DSM* diagnoses), previous mental health contacts, the child's physical health, and whether or not there is a family history of psychologic problems/psychiatric disorders. If a child has had previous mental health contacts, this information is requested for review prior to our own assessment. An intake interview is as follows:[1]

> An intake telephone interview was conducted with Zack's mother, lasting approximately 45 minutes. Ms. Aziz appeared to be quite distracted during the phone call, often excusing herself to attend to her children, who were heard screaming in the background. Zack, age 3, lives with his parents and 6-month-old sister. Both parents are employed full-time as managers of business firms.
>
> Ms. Aziz explained why the referral to our clinic was initiated. She described Zack as exhibiting an array of behaviors that she believes to be female-typical. For example, he will color his fingernails to mimic nail polish, will wear her shoes, wrap a blanket around himself to make a skirt, and appears to be very fascinated by jewelry. She said that she first noticed these behaviors just over a year ago and that they have increased since then. Ms. Aziz said that she initiated contact with our clinic to learn how to deal with these behaviors.
>
> Ms. Aziz stated that she believes that Zack knows that he is a boy and has a penis. She thinks that he notices the anatomical differences between himself and his sister. She said that she saw him "pushing his penis in" about 3 months ago. In terms of gender identity statements, Zack has said that he is a girl and that he wants to be a girl. Ms. Aziz said that she has responded to these statements by asking Zack, "Why?" Ms. Aziz explained that Zack is not able to express himself very well through speech, so has not been able to answer this question with clarity.
>
> Ms. Aziz said that Zack displays a range of behaviors, acting in a gender-typical fashion at times. He enjoys playing with other children and has both male and female friends. It was reported that Zack's best friend is a boy and, together, they will play in a rough-and-tumble manner. However, Ms. Aziz believes that Zack likes being around same-aged

girls more. With girls, Zack is said to be less active, sitting back and watching them with a look of fascination. He has made comments about liking the clothing of the girls in his class.

In terms of the feedback Zack has received regarding his cross-gender behaviors, Ms. Aziz said that she believes they have been inconsistent. Starting at the age of 1.5 years, Zack attended a daycare run by a woman, who Ms. Aziz thinks encouraged and taught some of his female-typical behavior because she found it "entertaining." For example, at this daycare, Zack was taught how to belly dance. Ms. Aziz sees the movements involved in belly dancing as being quite feminine and said that Zack enjoys showing them off. Zack's teachers have noticed some cross-gender behaviors but do not discourage them unless they are potentially harmful. For example, they will only intervene if they see him painting on his own skin.

Ms. Aziz said that her family identifies as Muslim. She explained that cross-gender behaviors are unacceptable in the Muslim faith, but said that their family is not very observant. Ms. Aziz has seen her husband get quite agitated by Zack's female-typical behavior and said that he "hates the idea" of Zack being girly. Mr. Aziz has made disapproving comments to Zack, like "you look silly" when he dresses up like a girl.

Ms. Aziz believes that she has contributed to Zack's gender confusion herself somewhat. Until recently, she has read him fairy tales like Cinderella, with female characters that Zack has seemed to really connect with. At first, she tried to ignore his cross-gender tendencies and not make any comments. However, she said that since reading online about Dr. Zucker's approach, she has tried to replace the feminine things that Zack is interested in with more masculine things. For example, she has taken away fairy tales and replaced them with stories about male characters, like Diego. Zack reportedly pays some attention to the newly introduced items, but appears to miss the female-typical things. Ms. Aziz said that he will throw a tantrum when something he likes is removed. For example, when his makeshift skirt was taken away, he cried and expressed that he wanted it back. She said that she still tries to remain neutral on the subject because she does not want to "cause harm," but has told him many times that he is a boy and has a penis.

Within the family, Zack is said to be closest with his mother, who has been his "primary caregiver." Ms. Aziz said that she has always been responsible for Zack's daily routine and she described Zack as being very attached to her. She has noticed separations from her, like when he goes to daycare, as being difficult for him. Zack is also said to be quite close with his grandmother, who is said to be very female typical. He often appears to be fascinated by her jewelry and makeup. She said that he just appears to like having someone around, even if he is playing by himself. He is also said to have a good relationship with his father. Together, they will read stories, build blocks, and ride bikes in the summer. Ms. Aziz said that Zack seemed to hate the idea of having a younger sister when she was pregnant. For example, he made a comment about sending the baby on a train to go to his aunt's house. Zack appears to have gotten used

to the idea of having a younger sister. Ms. Aziz stated that Zack loves his sister and will sometimes appear to be frightened that something bad might happen to her.

Ms. Aziz said that her relationship with her husband has been contentious at times. When Zack was 1.5 years old, Ms. Aziz and her husband had their biggest fight. Ms. Aziz described this fight as "traumatic," as Zack witnessed his father hold a gun to his mother's chest. As a result, the police were involved. Ms. Aziz said that she is not sure if Zack remembers this incident because he has not said anything about it, but she believes it might have affected him. This fight was an isolated episode in terms of magnitude, but there have been other instances of argumentativeness. Zack is said to always take his mother's side in these arguments, asking his father why he is being "bad to mommy."

Ms. Aziz's pregnancy with Zack was the result of in vitro fertilization. He has been exposed to three languages all at once, so she believes that his speech has been slow to progress as a result. When asked why she thought Zack displayed these cross-gender behaviors, Ms. Aziz cited many environmental explanations. She said that she thinks it is likely related to his attachment to her. She noted that he sees her all the time and that she has always been the one to take care of his routine. She said that, although she does not see herself as being very "girly," she thinks that she has encouraged his identification with females by reading him fairy tales. Ms. Aziz also believes that his daycare provider is somewhat responsible for teaching and encouraging female-typical behaviors. Finally, she thinks that he is more likely to behave in this way if he is "lacking attention" or bored.

Prior to the assessment, parents are provided with information about the temporal course of the assessment (typically 3–4 visits) and what it will involve. Parents are asked what they will inform their child about the assessment, who they are going to see, and why they are coming to see us. In our experience, this is an important phase in the assessment process in terms of establishing appropriate assessment rapport, particularly with anxious parents. For the majority of parents, they do not have a particular difficulty or problem in explaining to their child that they are coming to see some "talking doctors who know a lot about families" (a script that we suggest). They are able to frankly discuss with their child that they are coming to see a talking doctor to understand better why their child wishes to be of the other gender. This is usually because the issue has been on the table within the family environment.

There are, however, a minority of parents who are very uncertain and torn about what to tell their child. A common comment is, "I don't know what to tell him. I don't want him to think that there is anything wrong with him." Our suggestion for these parents is to, first, state that the issue is not a matter of right or wrong. Rather, the issue is to understand better why their child feels the way that he or she does and the purpose of the assessment is to determine how to best help them and their child. For these parents,

we have found this suggestion to usually be helpful and they might be able to say something like, "You know how you have been telling mommy that you want to be a girl, that you like 'girls' toys,' that you like to dress-up in mommy's clothes? Well, mom and dad want to understand better how you are feeling about yourself and we are going to go and see some talking doctors who know a lot about kids." In our experience, almost all reluctant parents who contact us are able to provide this information. However, for the very small minority who cannot provide this information due to severe anxiety or ambivalence, we will meet only with the parents. If after meeting us, they are comfortable bringing their child, the usual assessment protocol follows. If not, the assessment is conducted only with the parents. Since 1975, only five assessments were conducted only with parents.

The assessment protocol usually allows us to acquire enough information to decide whether or not the child meets the DSM criteria for Gender Identity Disorder (GID) and any other psychiatric disorder. Multiple sources of information are used, including the open-ended material gleaned from the clinical interviews, a review of the psychological testing of the child, and an examination of the relevant parent-report questionnaires. The assessment also attempts to understand the general functioning of the family matrix (e.g., the parent's relationship, parent-child relationships, sibling relationships, etc.) and how the child is functioning at school, in the peer group, etc. An effort is made to gain an understanding of how the parents have made sense of their child's gender development (e.g., its origins), how the parents have responded to their child's cross-gender behavior prior to the assessment, what goals the parents have with regard to their child's gender development, and so on.

ON WHAT BASIS IS IT DECIDED THAT TREATMENT IS INDICATED?

Prior to providing parents with feedback, we have a case formulation conference among the team members involved in the assessment. It is obvious that a case formulation requires some type of conceptual model to guide it. Accordingly, we will comment here on some of the parameters that underlie what we would like to characterize as a developmental, biopsychosocial model that we use in case formulations and in generating treatment decisions and recommendations. It is a model informed by a variety of theoretical and empirical advances that have emerged in the clinical and scientific literature over the past several decades.

1. Is gender identity fixed and unalterable in childhood? For the vast majority of children, it is probably safe to say that gender identity is a stable trait. A girl who "has" a female gender identity at age 3 is very much likely to have a female gender identity at age 13, at age 23, and so on

throughout the life course. In this sense, one might argue that the gender identity at age 3 was fixed and unalterable. But, for most children, no one tries to alter their gender identity after it is first expressed, for a host of psychological and social reasons. To formally answer the question of whether or not a young child's gender identity is fixed and unalterable, one would have to conduct a randomized psychosocial trial in which, for half the children, some type of intervention was attempted to alter the child's gender identity. It is unlikely that such an "experiment of nurture" would attract many volunteer parent participants.

For children who present clinically with the diagnosis of GID, long-term follow-up studies suggest that their gender identity is not necessarily fixed. The majority of children followed longitudinally appear to lose the diagnosis of GID when seen in late adolescence or young adulthood, and appear to have differentiated a gender identity that matches their natal sex (Drummond, Bradley, Badali-Peterson, & Zucker, 2008; Green, 1987; Singh, Bradley, & Zucker, 2010; Wallien & Cohen-Kettenis, 2008; Zucker, 2008a).[2] In this sense, one could argue that their childhood gender identity was alterable—that there was plasticity and malleability—although the mechanisms that underlie this change are far from fully understood. Thus, when we provide feedback to parents about their child's gender identity, we make use of the empirical information that is currently available about "natural history."

2. In our view, gender identity development can be best understood using a multifactorial model that takes into account biological factors, psychosocial factors, social cognition, associated psychopathology, and psychodynamic mechanisms. In the model, biological factors (e.g., possible genetic factors, prenatal sex hormones, temperament) are conceptualized as possible predisposing factors for the expression of a particular gender identity phenotype. They are not conceptualized as fixed factors leading to invariant gender identity differentiation across developmental time. The other parameters can be conceptualized as predisposing, precipitating or perpetuating factors.

Biological Factors

Let us use a dimension of temperament (activity level; AL) as an example of a possible predisposing biological factor. Activity level, the propensity for intense physical energy expenditure and the proclivity for rough-and-tumble play, is a sex-dimorphic trait, with likely genetic and prenatal hormonal influences (Campbell & Eaton, 1999; Eaton & Enns, 1986). Via a parent-report measure, we have shown that AL is inverted in children with GID: Boys with GID have a lower AL than control boys and girls with GID have a higher AL than control girls. Indeed, girls with GID have a significantly higher AL than boys with GID (Zucker & Bradley, 1995). If one construes

AL as a temperamental trait, one could conceptualize, for example, a boy with a low AL to find the behaviors of girls, on average, as more compatible with his own temperamental style than the behaviors of boys and could, conceivably, lead to a greater affiliation with girls regarding sex-of-playmate preference. In turn, this could lead to a greater interest in the toys and activities of girls which could, in theory, have a feedback effect on the child's gender identity, especially during early development when cognitive reasoning is fairly rigid and black and white.

> Frank was a 7-year-old boy who met the *DSM* criteria for GID. In contrast to his two brothers, Frank was described by his parents as more sensitive and emotional. He had a long history of an avoidance of rough-and-tumble play, complaining that other boys were both mean and aggressive. Indeed, one of his brothers, who had a history of severe disruptive behavior, had often been mean and aggressive towards him. The problematic relationship with his brother appeared to generalize to Frank's view of all boys, as he complained that all boys were mean. He affiliated primarily with girls and, with them, engaged in a variety of stereotypical feminine activities. By age 5, he began to voice the wish to be a girl, stating that if he were a girl, then all of his problems would be solved.
>
> If one conceptualized Frank's sensitive temperament as a predisposing, presumably biological factor, one could argue for an intervention that, in part, would focus on helping Frank recognize that there are a variety of ways to be a boy and that there are likely some boys in his social environment who are not pervasively mean or aggressive. Exposure of Frank to other boys whose temperament was more a match to his own could, in theory, help him to develop a more nuanced understanding of gender: that there are different ways to be a boy, that one does not have to be a girl as a fantasy solution to cope with his difficulties with his aggressive brother or the more boisterous boys in the school environment, and so on.

Psychosocial Factors

Psychosocial factors constitute a second parameter in case formulation. One example pertains to the parental response to cross-gender behavior as it emerges early in development. In our view, it is common for the initial parental response to cross-gender behavior to be either neutral or encouraging (reinforcement). Early cross-gender behavior is often viewed by parents as either cute or only a phase.[3] For some parents, they seek out a clinical assessment only after some kind of threshold is crossed, and they now no longer believe that the behavior is cute or only a phase (Zucker, 2000). The threshold might pertain to emergent social ostracism in the peer group, the child's intense verbalization that he or she either is or wants to be the

other gender, or other factors. In our case formulation, parental neutrality or encouragement of cross-gender behavior is viewed as a perpetuating factor (in relatively rare cases, in which, e.g., the mother overtly cross-dresses her son, acting out her desire for a daughter, such behavior could be viewed as a precipitating factor).

> Roy was a 4.5-year-old boy with a two-year history of pervasive cross-gender behavior. At the time of assessment, Roy did not express the wish to be a girl; rather, he insisted that he was a girl. Since he first began to display signs of cross-gender behavior, the parental response was to "go with it." They bought him stereotypical girls' toys, allowed him to wear his mother's clothes on a daily basis, and would often videotape his activities when he dressed up as a girl. Apart from his gender identity development, the parents identified one other major concern about his socioemotional development, namely that he would have intense and extremely disorganized temper tantrums when frustrated. During these episodes, he was experienced as inconsolable. By history, the parents reported that they had never "challenged" Roy when he insisted that he "was" a girl. They came to the assessment wanting to know if this was "really who Roy was" and if they were doing the "right thing" by allowing Roy to consistently enact behaviors that allowed him to, in effect, see himself as a girl.

Social Cognition

In the literature on normative gender development, it has long been noted that young children do not have a full understanding of gender constancy. Gender constancy refers to a child's cognitive understanding that gender is an invariant part of the self. It has been argued that in the early stages of gender constancy (e.g., the capacity to self-label oneself as a boy or a girl or to understand the constancy of gender over time) that children do not fully understand its invariance. Until children develop the capacity for concrete operational thought, typically between the ages of 5 and 7 years, they often conflate gender identity with surface expressions of gender behaviors (Kohlberg, 1966; Ruble, Martin, & Berenbaum, 2006). Thus, it is not particularly unusual for a 4-year-old girl to express the belief that, if she wore boys' clothes and engaged in boys' activities, then this would mean that she was a boy. It has also been reported in the normative gender development literature that younger children tend to have more rigid beliefs than older children about what boys and girls can do or should do (Ruble et al., 2006). In our own research, we have reported that children with GID appear to have a developmental lag in gender constancy acquisition (Zucker et al., 1999). Although it is unclear if this developmental lag can be understood as a predisposing factor, it can certainly be understood as a perpetuating

factor (e.g., pervasive enactments of surface cross-gender behaviors could contribute to the maintenance of cognitive gender confusion).

In some respects, gendered social cognition provides a window into how children with GID construct a subjective sense of self as a boy or as a girl. For example, when asked why he wanted to be a girl, one 7-year-old boy said that it was because he did not like to sweat and only boys sweat. He also commented that he wanted to be a girl because he liked to read and girls read better than boys. An 8-year-old boy commented that "girls are treated better than boys by their parents" and that "the teacher only yells at the boys." His view was that, if he was a girl, then his parents would be nicer to him and that he would get into less trouble at school. One 5-year-old boy talked about having a "girl's brain" because he only liked Barbie dolls. In this particular boy's treatment, he created drawings of his own brain, writing in examples of what made his brain more like a girl's brain and what made his brain more like a boy's brain (e.g., when he developed an interest in Lego). Over time, the drawings of the size of his girl's brain shrunk and the size of his boy's brain expanded.

It could, of course, be argued that gendered social cognition is merely an epiphenomenon of a more fundamental developmental process pertaining to gender identity, that is, it is simply a way that children attempt to explain to themselves their gender identity. On the other hand, it could be argued that young children's limited understanding of gendered social cognition calls for caution in assuming how fixed their gender identity is and that, with development, some children will develop a more flexible understanding that there are different ways one can be a boy or a girl.

Co-Occurring Psychopathology

When there is co-occurring psychopathology in children with GID, it can be understood in several ways: a) as a result of social ostracism; b) as related to generic family risk factors for psychopathology; and c) as a possible cause of the GID. Regarding this last possibility, Coates and Person (1985), for example, argued that severe separation anxiety preceded the expression of feminine behavior in GID boys, which emerged in order "to restore a fantasy tie to the physically or emotionally absent mother. In imitating 'Mommy' [the boy] confuse[s] 'being Mommy' with 'having Mommy.' [Cross-gender behavior] appears to allay, in part, the anxiety generated by the loss of the mother" (p. 708).

In recent years, various clinicians working with children with GID have noted that some of these youngsters also appear to show signs of autism spectrum disorder (ASD), particularly at the high-functioning end of the spectrum. This clinical observation, which is now supported by some systematic empirical data (de Vries, Noens, Cohen-Kettenis, van Berckelaer-Onnes, & Doreleijers, 2010), opens up another avenue regarding the role of

associated psychopathology in children with GID. In our experience, children with GID generally show intense, if not obsessional, interests, in cross-gender activities. This propensity for intense interests may be magnified even further in those youngsters with a co-occurring ASD. Thus, a bridge between GID and ASD may be the predisposition for obsessional or focused interests and extreme rigidity in thinking. Moreover, any attempt to interfere with the obsessionality may evoke intense anxiety. It is common for parents of these youngsters to report a series of obsessions (e.g., with a particular color, with a particular book that must be read over and over in ritualistic fashion, with specific objects, such as washing machines, vacuum cleaners, etc.).

Gender can become a site for obsessionality, perhaps a magnification of intense interests in typically developing children (DeLoache, Simcock, & Macara, 2007). One 5-year-old boy with co-occurring GID and ASD had many obsessional interests that preceded his gender obsession. Unlike his earlier obsessions, which the parents tried to ignore, they were less certain if they should ignore his gendered obsessions and, thus, bought him an array of girls' toys and allowed him to wear his mother's clothes on a daily basis. At the time of assessment, this youngster had been insisting that he was a girl and, at school, where gendered line-ups were common, would join the girls in their line. In the course of the assessment, the mother reported that he was now developing a new obsession: "He now thinks that he is a computer." She thought that this was preferable to him believing that he was a girl. The child psychiatrist who has followed this youngster reported that, at age 12, the symptoms of GID had remitted. At age 12, this youngster had an "obsession" with male heavy metal rock stars (a particular musical genre) and wore his hair long to emulate them.

> David was referred at the age of 5 by a child psychiatrist, following remarks to his parents that he wished to be a girl and to cut off his penis. Apart from a GID, David had a number of socioemotional difficulties, including persistent and pervasive struggles with self-regulation, behavioral rigidity, obsessive behaviors, anxiety, and poor social functioning. In our assessment, we concluded that he met criteria for Asperger's Disorder. Play therapy was initiated to help explore David's gender dysphoria. As appropriate, additional therapeutic strategies were drawn upon in order to support the development of self-regulation (e.g., with regard to sexualized behavior directed towards the therapist, temper tantrums), social skills, and the management of areas of obsessive focus. In the therapeutic context, struggles with the parent-child relationship, self-concept, peer relations, and anger and guilt were consistent themes.
>
> Over the course of four years in therapy, David evidenced a strong tendency towards obsessions/restricted interests (e.g., trains, airports, certain television shows, and book series), with each lasting between 3 to 6 months in duration. The gender-related preoccupation stood out in terms of its relationship to identity. The gender dysphoria began to

wane around age 7. At age 9 years, in the 112th therapy session, David initiated discussion about his history of obsessions/restricted interests. He requested that his therapist write out each of his areas of interest (in chronological order) and he proceeded to summarize the "rationale" behind each. Early in the list placed his preoccupation with cross-gender materials. David paused on this area and reflected it had carried special meaning for him. He went on to say that this may have been more than just an interest in this topic area, and that, in fact, he had wanted to *be* a girl. He reflected on the reinforcing aspects of many of the feminine interests and behaviors (e.g., the feeling of pretend long hair, how "beautiful" things looked, etc.), with a focus on the associated visual and tactile stimulation. When asked about his understanding of his involvement in therapy, starting at age 5 years, David reflected that his parents may have been concerned about his desire to be a girl, as they knew that he was "really a boy." He recalled his parents' efforts to curtail his cross-gender behaviors by limiting his time and access. He discussed his belief that this was not the right approach, and that they should have just allowed him to grow out of this interest, as he had all of the previous and subsequent ones.

In reflecting on his development of gender dysphoria, David discussed his experience of bullying from peers for his gender atypical areas of interest. He speculated that, in many ways, his desire to become a girl may have been an effort to avoid the bullying from peers. David again reiterated the very reinforcing aspects of many of his female-typical interests. Finally, he reflected on his negative feelings about himself and his behavior and we considered his gender dysphoria as an effort to cope with these feelings. David continues to demonstrate a tendency towards preoccupations but, at present, has no symptoms characteristic of GID. He continues to benefit from therapeutic support for self-regulation, social skills, and management of his restricted interests/preoccupations.

Psychodynamic Mechanisms

Psychodynamic mechanisms can be understood, in part, as a transfer of unresolved conflict and trauma-related experiences from parent to child. Sometimes these kinds of experiences are consciously recognized by parents (but, nonetheless, acted out), but certainly not always. Children, themselves, may vary in their understanding of what drives their behavior.

Tom was a 4-year-old boy with an approximate one-year history of pervasive cross-gender behavior, including the repeated wish to be a girl. Tom's mother was an intense, volatile, and extremely anxious woman, with strong narcissistic personality traits. She viewed Tom as a perfect child, until he began to express the desire to be a girl. She then experienced Tom as less than perfect, which, for her, was a severe narcissistic

injury. Tom's father played little role in his day-to-day life, working 18-hour days, 7 days/week.

We understood Tom's GID to develop in the context of the birth of his younger sister when he was just shy of his third birthday. He felt abandoned by his mother, who seemed to transfer much of her psychologic investment to the sister. She adorned the baby sister in pink (in early therapy sessions with Tom, he only used the color pink in his numerous drawings). In part, we conceptualized Tom's GID as the result of feeling an intense psychologic abandonment by his mother and an intense jealous rage towards his sister ("If you could be a girl like Suzie, then mom would pay more attention to you"). In our view, one of the factors in helping Tom work through his gender identity conflict was to make him more conscious of his jealous feelings and how they organized his day-to-day life within the family matrix.

Rose was a 9-year-old girl with a long history of cross-gender behavior, including the strong desire to be a boy. Rose was raised by her biological mother. At the age of 4, Rose discovered her mother's body at the bottom of the staircase. She had been murdered by a boyfriend. For various reasons, there were no biological relatives to care for Rose and so she was adopted at the age of 6.

At the time of assessment, Rose looked like a boy, based on her hairstyle and clothing style. During the assessment, Rose commented that she wanted to be a boy because boys were stronger than girls. She told her adoptive mother that when they walked down the street together that her mother need not be afraid, because "I look like a boy and no one will hurt you." Rose acknowledged that she has had the recurring thought that, had she been a boy, then she would have been able to protect her mother from the boyfriend because "boys are stronger than girls."

We conceptualized Rose's desire to be a boy as an unusual symptom emanating from a Post-Traumatic Stress Disorder. Perhaps due to the rigid normative social cognitions about gender, Rose had constructed, for herself, an unusual fantasy solution: had she been a boy ("because" boys are stronger than girls), she could have saved her mother's life.

In the case of Roy described above, one issue that was discussed in the case formulation conference was why the parents had never attempted to tell Roy that he was, in fact, "a boy." We wondered about why the parents were so "paralyzed" in this regard. One element of the family history that seemed relevant was that his mother had been subject to a long history of psychological and physical abuse by her father. We wondered if any signs of more boy-typical behavior on Roy's part might be conflated with viewing him as an "abuser-in-the-making," like her own father. In addition, Roy's mother had been subject to very severe peer ostracism during her own childhood (e.g., being made fun of because she wore glasses, had dental problems, etc.). These experiences were extremely difficult for her and she cried profusely (30 years

later) as she described them. She worried that, if she said anything to Roy about his insistence that he was a girl, he would experience this in the same traumatic way that she experienced the peer group teasing in her own childhood. Roy's father also had had a lot of difficult experiences in the peer group because of a speech impediment and he was also extremely worried that if he said anything to Roy about his girlish behaviors that Roy would experience this as representing a "defect," just like he experienced his speech problem as a defect.

Jim was the last of four boys born to a middle-class family. When seen at age 4, he had a strong desire to be a girl. Jim's mother acknowledged a very strong wish for a daughter, as she knew that this was her "last chance." Although rare, Jim's mother's reaction to giving birth to a fourth son was consistent with what we have characterized as pathological gender mourning (Zucker, Bradley, & Ipp, 1993). She became deeply depressed after his birth, wanting little to do with the baby for a couple of weeks. She had florid dreams about having given birth to a daughter. When Jim was a year old, her female friends bought her a life-sized female baby doll. As far as we could tell, Jim's mother had little insight into the significance of this gift. She asked plaintively, "Do you think it's because my desire for a daughter was so apparent to my friends?"

In the case formulation conference, we wondered whether or not it would be useful to organize treatment for the mother around helping her to understand the meaning of the wish for a daughter and what it represented for her and to help her mourn the loss of having given birth to a child of the non-preferred gender. We also wondered how the mother's disappointment/despondency might have been transmitted to Jim across his development.

WHEN TREATMENT IS INDICATED, WHAT ARE THE RATIONALES AND GOALS FOR TREATMENT AND, AS SPECIFICALLY AS POSSIBLE, HOW DOES TREATMENT PROCEED?

When treatment is recommended, it might include the following: a) weekly individual play psychotherapy for the child; b) weekly parent counseling or psychotherapy; c) parent-guided interventions in the naturalistic environment; and d) when required for other psychiatric problems in the child, psychotropic medication. The goals for treatment are formulated on a case-by-case basis. In some cases, the focus might be only on the child's GID, as the child shows little in the way of associated psychopathology and the parents are generally functioning well. In other cases, the focus of treatment is much broader: If the child has other significant socioemotional problems

and if the parents have significant psychopathology or marital discord, then these issues also need to be addressed.

If the parents are clear in their desire to have their child feel more comfortable in their own skin, that is, they would like to reduce their child's desire to be of the other gender, the therapeutic approach is organized around this goal. Any co-occurring psychopathology is also treated and the approach depends heavily on the understanding of the sources of the associated psychopathology. If parents are uncertain about how best to address their child's GID, we offer to address this further in the course of therapeutic sessions and will suggest to the parents that we hold off on making any specific decisions about intervention options. Table 3 provides a summary of treatment recommendations and disposition for 26 children evaluated in 2008.

When we conduct open-ended play psychotherapy (or simply talk therapy) with children, like any psychotherapeutic intervention for any issue, therapy begins with educating the child about the reason that they are in therapy. This is tailored to the child's developmental level and cognitive sophistication. Some children are simply told that they are going to meet with an individual therapist to understand better their gender-related feelings and, during sessions, they are free to play with whatever they want (boys' toys, girls' toys, dress-up clothing, neutral and educational activities, etc.), to draw, to talk about day-to-day life, to report on their dreams, and so on. Principles of confidentiality are reviewed.

For other children, they have a very sophisticated understanding of why they are in treatment and the educative process is less formal. One 4-year-old girl, for example, had actually asked her parents to take her to see a therapist (she was very intelligent) because she was confused about why she wanted to be a boy. After the assessment, she seamlessly entered into a therapeutic process about her gender feelings. Other children are substantially more guarded and require a much longer period of time before they are comfortable discussing their feelings. One 3-year-old boy, for example, in the course of a two-year treatment, was never able to talk about his day-to-day life with his therapist: It was all enacted literally via play with repetitive family scenarios in which he labeled the characters as himself and his parents. In both of these cases, the GID remitted in full.

Individual open-ended psychotherapy enables many children with GID to discuss and to play out their gender identity issues, it affords them the opportunity to make sense of their internal representational world, and, in general, to master various developmental tasks with which they may be struggling. There is a reasonably large psychoanalytic case report literature on GID, for which the interested reader can glean some good examples of the process of open-ended psychotherapy (see Zucker, 2006a, 2008b; Zucker & Bradley, 1995).

TABLE 3 Treatment recommendations for cases evaluated in 2008 ($N = 26$)

ID	Sex	Age	Individual Therapy	Parent Therapy	Medication	Other	Comment
1	F	10	No	Yes	On Concerta for ADHD prior to assessment	Support provided to child by school psychologist	Diagnosed with ODD and ADHD Outpatient services difficult to access in community
2	F	7	Yes	Yes	Consult recommended for ADHD	Feedback provided to school psychologist	Dropped out of treatment; mother sought advice from a nurse practitioner who specialized in naturopathy; significant discord between parents, who were separated; diagnosed with ODD and ADHD
3	F	5	Yes	Yes	No		Mourning the sudden death of father was one focus of treatment
4	M	6	Yes	Yes	Consult recommended for ADHD	In day treatment for behavioral problems (diagnosed with ODD and ADHD)	Father seen in counseling; mother refused treatment (has bipolar disorder and on long-term disability); parents separated; father has custody
5	M	9	No	No	No		Sibling of ID 2; subthreshold for GID; feminine behaviors of no concern to mother; father “denies” observing any feminine behaviors
6	M	5	No	Yes	No	Feedback provided to school psychologist and to child protection agency	Subthreshold for GID; behavioral problems at school; in foster care

7	M	3	No	No	No	Recommendations to parents for interventions in naturalistic environment	Family lives in a small town, with no mental health resources available
8	M	7	No	No	No	Recommendations to parents for interventions in naturalistic environment	Parents wanted to try interventions on their own prior to considering formal therapy
9	M	6	Yes	Yes	No	Recommendations to parents for interventions in naturalistic environment	When informed that the "odds" of persistent gender dysphoria were quite low for the patient, the mother "sobbed" with relief. She did not feel that formal therapy was, therefore, required, that she could "handle the rest" on her own.
10	M	8	Yes	Yes	No		Referred for immediate surgery for undescended testicles
11	F	12	Yes	Yes	On Celexa, Strattera, and Seroquel prior to assessment		Patient had transitioned to living as a boy prior to assessment; diagnosed with PDD-NOS
12	M	8	Yes	Yes	No		Raised by maternal grandmother; both biological parents were drug addicts; father diagnosed with Schizophrenia

(*Continued*)

TABLE 3 (Continued)

ID	Sex	Age	Individual Therapy	Parent Therapy	Medication	Other	Comment
13	M	7	Yes	Yes	No	Consult recommended for pharmacologic treatment for anxiety	Diagnosed with ASD prior to our assessment; referred to a child psychiatrist in private practice
14	M	6	No	No	No	Recommendations to parents for interventions in naturalistic environment	Parents wanted to try interventions on their own prior to considering formal therapy
15	M	7	Yes	Yes	No		Parents, who were separated, refused treatment; parent-initiated a social gender change in child after assessment; diagnosed with Separation Anxiety Disorder
16	M	6	Yes	Yes	No		query ODD
17	M	4	Yes	Yes	No		
18	F	10	Yes	Yes	No		adopted
19	M	6	Yes	Yes	No	Recommendations to parents for interventions in naturalistic environment	Parents wanted to try interventions on their own; query ASD; r/o chronic motor tic disorder; local mental health resources not available

20	M	3	Yes	Yes	No		Co-occurring disorder of sex development (46,XX ova-testicular DSD); male gender assignment shortly after birth; speech and language delay; significant behavior problems
21	F	10	Yes	Yes	Yes	On Concerta prior to assessment; Risperdal recommended	adopted at 20 months from Russia; language delay; Reactive Attachment Disorder (in remission); query PDD-NOS; significant behavior problems (one brief in-patient hospitalization)
22	M	6	Yes	Yes	No		Marfan syndrome; significant obsessional behavior; query Separation Anxiety Disorder; significant family stress, including OCD in older sister; discontinued treatment because of distance and family stress; referred to local resources for continued therapeutic support
23	M	4	Yes	Yes	No		Parents agreed to therapy, but then did not follow up
24	F	5	Yes	Yes	No		
25	M	4	Yes	Yes	No		
26	F	5	No	Yes	No		Referred mother for local mental health support

Note. F = natal female; M = natal male; ADHD = attention-deficit/hyperactivity disorder; ASD = autism spectrum disorder; ODD = oppositional defiant disorder; OCD = obsessive-compulsive disorder; PDD-NOS = pervasive developmental disorder not otherwise specified.

With parents, the focus of treatment that is specific to GID considers two issues: a) the potential role of parental factors in the genesis and maintenance of the GID, and b) naturalistic interventions. For parents for whom there may be significant psychodynamic and interpersonal factors in the genesis/maintenance of GID, we attempt to work on these issues. For example, we have posited that "identification with the aggressor" may be one factor involved in GID in girls (Zucker & Bradley, 1995). One 7-year-old girl, for example, had a long-standing conflicted relationship with her father. Her father was extremely critical, abrasive, and mean to this her. She had numerous socioemotional problems: extreme oppositional behavior with the parents, intense jealousy directed toward a younger sister, many sensory sensitivities that resulted in ritualistic behaviors, and was, in general, a very challenging child to parent. A large part of the treatment with the father focused on discussing how his rage toward his child was not helpful and likely made matters worse.

When parental psychopathology revolves around a gender-related axis, effort is made to explore the impact of this on their feelings toward the child. One mother of an 8-year-old boy wanted little to do with him. She was extremely depressed and withdrawn from her parenting role. She had been date raped as an adolescent and recalled that she dealt with this by becoming promiscuous ("Better to fuck them than to get fucked"). She acknowledged that she hated men. The only maneuver this boy could use to be close to his mother was to comb her hair (she was a hairdresser). In our view, these kinds of pathological processes require a long time to work on in psychotherapy with parents and are not particularly amenable to brief interventions.

When parents have significant reservations about setting limits on their child's cross-gender behaviors and to provide alternative activities, this requires considerable discussion. In our work, we emphasize that authoritarian limit setting is not the goal (limit setting per se is not the goal of treatment, but part of a series of interventions); rather, the goal is to help the child feel more comfortable in his or her own skin. Limit setting is discussed in context of the overall case formulation. If, for example, a young boy is driven by the desire to cross-dress, we explore with parents their understanding of what might underlie it.

For example, one 8-year-old boy was cared for by his mother (the father had died in a car accident) who worked two jobs. He was often left in the care of a neighbor while his mother worked the swing shift. In this context, he began to cross-dress and created a transitional mother object that he slept with. Helping the mother understand the possible link between his separation anxiety and his gender identity issues motivated her to spend more time discussing with him why she needed to work long hours, provided him with pictures of her to sleep with while she worked, called him a couple of times prior to his bedtime, and made more of an

effort to be with him on her days off. This resulted in a significant reduction in both the separation anxiety and his desire to be a girl. In general, our approach with parents is to make the point that the surface behaviors of GID are, in effect, "symptoms" and that symptoms can best be helped if the underlying mechanisms are better understood. As an example, we might explain to parents of girls that forcing them to wear dresses or other feminine clothing (which creates severe anxiety in many girls with GID) should not be the focus of treatment and that it would likely be unhelpful. Instead, it would be more helpful to focus on the underlying gender dysphoria.

In the naturalistic environment, we typically target the improvement of same-sex peer relations, since peer relationships are often the site of gender identity consolidation (Maccoby, 1998; Meyer-Bahlburg, 2002). For young children, this can be implemented via parent-arranged play dates with temperamentally compatible same-sex peers; with older children, this can be implemented via enrollment in community activities, such as gymnastics, drama clubs, and team sports. The goal here is to see if children with GID are able to develop a broader range of friendships that include same-sex peers. For parents who are free of major life stressors or significant psychopathology that interferes with their parenting role, this task can be implemented fairly easily; however, when parents are overwhelmed with their own difficulties, they often feel depleted and unable to work on these kinds of interventions.

WHAT IS THE DISPOSITION OF REFERRED CASES FOR WHICH NO CLINICALLY SIGNIFICANT GENDER-VARIANT BEHAVIOR IS OBSERVED?

In our clinic, we almost never receive a referral in which we conclude from the intake interview that the case is a false positive. About 70% of the children we evaluate meet the complete *DSM* criteria for GID; the remainder of referrals are subthreshold (gender variant), some of whom had met the full criteria when younger. Of the 26 cases evaluated in 2008 (Table 3), only one youngster (ID 6) showed no signs of GID although he had voiced to the referring child psychiatrist a strong wish to be a girl. Psychological testing confirmed the absence of clinically significant gender identity issues. In this case, this youngster was dealing with the stressor of having been placed in foster care because of maternal neglect and had significant behavior problems at school and at home. Another youngster (ID 5) was the sibling of ID 2 and was subthreshold for GID. As noted in Table 3, the mother did not have any concerns about his feminine behavior and the father denied observing any. Because his sister had a severe GID, oppositional behavior, and ADHD, and because the parents had significant relational discord

(they were separated), the focus of the recommendations were directed elsewhere.

The question posed by the guest editors of this special issue of the *Journal of Homosexuality* is relevant especially for children who are subthreshold for GID. Do these youngsters still have clinically significant gender identity issues that need to be monitored or even treated? In our view, the answer is sometimes yes and sometimes no. Some children may be subthreshold for GID, yet, the clinical impression is that these children may well be struggling with their gender identity and, for these children, a trial of therapy can certainly be beneficial to explore the issue further. If they have substantial other psychologic or psychiatric issues, these can also be a focus of treatment. One could argue that some children who are subthreshold for GID may be at risk for the later development of a full-blown GID (e.g., see Zucker, 2004, 2006b).

HOW ARE THE RELATIVE RISKS AND BENEFITS OF TREATMENT AS WELL AS THE IMPACT OF TREATMENT ON OUTCOME EXPLAINED TO CAREGIVERS?

In providing feedback to parents, we attempt to articulate our case formulation in a manner that is understandable. We identify the factors that we have found useful in understanding the child and the family. Parents vary in their psychologic sophistication and capacity for reflective functioning, so feedback is done in a way that is client centered. We provide a rationale for our treatment recommendations.

In the era of the Internet, some parents are quite familiar with the controversies about treatment of children with GID; others are not. For parents who are interested in discussing the philosophical differences among care providers, we discuss the varying perspectives. Benefits of treatment that we argue in favor of include the reduction in gender dysphoria, the attendant social ostracism that can ensue from GID persistence, the complexities of sex-reassignment surgery and its biomedical treatment, and the importance of reducing family psychopathology and stress, when it is present. The risks of treatment are discussed: Perhaps the child will not respond to the treatment; perhaps the parents will find it too stressful to attempt naturalistic interventions. As noted earlier, we explain that the goal of treatment is not to prevent the child from developing a future homosexual sexual orientation. For some parents, this is a non-issue; for other parents, it remains their goal. One concern parents have is that their child may go underground with his or her gender dysphoric feelings. We are mindful of this concern (the development of a false self in the Winnicottian sense) and emphasize that this is not a good outcome–the goal is to help the child work through their gender dysphoric feelings.

IS PREVENTION OF ADULT TRANSSEXUALISM A REASONABLE TREATMENT GOAL, AND GIVEN THE LOW FREQUENCY WITH WHICH GID PERSISTS INTO ADULTHOOD, HOW IS IT POSSIBLE TO DETERMINE THE EFFICACY OF TREATMENT IN ATTAINING THAT GOAL?

> . . . we cannot rule out the possibility that early successful treatment of childhood GID will diminish the role of a continuation of GID into adulthood. If so, successful treatment would also reduce the need for the long and difficult process of sex reassignment which includes hormonal and surgical procedures with substantial medical risks and complications. (Meyer-Bahlburg, 2002, p. 362)

> Relatively little dispute exists regarding the prevention of transsexualism, though evidence about the effectiveness of treatment in preventing adult transsexualism is also virtually nonexistent. (Cohen-Kettenis & Pfäfflin, 2003, p. 120)

The guest editors of this special issue have posed a provocative question about the prevention of transsexualism (GID) in adulthood. Here, we can pose an ancillary question to illustrate, in part, the centrality of social values: Is prevention of homosexuality a reasonable treatment goal? On this point, most secular clinicians would answer "no." In our own clinic, we have never advocated for the prevention of homosexuality as a treatment goal for GID in children. At the same time, we are sensitive to the fact that some parents bring their child to the clinic, in part, because they are worried that their child will grow up to be gay or lesbian (for all the reasons one might imagine—parental homophobia, worries about social ostracism, worries about HIV/AIDS, worries that this will result in a more difficult life, cultural factors, religious factors, etc.).

Over the years, our approach has been a psychoeducational one and also a pragmatic one: a) we explain to parents that there are no empirical studies that suggest that alteration of a child's gender identity will also alter their eventual sexual orientation; b) that homosexuality per se is not considered a mental disorder; c) that gay men and lesbians can lead productive and satisfying lives (as banal as this sounds) and that, over time, if their child develops a homoerotic sexual orientation, then it will be their job (and ours) to support their child in adapting to whatever stressors may be associated with their sexual identity. In our experience, the majority of parents are satisfied with this psychoeducational approach and, for some, it involves mourning the loss of the expected heterosexual child and whatever fantasies and aspirations are associated with this. Many of the parents that we work with do not have a particular problem if their child were to grow up gay or lesbian. Many of these parents do, however, hold the aspiration

that they would like their child to be comfortable in his or her skin. In other words, they can see that growing up transsexual or transgender may augur a more complicated life.

Although we do not have a particular quarrel with the prevention of transsexualism as a treatment goal for children with GID, we believe that this should be contextualized. If, for example, children with GID who persist in their desire to be of the other gender showed a better psychosocial adjustment and adaptation than children with GID who desist (e.g., become gay or lesbian or heterosexual without gender dysphoria), then one could, quite reasonably, question the prevention of transsexualism as a legitimate treatment goal. If a child grew up comfortable in their own skin, but was generally miserable otherwise, one could hardly argue with unabashed enthusiasm for the prevention of transsexualism.

From a developmental perspective, we take a very different approach when we work with adolescents with GID than when we work with children with GID. This is because we believe that there is much less evidence that GID can remit in adolescents than in children. Whether this is due to different populations of clients seen in adolescence versus childhood or whether this is due to a narrowing of plasticity and malleability in gender identity differentiation by the time of adolescence is open to debate. But, if the clinical consensus is that a particular adolescent is very much likely to persist down a pathway toward hormonal and sex-reassignment surgery, then our therapeutic approach is one that supports this pathway on the grounds that it will lead to a better psychosocial adaptation and quality of life (Zucker, Bradley, Owen-Anderson, et al., 2011).

Because the treatment literature is lacking in terms of rigorous comparative evaluations (e.g., Treatment X vs. Treatment Y or Treatment X vs. no treatment, etc.), one has to rely on a patchwork of empirical evidence about natural history. Thus, for example, natural history data suggest, to date, a much higher rate of desistance of GID in child samples than in adolescent or adult samples (Zucker et al., 2011).

The guest editors have made reference to the low frequency with which GID persists into adulthood and the implications of this fact in the evaluation of treatment efficacy. Persistence rates have varied fairly substantially in long-term follow-up studies. For example, Green (1987) reported that only 1 of 44 previously feminine boys appeared to be gender dysphoric at the time of follow-up. In contrast, Wallien and Cohen-Kettenis (2008) reported that 50% of 18 GID girls were persisters at follow up. In our own follow-up studies, we have found a persistence rate of 12% for GID girls ($n = 25$; Drummond et al., 2008) and a persistence rate of 13.3% for GID boys ($n = 135$; Singh et al., 2010). Thus, there is a fair bit of variation in persistence rates.

How can this variation be understood? One possibility is sampling differences. Another possibility pertains to the degree of GID in childhood.

Both Wallien and Cohen-Kettenis (2008) and Singh et al. (2010) showed that several metrics of GID severity in childhood predicted persistence at follow-up. Another possibility is to contextualize the natural history data.

Is there really such a thing as natural history for GID or does its developmental course vary as a function of contextual factors? If, as in our clinic, treatment is recommended to reduce the likelihood of GID persistence, perhaps the data can only be interpreted in that context. In any event, we require more comparative data to draw conclusions about the natural history of GID in children and its relation to contextual factors.

WHAT CONSTITUTES A SUCCESSFUL OUTCOME? WHAT CONSTITUTES A TREATMENT FAILURE?

If one goal of treatment is to reduce the gender dysphoria, then, by definition, a successful outcome would be its remission and a failure would be its persistence. If, however, a successful outcome also takes into account a child's more general well-being and adaptation to various developmental tasks, then the definitions of success and failure must be broader. Consider, for example, the vignette described earlier of the 7-year-old girl who had an extremely strained relationship with her father. Six years after therapy commenced (and still continues), the GID has fully remitted and there has been a lessening of the sensory sensitivities and rituals. Although this now young adolescent girl functions reasonably well at school and has friends, parent-child relations remain severely strained and there continues to be substantial parental psychopathology (in each parent and in their marriage). Success? Failure? In between?

For Tom, the 4-year-old boy who experienced his younger sister's birth as an extreme threat to his relationship with his mother, at the age of 13 his GID has remitted fully. In the course of many years of therapy, he has intermittently struggled with various issues (episodic encopresis, peer conflicts, behavioral compliance with parental expectations), but he functions extremely well at school and has many close friends. Although his development has been marked with various stressors and challenges, we would gauge his current outcome as pretty successful.

For children whose gender dysphoria persisted into adolescence or adulthood, some are functioning quite well; others are not. One natal male, originally seen at age 5, was seen for follow up at age 35. At follow up, she was living as a woman, but had elected to neither take exogenous female hormones or to have genital reassignment surgery ("A woman does not need a vagina to be a woman"). Because this individual was quite overweight, idiopathic gynecomastia was sufficient for the appearance of female breasts. She had a boyfriend who was sexually attracted to "she-males." She engaged in sex work, also attracting men interested in she-males. She used,

on a daily basis, oxycontin and heroin. She was on long-term psychiatric disability, with various diagnoses: ADHD, bipolar disorder, and adult baby syndrome (she and her boyfriend planned on getting an apartment and creating a baby's room for her). Apart from the ADHD, the patient had no complaints about her life. Success? Failure?

Another natal female was originally seen for assessment at the age of 12 years and followed up at the age of 26. He had transitioned to the male gender in adolescence, but had not sought out either hormonal suppression or cross-sex hormonal therapy. He was very content living as a man. Ben worked full time, owned his own house, and had had long-term relationships with women. However, he struggled with severe alcohol abuse, abused recreational drugs, had been frequently arrested for getting into fights while intoxicated, and was occasionally suicidal. Success? Failure? In between?

Our long-term follow-up studies of both girls and boys with GID suggest that many of these youngsters, regardless of their later gender identity and sexual orientation, are a psychiatrically vulnerable group (Drummond, 2006; Drummond et al., 2008; Singh et al., 2010). Although some of this vulnerability might be understood in relation to the stressors associated with an atypical gender identity and/or sexual orientation, it is our belief that it is also related to other risk factors, including biological and psychosocial parameters within their families.

NOTES

1. We have used Clifft's (1986) guidelines for confidentiality in reporting clinical material.

2. These children are sometimes referred to as *desisters*, while those who do not "lose" the diagnosis are referred to as *persisters*.

3. There are more parents nowadays who interpret the cross-gender identification as a marker of the child's "essential" gender identity (Brill & Pepper, 2008; Dreger, 2009; Kilodavis, 2009).

REFERENCES

Achenbach, T. M., & Edelbrock, C. (1983). *Manual for the Child Behavior Checklist and Revised Child Behavior Profile*. Burlington, VT: University of Vermont: Department of Psychiatry.

Achenbach, T. M., & Edelbrock, C. (1986a). *Manual for the Youth Self-Report and Profile*. Burlington, VT: University of Vermont Department of Psychiatry.

Achenbach, T. M., & Edelbrock, C. (1986b). *Manual for the Teacher's Report Form and Teacher Version of the Child Behavior Profile*. Burlington, VT: University of Vermont Department of Psychiatry.

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text rev.). Washington, DC: Author.

Bates, J. E., & Bentler, P. M. (1973). Play activities of normal and effeminate boys. *Developmental Psychology*, *9*, 20–27.

Beitchman, J. H. (1996). *FAB-C^{TM}: Feelings, Attitudes, and Behaviors Scale for Children*. Toronto, ON, Canada: Multi-Health Systems.

Brill, S., & Pepper, R. (2008). *The transgender child: A handbook for families and professionals*. San Francisco, CA: Cleis Press.

Campbell, D. W., & Eaton, W. O. (1999). Sex differences in the activity level of infants. *Infant and Child Development*, *8*, 1–17.

Cassidy, J., & Marvin, R. S., with the Attachment Working Group of the MacArthur Network on the Transition from Infancy to Early Childhood. (1992). *Attachment organization in three- and four-year-olds*. Unpublished manual, University of Virginia at Charlottesville.

Chiu, S. W., Gervan, S., Fairbrother, C., Johnson, L. L., Owen-Anderson, A. F. H., Bradley, S. J., & Zucker, K. J. (2006). Sex-dimorphic color preference in children with gender identity disorder: A comparison to clinical and community controls. *Sex Roles*, *55*, 385–395.

Clifft, M. A. (1986). Writing about psychiatric patients: Guidelines for disguising case material. *Bulletin of the Menninger Clinic*, *50*, 511–524.

Coates, S., & Person, E. S. (1985). Extreme boyhood femininity: Isolated behavior or pervasive disorder? *Journal of the American Academy of Child Psychiatry*, *24*, 702–709.

Cohen-Kettenis, P. T., & Pfäfflin, F. (2003). *Transgenderism and intersexuality in childhood and adolescence: Making choices*. Thousand Oaks, CA: Sage.

de Vries, A. L. C., Noens, I. L., Cohen-Kettenis, P. T., van Berckelaer-Onnes, I. A., & Doreleijers, T. A. H. (2010). Autism spectrum disorders in gender dysphoric children and adolescents. *Journal of Autism and Developmental Disorders*, *40*, 930–936.

DeLoache, J. S., Simcock, G., & Macari, S. (2007). Planes, trains, automobiles–and tea sets: Extremely intense interests in very young children. *Developmental Psychology*, *43*, 1579–1586.

Derogatis, L. (1983). *SCL-90: Administration, scoring and procedures manual for the revised version*. Baltimore, MD: Clinical Psychometric Research.

Dreger, A. (2009). Gender identity disorder in childhood: Inconclusive advice to parents. *Hastings Center Report*, *39*, 26–29.

Drummond, K. D. (2006). *A follow-up study of girls with gender identity disorder*. Unpublished master's thesis, Ontario Institute for Studies in Education of the University of Toronto.

Drummond, K. D., Bradley, S. J., Badali-Peterson, M., & Zucker, K. J. (2008). A follow-up study of girls with gender identity disorder. *Developmental Psychology*, *44*, 34–45.

Eaton, W. O., & Enns, L. R (1986). Sex differences in human motor activity level. *Psychological Bulletin*, *100*, 19–28.

Fridell, S. R., Owen-Anderson, A., Johnson, L. L., Bradley, S. J., & Zucker, K. J. (2006). The Playmate And Play Style Preferences Structured Interview: A comparison of children with gender identity disorder and controls. *Archives of Sexual Behavior*, *35*, 729–737.

Green, R. (1987). *The "sissy boy syndrome" and the development of homosexuality*. New Haven, CT: Yale University Press.

Johnson, L. L., Bradley, S. J., Birkenfeld-Adams, A. S., Kuksis, M. A. R., Maing, D. M., Mitchell, J. N., & Zucker, K. J. (2004). A parent-report Gender Identity Questionnaire for Children. *Archives of Sexual Behavior*, *33*, 105–116.

Kilodavis, C. (2009). *My princess boy: A mom's story about a young boy who loves to dress up*. Seattle, WA: K D Talent LLC.

Kohlberg, L. (1966). A cognitive-developmental analysis of children's sex-role concepts and attitudes. In E. E. Maccoby (Ed.), *The development of sex differences* (pp. 82–173). Stanford, CA: Stanford University Press.

Maccoby, E. E. (1998). *The two sexes: Growing up apart, coming together*. Cambridge, MA: Harvard University Press.

Meyer-Bahlburg, H. F. L. (2002). Gender identity disorder in young boys: A parent- and peer-based treatment protocol. *Clinical Child Psychology and Psychiatry*, *7*, 360–377.

Ruble, D. N., Martin, C. L., & Berenbaum, S. A. (2006). Gender development. In W. Damon & R. M. Lerner (Series eds.) and N. Eisenberg (Vol. ed.), *Handbook of child psychology (6th ed.). Vol. 3: Social, emotional, and personality development* (pp. 858–932). New York, NY: Wiley.

Singh, D., Bradley, S. J., & Zucker, K. J. (2010, June). *A follow-up study of boys with gender identity disorder*. Poster presented at the University of Lethbridge Workshop, The Puzzle of Sexual Orientation: What Is It and How Does It Work?, Lethbridge, AB, Canada.

Spanier, G. B. (1976). Measuring dyadic adjustment: New scales for assessing the quality of marriage and similar dyads. *Journal of Marriage and the Family*, *38*, 15–28.

Wallien, M. S. C., & Cohen-Kettenis, P. T. (2008). Psychosexual outcome of gender dysphoric children. *Journal of the American Academy of Child and Adolescent Psychiatry*, *47*, 1413–1423.

Wallien, M. S. C., Quilty, L. C., Steensma, T. D., Singh, D., Lambert, S. L., Leroux, A., . . . Zucker, K. J. (2009). Cross-national replication of the Gender Identity Interview for Children. *Journal of Personality Assessment*, *91*, 545–552.

Zucker, K. J. (2000). Gender identity disorder. In A. J. Sameroff, M. Lewis, & S. M. Miller (Eds.), *Handbook of developmental psychopathology* (2nd ed.; pp. 671–686). New York, NY: Kluwer Academic/Plenum.

Zucker, K. J. (2004). Gender identity disorder. In I. B. Weiner (Ed.), *Adult psychopathology case studies* (pp. 207–228). New York, NY: Wiley.

Zucker, K. J. (2006a). I'm half-boy, half-girl": Play psychotherapy and parent counseling for gender identity disorder. In R. L. Spitzer, M. B. First, J. B. W. Williams, & M. Gibbons (Eds.), *DSM-IV-TR casebook, volume 2. Experts tell how they treated their own patients* (pp. 321–334). Washington, DC: American Psychiatric Publishing.

Zucker, K. J. (2006b). Gender identity disorder. In D. A. Wolfe & E. J. Mash (Eds.), *Behavioral and emotional disorders in adolescents: Nature, assessment, and treatment* (pp. 535–562). New York, NY: Guilford Press.

Zucker, K. J. (2008a). On the "natural history" of gender identity disorder in children [Editorial]. *Journal of the American Academy of Child and Adolescent Psychiatry*, *47*, 1361–1363.

Zucker, K. J. (2008b). Enfants avec troubles de l'identité sexuée: y-a-t-il une pratique la meilleure? [Children with gender identity disorder: Is there a best practice?]. *Neuropsychiatrie de l'Enfance et de l'Adolescence*, *56*, 358–364.

Zucker, K. J., & Bradley, S. J. (1995). *Gender identity disorder and psychosexual problems in children and adolescents*. New York, NY: Guilford Press.

Zucker, K. J., Bradley, S. J., & Ipp, M. (1993). Delayed naming of a newborn boy: Relationship to the mother's wish for a girl and subsequent cross-gender identity in the child by the age of two. *Journal of Psychology and Human Sexuality*, *6*, 57–68.

Zucker, K. J., Bradley, S. J., Kuksis, M., Pecore, K., Birkenfeld-Adams, A., Doering, R. W., et al. (1999). Gender constancy judgments in children with gender identity disorder: Evidence for a developmental lag. *Archives of Sexual Behavior*, *28*, 475–502.

Zucker, K. J., Bradley, S. J., & Lowry Sullivan, C. B. (1996). Traits of separation anxiety in boys with gender identity disorder. *Journal of the American Academy of Child and Adolescent Psychiatry*, *35*, 791–798.

Zucker, K. J., Bradley, S. J., Lowry Sullivan, C. B., Kuksis, M., Birkenfeld-Adams, A., & Mitchell, J. N. (1993). A gender identity interview for children. *Journal of Personality Assessment*, *61*, 443–456.

Zucker, K. J., Bradley, S. J., Owen-Anderson, A., Singh, D., Blanchard, R., & Bain, J. (2011). Puberty-blocking hormonal therapy for adolescents with gender identity disorder: A descriptive clinical study. *Journal of Gay & Lesbian Mental Health*, *15*, 58–82.

Zucker, K. J., Doering, R. W., Bradley, S. J., & Finegan, J. K. (1982). Sex-typed play in gender-disturbed children: A comparison to sibling and psychiatric controls. *Archives of Sexual Behavior*, *11*, 309–321.

Zucker, K. J., Finegan, J. K., Doering, R. W., & Bradley, S. J. (1983). Human figure drawings of gender-problem children: A comparison to sibling, psychiatric, and normal controls. *Journal of Abnormal Child Psychology*, *11*, 287–298.

Zucker, K. J., Lozinski, J. A., Bradley, S. J., & Doering, R. W. (1992). Sex-typed responses in the Rorschach protocols of children with gender identity disorder. *Journal of Personality Assessment*, *58*, 295–310.

Zucker, K. J., Mitchell, J. N., Bradley, S. J., Tkachuk, J., Cantor, J. M., & Allin, S. M. (2006). The Recalled Childhood Gender Identity/Gender Role Questionnaire: Psychometric properties. *Sex Roles*, *54*, 469–483.

THE NEW ATLANTIS

A Journal of Technology & Society

~ Special Report ~

Sexuality and Gender

Findings from the Biological, Psychological, and Social Sciences

Lawrence S. Mayer, M.B., M.S., Ph.D.
Paul R. McHugh, M.D.

Number 50 ~ Fall 2016 ~ $7.00
www.TheNewAtlantis.com

THE NEW ATLANTIS
A Journal of Technology & Society
Number 50 ~ Fall 2016

Editor's Note: Questions related to sexuality and gender bear on some of the most intimate and personal aspects of human life. In recent years they have also vexed American politics. We offer this report—written by Dr. Lawrence S. Mayer, an epidemiologist trained in psychiatry, and Dr. Paul R. McHugh, arguably the most important American psychiatrist of the last half-century—in the hope of improving public understanding of these questions. Examining research from the biological, psychological, and social sciences, this report shows that some of the most frequently heard claims about sexuality and gender are not supported by scientific evidence. The report has a special focus on the higher rates of mental health problems among LGBT populations, and it questions the scientific basis of trends in the treatment of children who do not identify with their biological sex. More effort is called for to provide these people with the understanding, care, and support they need to lead healthy, flourishing lives.

Sexuality and Gender

Findings from the Biological, Psychological, and Social Sciences

Lawrence S. Mayer, M.B., M.S., Ph.D. and Paul R. McHugh, M.D.

Lawrence S. Mayer, M.B., M.S., Ph.D. *is a scholar in residence in the Department of Psychiatry at the Johns Hopkins University School of Medicine and a professor of statistics and biostatistics at Arizona State University.* ***Paul R. McHugh, M.D.*** *is a professor of psychiatry and behavioral sciences at the Johns Hopkins University School of Medicine and was for twenty-five years the psychiatrist-in-chief at the Johns Hopkins Hospital. He is the author or coauthor of several books, including, most recently,* Try to Remember: Psychiatry's Clash over Meaning, Memory, and Mind *(Dana Press, 2008).*

The New Atlantis

A Journal of Technology & Society

The New Atlantis *(1627) was the title Francis Bacon selected for his fable of a society living with the benefits and challenges of advanced science and technology. Bacon, a founder and champion of modern science, sought not only to highlight the potential of technology to improve human life, but also to foresee some of the social, moral, and political difficulties that confront a society shaped by the great scientific enterprise. His book offers no obvious answers; perhaps it seduces more than it warns. But the tale also hints at some of the dilemmas that arise with the ability to remake and reconfigure the natural world: governing science, so that it might flourish freely without destroying or dehumanizing us, and understanding the effect of technology on human life, human aspiration, and the human good. To a great extent, we live in the world Bacon imagined, and now we must find a way to live well with both its burdens and its blessings. This very challenge, which now confronts our own society most forcefully, is the focus of this journal.*

Editorial Office:
The New Atlantis
1730 M Street N.W., Suite 910
Washington, D.C. 20036
Telephone: (202) 682-1200
Fax: (202) 408-0632
E-mail: editor@thenewatlantis.com

Subscription Office:
Postmaster and subscribers, please send subscription orders and address changes to: *The New Atlantis* Subscription Services, P.O. Box 3000, Denville, N.J. 07834-3000, or call toll-free at (866) 440-6916.
Rate: $24/year (4 Issues). Please add $10 for delivery outside the United States.

Advertising Information:
Those interested in placing advertisements should contact Samuel Matlack, Managing Editor, at ads@thenewatlantis.com.

Submissions:
Manuscripts and proposals should be directed to Samuel Matlack by e-mail (submissions@thenewatlantis.com) or by post to our editorial office.

The New Atlantis (ISSN 1543-1215) is published quarterly in the Spring, Summer, Fall, and Winter by the Center for the Study of Technology and Society in partnership with the Ethics and Public Policy Center in Washington, D.C. It is printed by Global Printing and distributed by Ingram Periodicals, Inc.

The New Atlantis
A Journal of Technology & Society

Preface

This report was written for the general public and for mental health professionals in order to draw attention to—and offer some scientific insight about—the mental health issues faced by LGBT populations.

It arose from a request from Paul R. McHugh, M.D., the former chief of psychiatry at Johns Hopkins Hospital and one of the leading psychiatrists in the world. Dr. McHugh requested that I review a monograph he and colleagues had drafted on subjects related to sexual orientation and identity; my original assignment was to guarantee the accuracy of statistical inferences and to review additional sources. In the months that followed, I closely read over five hundred scientific articles on these topics and perused hundreds more. I was alarmed to learn that the LGBT community bears a disproportionate rate of mental health problems compared to the population as a whole.

As my interest grew, I explored research across a variety of scientific fields, including epidemiology, genetics, endocrinology, psychiatry, neuroscience, embryology, and pediatrics. I also reviewed many of the academic empirical studies done in the social sciences including psychology, sociology, political science, economics, and gender studies.

I agreed to take over as lead author, rewriting, reorganizing, and expanding the text. I support every sentence in this report, without reservation and without prejudice regarding any political or philosophical debates. This report is about science and medicine, nothing more and nothing less.

Readers wondering about this report's synthesis of research from so many different fields may wish to know a little about its lead author. I am a full-time academic involved in all aspects of teaching, research, and professional service. I am a biostatistician and epidemiologist who focuses on the design, analysis, and interpretation of experimental and observational data in public health and medicine, particularly when the data are complex in terms of underlying scientific issues. I am a research physician, having trained in medicine and psychiatry in the U.K. and received the British equivalent (M.B.) to the American M.D. I have never practiced medicine (including psychiatry) in the United States or abroad. I have testified in dozens of federal and state legal proceedings and regulatory hearings, in

most cases reviewing scientific literature to clarify the issues under examination. I strongly support equality and oppose discrimination for the LGBT community, and I have testified on their behalf as a statistical expert.

I have been a full-time tenured professor for over four decades. I have held professorial appointments at eight universities, including Princeton, the University of Pennsylvania, Stanford, Arizona State University, Johns Hopkins University Bloomberg School of Public Health and School of Medicine, Ohio State, Virginia Tech, and the University of Michigan. I have also held research faculty appointments at several other institutions, including the Mayo Clinic.

My full-time and part-time appointments have been in twenty-three disciplines, including statistics, biostatistics, epidemiology, public health, social methodology, psychiatry, mathematics, sociology, political science, economics, and biomedical informatics. But my research interests have varied far less than my academic appointments: the focus of my career has been to learn how statistics and models are employed across disciplines, with the goal of improving the use of models and data analytics in assessing issues of interest in the policy, regulatory, or legal realms.

I have been published in many top-tier peer-reviewed journals (including *The Annals of Statistics*, *Biometrics*, and *American Journal of Political Science*) and have reviewed hundreds of manuscripts submitted for publication to many of the major medical, statistical, and epidemiological journals (including *The New England Journal of Medicine*, *Journal of the American Statistical Association*, and *American Journal of Public Health*).

I am currently a scholar in residence in the Department of Psychiatry at Johns Hopkins School of Medicine and a professor of statistics and biostatistics at Arizona State University. Up until July 1, 2016, I also held part-time faculty appointments at the Johns Hopkins Bloomberg School of Public Health and School of Medicine, and at the Mayo Clinic.

An undertaking as ambitious as this report would not be possible without the counsel and advice of many gifted scholars and editors. I am grateful for the generous help of Laura E. Harrington, M.D., M.S., a psychiatrist with extensive training in internal medicine and neuroimmunology, whose clinical practice focuses on women in life transition, including affirmative treatment and therapy for the LGBT community. She contributed to the entire report, particularly lending her expertise to the sections on endocrinology and brain research. I am indebted also to Bentley J. Hanish, B.S., a young geneticist who expects to graduate medical school in 2021 with an M.D./Ph.D. in psychiatric epidemiology.

He contributed to the entire report, particularly to those sections that concern genetics.

I gratefully acknowledge the support of Johns Hopkins University Bloomberg School of Public Health and School of Medicine, Arizona State University, and the Mayo Clinic.

In the course of writing this report, I consulted a number of individuals who asked that I not thank them by name. Some feared an angry response from the more militant elements of the LGBT community; others feared an angry response from the more strident elements of religiously conservative communities. Most bothersome, however, is that some feared reprisals from their own universities for engaging such controversial topics, regardless of the report's content—a sad statement about academic freedom.

I dedicate my work on this report, first, to the LGBT community, which bears a disproportionate rate of mental health problems compared to the population as a whole. We must find ways to relieve their suffering.

I dedicate it also to scholars doing impartial research on topics of public controversy. May they never lose their way in political hurricanes.

And above all, I dedicate it to children struggling with their sexuality and gender. Children are a special case when addressing gender issues. In the course of their development, many children explore the idea of being of the opposite sex. Some children may have improved psychological well-being if they are encouraged and supported in their cross-gender identification, particularly if the identification is strong and persistent over time. But nearly all children ultimately identify with their biological sex. The notion that a two-year-old, having expressed thoughts or behaviors identified with the opposite sex, can be labeled for life as transgender has absolutely no support in science. Indeed, it is iniquitous to believe that all children who have gender-atypical thoughts or behavior at some point in their development, particularly before puberty, should be encouraged to become transgender.

As citizens, scholars, and clinicians concerned with the problems facing LGBT people, we should not be dogmatically committed to any particular views about the nature of sexuality or gender identity; rather, we should be guided first and foremost by the needs of struggling patients, and we should seek with open minds for ways to help them lead meaningful, dignified lives.

Lawrence S. Mayer, M.B., M.S., Ph.D.

The New Atlantis
A Journal of Technology & Society

Executive Summary

This report presents a careful summary and an up-to-date explanation of research—from the biological, psychological, and social sciences—related to sexual orientation and gender identity. It is offered in the hope that such an exposition can contribute to our capacity as physicians, scientists, and citizens to address health issues faced by LGBT populations within our society.

Some key findings:

Part One: Sexual Orientation

- The understanding of sexual orientation as an innate, biologically fixed property of human beings—the idea that people are "born that way"—is not supported by scientific evidence.

- While there is evidence that biological factors such as genes and hormones are associated with sexual behaviors and attractions, there are no compelling causal biological explanations for human sexual orientation. While minor differences in the brain structures and brain activity between homosexual and heterosexual individuals have been identified by researchers, such neurobiological findings do not demonstrate whether these differences are innate or are the result of environmental and psychological factors.

- Longitudinal studies of adolescents suggest that sexual orientation may be quite fluid over the life course for some people, with one study estimating that as many as 80% of male adolescents who report same-sex attractions no longer do so as adults (although the extent to which this figure reflects actual changes in same-sex attractions and not just artifacts of the survey process has been contested by some researchers).

- Compared to heterosexuals, non-heterosexuals are about two to three times as likely to have experienced childhood sexual abuse.

Part Two: Sexuality, Mental Health Outcomes, and Social Stress

- Compared to the general population, non-heterosexual subpopulations are at an elevated risk for a variety of adverse health and mental health outcomes.

- Members of the non-heterosexual population are estimated to have about 1.5 times higher risk of experiencing anxiety disorders than members of the heterosexual population, as well as roughly double the risk of depression, 1.5 times the risk of substance abuse, and nearly 2.5 times the risk of suicide.

- Members of the transgender population are also at higher risk of a variety of mental health problems compared to members of the non-transgender population. Especially alarmingly, the rate of lifetime suicide attempts across all ages of transgender individuals is estimated at 41%, compared to under 5% in the overall U.S. population.

- There is evidence, albeit limited, that social stressors such as discrimination and stigma contribute to the elevated risk of poor mental health outcomes for non-heterosexual and transgender populations. More high-quality longitudinal studies are necessary for the "social stress model" to be a useful tool for understanding public health concerns.

Part Three: Gender Identity

- The hypothesis that gender identity is an innate, fixed property of human beings that is independent of biological sex—that a person might be "a man trapped in a woman's body" or "a woman trapped in a man's body"—is not supported by scientific evidence.

- According to a recent estimate, about 0.6% of U.S. adults identify as a gender that does not correspond to their biological sex.

- Studies comparing the brain structures of transgender and non-transgender individuals have demonstrated weak correlations between brain structure and cross-gender identification. These correlations do not provide any evidence for a neurobiological basis for cross-gender identification.

- Compared to the general population, adults who have undergone sex-reassignment surgery continue to have a higher risk of experiencing poor mental health outcomes. One study found that, compared to controls, sex-reassigned individuals were about 5 times more likely to attempt suicide and about 19 times more likely to die by suicide.

- Children are a special case when addressing transgender issues. Only a minority of children who experience cross-gender identification will continue to do so into adolescence or adulthood.

- There is little scientific evidence for the therapeutic value of interventions that delay puberty or modify the secondary sex characteristics of adolescents, although some children may have improved psychological well-being if they are encouraged and supported in their cross-gender identification. There is no evidence that all children who express gender-atypical thoughts or behavior should be encouraged to become transgender.

The New Atlantis
A Journal of Technology & Society

Sexuality and Gender

Findings from the Biological, Psychological, and Social Sciences

Lawrence S. Mayer, M.B., M.S., Ph.D. and Paul R. McHugh, M.D.

Introduction

Few topics are as complex and controversial as human sexual orientation and gender identity. These matters touch upon our most intimate thoughts and feelings, and help to define us as both individuals and social beings. Discussions of the ethical questions raised by sexual orientation and gender identity can become heated and personal, and the associated policy issues sometimes provoke intense controversies. The disputants, journalists, and lawmakers in these debates often invoke the authority of science, and in our news and social media and our broader popular culture we hear claims about what "science says" on these matters.

This report offers a careful summary and an up-to-date explanation of many of the most rigorous findings produced by the biological, psychological, and social sciences related to sexual orientation and gender identity. We examine a vast body of scientific literature from several disciplines. We try to acknowledge the limitations of the research and to avoid premature conclusions that would result in over-interpretation of scientific findings. Since the relevant literature is rife with inconsistent and ambiguous definitions, we not only examine the empirical evidence but also delve into underlying conceptual problems. This report does not, however, discuss matters of morality or policy; our focus is on the scientific evidence—what it shows and what it does not show.

We begin in Part One by critically examining whether concepts such as heterosexuality, homosexuality, and bisexuality represent distinct, fixed, and biologically determined properties of human beings. As part of this discussion, we look at the popular "born that way" hypothesis, which

posits that human sexual orientation is biologically innate; we examine the evidence for this claim across several subspecialties of the biological sciences. We explore the developmental origins of sexual attractions, the degree to which such attractions may change over time, and the complexities inherent in the incorporation of these attractions into one's sexual identity. Drawing on evidence from twin studies and other types of research, we explore genetic, environmental, and hormonal factors. We also explore some of the scientific evidence relating brain science to sexual orientation.

In Part Two we examine research on health outcomes as they relate to sexual orientation and gender identity. There is a consistently observed higher risk of poor physical and mental health outcomes for lesbian, gay, bisexual, and transgender subpopulations compared to the general population. These outcomes include depression, anxiety, substance abuse, and most alarmingly, suicide. For example, among the transgender subpopulation in the United States, the rate of attempted suicide is estimated to be as high as 41%, ten times higher than in the general population. As physicians, academics, and scientists, we believe all of the subsequent discussions in this report must be cast in the light of this public health issue.

We also examine some ideas proposed to explain these differential health outcomes, including the "social stress model." This hypothesis—which holds that stressors like stigma and prejudice account for much of the additional suffering observed in these subpopulations—does not seem to offer a complete explanation for the disparities in the outcomes.

Much as Part One investigates the conjecture that sexual orientation is fixed with a causal biological basis, a portion of Part Three examines similar issues with respect to gender identity. Biological sex (the binary categories of male and female) is a fixed aspect of human nature, even though some individuals affected by disorders of sex development may exhibit ambiguous sex characteristics. By contrast, gender identity is a social and psychological concept that is not well defined, and there is little scientific evidence that it is an innate, fixed biological property.

Part Three also examines sex-reassignment procedures and the evidence for their effectiveness at alleviating the poor mental health outcomes experienced by many people who identify as transgender. Compared to the general population, postoperative transgender individuals continue to be at high risk of poor mental health outcomes.

An area of particular concern involves medical interventions for gender-nonconforming youth. They are increasingly receiving therapies that affirm their felt genders, and even hormone treatments or surgical

modifications at young ages. But the majority of children who identify as a gender that does not conform to their biological sex will no longer do so by the time they reach adulthood. We are disturbed and alarmed by the severity and irreversibility of some interventions being publicly discussed and employed for children.

Sexual orientation and gender identity resist explanation by simple theories. There is a large gap between the certainty with which beliefs are held about these matters and what a sober assessment of the science reveals. In the face of this complexity and uncertainty, we need to be humble about what we know and do not know. We readily acknowledge that this report is neither an exhaustive analysis of the subjects it addresses nor the last word on them. Science is by no means the only avenue for understanding these astoundingly complex, multifaceted topics; there are other sources of wisdom and knowledge—including art, religion, philosophy, and lived human experience. And much of our scientific knowledge in this area remains unsettled. However, we offer this overview of the scientific literature in the hope that it can provide a shared framework for intelligent, enlightened discourse in political, professional, and scientific exchanges—and may add to our capacity as concerned citizens to alleviate suffering and promote human health and flourishing.

The New Atlantis
A Journal of Technology & Society

Part One

Sexual Orientation

While some people are under the impression that sexual orientation is an innate, fixed, and biological trait of human beings—that, whether heterosexual, homosexual, or bisexual, we are "born that way"—there is insufficient scientific evidence to support that claim. In fact, the concept of sexual orientation itself is highly ambiguous; it can refer to a set of behaviors, to feelings of attraction, or to a sense of identity. Epidemiological studies show a rather modest association between genetic factors and sexual attractions or behaviors, but do not provide significant evidence pointing to particular genes. There is also evidence for other hypothesized biological causes of homosexual behaviors, attractions, or identity—such as the influence of hormones on prenatal development—but that evidence, too, is limited. Studies of the brains of homosexuals and heterosexuals have found some differences, but have not demonstrated that these differences are inborn rather than the result of environmental factors that influenced both psychological and neurobiological traits. One environmental factor that appears to be correlated with non-heterosexuality is childhood sexual abuse victimization, which may also contribute to the higher rates of poor mental health outcomes among non-heterosexual subpopulations, compared to the general population. Overall, the evidence suggests some measure of fluidity in patterns of sexual attraction and behavior—contrary to the "born that way" notion that oversimplifies the vast complexity of human sexuality.

The popular discussion of sexual orientation is characterized by two conflicting ideas about why some individuals are lesbian, gay, or bisexual. While some claim that sexual orientation is a choice, others say that sexual orientation is a fixed feature of one's nature, that one is "born that way." We hope to show here that, though sexual orientation is not a choice, neither is there scientific evidence for the view that sexual orientation is a fixed and innate biological property.

A prominent recent example of a person describing sexual orientation as a choice is Cynthia Nixon, a star of the popular television series *Sex and the City*, who in a January 2012 *New York Times* interview explained, "For me it's a choice, and you don't get to define my gayness for me," and commented that she was "very annoyed" about the issue of whether or not gay people are born that way. "Why can't it be a choice? Why is that any less legitimate?"[1] Similarly, Brandon Ambrosino wrote in *The New Republic* in

2014 that "It's time for the LGBT community to stop fearing the word 'choice,' and to reclaim the dignity of sexual autonomy."[2]

By contrast, proponents of the "born that way" hypothesis—expressed for instance in Lady Gaga's 2011 song "Born This Way"—posit that there is a causal biological basis for sexual orientation and often try to bolster their claims with scientific findings. Citing three scientific studies[3] and an article from *Science* magazine,[4] Mark Joseph Stern, writing for *Slate* in 2014, claims that "homosexuality, at least in men, is clearly, undoubtedly, inarguably an inborn trait."[5] However, as neuroscientist Simon LeVay, whose work in 1991 showed brain differences in homosexual men compared to heterosexual men, explained some years after his study, "It's important to stress what I didn't find. I did not prove that homosexuality is genetic, or find a genetic cause for being gay. I didn't show that gay men are 'born that way,' the most common mistake people make in interpreting my work. Nor did I locate a gay center in the brain."[6]

Many recent books contain popular treatments of science that make claims about the innateness of sexual orientation. These books often exaggerate—or at least oversimplify—complex scientific findings. For example, in a 2005 book, psychologist and science writer Leonard Sax responds to a worried mother's question as to whether her teenage son will outgrow his homosexual attractions: "Biologically, the difference between a gay man and a straight man is something like the difference between a left-handed person and a right-handed person. Being left-handed isn't just a phase. A left-handed person won't someday magically turn into a right-handed person.... Some children are destined at birth to be left-handed, and some boys are destined at birth to grow up to be gay."[7]

As we argue in this part of the report, however, there is little scientific evidence to support the claim that sexual attraction is simply fixed by innate and deterministic factors such as genes. Popular understandings of scientific findings often presume deterministic causality when the findings do not warrant that presumption.

Another important limitation for research and for interpretation of scientific studies on this topic is that some central concepts—including "sexual orientation" itself—are often ambiguous, making reliable measurements difficult both within individual studies and when comparing results across studies. So before turning to the scientific evidence concerning the development of sexual orientation and sexual desire, we will examine at some length several of the most troublesome conceptual ambiguities in the study of human sexuality in order to arrive at a fuller picture of the relevant concepts.

Problems with Defining Key Concepts

A 2014 *New York Times Magazine* piece titled "The Scientific Quest to Prove Bisexuality Exists"[8] provides an illustration of the themes explored in this Part—sexual desire, attraction, orientation, and identity—and of the difficulties with defining and studying these concepts. Specifically, the article shows how a scientific approach to studying human sexuality can conflict with culturally prevalent views of sexual orientation, or with the self-understanding that many people have of their own sexual desires and identities. Such conflicts raise important questions about whether sexual orientation and related concepts are as coherent and well-defined as is often assumed by researchers and the public alike.

The author of the article, Benoit Denizet-Lewis, an openly gay man, describes the work of scientists and others trying to demonstrate the existence of a stable bisexual orientation. He visited researchers at Cornell University and participated in tests used to measure sexual arousal, tests that include observing the way pupils dilate in response to sexually explicit imagery. To his surprise, he found that, according to this scientific measure, he was aroused when watching pornographic films of women masturbating:

> Might I actually be bisexual? Have I been so wedded to my gay identity—one I adopted in college and announced with great fanfare to family and friends—that I haven't allowed myself to experience another part of myself? In some ways, even asking those questions is anathema to many gays and lesbians. That kind of publicly shared uncertainty is catnip to the Christian Right and to the scientifically dubious, psychologically damaging ex-gay movement it helped spawn. As out gay men and lesbians, after all, we're supposed to be sure—we're supposed to be "born this way."[9]

Despite the apparently scientific (though admittedly limited) evidence of his bisexual-typical patterns of arousal, Denizet-Lewis rejected the idea that he was actually bisexual, because "It doesn't feel true as a sexual orientation, nor does it feel right as my identity."[10]

Denizet-Lewis's concerns here illustrate a number of the quandaries raised by the scientific study of human sexuality. The objective measures the researchers used seemed to be at odds with the more intuitive, subjective understanding of what it is to be sexually aroused; our own understanding of what we are sexually aroused by is tied up with the entirety of our lived experience of sexuality. Furthermore, Denizet-Lewis's insistence

that he is gay, not bisexual, and his concern that uncertainty about his identity could have social and political implications, points to the fact that sexual orientation and identity are understood not only in scientific and personal terms, but in social, moral, and political terms as well.

But how do categories of sexual orientation—with labels such as "bisexual" or "gay" or "straight"—help scientists study the complex phenomenon of human sexuality? When we examine the concept of sexual orientation, it becomes apparent, as this part will show, that it is too vague and poorly defined to be very useful in science, and that in its place we need more clearly defined concepts. We strive in this report to use clear terms; when discussing scientific studies that rely on the concept of "sexual orientation," we try as much as possible to specify how the scientists defined the term, or related terms.

One of the central difficulties in examining and researching sexual orientation is that the underlying concepts of "sexual desire," "sexual attraction," and "sexual arousal" can be ambiguous, and it is even less clear what it means that a person identifies as having a sexual orientation grounded in some pattern of desires, attractions, or states of arousal.

The word "desire" all by itself might be used to cover an aspect of volition more naturally expressed by "want": I want to go out for dinner, or to take a road trip with my friends next summer, or to finish this project. When "desire" is used in this sense, the objects of desire are fairly determinate *goals*—some may be perfectly achievable, such as moving to a new city or finding a new job; others may be more ambitious and out of reach, like the dream of becoming a world-famous movie star. Often, however, the language of desire is meant to include things that are less clear: indefinite *longings* for a life that is, in some unspecified sense, different or better; an inchoate sense of something being missing or lacking in oneself or one's world; or, in psychoanalytic literature, unconscious dynamic forces that shape one's cognitive, emotional, and social behaviors, but that are separate from one's ordinary, conscious sense of self.

This more full-blooded notion of desire is, itself, ambiguous. It might refer to a hoped-for state of affairs like finding a sense of meaning, fulfillment, and satisfaction with one's life, a desire that, while not completely clear in its implications, is presumably not entirely out of reach, although such longings may also be forms of fantasizing about a radically altered or perhaps even unattainable state of affairs. If I want to take a road trip with my friends, the steps are clear: call up my friends, pick a date, map out a route, and so on. However, if I have an inchoate longing for change, a hope for sustainable intimacy, love, and belonging, or an unconscious conflict

that is disrupting my ability to move forward in the life I have tried to build for myself, I face a different sort of challenge. There is not necessarily a set of well-defined or conscious goals, much less established ways of achieving them. This is not to say that the satisfaction of these longings is impossible, but doing so often involves not only choosing concrete actions to achieve particular goals but the more complex shaping of one's own life through acting in and making sense of the world and one's place in it.

So the first thing to note when considering both popular discussions and scientific studies of sexuality is that the use of the term "desire" could refer to distinct aspects of human life and experience.

Just as the meanings that might be intended by the term "desire" are many, so also is each of these meanings varied, making clear delineations a challenge. For example, a commonsense understanding might suggest that the term "sexual desire" means wanting to engage in specific sexual acts with particular individuals (or categories of individuals). Psychiatrist Steven Levine articulated this common view in his definition of sexual desire as "the sum of the forces that incline us toward and away from sexual behavior."[11] But it is not obvious how one might study this "sum" in a rigorous way. Nor is it obvious why all the diverse factors that can potentially influence sexual behavior, such as material poverty—in the case of prostitution, for instance—alcohol consumption, and intimate affection, should all be grouped together as aspects of sexual desire. As Levine himself points out, "In anyone's hands, sexual desire can be a slippery concept."[12]

Consider a few of the ways that the term "sexual desire" has been employed in scientific contexts—designating one or more of the following distinct phenomena:

1. States of physical arousal that may or may not be linked to a specific physical activity and may or may not be objects of conscious awareness.

2. Conscious erotic interest in response to finding others attractive (in perception, memory, or fantasy), which may or may not involve any of the bodily processes associated with measurable states of physical arousal.

3. Strong interest in finding a companion or establishing a durable relationship.

4. The romantic aspirations and feelings associated with infatuation or falling in love with a specific individual.

5. Inclination towards attachment to specific individuals.

6. The general motivation to seek intimacy with a member of some specific group.

7. An aesthetic measure that latches onto perceived beauty in others.[13]

In a given social science study, the concepts mentioned above will often each have its own particular operational definition for the purposes of research. But they cannot all mean the *same* thing. Strong interest in finding a companion, for example, is clearly distinguishable from physical arousal. Looking at this list of experiential and psychological phenomena, one can easily envision what confusions might arise from using the term "sexual desire" without sufficient care.

The philosopher Alexander Pruss provides a helpful summary of some of the difficulties involved in characterizing the related concept of sexual attraction:

> What does it mean to be "sexually attracted" to someone? Does it mean to have a tendency to be aroused in their presence? But surely it is possible to find someone sexually attractive without being aroused. Does it mean to form the belief that someone is sexually attractive to one? Surely not, since a belief about who is sexually attractive to one might be wrong—for instance, one might confuse admiration of form with sexual attraction. Does it mean to have a noninstrumental desire for a sexual or romantic relationship with the person? Probably not: we can imagine a person who has no sexual attraction to anybody, but who has a noninstrumental desire for a romantic relationship because of a belief, based on the testimony of others, that romantic relationships have noninstrumental value. These and similar questions suggest that there is a cluster of related concepts under the head of "sexual attraction," and any precise definition is likely to be an undesirable shoehorning. But if the concept of sexual attraction is a cluster of concepts, neither are there simply univocal concepts of heterosexuality, homosexuality, and bisexuality.[14]

The ambiguity of the term "sexual desire" (and similar terms) should give us pause to consider the diverse aspects of human experience that are often associated with it. The problem is neither irresolvable nor unique to this subject matter. Other social science concepts—aggression and addiction, for example—may likewise be difficult to define and to

operationalize and for this reason admit of various usages.* Nevertheless, the ambiguity presents a significant challenge for both research design and interpretation, requiring that we take care in attending to the meanings, contexts, and findings specific to each study. It is also important to bracket any subjective associations with or uses of these terms that do not conform to well-defined scientific classifications and techniques.

It would be a mistake, at any rate, to ignore the varied uses of this and related terms or to try to reduce the many and distinct experiences to which they might refer to a single concept or experience. As we shall see, doing so could in some cases adversely affect the evaluation and treatment of patients.

The Context of Sexual Desire

We can further clarify the complex phenomenon of sexual desire if we examine what relationship it has to other aspects of our lives. To do so, we borrow some conceptual tools from a philosophical tradition known as phenomenology, which conceives of human experience as deriving its meaning from the whole context in which it appears.

The testimony of experience suggests that one's experience of sexual desire and sexual attraction is not voluntary, at least not in any immediate way. The whole set of inclinations that we generally associate with the experience of sexual desire—whether the impulse to engage in particular acts or to enjoy certain relationships—does not appear to be the sole product of any deliberate choice. Our sexual appetites (like other natural appetites) are experienced as given, even if their expression is shaped in subtle ways by many factors, which might very well include volition. Indeed, far from appearing as a product of our will, sexual desire—however we define it—is often experienced as a powerful force, akin to hunger, that many struggle (especially in adolescence) to bring under direction and control. Furthermore, sexual desire can impact one's attention involuntarily or color one's day-to-day perceptions, experiences, and encounters. What seems to be to some extent in our control is how we choose to live with this appetite, how we integrate it into the rest of our lives.

But the question remains: What *is* sexual desire? What is this part of our lives that we consider to be given, prior even to our capacity to

* "Operationalizing" refers to the way social scientists make a variable measurable. Homosexuality may be operationalized as the answers that survey respondents give to questions about their sexual orientation. Or it could be operationalized as answers to questions about their desires, attractions, and behavior. Operationalizing variables in ways that will reliably measure the trait or behavior being studied is a difficult but important part of any social science research.

deliberate and make rational choices about it? We know that some sort of sexual appetite is present in non-human animals, as is evident in the mammalian estrous cycle; in most mammalian species sexual arousal and receptivity are linked to the phase of the ovulation cycle during which the female is reproductively receptive.[15] One of the relatively unique features of *Homo sapiens*, shared with only a few other primates, is that sexual desire is not exclusively linked to the woman's ovulatory cycle.[16] Some biologists have argued that this means that sexual desire in humans has evolved to facilitate the formation of sustaining relationships between parents, in addition to the more basic biological purpose of reproduction. Whatever the explanation for the origins and biological functions of human sexuality, the lived experience of sexual desires is laden with significance that goes beyond the biological purposes that sexual desires and behaviors serve. This significance is not just a subjective add-on to the more basic physiological and functional realities, but something that pervades our lived experience of sexuality.

As philosophers who study the structure of conscious experience have observed, our way of experiencing the world is shaped by our "embodiment, bodily skills, cultural context, language and other social practices."[17] Long before most of us experience anything like what we typically associate with sexual desire, we are already enmeshed in a cultural and social context involving other persons, feelings, emotions, opportunities, deprivations, and so on. Perhaps sexuality, like other human phenomena that gradually become part of our psychological constitution, has roots in these early meaning-making experiences. If meaning-making is integral to human experience in general, it is likely to play a key role in sexual experience in particular. And given that volition is operative in these other aspects of our lives, it stands to reason that volition will be operative in our experience of sexuality too, if only as one of many other factors.

This is not to suggest that sexuality—including sexual desire, attraction, and identity—is the result of any deliberate, rational decision calculus. Even if volition plays an important role in sexuality, volition itself is quite complex: many, perhaps most, of our volitional choices do not seem to come in the form of discrete, conscious, or deliberate decisions; "volitional" does not necessarily mean "deliberate." The life of a desiring, volitional agent involves many tacit patterns of behavior owing to habits, past experiences, memories, and subtle ways of adopting and abandoning different stances on one's life.

If something like this way of understanding the life of a desiring, volitional agent is true, then we do not deliberately "choose" the objects of our

sexual desires any more than we choose the objects of our other desires. It might be more accurate to say that we gradually guide and give ourselves over to them over the course of our growth and development. This process of forming and reforming ourselves as human beings is similar to what Abraham Maslow calls self-actualization.[18] Why should sexuality be an exception to this process? In the picture we are offering, internal factors, such as our genetic make-up, and external environmental factors, such as past experiences, are only ingredients, however important, in the complex human experience of sexual desire.

Sexual Orientation

Just as the concept of "sexual desire" is complex and difficult to define, there are currently no agreed-upon definitions of "sexual orientation," "homosexuality," or "heterosexuality" for purposes of empirical research. Should homosexuality, for example, be characterized by reference to desires to engage in particular acts with individuals of the same sex, or to a patterned history of having engaged in such acts, or to particular features of one's private wishes or fantasies, or to a consistent impulse to seek intimacy with members of the same sex, or to a social identity imposed by oneself or others, or to something else entirely?

As early as 1896, in a book on homosexuality, the French thinker Marc-André Raffalovich argued that there were more than ten different types of affective inclination or behavior captured by the term "homosexuality" (or what he called "unisexuality").[19] Raffalovich knew his subject matter up close: he chronicled the trial, imprisonment, and resulting social disgrace of the writer Oscar Wilde, who had been prosecuted for "gross indecency" with other men. Raffalovich himself maintained a prolonged and intimate relationship with John Gray, a man of letters thought to be the inspiration for Wilde's classic *The Picture of Dorian Gray*.[20] We might also consider the vast psychoanalytic literature from the early twentieth century on the topic of sexual desire, in which the experiences of individual subjects and their clinical cases are catalogued in great detail. These historical examples bring into relief the complexity that researchers still face today when attempting to arrive at clean categorizations of the richly varied affective and behavioral phenomena associated with sexual desire, in both same-sex and opposite-sex attractions.

We may contrast such inherent complexity with a different phenomenon that can be delineated unambiguously, such as pregnancy. With very few exceptions, a woman is or is not pregnant, which makes classification

of research subjects for the purposes of study relatively easy: compare pregnant women with other, non-pregnant women. But how can researchers compare, say, "gay" men to "straight" men in a single study, or across a range of studies, without mutually exclusive and exhaustive definitions of the terms "gay" and "straight"?

To increase precision, some researchers categorize concepts associated with human sexuality along a continuum or scale according to variations in pervasiveness, prominence, or intensity. Some scales focus on both intensity and the objects of sexual desire. Among the most familiar and widely used is the Kinsey scale, developed in the 1940s to classify sexual desires and orientations using purportedly measurable criteria. People are asked to choose one of the following options:

0 - Exclusively heterosexual
1 - Predominantly heterosexual, only incidentally homosexual
2 - Predominantly heterosexual, but more than incidentally homosexual
3 - Equally heterosexual and homosexual
4 - Predominantly homosexual, but more than incidentally heterosexual
5 - Predominantly homosexual, only incidentally heterosexual
6 - Exclusively homosexual[21]

But there are considerable limitations to this approach. In principle, measurements of this sort are valuable for social science research. They can be used, for example, in empirical tests such as the classic "t-test," which helps researchers measure statistically meaningful differences between data sets. Many measurements in social science, however, are "ordinal," meaning that variables are rank-ordered along a single, one-dimensional continuum but are not intrinsically significant beyond that. In the case of the Kinsey scale, this situation is even worse, because it measures the self-identification of individuals, while leaving unclear whether the values they report all refer to the same aspect of sexuality—different people may understand the terms "heterosexual" and "homosexual" to refer to feelings of attraction, or to arousal, or to fantasies, or to behavior, or to any combination of these. The ambiguity of the terms severely limits the use of the Kinsey scale as an ordinal measurement that gives a rank order to variables along a single, one-dimensional continuum. So it is not clear that this scale helps researchers to make even rudimentary classifications among the relevant groups using qualitative criteria, much less to rank-order variables or conduct controlled experiments.

Perhaps, given the inherent complexity of the subject matter, attempts to devise "objective" scales of this sort are misguided. In a critique of such approaches to social science, philosopher and neuropsychologist Daniel N. Robinson points out that "statements that lend themselves to different interpretation do not become 'objective' merely by putting a numeral in front of them."[22] It may be that self-reported identifications with culturally fraught and inherently complex labels simply cannot provide an objective basis for quantitative measurements in individuals or across groups.

Another obstacle for research in this area may be the popular, but not well-supported, belief that romantic desires are sublimations of sexual desires. This idea, traceable to Freud's theory of unconscious drives, has been challenged by research on "attachment theory," developed by John Bowlby in the 1950s.[23] Very roughly, attachment theory holds that later affective experiences that are often grouped under the general rubric "romantic" are explained in part by early childhood attachment behaviors (associated with maternal figures or caregivers)—not by unconscious, sexual drives. Romantic desires, following this line of thought, might not be as strongly correlated with sexual desires as is commonly thought. All of this is to suggest that simple delineations of the concepts relating to human sexuality cannot be taken at face value and that ongoing empirical research sometimes changes or complicates the meanings of the concepts.

If we look at recent research, we find that scientists often use at least one of three categories when attempting to classify people as "homosexual" or "heterosexual": sexual *behavior*; sexual *fantasies* (or related emotional or affective experiences); and *self-identification* (as "gay," "lesbian," "bisexual," "asexual," and so forth).[24] Some add a fourth: inclusion in a community defined by sexual orientation. Consider, for example, the American Psychological Association's definition of sexual orientation in a 2008 document designed to educate the public:

> Sexual orientation refers to an enduring pattern of emotional, romantic and/or sexual *attractions* to men, women or both sexes. Sexual orientation also refers to a person's sense of *identity* based on those attractions, related *behaviors*, and membership in a *community* of others who share those attractions. Research over several decades has demonstrated that sexual orientation ranges along a *continuum*, from exclusive attraction to the other sex to exclusive attraction to the same sex.[25] [Emphases added.]

One difficulty with grouping these categories together under the same general rubric of "sexual orientation" is that research suggests they often

do not coincide in real life. Sociologist Edward O. Laumann and colleagues summarize this point clearly in a 1994 book:

> While there is a core group (about 2.4 percent of the total men and about 1.3 percent of the total women) in our survey who *define themselves* as homosexual or bisexual, have same-gender *partners*, and express homosexual *desires*, there are also sizable groups who do not consider themselves to be either homosexual or bisexual but have had adult homosexual experiences or express some degree of desire.... [T]his preliminary analysis provides unambiguous evidence that no single number can be used to provide an accurate and valid characterization of the incidence and prevalence of homosexuality in the population at large. In sum, homosexuality is fundamentally a multidimensional phenomenon that has manifold meanings and interpretations, depending on context and purpose.[26] [Emphases added.]

More recently, in a 2002 study, psychologists Lisa M. Diamond and Ritch C. Savin-Williams make a similar point:

> The more carefully researchers map these constellations—differentiating, for example, between *gender identity* and *sexual identity*, *desire* and *behavior*, *sexual* versus *affectionate* feelings, early-appearing versus late-appearing *attractions* and *fantasies*, or social *identifications* and sexual *profiles*—the more complicated the picture becomes because few individuals report uniform inter-correlations among these domains.[27] [Emphases added.]

Some researchers acknowledge the difficulties with grouping these various components under a single rubric. For example, researchers John C. Gonsiorek and James D. Weinrich write in a 1991 book: "It can be safely assumed that there is no necessary relationship between a person's sexual behavior and self-identity unless both are individually assessed."[28] Likewise, in a 1999 review of research on the development of sexual orientation in women, social psychologist Letitia Anne Peplau argues: "There is ample documentation that same-sex attractions and behaviors are not inevitably or inherently linked to one's identity."[29]

In sum, the complexities surrounding the concept of "sexual orientation" present considerable challenges for empirical research on the subject. While the general public may be under the impression that there are widely accepted scientific definitions of terms such as "sexual orientation," in fact, there are not. Diamond's assessment of the situation in 2003 is still true today, that "there is currently no scientific or popular consensus on

the exact constellation of experiences that definitively 'qualify' an individual as lesbian, gay, or bisexual."[30]

It is owing to such complexities that some researchers, for instance Laumann, proceed by characterizing sexual orientation as a "multidimensional phenomenon." But one might just as well wonder whether, in trying to shoehorn this "multidimensional phenomenon" into a single category, we are not reifying a concept that corresponds to something far too plastic and diffuse in reality to be of much value in scientific research. While labels such as "heterosexual" and "homosexual" are often taken to designate stable psychological or even biological traits, perhaps they do not. It may be that individuals' affective, sexual, and behavioral experiences do not conform well to such categorical labels because these labels do not, in fact, refer to natural (psychological or biological) kinds. At the very least, we should recognize that we do not yet possess a clear and well-established framework for research on these topics. Rather than attempting to research sexual desire, attraction, identity, and behavior under the general rubric of "sexual orientation," we might do better to examine empirically each domain separately and in its own specificity.

To that end, this part of our report considers research on sexual desire and sexual attraction, focusing on the empirical findings related to etiology and development, and highlighting the underlying complexities. We will continue to employ ambiguous terms like "sexual orientation" where they are used by the authors we discuss, but we will try to be attentive to the context of their use and the ambiguities attaching to them.

Challenging the "Born that Way" Hypothesis

Keeping in mind these reflections on the problems of definitions, we turn to the question of how sexual desires originate and develop. Consider the different patterns of attraction between individuals who report experiencing predominant sexual or romantic attraction toward members of the same sex and those who report experiencing predominant sexual or romantic attraction toward members of the opposite sex. What are the causes of these two patterns of attraction? Are such attractions or preferences innate traits, perhaps determined by our genes or prenatal hormones; are they acquired by experiential, environmental, or volitional factors; or do they develop out of some combination of both kinds of causes? What role, if any, does human agency play in the genesis of patterns of attraction? What role, if any, do cultural or social influences play?

Research suggests that while genetic or innate factors may influence the emergence of same-sex attractions, these biological factors cannot provide a complete explanation, and environmental and experiential factors may also play an important role.

The most commonly accepted view in popular discourse we mentioned above—the "born that way" notion that homosexuality and heterosexuality are biologically innate or the product of very early developmental factors—has led many non-specialists to think that homosexuality or heterosexuality is in any given person unchangeable and determined entirely apart from choices, behaviors, life experiences, and social contexts. However, as the following discussion of the relevant scientific literature shows, this is not a view that is well-supported by research.

Studies of Twins

One powerful research design for assessing whether biological or psychological traits have a genetic basis is the study of identical twins. If the probability is high that both members in a pair of identical twins, who share the same genome, exhibit a trait when one of them does—this is known as the concordance rate—then one can infer that genetic factors are likely to be involved in the trait. If, however, the concordance rate for identical twins is no higher than the concordance rate of the same trait in fraternal twins, who share (on average) only half their genes, this indicates that the shared environment may be a more important factor than shared genes.

One of the pioneers of behavioral genetics and one of the first researchers to use twins to study the effect of genes on traits, including sexual orientation, was psychiatrist Franz Josef Kallmann. In a landmark paper published in 1952, he reported that for all the pairs of identical twins he studied, if one of the twins was gay then both were gay, yielding an astonishing 100% concordance rate for homosexuality in identical twins.[31] Were this result replicated and the study designed better, it would have given early support to the "born that way" hypothesis. But the study was heavily criticized. For example, philosopher and law professor Edward Stein notes that Kallmann did not present any evidence that the twins in his study were in fact genetically identical, and his sample was drawn from psychiatric patients, prisoners, and others through what Kallmann described as "direct contacts with the clandestine homosexual world," leading Stein to argue that Kallmann's sample "in no way constituted a reasonable cross-section of the homosexual population."[32]

(Samples such as Kallmann's are known as convenience samples, which involve selecting subjects from populations that are conveniently accessible to the researcher.)

Nevertheless, well-designed twin studies examining the genetics of homosexuality indicate that genetic factors likely play some role in determining sexual orientation. For example, in 2000, psychologist J. Michael Bailey and colleagues conducted a major study of sexual orientation using twins in the Australian National Health and Medical Research Council Twin Registry, a large probability sample, which was therefore more likely to be representative of the general population than Kallmann's.[33] The study employed the Kinsey scale to operationalize sexual orientation and estimated concordance rates for being homosexual of 20% for men and 24% for women in identical (maternal, monozygotic) twins, compared to 0% for men and 10% for women in non-identical (fraternal, dizygotic) twins.[34] The difference in the estimated concordance rates was statistically significant for men but not for women. On the basis of these findings, the researchers estimated that the heritability of homosexuality for men was 0.45 with a wide 95% confidence interval of 0.00–0.71; for women, it was 0.08 with a similarly wide confidence interval of 0.00–0.67. These estimates suggest that for males 45% of the differences between certain sexual orientations (homosexual versus heterosexuals as measured by the Kinsey scale) could be attributed to differences in genes.

The large confidence intervals in the study by Bailey and colleagues mean that we must be careful in assessing the substantive significance of these findings. The authors interpret their findings to suggest that "any major gene for strictly defined homosexuality has either low penetrance or low frequency,"[35] but their data did show (marginal) statistical significance. While the concordance estimates seem somewhat high in the models used, the confidence intervals are so wide that it is difficult to judge the reliability, including the replicability, of these estimates.

It is worth clarifying here what "heritability" means in these studies, since the technical meaning in population genetics is narrower and more precise than the everyday meaning of the word. Heritability is a measure of how much variation in a particular trait within a population can be attributed to variation in genes in that population. It is not, however, a measure of how much a trait is genetically determined.

Traits that are almost entirely genetically determined can have very low heritability values, while traits that have almost no genetic basis can be found to be highly heritable. For instance, the number of fingers human beings have is almost completely genetically determined. But there is little

variation in the number of fingers humans have, and most of the variation we do see is due to non-genetic factors such as accidents, which would lead to low heritability estimates for the trait. Conversely, cultural traits can sometimes be found to be highly heritable. For instance, whether a given individual in mid-twentieth century America wore earrings would have been found to be highly heritable, because it was highly associated with being male or female, which is in turn associated with possessing XX or XY sex chromosomes, making variability in earring-wearing behavior highly associated with genetic differences, despite the fact that wearing earrings is a cultural rather than biological phenomenon. Today, heritability estimates for earring-wearing behavior would be lower than they were in mid-twentieth century America, not because of any changes in the American gene pool, but because of the increased acceptance of men wearing earrings.[36]

So, a heritability estimate of 0.45 does not mean that 45% of sexuality is determined by genes. Rather, it means that 45% of the variation between individuals in the population studied can be attributed in some way to genetic factors, as opposed to environmental factors.

In 2010, psychiatric epidemiologist Niklas Långström and colleagues conducted a large, sophisticated twin study of sexual orientation, analyzing data from 3,826 identical and fraternal same-sex twin pairs (2,320 identical and 1,506 fraternal pairs).[37] The researchers operationalized homosexuality in terms of lifetime same-sex sexual partners. The sample's concordance rates were somewhat lower than those found in the study by Bailey and colleagues. For having had at least one same-sex partner, the concordance for men was 18% in identical twins and 11% in fraternal twins; for women, 22% and 17%, respectively. For total number of sexual partners, concordance rates for men were 5% in identical twins and 0% in fraternal twins; for women, 11% and 7%, respectively.

For men, these rates suggest an estimated heritability rate of 0.39 for having had at least one lifetime same-sex partner (with a 95% confidence interval of 0.00–0.59), and 0.34 for total number of same-sex partners (with a 95% confidence interval of 0.00–0.53). Environmental factors experienced by one twin but not the other explained 61% and 66% of the variance, respectively, while environmental factors shared by the twins failed to explain any of the variance. For women, the heritability rate for having had at least one lifetime same-sex partner was 0.19 (95% confidence interval of 0.00–0.49); for total number of same-sex partners, it was 0.18 (95% confidence interval of 0.11–0.45). Unique environmental factors accounted for 64% and 66% of the variance, respectively, while

shared environmental factors accounted for 17% and 16%, respectively. These values indicate that, while the genetic component of homosexual behavior is far from negligible, non-shared environmental factors play a critical, perhaps preponderant, role. The authors conclude that sexual orientation arises from both heritable and environmental influences unique to the individual, stating that "the present results support the notion that the individual-specific environment does indeed influence sexual preference."[38]

Another large and nationally representative study of twins published by sociologists Peter S. Bearman and Hannah Brückner in 2002 used data from the National Longitudinal Study of Adolescent to Adult Health (commonly abbreviated as "Add Health") of adolescents in grades 7–12.[39] They attempted to estimate the relative influence of social factors, genetic factors, and prenatal hormonal factors on the development of same-sex attractions. Overall, 8.7% of the 18,841 adolescents in their study reported same-sex attractions, 3.1% reported a same-sex romantic relationship, and 1.5% reported same-sex sexual behavior. The authors first analyzed the "social influence hypothesis," according to which opposite-sex twins receive less gendered socialization from their families than same-sex twins or opposite-sex siblings, and found that this hypothesis was well-supported in the case of males. While female opposite-sex twins in the study were the least likely of all the groups to report same-sex attractions (5.3%), male opposite-sex twins were the likeliest to report same-sex attractions (16.8%)—more than twice as likely as males with a full, non-twin sister (16.8% vs. 7.3%). The authors concluded there was "substantial indirect evidence in support of a socialization model at the individual level."[40]

The authors also examined the "intrauterine hormone transfer hypothesis," according to which prenatal hormone transfers between opposite-sex twin fetuses influences the sexual orientation of the twins. (Note that this is different from the more general hypothesis that prenatal hormones influence the development of sexual orientation.) In the study, the proportion of male opposite-sex twins reporting same-sex attraction was about twice as high for those without older brothers (18.7%) as for those with older brothers (8.8%). The authors argued that this finding was strong evidence against the hormone-transfer hypothesis, since the presence of older brothers should not decrease the likelihood of same-sex attraction if that attraction has a basis in prenatal hormonal transfers. However, that conclusion seems premature: the observations are consistent with the possibility of *both* hormonal factors *and* the presence of an older brother having an effect (especially if the latter influences the former). This study

also found no correlation between experiencing same-sex attraction and having multiple older brothers, which had been reported in some earlier studies.[41]

Finally, Bearman and Brückner did not find evidence of significant genetic influence on sexual attraction. Significant influence would require that identical twins have significantly higher concordance rates for same-sex attraction than fraternal twins or non-twin siblings. But in the study, the rates were statistically similar: identical twins were 6.7% concordant, dizygotic pairs 7.2% concordant, and full siblings 5.5% concordant. The authors concluded that "it is more likely that any genetic influence, if present, can only be expressed in specific and circumscribed social structures."[42] Based on their data, they suggested the one observed social structure that might enable this genetic expression is the more limited "gender socialization associated with firstborn OS [opposite-sex] twin pairs."[43] Thus, they inferred that their results "support the hypothesis that less gendered socialization in early childhood and preadolescence shapes subsequent same-sex romantic preferences."[44] While the findings here are suggestive, further research is needed to confirm this hypothesis. The authors also argued that the higher concordance rates for same-sex attraction reported in previous studies may be unreliable due to methodological problems such as non-representative samples and small sample sizes. (It should be noted, however, that these remarks were published prior to the study by Långström and colleagues discussed above, which uses a study design that does not appear to have these limitations.)

To reconcile the somewhat mixed data on heritability, we could hypothesize that attraction to the same sex may have a stronger heritable component as people age—that is, when researchers attempt to measure sexual orientation later in life (as in the 2010 study by Långström and colleagues) than when measured earlier in life. Heritability estimates can change depending on the age at which a trait is measured because changes in the environmental factors that might influence variation in the trait may vary for individuals at different ages, and because genetically influenced traits may become more fixed at a later stage in an individual's development (height, for instance, becomes fixed in early adulthood). This hypothesis is also suggested by findings, discussed below, that same-sex attraction may be more fluid in adolescence than in later stages of adulthood.

In contrast to the studies just summarized, psychiatrist Kenneth S. Kendler and colleagues conducted a large twin study using a probability sample of 794 twin pairs and 1,380 non-twin siblings.[45] Based on concordance rates for sexual orientation (defined in this study as self-iden-

tification based on attraction), the authors state that their results "suggest that genetic factors may provide an important influence on sexual orientation."[46] The study does not, however, appear to be sufficiently powerful to draw strong conclusions about the degree of genetic influence on sexuality: only 19 of 324 identical twin pairs had any non-heterosexual member, with 6 of the 19 pairs concordant; 15 of 240 same-sex fraternal twin pairs had any non-heterosexual member, with 2 of the 15 pairs concordant. Because only 8 twin pairs were concordant for non-heterosexuality, the study's ability to draw substantively significant comparisons between identical and fraternal twins (or between twins and non-twin siblings) is limited.

Overall, these studies suggest that (depending on how homosexuality is defined) in anywhere from 6% to 32% of cases, both members of an identical twin pair would be homosexual if at least one member is. Since some twin studies found higher concordance rates in identical twins than in fraternal twins or non-twin siblings, there may be genetic influences on sexual desire and behavioral preferences. One needs to bear in mind that identical twins typically have even more similar environments—early attachment experiences, peer relationships, and the like—than fraternal twins or non-twin siblings. Because of their similar appearances and temperaments, for example, identical twins may be more likely than fraternal twins or other siblings to be treated similarly. So some of the higher concordance rates may be attributable to environmental factors rather than genetic factors. In any case, if genes do play a role in predisposing people toward certain sexual desires or behaviors, these studies make clear that genetic influences cannot be the whole story.

Summarizing the studies of twins, we can say that there is no reliable scientific evidence that sexual orientation is determined by a person's genes. But there is evidence that genes play a role in influencing sexual orientation. So the question "Are gay people born that way?" requires clarification. There is virtually no evidence that anyone, gay or straight, is "born that way" if that means their sexual orientation was genetically determined. But there is some evidence from the twin studies that certain genetic profiles probably increase the likelihood the person later identifies as gay or engages in same-sex sexual behavior.

Future twin studies on the heritability of sexual orientation should include analyses of larger samples or meta-analyses or other systematic reviews to overcome the limited sample size and statistical power of some of the existing studies, and analyses of heritability rates across different dimensions of sexuality (such as attraction, behavior, and identity) to

overcome the imprecisions of the ambiguous concept of sexual orientation and the limits of studies that look at only one of these dimensions of sexuality.

Molecular Genetics

In examining the question whether, and perhaps to what extent, there may be genetic contributions to homosexuality, we have so far looked at studies that employ methods of classical genetics to estimate the heritability of a trait like sexual orientation but that do not identify particular genes that may be associated with the trait.[47] But genetics can also be studied using what are often called molecular methods that provide estimates of which particular genetic variations are associated with traits, whether physical or behavioral.

One early attempt to identify a more specific genetic basis for homosexuality was a 1993 study by geneticist Dean Hamer and colleagues of 40 pairs of homosexual brothers.[48] By examining the family history of homosexuality for these individuals, they identified a possible linkage between homosexuality in males and genetic markers on the Xq28 region of the X chromosome. Attempts to replicate this influential study's results have had mixed results: George Rice and colleagues attempted and failed to replicate Hamer's findings,[49] though in 2015 Alan R. Sanders and colleagues were able to replicate Hamer's original findings using a larger population size of 409 male twin pairs of homosexual brothers, and to find additional genetic linkage sites.[50] (Since the effect was small, however, the genetic marker would not be a good predictor of sexual orientation.)

Genetic linkage studies like the ones discussed above are able to identify particular regions of chromosomes that may be associated with a trait by looking at patterns of inheritance. Today, one of the chief methods for inferring which genetic variants are associated with a trait is the genome-wide association study, which uses DNA sequencing technologies to identify particular differences in DNA that may be associated with a trait. Scientists examine millions of genetic variants in large numbers of individuals who have a particular trait, as well as individuals who do not have the trait, and compare the frequency of genetic variants among those who do and do not have the trait. Specific genetic variants that occur more frequently among those who have than those who do not have the trait are inferred to have some association with that trait. Genome-wide association studies have become popular in recent years, yet few such scientific studies have found significant associations of genetic variants with sexual

orientation. The largest attempt to identify genetic variants associated with homosexuality, a study of over 23,000 individuals from the 23andMe database presented at the American Society of Human Genetics annual meeting in 2012, found no linkages reaching genome-wide significance for same-sex sexual identity for males or females.[51]

So, again, the evidence for a genetic basis for homosexuality is inconsistent and inconclusive, which suggests that, though genetic factors explain some of the variation in sexual orientation, the genetic contribution to this trait is not likely to be strong and even less likely to be decisive.

As is often true of human behavioral tendencies, there may be genetic contributions to the tendency toward homosexual inclinations or behaviors. Phenotypic expression of genes is usually influenced by environmental factors—different environments may lead to different phenotypes even for the same genes. So even if there are genetic factors that contribute to homosexuality, an individual's sexual attractions or preferences may also be influenced by a number of environmental factors, such as social stressors, including emotional, physical, or sexual abuse. Looking to developmental, environmental, experiential, social, or volitional factors will be necessary to arrive at a fuller picture of how sexual interests, attractions, and desires develop.

The Limited Role of Genetics

Lay readers might note at this point that even at the purely biological level of genetics, the shopworn "nature vs. nurture" debates regarding human psychology have been abandoned by scientists, who recognize that no credible hypothesis can be offered for any particular traits that would be determined either purely by genetics or the environment. The growing field of epigenetics, for example, demonstrates that even for relatively simple traits, gene expression itself can be influenced by innumerable other external factors that can shape the functioning of genes.[52] This is even more relevant when it comes to the relationship between genes and complex traits like sexual attraction, drives, and behaviors.

These gene-environment relationships are complex and multidimensional. Non-genetic developmental factors and environmental experiences may be sculpted, in part, by genetic factors working in subtle ways. For example, social geneticists have documented the indirect role of genes in peer-aligned behaviors, such that an individual's physical appearance could influence whether a particular social group will include or exclude that individual.[53]

Contemporary geneticists know that genes can influence a person's range of interests and motivations, therefore indirectly affecting behavior. While genes may in this way incline a person to certain behaviors, compelling behavior directly, independently of a wide range of other factors, seems less plausible. They may influence behavior in more subtle ways, depending on external environmental stimuli (for instance, peer pressure, suggestion, and behavioral rewards) in conjunction with psychological factors and physical makeup. Dean Hamer, whose work on the possible role of genetics in homosexuality was examined above, explained some of the limitations of behavioral genetics in a 2002 article in *Science*: "The real culprit [of lack of progress in behavioral genetics] is the assumption that the rich complexity of human thought and emotion can be reduced to a simple, linear relation between individual genes and behaviors.... This oversimplified model, which underlies most current research in behavior genetics, ignores the critical importance of the brain, the environment, and gene expression networks."[54]

The genetic influences affecting any complex human behavior—whether sexual behaviors, or interpersonal interactions—depend in part on individuals' life experiences as they mature. Genes constitute only one of the many key influences on behavior in addition to environmental influences, personal choices, and interpersonal experiences. The weight of evidence to date strongly suggests that the contribution of genetic factors is modest. We can say with confidence that genes are not the sole, essential cause of sexual orientation; there is evidence that genes play a modest role in contributing to the development of sexual attractions and behaviors but little evidence to support a simplistic "born that way" narrative concerning the nature of sexual orientation.

The Influence of Hormones

Another area of research relevant to the hypothesis that people are born with dispositions toward different sexual orientations involves prenatal hormonal influences on physical development and subsequent male- or female-typical behaviors in early childhood. For ethical and practical reasons, the experimental work in this field is carried out in non-human mammals, which limits how this research can be generalized to human cases. However, children who are born with disorders of sexual development (DSD) serve as a population in which to examine the influence of genetic and hormonal abnormalities on the subsequent development of non-typical sexual identity and sexual orientation.

Hormones responsible for sexual differentiation are generally thought to exert on the developing fetus either *organizational* effects—which produce permanent changes in the wiring and sensitivity of the brain, and thus are considered largely irreversible—or *activating* effects, which occur later in an individual's life (at puberty, and into adulthood).[55] Organizational hormones may prime the fetal systems (including the brain) structurally, and set the stage for sensitivity to hormones presenting at puberty and beyond, when the hormone will then "activate" systems which were "organized" prenatally.

Periods of peak response to the hormonal environment are thought to occur during gestation. For example, testosterone is thought to influence the male fetus maximally between weeks 8 and 24, and then again at birth, until about three months of age.[56] Estrogens are provided throughout gestation by the placenta and the mother's blood system.[57] Studies in animals reveal there may even be multiple periods of sensitivity for a variety of hormones, that the presence of one hormone may influence the action of another hormone, and the sensitivity of the receptors for these hormones can influence their actions.[58] Sexual differentiation, alone, is a highly complex system.

Specific hormones of interest in this area of research are testosterone, dihydrotestosterone (a metabolite of testosterone, and more potent than testosterone), estradiol, progesterone, and cortisol. The generally accepted pathways of normal hormonal influence of development in utero are as follows. The typical pattern of sex differentiation in human fetuses begins with the differentiation of the sex organs into testes or ovaries, a process that is largely genetically controlled. Once these organs have differentiated, they produce specific hormones that determine development of external genitalia. This window of time in gestation is when hormones exert their phenotypic and neurological effects. Testosterone secreted by the testes contributes to the development of male external genitalia and affects neurological development in males;[59] it is the absence of testosterone in females which allows for the female pattern of external genitalia to develop.[60] Imbalances of testosterone or estrogen, as well as their presence or absence at specific critical periods of gestation, may cause disorders of sexual development. (Genetic or environmental effects can also lead to disorders of sexual development.)

Stress may also play some role in influencing the way hormones shape gonadal development, neurodevelopment, and subsequent sex-typical behaviors in early childhood.[61] Cortisol is the main hormone associated

with stress responses. It may originate from the mother, if she experiences severe stressors during her pregnancy, or from the fetus under stress.[62] Elevated levels of cortisol may also occur from genetic defects.[63] One of the most extensively studied disorders of sexual development is congenital adrenal hyperplasia (CAH), which in females can result in genital virilization.[64] Over 90% of cases of CAH result from a mutation in a gene that codes for an enzyme that helps synthesize cortisol.[65] This results in an overproduction of cortisol precursors, some of which are converted into androgens (hormones associated with male sex development).[66] As a result, girls are born with some degree of virilization of their genitalia, depending on the severity of the genetic defect.[67] For severe cases of genital virilization, surgical intervention is sometimes performed to normalize the genitalia. Hormone therapies are also often administered to mitigate the effects of excess androgen production.[68] Females with CAH, who as fetuses were exposed to above-average levels of androgens, are less likely to be exclusively heterosexual than females without CAH, and females with more severe forms of CAH are more likely to be non-heterosexual than females with milder forms of the condition.[69]

Likewise, there are disorders of sexual development in genetic males affected by androgen insensitivity. In males with androgen insensitivity syndrome, the testes produce testosterone normally, but the receptors to testosterone are not functional.[70] The genitalia, at birth, appear to be female, and the child is usually raised as a female. The individual's endogenous testosterone is broken down into estrogen, such that the individual begins to develop female secondary sex characteristics.[71] It does not become apparent that there is a problem until puberty, when the individual does not start menses appropriately.[72] These patients generally prefer to continue life as females, and their sexual orientation does not differ from females having an XX genotype.[73] Studies have suggested that they are just as likely if not more likely to be exclusively interested in male partners than XX females.[74]

There are other disorders of sexual development affecting some genetic males (i.e., with an XY genotype) in whom androgen deficiencies are a direct result of the lack of enzymes either to synthesize dihydrotestosterone from testosterone or to produce testosterone from its precursor hormone.[75] Individuals with these deficiencies are born with varied degrees of ambiguous genitalia, and are sometimes raised as girls. During puberty, however, these individuals often experience physical virilization, and must then decide whether to live as men or women. Peggy T. Cohen-Kettenis, a professor of gender development and psychopathology, found that 39 to

64% of individuals with these deficiencies who are raised as girls change to live as men in adolescence and early adulthood, and she also reported that "the degree of external genital masculinization at birth does not seem to be related to gender role changes in a systematic way."[76]

The twin studies reviewed earlier may shed light on the role of maternal hormonal influences, since both identical and fraternal twins are exposed to similar maternal hormonal influences in utero. The relatively weak concordance rates in the twin studies suggest that prenatal hormones, like genetic factors, do not play a strongly determinative role in sexual orientation. Other attempts at finding significant hormonal influences on sexual development have likewise been mixed, and the salience of the findings is not yet clear. Since direct studies of prenatal hormonal influences on sexual development are methodologically difficult, some studies have tried to develop models whereby differences in prenatal hormonal exposure can be inferred indirectly—by measuring subtle morphological changes or by examining hormonal disorders that are present later during development.

For example, one rough proxy of prenatal testosterone levels used by researchers is the ratio between the length of the second finger (index finger) and the fourth finger (ring finger), which is commonly called the "2D:4D ratio." Some evidence suggests that the ratio may be influenced by prenatal exposure to testosterone, such that in males higher levels of exposure to testosterone cause shorter index fingers relative to the ring finger (or having a low 2D:4D ratio), and vice versa.[77] According to one hypothesis, homosexual men may have a higher 2D:4D ratio (closer to the ratio found in females than in heterosexual males), while another hypothesis suggests the opposite, that homosexual men may be hypermasculinized by prenatal testosterone, resulting in a lower ratio than in heterosexual men. For women, the hypothesis for homosexuality that they have been hypermasculinized (lower ratio, higher testosterone) has also been proposed. Several studies comparing this trait in homosexually versus heterosexually identified men and women have shown mixed results.

A study published in *Nature* in 2000 found that in a sample of 720 California adults, the right-hand 2D:4D ratio of homosexual women was significantly more masculine (that is, the ratio was smaller) than that of heterosexual women and did not differ significantly from that of heterosexual men.[78] This study also found no significant difference in mean 2D:4D ratio between heterosexual and homosexual men. Another study that year, which used a relatively small sample of homosexual and heterosexual men from the United Kingdom, reported a lower 2D:4D (that

is, more masculine) ratio in homosexual men.[79] A 2003 study using a London-based sample also found that homosexual men had a lower 2D:4D ratio than heterosexuals,[80] while two other studies with samples from California and Texas showed *higher* 2D:4D ratios for homosexual men.[81]

A 2003 twin study compared seven female monozygotic twin pairs discordant for homosexuality (one twin was lesbian) and five female monozygotic twin pairs concordant for homosexuality (both twins were lesbian).[82] In the twin pairs discordant for sexual orientation, the individuals identifying as homosexual had significantly lower 2D:4D ratios than their twins, whereas the concordant twins showed no difference. The authors interpreted this result as suggesting that "low 2D:4D ratio is a result of differences in prenatal environment."[83] Finally, a 2005 study of 2D:4D ratios in an Austrian sample of 95 homosexual and 79 heterosexual men found that the 2D:4D ratios of heterosexual men were not significantly different from those of homosexual men.[84] After reviewing the several studies on this trait, the authors conclude that "more data are essential before we can be sure whether there is a 2D:4D effect for sexual orientation in men when ethnic variation is controlled for."[85]

Much research has examined the effects of prenatal hormones on behavior and brain structure. Again, these results come primarily from studies of non-human primates, but the study of disorders of sexual development has provided helpful insights into the effects of hormones on sexual development in humans. Since hormonal influences typically occur during time-sensitive periods of development, when their effects manifest physically, it is reasonable to assume that organizational effects of these early, time-linked hormonal patterns are likely to direct aspects of neural development. Neuroanatomical connectivity and neurochemical sensitivities may be among such influences.

In 1983, Günter Dörner and colleagues performed a study investigating whether there is any relationship between maternal stress during pregnancy and later sexual identity of their children, interviewing two hundred men about stressful events that may have occurred to their mothers during their prenatal lives.[86] Many of these events occurred as a consequence of World War II. Of men who reported that their mothers had experienced moderately to severely stressful events during pregnancy, 65% were homosexual, 25% were bisexual, and 10% were heterosexual. (Sexual orientation was assessed using the Kinsey scale.) However, more recent studies have shown much smaller or no significant correlations.[87] In a 2002 prospective study on the relationship between sexual orientation and prenatal stress during the second and third trimesters, Hines

and colleagues found that stress reported by mothers during pregnancy showed "only a small relationship" to male-typical behaviors in their daughters at the age of 42 months, "and no relationship at all" to female-typical behaviors in their sons.[88]

In summary, some forms of prenatal hormone exposure, particularly CAH in females, are associated with differences in sexual orientation, while other factors are often important in determining the physical and psychological effects of those exposures. Hormonal conditions that contribute to disorders of sex development may contribute to the development of non-heterosexual orientations in some individuals, but this does not demonstrate that such factors explain the development of sexual attractions, desires, and behaviors in the majority of cases.

Sexual Orientation and the Brain

There have been several studies examining neurobiological differences between individuals who identify as heterosexual and those who identify as homosexual. This work began with neuroscientist Simon LeVay's 1991 study that reported biological differences in the brains of gay men as compared to straight men—specifically, a difference in volume in a particular cell group of the interstitial nuclei of the anterior hypothalamus (INAH3).[89] Later work by psychiatrist William Byne and colleagues showed more nuanced findings: "In agreement with two prior studies… we found INAH3 to be sexually dimorphic, occupying a significantly greater volume in males than females. In addition, we determined that the sex difference in volume was attributable to a sex difference in neuronal number and not in neuronal size or density."[90] The authors noted that, "Although there was a trend for INAH3 to occupy a smaller volume in homosexual men than in heterosexual men, there was no difference in the number of neurons within the nucleus based on sexual orientation." They speculated that "postnatal experience" may account for the differences in volume in this region between homosexual and heterosexual men, though this would require further research to confirm.[91] They also noted that the functional significance of sexual dimorphism in INAH3 is unknown. The authors conclude: "Based on the results of the present study as well as those of LeVay (1991), sexual orientation cannot be reliably predicted on the basis of INAH3 volume alone."[92] In 2002, psychologist Mitchell S. Lasco and colleagues published a study examining a different part of the brain—the anterior commissure—and found that there were no significant differences in that area based either on sex or sexual orientation.[93]

Other studies have since been conducted to ascertain structural or functional differences between the brains of heterosexual and homosexual individuals (using a variety of criteria to define these categories). Findings from several of these studies are summarized in a 2008 commentary published in the *Proceedings of the National Academy of Sciences*.[94] Research of this kind, however, does not seem to reveal much of relevance regarding the etiology or biological origins of sexual orientation. Due to inherent limitations, this research literature is fairly unremarkable. For example, in one study functional MRI was used to measure activity changes in the brain when pictures of men and women were shown to subjects, finding that viewing a female face produced stronger activity in the thalamus and orbitofrontal cortex of heterosexual men and homosexual women, whereas in homosexual men and heterosexual women these structures reacted more strongly to the face of a man.[95] That the brains of heterosexual women and homosexual men reacted distinctively to the faces of men, whereas the brains of heterosexual men and homosexual women reacted distinctively to the faces of women, is a finding that seems rather trivial with respect to understanding the etiology of homosexual attractions. In a similar vein, one study reported different responses to pheromones between homosexual and heterosexual men,[96] and a follow-up study showed a similar finding in homosexual compared to heterosexual women.[97] Another study showed differences in cerebral asymmetry and functional connectivity between homosexual and heterosexual subjects.[98]

While findings of this kind may suggest avenues for future investigation, they do not move us much closer to an understanding of the biological or environmental determinants of sexual attractions, interests, preferences, or behaviors. We will say more about this below. For now, we will briefly illustrate a few of the inherent limitations in this area of research with the following hypothetical example. Suppose we were to study the brains of yoga teachers and compare them to the brains of bodybuilders. If we search long enough, we will eventually find statistically significant differences in some area of brain morphology or brain function between these two groups. But this would not imply that such differences determined the different life trajectories of the yoga teacher and the bodybuilder. The brain differences could have been the result, rather than the cause, of distinctive patterns of behavior or interests.[99] Consider another example. Suppose that gay men tend to have less body fat than straight men (as indicated by lower average scores on body mass indices). Even though body mass is, in part, determined by genetics, we could not claim based on this finding that there is some innate, genetic cause of both body

mass and homosexuality at work. It could be the case, for instance, that being gay is associated with a diet that lowers body mass. These examples illustrate one of the common problems encountered in the popular interpretation of such research: the suggestion that the neurobiological pattern determines a particular behavioral expression.

With this overview of studies on biological factors that might influence sexual attraction, preferences, or desires, we can understand the rather strong conclusion by social psychologist Letitia Anne Peplau and colleagues in a 1999 review article: "To recap, more than 50 years of research has failed to demonstrate that biological factors are a major influence in the development of women's sexual orientation.... Contrary to popular belief, scientists have not convincingly demonstrated that biology determines women's sexual orientation."[100] In light of the studies we have summarized here, this statement could also be made for research on male sexual orientation, however this concept is defined.

Misreading the Research

There are some significant built-in limitations to what the kind of empirical research summarized in the preceding sections can show. Ignoring these limitations is one of the main reasons the research is routinely misinterpreted in the public sphere. It may be tempting to assume, as we just saw with the example of brain structure, that if a particular biological profile is associated with some behavioral or psychological trait, then that biological profile *causes* that trait. This reasoning relies on a fallacy, and in this section we explain why, using concepts from the field of epidemiology. While some of these issues are rather technical in detail, we will try to explain them in a general way that is accessible to the non-specialist reader.

Suppose for the sake of illustration that one or more differences in a biological trait are found between homosexual and heterosexual men. That difference could be a discrete measure (call this D) such as presence of a genetic marker, or it could be a continuous measure (call this C) such as the average volume of a particular part of the brain.

Showing that a risk factor significantly increases the chances of a particular health outcome or a behavior might give us a clue to development of that health outcome or that behavior, but it does not provide evidence of causation. Indeed, it may not provide evidence of anything but the weakest of correlations. The inference is sometimes made that if it can be shown that gay men and straight men differ significantly in the

probability that D is present (whether a gene, a hormonal factor, or something else), no matter how low that probability, then this finding suggests that being gay has a biological basis. But this inference is unwarranted. Doubling (or even tripling or quadrupling) the probability of a relatively rare trait can have little value in terms of predicting who will or will not identify as gay.

The same would be true for any continuous variable (C). Showing a significant difference at the mean or average for a given trait (such as the volume of a particular brain region) between men who identify as heterosexual and men who identify as homosexual does not suffice to show that this average difference contributes to the probability of identifying as heterosexual or homosexual. In addition to the reasons explained above, a significant difference at the means of two distributions can be consistent with a great deal of overlap between the distributions. That is, there may be virtually no separation in terms of distinguishing between some individual members of each group, and thus the measure would not provide much predictability for sexual orientation or preference.

Some of these issues could, in part, be addressed by additional methodological approaches, such as the use of a training sample or cross-validation procedures. A training sample is a small sample used to develop a model (or hypothesis); this model is then tested on a larger independent sample. This method avoids testing a hypothesis on the same data used to develop the hypothesis. Cross-validation includes procedures used to examine whether a statistically significant effect is really there or just due to chance. If one wants to show the result did not occur by chance (and if the sample is large), one can run the same tests on a random split of the relevant sample. After finding a difference in the prevalence of trait D or C between a gay sample and a straight sample, researchers could randomly split the gay sample into two groups and then show that these two groups do not differ regarding D or C. Suppose one finds five differences out of 100 comparing gay to straight men in the overall samples, then finds five differences out of 100 when comparing the split gay samples. This would cast additional doubt on the initial finding of a difference between the means of gay and straight individuals.

Sexual Abuse Victimization

Whereas the preceding discussion considered the part that biological factors might play in the development of sexual orientation, this section will summarize evidence that a particular environmental factor—childhood

sexual abuse—is reported significantly more often among those who later identify as homosexual. The results presented below raise the question whether there is an association between sexual abuse, particularly in childhood, and later expressions of sexual attraction, behavior, or identity. If so, might child abuse increase the probability of having a non-heterosexual orientation?

Correlations, at least, have been found, as we will summarize below. But we should note first that they might be accounted for by one or more of the following conjectures:

1. Abuse might contribute to the development of non-heterosexual orientation.

2. Children with (signs of future) non-heterosexual tendencies might attract abusers, placing them at elevated risk.

3. Certain factors might contribute to *both* childhood sexual abuse and non-heterosexual tendencies (for instance, a dysfunctional family or an alcoholic parent).

It should be kept in mind that these three hypotheses are not mutually exclusive; all three, and perhaps others, might be operative. As we summarize the studies on this issue, we will try to evaluate each of these hypotheses in light of current scientific research.

Behavioral and community health professor Mark S. Friedman and colleagues conducted a 2011 meta-analysis of 37 studies from the United States and Canada examining sexual abuse, physical abuse, and peer victimization in heterosexuals as compared to non-heterosexuals.[101] Their results showed that non-heterosexuals were on average 2.9 times more likely to report having been abused as children (under 18 years of age). In particular, non-heterosexual males were 4.9 times likelier—and non-heterosexual females, 1.5 times likelier—than their heterosexual counterparts to report sexual abuse. Non-heterosexual adolescents as a whole were 1.3 times likelier to indicate physical abuse by parents than their heterosexual peers, but gay and lesbian adolescents were only 0.9 times as likely (bisexuals were 1.4 times as likely). As for peer victimization, non-heterosexuals were 1.7 times likelier to report being injured or threatened with a weapon or being attacked.

The authors note that although they hypothesized that the rates of abuse would decrease as social acceptance of homosexuality rose, "disparities in prevalence rates of sexual abuse, parental physical abuse, and peer

victimization between sexual minority and sexual nonminority youths did not change from the 1990s to the first decade of the 2000s."[102] While these authors cite authorities who claim that sexual abuse does not "cause individuals to become gay, lesbian, or bisexual,"[103] their data do not give evidence against the hypothesis that childhood sexual abuse might affect sexual orientation. On the other hand, the causal path could be in the opposite direction or bi-directional. The evidence does not refute or support this conjecture; the study's design is not capable of shedding much light on the question of directionality.

The authors invoke a widely-cited hypothesis to explain the higher rates of sexual abuse among non-heterosexuals, the hypothesis that "sexual minority individuals are…more likely to be targeted for sexual abuse, as youths who are perceived to be gay, lesbian, or bisexual are more likely to be bullied by their peers."[104] The two conjectures—that abuse is a cause and that it is a result of non-heterosexual tendencies—are not mutually exclusive: abuse may be a causal factor in the development of non-heterosexual attractions and desires, and at the same time non-heterosexual attractions, desires, and behaviors may increase the risk of being targeted for abuse.

Community health sciences professor Emily Faith Rothman and colleagues conducted a 2011 systematic review of the research investigating the prevalence of sexual assault against people who identify as gay, lesbian, or bisexual in the United States.[105] They examined 75 studies (25 of which used probability sampling) involving a total of 139,635 gay or bisexual (GB) men and lesbian or bisexual (LB) women, which measured the prevalence of victimization due to lifetime sexual assault (LSA), childhood sexual assault (CSA), adult sexual assault (ASA), intimate partner sexual assault (IPSA), and hate-crime-related sexual assault (HC). Although the study was limited by not having a heterosexual control group, it showed alarmingly high rates of sexual assault, including childhood sexual assault, for this population, as summarized in Table 1.

Using a multi-state probability-based sample in a 2013 study, psychologist Judith Anderson and colleagues compared differences in adverse childhood experiences—including dysfunctional households; physical, sexual, or emotional abuse; and parental discord—among self-identified homosexual, heterosexual, and bisexual adults.[106] They found that bisexuals had significantly higher proportions than heterosexuals of all adverse childhood experience factors, and that gays and lesbians had significantly higher proportions than heterosexuals of all these measures except parental separation or divorce. Overall, gays and lesbians had nearly 1.7 times,

Table 1. Sexual Assault among Gay/Bisexual Men and Lesbian/Bisexual Women

GB Men (%)	LB Women (%)
CSA: 4.1–59.2 (median 22.7)	CSA: 14.9–76.0 (median 34.5)
ASA: 10.8–44.7 (median 14.7)	ASA: 11.3–53.2 (median 23.2)
LSA: 11.8–54.0 (median 30.4)	LSA: 15.6–85.0 (median 43.4)
IPSA: 9.5–57.0 (median 12.1)	IPSA: 3.0–45.0 (median 13.3)
HC: 3.0–19.8 (median 14.0)	HC: 1.0–12.3 (median 5.0)

and bisexuals 1.6 times, the heterosexual rate of adverse childhood experiences. The data for abuse are summarized in Table 2.

While this study, like some others we have discussed, may be limited by recall bias—that is, inaccuracies introduced by errors of memory—it has the merit of having a control group of self-identified heterosexuals to compare with self-identified gay/lesbian and bisexual cohorts. In their discussion of findings, the authors critique the hypothesis that childhood trauma has a causal relationship to homosexual preferences. Among their reasons for skepticism, they note that the vast majority of individuals who suffer childhood trauma do not become gay or bisexual, and that gender-nonconforming behavior may help explain the elevated rates of abuse. However, it is plausible from these and related results to hypothesize

Table 2. Adverse Childhood Experiences among Gays/Lesbians, Bisexuals, and Heterosexuals

Sexual Abuse (%)

GLs	Bisexuals	Heterosexuals
29.7	34.9	14.8

Emotional Abuse (%)

GLs	Bisexuals	Heterosexuals
47.9	48.4	29.6

Physical Abuse (%)

GLs	Bisexuals	Heterosexuals
29.3	30.3	16.7

that adverse childhood experiences may be a significant—but not a determinative—factor in developing homosexual preferences. Further studies are needed to see whether either or both hypotheses have merit.

A 2010 study by professor of social and behavioral sciences Andrea Roberts and colleagues examined sexual orientation and risk of post-traumatic stress disorder (PTSD) using data from a national epidemiological face-to-face survey of nearly 35,000 adults.[107] Individuals were placed into several categories: heterosexual with no same-sex attraction or partners (reference group); heterosexual with same-sex attraction but no same-sex partners; heterosexual with same-sex partners; self-identified gay/lesbian; and self-identified bisexual. Among those reporting exposure to traumatic events, gay and lesbian individuals as well as bisexuals had about twice the lifetime risk of PTSD compared to the heterosexual reference group. Differences were found in rates of childhood maltreatment and interpersonal violence: gays, lesbians, bisexuals, and heterosexuals with same-sex partners reported experiencing worse traumas during childhood and adolescence than the reference group. The findings are summarized in Table 3.

Similar patterns emerged in a 2012 study by psychologist Brendan Zietsch and colleagues that primarily focused on the distinct question of whether common causal factors could explain the association between sexual orientation—in this study defined as sexual preference—and depression.[108] In a community sample of 9,884 adult twins, the authors found that non-heterosexuals had significantly elevated prevalence of lifetime depression (odds ratio for males 2.8; odds ratio for females 2.7). As the authors point out, the data raised questions about whether higher rates of depression for non-heterosexuals could be explained, in their entirety, by the social stress hypothesis (the idea, discussed in depth in Part Two of this report, that social stress

Table 3. Childhood Exposure to Maltreatment or Interpersonal Violence (before Age 18)

Women	Men
49.2% of lesbians	31.5% of gays
51.2% of bisexuals	Approximately 32% of bisexuals[109]
40.9% of heterosexuals with same-sex partners	27.9% of heterosexuals with same-sex partners
21.2% of heterosexuals	19.8% of heterosexuals

experienced by sexual minorities accounts for their elevated risks of poor mental health outcomes). Heterosexuals with a non-heterosexual twin had higher rates of depression (39%) than heterosexual twin pairs (31%), suggesting that genetic, familial, or other factors may play a role.

The authors note that "in both males and females, significantly higher rates of non-heterosexuality were found in participants who experienced childhood sexual abuse and in those with a risky childhood family environment."[110] Indeed, 41% of non-heterosexual males and 42% of non-heterosexual females reported childhood family dysfunction, compared to 24% and 30% of heterosexual males and females, respectively. And 12% of non-heterosexual males and 24% of non-heterosexual females reported sexual abuse before the age of 14, compared with 4% and 11% of heterosexual males and females, respectively. The authors are careful to emphasize that their findings should not be interpreted as disproving the social stress hypothesis, but suggest that there may be other factors at work. Their findings do, however, suggest there could be common etiological factors for depression and non-heterosexual preferences, as they found that genetic factors account for 60% of the correlation between sexual orientation and depression.[111]

In a 2001 study, psychologist Marie E. Tomeo and colleagues noted that the previous literature had consistently found increased rates of reported childhood molestation in the homosexual population, with somewhere between 10% and 46% reporting that they had experienced childhood sexual abuse.[112] The authors found that 46% of homosexual men and 22% of homosexual women reported that they had been molested by a person of the same gender, as compared with 7% of heterosexual men and 1% of heterosexual women. Moreover, 38% of homosexual women interviewed did not identify as homosexual until after the abuse, while the authors report conflicting figures—68% in one part of the paper and (by inference) 32% in another—for the number of homosexual men who did not identify as homosexual until after the abuse. The sample for this study was relatively small, only 267 individuals; also, the "sexual contact" measure of abuse in the survey was somewhat vague, and the subjects were recruited from participants in gay pride events in California. But the authors state that "it is most unlikely that all the present findings apply only to homosexual persons who go to homosexual fairs and volunteer to participate in questionnaire research."[113]

In 2010, psychologists Helen Wilson and Cathy S. Widom published a prospective 30-year follow-up study—one that looked at children who had experienced abuse or neglect between 1961 and 1971, and then followed up with those children after 30 years—to ascertain whether physical abuse, sexual abuse, or neglect in childhood increased the likelihood of same-sex

sexual relationships later in life.[114] An original sample of 908 abused and/or neglected children was matched with a non-maltreated control group of 667 individuals (matched for age, sex, race or ethnicity, and approximate socioeconomic status). Homosexuality was operationalized as anyone who had cohabited with a same-sex romantic partner or had a same-sex sexual partner, which made up 8% of the sample. Among these 8%, most individuals also reported having had opposite-sex partners, suggesting high rates of bisexuality or fluidity in sexual attractions or behaviors. The study found that those who reported histories of childhood sexual abuse were 2.8 times more likely to report having had same-sex sexual relationships, though the "relationship between childhood sexual abuse and same-sex sexual orientation was significant only for men."[115] This finding suggested that boys who are sexually abused may be more likely to establish both heterosexual and homosexual relationships.

The authors advised caution in interpreting this result, because the sample size of sexually abused men was small, but the association remained statistically significant when they controlled for total lifetime number of sexual partners and for engaging in prostitution. The study was also limited by a definition of sexual orientation that was not sensitive to how participants identified themselves. It may have failed to capture people with same-sex attractions but no same-sex romantic relationship history. The study had two notable methodological strengths. The prospective design is better suited for evaluating causal relationships than the typical retrospective design. Also, the childhood abuse recorded was documented when it occurred, thus mitigating recall bias.

Having examined the statistical association between childhood sexual abuse and later homosexuality, we turn to the question of whether the association suggests causation.

A 2013 analysis by health researcher Andrea Roberts and colleagues attempted to provide an answer to this question.[116] The authors noted that while studies show 1.6 to 4 times more reported childhood sexual and physical abuse among gay and lesbian individuals than among heterosexuals, conventional statistical methods cannot demonstrate a strong enough statistical relationship to support the argument of causation. They argued that a sophisticated statistical method called "instrumental variables," imported from econometrics and economic analysis, could increase the level of association.[117] (The method is somewhat similar to the method of "propensity scores," which is more sophisticated and more familiar to public health researchers.) The authors applied the method of instrumental variables to data collected from a nationally representative sample.

They used three dichotomous measures of sexual orientation: any vs. no same-sex attraction; any vs. no lifetime same-sex sexual partners; and lesbian, gay, or bisexual vs. heterosexual self-identification. As in other studies, the data showed associations between childhood sexual abuse or maltreatment and all three dimensions of non-heterosexuality (attraction, partners, identity), with associations between sexual abuse and sexual identity being the strongest.

The authors' instrumental variable models suggested that early sexual abuse increased the predicted rate of same-sex attraction by 2.0 percentage points, same-sex partnering by 1.4 percentage points, and same-sex identity by 0.7 percentage points. The authors estimated the rate of homosexuality that might be attributable to sexual abuse "using effect estimates from conventional models" and found that on conventional effect estimates, "9% of same-sex attraction, 21% of any lifetime same-sex sexual partnering, and 23% of homosexual or bisexual identity was due to childhood sexual abuse."[118] We should note that these correlations are cross-sectional: they compare groups of people to groups of people, rather than model the course of individuals over time. (A study design with a time-series analysis would give the strongest statistical support to the claim of causality.) Additionally, these results have been strongly criticized on methodological grounds for having made unjustified assumptions in the instrumental variables regression; a commentary by Drew H. Bailey and J. Michael Bailey claims, "Not only do Roberts et al.'s results fail to provide support for the idea that childhood maltreatment causes adult homosexuality, the pattern of differences between males and females is opposite what should be expected based on better evidence."[119]

Roberts and colleagues conclude their study with several conjectures to explain the epidemiological associations. They echo suggestions made elsewhere that sexual abuse perpetrated by men might cause boys to think they are gay or make girls averse to sexual contact with men. They also conjecture that sexual abuse might leave victims feeling stigmatized, which in turn might make them more likely to act in ways that are socially stigmatized (as by engaging in same-sex sexual relationships). The authors also point to the biological effects of maltreatment, citing studies that show that "quality of parenting" can affect chemical and hormonal receptors in children, and hypothesizing that this might influence sexuality "through epigenetic changes, particularly in the stria terminalis and the medial amygdala, brain regions that regulate social behavior."[120] They also mention the possibilities that emotional numbing caused by maltreatment may drive victims to seek out risky behaviors associated

with same-sex sexuality, or that same-sex attractions and partnering may result from "the drive for intimacy and sex to repair depressed, stressed, or angry moods," or from borderline personality disorder, which is a risk factor in individuals who have been maltreated.[121]

In short, while this study suggests that sexual abuse may sometimes be a causal contributor to having a non-heterosexual orientation, more research is needed to elucidate the biological or psychological mechanisms. Without such research, the idea that sexual abuse may be a causal factor in sexual orientation remains speculative.

Distribution of Sexual Desires and Changes Over Time

However sexual desires and interests develop, there is a related issue that scientists debate: whether sexual desires and attractions tend to remain fixed and unalterable across the lifespan of a person—or are fluid and subject to change over time but tend to become fixed after a certain age or developmental period. Advocates of the "born that way" hypothesis, as mentioned earlier, sometimes argue that a person is not only born with a sexual orientation but that that orientation is immutable; it is fixed for life.

There is now considerable scientific evidence that sexual desires, attractions, behaviors, and even identities can, and sometimes do, change over time. For findings in this area we can turn to the most comprehensive study of sexuality to date, the 1992 National Health and Social Life Survey conducted by the National Opinion Research Center at the University of Chicago (NORC).[122] Two important publications have appeared using data from NORC's comprehensive survey: *The Social Organization of Sexuality: Sexual Practices in the United States*, a large tome of data intended for the research community, and *Sex in America: A Definitive Survey*, a smaller and more accessible book summarizing the findings for the general public.[123] These books present data from a reliable probability sample of the American population between ages 18 and 59.

According to data from the NORC survey, the estimated prevalence of non-heterosexuality, depending on how it was operationalized, and on whether the subjects were male or female, ranged between roughly 1% and 9%.[124] The NORC studies added scientific respectability to sexual surveys, and these findings have been largely replicated in the United States and abroad. For example, the British National Survey of Sexual Attitudes and Lifestyles (Natsal) is probably the most reliable source of information on sexual behavior in that country—a study conducted every ten years since 1990.[125]

The NORC study also suggested ways in which sexual behaviors and identities can vary significantly under different social and environmental circumstances. The findings revealed, for example, a sizable difference in rates of male homosexual behavior among individuals who spent their adolescence in rural as compared to large metropolitan cities in America, suggesting the influence of social and cultural environments. Whereas only 1.2% of males who had spent their adolescence in a rural environment responded that they had had a male sexual partner in the year of the survey, those who had spent adolescence living in metropolitan areas were close to four times (4.4%) more likely to report that they had had such an encounter.[126] From these data one cannot infer differences between these environments in the prevalence of sexual interests or attractions, but the data do suggest differences in sexual behaviors. Also of note is that women who attended college were nine times more likely to identify as lesbians than women who did not.[127]

Moreover, other population-based surveys suggest that sexual desire may be fluid for a considerable number of individuals, especially among adolescents as they mature through the early stages of adult development. In this regard, opposite-sex attraction and identity seem to be more stable than same-sex or bisexual attraction and identity. This is suggested by data from the National Longitudinal Study of Adolescent to Adult Health (the "Add Health" study discussed earlier). This prospective longitudinal study of a nationally representative sample of U.S. adolescents starting in grades 7–12 began during the 1994–1995 school year, and followed the cohort into young adulthood, with four follow-up interviews (referred to as Waves I, II, III, IV in the literature).[128] The most recent was in 2007–2008, when the sample was aged 24–32.

Same-sex or both-sex romantic attractions were quite prevalent in the study's first wave, with rates of approximately 7% for the males and 5% for the females.[129] However, 80% of the adolescent males who had reported same-sex attractions at Wave I later identified themselves as exclusively heterosexual as young adults at Wave IV.[130] Similarly, for adolescent males who, at Wave I, reported romantic attraction to both sexes, over 80% of them reported no same-sex romantic attraction at Wave III.[131] The data for the females surveyed were similar but less striking: for adolescent females who had both-sex attractions at Wave I, more than half reported exclusive attraction to males at Wave III.[132]

J. Richard Udry, the director of Add Health for Waves I, II, and III,[133] was among the first to point out the fluidity and instability of romantic attraction between the first two waves. He reported that among boys who

reported romantic attraction *only* to boys and *never* to girls at Wave I, 48% did so during Wave II; 35% reported no attraction to either sex; 11% reported exclusively same-sex attraction; and 6% reported attraction to both sexes.[134]

Ritch Savin-Williams and Geoffrey Ream published a 2007 analysis of the data from Waves I–III of Add Health.[135] Measures used included whether individuals ever had a romantic attraction for a given sex, sexual behavior, and sexual identity. (The categories for sexual identity were 100% heterosexual, mostly heterosexual but somewhat same-sex attracted, bisexual, mostly homosexual but somewhat attracted to opposite sex, and 100% homosexual.) While the authors noted the "stability of opposite-sex attraction and behavior" between Waves I and III, they found a "high proportion of participants with same- and both-sex attraction and behavior that migrated into opposite-sex categories between waves."[136] A much smaller proportion of those in the heterosexual categories, and a similar proportion of those without attraction, moved to non-heterosexual categories. The authors summarize: "All attraction categories other than opposite-sex were associated with a lower likelihood of stability over time. That is, individuals reporting any same-sex attractions were more likely to report subsequent shifts in their attractions than were individuals without any same-sex attractions."[137]

The authors also note the difficulties these data present for trying to define sexual orientation and to classify individuals according to such categories: "the critical consideration is whether having 'any' same-sex sexuality qualifies as nonheterosexuality. How much of a dimension must be present to tip the scales from one sexual orientation to another was not resolved with the present data, only that such decisions matter in terms of prevalence rates."[138] The authors suggested that researchers could "forsake the general notion of sexual orientation altogether and assess only those components relevant for the research question."[139]

Another prospective study by biostatistician Miles Ott and colleagues of 10,515 youth (3,980 males; 6,535 females) in 2013 showed findings on sexual orientation change in adolescents consistent with the findings of the Add Health data, again suggesting fluidity and plasticity of same-sex attractions among many adolescents.[140]

A few years after the Add Health data were originally published, the *Archives of Sexual Behavior* published an article by Savin-Williams and Joyner that critiqued the Add Health data on sexual attraction change.[141] Before outlining their critique, Savin-Williams and Joyner summarize the key Add Health findings: "in the approximately 13 years between Waves

I and IV, regardless of whether the measure was identical across waves (romantic attraction) or discrepant in words but not in theory (romantic attraction and sexual orientation identity), approximately 80% of adolescent boys and half of adolescent girls who expressed either partial or exclusive same-sex romantic attraction at Wave I 'turned' heterosexual (opposite-sex attraction or exclusively heterosexual identity) as young adults."[142] The authors propose three hypotheses to explain these discrepancies:

> (1) gay adolescents going into the closet during their young adult years; (2) confusion regarding the use and meaning of romantic attraction as a proxy for sexual orientation; and (3) the existence of mischievous adolescents who played a 'jokester' role by reporting same-sex attraction when none was present.[143]

Savin-Williams and Joyner reject the first hypothesis but find support for the second and the third. With respect to the second hypothesis, they question the use of romantic attraction to operationalize sexual identity:

> To help us assess whether the construct/measurement issue (romantic attraction versus sexual orientation identity) was driving results, we compared the two constructs at Wave IV.... Whereas over 99% of young adults with opposite-sex romantic attraction identified as heterosexual or mostly heterosexual and 94% of those with same-sex romantic attraction identified as homosexual or mostly homosexual, 33% of both-sex attracted men identified as heterosexual (just 6% of both-sex attracted women identified as heterosexual). These data indicated that young adult men and women generally understood the meaning of romantic attraction to the opposite- or same-sex to imply a particular (and consistent) sexual orientation identity, with one glaring exception—a substantial subset of young adult men who, despite their stated both-sex romantic attraction, identified as heterosexual.

Regarding the third hypothesis for explaining the Add Health data, Savin-Williams and Joyner note that surveys of adolescents sometimes yield unusual or distorted results due to adolescents who do not respond truthfully. The Add Health survey, they observe, had a significant number of unusual responders. For example, several hundred adolescents reported in the Wave I questionnaire that they had an artificial limb, whereas in later at-home interviews, only two of those adolescents reported having an artificial limb.[144] Adolescent boys who went from nonheterosexual in Wave I to heterosexual in Wave IV were significantly less likely to report

having filled out the Wave I questionnaire honestly; these boys also displayed other significant differences, such as lower grade point averages. Additionally, like consistently heterosexual boys, boys who were inconsistent between Waves I and IV were more popular in their school with boys than girls, whereas consistently nonheterosexual boys were more popular with girls. These and other data[145] led the authors to conclude that "boys who emerged from a gay or bisexual adolescence to become a heterosexual young adulthood were, by-and-large, heterosexual adolescents who were either confused and did not understand the measure of romantic attraction or jokesters who decided, for reasons we were not able to detect, to dishonestly report their sexuality."[146] However, the authors were not able to estimate the proportion of inaccurate responders, which would have helped evaluate the explanatory power of the hypotheses.

Later in 2014, the *Archives of Sexual Behavior* published a critique of the Savin-Williams and Joyner explanation of Add Health data by psychologist Gu Li and colleagues.[147] Along with criticizing the methodology of Savin-Williams and Joyner, these authors argued that the data were consistent with a scenario in which some nonheterosexual adolescents went "back into the closet" in later years as a possible reaction to social stress. (We will examine the effects of social stress on mental health in LGBT populations in Part Two of this report.) They also claimed that "it makes little sense to use responses to Wave IV sexual identity to validate or invalidate responses to Waves I or IV romantic attractions when these aspects of sexual orientation may not align in the first place."[148] Regarding the jokester hypothesis, these authors pose this difficulty: "Although some participants might be 'jokesters,' and we as researchers should be cautious of problems associated with self-report surveys whenever analyzing and interpreting data, it is unclear why the 'jokesters' would answer questions about delinquency honestly, but not questions about their sexual orientation."[149]

Savin-Williams and Joyner published a response to the critique in the same issue of the journal.[150] Responding to the criticism that their comparison of Wave IV self-reported sexual identity to Wave I self-reported romantic attractions was unsound, Savin-Williams and Joyner claimed that the results were quite similar if one used attraction as the Wave IV measure. They also deemed it highly unlikely that a large proportion of the respondents who were classified as nonheterosexuals in Wave I and heterosexuals in Wave IV went "back into the closet," because the proportion of individuals in adolescence and young adulthood who are "out of the closet" usually increases over time.[151]

The following year, the *Archives of Sexual Behavior* published another response to Savin-Williams and Joyner by psychologist Sabra Katz-Wise and colleagues, which argued that Savin-Williams and Joyner's "approach to identifying 'dubious' sexual minority youth is inherently flawed."[152] They wrote that "romantic attraction and sexual orientation identity are two distinct dimensions of sexual orientation that may not be concordant, even at a single time point."[153] They also claimed that "even if Add Health had assessed the same facets of sexual orientation at all waves, it would still be incorrect to infer 'dubious' sexual minorities from changes on the same dimension of sexual orientation, because these changes may reflect sexual fluidity."[154]

Unfortunately, the Add Health study does not appear to contain the data that would allow an assessment to determine which, if any, of these interpretations is likely to be correct. It may well be the case that a combination of factors contributed to the differences between the Wave I and Wave IV data. For example, there may have been some adolescents who responded to the Wave I sexual attraction questions inaccurately, some openly nonheterosexual adolescents who later went "back into the closet," and some adolescents who experienced nonheterosexual attractions before Wave I that largely disappeared by Wave IV. Other prospective study designs that track specific individuals across adolescent and adult development may shed further light on these issues.

While ambiguities in defining and characterizing sexual desire and orientation make changes in sexual desire difficult to study, data from these large, population-based national studies of randomly sampled individuals do suggest that all three dimensions of sexuality—affect, behavior, and identity—may change over time for some people. It is unclear, and current research does not address, whether and to what extent factors subject to volitional control—choice of sexual partners or sexual behaviors, for example—may influence such changes through conditioning and other mechanisms that are characterized in the behavioral sciences.

Several researchers have suggested that sexual orientation and attractions may be especially plastic for women.[155] For example, Lisa Diamond argued in her 2008 book *Sexual Fluidity* that "women's sexuality is fundamentally more fluid than men's, permitting greater variability in its development and expression over the life course," based on research by her and many others.[156]

Diamond's longitudinal five-year interviews of women in sexual relationships with other women also shed light on the problems with the concept of sexual orientation. In many cases, the women in her study

reported not so much setting out to form a lesbian sexual relationship but rather experiencing a gradual growth of affective intimacy with a woman that eventually led to sexual involvement. Some of these women rejected the labels of "lesbian," "straight," or "bisexual" as being inconsistent with their lived experience.[157] In another study, Diamond calls into question the utility of the concept of sexual orientation, especially as it applies to females.[158] She points out that if the neural basis of parent-child attachment—including attachment to one's mother—forms at least part of the basis for romantic attachments in adulthood, then it would not be surprising for a woman to experience romantic feelings for another woman without necessarily wanting to be sexually intimate with her. Diamond's research indicates that these kinds of relationships form more often than we typically recognize, especially among women.

Some researchers have also suggested that men's sexuality is more fluid than it was previously thought. For example, Diamond presented a 2014 conference paper, based on initial results from a survey of 394 people, entitled "I Was Wrong! Men Are Pretty Darn Sexually Fluid, Too!"[159] Diamond based this conclusion on a survey of men and women between the ages of 18 and 35, which asked about their sexual attractions and self-described identities at different stages of their lives. The survey found that 35% of self-identified gay men reported experiencing opposite-sex attractions in the past year, and 10% of self-identified gay men reported opposite-sex sexual behavior during the same period. Additionally, nearly as many men transitioned at some time in their life from gay to bisexual, queer, or unlabeled identity as did men from bisexual to gay identity.

In a 2012 review article entitled "Can We Change Sexual Orientation?" published in the *Archives of Sexual Behavior*, psychologist Lee Beckstead wrote, "Although their sexual behavior, identity, and attractions may change throughout their lives, this may not indicate a change in sexual orientation…but a change in awareness and an expansion of sexuality."[160] It is difficult to know how to interpret this claim—that sexual behavior, identity, and attractions may change but that this does not necessarily indicate a change in sexual orientation. We have already analyzed the inherent difficulties of defining sexual orientation, but however one chooses to define this construct, it seems that the definition would somehow be tied to sexual behavior, identity, or attraction. Perhaps we can take Beckstead's claim here as one more reason to consider dispensing with the construct of sexual orientation in the context of social science research, as it seems that whatever it might represent, it is only loosely or inconsistently tied to empirically measurable phenomena.

Given the possibility of changes in sexual desire and attraction, which research suggests is not uncommon, any attempt to infer a stable, innate, and fixed identity from a complex and often shifting mélange of inner fantasies, desires, and attractions—sexual, romantic, aesthetic, or otherwise—is fraught with difficulties. We can imagine, for example, a sixteen-year-old boy who becomes infatuated with a young man in his twenties, developing fantasies centered around the other's body and build, or perhaps on some of his character traits or strengths. Perhaps one night at a party the two engage in physical intimacy, catalyzed by alcohol and by the general mood of the party. This young man then begins an anguished process of introspection and self-exploration aimed at finding the answer to the enigmatic question, "Does this mean I'm gay?"

Current research from the biological, psychological, and social sciences suggests that this question, at least as it is framed, makes little sense. As far as science can tell us, there is nothing "there" for this young man to discover—no fact of nature to uncover or to find buried within himself. What his fantasies, or his one-time liaison, "really mean" is subject to any number of interpretations: that he finds the male figure beautiful, that he was lonely and feeling rejected the night of the party and responded to his peer's attentions and affections, that he was intoxicated and influenced by the loud music and strobe lights, that he does have a deep-seated sexual or romantic attraction to other men, and so on. Indeed, psychodynamic interpretations of such behaviors citing unconscious motivational factors and inner conflicts, many of them interesting, most impossible to prove, can be spun endlessly.

What we can say with more confidence is that this young man had an experience encompassing complex feelings, or that he engaged in a sexual act conditioned by multiple complex factors, and that such fantasies, feelings, or associated behaviors may (or may not) be subject to change as he grows and develops. Such behaviors could become more habitual with repetition and thus more stable, or they may extinguish and recur rarely or never. The research on sexual behaviors, sexual desire, and sexual identity suggests that both trajectories are real possibilities.

Conclusion

The concept of sexual orientation is unusually ambiguous compared to other psychological traits. Typically, it refers to at least one of three things: attractions, behaviors, or identity. Additionally, we have seen that sexual orientation often refers to several other things as well: belonging

to a certain community, fantasies (as distinct in some respects from attractions), longings, strivings, felt needs for certain forms of companionship, and so on. It is important, then, that researchers are clear about which of these domains are being studied, and that we keep in mind the researchers' specified definitions when we interpret their findings.

Furthermore, not only can the term "sexual orientation" be understood in several different senses, most of the senses are themselves complex concepts. Attraction, for example, could refer to arousal patterns, or to romantic feelings, or to desires for company, or other things; and each of these things can be present either sporadically and temporarily or pervasively and long-term, either exclusively or not, either in a deep or shallow way, and so forth. For this reason, even specifying one of the basic senses of orientation (attraction, behavior, or identity) is insufficient for doing justice to the richly varied phenomenon of human sexuality.

In this part we have criticized the common assumption that sexual *desires*, *attractions*, or *longings* reveal some innate and fixed feature of our biological or psychological constitution, a fixed sexual *identity* or *orientation*. Furthermore, we may have some reasons to doubt the common assumption that in order to live happy and flourishing lives, we must somehow discover this innate fact about ourselves that we call *sexuality* or *sexual orientation*, and invariably express it through particular patterns of sexual behavior or a particular life trajectory. Perhaps we ought instead to consider what sorts of behaviors—whether in the sexual realm or elsewhere—tend to be conducive to health and flourishing, and what kinds of behaviors tend to undermine a healthy and flourishing life.

The New Atlantis
A Journal of Technology & Society

Part Two

Sexuality, Mental Health Outcomes, and Social Stress

Compared to the general population, non-heterosexual and transgender subpopulations have higher rates of mental health problems such as anxiety, depression, and suicide, as well as behavioral and social problems such as substance abuse and intimate partner violence. The prevailing explanation in the scientific literature is the social stress model, which posits that social stressors—such as stigmatization and discrimination—faced by members of these subpopulations account for the disparity in mental health outcomes. Studies show that while social stressors do contribute to the increased risk of poor mental health outcomes for these populations, they likely do not account for the entire disparity.

Many of the issues surrounding sexual orientation and gender identity remain controversial among researchers, but there is general agreement on the observation at the heart of Part Two: lesbian, gay, bisexual, and transgender (LGBT) subpopulations are at higher risk, compared to the general population, of numerous mental health problems. Less certain are the causes of that increased risk and thus the social and clinical approaches that may help to ameliorate it. In this part we review some of the research documenting the increased risk, focusing on papers that are data-based with sound methodology, and that are widely cited in the scientific literature.

A robust and growing body of research examines the relationships between sexuality or sexual behaviors and mental health status. The first half of this part discusses the associations of sexual identities or behaviors with psychiatric disorders (such as mood disorders, anxiety disorders, and adjustment disorders), suicide, and intimate partner violence. The second half explores the reasons for the elevated risks of these outcomes among non-heterosexual and transgender populations, and considers what social science research can tell us about one of the most prevalent ways of explaining these risks, the social stress model. As we will see, social stressors such as harassment and stigma likely explain some but not all of the elevated mental health risks for these populations. More research

is needed to understand the causes of and potential solutions for these important clinical and public health issues.

Some Preliminaries

We turn first to the evidence for the statistical links between sexual identities or behaviors and mental health outcomes. Before summarizing the relevant research, we should mention the criteria used in selecting the studies reviewed. In an attempt to distill overall findings of a large body of research, each section begins by summarizing the most extensive and reliable meta-analyses—papers that compile and analyze the statistical data from the published research literature. For some areas of research, no comprehensive meta-analyses have been conducted, and in these areas we rely on review articles that summarize the research literature without going into quantitative analyses of published data. In addition to reporting these summaries, we also discuss a few select studies that are of particular value because of their methodology, sample size, controls for confounding factors, or ways in which concepts such as heterosexuality or homosexuality are operationalized; and we discuss key studies published after the meta-analyses or review articles were published.

As we showed in Part One, explaining the exact biological and psychological origins of sexual desires and behaviors is a difficult scientific task, one that has not yet been and may never be satisfactorily completed. However, researchers can study the correlations between sexual behavior, attraction, or identity and mental health outcomes, though there may be—and often are found to be—differences between how sexual behavior, attraction, and identity relate to particular mental health outcomes. Understanding the scope of the health challenges faced by individuals who engage in particular sexual behaviors or experience certain sexual attractions is a necessary step in providing these individuals with the care they need.

Sexuality and Mental Health

In a 2008 meta-analysis of research on mental health outcomes for non-heterosexuals, University College London professor of psychiatry Michael King and colleagues concluded that gays, lesbians, and bisexuals face "higher risk of suicidal behaviour, mental disorder and substance misuse and dependence than heterosexual people."[1] This survey of the literature examined papers published between January 1966 and April 2005 with data from 214,344 heterosexual and 11,971 non-heterosexual individuals.

The large sample size allowed the authors to generate estimates that are highly reliable, as indicated by the relatively small confidence intervals.[2]

Compiling the risk ratios found in these papers, the authors estimated that lesbian, gay, and bisexual individuals had a 2.47 times higher lifetime risk than heterosexuals for suicide attempts,[3] that they were about twice as likely to experience depression over a twelve-month period,[4] and approximately 1.5 times as likely to experience anxiety disorders.[5] Both non-heterosexual men and women were found to be at an elevated risk for substance abuse problems (1.51 times as likely),[6] with the risk for non-heterosexual women especially high—3.42 times higher than for heterosexual women.[7] Non-heterosexual men, on the other hand, were at a particularly high risk for suicide attempts: while non-heterosexual men and women together were at a 2.47 times greater risk of suicide attempts over their lifetimes, non-heterosexual men were found to be at a 4.28 times greater risk.[8]

These findings have been replicated in other studies, both in the United States and internationally, confirming a consistent and alarming pattern. However, there is considerable variation in the estimates of the increased risks of various mental health problems, depending on how researchers define terms such as "homosexual" or "non-heterosexual." The findings from a 2010 study by Northern Illinois University professor of nursing and health studies Wendy Bostwick and colleagues examined associations of sexual orientation with mood and anxiety disorders among men and women who either identified as gay, lesbian, or bisexual, or who reported engaging in same-sex sexual behavior, or who reported feeling same-sex attractions. The study employed a large, U.S.-based random population sample, using data collected from the 2004–2005 wave of the National Epidemiologic Survey on Alcohol and Related Conditions, which was based on 34,653 interviews.[9] In its sample, 1.4% of respondents identified as lesbian, gay, or bisexual; 3.4% reported some lifetime same-sex sexual behavior; and 5.8% reported non-heterosexual attractions.[10]

Women who identified as lesbian, bisexual, or "not sure" reported higher rates of lifetime mood disorders than women who identified as heterosexual: the prevalence was 44.4% in lesbians, 58.7% in bisexuals, and 36.5% in women unsure of their sexual identity, as compared to 30.5% in heterosexuals. A similar pattern was found for anxiety disorders, with bisexual women experiencing the highest prevalence, followed by lesbians and those unsure, and heterosexual women experiencing the lowest prevalence. Examining the data for women with different sexual *behavior* or sexual *attraction* (rather than identity), those reporting sexual behavior

with or attractions to both men and women had a higher rate of lifetime disorders than women who reported exclusively heterosexual or homosexual behaviors or attractions, and women reporting exclusive same-sex sexual behavior or exclusive same-sex attraction in fact had the *lowest* rates of lifetime mood and anxiety disorders.[11]

Men who identified as gay had more than double the prevalence of lifetime mood disorders compared to men who identified as heterosexual (42.3% vs. 19.8%), and more than double the rate of any lifetime anxiety disorder (41.2% vs. 18.6%), while those who identified as bisexual had a slightly lower prevalence of mood disorders (36.9%) and anxiety disorders (38.7%) than gay men. When looking at sexual attraction or behavior for men, those who reported sexual attraction to "mostly males" or sexual behavior with "both females and males" had the highest prevalence of lifetime mood disorders and anxiety disorders compared to other groups, while those reporting exclusively heterosexual attraction or behavior had the lowest prevalence of any group.

Other studies have found that non-heterosexual populations are at a higher risk of physical health problems in addition to mental health problems. A 2007 study by UCLA professor of epidemiology Susan Cochran and colleagues examined data from the California Quality of Life Survey of 2,272 adults to assess links between sexual orientation and self-reported physical health status, health conditions, and disability, as well as psychological distress among lesbians, gay men, bisexuals, and those they classified as "homosexually experienced heterosexual individuals."[12] While the study, like most, was limited by the use of self-reporting of health conditions, it had several strengths: it studied a population-based sample; it separately measured identity and behavioral dimensions of sexual orientation; and it controlled for race (ethnicity), education, relationship status, and family income, among other factors.

While the authors of this study found a number of health conditions that appeared to have elevated prevalence among non-heterosexuals, after adjusting for demographic factors that are potential confounders the only group with significantly greater prevalence of non-HIV physical health conditions was bisexual women, who were more likely to have health problems than heterosexual women. Consistent with the 2010 study by Bostwick and colleagues, higher rates of psychological stress were reported by lesbians, bisexual women, gay men, and homosexually experienced heterosexual men, both before and after adjusting for demographic confounding. Among men, self-identified gay and homosexually experienced heterosexual respondents reported the highest rates of several health problems.

Using the same California Quality of Life Survey, a 2009 study by UCLA professor of psychiatry and biobehavioral sciences Christine Grella and colleagues (including Cochran) examined the relationship between sexual orientation and receiving treatment for substance use or mental disorders.[13] They used a population-based sample, with sexual minorities oversampled to provide more statistical power to detect group differences. The usage of treatment was classified according to whether or not respondents reported receiving treatment in the preceding twelve months for "emotional, mental health, alcohol or other drug problems." Sexual orientation was operationalized by a combination of behavioral history and self-identification. For example, they grouped together as "gay/bisexual" or "lesbian/bisexual" both those who identified as gay, lesbian, or bisexual, and those who had reported same-sex sexual behaviors. They found that women who were lesbian or bisexual were most likely to have received treatment, followed by men who were gay or bisexual, then heterosexual women, with heterosexual men being the least likely group to have reported receiving treatment. Overall, more than twice as many LGB individuals, compared to heterosexuals, had reported receiving treatment in the past twelve months (48.5% compared to 22.5%). The pattern was similar for men and women; 42.5% of homosexual men, compared to 17.1% of heterosexual men, had reported receiving treatment, while 55.3% of lesbian and bisexual women and 27.1% of heterosexual women reported receiving treatment. (Bostwick and colleagues had found that women with exclusively same-sex attractions and behaviors had a lower prevalence of mood and anxiety disorders compared to heterosexual women. The difference in results could be due to the fact that Grella and colleagues grouped those who identified as lesbians together with those who identified as bisexuals or who reported same-sex sexual behavior.)

A 2006 study by Columbia University psychiatry professor Theodorus Sandfort and colleagues examined a representative, population-based sample from the second Dutch National Survey of General Practice, carried out in 2001, to assess links between self-reported sexual orientation and health status among 9,511 participants, of whom 0.9% were classified as bisexual and 1.5% as gay or lesbian.[14] To operationalize sexual orientation, the researchers asked respondents about their sexual preference on a 5-point scale: exclusively women, predominantly women, equally men and women, predominantly men, and exclusively men. Only those who reported an equal preference for men and women were classified as bisexual, while men reporting predominant preferences for women, or women reporting a predominant preference for men were classified as heterosexual. They

found that gay, lesbian, and bisexual respondents reported experiencing higher numbers of acute mental health problems and reported worse general mental health than heterosexuals. The results for physical health were mixed, however: lesbian and gay respondents reported experiencing more acute physical symptoms (such as headaches, back pain, or sore throats) over the past fourteen days, though they did not report experiencing two or more such symptoms any more than heterosexuals.

Lesbian and gay respondents were more likely to report chronic health problems, though bisexual men (that is, men who reported an equal sexual preference for men and women) were less likely to report chronic health problems and bisexual women were no more likely than heterosexual women to do so. The researchers did not find a statistically significant relationship between sexual orientation and overall physical health. After controlling for the possible confounding effects of mental health problems on the reporting of physical health problems, the researchers also found that the statistical effect of reporting a gay or lesbian sexual preference on chronic and acute physical conditions disappeared, though the effect of bisexual preference remained.

The Sandfort study defined sexual orientation in terms of preference or attraction without reference to behavior or self-identification, which makes it a challenge to compare its results to the results of studies that operationalize sexual orientation differently. For example, it is difficult to compare the findings of this study regarding bisexuals (defined as men or women who report an equal sexual preference for men and women) with the findings of other studies regarding "homosexually experienced heterosexual individuals" or those who are "unsure" of their sexual identity. As in most of these types of studies, the health assessments were self-reported, which may make the results somewhat unreliable. But this study also has several strengths: it used a large and representative sample of a country's population, as opposed to the convenience samples that are sometimes used for these kinds of studies, and this sample included a sufficient number of gays and lesbians for their data to be treated in separate groups in the study's statistical analyses. Only three people in the sample reported HIV infection, so this did not appear to be a potential confounding factor, though HIV could have been underreported.

In an effort to summarize findings in this area, we can cite the 2011 report from the Institute of Medicine (IOM), *The Health of Lesbian, Gay, Bisexual, and Transgender People.*[15] This report is an extensive review of scientific literature citing hundreds of studies that examine the health status of LGBT populations. The authors are scientists who are well versed

in these issues (although we wish there had been more involvement of experts in psychiatry). The report reviews findings on physical and mental health in childhood, adolescence, early and middle adulthood, and late adulthood. Consistent with the studies cited above, this report reviews evidence showing that, compared with heterosexual youth, LGB youth are at a higher risk of depression, as well as suicide attempts and suicidal ideation. They are also more likely to experience violence and harassment and to be homeless. LGB individuals in early or middle adulthood are more prone to mood and anxiety disorders, depression, suicidal ideation, and suicide attempts.

The IOM report shows that, like LGB youth, LGB adults—and women in particular—appear to be likelier than heterosexuals to smoke, use or abuse alcohol, and abuse other drugs. The report cites a study[16] that found that self-identified non-heterosexuals used mental health services more often than heterosexuals, and another[17] that found that lesbians used mental health services at higher rates than heterosexuals.

The IOM report notes that "more research has focused on gay men and lesbians than on bisexual and transgender people."[18] The relatively few studies focusing on transgender populations show high rates of mental disorders, but the use of nonprobability samples and the lack of non-transgender controls call into question the validity of the studies.[19] Although some studies have suggested that the use of hormone treatments may be associated with negative physical health outcomes among transgender populations, the report notes that the relevant research has been "limited" and that "no clinical trials on the subject have been conducted."[20] (Health outcomes for transgender individuals will be further discussed below in this part and also in Part Three.)

The IOM report claims that the evidence that LGBT populations have worse mental and physical health outcomes is not fully conclusive. To support this claim, the IOM report cites a 2001 study[21] of mental health in 184 sister pairs in which one sister was lesbian and the other heterosexual. The study found no significant differences in rates of mental health problems, and found significantly higher self-esteem in the lesbian sisters. The IOM report also cites a 2003 study[22] that found no significant differences between heterosexual and gay or bisexual men in general happiness, perceived health, and job satisfaction. Acknowledging these caveats and the studies that do not support the general trend, the vast majority of studies cited in the report point to a generally higher risk of poor mental health status in LGBT populations compared to heterosexual populations.

Sexuality and Suicide

The association between sexual orientation and suicide has strong scientific support. This association merits particular attention, since among all the mental health risks, the increased risk of suicide is the most concerning, owing in part to the fact that the evidence is robust and consistent, and in part to the fact that suicide is so devastating and tragic for the person, family, and community. A better understanding of the risk factors for suicide could allow us, quite literally, to save lives.[23]

Sociologist and suicide researcher Ann Haas and colleagues published an extensive review article in 2011 based on the results of a 2007 conference sponsored by the Gay and Lesbian Medical Association, the American Foundation for Suicide Prevention, and the Suicide Prevention Resource Center.[24] They also examined studies reported since the 2007 conference. For the purposes of their report, the authors defined sexual orientation as "sexual self-identification, sexual behavior, and sexual attraction or fantasy."[25]

Haas and colleagues found the association between homosexual or bisexual orientation and suicide attempts to be well supported by data. They noted that population-based surveys of U.S. adolescents since the 1990s indicate that suicide attempts are two to seven times more likely in high school students who identify as LGB, with sexual orientation being a stronger predictor in males than females. They reviewed data from New Zealand that suggested that LGB individuals were six times more likely to have attempted suicide. They cited health-related surveys of U.S. men and Dutch men and women showing same-sex behavior linked to higher risk of suicide attempts. Studies cited in the report show that lesbian or bisexual women are likelier, on average, to experience suicidal ideation, that gay or bisexual men are more likely, on average, to attempt suicide, and that lifetime suicide attempts among non-heterosexuals are greater in men than in women.

Examining studies that looked at rates of mental disorders in relation to suicidal behavior, Haas and colleagues discussed a New Zealand study[26] showing that gay people reporting suicide attempts had higher rates of depression, anxiety, and conduct disorder. Large-scale health surveys suggested that rates of substance abuse are up to one third higher for the LGB subpopulation. Combined worldwide studies showed up to 50% higher rates of mental disorders and substance abuse among persons self-identifying in surveys as lesbian, gay, or bisexual. Lesbian or bisexual women showed higher levels of substance abuse, while gay or bisexual men had higher rates of depression and panic disorder.

Haas and colleagues also examined transgender populations, noting that scant information is available about transgender suicides but that the existing studies indicate a dramatic increased risk of completed suicide. (These findings are noted here but examined in more detail in Part Three.) A 1997 clinical study[27] estimated elevated risks of suicide for Dutch male-to-female transsexual individuals on hormone therapy, but found no significant differences in overall mortality. A 1998 international review of 2,000 persons receiving sex-reassignment surgery identified 16 possible suicides, an "alarmingly high rate of 800 suicides for every 100,000 post-surgery transsexuals."[28] In a 1984 study, a clinical sample of transgender individuals requesting sex-reassignment surgery showed suicide attempt rates between 19% and 25%.[29] And a large sample of 40,000 mostly U.S. volunteers completing an Internet survey in 2000 found transgender persons to report higher rates of suicide attempts than any group except lesbians.[30]

Finally, the review by Haas and colleagues suggests that it is not clear which aspects of sexuality (identity, attraction, behavior) are most closely linked with the risk of suicidal behavior. The authors cite a 2010 study[31] showing that adolescents identifying as heterosexual while reporting same-sex attraction or behavior did not have significantly higher suicide rates than other self-identified heterosexuals. They also cite the large national survey of U.S. adults conducted by Wendy Bostwick and colleagues (discussed earlier),[32] which showed mood and anxiety disorders—key risk factors for suicidal behavior—more closely related to sexual self-identity than to behavior or attraction, especially for women.

A more recent critical review of existing studies of suicide risk and sexual orientation was presented by Austrian clinical psychologist Martin Plöderl and colleagues.[33] This review rejects several hypotheses developed to account for the increased suicide risk among non-heterosexuals, including biases in self-reporting and failures to measure suicide attempts accurately. The review argues that methodological improvements in studies since 1997 have provided control groups, better representativeness of study samples, and more clarity in defining both suicide attempts and sexual orientation.

The review mentions a 2001 study[34] by Ritch Savin-Williams, a Cornell University professor of developmental psychology, that reported no statistically significant difference between heterosexual and LGB youths after eliminating false-positive reports of suicide attempts and blaming a "'suffering suicidal' script" for leading to an over-reporting of suicidal behavior among gay youths. Plöderl and colleagues argue, however, that

the Savin-Williams study's finding that there was no statistically significant difference between the suicide rates of LGB and heterosexual youths might be attributable to the small sample size, which yielded low statistical power.[35] The later work has not replicated this finding. Subsequent questionnaire or interview-based studies with stricter definitions of suicide attempts have found significantly increased rates of suicide attempts among non-heterosexuals. Several large-scale surveys of young people have found that the elevated risk of reported suicidal behavior increased with the severity of the attempts.[36] Finally, according to Plöderl and colleagues, comparing results of questionnaires with clinical interviews indicates that homosexual youth are less likely to over-report suicide attempts in surveys than heterosexual youth.

Plöderl and colleagues concluded that among psychiatric patients, homosexual or bisexual populations are over-represented in "serious suicide attempts," and that sexual orientation is one of the strongest predictors of suicide. Similarly, in nonclinical population-based studies, non-heterosexual status is found to be one of the strongest predictors of suicide attempts. The authors note:

> The most exhaustive collation of published and unpublished international studies on the association of suicide attempts and sexual orientation with different methodologies has produced a very consistent picture: nearly all studies found increased incidences of self-reported suicide attempts among sexual minorities.[37]

In acknowledging the challenges of all such research, the authors suggest that "the major problem remains as to where one draws the line between a heterosexual or non-heterosexual orientation."[38]

A 1999 study by Richard Herrell and colleagues analyzed 103 middle-aged male twin pairs from the Vietnam Era Twin Registry in Hines, Illinois, in which one twin, but not the other, reported having a male sex partner after the age of 18.[39] The study adopted several measures of suicidality and controlled for potential confounding factors such as substance abuse or depression. It found a "substantially increased lifetime prevalence of suicidal symptoms" in male twins who had sex with men compared with co-twins who did not, independent of the potential confounding effects of drug and alcohol abuse.[40] Though it is a relatively small study and relied on self-reporting for both same-sex behaviors and suicidal thoughts or behaviors, it is notable for using a probability sample (which eliminates selection bias), and for using the co-twin control method (which reduces the effects of genetics, age, race, and the like).

The study looked at middle-aged men; what the implications might be for adolescents is not clear.

In a 2011 study, Robin Mathy and colleagues analyzed the impact of sexual orientation on suicide rates in Denmark during the first twelve years after the legalization of same-sex registered domestic partnerships (RDPs) in that country, using data from death certificates issued between 1990 and 2001 as well as Danish census population estimates.[41] The researchers found that the age-adjusted suicide rate for same-sex RDP men was nearly eight times the rate for men in heterosexual marriages, and nearly twice the rate for men who had never married. For women, RDP status had a small, statistically insignificant effect on suicide mortality risk, and the authors conjectured that the impact of HIV status on the health of gay men might have contributed to this difference between the results for men and women. The study is limited by the fact that RDP status is an indirect measure of sexual orientation or behavior, and does not include those gays and lesbians who are not in a registered domestic partnership; the study also excluded individuals under the age of 18. Finally, the absolute number of individuals with current or past RDP status was relatively small, which may limit the study's conclusions.

Professor of pediatrics Gary Remafedi and colleagues published a 1991 study that looked at 137 males age 14–21 who self-identified as gay (88%) or bisexual (12%). Remafedi and colleagues attempted, with a case-controlled approach, to examine which factors for this population were most predictive of suicide.[42] Compared to those who did not attempt suicide, those who did were significantly more likely to label themselves and identify publicly as bisexual or homosexual at younger ages, report sexual abuse, and report illicit drug use. The authors noted that the likelihood of a suicide attempt "diminished with advancing age at the time of bisexual or homosexual self-labeling." Specifically, "with each year's delay in self-identification, the odds of a suicide attempt declined by more than 80%."[43] This study is limited by using a relatively small nonprobability sample, though the authors note that its result comports with their previous finding[44] of an inverse relationship between psychosocial problems and the age at which one identifies as homosexual.

In a 2010 study, Plöderl and colleagues solicited self-reported suicide attempts among 1,382 Austrian adults to confirm existing evidence that homosexual and bisexual individuals are at higher risk.[45] To sharpen the results, the authors developed more rigorous definitions of "suicide attempts" and assessed multiple dimensions of sexual orientation, distinguishing among sexual fantasies, preferred partners, self-identification,

recent sexual behavior, and lifetime sexual behavior. This study found an increased risk for suicide attempts for sexual minorities along all dimensions of sexual orientation. For women, the risk increases were largest for those with homosexual behaviors; for men, they were largest for homosexual or bisexual behavior in the previous twelve months and self-identification as homosexual or bisexual. Those reporting being unsure of their identity reported the highest percentage of suicide attempts (44%), although this group was small, comprising less than 1% of participants.

A 2016 meta-analysis by University of Toronto graduate student Travis Salway Hottes and colleagues aggregated data from thirty cross-sectional studies on suicide attempts that together included 21,201 sexual minority adults.[46] These studies used either population-based sampling or community-based sampling. Since each sampling method has its own strengths and potential biases,[47] the researchers wanted to examine any differences in the rates of attempted suicide between the two sampling types. Of the LGB respondents to population-based surveys, 11% reported having attempted suicide at least once, compared to 4% of heterosexual respondents to these surveys.[48] Of the LGB respondents to community-based surveys, 20% reported having attempted suicide.[49] Statistical analysis showed that the difference in the sampling methods accounted for 33% of the variation in the suicide figures reported by the studies.

The research on sexuality and the risk of suicide suggests that those who identify as gay, lesbian, bisexual, or transgender, or those who experience same-sex attraction or engage in same-sex sexual behavior are at substantially increased risk of suicidal ideation, suicide attempts, and completed suicide. In the section later in Part Two on the social stress model, we will examine—and raise questions about—one set of arguments put forward to explain these findings. Given the tragic consequences of inadequate or incomplete information in these matters and its effect on public policy and clinical care, more research into the reasons for elevated suicide risk among sexual minorities is desperately needed.

Sexuality and Intimate Partner Violence

Several studies have examined the differences between rates of intimate partner violence (IPV) in same-sex couples and opposite-sex couples. The research literature examines rates of IPV *victimization* (being subjected to violence by a partner) and rates of IPV *perpetration* (committing violence against a partner). In addition to physical and sexual violence, some studies also examine psychological violence, which comprises verbal attacks,

threats, and similar forms of abuse. The weight of evidence indicates that the rate of intimate partner violence is significantly higher among same-sex couples.

In 2014, London School of Hygiene and Tropical Medicine researcher Ana Buller and colleagues conducted a systematic review of 19 studies (with a meta-analysis of 17 of these studies) examining associations between intimate partner violence and health among men who have sex with men.[50] Combining the available data, they found that the pooled lifetime prevalence of any IPV was 48% (estimates from the studies were quite heterogeneous, ranging from 32% to 82%). For IPV within the previous five years, pooled prevalence was 32% (estimates ranging from 16% to 51%). IPV victimization was associated with increased rates of substance use (pooled odds ratio of 1.9), positive HIV status (pooled odds ratio of 1.5), and increased rates of depressive symptoms (pooled odds ratio of 1.5). IPV perpetration was also associated with increased rates of substance use (pooled odds ratio of 2.0). An important limitation of this meta-analysis was that the number of studies it included was relatively small. Also, the heterogeneity of the studies' results may undermine the precision of the meta-analysis. Further, most of the reviewed studies used convenience samples rather than probabilistic samples, and they used the word "partner" without distinguishing long-term relationships from casual encounters.

English psychologists Sabrina Nowinski and Erica Bowen conducted a 2012 review of 54 studies on the prevalence and correlates of intimate partner violence victimization among heterosexual and gay men.[51] The studies showed rates of IPV victimization for gay men ranging from 15% to 51%. Compared to heterosexual men, the review reports, "it appears that gay men experienced more total and sexual IPV, slightly less physical IPV, and similar levels of psychological IPV."[52] The authors also report that according to estimates of IPV prevalence over the most recent twelve months, gay men "experienced less physical, psychological and sexual IPV" than heterosexual men, though the relative lack of twelve-month estimates may make this result unreliable. The authors note that "one of the most worrying findings is the prevalence of severe sexual coercion and abuse in male same-gender relationships,"[53] citing a 2005 study[54] on IPV in HIV-positive gay men. Nowinski and Bowen found positive HIV status to be associated with IPV in both gay and heterosexual relationships. An important limitation of their review is the fact that many of the same-sex IPV studies they examined were based on small convenience samples.

Catherine Finneran and Rob Stephenson of Emory University in 2012 conducted a systematic review of 28 studies examining IPV among men

who have sex with men.[55] Every study in the review estimated rates of IPV for gay men that were similar to or higher than those for all women regardless of sexual orientation. The authors conclude that "the emergent evidence reviewed here demonstrates that IPV—psychological, physical, and sexual—occurs in male-male partnerships at alarming rates."[56] Physical IPV victimization was reported most frequently, with rates ranging from 12% to 45%.[57] The rate of sexual IPV victimization ranged from 5% to 31%, with 9 out of 19 studies reporting rates over 20%. Psychological IPV victimization was recorded in six studies, with rates ranging from 5% to 73%.[58] Perpetration of physical IPV was reported in eight studies, with rates ranging from 4% to 39%. Rates of perpetration of sexual IPV ranged from 0.7% to 28%; four of the five studies reviewed reported rates of 9% or more. Only one study measured perpetration of psychological violence, and the estimated prevalence was 78%. Lack of consistent research design among the studies examined (for example, some differences regarding the exact definition of IPV, the correlates of IPV examined, and the recall periods used to measure violence) makes it impossible to calculate a pooled prevalence estimate, which would be useful given the lack of a national probability-based sample.

A 2013 study by UCLA's Naomi Goldberg and Ilan Meyer used a large probability sample of almost 32,000 individuals from the California Health Interview Survey to assess differences in intimate partner violence between various cohorts: heterosexual; self-identified gay, lesbian, and bisexual individuals; and men who have sex with men but did not identify as gay or bisexual, and women who have sex with women but did not identify as lesbian or bisexual.[59] All three LGB groups had greater lifetime and one-year prevalence of intimate partner violence than the heterosexual group, but this difference was only statistically significant for bisexual women and gay men. Bisexual women were more likely to have experienced lifetime IPV (52% of bisexual women vs. 22% of heterosexual women and 32% of lesbians) and to have experienced IPV in the preceding year (27% of bisexuals vs. 5% of heterosexuals and 10% of lesbians). For men, all three non-heterosexual groups had higher rates of lifetime and one-year IPV, but this was only statistically significant for gay men, who were more likely to have experienced IPV over a lifetime (27% of gay men vs. 11% of heterosexual men and 19.6% of bisexual men) and over the preceding year (12% of gay men vs. 5% of heterosexual men and 9% of bisexual men). The authors also tested whether binge drinking and psychological distress could explain the higher prevalence of IPV victimization in gay men and bisexual women; controlling for these

variables revealed that they did not. This study is limited by the fact that other potentially confounding psychological variables (besides drinking and distress) were not controlled for, statistically or otherwise, and may have accounted for the findings.

To estimate the prevalence of battering victimization among gay partners, AIDS-prevention researcher Gregory Greenwood and colleagues published a 2002 study based on telephone interviews with a probability-based sample of 2,881 men who have sex with men (MSM) in four cities from 1996 to 1998.[60] Of those interviewed, 34% reported experiencing psychological or symbolic abuse, 22% reported physical abuse, and 5% reported sexual abuse. Overall, 39% reported some type of battering victimization, and 18% reported more than one type of battering in the previous five years. Men younger than 40 were significantly more likely than men over 60 to report battering violence. The authors conclude that "the prevalence of battering within the context of intimate partner relationships was very high" among their sample of men who have sex with men, and that since lifetime rates are usually higher than those for a five-year recall, "it is likely that a substantially greater number of MSM than of heterosexual men have experienced lifetime victimization."[61] The five-year prevalence of physical battering among this sample of urban MSM was also "significantly higher" than the annual rate of severe violence (3%) or total violence (12%) experienced in a representative sample of heterosexual women living with men, suggesting that the estimates of battering victimization for MSM in this study "are higher than or comparable to those reported for heterosexual women."[62] This study was limited by its use of a sample from four cities, so it is not clear how well the results generalize to non-urban settings.

Transgender Health Outcomes

The research literature for mental health outcomes in transgender individuals is more limited than the research on mental health outcomes in LGB populations. Because people identifying as transgender make up a very small proportion of the population, large population-based surveys and studies of such individuals are difficult if not impossible to conduct. Nevertheless, the limited available research strongly suggests that transgender people have increased risks of poor mental health outcomes. It appears that the rates of co-occurring substance use disorders, anxiety disorders, depression, and suicide tend to be higher for transgender people than for LGB individuals.

In 2015, Harvard pediatrics professor and epidemiologist Sari Reisner and colleagues conducted a retrospective matched-pair cohort study of mental health outcomes for 180 transgender subjects aged 12–29 years (106 female-to-male and 74 male-to-female), matched to non-transgender controls based on gender identity.[63] Transgender youth had an elevated risk of depression (50.6% vs. 20.6%)[64] and anxiety (26.7% vs. 10.0%).[65] Transgender youth also had higher risk of suicidal ideation (31.1% vs. 11.1%),[66] suicide attempts (17.2% vs. 6.1%),[67] and self-harm without lethal intent (16.7% vs. 4.4%)[68] relative to the matched controls. A significantly greater proportion of transgender youth accessed inpatient mental health care (22.8% vs. 11.1%)[69] and outpatient mental health care (45.6% vs. 16.1%)[70] services. No statistically significant differences in mental health status were observed when comparing female-to-male transgender individuals to the male-to-female transgender individuals after adjusting for age, race/ethnicity, and hormone use.

This study had the merit of including individuals who presented to a community-based health clinic, and who thus were not identified solely as meeting the diagnostic criteria for gender identity disorder in the fourth edition of the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders* (*DSM-IV*), and were not selected from a population of patients presenting to a clinic for treatment of gender identity issues. However, Reisner and colleagues note that their study has the limitations typically found in the retrospective chart review study design, such as incomplete documentation and variation in the quality of information recorded by medical professionals.

A report from the American Foundation for Suicide Prevention and the Williams Institute, a think tank for LGBT issues at the UCLA School of Law, summarized findings on suicide attempts among transgender and gender-nonconforming adults from a large national sample of over 6,000 individuals.[71] This constitutes the largest study of transgender and gender-nonconforming adults to date, though it used a convenience sample rather than a population-based sample. (Large population-based samples are nearly impossible given the low overall prevalence in the general population of transgendered individuals.) Summarizing the major findings of this study, the authors write:

> The prevalence of suicide attempts among respondents to the National Transgender Discrimination Survey (NTDS), conducted by the National Gay and Lesbian Task Force and National Center for Transgender Equality, is 41 percent, which vastly exceeds the 4.6

> percent of the overall U.S. population who report a lifetime suicide attempt, and is also higher than the 10–20 percent of lesbian, gay and bisexual adults who report ever attempting suicide.[72]

The authors note that "respondents who said they had received transition-related health care or wanted to have it someday were more likely to report having attempted suicide than those who said they did not want it," however, "the survey did not provide information about the timing of reported suicide attempts in relation to receiving transition-related health care, which precluded investigation of transition-related explanations for these patterns."[73] The survey data suggested associations between suicide attempts, co-occurring mental health disorders, and experiences of discrimination or mistreatment, although the authors note some limitations of these outcomes: "The survey data did not allow us to determine a direct causal relationship between experiencing rejection, discrimination, victimization, or violence, and lifetime suicide attempts," although they did find evidence that stressors interacted with mental health factors "to produce a marked vulnerability to suicidal behavior in transgender and gender non-conforming individuals."[74]

A 2001 study by Kristen Clements-Nolle and colleagues of 392 male-to-female and 123 female-to-male transgender persons found that 62% of the male-to-female and 55% of the female-to-male transgender persons were depressed at the time of the study, and 32% of each population had attempted suicide.[75] The authors note: "The prevalence of suicide attempts among male-to-female and female-to-male transgender persons in our study was much higher than that found in US household probability samples and a population-based sample of adult men reporting same-sex partners."[76]

Explanations for the Poor Health Outcomes: The Social Stress Model

The greater prevalence of mental health problems in LGBT subpopulations is a cause for concern, and policymakers and clinicians should strive to reduce these risks. But to know what kinds of measures will help ameliorate them we must better understand their causes. At this time, the medical and social strategies for helping non-heterosexual populations in the United States are quite limited, and this may be due in part to the relatively limited explanations for the poor mental health outcomes offered by social scientists and psychologists.

Despite the limits of the scientific understanding of why non-heterosexual subpopulations are more likely to have such poor mental

health outcomes, much of the public effort to ameliorate these problems is motivated by a particular hypothesis called the *social stress model*. This model posits that discrimination, stigmatization, and other similar stresses contribute to poor mental health outcomes among sexual minorities. An implication of the social stress model is that reducing these stresses would ameliorate the mental health problems experienced by sexual minorities.

Sexual minorities face distinct social challenges such as stigma, overt discrimination and harassment, and, often, struggle with reconciling their sexual behaviors and identities with the norms of their families and communities. In addition, they tend to be subject to challenges similar to those of some other minority populations, arising from marginalization by or conflict with the larger part of society in ways that may adversely impact their health.[77] Many researchers classify these various challenges under the concept of *social stress* and believe that social stress contributes to the generally higher rates of mental health problems among LGBT subpopulations.[78]

In attempting to account for the mental health disparities between heterosexuals and non-heterosexuals, researchers occasionally refer to a social or minority stress *hypothesis*.[79] However, it is more accurate to refer to a social or minority stress *model*, because the postulated connection between social stress and mental health is more complex and less precise than anything that could be stated as a single hypothesis.[80] The term *stress* can have a number of meanings, ranging from a description of a physiological condition to a mental or emotional state of anger or anxiety to a difficult social, economic, or interpersonal situation. More questions arise when one thinks about various kinds of *stressors* that may disproportionately affect mental health in minority populations. We will discuss some of these aspects of the social stress model after a concise overview of the model as it has been presented in recent literature on LGBT mental health.

The social stress model attempts to explain why non-heterosexual people have, on average, higher incidences of poor mental health outcomes than the rest of the population. It does not put forth a complete explanation for the disparities between non-heterosexuals and heterosexuals, and it does not explain the mental health problems of a particular patient. Rather, it describes social factors that might directly or indirectly influence the health risks for LGBT people, which may only become apparent at a population level. Some of these factors may also influence heterosexuals, but LGBT people are probably disproportionately exposed to them.

In an influential 2003 article on the social stress model, psychiatric epidemiologist and sexual orientation law expert Ilan Meyer distinguished between *distal* and *proximate* minority stressors. Distal stressors do not

depend on the individual's "perceptions or appraisals," and thus "can be seen as independent of personal identification with the assigned minority status."[81] For instance, if a man who was perceived to be gay by an employer was fired on that basis, this would be a distal stressor, since the stressful event of discrimination would have had nothing to do with whether the man actually identified as gay, but only with someone else's attitude and perception. Distal stressors tend to reflect social circumstances rather than the individual's reaction to those circumstances. Proximate stressors, in contrast, are more subjective and are closely related to the individual's self-identity as lesbian, gay, bisexual, or transgender. An example of a proximate stressor would be when a young woman personally identifies as being a lesbian, and chooses to hide that identity from her family members out of fear of disapproval, or because of an internal sense of shame. The effects of proximate stressors such as this one are highly dependent on the individual's self-understanding and unique social circumstances. In this section we describe the types of stressors postulated in the social stress model, starting at the distal and proceeding to the most proximate stressors, and examine some of the empirical evidence that has been offered on the links between the stressors and mental health outcomes.

Discrimination and prejudice events. Overt acts of mistreatment, ranging from violence to harassment and discrimination, are categorized together by researchers as "prejudice events." These are thought to be significant stressors for non-heterosexual populations.[82] Surveys of LGBT subpopulations have found that they tend to experience these kinds of prejudice events more frequently than the general population.[83]

The available evidence indicates that prejudice events likely contribute to mental health problems. A 1999 study by UC Davis professor of psychology Gregory Herek and colleagues using survey data from 2,259 LGB individuals in Sacramento found that self-identified lesbians and gays who experienced a bias crime in the preceding five years—a crime, such as assault, theft, or vandalism, motivated by the actual or perceived sexual identity of the victim—reported significantly higher levels of depressive symptoms, traumatic stress symptoms, and anxiety than lesbians and gays who had not experienced a bias crime over that same period.[84] Additionally, lesbians and gays who reported being the victims of bias crimes in the last five years showed significantly higher levels of depressive and traumatic stress symptoms than individuals who experienced non-bias crimes in the same period (though the two groups did not display significant differences in anxiety). Comparable significant correlations were not found for

self-identified bisexuals, who constituted a much smaller portion of the survey respondents. The study also found that lesbians and gays subject to bias crimes were significantly more likely than other respondents to report feelings of vulnerability and a decreased sense of personal mastery or agency. Corroborating these findings on the harmful impact of bias crimes was a 2001 study by Northeastern University social scientist Jack McDevitt and colleagues that examined aggravated assaults using data from the Boston Police Department.[85] They found that bias crime victims tended to experience the effects of victimization more intensely and for a longer period of time than non-bias crime victims. (The study looked at bias-motivated assaults in general, rather than restricting its analysis to assaults motivated by LGBT bias, though a substantial portion of the subjects did experience assaults motivated by their non-heterosexual status.)

Similar patterns also appear among non-heterosexual adolescents, for whom maltreatment is particularly high.[86] In a 2011 study, University of Arizona social and behavioral scientist Stephen T. Russell and colleagues analyzed a survey of 245 young LGBT adults that retrospectively assessed school victimization due to actual or perceived LGBT status between the ages of 13 and 19. They found strong correlations between school victimization and poor mental health as young adults.[87] Victimization was assessed by asking yes-or-no questions, such as, "During my middle or high school years, while at school, I was pushed, shoved, slapped, hit, or kicked by someone who wasn't just kidding around," followed by a question of how often these events were related to the respondent's sexual identity. Respondents who reported high levels of school victimization due to their sexual identity were 2.6 times more likely to report depression as young adults and 5.6 times more likely to report that they had attempted suicide, compared to those who reported low levels of victimization. These differences were highly statistically significant, though the study is potentially limited by its use of retrospective surveys to measure incidents of victimization. A study by professor of social work Joanna Almeida and colleagues, which relied on the 2006 Boston Youth Survey (a biennial survey of high school students in Boston public schools), found that perceptions of having been victimized due to LGBT status accounted for increased symptoms of depression among LGBT students. For male LGBT students, but not females, the study also found a positive correlation between victimization and suicidal thoughts and self-harm.[88]

Differences in compensation suggest discrimination in the workplace, which can have both direct and indirect effects on mental health. M. V. Lee Badgett, a professor of economics at the University of Massachusetts,

Amherst, analyzed data collected between 1989 and 1991 in the General Social Survey and found that non-heterosexual male employees received significantly lower compensation (11% to 27%) than heterosexuals, even after controlling for experience, education, occupation, and other factors.[89] According to a 2009 review by Badgett,[90] nine studies from the 1990s and early 2000s "consistently show that gay and bisexual men earned 10% to 32% less than heterosexual men," and that differences in occupation cannot account for much of the wage disparity. Researchers have also found that non-heterosexual women earn more than heterosexual women,[91] which may suggest either that patterns of discrimination differ for men and women, or that there are other factors associated with non-heterosexual behavior and self-identification in men and women influencing their respective earnings, such as a lower rate of child-rearing or being the family primary wage earner.

There is evidence that suggests that wage disparities can help explain some population-level disparities in mental health outcomes,[92] though it is difficult to tell if differences in mental health help explain the differences in wages. A 1999 study[93] by Craig Waldo on the relationship between workplace heterosexism—defined as negative social attitudes toward non-heterosexuals—and stress-related outcomes in 287 LGB individuals found that LGB individuals who experienced heterosexism in the workplace "exhibited higher levels of psychological distress and health-related problems, as well as decreased satisfaction with several aspects of their jobs." The cross-sectional data used by many of these studies make it impossible to infer causality, though both prospective studies and qualitative analyses of the impact of unemployment on mental health suggest that at least some of the correlations are likely accounted for by the psychological and material effects of unemployment.[94]

Stigma. Sociologists have for many years documented a range of adverse effects of stigma on individuals, ranging from issues with self-esteem to academic achievement.[95] Stigma is typically regarded as an attribute attaching to a person that reduces that person's worth to others in a particular social context.[96] These negative evaluations are in many cases widely shared among a cultural group and become the basis for excluding or differentially treating stigmatized individuals. For example, mental illness can become stigmatized when it is regarded as a character flaw in mentally ill people. One reason why stigma serves an important role in the social stress model is that it can be invoked as an explanation even in the absence of particular events of discrimination or maltreatment. For

example, stigmatization of depression may take place when a depressed person conceals the depression on the expectation that friends and family members will regard it as a character flaw. Even when this concealment is successful, and there is therefore no actual discrimination or mistreatment by the individual's friends or family, anxiety over the attitudes others may have can affect the depressed person's emotional and mental well-being.

Researchers have found associations between the risk of poor mental health and stigma toward certain populations, though there has been little empirical research on the mental health effects of stigma on LGBT people in particular. Stigma is not easy to define or operationalize, making it a difficult and vague concept for empirical social scientists to study. Nevertheless, researchers have attempted to work with the concept using surveys of self-perceived devaluation by others and have found correlations between experiences of stigma and the risk of poor mental health status. One highly cited 1997 study by sociologist and epidemiologist Bruce Link and colleagues on the connection between stigma and mental health found a "strong and enduring" negative effect of stigma on the mental well-being of men who were suffering from a mental disorder and substance abuse.[97] In this study, the effects of stigma appeared to persist even after the men had received largely successful treatment for their original mental and substance abuse problems. The study found significant correlations between certain stigma variables—self-reported experiences of devaluation and rejection—and depressive symptoms before and after treatment, suggesting that the effects of stigma are relatively long-lasting. This might simply indicate that people with depressive symptoms tend to report more stigma, but if that were the case, one would have expected reports of stigma to decline over the course of the treatment program, as depression did. However, since stigma reports stayed constant, the authors concluded that stigma must have had a causal role in shaping depressive symptoms. It is worth noting that this study found stigma variables to account uniquely for around 10% or slightly more of the variance in depressive symptoms—in other words, stigma had a minor effect on depressive symptoms, though such an effect might manifest itself in significant ways on a population level. Some other researchers have suggested that the effects of stigma are usually minor and transitory; for example, Vanderbilt sociologist Walter Gove argued that for the "vast majority of cases the stigma [experienced by mental patients] appears to be transitory and does not appear to pose a severe problem."[98]

Researchers have relatively recently begun pursuing both empirical and theoretical work[99] on how stigma affects the mental health of LGBT

people, though there has been some controversy over the magnitude and duration of effects due to stigma. Some of the controversy may stem from the difficulty of defining and quantifying stigma as well as the variations in stigma across different social contexts. A 2013 study by Columbia University medical psychologist Walter Bockting and colleagues on mental health in 1,093 transgender people found a positive correlation between psychological distress and both enacted and felt stigma, which were measured using survey questions.[100] A 2003 study[101] by clinical psychologist Robin Lewis and colleagues of predictors of depressive symptoms in 201 LGB individuals found that stigma consciousness was significantly associated with depressive symptoms, where stigma consciousness was assessed using a ten-item questionnaire that assessed "the degree to which one expects to be judged on the basis of a stereotype."[102] However, depressive symptoms are often associated with negative cognition about the self, the world, and the future, and this may contribute to the subjective perception of stigmatization among individuals suffering from depression.[103] A 2011 study[104] by Bostwick that also used measures of stigma consciousness and depressive symptoms found a modest positive correlation between stigma scores and depressive symptoms in bisexual women, although the study was limited by having a relatively small sample size. However, a 2003 longitudinal study[105] of Norwegian adolescents by psychologist Lars Wichstrøm and colleague found that sexual orientation was associated with poor mental health status after accounting for a variety of psychological risk factors, including self-worth. While this study did not directly consider stigma as a risk factor, it suggests that psychological factors such as stigma consciousness alone likely cannot fully account for the disparities in mental health between heterosexuals and non-heterosexuals. Additionally, it is important to note that due to the cross-sectional design of these studies, causal inferences cannot be supported by the data—different kinds of data and more evidence would be needed to support conclusions about causal relationships. In particular, it is impossible to prove through these studies that stigma leads to poor mental health, as opposed to, for example, poor mental health leading people to report higher levels of stigma, or a third factor being responsible for both poor mental health and higher levels of stigma.

Concealment. Stigma may affect non-heterosexual individuals' decisions about whether to disclose or conceal their sexual orientation. LGBT people may decide to conceal their sexual orientation to protect themselves against possible bias or discrimination, to avoid a sense of shame, or to

avoid a potential conflict between their social role and sexual desires or behaviors.[106] Particular contexts in which LGBT people may be more likely to conceal their sexual orientation include school, work, and other places in which they feel that disclosure could negatively affect the way that people regard them.

There is a large amount of evidence from psychological research indicating that concealment of an important aspect of one's identity may have adverse mental health consequences. In general, expressing one's emotions and sharing important aspects of one's life with others play large roles in maintaining mental health.[107] Recent decades have seen a growing body of research on the relationships between concealment and disclosure and mental health in LGBT subpopulations.[108] For example, a 2007 study[109] by Belle Rose Ragins and colleagues of workplace concealment and disclosure in 534 LGB individuals found that fear of disclosing was associated with psychological strain and other outcomes such as job satisfaction. However, the study also challenged the notion that disclosure leads to positive psychological and social outcomes, since employees' disclosure was not significantly associated with most of the outcome variables. The authors interpret this result by saying that "this study suggests that concealment may be a necessary and adaptive decision in an unsupportive or hostile environment, thus underscoring the importance of social context."[110] Due to the relatively rapid changes in social acceptance of same-sex marriage and of same-sex relationships more broadly in recent decades,[111] it is possible that some of the research on the psychological effects of concealment and disclosure is outdated, because in general there may now be less pressure for those identifying as LGB to conceal their identities.

Testing the model. One of the implications of the social stress model is that reducing the amount of discrimination, prejudice, and stigmatization of sexual minorities would help reduce the rates of mental health problems for these populations. Some jurisdictions have sought to reduce these social stressors by passing anti-discrimination and hate-crime laws. If such policies are in fact successful at reducing these stressors then they could be expected to reduce the rates of mental health problems in LGB populations to the extent that the social stress model accurately accounts for the causes of these problems. So far, studies have not been designed in such a way that could allow them to test conclusively the hypothesis that social stress accounts for the high rates of poor mental health outcomes in non-heterosexual populations, but there is research that provides some data on a testable implication of the social stress model.

A 2009 study by sociomedical scientist Mark Hatzenbuehler and colleagues investigated the association between psychiatric morbidity in LGB populations and two state-level policies that pertained to these populations: hate-crime laws that did not include sexual orientation as a protected category, and laws prohibiting employment discrimination based on sexual orientation.[112] The study used data on mental health outcomes from Wave 2 of the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC), a nationally representative sample of 34,653 civilian, non-institutionalized adults, and measuring psychiatric disorders according to *DSM-IV* criteria.[113] Wave 2 of NESARC took place in 2004–2005. Of the sample, 577 respondents identified as lesbian, gay, or bisexual. The analysis of the data showed that LGB individuals living in states with no hate-crime laws and no non-discrimination laws tended to have higher odds of psychiatric morbidity (compared to LGB individuals in states with one or two protective laws), but the analysis found statistically significant correlations only for dysthymia (a less severe but more persistent form of depression), generalized anxiety disorder, and post-traumatic stress disorder, while the correlations between seven other psychiatric conditions investigated were not found to be statistically significant. No epidemiological inferences can be made due to the nature of the data, suggesting the need for more studies on this and similar topics.

Hatzenbuehler and colleagues attempted to improve on this cross-sectional study by doing a prospective study, published in 2010, this time examining changes in psychiatric morbidity over the period in which certain states passed constitutional amendments defining marriage as a union between one man and one woman—amendments that were described by the study's authors as "bans on gay marriage."[114] The authors examined differences in psychiatric morbidity between Wave 1 of NESARC, which took place in 2001–2002, and Wave 2, which coincided with the 2004 and 2005 state-constitutional amendments. They observed that the prevalence in mood disorders in LGB respondents living in states that passed marriage amendments increased by 36.6% between Waves 1 and 2. Mood disorders for LGB respondents living in states that did not pass marriage amendments decreased by 23.6%, though this change was not statistically significant. The prevalence of certain disorders increased both in states that passed such amendments and in states that did not. Generalized anxiety disorder, for example, increased in both, but by a much larger and statistically significant magnitude in states that passed marriage amendments. Hatzenbuehler and colleagues found that drug-use disorders increased more in states that did *not* pass marriage amendments,

and the increase was statistically significant only for those states. (Total substance abuse disorders increased in both cases, by a roughly similar amount.) As with the earlier cross-sectional study, for the majority of the psychiatric conditions investigated there were no significant correlations between the conditions and the social policies that were hypothesized to have an influence on mental health outcomes.

Some of the limitations of the study's findings noted by the authors include the following: healthier LGB respondents may have moved out of the states that would eventually pass marriage amendments into the states that would not; sexual orientation was only assessed during Wave 2 of NESARC, and there is some fluidity to sexual identity that may have led to misclassification of some LGB respondents; and the sample size of LGB respondents living in states that passed marriage amendments was relatively small, limiting the statistical power of the study.

One hypothesized causal mechanism for the change in mental health variables associated with the marriage amendments is that the public debate surrounding the amendments may have elevated the stress experienced by non-heterosexuals—a hypothesis that was put forward by psychologist Sharon Scales Rostosky and colleagues in a study of the attitudes of LGB adults in states that passed marriage amendments in 2006.[115] The survey data collected during this study showed that LGB respondents living in states that passed marriage amendments in 2006 had higher levels of various kinds of psychological distress, including stress and depressive symptoms. The study also found that participation in LGBT activism during the election season was associated with increased psychological distress. It may be that part of the psychological distress recorded by this survey, which included perceived stress, depressive symptoms (but not diagnoses of depressive disorders), and what the researchers called "amendment-related affect," may have simply reflected the typical feelings of advocates when they experience political defeat on an issue that they care passionately about. Other key limitations of the study were its cross-sectional design and its reliance on volunteers for the survey (in contrast to the previous study by Hatzenbuehler and colleagues). The survey methodology may also have biased the results—the researchers advertised on websites and through listserv e-mail announcements that they were looking for survey respondents for a study on "attitudes and experiences of LGB…individuals regarding the debate" over gay marriage. As with many forms of convenience sampling, individuals with strong attitudes regarding the issues under investigation in the survey may have been more likely to respond.

As for the effects of particular policies, the evidence is equivocal at best. The 2009 study by Hatzenbuehler and colleagues demonstrated significant correlations between the risk of some (though not all) mental health problems in the LGB subpopulation and state policies on hate crime and employment protections. Even for the aspects of mental health that this study found to be correlated with hate-crime or employment-protection policies, the study was unable to show an epidemiological relationship between policies and health outcomes.

Conclusion

The social stress model probably accounts for some of the poor mental health outcomes experienced by sexual minorities, though the evidence supporting the model is limited, inconsistent and incomplete. Some of the central concepts of the model, such as stigmatization, are not easily operationalized. There is evidence linking some forms of mistreatment, stigmatization, and discrimination to some of the poor mental health outcomes experienced by non-heterosexuals, but it is far from clear that these factors account for all of the disparities between the heterosexual and non-heterosexual populations. Those poor mental health outcomes may be mitigated to some extent by reducing social stressors, but this strategy is unlikely to eliminate all of the disparities in mental health status between sexual minorities and the wider population. Other factors, such as the elevated rates of sexual abuse victimization among the LGBT population discussed in Part One, may also account for some of these mental health disparities, as research has consistently shown that "survivors of childhood sexual abuse are significantly at risk of a wide range of medical, psychological, behavioral, and sexual disorders."[116]

Just as it does a disservice to non-heterosexual subpopulations to ignore or downplay the statistically higher risks of negative mental health outcomes they face, so it does them a disservice to misattribute the causes of these elevated risks, or to ignore other potential factors that may be at work. Assuming that a single model can explain all of the mental health risks faced by non-heterosexuals can mislead clinicians and therapists charged with helping this vulnerable subpopulation. The social stress model deserves further research, but should not be assumed to offer a complete explanation of the causes of mental health disparities if clinicians and policymakers want to adequately address the mental health challenges faced by the LGBT community. More research is needed to explore the causes of, and solutions to, these important public health challenges.

The New Atlantis
A Journal of Technology & Society

Part Three

Gender Identity

The concept of biological sex is well defined, based on the binary roles that males and females play in reproduction. By contrast, the concept of gender is not well defined. It is generally taken to refer to behaviors and psychological attributes that tend to be typical of a given sex. Some individuals identify as a gender that does not correspond to their biological sex. The causes of such cross-gender identification remain poorly understood. Research investigating whether these transgender individuals have certain physiological features or experiences in common with the opposite sex, such as brain structures or atypical prenatal hormone exposures, has so far been inconclusive. Gender dysphoria—a sense of incongruence between one's biological sex and one's gender, accompanied by clinically significant distress or impairment—is sometimes treated in adults by hormones or surgery, but there is little scientific evidence that these therapeutic interventions have psychological benefits. Science has shown that gender identity issues in children usually do not persist into adolescence or adulthood, and there is little scientific evidence for the therapeutic value of puberty-delaying treatments. We are concerned by the increasing tendency toward encouraging children with gender identity issues to transition to their preferred gender through medical and then surgical procedures. There is a clear need for more research in these areas.

As described in Part One, there is a widely held belief that *sexual orientation* is a well-defined concept, and that it is innate and fixed in each person—as it is often put, gay people are "born that way." Another emerging and related view is that *gender identity*—the subjective, internal sense of being a man or a woman (or some other gender category)—is also fixed at birth or at a very early age and can diverge from a person's biological sex. In the case of children, this is sometimes articulated by saying that a little boy may be trapped in a little girl's body, or vice versa.

In Part One we argued that scientific research does not give much support to the hypothesis that sexual orientation is innate and fixed. We will argue here, similarly, that there is little scientific evidence that gender identity is fixed at birth or at an early age. Though biological sex is innate, and gender identity and biological sex are related in complex ways, they

are not identical; gender is sometimes defined or expressed in ways that have little or no biological basis.

Key Concepts and Their Origins

To clarify what is meant by "gender" and "sex," we begin with a widely used definition, here quoted from a pamphlet published by the American Psychological Association (APA):

> *Sex* is assigned at birth, refers to one's biological status as either male or female, and is associated primarily with physical attributes such as chromosomes, hormone prevalence, and external and internal anatomy. *Gender* refers to the socially constructed roles, behaviors, activities, and attributes that a given society considers appropriate for boys and men or girls and women. These influence the ways that people act, interact, and feel about themselves. While aspects of biological sex are similar across different cultures, aspects of gender may differ.[1]

This definition points to the obvious fact that there are social norms for men and women, norms that vary across different cultures and that are not simply determined by biology. But it goes further in holding that gender is wholly "socially constructed"—that it is detached from biological sex. This idea has been an important part of a feminist movement to reform or eliminate traditional gender roles. In the classic feminist book *The Second Sex* (1949), Simone de Beauvoir wrote that "one is not born, but becomes a woman."[2] This notion is an early version of the now familiar distinction between sex as a biological designation and gender as a cultural construct: though one is born, as the APA explains, with the "chromosomes, hormone prevalence, and external and internal anatomy" of a female, one is socially conditioned to take on the "roles, behaviors, activities, and attributes" of a woman.

Developments in feminist theory in the second half of the twentieth century further solidified the position that gender is socially constructed. One of the first to use the term "gender" as distinct from sex in the social-science literature was Ann Oakley in her 1972 book, *Sex, Gender and Society*.[3] In the 1978 book *Gender: An Ethnomethodological Approach*, psychology professors Suzanne Kessler and Wendy McKenna argued that "gender is a social construction, that a world of two 'sexes' is a result of the socially shared, taken for granted methods which members use to construct reality."[4]

Anthropologist Gayle Rubin expresses a similar view, writing in 1975 that "Gender is a socially imposed division of the sexes. It is a product of

the social relations of sexuality."[5] According to her argument, if it were not for this social imposition, we would still have males and females but not "men" and "women." Furthermore, Rubin argues, if traditional gender roles are socially constructed, then they can also be *de*constructed, and we can eliminate "obligatory sexualities and sex roles" and create "an androgynous and genderless (though not sexless) society, in which one's sexual anatomy is irrelevant to who one is, what one does, and with whom one makes love."[6]

The relationship between gender theory and the deconstruction or overthrowing of traditional gender roles is made even clearer in the works of the influential feminist theorist Judith Butler. In works such as *Gender Trouble: Feminism and the Subversion of Identity* (1990)[7] and *Undoing Gender* (2004)[8] Butler advances what she describes as "performativity theory," according to which being a woman or man is not something that one *is* but something that one *does*. "Gender is neither the causal result of sex nor as seemingly fixed as sex," as she put it.[9] Rather, gender is a constructed status radically independent from biology or bodily traits, "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."[10]

This view, that gender and thus gender identity are fluid and plastic, and not necessarily binary, has recently become more prominent in popular culture. An example is Facebook's move in 2014 to include 56 new ways for users to describe their gender, in addition to the options of male and female. As Facebook explains, the new options allow the user to "feel comfortable being your true, authentic self," an important part of which is "the expression of gender."[11] Options include *agender*, several *cis-* and *trans-* variants, *gender fluid*, *gender questioning*, *neither*, *other*, *pangender*, and *two-spirit*.[12]

Whether or not Judith Butler was correct in describing traditional gender roles of men and women as "performative," her theory of gender as a "free-floating artifice" does seem to describe this new taxonomy of gender. As these terms multiply and their meanings become more individualized, we lose any common set of criteria for defining what gender distinctions mean. If gender is entirely detached from the binary of biological sex, gender could come to refer to any distinctions in behavior, biological attributes, or psychological traits, and each person could have a gender defined by the unique combination of characteristics the person possesses. This *reductio ad absurdum* is offered to present the possibility that defining gender too broadly could lead to a definition that has little meaning.

Alternatively, gender identity could be defined in terms of sex-typical traits and behaviors, so that being a boy means behaving in the ways boys typically behave—such as engaging in rough-and-tumble play and expressing an interest in sports and liking toy guns more than dolls. But this would imply that a boy who plays with dolls, hates guns, and refrains from sports or rough-and-tumble play might be considered to be a girl, rather than simply a boy who represents an exception to the typical patterns of male behavior. The ability to recognize exceptions to sex-typical behavior relies on an understanding of maleness and femaleness that is independent of these stereotypical sex-appropriate behaviors. The underlying basis of maleness and femaleness is the distinction between the reproductive roles of the sexes; in mammals such as humans, the female gestates offspring and the male impregnates the female. More universally, the male of the species fertilizes the egg cells provided by the female of the species. This conceptual basis for sex roles is binary and stable, and allows us to distinguish males from females on the grounds of their reproductive systems, even when these individuals exhibit behaviors that are not typical of males or females.

To illustrate how reproductive roles define the differences between the sexes even when behavior appears to be atypical for the particular sex, consider two examples, one from the diversity of the animal kingdom, and one from the diversity of human behavior. First, we look at the emperor penguin. Male emperor penguins provide more care for eggs than do females, and in this sense, the male emperor penguin could be described as more maternal than the female.[13] However, we recognize that the male emperor penguin is not in fact female but rather that the species represents an exception to the general, but not universal, tendency among animals for females to provide more care than males for offspring. We recognize this because sex-typical behaviors like parental care do not define the sexes; the individual's role in sexual reproduction does.

Even other sex-typical biological traits, such as chromosomes, are not necessarily helpful for defining sex in a universal way, as the penguin example further illustrates. As with other birds, the genetics of sex determination in the emperor penguin is different than the genetics of sex determination in mammals and many other animals. In humans, males have XY chromosomes and females have XX chromosomes; that is, males have a unique sex-determining chromosome that they do not share with females, while females have two copies of a chromosome that they share with males. But in birds, it is females, not males, that have and pass on the sex-specific chromosome.[14] Just as the observation that

male emperor penguins nurture their offspring more than their partners did not lead zoologists to conclude that the egg-laying member of the emperor penguin species was in fact the male, the discovery of the ZW sex-determination system in birds did not lead geneticists to challenge the age-old recognition that hens are females and roosters are males. The only variable that serves as the fundamental and reliable basis for biologists to distinguish the sexes of animals is their role in reproduction, not some other behavioral or biological trait.

Another example that, in this case, only appears to be non-sex-typical behavior is that of Thomas Beatie, who made headlines as a man who gave birth to three children between 2008 and 2010.[15] Thomas Beatie was born a woman, Tracy Lehuanani LaGondino, and underwent a surgical and legal transition to living as a man before deciding to have children. Because the medical procedures he underwent did not involve the removal of his ovaries or uterus, Beatie was capable of bearing children. The state of Arizona recognizes Thomas Beatie as the father of his three children, even though, biologically, he is their mother. Unlike the case of the male emperor penguin's ostensibly maternal, "feminine" parenting behavior, Beatie's ability to have children does not represent an exception to the normal inability of males to bear children. The labeling of Beatie as a man despite his being biologically female is a personal, social, and legal decision that was made without any basis in biology; nothing whatsoever in biology suggests Thomas Beatie is a male.

In biology, an organism is male or female if it is structured to perform one of the respective roles in reproduction. This definition does not require any arbitrary measurable or quantifiable physical characteristics or behaviors; it requires understanding the reproductive system and the reproduction process. Different animals have different reproductive systems, but sexual reproduction occurs when the sex cells from the male and female of the species come together to form newly fertilized embryos. It is these reproductive roles that 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.

But this definition of the biological category of sex is not universally accepted. For example, philosopher and legal scholar Edward Stein maintains that infertility poses a crucial problem for defining sex in terms of reproductive roles, writing that defining sex in terms of these roles would define "infertile males as females."[16] Since an infertile male cannot play the reproductive role for which males are structured, and an infertile

female cannot play the reproductive role for which females are structured, according to this line of thinking, defining sex in terms of reproductive roles would not be appropriate, as infertile males would be classified as females, and infertile females as males. Nevertheless, while a reproductive system structured to serve a particular reproductive role may be impaired in such a way that it cannot perform its function, the system is still recognizably structured for that role, so that biological sex can still be defined strictly in terms of the structure of reproductive systems. A similar point can be made about heterosexual couples who choose not to reproduce for any of a variety of reasons. The male and female reproductive systems are generally clearly recognizable, regardless of whether or not they are being used for purposes of reproduction.

The following analogy illustrates how a system can be recognized as having a particular purpose, even when that system is dysfunctional in a way that renders it incapable of carrying out its purpose: Eyes are complex organs that function as processors of vision. However, there are numerous conditions affecting the eye that can impair vision, resulting in blindness. The eyes of the blind are still recognizably organs structured for the function of sight. Any impairments that result in blindness do not affect the purpose of the eye—any more than wearing a blindfold—but only its function. The same is true for the reproductive system. Infertility can be caused by many problems. However, the reproductive system continues to exist for the purpose of begetting children.

There are individuals, however, who are biologically "intersex," meaning that their sexual anatomy is ambiguous, usually for reasons of genetic abnormalities. For example, the clitoris and penis are derived from the same embryonic structures. A baby may display an abnormally large clitoris or an abnormally small penis, causing its biological sex to be difficult to determine long after birth.

The first academic article to use the term "gender" appears to be the 1955 paper by the psychiatry professor John Money of Johns Hopkins on the treatment of "intersex" children (the term then used was "hermaphrodites").[17] Money posited that gender identity, at least for these children, was fluid and that it could be constructed. In his mind, making a child identify with a gender only required constructing sex-typical genitalia and creating a gender-appropriate environment for the child. The chosen gender for these children was often female—a decision that was not based on genetics or biology, nor on the belief that these children were "really" girls, but, in part, on the fact that at the time it was easier surgically to construct a vagina then it was to construct a penis.

The most widely known patient of Dr. Money was David Reimer, a boy who was not born with an intersex condition but whose penis was damaged during circumcision as an infant.[18] David was raised by his parents as a girl named Brenda, and provided with both surgical and hormonal interventions to ensure that he would develop female-typical sex characteristics. However, the attempt to conceal from the child what had happened to him was not successful—he self-identified as a boy, and eventually, at the age of 14, his psychiatrist recommended to his parents that they tell him the truth. David then began the difficult process of reversing the hormonal and surgical interventions that had been performed to feminize his body. But he continued to be tormented by his childhood ordeal, and took his own life in 2004, at the age of 38.

David Reimer is just one example of the harm wrought by theories that gender identity can socially and medically be reassigned in children. In a 2004 paper, William G. Reiner, a pediatric urologist and child and adolescent psychiatrist, and John P. Gearhart, a professor of pediatric urology, followed up on the sexual identities of 16 genetic males affected by cloacal exstrophy—a condition involving a badly deformed bladder and genitals. Of the 16 subjects, 14 were assigned female sex at birth, receiving surgical interventions to construct female genitalia, and were raised as girls by their parents; 6 of these 14 later chose to identify as males, while 5 continued to identify as females and 2 declared themselves males at a young age but continued to be raised as females because their parents rejected the children's declarations. The remaining subject, who had been told at age 12 that he was born male, refused to discuss sexual identity.[19] So the assignment of female sex persisted in only 5 of the 13 cases with known results.

This lack of persistence is some evidence that the assignment of sex through genital construction at birth with immersion into a "gender-appropriate" environment is not likely to be a successful option for managing the rare problem of genital ambiguity from birth defects. It is important to note that the ages of these individuals at last follow-up ranged from 9 to 19, so it is possible that some of them may have subsequently changed their gender identities.

Reiner and Gearhart's research indicates that gender is not arbitrary; it suggests that a biological male (or female) will probably not come to identify as the opposite gender after having been altered physically and immersed into the corresponding gender-typical environment. The plasticity of gender appears to have a limit.

What is clear is that biological sex is not a concept that can be reduced to, or artificially assigned on the basis of, the type of external genitalia

alone. Surgeons are becoming more capable of constructing artificial genitalia, but these "add-ons" do not change the biological sex of the recipients, who are no more capable of playing the reproductive roles of the opposite biological sex than they were without the surgery. Nor does biological sex change as a function of the environment provided for the child. No degree of supporting a little boy in converting to be considered, by himself and others, to be a little girl makes him biologically a little girl. The scientific definition of biological sex is, for almost all human beings, clear, binary, and stable, reflecting an underlying biological reality that is not contradicted by exceptions to sex-typical behavior, and cannot be altered by surgery or social conditioning.

In a 2004 article summarizing the results of research related to intersex conditions, Paul McHugh, the former chief of psychiatry at Johns Hopkins Hospital (and the coauthor of this report), suggested:

> We in the Johns Hopkins Psychiatry Department eventually concluded that human sexual identity is mostly built into our constitution by the genes we inherit and the embryogenesis we undergo. Male hormones sexualize the brain and the mind. Sexual dysphoria—a sense of disquiet in one's sexual role—naturally occurs amongst those rare males who are raised as females in an effort to correct an infantile genital structural problem.[20]

We now turn our attention to transgender individuals—children and adults—who choose to identify as a gender different from their biological sex, and explore the meaning of gender identity in this context and what the scientific literature tells us about its development.

Gender Dysphoria

While biological sex is, with very few exceptions, a well-defined, binary trait (male versus female) corresponding to how the body is organized for reproduction, *gender identity* is a more subjective attribute. For most people, their own gender identity is probably not a significant concern; most biological males identify as boys or men, and most biological females identify as girls or women. But some individuals experience an incongruence between their biological sex and their gender identity. If this struggle causes them to seek professional help, then the problem is classified as "gender dysphoria."

Some male children raised as females, as described in Reiner and colleagues' 2004 study, came to experience problems with their gender

identity when their subjective sense of being boys conflicted with being identified and treated as girls by their parents and doctors. The biological sex of the boys was not in question (they had an XY genotype), and the cause of gender dysphoria lay in the fact that they were genetically male, came to identify as male, but had been assigned female gender identities. This suggests that gender identity can be a complex and burdensome issue for those who choose (or have others choose for them) a gender identity opposite their biological sex.

But the cases of gender dysphoria that are the subject of much public debate are those in which individuals come to identify as genders different from those based on their biological sex. These people are usually identified, and describe themselves, as "transgender."*

According to the fifth edition of the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders* (*DSM-5*), gender dysphoria is marked by "incongruence between one's experienced/expressed gender and assigned gender," as well as "clinically significant distress or impairment in social, occupational, or other important areas of functioning."[21]

It is important to clarify that gender dysphoria is not the same as gender nonconformity or gender identity disorder. Gender nonconformity describes an individual who behaves in a manner contrary to the gender-specific norms of his or her biological sex. As the *DSM-5* notes, most transvestites, for instance, are not transgender—men who dress as women typically do not identify themselves as women.[22] (However, certain forms of transvestitism can be associated with late-onset gender dysphoria.[23])

Gender identity disorder, an obsolete term from an earlier version of the *DSM* that was removed in its fifth edition, was used as a psychiatric diagnosis. If we compare the diagnostic criteria for gender dysphoria (the current term) and gender identity disorder (the former term), we see that both require the patient to display "a marked incongruence between one's

* A note on terminology: In this report, we generally use the term *transgender* to refer to persons for whom there is an incongruity between the gender identity they understand themselves to possess and their biological sex. We use the term *transsexual* to refer to individuals who have undergone medical interventions to transform their appearance to better correspond with that of their preferred gender. The most familiar colloquial term used to describe the medical interventions that transform the appearance of transgender individuals may be "sex change" (or, in the case of surgery, "sex-change operation"), but this is not commonly used in the scientific and medical literature today. While no simple terms for these procedures are completely satisfactory, in this report we employ the commonly used terms *sex reassignment* and *sex-reassignment surgery*, except when quoting a source that uses "gender reassignment" or some other term.

experienced/expressed gender and assigned gender."[24] The key difference is that a diagnosis of gender dysphoria requires the patient additionally to experience a "clinically significant distress or impairment in social, occupational, or other important areas of functioning" associated with these incongruent feelings.[25] Thus the major set of diagnostic criteria used in contemporary psychiatry does not designate all transgender individuals as having a psychiatric disorder. For example, a biological male who identifies himself as a female is not considered to have a psychiatric disorder unless the individual is experiencing significant psychosocial distress at the incongruence. A diagnosis of gender dysphoria may be part of the criteria used to justify sex-reassignment surgery or other clinical interventions. Furthermore, a patient who has had medical or surgical modifications to express his or her gender identity may still suffer from gender dysphoria. It is the nature of the struggle that defines the disorder, not the fact that the expressed gender differs from the biological sex.

There is no scientific evidence that all transgender people have gender dysphoria, or that they are all struggling with their gender identities. Some individuals who are not transgender—that is, who do not identify as a gender that does not correspond with their biological sex—might nonetheless struggle with their gender identity; for example, girls who behave in some male-typical ways might experience various forms of distress without ever coming to identify as boys. Conversely, individuals who do identify as a gender that does not correspond with their biological sex may not experience clinically significant distress related to their gender identity. Even if only, say, 40% of individuals who identify as a gender that does not correspond with their biological sex experience significant distress related to their gender identity, this would constitute a public health issue requiring clinicians and others to act to support those with gender dysphoria, and hopefully, to reduce the rate of gender dysphoria in the population. There is no evidence to suggest that the other 60% in this hypothetical—that is, the individuals who identify as a gender that does not correspond with their biological sex but who do not experience significant distress—would require clinical treatment.

The *DSM*'s concept of subjectively "experiencing" one's gender as incongruent from one's biological sex may require more critical scrutiny and possibly modification. The exact definition of gender dysphoria, however well-intentioned, is somewhat vague and confusing. It does not account for individuals who self-identify as transgender but do not experience dysphoria associated with their gender identity and who seek psychiatric care for functional impairment for problems unrelated to their

gender identity, such as anxiety or depression. They may then be mislabeled as having gender dysphoria simply because they have a desire to be identified as a member of the opposite gender, when they have come to a satisfactory resolution, subjectively, with this incongruence and may be depressed for reasons having nothing to do with their gender identity.

The *DSM-5* criteria for a diagnosis of gender dysphoria in children are defined in a "more concrete, behavioral manner than those for adolescents and adults."[26] This is to say that some of the diagnostic criteria for gender dysphoria in children refer to behaviors that are stereotypically associated with the opposite gender. Clinically significant distress is still necessary for a diagnosis of gender dysphoria in children, but some of the other diagnostic criteria include, for instance, a "strong preference for the toys, games, or activities stereotypically used or engaged in by the other gender."[27] What of girls who are "tomboys" or boys who are not oriented toward violence and guns, who prefer quieter play? Should parents worry that their tomboy daughter is really a boy stuck in a girl's body? There is no scientific basis for believing that playing with toys typical of boys defines a child as a boy, or that playing with toys typical of girls defines a child as a girl. The *DSM-5* criterion for diagnosing gender dysphoria by reference to gender-typical toys is unsound; it appears to ignore the fact that a child could display an *expressed* gender—manifested by social or behavioral traits—incongruent with the child's biological sex but without *identifying* as the opposite gender. Furthermore, even for children who do identify as a gender opposite their biological sex, diagnoses of gender dysphoria are simply unreliable. The reality is that they may have psychological difficulties in accepting their biological sex as their gender. Children can have difficulty with the expectations associated with those gender roles. Traumatic experiences can also cause a child to express distress with the gender associated with his or her biological sex.

Gender identity problems can also arise with intersex conditions (the presence of ambiguous genitalia due to genetic abnormalities), which we discussed earlier. These disorders of sex development, while rare, can contribute to gender dysphoria in some cases.[28] Some of these conditions include complete androgen insensitivity syndrome, where individuals with XY (male) chromosomes lack receptors for male sex hormones, leading them to develop the secondary sex characteristics of females, rather than males (though they lack ovaries, do not menstruate, and are consequently sterile).[29] Another hormonal disorder of sex development that can lead to individuals developing in ways that are not typical of their genetic sex include congenital adrenal hyperplasia, a condition that can

masculinize XX (female) fetuses.[30] Other rare phenomena such as genetic mosaicism[31] or chimerism,[32] where some cells in the individual's bodies contain XX chromosomes and others contain XY chromosomes, can lead to considerable ambiguity in sex characteristics, including individuals who possess both male and female gonads and sex organs.

While there are many cases of gender dysphoria that are not associated with these identifiable intersex conditions, gender dysphoria may still represent a different type of intersex condition in which the primary sex characteristics such as genitalia develop normally while secondary sex characteristics associated with the brain develop along the lines of the opposite sex. Controversy exists over influences determining the nature of neurological, psychological, and behavioral sex differences. The emerging consensus is that there may be some differences in patterns of neurological development in- and ex-utero for men and women.[33] Therefore, in theory, transgender individuals could be subject to conditions allowing a more female-type brain to develop within a genetic male (having the XY chromosomal patterns), and vice versa. However, as we will show in the next section, the research supporting this idea is quite minimal.

As a way of surveying the biological and social science research on gender dysphoria, we can list some of the important questions. Are there biological factors that influence the development of a gender identity that does not correspond with one's biological sex? Are some individuals born with a gender identity different from their biological sex? Is gender identity shaped by environmental or nurturing conditions? How stable are choices of gender identity? How common is gender dysphoria? Is it persistent across the lifespan? Can a little boy who thinks he is a little girl change over the course of his life to regard himself as male? If so, how often can such people change their gender identities? How would someone's gender identity be measured scientifically? Does self-understanding suffice? Does a biological girl become a gender boy by believing, or at least stating, she is a little boy? Do people's struggles with a sense of incongruity between their gender identity and biological sex persist over the life course? Does gender dysphoria respond to psychiatric interventions? Should those interventions focus on affirming the gender identity of the patient or take a more neutral stance? Do efforts to hormonally or surgically modify an individual's primary or secondary sex characteristics help resolve gender dysphoria? Does modification create further psychiatric problems for some of those diagnosed with gender dysphoria, or does it typically resolve existing psychiatric problems? We broach a few of these critical questions in the following sections.

Gender and Physiology

Robert Sapolsky, a Stanford professor of biology who has done extensive neuroimaging research, suggested a possible neurobiological explanation for cross-gender identification in a 2013 *Wall Street Journal* article, "Caught Between Male and Female." He asserted that recent neuroimaging studies of the brains of transgender adults suggest that they may have brain structures more similar to their gender identity than to their biological sex.[34] Sapolsky bases this assertion on the fact that there are differences between male and female brains, and while the differences are "small and variable," they "probably contribute to the sex differences in learning, emotion and socialization."[35] He concludes: "The issue isn't that sometimes people believe they are of a different gender than they actually are. Remarkably, instead, it's that sometimes people are born with bodies whose gender is different from what they actually are."[36] In other words, he claims that some people can have a female-type brain in a male body, or vice versa.

While this kind of neurobiological theory of cross-gender identification remains outside of the scientific mainstream, it has recently received scientific and popular attention. It provides a potentially attractive explanation for cross-gender identification, especially for individuals who are not affected by any known genetic, hormonal, or psychosocial abnormalities.[37] However, while Sapolsky may be right, there is fairly little support in the scientific literature for his contention. His neurological explanation for differences between male and female brains and those differences' possible relevance to cross-gender identification warrant further scientific consideration.

There are many small studies that attempt to define causal factors of the experience of incongruence between one's biological sex and felt gender. These studies are described in the following pages, each pointing to an influence that may contribute to the explanation for cross-gender identification.

Nancy Segal, a psychologist and geneticist, researched two case studies of identical twins discordant for female-to-male (FtM) transsexualism.[38] Segal notes that, according to another, earlier study that conducted nonclinical interviews with 45 FtM transsexuals, 60% suffered some form of childhood abuse, with 31% experiencing sexual abuse, 29% experiencing emotional abuse, and 38% physical abuse.[39] However, this earlier study did not include a control group and was limited by its small sample size, making it difficult to extract significant interactions, or generalizations, from the data.

Segal's own first case study was of a 34-year-old FtM twin, whose identical twin sister was married and the mother of seven children.[40] Several stressful events had occurred during the twins' mother's pregnancy, and they were born five weeks prematurely. When they were eight years old, their parents divorced. The FtM twin exhibited gender-nonconforming behavior early and it persisted throughout childhood. She became attracted to other girls in junior high school and as a teenager attempted suicide several times. She reported physical abuse and emotional abuse at the hand of her mother. The twins were raised in a Mormon household, in which transsexuality was not tolerated.[41] The twin sister had never questioned her gender identity but did experience some depression. For Segal, the FtM twin's gender nonconformity and abuse in childhood were factors that contributed to gender dysphoria; the other twin was not subject to the same stressors in childhood, and did not develop issues around her gender identity. Segal's second case study also concerned identical twins with one twin transitioning from female to male.[42] This FtM twin had early-onset nonconforming behaviors and attempted suicide as a young adult. At age 29 she underwent reassignment surgery, was well supported by family, met a woman, and married. As in the first case, the other twin was reportedly always secure in her female gender identity.

Segal speculates that each set of twins may have had uneven prenatal androgen exposures (though her study did not offer evidence to support this)[43] and concludes that "Transsexualism is unlikely to be associated with a major gene, but is likely to be associated with multiple genetic, epigenetic, developmental and experiential influences."[44] Segal is critical of the notion that the maternal abuse experienced by the FtM twin in her first case study may have played a causal role in the twin's "atypical gender identification" since the abuse "apparently *followed*" the twin's gender-atypical behaviors—though Segal acknowledges "it is possible that this abuse reinforced his already atypical gender identification."[45] These case studies, while informative, are not scientifically strong, and do not provide direct evidence for any causal hypotheses about the origins of atypical gender identification.

A source of more information—but also inadequate to make direct causal inferences—is a case analysis by Mayo Clinic psychiatrists J. Michael Bostwick and Kari A. Martin of an intersex individual born with ambiguous genitalia who was operated on and raised as a female.[46] By way of offering some background, the authors draw a distinction between gender identity disorder (an "inconsistency between perceived gender identity and phenotypic sex" that generally involves "no discernible neuroendocri-

nological abnormality"[47]), and intersexuality (a condition in which biological features of both sexes are present). They also provide a summary and classification scheme of the various types of intersex disorders. After a thorough discussion of the various intersex developmental issues that can lead to a disjunction between the brain and body, the authors acknowledge that "Some adult patients with severe dysphoria—transsexuals—have neither history nor objective findings supporting a known biological cause of brain-body disjunction."[48] These patients require thorough medical and psychiatric attention to avoid gender dysphoria.

After this helpful summary, the authors state that "Absent psychosis or severe character pathology, patients' subjective assertions are presently the most reliable standards for delineating core gender identity."[49] But it is not clear how we could consider subjective assertions more reliable in establishing gender identity, unless gender identity is defined as a completely subjective phenomenon. The bulk of the article is devoted to describing the various objectively discernible and identifiable ways in which one's identity as a male or female is imprinted on the nervous and endocrine system. Even when something goes wrong with the development of external genitalia, individuals are more likely to act in accordance with their chromosomal and hormonal makeup.[50]

In 2011, Giuseppina Rametti and colleagues from various research centers in Spain used MRI to study the brain structures of 18 FtM transsexuals who exhibited gender nonconformity early in life and experienced sexual attraction to females prior to hormone treatment.[51] The goal was to learn whether their brain features corresponded more to their biological sex or to their sense of gender identity. The control group consisted of 24 male and 19 female heterosexuals with gender identities conforming to their biological sex. Differences were noted in the white matter microstructure of specific brain areas. In untreated FtM transsexuals, that structure was more similar to that of heterosexual males than to that of heterosexual females in three of four brain areas.[52] In a complementary study, Rametti and colleagues compared 18 MtF transsexuals to 19 female and 19 male heterosexual controls.[53] These MtF transsexuals had white matter tract averages in several brain areas that fell between the averages of the control males and the control females. The values, however, were typically closer to the males (that is, to those that shared their biological sex) than to the females in most areas.[54] In controls the authors found that, as expected, the males had greater amounts of gray and white matter and higher volumes of cerebrospinal fluid than control females. The MtF transsexual brain volumes

were all similar to those of male controls and significantly different from those of females.[55]

Overall, the findings of these studies by Rametti and colleagues do not sufficiently support the notion that transgender individuals have brains more similar to their preferred gender than to the gender corresponding with their biological sex. Both studies are limited by small sample sizes and lack of a prospective hypothesis—both analyzed the MRI data to find the gender differences and then looked to see where the data from transgender subjects fit.

Whereas both of these MRI studies looked at brain *structure*, a functional MRI study by Emiliano Santarnecchi and colleagues from the University of Siena and the University of Florence looked at brain *function*, examining gender-related differences in spontaneous brain activity during the resting state.[56] The researchers compared a single FtM individual (declared cross-gender since childhood), and control groups of 25 males and 25 females, with regard to spontaneous brain activity. The FtM individual demonstrated a "brain activity profile more close to his biological sex than to his desired one," and based in part on this result the authors concluded that "untreated FtM transsexuals show a functional connectivity profile comparable to female control subjects."[57] With a sample size of one, this study's statistical power is virtually zero.

In 2013, Hsaio-Lun Ku and colleagues from various medical centers and research institutes in Taiwan also conducted functional brain imaging studies. They compared the brain activity of 41 transsexuals (21 FtMs, 20 MtFs) and 38 matched heterosexual controls (19 males and 19 females).[58] Arousal response of each cohort while viewing neutral as compared to erotic films was compared between groups. All of the transsexuals in the study reported sexual attractions to members of their natal, biological sex, and exhibited more sexual arousal than heterosexual controls when viewing erotic films that depicted sexual activity between subjects sharing their biological sex. A "selfness" score was also incorporated into the study, in which the researchers asked participants to "rate the degree to which you identify yourself as the male or female in the film."[59] The transsexuals in the study identified with those of their preferred gender more than the controls identified with those of their biological gender, in both erotic films and neutral films. The heterosexual controls did not identify themselves with either males or females in either of the film types. Ku and colleagues claim to have demonstrated characteristic brain patterns for sexual attraction as related to biological sex but did not make meaningful neurobiological gender-identity comparisons among the three cohorts. In

addition, they reported findings that transsexuals demonstrated psychosocial maladaptive defensive styles.

A 2008 study by Hans Berglund and colleagues from Sweden's Karolinska Institute and Stockholm Brain Institute used PET and fMRI scans to compare brain-area activation patterns in 12 MtF transgendered individuals who were sexually attracted to women with those of 12 heterosexual women and 12 heterosexual men.[60] The first set of subjects took no hormones and had not undergone sex-reassignment surgery. The experiment involved smelling odorous steroids thought to be female pheromones, and other sexually neutral odors such as lavender oil, cedar oil, eugenol, butanol, and odorless air. The results were varied and mixed between the groups for the various odors, which should not be surprising, since *post hoc* analyses usually lead to contradictory findings.

In summary, the studies presented above show inconclusive evidence and mixed findings regarding the brains of transgender adults. Brain-activation patterns in these studies do not offer sufficient evidence for drawing sound conclusions about possible associations between brain activation and sexual identity or arousal. The results are conflicting and confusing. Since the data by Ku and colleagues on brain-activation patterns are not universally associated with a particular sex, it remains unclear whether and to what extent neurobiological findings say anything meaningful about gender identity. It is important to note that regardless of their findings, studies of this kind cannot support any conclusion that individuals come to identify as a gender that does not correspond to their biological sex because of an innate, biological condition of the brain.

The question is not simply whether there are differences between the brains of transgender individuals and people identifying with the gender corresponding to their biological sex, but whether gender identity is a fixed, innate, and biological trait, even when it does not correspond to biological sex, or whether environmental or psychological causes contribute to the development of a sense of gender identity in such cases. Neurological differences in transgender adults might be the consequence of biological factors such as genes or prenatal hormone exposure, or of psychological and environmental factors such as childhood abuse, or they could result from some combination of the two. There are no serial, longitudinal, or prospective studies looking at the brains of cross-gender identifying children who develop to later identify as transgender adults. Lack of this research severely limits our ability to understand causal relationships between brain morphology, or functional activity, and the later development of gender identity different from biological sex.

More generally, it is now widely recognized among psychiatrists and neuroscientists who engage in brain imaging research that there are inherent and ineradicable methodological limitations of *any* neuroimaging study that simply associates a particular trait, such as a certain behavior, with a particular brain morphology.[61] (And when the trait in question is not a concrete behavior but something as elusive and vague as "gender identity," these methodological problems are even more serious.) These studies cannot provide statistical evidence nor show a plausible biological mechanism strong enough to support *causal connections* between a brain feature and the trait, behavior, or symptom in question. To support a conclusion of causality, even epidemiological causality, we need to conduct prospective longitudinal panel studies of a fixed set of individuals across the course of sexual development if not their lifespan.

Studies like these would use serial brain images at birth, in childhood, and at other points along the developmental continuum, to see whether brain morphology findings were there from the beginning. Otherwise, we cannot establish whether certain brain features caused a trait, or whether the trait is innate and perhaps fixed. Studies like those discussed above of individuals who already exhibit the trait are incapable of distinguishing between *causes* and *consequences* of the trait. In most cases transgender individuals have been acting and thinking for years in ways that, through learned behavior and associated neuroplasticity, may have produced brain changes that could differentiate them from other members of their biological or natal sex. The only definitive way to establish epidemiological causality between a brain feature and a trait (especially one as complex as gender identity) is to conduct prospective, longitudinal, preferably randomly sampled and population-based studies.

In the absence of such prospective longitudinal studies, large representative population-based samples with adequate statistical controls for confounding factors may help narrow the possible causes of a behavioral trait and thereby increase the probability of identifying a neurological cause.[62] However, because the studies conducted thus far use small convenience samples, none of them is especially helpful for narrowing down the options for causality. To obtain a better study sample, we would need to include neuroimaging in large-scale epidemiological studies. In fact, given the small number of transgender individuals in the general population,[63] the studies would need to be prohibitively large to attain findings that would reach statistical significance.

Moreover, if a study found significant differences between these groups—that is, a number of differences higher than what would be

expected by chance alone—these differences would refer to the average in a population of each group. Even if these two *groups* differed significantly for all 100 measurements, it would not necessarily indicate a biological difference among *individuals* at the extremes of the distribution. Thus, a randomly selected transgender individual and a randomly selected non-transgender individual might not differ on any of these 100 measurements. Additionally, since the probability that a randomly selected person from the general population will be transgender is quite small, statistically significant differences in the sample means are not sufficient evidence to conclude that a particular measurement is predictive of whether the person is transgender or not. If we measured the brain of an infant, toddler, or adolescent and found this individual to be closer to one cohort than another on these measures, it would not imply that this individual would grow up to identify as a member of that cohort. It may be helpful to keep this caveat in mind when interpreting research on transgender individuals.

In this context, it is important to note that there are no studies that demonstrate that any of the biological differences being examined have predictive power, and so all interpretations, usually in popular outlets, claiming or suggesting that a statistically significant difference between the brains of people who are transgender and those who are not is the cause of being transgendered or not—that is to say, that the biological differences determine the differences in gender identity—are unwarranted.

In short, the current studies on associations between brain structure and transgender identity are small, methodologically limited, inconclusive, and sometimes contradictory. Even if they were more methodologically reliable, they would be insufficient to demonstrate that brain structure is a cause, rather than an effect, of the gender-identity behavior. They would likewise lack predictive power, the real challenge for any theory in science.

For a simple example to illustrate this point, suppose we had a room with 100 people in it. Two of them are transgender and all others are not. I pick someone at random and ask you to guess the person's gender identity. If you know that 98 out of 100 of the individuals are not transgender, the safest bet would be to guess that the individual is not transgender, since that answer will be correct 98% of the time. Suppose, then, that you have the opportunity to ask questions about the neurobiology and about the natal sex of the person. Knowing the biology only helps in predicting whether the individual is transgender if it can improve on the original guess that the person is not transgender. So if knowing a characteristic of the individual's brain does not improve the ability to predict what group the patient belongs to, then the fact that the two groups differ at the mean is almost irrelevant.

Improving on the original prediction is very difficult for a rare trait such as being transgender, because the probability of that prediction being correct is already very high. If there really were a clear difference between the brains of transgender and non-transgender individuals, akin to the biological differences between the sexes, then improving on the original guess would be relatively easy. Unlike the differences between the sexes, however, there are no biological features that can reliably identify transgender individuals as different from others.

The consensus of scientific evidence overwhelmingly supports the proposition that a physically and developmentally normal boy or girl is indeed what he or she appears to be at birth. The available evidence from brain imaging and genetics does not demonstrate that the development of gender identity as different from biological sex is innate. Because scientists have not established a solid framework for understanding the causes of cross-gender identification, ongoing research should be open to psychological and social causes, as well as biological ones.

Transgender Identity in Children

In 2012, the *Washington Post* featured a story by Petula Dvorak, "Transgender at five,"[64] about a girl who at the age of 2 years began insisting that she was a boy. The story recounts her mother's interpretation of this behavior: "Her little girl's brain was different. Jean [her mother] could tell. She had heard about transgender people, those who are one gender physically but the other gender mentally." The story recounts this mother's distressed experiences as she began researching gender identity problems in children and came to understand other parents' experiences:

> Many talked about their painful decision to allow their children to publicly transition to the opposite gender—a much tougher process for boys who wanted to be girls. Some of what Jean heard was reassuring: Parents who took the plunge said their children's behavior problems largely disappeared, schoolwork improved, happy kid smiles returned. But some of what she heard was scary: children taking puberty blockers in elementary school and teens embarking on hormone therapy before they'd even finished high school.[65]

The story goes on to describe how the sister, Moyin, of the transgender child Tyler (formerly Kathryn) made sense of her sibling's identity:

> Tyler's sister, who's 8, was much more casual about describing her transgender sibling. "It's just a boy mind in a girl body," Moyin

> explained matter-of-factly to her second-grade classmates at her private school, which will allow Tyler to start kindergarten as a boy, with no mention of Kathryn.[66]

The remarks from the child's sister encapsulate the popular notion regarding gender identity: transgender individuals, or children who meet the diagnostic criteria for gender dysphoria, are simply "a boy mind in a girl body," or vice versa. This view implies that gender identity is a persistent and innate feature of human psychology, and it has inspired a gender-affirming approach to children who experience gender identity issues at an early age.

As we have seen above in the overview of the neurobiological and genetic research on the origins of gender identity, there is little evidence that the phenomenon of transgender identity has a biological basis. There is also little evidence that gender identity issues have a high rate of persistence in children. According to the *DSM-5*, "In natal [biological] males, persistence [of gender dysphoria] has ranged from 2.2% to 30%. In natal females, persistence has ranged from 12% to 50%."[67] Scientific data on persistence of gender dysphoria remains sparse due to the very low prevalence of the disorder in the general population, but the wide range of findings in the literature suggests that there is still much that we do not know about why gender dysphoria persists or desists in children. As the *DSM-5* entry goes on to note, "It is unclear if children 'encouraged' or supported to live socially in the desired gender will show higher rates of persistence, since such children have not yet been followed longitudinally in a systematic manner."[68] There is a clear need for more research in these areas, and for parents and therapists to acknowledge the great uncertainty regarding how to interpret the behavior of these children.

Therapeutic Interventions in Children

With the uncertainty surrounding the diagnosis of and prognosis for gender dysphoria in children, therapeutic decisions are particularly complex and difficult. Therapeutic interventions for children must take into account the probability that the children may outgrow cross-gender identification. University of Toronto researcher and therapist Kenneth Zucker believes that family and peer dynamics can play a significant role in the development and persistence of gender-nonconforming behavior, writing that

> it is important to consider both predisposing and perpetuating factors that might inform a clinical formulation and the development of

> a therapeutic plan: the role of temperament, parental reinforcement of cross-gender behavior during the sensitive period of gender identity formation, family dynamics, parental psychopathology, peer relationships and the multiple meanings that might underlie the child's fantasy of becoming a member of the opposite sex.[69]

Zucker worked for years with children experiencing feelings of gender incongruence, offering psychosocial treatments to help them embrace the gender corresponding with their biological sex—for instance, talk therapy, parent-arranged play dates with same-sex peers, therapy for co-occurring psychopathological issues such as autism spectrum disorder, and parent counseling.[70]

In a follow-up study by 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 identity disorder persisted in only 3 of the 25 girls they had treated.[71] (Zucker's clinic was closed by the Canadian government in 2015.[72])

An alternative to Zucker's approach that emphasizes affirming the child's preferred gender identity has become more common among therapists.[73] This approach involves helping the children to self-identify even more with the gender label they prefer at the time. One component of the gender-affirming approach has been the use of hormone treatments for adolescents in order to delay the onset of sex-typical characteristics during puberty and alleviate the feelings of dysphoria the adolescents will experience as their bodies develop sex-typical characteristics that are at odds with the gender with which they identify. There is relatively little evidence for the therapeutic value of these kinds of puberty-delaying treatments, but they are currently the subject of a large clinical study sponsored by the National Institutes of Health.[74]

While epidemiological data on the outcomes of medically delayed puberty is quite limited, referrals for sex-reassignment hormones and surgical procedures appear to be on the rise, and there is a push among many advocates to proceed with sex reassignment at younger ages. According to a 2013 article in *The Times* of London, the United Kingdom saw a 50% increase in the number of children referred to gender dysphoria clinics from 2011 to 2012, and a nearly 50% increase in referrals among adults from 2010 to 2012.[75] Whether this increase can be attributed to rising rates of gender confusion, rising sensitivity to gender issues, growing acceptance of therapy as an option, or other factors, the increase itself is concerning, and merits further scientific inquiry into the family dynamics

and other potential problems, such as social rejection or developmental issues, that may be taken as signs of childhood gender dysphoria.

A study of psychological outcomes following puberty suppression and sex-reassignment surgery, published in the journal *Pediatrics* in 2014 by child and adolescent psychiatrist Annelou L. C. de Vries and colleagues, suggested improved outcomes for individuals after receiving these interventions, with well-being improving to a level similar to that of young adults from the general population.[76] This study looked at 55 transgender adolescents and young adults (22 MtF and 33 FtM) from a Dutch clinic who were assessed three times: before the start of puberty suppression (mean age: 13.6 years), when cross-sex hormones were introduced (mean age: 16.7 years), and at least one year after sex-reassignment surgery (mean age: 20.7 years). The study did not provide a matched group for comparison—that is, a group of transgender adolescents who did not receive puberty-blocking hormones, cross-sex hormones, and/or sex-reassignment surgery—which makes comparisons of outcomes more difficult.

In the study cohort, gender dysphoria improved over time, body image improved on some measures, and overall functioning improved modestly. Due to the lack of a matched control group it is unclear whether these changes are attributable to the procedures or would have occurred in this cohort without the medical and surgical interventions. Measures of anxiety, depression, and anger showed some improvements over time, but these findings did not reach statistical significance. While this study suggested some improvements over time in this cohort, particularly the reported subjective satisfaction with the procedures, detecting significant differences would require the study to be replicated with a matched control group and a larger sample size. The interventions also included care from a multidisciplinary team of medical professionals, which could have had a beneficial effect. Future studies of this kind would ideally include long-term follow-ups that assess outcomes and functioning beyond the late teens or early twenties.

Therapeutic Interventions in Adults

The potential that patients undergoing medical and surgical sex reassignment may want to return to a gender identity consistent with their biological sex suggests that reassignment carries considerable psychological and physical risk, especially when performed in childhood, but also in adulthood. It suggests that the patients' pre-treatment beliefs about an ideal post-treatment life may sometimes go unrealized.

In 2004, Birmingham University's Aggressive Research Intelligence Facility (Arif) assessed the findings of more than one hundred follow-up studies of post-operative transsexuals.[77] An article in *The Guardian* summarized the findings:

> Arif…concludes that none of the studies provides conclusive evidence that gender reassignment is beneficial for patients. It found that most research was poorly designed, which skewed the results in favour of physically changing sex. There was no evaluation of whether other treatments, such as long-term counselling, might help transsexuals, or whether their gender confusion might lessen over time. Arif says the findings of the few studies that have tracked significant numbers of patients over several years were flawed because the researchers lost track of at least half of the participants. The potential complications of hormones and genital surgery, which include deep vein thrombosis and incontinence respectively, have not been thoroughly investigated, either. "There is huge uncertainty over whether changing someone's sex is a good or a bad thing," says Dr Chris Hyde, director of Arif. "While no doubt great care is taken to ensure that appropriate patients undergo gender reassignment, there's still a large number of people who have the surgery but remain traumatized—often to the point of committing suicide."[78]

The high level of uncertainty regarding various outcomes after sex-reassignment surgery makes it difficult to find clear answers about the effects on patients of reassignment surgery. Since 2004, there have been other studies on the efficacy of sex-reassignment surgery, using larger sample sizes and better methodologies. We will now examine some of the more informative and reliable studies on outcomes for individuals receiving sex-reassignment surgery.

As far back as 1979, Jon K. Meyer and Donna J. Reter published a longitudinal follow-up study on the overall well-being of adults who underwent sex-reassignment surgery.[79] The study compared the outcomes of 15 people who received surgery with those of 35 people who requested but did not receive surgery (14 of these individuals eventually received surgery later, resulting in three cohorts of comparison: operated, not-operated, and operated later). Well-being was quantified using a scoring system that assessed psychiatric, economic, legal, and relationship outcome variables. Scores were determined by the researchers after performing interviews with the subjects. Average follow-up time was approximately five years for subjects who had sex change surgery, and about two years for those subjects who did not.

Compared to their condition before surgery, the individuals who had undergone surgery appeared to show some improvement in well-being, though the results had a fairly low level of statistical significance. Individuals who had no surgical intervention did display a statistically significant improvement at follow-up. However, there was no statistically significant difference between the two groups' scores of well-being at follow-up. The authors concluded that "sex reassignment surgery confers no objective advantage in terms of social rehabilitation, although it remains subjectively satisfying to those who have rigorously pursued a trial period and who have undergone it."[80] This study led the psychiatry department at Johns Hopkins Medical Center (JHMC) to discontinue surgical interventions for sex changes for adults.[81]

However, the study has important limitations. Selection bias was introduced in the study population, because the subjects were drawn from those individuals who sought sex-reassignment surgery at JHMC. In addition, the sample size was small. Also, the individuals who did not undergo sex-reassignment surgery but presented to JHMC for it did not represent a true control group. Random assignment of the surgical procedure was not possible. Large differences in the average follow-up time between those who underwent surgery and those who did not further reduces any capacity to draw valid comparisons between the two groups. Additionally, the study's methodology was also criticized for the somewhat arbitrary and idiosyncratic way it measured the well-being of its subjects. Cohabitation or any form of contact with psychiatric services were scored as equally negative factors as having been arrested.[82]

In 2011, Cecilia Dhejne and colleagues from the Karolinska Institute and Gothenburg University in Sweden published one of the more robust and well-designed studies to examine outcomes for persons who underwent sex-reassignment surgery. Focusing on mortality, morbidity, and criminality rates, the matched cohort study compared a total of 324 transsexual persons (191 MtFs, 133 FtMs) who underwent sex reassignment between 1973 and 2003 to two age-matched controls: people of the same sex as the transsexual person at birth, and people of the sex to which the individual had been reassigned.[83]

Given the relatively low number of transsexual persons in the general population, the size of this study is impressive. Unlike Meyer and Reter, Dhejne and colleagues did not seek to evaluate the patient satisfaction after sex-reassignment surgery, which would have required a control group of transgender persons who desired to have sex-reassignment surgery but did not receive it. Also, the study did not compare outcome

variables before and after sex-reassignment surgery; only outcomes after surgery were evaluated. We need to keep these caveats in mind as we look at what this study found.

Dhejne and colleagues found statistically significant differences between the two cohorts on several of the studied rates. For example, the postoperative transsexual individuals had an approximately three times higher risk for psychiatric hospitalization than the control groups, even after adjusting for prior psychiatric treatment.[84] (However, the risk of being hospitalized for substance abuse was not significantly higher after adjusting for prior psychiatric treatment, as well as other covariates.) Sex-reassigned individuals had nearly a three times higher risk of all-cause mortality after adjusting for covariates, although the elevated risk was significant only for the time period of 1973–1988.[85] Those undergoing surgery during this period were also at increased risk of being convicted of a crime.[86] Most alarmingly, sex-reassigned individuals were 4.9 times more likely to attempt suicide and 19.1 times more likely to die by suicide compared to controls.[87] "Mortality from suicide was strikingly high among sex-reassigned persons, including after adjustment for prior psychiatric morbidity."[88]

The study design precludes drawing inferences "as to the effectiveness of sex reassignment as a treatment for transsexualism," although Dhejne and colleagues state that it is possible that "things might have been even worse without sex reassignment."[89] Overall, post-surgical mental health was quite poor, as indicated especially by the high rate of suicide attempts and all-cause mortality in the 1973–1988 group. (It is worth noting that for the transsexuals in the study who underwent sex reassignment from 1989 to 2003, there were of course fewer years of data available at the time the study was conducted than for those transsexuals from the earlier period. The rates of mortality, morbidity, and criminality in the later group may in time come to resemble the elevated risks of the earlier group.) In summary, this study suggests that sex-reassignment surgery may not rectify the comparatively poor health outcomes associated with transgender populations in general. Still, because of the limitations of this study mentioned above, the results also cannot establish that sex-reassignment surgery causes poor health outcomes.

In 2009, Annette Kuhn and colleagues from the University Hospital and University of Bern in Switzerland examined post-surgery quality of life in 52 MtF and 3 FtM transsexuals fifteen years after sex-reassignment surgery.[90] This study found considerably lower general life satisfaction in post-surgical transsexuals as compared with females who had at least one

pelvic surgery in the past. The postoperative transsexuals reported lower satisfaction with their general quality of health and with some of the personal, physical, and social limitations they experienced with incontinence that resulted as a side effect of the surgery. Again, inferences cannot be drawn from this study regarding the efficacy of sex-reassignment surgery due to the lack of a control group of transgender individuals who did not receive sex-reassignment surgery.

In 2010, Mohammad Hassan Murad and colleagues from the Mayo Clinic published a systematic review of studies on the outcomes of hormonal therapies used in sex-reassignment procedures, finding that there was "very low quality evidence" that sex reassignment via hormonal interventions "likely improves gender dysphoria, psychological functioning and comorbidities, sexual function and overall quality of life."[91] The authors identified 28 studies that together examined 1,833 patients who underwent sex-reassignment procedures that included hormonal interventions (1,093 male-to-female, 801 female-to-male).[92] Pooling data across studies showed that, after receiving sex-reassignment procedures, 80% of patients reported improvement in gender dysphoria, 78% reported improvement in psychological symptoms, and 80% reported improvement in quality of life.[93] None of the studies included the bias-limiting measure of randomization (that is, in none of the studies were sex-reassignment procedures assigned randomly to some patients but not to others), and only three of the studies included control groups (that is, patients who were not provided the treatment to serve as comparison cases for those who did).[94] Most of the studies examined in Murad and colleagues' review reported improvements in psychiatric comorbidities and quality of life, though notably suicide rates remained higher for individuals who had received hormone treatments than for the general population, despite reductions in suicide rates following the treatments.[95] The authors also found that there were some exceptions to reports of improvements in mental health and satisfaction with sex-reassignment procedures; in one study, 3 of 17 individuals regretted the procedure with 2 of these 3 seeking reversal procedures,[96] and four of the studies reviewed reported worsening quality of life, including continuing social isolation, lack of improvement in social relationships, and dependence on government welfare programs.[97]

The scientific evidence summarized suggests we take a skeptical view toward the claim that sex-reassignment procedures provide the hoped-for benefits or resolve the underlying issues that contribute to elevated mental health risks among the transgender population. While we work to stop maltreatment and misunderstanding, we should also work to study

and understand whatever factors may contribute to the high rates of suicide and other psychological and behavioral health problems among the transgender population, and to think more clearly about the treatment options that are available.

The New Atlantis
A Journal of Technology & Society

Conclusion

Accurate, replicable scientific research results can and do influence our personal decisions and self-understanding, and can contribute to the public discourse, including cultural and political debates. When the research touches on controversial themes, it is particularly important to be clear about precisely what science has and has not shown. For complex, complicated questions concerning the nature of human sexuality, there exists at best provisional scientific consensus; much remains unknown, as sexuality is an immensely complex part of human life that defies our attempts at defining all its aspects and studying them with precision.

For questions that are easier to study empirically, however, such as those concerning the rates of mental health outcomes for identifiable subpopulations of sexual minorities, the research does offer some clear answers: these subpopulations show higher rates of depression, anxiety, substance abuse, and suicide compared to the general population. One hypothesis, the social stress model—which posits that stigma, prejudice, and discrimination are the primary causes of higher rates of poor mental health outcomes for these subpopulations—is frequently cited as a way to explain this disparity. While non-heterosexual and transgender individuals are often subject to social stressors and discrimination, science has not shown that these factors alone account for the entirety, or even a majority, of the health disparity between non-heterosexual and transgender subpopulations and the general population. There is a need for extensive research in this area to test the social stress hypothesis and other potential explanations for the health disparities, and to help identify ways of addressing the health concerns present in these subpopulations.

Some of the most widely held views about sexual orientation, such as the "born that way" hypothesis, simply are not supported by science. The literature in this area does describe a small ensemble of biological differences between non-heterosexuals and heterosexuals, but those biological differences are not sufficient to predict sexual orientation, the ultimate test of any scientific finding. The strongest statement that science offers to explain sexual orientation is that some biological factors appear, to an unknown extent, to predispose some individuals to a non-heterosexual orientation.

The suggestion that we are "born that way" is more complex in the case of gender identity. In one sense, the evidence that we are born with

a given gender seems well supported by direct observation: males overwhelmingly identify as men and females as women. The fact that children are (with a few exceptions of intersex individuals) born either biologically male or female is beyond debate. The biological sexes play complementary roles in reproduction, and there are a number of population-level average physiological and psychological differences between the sexes. However, while biological sex is an innate feature of human beings, gender identity is a more elusive concept.

In reviewing the scientific literature, we find that almost nothing is well understood when we seek biological explanations for what causes some individuals to state that their gender does not match their biological sex. The findings that do exist often have sample-selection problems, and they lack longitudinal perspective and explanatory power. Better research is needed, both to identify ways by which we can help to lower the rates of poor mental health outcomes and to make possible more informed discussion about some of the nuances present in this field.

Yet despite the scientific uncertainty, drastic interventions are prescribed and delivered to patients identifying, or identified, as transgender. This is especially troubling when the patients receiving these interventions are children. We read popular reports about plans for medical and surgical interventions for many prepubescent children, some as young as six, and other therapeutic approaches undertaken for children as young as two. We suggest that no one can determine the gender identity of a two-year-old. We have reservations about how well scientists understand what it even means for a child to have a developed sense of his or her gender, but notwithstanding that issue, we are deeply alarmed that these therapies, treatments, and surgeries seem disproportionate to the severity of the distress being experienced by these young people, and are at any rate premature since the majority of children who identify as the gender opposite their biological sex will not continue to do so as adults. Moreover, there is a lack of reliable studies on the long-term effects of these interventions. We strongly urge caution in this regard.

We have sought in this report to present a complex body of research in a way that will be intelligible to a wide audience of both experts and lay readers alike. Everyone—scientists and physicians, parents and teachers, lawmakers and activists—deserves access to accurate information about sexual orientation and gender identity. While there is much controversy surrounding how our society treats its LGBT members, no political

or cultural views should discourage us from understanding the related clinical and public health issues and helping people suffering from mental health problems that may be connected to their sexuality.

Our work suggests some avenues for future research in the biological, psychological, and social sciences. More research is needed to uncover the causes of the increased rates of mental health problems in the LGBT subpopulations. The social stress model that dominates research on this issue requires improvement, and most likely needs to be supplemented by other hypotheses. Additionally, the ways in which sexual desires develop and change across one's lifespan remain, for the most part, inadequately understood. Empirical research may help us to better understand relationships, sexual health, and mental health.

Critiquing and challenging both parts of the "born that way" paradigm—both the notion that sexual orientation is biologically determined and fixed, and the related notion that there is a fixed gender independent of biological sex—enables us to ask important questions about sexuality, sexual behaviors, gender, and individual and social goods in a different light. Some of these questions lie outside the scope of this work, but those that we have examined suggest that there is a great chasm between much of the public discourse and what science has shown.

Thoughtful scientific research and careful, circumspect interpretation of its results can advance our understanding of sexual orientation and gender identity. There is still much work to be done and many unanswered questions. We have attempted to synthesize and describe a complex body of scientific research related to some of these themes. We hope that this report contributes to the ongoing public conversation regarding human sexuality and identity. We anticipate that this report may elicit spirited responses, and we welcome them.

THE NEW ATLANTIS
A Journal of Technology & Society

Notes

Part One: Sexual Orientation

1. Alex Witchel, "Life After 'Sex,'" *The New York Times Magazine*, January 19, 2012, http://www.nytimes.com/2012/01/22/magazine/cynthia-nixon-wit.html.

2. Brandon Ambrosino, "I Wasn't Born This Way. I Choose to Be Gay," *The New Republic*, January 28, 2014, https://newrepublic.com/article/116378/macklemores-same-love-sends-wrong-message-about-being-gay.

3. J. Michael Bailey *et al.*, "A Family History Study of Male Sexual Orientation Using Three Independent Samples," *Behavior Genetics* 29, no. 2 (1999): 79–86, http://dx.doi.org/10.1023/A:1021652204405; Andrea Camperio-Ciani, Francesca Corna, Claudio Capiluppi, "Evidence for maternally inherited factors favouring male homosexuality and promoting female fecundity," *Proceedings of the Royal Society B* 271, no. 1554 (2004): 2217–2221, http://dx.doi.org/10.1098/rspb.2004.2872; Dean H. Hamer *et al.*, "A linkage between DNA markers on the X chromosome and male sexual orientation," *Science* 261, no. 5119 (1993): 321–327, http://dx.doi.org/10.1126/science.8332896.

4. Elizabeth Norton, "Homosexuality May Start in the Womb," *Science*, December 11, 2012, http://www.sciencemag.org/news/2012/12/homosexuality-may-start-womb.

5. Mark Joseph Stern, "No, Being Gay Is Not a Choice," *Slate*, February 4, 2014, http://www.slate.com/blogs/outward/2014/02/04/choose_to_be_gay_no_you_don_t.html.

6. David Nimmons, "Sex and the Brain," *Discover*, March 1, 1994, http://discovermagazine.com/1994/mar/sexandthebrain346/.

7. Leonard Sax, *Why Gender Matters: What Parents and Teachers Need to Know about the Emerging Science of Sex Differences* (New York: Doubleday, 2005), 206.

8. Benoit Denizet-Lewis, "The Scientific Quest to Prove Bisexuality Exists," *The New York Times Magazine*, March 20, 2014, http://www.nytimes.com/2014/03/23/magazine/the-scientific-quest-to-prove-bisexuality-exists.html.

9. *Ibid.*

10. *Ibid.*

11. Stephen B. Levine, "Reexploring the Concept of Sexual Desire," *Journal of Sex & Marital Therapy*, 28, no. 1 (2002), 39, http://dx.doi.org/10.1080/009262302317251007.

12. *Ibid.*

13. See Lori A. Brotto *et al.*, "Sexual Desire and Pleasure," in *APA Handbook of Sexuality and Psychology*, Volume 1: Person-based Approaches, APA (2014): 205–244; Stephen B. Levine, "Reexploring the Concept of Sexual Desire," *Journal of Sex & Marital Therapy* 28, no. 1 (2002): 39–51, http://dx.doi.org/10.1080/009262302317251007; Lisa M. Diamond, "What Does Sexual Orientation Orient? A Biobehavioral Model Distinguishing Romantic Love and Sexual Desire," *Psychological Review* 110, no. 1 (2003): 173–192,

http://dx.doi.org/10.1037/0033-295X.110.1.173; Gian C. Gonzaga *et al.*, "Romantic Love and Sexual Desire in Close Relationships," *Emotion* 6, no. 2 (2006): 163–179, http://dx.doi.org/10.1037/1528-3542.6.2.163.

14. Alexander R. Pruss, *One Body: An Essay in Christian Sexual Ethics* (Notre Dame, Ind.: University of Notre Dame Press, 2012), 360.

15. Neil A. Campbell and Jane B. Reece, *Biology*, Seventh Edition (San Francisco: Pearson Education, 2005), 973.

16. See, for instance, Nancy Burley, "The Evolution of Concealed Ovulation," *American Naturalist* 114, no. 6 (1979): 835–858, http://dx.doi.org/10.1086/283532.

17. David Woodruff Smith, "Phenomenology," *Stanford Encyclopedia of Philosophy* (2013), http://plato.stanford.edu/entries/phenomenology/.

18. See, for instance, Abraham Maslow, *Motivation and Personality*, Third Edition (New York: Addison-Wesley Educational Publishers, 1987).

19. Marc-André Raffalovich, *Uranisme et unisexualité: étude sur différentes manifestations de l'instinct sexuel* (Lyon, France: Storck, 1896).

20. See, generally, Brocard Sewell, *In the Dorian Mode: Life of John Gray 1866–1934* (Padstow, Cornwall, U.K.: Tabb House, 1983).

21. For more on the Kinsey scale, see "Kinsey's Heterosexual-Homosexual Rating Scale," Kinsey Institute at Indiana University, http://www.kinseyinstitute.org/research/publications/kinsey-scale.php.

22. Brief as *Amicus Curiae* of Daniel N. Robinson in Support of Petitioners and Supporting Reversal, *Hollingsworth v. Perry*, 133 S. Ct. 2652 (2013).

23. See, for example, John Bowlby, "The Nature of the Child's Tie to His Mother," *The International Journal of Psycho-Analysis* 39 (1958): 350–373.

24. Edward O. Laumann *et al.*, *The Social Organization of Sexuality: Sexual Practices in the United States* (Chicago: University of Chicago Press, 1994).

25. American Psychological Association, "Answers to Your Questions for a Better Understanding of Sexual Orientation & Homosexuality," 2008, http://www.apa.org/topics/lgbt/orientation.pdf.

26. Laumann *et al.*, *The Social Organization of Sexuality*, 300–301.

27. Lisa M. Diamond and Ritch C. Savin-Williams, "Gender and Sexual Identity," in *Handbook of Applied Development Science*, eds. Richard M. Lerner, Francine Jacobs, and Donald Wertlieb (Thousand Oaks, Calif.: SAGE Publications, 2002), 101. See also A. Elfin Moses and Robert O. Hawkins, *Counseling Lesbian Women and Gay Men: A Life-Issues Approach* (Saint Louis, Mo.: Mosby, 1982).

28. John. C. Gonsiorek and James D. Weinrich, "The Definition and Scope of Sexual Orientation," in *Homosexuality: Research Implications for Public Policy*, eds. John. C. Gonsiorek and James D. Weinrich (Newberry Park, Calif.: SAGE Publications, 1991), 8.

29. Letitia Anne Peplau *et al.*, "The Development of Sexual Orientation in Women,"

Annual Review of Sex Research 10, no. 1 (1999): 83, http://dx.doi.org/10.1080/10532528.1999.10559775.

30. Lisa M. Diamond, "New Paradigms for Research on Heterosexual and Sexual-Minority Development," *Journal of Clinical Child & Adolescent Psychology* 32, no. 4 (2003): 492.

31. Franz J. Kallmann, "Comparative Twin Study on the Genetic Aspects of Male Homosexuality," *Journal of Nervous and Mental Disease* 115, no. 4 (1952): 283–298, http://dx.doi.org/10.1097/00005053-195201000-00025.

32. Edward Stein, *The Mismeasure of Desire: The Science, Theory, and Ethics of Sexual Orientation* (New York: Oxford University Press, 1999), 145.

33. J. Michael Bailey, Michael P. Dunne, and Nicholas G. Martin, "Genetic and environmental influences on sexual orientation and its correlates in an Australian twin sample," *Journal of Personality and Social Psychology* 78, no. 3 (2000): 524–536, http://dx.doi.org/10.1037/0022-3514.78.3.524.

34. Bailey and colleagues calculated these concordance rates using a "strict" criterion for determining non-heterosexuality, which was a Kinsey score of 2 or greater. They also calculated concordance rates using a "lenient" criterion, a Kinsey score of 1 or greater. The concordance rates for this lenient criterion were 38% for men and 30% for women in identical twins, compared to 6% for men and 30% for women in fraternal twins. The differences between the identical and fraternal concordance rates using the lenient criterion were statistically significant for men but not for women.

35. Bailey, Dunne, and Martin, "Genetic and environmental influences on sexual orientation and its correlates in an Australian twin sample," 534.

36. These examples are drawn from Ned Block, "How heritability misleads about race," *Cognition* 56, no. 2 (1995): 103–104, http://dx.doi.org/10.1016/0010-0277(95)00678-R.

37. Niklas Långström *et al.*, "Genetic and Environmental Effects on Same-sex Sexual Behavior: A Population Study of Twins in Sweden," *Archives of Sexual Behavior* 39, no. 1 (2010): 75–80, http://dx.doi.org/10.1007/s10508-008-9386-1.

38. *Ibid.*, 79.

39. Peter S. Bearman and Hannah Brückner, "Opposite-Sex Twins and Adolescent Same-Sex Attraction," *American Journal of Sociology* 107, no. 5 (2002): 1179–1205, http://dx.doi.org/10.1086/341906.

40. *Ibid.*, 1199.

41. See, for example, Ray Blanchard and Anthony F. Bogaert, "Homosexuality in men and number of older brothers," *American Journal of Psychiatry* 153, no. 1 (1996): 27–31, http://dx.doi.org/10.1176/ajp.153.1.27.

42. Peter S. Bearman and Hannah Brückner, 1198.

43. *Ibid.*, 1198.

44. *Ibid.*, 1179.

45. Kenneth S. Kendler *et al.*, "Sexual Orientation in a U.S. National Sample of Twin and Nontwin Sibling Pairs," *American Journal of Psychiatry* 157, no. 11 (2000): 1843–1846, http://dx.doi.org/10.1176/appi.ajp.157.11.1843.

46. *Ibid.*, 1845.

47. Quantitative genetic studies, including twin studies, rely on an abstract model based on many assumptions, rather than on the measurement of correlations between genes and phenotypes. This abstract model is used to infer the presence of a genetic contribution to a trait by means of correlation among relatives. Environmental effects can be controlled in experiments with laboratory animals, but in humans this is not possible, so it is likely that the best that can be done is to study identical twins raised apart. But it should be noted that even these studies can be somewhat misinterpreted because identical twins adopted separately tend to be adopted into similar socioeconomic environments. The twin studies on homosexuality do not include any separated twin studies, and the study designs report few effective controls for environmental effects (for instance, identical twins likely share a common rearing environment to a greater extent than ordinary siblings or even fraternal twins).

48. Dean H. Hamer *et al.*, "A linkage between DNA markers on the X chromosome and male sexual orientation," *Science* 261, no. 5119 (1993): 321–327, http://dx.doi.org/10.1126/science.8332896.

49. George Rice *et al.*, "Male Homosexuality: Absence of Linkage to Microsatellite Markers at Xq28," *Science* 284, no. 5414 (1999): 665–667, http://dx.doi.org/10.1126/science.284.5414.665.

50. Alan R. Sanders *et al.*, "Genome-wide scan demonstrates significant linkage for male sexual orientation," *Psychological Medicine* 45, no. 07 (2015): 1379–1388, http://dx.doi.org/10.1017/S0033291714002451.

51. E. M. Drabant *et al.*, "Genome-Wide Association Study of Sexual Orientation in a Large, Web-based Cohort," 23andMe, Inc., Mountain View, Calif. (2012), http://blog.23andme.com/wp-content/uploads/2012/11/Drabant-Poster-v7.pdf.

52. Richard C. Francis, *Epigenetics: How Environment Shapes Our Genes* (New York: W. W. Norton & Company, 2012).

53. See, for example, Richard P. Ebstein *et al.*, "Genetics of Human Social Behavior," *Neuron* 65, no. 6 (2010): 831–844, http://dx.doi.org/10.1016/j.neuron.2010.02.020.

54. Dean Hamer, "Rethinking Behavior Genetics," *Science* 298, no. 5591 (2002): 71, http://dx.doi.org/10.1126/science.1077582.

55. For an overview of the distinction between the organizational and activating effects of hormones and its importance in the field of endocrinology, see Arthur P. Arnold, "The organizational-activational hypothesis as the foundation for a unified theory of sexual differentiation of all mammalian tissues," *Hormones and Behavior* 55, no. 5 (2009): 570–578, http://dx.doi.org/10.1016/j.yhbeh.2009.03.011.

56. Melissa Hines, "Prenatal endocrine influences on sexual orientation and on sexually differentiated childhood behavior," *Frontiers in Neuroendocrinology* 32, no. 2 (2011):

170–182, http://dx.doi.org/10.1016/j.yfrne.2011.02.006.

57. Eugene D. Albrecht and Gerald J. Pepe, "Estrogen regulation of placental angiogenesis and fetal ovarian development during primate pregnancy," *The International Journal of Developmental Biology* 54, no. 2–3 (2010): 397–408, http://dx.doi.org/10.1387/ijdb.082758ea.

58. Sheri A. Berenbaum, "How Hormones Affect Behavioral and Neural Development: Introduction to the Special Issue on 'Gonadal Hormones and Sex Differences in Behavior,'" *Developmental Neuropsychology* 14 (1998): 175–196, http://dx.doi.org/10.1080/87565649809540708.

59. Jean D. Wilson, Fredrick W. George, and James E. Griffin, "The Hormonal Control of Sexual Development," *Science* 211 (1981): 1278–1284, http://dx.doi.org/10.1126/science.7010602.

60. *Ibid.*

61. See, for example, Celina C. C. Cohen-Bendahan, Cornelieke van de Beek, and Sheri A. Berenbaum, "Prenatal sex hormone effects on child and adult sex-typed behavior: methods and findings," *Neuroscience & Biobehavioral Reviews* 29, no. 2 (2005): 353–384, http://dx.doi.org/10.1016/j.neubiorev.2004.11.004; Marta Weinstock, "The potential influence of maternal stress hormones on development and mental health of the offspring," *Brain, Behavior, and Immunity* 19, no. 4 (2005): 296–308, http://dx.doi.org/10.1016/j.bbi.2004.09.006; Marta Weinstock, "Gender Differences in the Effects of Prenatal Stress on Brain Development and Behaviour," *Neurochemical Research* 32, no. 10 (2007): 1730–1740, http://dx.doi.org/10.1007/s11064-007-9339-4.

62. Vivette Glover, T. G. O'Connor, and Kieran O'Donnell, "Prenatal stress and the programming of the HPA axis," *Neuroscience & Biobehavioral Reviews* 35, no. 1 (2010): 17–22, http://dx.doi.org/10.1016/j.neubiorev.2009.11.008.

63. See, for example, Felix Beuschlein *et al.*, "Constitutive Activation of PKA Catalytic Subunit in Adrenal Cushing's Syndrome," *New England Journal of Medicine* 370, no. 11 (2014): 1019–1028, http://dx.doi.org/10.1056/NEJMoa1310359.

64. Phyllis W. Speiser, and Perrin C. White, "Congenital Adrenal Hyperplasia," *New England Journal of Medicine* 349, no. 8 (2003): 776–788, http://dx.doi.org/10.1056/NEJMra021561.

65. *Ibid.*, 776.

66. *Ibid.*

67. *Ibid.*, 778.

68. Phyllis W. Speiser *et al.*, "Congenital Adrenal Hyperplasia Due to Steroid 21-Hydroxylase Deficiency: An Endocrine Society Clinical Practice Guideline," *The Journal of Clinical Endocrinology and Metabolism* 95, no. 9 (2009): 4133–4160, http://dx.doi.org/10.1210/jc.2009-2631.

69. Melissa Hines, "Prenatal endocrine influences on sexual orientation and on sexually differentiated childhood behavior," 173–174.

70. Ieuan A. Hughes *et al.*, "Androgen insensitivity syndrome," *The Lancet* 380, no. 9851 (2012): 1419–1428, http://dx.doi.org/10.1016/S0140-6736%2812%2960071-3.

71. *Ibid.*, 1420.

72. *Ibid.*, 1419.

73. Melissa S. Hines, Faisal Ahmed, and Ieuan A. Hughes, "Psychological Outcomes and Gender-Related Development in Complete Androgen Insensitivity Syndrome," *Archives of Sexual Behavior* 32, no. 2 (2003): 93–101, http://dx.doi.org/10.1023/A:1022492106974.

74. See, for example, Claude J. Migeon Wisniewski *et al.*, "Complete Androgen Insensitivity Syndrome: Long-Term Medical, Surgical, and Psychosexual Outcome," *The Journal of Clinical Endocrinology & Metabolism* 85, no. 8 (2000): 2664–2669, http://dx.doi.org/10.1210/jcem.85.8.6742.

75. Peggy T. Cohen-Kettenis, "Gender Change in 46,XY Persons with 5α-Reductase-2 Deficiency and 17β-Hydroxysteroid Dehydrogenase-3 Deficiency," *Archives of Sexual Behavior* 34, no. 4 (2005): 399–410, http://dx.doi.org/10.1007/s10508-005-4339-4.

76. *Ibid.*, 399.

77. See, for example, Johannes Hönekopp *et al.*, "Second to fourth digit length ratio (2D:4D) and adult sex hormone levels: New data and a meta-analytic review," *Psychoneuroendocrinology* 32, no. 4 (2007): 313–321, http://dx.doi.org/10.1016/j.psyneuen.2007.01.007.

78. Terrance J. Williams *et al.*, "Finger-length ratios and sexual orientation," *Nature* 404, no. 6777 (2000): 455–456, http://dx.doi.org/10.1038/35006555.

79. S. J. Robinson and John T. Manning, "The ratio of 2nd to 4th digit length and male homosexuality," *Evolution and Human Behavior* 21, no. 5 (2000): 333–345, http://dx.doi.org/10.1016/S1090-5138(00)00052-0.

80. Qazi Rahman and Glenn D. Wilson, "Sexual orientation and the 2nd to 4th finger length ratio: evidence for organising effects of sex hormones or developmental instability?," *Psychoneuroendocrinology* 28, no. 3 (2003): 288–303, http://dx.doi.org/10.1016/S0306-4530(02)00022-7.

81. Richard A. Lippa, "Are 2D:4D Finger-Length Ratios Related to Sexual Orientation? Yes for Men, No for Women," *Journal of Personality and Social Psychology* 85, no. 1 (2003): 179–188, http://dx.doi.org/10.1037/0022-3514.85.1.179; Dennis McFadden and Erin Shubel, "Relative Lengths of Fingers and Toes in Human Males and Females," *Hormones and Behavior* 42, no. 4 (2002): 492–500, http://dx.doi.org/10.1006/hbeh.2002.1833.

82. Lynn S. Hall and Craig T. Love, "Finger-Length Ratios in Female Monozygotic Twins Discordant for Sexual Orientation," *Archives of Sexual Behavior* 32, no. 1 (2003): 23–28, http://dx.doi.org/10.1023/A:1021837211630.

83. *Ibid.*, 23.

84. Martin Voracek, John T. Manning, and Ivo Ponocny, "Digit ratio (2D:4D) in homosexual and heterosexual men from Austria," *Archives of Sexual Behavior* 34, no. 3 (2005): 335–340, http://dx.doi.org/10.1007/s10508-005-3122-x.

85. *Ibid.*, 339.

86. Günter Dörner *et al.*, "Stressful Events in Prenatal Life of Bi- and Homosexual Men," *Experimental and Clinical Endocrinology* 81, no. 1 (1983): 83–87, http://dx.doi.org/10.1055/s-0029-1210210.

87. See, for example, Lee Ellis *et al.*, "Sexual orientation of human offspring may be altered by severe maternal stress during pregnancy," *Journal of Sex Research* 25, no. 2 (1988): 152–157, http://dx.doi.org/10.1080/00224498809551449; J. Michael Bailey, Lee Willerman, and Carlton Parks, "A Test of the Maternal Stress Theory of Human Male Homosexuality," *Archives of Sexual Behavior* 20, no. 3 (1991): 277–293, http://dx.doi.org/10.1007/BF01541847; Lee Ellis and Shirley Cole-Harding, "The effects of prenatal stress, and of prenatal alcohol and nicotine exposure, on human sexual orientation," *Physiology & Behavior* 74, no. 1 (2001): 213–226, http://dx.doi.org/10.1016/S0031-9384(01)00564-9.

88. Melissa Hines *et al.*, "Prenatal Stress and Gender Role Behavior in Girls and Boys: A Longitudinal, Population Study," *Hormones and Behavior* 42, no. 2 (2002): 126–134, http://dx.doi.org/10.1006/hbeh.2002.1814.

89. Simon LeVay, "A Difference in Hypothalamic Structure between Heterosexual and Homosexual Men," *Science* 253, no. 5023 (1991): 1034–1037, http://dx.doi.org/10.1126/science.1887219.

90. William Byne *et al.*, "The Interstitial Nuclei of the Human Anterior Hypothalamus: An Investigation of Variation with Sex, Sexual Orientation, and HIV Status," *Hormones and Behavior* 40, no. 2 (2001): 87, http://dx.doi.org/10.1006/hbeh.2001.1680.

91. *Ibid.*, 91.

92. *Ibid.*

93. Mitchell S. Lasco, *et al.*, "A lack of dimorphism of sex or sexual orientation in the human anterior commissure," *Brain Research* 936, no. 1 (2002): 95–98, http://dx.doi.org/10.1016/S0006-8993(02)02590-8.

94. Dick F. Swaab, "Sexual orientation and its basis in brain structure and function," *Proceedings of the National Academy of Sciences* 105, no. 30 (2008): 10273–10274, http://dx.doi.org/10.1073/pnas.0805542105.

95. Felicitas Kranz and Alumit Ishai, "Face Perception Is Modulated by Sexual Preference," *Current Biology* 16, no. 1 (2006): 63–68, http://dx.doi.org/10.1016/j.cub.2005.10.070.

96. Ivanka Savic, Hans Berglund, and Per Lindström, "Brain response to putative pheromones in homosexual men," *Proceedings of the National Academy of Sciences* 102, no. 20 (2005): 7356–7361, http://dx.doi.org/10.1073/pnas.0407998102.

97. Hans Berglund, Per Lindström, and Ivanka Savic, "Brain response to putative pheromones in lesbian women," *Proceedings of the National Academy of Sciences* 103, no. 21 (2006): 8269–8274, http://dx.doi.org/10.1073/pnas.0600331103.

98. Ivanka Savic and Per Lindström, "PET and MRI show differences in cerebral asymmetry and functional connectivity between homo- and heterosexual subjects,"

Proceedings of the National Academy of Sciences 105, no. 27 (2008): 9403–9408, http://dx.doi.org/10.1073/pnas.0801566105.

99. Research on neuroplasticity shows that while there are critical periods of development in which the brain changes more rapidly and profoundly (for instance, during development of language in toddlers), the brain continues to change across the lifespan in response to behaviors (like practicing juggling or playing a musical instrument), life experiences, psychotherapy, medications, psychological trauma, and relationships. For a helpful and generally accessible overview of the research related to neuroplasticity, see Norman Doidge, *The Brain That Changes Itself: Stories of Personal Triumph from the Frontiers of Brain Science* (New York: Penguin, 2007).

100. Letitia Anne Peplau *et al.*, "The Development of Sexual Orientation in Women," *Annual Review of Sex Research* 10, no. 1 (1999): 81, http://dx.doi.org/10.1080/10532528.1999.10559775. Also see J. Michael Bailey, "What is Sexual Orientation and Do Women Have One?" in *Contemporary Perspectives on Lesbian, Gay, and Bisexual Identities*, ed. Debra A. Hope (New York: Springer, 2009), 43–63, http://dx.doi.org/10.1007/978-0-387-09556-1_3.

101. Mark S. Friedman *et al.*, "A Meta-Analysis of Disparities in Childhood Sexual Abuse, Parental Physical Abuse, and Peer Victimization Among Sexual Minority and Sexual Nonminority Individuals," *American Journal of Public Health* 101, no. 8 (2011): 1481–1494, http://dx.doi.org/10.2105/AJPH.2009.190009.

102. *Ibid.*, 1490.

103. *Ibid.*, 1492.

104. *Ibid.*

105. Emily F. Rothman, Deinera Exner, and Allyson L. Baughman, "The Prevalence of Sexual Assault Against People Who Identify as Gay, Lesbian, or Bisexual in the United States: A Systematic Review," *Trauma, Violence, & Abuse* 12, no. 2 (2011): 55–66, http://dx.doi.org/10.1177/1524838010390707.

106. Judith P. Andersen and John Blosnich, "Disparities in Adverse Childhood Experiences among Sexual Minority and Heterosexual Adults: Results from a Multi-State Probability-Based Sample," *PLOS ONE* 8, no. 1 (2013): e54691, http://dx.doi.org/10.1371/journal.pone.0054691.

107. Andrea L. Roberts *et al.*, "Pervasive Trauma Exposure Among US Sexual Orientation Minority Adults and Risk of Posttraumatic Stress Disorder," *American Journal of Public Health* 100, no. 12 (2010): 2433–2441, http://dx.doi.org/10.2105/AJPH.2009.168971.

108. Brendan P. Zietsch *et al.*, "Do shared etiological factors contribute to the relationship between sexual orientation and depression?," *Psychological Medicine* 42, no. 3 (2012): 521–532, http://dx.doi.org/10.1017/S0033291711001577.

109. The exact figure is not reported in the text for reasons the authors do not specify.

110. *Ibid.*, 526.

111. *Ibid.*, 527.

112. Marie E. Tomeo *et al.*, "Comparative Data of Childhood and Adolescence Molestation in Heterosexual and Homosexual Persons," *Archives of Sexual Behavior* 30, no. 5 (2001): 535–541, http://dx.doi.org/10.1023/A:1010243318426.

113. *Ibid.*, 541.

114. Helen W. Wilson and Cathy Spatz Widom, "Does Physical Abuse, Sexual Abuse, or Neglect in Childhood Increase the Likelihood of Same-sex Sexual Relationships and Cohabitation? A Prospective 30-year Follow-up," *Archives of Sexual Behavior* 39, no. 1 (2010): 63–74, http://dx.doi.org/10.1007/s10508-008-9449-3.

115. *Ibid.*, 70.

116. Andrea L. Roberts, M. Maria Glymour, and Karestan C. Koenen, "Does Maltreatment in Childhood Affect Sexual Orientation in Adulthood?," *Archives of Sexual Behavior* 42, no. 2 (2013): 161–171, http://dx.doi.org/10.1007/s10508-012-0021-9.

117. For those interested in the methodological details: this statistical method uses a two-step process where "instruments"—in this case, family characteristics that are known to be related to maltreatment (presence of a stepparent, parental alcohol abuse, or parental mental illness)—are used as the "instrumental variables" to predict the risk of maltreatment. In the second step, the predicted risk of maltreatment is employed as the independent variable and adult sexual orientation as the dependent variable; coefficients from this are the instrumental variable estimates. It should also be noted here that these instrumental variable estimation techniques rely on some important (and questionable) assumptions, in this case the assumption that the instruments (the stepparent, the alcohol abuse, the mental illness) do not affect the child's sexual orientation measures except through child abuse. But this assumption is not demonstrated, and therefore may constitute a foundational limitation of the method. Causation is difficult to support statistically and continues to beguile research in the social sciences in spite of efforts to design studies capable of generating stronger associations that give stronger support to claims of causation.

118. Roberts, Glymour, and Koenen, "Does Maltreatment in Childhood Affect Sexual Orientation in Adulthood?," 167.

119. Drew H. Bailey and J. Michael Bailey, "Poor Instruments Lead to Poor Inferences: Comment on Roberts, Glymour, and Koenen (2013)," *Archives of Sexual Behavior* 42, no. 8 (2013): 1649–1652, http://dx.doi.org/10.1007/s10508-013-0101-5.

120. Roberts, Glymour, and Koenen, "Does Maltreatment in Childhood Affect Sexual Orientation in Adulthood?," 169.

121. *Ibid.*, 169.

122. For information on the study, see "National Health and Social Life Survey," Population Research Center of the University of Chicago, http://popcenter.uchicago.edu/data/nhsls.shtml.

123. Edward O. Laumann *et al.*, *The Social Organization of Sexuality: Sexual Practices in the United States* (Chicago: University of Chicago Press, 1994); Robert T. Michael *et al.*, *Sex in America: A Definitive Survey* (New York: Warner Books, 1994).

124. Laumann *et al.*, *The Social Organization of Sexuality*, 295.

125. The third iteration of Natsal from 2010 found, over an age range from 16 to 74, that 1.0% of women and 1.5% of men consider themselves gay/lesbian, and 1.4% of women and 1.0% of men think of themselves as bisexual. See Catherine H. Mercer *et al.*, "Changes in sexual attitudes and lifestyles in Britain through the life course and over time: findings from the National Surveys of Sexual Attitudes and Lifestyles (Natsal)," *The Lancet* 382, no. 9907 (2013): 1781–1794, http://dx.doi.org/10.1016/S0140-6736(13)62035-8. Full results of this survey are reported in several articles in the same issue of *The Lancet*.

126. See Table 8.1 in Laumann *et al.*, *The Social Organization of Sexuality*, 304.

127. This figure is calculated from Table 8.2 in Laumann *et al.*, *The Social Organization of Sexuality*, 305.

128. For more information on the study design of Add Health, see Kathleen Mullan Harris *et al.*, "Study Design," The National Longitudinal Study of Adolescent to Adult Health, http://www.cpc.unc.edu/projects/addhealth/design. Some studies based on Add Health data use Arabic numerals rather than Roman numerals to label the waves; when describing or quoting from those studies, we stick with the Roman numerals.

129. See Table 1 in Ritch C. Savin-Williams and Kara Joyner, "The Dubious Assessment of Gay, Lesbian, and Bisexual Adolescents of Add Health," *Archives of Sexual Behavior* 43, no. 3 (2014): 413–422, http://dx.doi.org/10.1007/s10508-013-0219-5.

130. *Ibid.*, 415.

131. *Ibid.*

132. *Ibid.*

133. "Research Collaborators," The National Longitudinal Study of Adolescent to Adult Health, http://www.cpc.unc.edu/projects/addhealth/people.

134. J. Richard Udry and Kim Chantala, "Risk Factors Differ According to Same-Sex and Opposite-Sex Interest," *Journal of Biosocial Science* 37, no. 04 (2005): 481–497, http://dx.doi.org/10.1017/S0021932004006765.

135. Ritch C. Savin-Williams and Geoffrey L. Ream, "Prevalence and Stability of Sexual Orientation Components During Adolescence and Young Adulthood," *Archives of Sexual Behavior* 36, no. 3 (2007): 385–394, http://dx.doi.org/10.1007/s10508-006-9088-5.

136. *Ibid.*, 388.

137. *Ibid.*, 389.

138. *Ibid.*, 392–393.

139. *Ibid.*, 393.

140. Miles Q. Ott *et al.*, "Repeated Changes in Reported Sexual Orientation Identity Linked to Substance Use Behaviors in Youth," *Journal of Adolescent Health* 52, no. 4 (2013): 465–472, http://dx.doi.org/10.1016/j.jadohealth.2012.08.004.

141. Savin-Williams and Joyner, "The Dubious Assessment of Gay, Lesbian, and Bisexual

Adolescents of Add Health."

142. *Ibid.*, 416.

143. *Ibid.*, 414.

144. For more analysis of inaccurate responders in the Add Health surveys, see Xitao Fan *et al.*, "An Exploratory Study about Inaccuracy and Invalidity in Adolescent Self-Report Surveys," *Field Methods* 18, no. 3 (2006): 223–244, http://dx.doi.org/10.1177/152822X06289161.

145. Savin-Williams and Joyner were also skeptical of the Add Health survey data because the high proportion of youth reporting same-sex or both-sex attractions (7.3% of boys and 5.0% of girls) in Wave I was very unusual when compared to similar studies, and because of the dramatic reduction in reported same-sex attraction a little over a year later, in Wave II.

146. Savin-Williams and Joyner, "The Dubious Assessment of Gay, Lesbian, and Bisexual Adolescents of Add Health," 420.

147. Gu Li, Sabra L. Katz-Wise, and Jerel P. Calzo, "The Unjustified Doubt of Add Health Studies on the Health Disparities of Non-Heterosexual Adolescents: Comment on Savin-Williams and Joyner (2014)," *Archives of Sexual Behavior*, 43 no. 6 (2014): 1023–1026, http://dx.doi.org/10.1007/s10508-014-0313-3.

148. *Ibid.*, 1024.

149. *Ibid.*, 1025.

150. Ritch C. Savin-Williams and Kara Joyner, "The Politicization of Gay Youth Health: Response to Li, Katz-Wise, and Calzo (2014)," *Archives of Sexual Behavior* 43, no. 6 (2014): 1027–1030, http://dx.doi.org/10.1007/s10508-014-0359-2.

151. See, for example, Stephen T. Russell *et al.*, "Being Out at School: The Implications for School Victimization and Young Adult Adjustment," *American Journal of Orthopsychiatry* 84, no. 6 (2014): 635–643, http://dx.doi.org/10.1037/ort0000037.

152. Sabra L. Katz-Wise *et al.*, "Same Data, Different Perspectives: What Is at Stake? Response to Savin-Williams and Joyner (2014a)," *Archives of Sexual Behavior* 44, no. 1 (2015): 15, http://dx.doi.org/10.1007/s10508-014-0434-8.

153. *Ibid.*, 15.

154. *Ibid.*, 15–16.

155. For example, see Bailey, "What is Sexual Orientation and Do Women Have One?," 43–63; Peplau *et al.*, "The Development of Sexual Orientation in Women," 70–99.

156. Lisa M. Diamond, *Sexual Fluidity* (Cambridge, Mass.: Harvard University Press, 2008), 52.

157. Lisa M. Diamond, "Was It a Phase? Young Women's Relinquishment of Lesbian/Bisexual Identities Over a 5-Year Period," *Journal of Personality and Social Psychology* 84, no. 2 (2003): 352–364, http://dx.doi.org/10.1037/0022-3514.84.2.352.

158. Diamond, "What Does Sexual Orientation Orient?," 173–192.

159. This conference paper was summarized in Denizet-Lewis, "The Scientific Quest to Prove Bisexuality Exists."

160. A. Lee Beckstead, "Can We Change Sexual Orientation?," *Archives of Sexual Behavior* 41, no. 1 (2012): 128, http://dx.doi.org/10.1007/s10508-012-9922-x.

Part Two: Sexuality, Mental Health Outcomes, and Social Stress

1. Michael King *et al.*, "A systematic review of mental disorder, suicide, and deliberate self harm in lesbian, gay and bisexual people," *BMC Psychiatry* 8 (2008): 70, http://dx.doi.org/10.1186/1471-244X-8-70.

2. The researchers who performed this meta-analysis initially found 13,706 papers by searching academic and medical research databases, but after excluding duplicates and other spurious search results examined 476 papers. After further excluding uncontrolled studies, qualitative papers, reviews, and commentaries, the authors found 111 data-based papers, of which they excluded 87 that were not population-based studies, or that failed to employ psychiatric diagnoses, or that used poor sampling. The 28 remaining papers relied on 25 studies (some of the papers examined data from the same studies), which King and colleagues evaluated using four quality criteria: (1) whether or not random sampling was used; (2) the representativeness of the study (measured by survey response rates); (3) whether the sample was drawn from the general population or from some more limited subset, such as university students; and (4) sample size. However, only one study met all four criteria. Acknowledging the inherent limitations and inconsistencies of sexual orientation concepts, the authors included information on how those concepts were operationalized in the studies analyzed—whether in terms of same-sex attraction (four studies), same-sex behavior (thirteen studies), self-identification (fifteen studies), score above zero on the Kinsey scale (three studies), two different definitions of sexual orientation (nine studies), three different definitions (one study). Eighteen of the studies used a specific time frame for defining the sexuality of their subjects. The studies were also grouped into whether or not they focused on lifetime or twelve-month prevalence, and whether the authors analyzed outcomes for LGB populations separately or collectively.

3. 95% confidence interval: 1.87–3.28.

4. 95% confidence interval: 1.69–2.48.

5. 95% confidence interval: 1.23–1.92.

6. 95% confidence interval: 1.23–1.86.

7. 95% confidence interval: 1.97–5.92.

8. 95% confidence interval: 2.32–7.88.

9. Wendy B. Bostwick *et al.*, "Dimensions of Sexual Orientation and the Prevalence of Mood and Anxiety Disorders in the United States," *American Journal of Public Health* 100, no. 3 (2010): 468–475, http://dx.doi.org/10.2105/AJPH.2008.152942.

10. *Ibid.*, 470.

11. The difference in health outcomes between women who identify as lesbians and women who report exclusive same-sex sexual behaviors or attractions is a good illustration of how the differences between sexual identity, behavior, and attraction matter.

12. Susan D. Cochran and Vickie M. Mays, "Physical Health Complaints Among Lesbians, Gay Men, and Bisexual and Homosexually Experienced Heterosexual Individuals: Results From the California Quality of Life Survey," *American Journal of Public Health* 97, no. 11 (2007): 2048–2055, http://dx.doi.org/10.2105/AJPH.2006.087254.

13. Christine E. Grella *et al.*, "Influence of gender, sexual orientation, and need on treatment utilization for substance use and mental disorders: Findings from the California Quality of Life Survey," *BMC Psychiatry* 9, no. 1 (2009): 52, http://dx.doi.org/10.1186/1471-244X-9-52.

14. Theo G. M. Sandfort *et al.*, "Sexual Orientation and Mental and Physical Health Status: Findings from a Dutch Population Survey," *American Journal of Public Health* 96, (2006): 1119–1125, http://dx.doi.org/10.2105%2FAJPH.2004.058891.

15. Robert Graham *et al.*, Committee on Lesbian, Gay, Bisexual, and Transgender Health Issues and Research Gaps and Opportunities, Institute of Medicine, *The Health of Lesbian, Gay, Bisexual, and Transgender People: Building a Foundation for Better Understanding* (Washington, D.C.: The National Academies Press, 2011), http://dx.doi.org/10.17226/13128.

16. Susan D. Cochran, J. Greer Sullivan, and Vickie M. Mays, "Prevalence of Mental Disorders, Psychological Distress, and Mental Health Services Use Among Lesbian, Gay, and Bisexual Adults in the United States," *Journal of Consulting and Clinical Psychology* 71, no. 1 (2007): 53–61, http://dx.doi.org/10.1037/0022-006X.71.1.53.

17. Lisa A. Razzano, Alicia Matthews, and Tonda L. Hughes, "Utilization of Mental Health Services: A Comparison of Lesbian and Heterosexual Women," *Journal of Gay & Lesbian Social Services* 14, no. 1 (2002): 51–66, http://dx.doi.org/10.1300/J041v14n01_03.

18. Robert Graham *et al.*, *The Health of Lesbian, Gay, Bisexual, and Transgender People*, 4.

19. *Ibid.*, 190, see also 258–259.

20. *Ibid.*, 211.

21. Esther D. Rothblum and Rhonda Factor, "Lesbians and Their Sisters as a Control Group: Demographic and Mental Health Factors," *Psychological Science* 12, no. 1 (2001): 63–69, http://dx.doi.org/10.1111/1467-9280.00311.

22. Stephen M. Horowitz, David L. Weis, and Molly T. Laflin, "Bisexuality, Quality of Life, Lifestyle, and Health Indicators," *Journal of Bisexuality* 3, no. 2 (2003): 5–28, http://dx.doi.org/10.1300/J159v03n02_02.

23. By way of context, it may be worth noting that in the United States, the overall suicide rate has risen in recent years: "From 1999 through 2014, the age-adjusted suicide rate in the United States increased 24%, from 10.5 to 13.0 per 100,000 population, with the pace of increase greater after 2006." Sally C. Curtin, Margaret Warner, and Holly Hedegaard, "Increase in suicide in the United States, 1999–2014," National Center for

Health Statistics, NCHS data brief no. 241 (April 22, 2016), http://www.cdc.gov/nchs/products/databriefs/db241.htm.

24. Ann P. Haas *et al.*, "Suicide and Suicide Risk in Lesbian, Gay, Bisexual, and Transgender Populations: Review and Recommendations," *Journal of Homosexuality* 58, no. 1 (2010): 10–51, http://dx.doi.org/10.1080/00918369.2011.534038.

25. *Ibid.*, 13.

26. David M. Fergusson, L. John Horwood, and Annette L. Beautrais, "Is Sexual Orientation Related to Mental Health Problems and Suicidality in Young People?," *Archives of General Psychiatry* 56, no. 10 (1999): 876–880, http://dx.doi.org/10.1001/archpsyc.56.10.876.

27. Paul J. M. Van Kesteren *et al.*, "Mortality and morbidity in transsexual subjects treated with cross-sex hormones," *Clinical Endocrinology* 47, no. 3 (1997): 337–343, http://dx.doi.org/10.1046/j.1365-2265.1997.2601068.x.

28. Friedemann Pfäfflin and Astrid Junge, *Sex Reassignment: Thirty Years of International Follow-Up Studies After Sex Reassignment Surgery: A Comprehensive Review, 1961–1991*, Roberta B. Jacobson and Alf B. Meier, trans. (Düsseldorf: Symposion Publishing, 1998), https://web.archive.org/web/20070503090247/http://www.symposion.com/ijt/pfaefflin/1000.htm.

29. Jean M. Dixen *et al.*, "Psychosocial characteristics of applicants evaluated for surgical gender reassignment," *Archives of Sexual Behavior* 13, no. 3 (1984): 269–276, http://dx.doi.org/10.1007/BF01541653.

30. Robin M. Mathy, "Transgender Identity and Suicidality in a Nonclinical Sample: Sexual Orientation, Psychiatric History, and Compulsive Behaviors," *Journal of Psychology & Human Sexuality* 14, no. 4 (2003): 47–65, http://dx.doi.org/10.1300/J056v14n04_03.

31. Yue Zhao *et al.*, "Suicidal Ideation and Attempt Among Adolescents Reporting 'Unsure' Sexual Identity or Heterosexual Identity Plus Same-Sex Attraction or Behavior: Forgotten Groups?," *Journal of the American Academy of Child & Adolescent Psychiatry* 49, no. 2 (2010): 104–113, http://dx.doi.org/10.1016/j.jaac.2009.11.003.

32. Wendy B. Bostwick *et al.*, "Dimensions of Sexual Orientation and the Prevalence of Mood and Anxiety Disorders in the United States."

33. Martin Plöderl *et al.*, "Suicide Risk and Sexual Orientation: A Critical Review," *Archives of Sexual Behavior* 42, no. 5 (2013): 715–727, http://dx.doi.org/10.1007/s10508-012-0056-y.

34. Ritch C. Savin-Williams, "Suicide Attempts Among Sexual-Minority Youths: Population and Measurement Issues," *Journal of Consulting and Clinical Psychology* 69, no. 6 (2001): 983–991, http://dx.doi.org/10.1037/0022-006X.69.6.983.

35. For females in this study, eliminating false positive attempts substantially decreased the difference between orientations. For males, the "true suicide attempts" difference approached statistical significance: 2% of heterosexual males (1 of 61) and 9% of homosexual males (5 of 53) attempted suicide, resulting in an odds ratio of 6.2.

36. Martin Plöderl *et al.*, "Suicide Risk and Sexual Orientation," 716–717.

37. *Ibid.*, 723.

38. *Ibid.*

39. Richard Herrell *et al.*, "Sexual Orientation and Suicidality: A Co-twin Control Study in Adult Men," *Archives of General Psychiatry* 56, no. 10 (1999): 867–874, http://dx.doi.org/10.1001/archpsyc.56.10.867.

40. *Ibid.*, 872.

41. Robin M. Mathy *et al.*, "The association between relationship markers of sexual orientation and suicide: Denmark, 1990–2001," *Social Psychiatry and Psychiatric Epidemiology* 46, no. 2 (2011): 111–117, http://dx.doi.org/10.1007/s00127-009-0177-3.

42. Gary Remafedi, James A. Farrow, and Robert W. Deisher, "Risk Factors for Attempted Suicide in Gay and Bisexual Youth," *Pediatrics* 87, no. 6 (1991): 869–875, http://pediatrics.aappublications.org/content/87/6/869.

43. *Ibid.*, 873.

44. Gary Remafedi, "Adolescent Homosexuality: Psychosocial and Medical Implications," *Pediatrics* 79, no. 3 (1987): 331–337, http://pediatrics.aappublications.org/content/79/3/331.

45. Martin Plöderl, Karl Kralovec, and Reinhold Fartacek, "The Relation Between Sexual Orientation and Suicide Attempts in Austria," *Archives of Sexual Behavior* 39, no. 6 (2010): 1403–1414, http://dx.doi.org/10.1007/s10508-009-9597-0.

46. Travis Salway Hottes *et al.*, "Lifetime Prevalence of Suicide Attempts Among Sexual Minority Adults by Study Sampling Strategies: A Systematic Review and Meta-Analysis," *American Journal of Public Health* 106, no. 5 (2016): e1–e12, http://dx.doi.org/10.2105/AJPH.2016.303088.

47. For a brief explanation of the strengths and limitations of population- and community-based sampling, see Hottes *et al.*, e2.

48. 95% confidence intervals: 8–15% and 3–5%, respectively.

49. 95% confidence interval: 18–22%.

50. Ana Maria Buller *et al.*, "Associations between Intimate Partner Violence and Health among Men Who Have Sex with Men: A Systematic Review and Meta-Analysis," *PLOS Medicine* 11, no. 3 (2014): e1001609, http://dx.doi.org/10.1371/journal.pmed.1001609.

51. Sabrina N. Nowinski and Erica Bowen, "Partner violence against heterosexual and gay men: Prevalence and correlates," *Aggression and Violent Behavior* 17, no. 1 (2012): 36–52, http://dx.doi.org/10.1016/j.avb.2011.09.005. It is worth noting that the 54 studies that Nowinski and Bowen consider operationalize heterosexuality and homosexuality in various ways.

52. *Ibid.*, 39.

53. *Ibid.*, 50.

54. Shonda M. Craft and Julianne M. Serovich, "Family-of-Origin Factors and Partner Violence in the Intimate Relationships of Gay Men Who Are HIV Positive," *Journal of Interpersonal Violence* 20, no. 7 (2005): 777–791, http://dx.doi.org/10.1177/0886260505277101.

55. Catherine Finneran and Rob Stephenson, "Intimate Partner Violence Among Men Who Have Sex With Men: A Systematic Review," *Trauma, Violence, & Abuse* 14, no. 2 (2013): 168–185, http://dx.doi.org/10.1177/1524838012470034.

56. *Ibid.*, 180.

57. Although one study reported just 12%, the majority of studies (17 out of 24) showed that physical IPV was at least 22%, with nine studies recording rates of 31% or more.

58. Although Finneran and Stephenson say this measure was recorded in only six studies, the table they provide lists eight studies as measuring psychological violence, with seven of these showing rates 33% or higher, including five reporting rates of 45% or higher.

59. Naomi G. Goldberg and Ilan H. Meyer, "Sexual Orientation Disparities in History of Intimate Partner Violence: Results From the California Health Interview Survey," *Journal of Interpersonal Violence* 28, no. 5 (2013): 1109–1118, http://dx.doi.org/10.1177/0886260512459384.

60. Gregory L. Greenwood *et al.*, "Battering Victimization Among a Probability-Based Sample of Men Who Have Sex With Men," *American Journal of Public Health* 92, no. 12 (2002): 1964–1969, http://dx.doi.org/10.2105/AJPH.92.12.1964.

61. *Ibid.*, 1967.

62. *Ibid.*

63. Sari L. Reisner *et al.*, "Mental Health of Transgender Youth in Care at an Adolescent Urban Community Health Center: A Matched Retrospective Cohort Study," *Journal of Adolescent Health* 56, no. 3 (2015): 274–279, http://dx.doi.org/10.1016/j.jadohealth.2014.10.264.

64. Relative risk: 3.95.

65. Relative risk: 3.27.

66. Relative risk: 3.61.

67. Relative risk: 3.20.

68. Relative risk: 4.30.

69. Relative risk: 2.36.

70. Relative risk: 4.36.

71. Anne P. Haas, Philip L. Rodgers, and Jody Herman, "Suicide Attempts Among Transgender and Gender Non-Conforming Adults: Findings of the National Transgender Discrimination Survey," Williams Institute, UCLA School of Law, January 2014, http://williamsinstitute.law.ucla.edu/wp-content/uploads/AFSP-Williams-Suicide-Report-

Final.pdf.

72. *Ibid.*, 2.

73. *Ibid.*, 8.

74. *Ibid.*, 13.

75. Kristen Clements-Nolle *et al.*, "HIV Prevalence, Risk Behaviors, Health Care Use, and Mental Health Status of Transgender Persons: Implications for Public Health Intervention," *American Journal of Public Health* 91, no. 6 (2001): 915–921, http://dx.doi.org/10.2105/AJPH.91.6.915.

76. *Ibid.*, 919.

77. See, for example, Ilan H. Meyer, "Minority Stress and Mental Health in Gay Men," *Journal of Health and Social Behavior* 36 (1995): 38–56, http://dx.doi.org/10.2307/2137286; Bruce P. Dohrenwend, "Social Status and Psychological Disorder: An Issue of Substance and an Issue of Method," *American Sociological Review* 31, no. 1 (1966): 14–34, http://www.jstor.org/stable/2091276.

78. For overviews of the social stress model and mental health patterns among LGBT populations, see Ilan H. Meyer, "Prejudice, Social Stress, and Mental Health in Lesbian, Gay, and Bisexual Populations: Conceptual Issues and Research Evidence," *Psychological Bulletin* 129, no. 5 (2003): 674–697, http://dx.doi.org/10.1037/0033-2909.129.5.674; Robert Graham *et al.*, *The Health of Lesbian, Gay, Bisexual, and Transgender People*, *op. cit*; Gregory M. Herek and Linda D. Garnets, "Sexual Orientation and Mental Health," *Annual Review of Clinical Psychology* 3 (2007): 353–375, http://dx.doi.org/10.1146/annurev.clinpsy.3.022806.091510; Mark L. Hatzenbuehler, "How Does Sexual Minority Stigma 'Get Under the Skin'? A Psychological Mediation Framework," *Psychological Bulletin* 135, no. 5 (2009): 707–730, http://dx.doi.org/10.1037/a0016441.

79. See, for instance, Ilan H. Meyer, "The Right Comparisons in Testing the Minority Stress Hypothesis: Comment on Savin-Williams, Cohen, Joyner, and Rieger (2010)," *Archives of Sexual Behavior* 39, no. 6 (2010): 1217–1219.

80. This should not be taken to suggest that social stress is too vague a concept for empirical social science; the social stress model may certainly produce quantitative empirical hypotheses, such as hypotheses about correlations between stressors and specific mental health outcomes. In this context, the term "model" does not refer to a statistical model of the kind often used in social science research—the social stress model is a "model" in a metaphorical sense.

81. Meyer, "Prejudice, Social Stress, and Mental Health in Lesbian, Gay, and Bisexual Populations," 676.

82. Meyer, "Prejudice, Social Stress, and Mental Health in Lesbian, Gay, and Bisexual Populations," 680; Gregory M. Herek, J. Roy Gillis, and Jeanine C. Cogan, "Psychological Sequelae of Hate-Crime Victimization Among Lesbian, Gay, and Bisexual Adults," *Journal of Consulting and Clinical Psychology* 67, no. 6 (1999): 945–951, http://dx.doi.org/10.1037/0022-006X.67.6.945; Allegra R. Gordon and Ilan H. Meyer, "Gender Nonconformity as a Target of Prejudice, Discrimination, and Violence Against LGB

Individuals," *Journal of LGBT Health Research* 3, no. 3 (2008): 55–71, http://dx.doi.org/10.1080/15574090802093562; David M. Huebner, Gregory M. Rebchook, and Susan M. Kegeles, "Experiences of Harassment, Discrimination, and Physical Violence Among Young Gay and Bisexual Men," *American Journal of Public Health* 94, no. 7 (2004): 1200–1203, http://dx.doi.org/10.2105/AJPH.94.7.1200; Rebecca L Stotzer, "Violence against transgender people: A review of United States data," *Aggression and Violent Behavior* 14, no. 3 (2009): 170–179, http://dx.doi.org/10.1016/j.avb.2009.01.006; Rebecca L. Stotzer, "Gender identity and hate crimes: Violence against transgender people in Los Angeles County," *Sexuality Research and Social Policy* 5, no. 1 (2008): 43–52, http://dx.doi.org/10.1525/srsp.2008.5.1.43.

83. Stotzer, "Gender identity and hate crimes," 43–52; Emilia L. Lombardi *et al.*, "Gender Violence: Transgender Experiences with Violence and Discrimination," *Journal of Homosexuality* 42, no. 1 (2002): 89–101, http://dx.doi.org/10.1300/J082v42n01_05; Herek, Gillis, and Cogan, "Psychological Sequelae of Hate-Crime Victimization Among Lesbian, Gay, and Bisexual Adults," 945–951; Huebner, Rebchook, and Kegeles, "Experiences of Harassment, Discrimination, and Physical Violence Among Young Gay and Bisexual Men," 1200–1203; Anne H. Faulkner and Kevin Cranston, "Correlates of same-sex sexual behavior in a random sample of Massachusetts high school students," *American Journal of Public Health* 88, no. 2 (1998): 262–266, http://dx.doi.org/10.2105/AJPH.88.2.262.

84. Herek, Gillis, and Cogan, "Psychological Sequelae of Hate-Crime Victimization Among Lesbian, Gay, and Bisexual Adults," 945–951.

85. Jack McDevitt *et al.*, "Consequences for Victims: A Comparison of Bias- and Non-Bias-Motivated Assaults," *American Behavioral Scientist* 45, no. 4 (2001): 697–713, http://dx.doi.org/10.1177/0002764201045004010.

86. Caitlin Ryan and Ian Rivers, "Lesbian, gay, bisexual and transgender youth: Victimization and its correlates in the USA and UK," *Culture, Health & Sexuality* 5, no. 2 (2003): 103–119, http://dx.doi.org/10.1080/1369105011000012883; Elise D. Berlan *et al.*, "Sexual Orientation and Bullying Among Adolescents in the Growing Up Today Study," *Journal of Adolescent Health* 46, no. 4 (2010): 366–371, http://dx.doi.org/10.1016/j.jadohealth.2009.10.015; Ritch C. Savin-Williams, "Verbal and Physical Abuse as Stressors in the Lives of Lesbian, Gay Male, and Bisexual Youths: Associations With School Problems, Running Away, Substance Abuse, Prostitution, and Suicide," *Journal of Consulting and Clinical Psychology* 62, no. 2 (1994): 261–269, http://dx.doi.org/10.1037/0022-006X.62.2.261.

87. Stephen T. Russell *et al.*, "Lesbian, Gay, Bisexual, and Transgender Adolescent School Victimization: Implications for Young Adult Health and Adjustment," *Journal of School Health* 81, no. 5 (2011): 223–230, http://dx.doi.org/10.1111/j.1746-1561.2011.00583.x.

88. Joanna Almeida *et al.*, "Emotional Distress Among LGBT Youth: The Influence of Perceived Discrimination Based on Sexual Orientation," *Journal of Youth and Adolescence* 38, no. 7 (2009): 1001–1014, http://dx.doi.org/10.1007/s10964-009-9397-9.

89. M. V. Lee Badgett, "The Wage Effects of Sexual Orientation Discrimination," *Industrial and Labor Relations Review* 48, no. 4 (1995): 726–739, http://dx.doi.org/10.1177/

001979399504800408.

90. M. V. Lee Badgett, "Bias in the Workplace: Consistent Evidence of Sexual Orientation and Gender Identity Discrimination 1998–2008," *Chicago-Kent Law Review* 84, no. 2 (2009): 559–595, http://scholarship.kentlaw.iit.edu/cklawreview/vol84/iss2/7.

91. Marieka Klawitter, "Meta-Analysis of the Effects of Sexual Orientation on Earning," *Industrial Relations* 54, no. 1 (2015): 4–32, http://dx.doi.org/10.1111/irel.12075.

92. Jonathan Platt *et al.*, "Unequal depression for equal work? How the wage gap explains gendered disparities in mood disorders," *Social Science & Medicine* 149 (2016): 1–8, http://dx.doi.org/10.1016/j.socscimed.2015.11.056.

93. Craig R. Waldo, "Working in a majority context: A structural model of heterosexism as minority stress in the workplace," *Journal of Counseling Psychology* 46, no. 2 (1999): 218–232, http://dx.doi.org/10.1037/0022-0167.46.2.218.

94. M. W. Linn, Richard Sandifer, and Shayna Stein, "Effects of unemployment on mental and physical health," *American Journal of Public Health* 75, no. 5 (1985): 502–506, http://dx.doi.org/10.2105/AJPH.75.5.502; Jennie E. Brand, "The far-reaching impact of job loss and unemployment," *Annual Review of Sociology* 41 (2015): 359–375, http://dx.doi.org/10.1146/annurev-soc-071913-043237; Marie Conroy, "A Qualitative Study of the Psychological Impact of Unemployment on individuals," (master's dissertation, Dublin Institute of Technology, September 2010), http://arrow.dit.ie/aaschssldis/50/.

95. Irving Goffman, *Stigma: Notes on the Management of Spoiled Identity* (New York: Simon & Schuster, 1963); Brenda Major and Laurie T. O'Brien, "The Social Psychology of Stigma," *Annual Review of Psychology*, 56 (2005): 393–421, http://dx.doi.org/10.1146/annurev.psych.56.091103.070137.

96. Major and O'Brien, "The Social Psychology of Stigma," 395.

97. Bruce G. Link *et al.*, "On Stigma and Its Consequences: Evidence from a Longitudinal Study of Men with Dual Diagnoses of Mental Illness and Substance Abuse," *Journal of Health and Social Behavior* 38, no. (1997): 177–190, http://dx.doi.org/10.2307/2955424.

98. Walter R. Gove, "The Current Status of the Labeling Theory of Mental Illness," in *Deviance and Mental Illness*, ed. Walter R. Gove (Beverly Hills, Calif.: Sage, 1982), 290.

99. A highly cited piece of theoretical research on stigma processes is Hatzenbuehler, "How Does Sexual Minority Stigma 'Get Under the Skin'?," *op. cit.*, http://dx.doi.org/10.1037/a0016441.

100. Walter O. Bockting *et al.*, "Stigma, Mental Health, and Resilience in an Online Sample of the US Transgender Population," *American Journal of Public Health* 103, no. 5 (2013): 943–951, http://dx.doi.org/10.2105/AJPH.2013.301241.

101. Robin J. Lewis *et al.*, "Stressors for Gay Men and Lesbians: Life Stress, Gay-Related Stress, Stigma Consciousness, and Depressive Symptoms," *Journal of Social and Clinical Psychology* 22, no. 6 (2003): 716–729, http://dx.doi.org/10.1521/jscp.22.6.716.22932.

102. *Ibid.*, 721.

103. Aaron T. Beck *et al.*, *Cognitive Therapy of Depression* (New York: Guilford Press,

1979).

104. Wendy Bostwick, "Assessing Bisexual Stigma and Mental Health Status: A Brief Report," *Journal of Bisexuality* 12, no. 2 (2012): 214–222, http://dx.doi.org/10.1080/15299716.2012.674860.

105. Lars Wichstrøm and Kristinn Hegna, "Sexual Orientation and Suicide Attempt: A Longitudinal Study of the General Norwegian Adolescent Population," *Journal of Abnormal Psychology* 112, no. 1 (2003): 144–151, http://dx.doi.org/10.1037/0021-843X.112.1.144.

106. Anthony R. D'Augelli and Arnold H. Grossman, "Disclosure of Sexual Orientation, Victimization, and Mental Health Among Lesbian, Gay, and Bisexual Older Adults," *Journal of Interpersonal Violence* 16, no. 10 (2001): 1008–1027, http://dx.doi.org/10.1177/088626001016010003; Eric R. Wright and Brea L. Perry, "Sexual Identity Distress, Social Support, and the Health of Gay, Lesbian, and Bisexual Youth," *Journal of Homosexuality* 51, no. 1 (2006): 81–110, http://dx.doi.org/10.1300/J082v51n01_05; Judith A. Clair, Joy E. Beatty, and Tammy L. MacLean, "Out of Sight But Not Out of Mind: Managing Invisible Social Identities in the Workplace," *Academy of Management Review* 30, no. 1 (2005): 78–95, http://dx.doi.org/10.5465/AMR.2005.15281431.

107. For example, see *Emotion, Disclosure, and Health* (Washington, D.C.: American Psychological Association, 2002), ed. James W. Pennebaker; Joanne Frattaroli, "Experimental Disclosure and Its Moderators: A Meta-Analysis," *Psychological Bulletin* 132, no. 6 (2006): 823–865, http://dx.doi.org/10.1037/0033-2909.132.6.823.

108. See, for example, James M. Croteau, "Research on the Work Experiences of Lesbian, Gay, and Bisexual People: An Integrative Review of Methodology and Findings," *Journal of Vocational Behavior* 48, no. 2 (1996): 195–209, http://dx.doi.org/10.1006/jvbe.1996.0018; Anthony R. D'Augelli, Scott L. Hershberger, and Neil W. Pilkington, "Lesbian, Gay, and Bisexual Youth and Their Families: Disclosure of Sexual Orientation and Its Consequences," *American Journal of Orthopsychiatry* 68, no. 3 (1998): 361–371, http://dx.doi.org/10.1037/h0080345; Margaret Rosario, Eric W. Schrimshaw, and Joyce Hunter, "Disclosure of Sexual Orientation and Subsequent Substance Use and Abuse Among Lesbian, Gay, and Bisexual Youths: Critical Role of Disclosure Reactions," *Psychology of Addictive Behaviors* 23, no. 1 (2009): 175–184, http://dx.doi.org/10.1037/a0014284; D'Augelli and Grossman, "Disclosure of Sexual Orientation, Victimization, and Mental Health Among Lesbian, Gay, and Bisexual Older Adults," 1008–1027; Belle Rose Ragins, "Disclosure Disconnects: Antecedents and Consequences of Disclosing Invisible Stigmas across Life Domains," *Academy of Management Review* 33, no. 1 (2008): 194–215, http://dx.doi.org/10.5465/AMR.2008.27752724; Nicole Legate, Richard M. Ryan, and Netta Weinstein, "Is Coming Out Always a 'Good Thing'? Exploring the Relations of Autonomy Support, Outness, and Wellness for Lesbian, Gay, and Bisexual Individuals," *Social Psychological and Personality Science* 3, no. 2 (2012): 145–152, http://dx.doi.org/10.1177/1948550611411929.

109. Belle Rose Ragins, Romila Singh, and John M. Cornwell, "Making the Invisible Visible: Fear and Disclosure of Sexual Orientation at Work," *Journal of Applied Psychology* 92, no. 4 (2007): 1103–1118, http://dx.doi.org/10.1037/0021-9010.92.4.1103.

110. *Ibid.*, 1114.

111. Dawn Michelle Baunach, "Changing Same-Sex Marriage Attitudes in America from 1988 Through 2010," *Public Opinion Quarterly* 76, no. 2 (2012): 364–378, http://dx.doi.org/10.1093/poq/nfs022; Pew Research Center, "Changing Attitudes on Gay Marriage" (online publication), July 29, 2015, http://www.pewforum.org/2015/07/29/graphics-slideshow-changing-attitudes-on-gay-marriage/; Bruce Drake, Pew Research Center, "How LGBT adults see society and how the public sees them" (online publication), June 25, 2013, http://www.pewresearch.org/fact-tank/2013/06/25/how-lgbt-adults-see-society-and-how-the-public-sees-them/.

112. Mark L. Hatzenbuehler, Katherine M. Keyes, and Deborah S. Hasin, "State-Level Policies and Psychiatric Morbidity In Lesbian, Gay, and Bisexual Populations," *American Journal of Public Health* 99, no. 12 (2009): 2275–2281, http://dx.doi.org/10.2105/AJPH.2008.153510.

113. Deborah S. Hasin and Bridget F. Grant, "The National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) Waves 1 and 2: review and summary of findings," *Social Psychiatry and Psychiatric Epidemiology* 50, no. 11 (2015): 1609–1640, http://dx.doi.org/10.1007/s00127-015-1088-0.

114. Mark L. Hatzenbuehler *et al.*, "The Impact of Institutional Discrimination on Psychiatric Disorders in Lesbian, Gay, and Bisexual Populations: A Prospective Study," *American Journal of Public Health* 100, no. 3 (2010): 452–459, http://dx.doi.org/10.2105/AJPH.2009.168815.

115. Sharon Scales Rostosky *et al.*, "Marriage Amendments and Psychological Distress in Lesbian, Gay, and Bisexual (LGB) Adults," *Journal of Counseling Psychology* 56, no. 1 (2009): 56–66, http://dx.doi.org/10.1037/a0013609.

116. Roberto Maniglio, "The impact of child sexual abuse on health: A systematic review of reviews," *Clinical Psychology Review* 29 (2009): 647, http://dx.doi.org/10.1016/j.cpr.2009.08.003.

Part Three: Gender Identity

1. American Psychological Association, "Answers to Your Questions About Transgender People, Gender Identity and Gender Expression" (pamphlet), http://www.apa.org/topics/lgbt/transgender.pdf.

2. Simone de Beauvoir, *The Second Sex* (New York: Vintage, 2011 [orig. 1949]), 283.

3. Ann Oakley, *Sex, Gender and Society* (London: Maurice Temple Smith, 1972).

4. Suzanne J. Kessler and Wendy McKenna, *Gender: An Ethnomethodological Approach* (New York: John Wiley & Sons, 1978), vii.

5. Gayle Rubin, "The Traffic in Women: Notes on the 'Political Economy' of Sex," in *Toward an Anthropology of Women*, ed. Rayna R. Reiter (New York and London: Monthly Review Press, 1975), 179.

6. *Ibid.*, 204.

7. Judith Butler, *Gender Trouble: Feminism and the Subversion of Identity* (London: Routledge, 1990).

8. Judith Butler, *Undoing Gender* (New York: Routledge, 2004).

9. Butler, *Gender Trouble*, 7.

10. *Ibid.*, 6.

11. "Facebook Diversity" (web page), https://www.facebook.com/facebookdiversity/photos/a.196865713743272.42938.105225179573993/567587973337709/.

12. Will Oremus, "Here Are All the Different Genders You Can Be on Facebook," *Slate*, February 13, 2014, http://www.slate.com/blogs/future_tense/2014/02/13/facebook_custom_gender_options_here_are_all_56_custom_options.html.

13. André Ancel, Michaël Beaulieu, and Caroline Gilbert, "The different breeding strategies of penguins: a review," *Comptes Rendus Biologies* 336, no. 1 (2013): 6–7, http://dx.doi.org/10.1016/j.crvi.2013.02.002. Generally, male emperor penguins do the work of incubating the eggs and then caring for the chicks for several days after hatching. After that point, males and females take turns caring for the chicks.

14. Jennifer A. Marshall Graves and Swathi Shetty, "Sex from W to Z: Evolution of Vertebrate Sex Chromosomes and Sex Determining Genes," *Journal of Experimental Zoology* 290 (2001): 449–462, http://dx.doi.org/10.1002/jez.1088.

15. For an overview of Thomas Beatie's story, see his book, *Labor of Love: The Story of One Man's Extraordinary Pregnancy* (Berkeley: Seal Press, 2008).

16. Edward Stein, *The Mismeasure of Desire: The Science, Theory, and Ethics of Sexual Orientation* (New York: Oxford University Press, 1999), 31.

17. John Money, "Hermaphroditism, gender and precocity in hyperadrenocorticism: psychologic findings," *Bulletin of the John Hopkins Hospital* 95, no. 6 (1955): 253–264, http://www.ncbi.nlm.nih.gov/pubmed/14378807.

18. An account of the David Reimer story can be found in John Colapinto, *As Nature Made Him: The Boy Who Was Raised as a Girl* (New York: Harper Collins, 2000).

19. William G. Reiner and John P. Gearhart, "Discordant Sexual Identity in Some Genetic Males with Cloacal Exstrophy Assigned to Female Sex at Birth," *New England Journal of Medicine*, 350 (January 2004): 333–341, http://dx.doi.org/10.1056/NEJMoa022236.

20. Paul R. McHugh, "Surgical Sex: Why We Stopped Doing Sex Change Operations," *First Things* (November 2004), http://www.firstthings.com/article/2004/11/surgical-sex.

21. American Psychiatric Association, "Gender Dysphoria," *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* [hereafter *DSM-5*] (Arlington, Va.: American Psychiatric Publishing, 2013), 452, http://dx.doi.org/10.1176/appi.books.9780890425596.dsm14.

22. *Ibid.*, 458.

23. *Ibid.*

24. *Ibid.*, 452.

25. *Ibid.*

26. *Ibid.*, 454–455.

27. *Ibid.*, 452.

28. *Ibid.*, 457.

29. Angeliki Galani *et al.*, "Androgen insensitivity syndrome: clinical features and molecular defects," *Hormones* 7, no. 3 (2008): 217–229, https://dx.doi.org/10.14310%2Fhorm.2002.1201.

30. Perrin C. White and Phyllis W. Speiser, "Congenital Adrenal Hyperplasia due to 21-Hydroxylase Deficiency," *Endocrine Reviews* 21, no. 3 (2000): 245–219, http://dx.doi.org/10.1210/edrv.21.3.0398.

31. Alexandre Serra *et al.*, "Uniparental Disomy in Somatic Mosaicism 45,X/46,XY/46,XX Associated with Ambiguous Genitalia," *Sexual Development* 9 (2015): 136–143, http://dx.doi.org/10.1159/000430897.

32. Marion S. Verp *et al.*, "Chimerism as the etiology of a 46,XX/46,XY fertile true hermaphrodite," *Fertility and Sterility* 57, no 2 (1992): 346–349, http://dx.doi.org/10.1016/S0015-0282(16)54843-2.

33. For one recent review of the science of neurological sex differences, see Amber N. V. Ruigrok *et al.*, "A meta-analysis of sex differences in human brain structure," *Neuroscience Biobehavioral Review* 39 (2014): 34–50, http://dx.doi.org/10.1016%2Fj.neubiorev.2013.12.004.

34. Robert Sapolsky, "Caught Between Male and Female," *Wall Street Journal*, December 6, 2013, http://www.wsj.com/articles/SB10001424052702304854804579234030532617704.

35. *Ibid.*

36. *Ibid.*

37. For some examples of popular interest in this view, see Francine Russo, "Transgender Kids," *Scientific American Mind* 27, no. 1 (2016): 26–35, http://dx.doi.org/10.1038/scientificamericanmind0116-26; Jessica Hamzelou, "Transsexual differences caught on brain scan," *New Scientist* 209, no. 2796 (2011): 1, https://www.newscientist.com/article/dn20032-transsexual-differences-caught-on-brain-scan/; Brynn Tannehill, "Do Your Homework, Dr. Ablow," The Huffington Post, January 17, 2014, http://www.huffingtonpost.com/brynn-tannehill/how-much-evidence-does-it_b_4616722.html.

38. Nancy Segal, "Two Monozygotic Twin Pairs Discordant for Female-to-Male Transsexualism," *Archives of Sexual Behavior* 35, no. 3 (2006): 347–358, http://dx.doi.org/10.1007/s10508-006-9037-3.

39. Holly Devor, "Transsexualism, Dissociation, and Child Abuse: An Initial Discussion Based on Nonclinical Data," *Journal of Psychology and Human Sexuality*, 6 no. 3 (1994): 49–72, http://dx.doi.org/10.1300/J056v06n03_04.

40. Segal, "Two Monozygotic Twin Pairs Discordant for Female-to-Male Transsexualism," 350.

41. *Ibid.*, 351.

42. *Ibid.*, 353–354.

43. *Ibid.*, 354.

44. *Ibid.*, 356.

45. *Ibid.*, 355. Emphasis in original.

46. J. Michael Bostwick and Kari A. Martin, "A Man's Brain in an Ambiguous Body: A Case of Mistaken Gender Identity," *American Journal of Psychiatry*, 164 no. 10 (2007): 1499–1505, http://dx.doi.org/10.1176/appi.ajp.2007.07040587.

47. *Ibid.*, 1500.

48. *Ibid.*, 1504.

49. *Ibid.*

50. *Ibid.*, 1503–1504.

51. Giuseppina Rametti *et al.*, "White matter microstructure in female to male transsexuals before cross-sex hormonal treatment. A diffusion tensor imaging study," *Journal of Psychiatric Research* 45, no. 2 (2011): 199–204, http://dx.doi.org/10.1016/j.jpsychires.2010.05.006.

52. *Ibid.*, 202.

53. Giuseppina Rametti *et al.*, "The microstructure of white matter in male to female transsexuals before cross-sex hormonal treatment. A DTI study," *Journal of Psychiatric Research* 45, no. 7 (2011): 949–954, http://dx.doi.org/10.1016/j.jpsychires.2010.11.007.

54. *Ibid.*, 952.

55. *Ibid.*, 951.

56. Emiliano Santarnecchi *et al.*, "Intrinsic Cerebral Connectivity Analysis in an Untreated Female-to-Male Transsexual Subject: A First Attempt Using Resting-State fMRI," *Neuroendocrinology* 96, no. 3 (2012): 188–193, http://dx.doi.org/10.1159/000342001.

57. *Ibid.*, 188.

58. Hsaio-Lun Ku *et al.*, "Brain Signature Characterizing the Body-Brain-Mind Axis of Transsexuals," *PLOS ONE* 8, no. 7 (2013): e70808, http://dx.doi.org/10.1371/journal.pone.0070808.

59. *Ibid.*, 2.

60. Hans Berglund *et al.*, "Male-to-Female Transsexuals Show Sex-Atypical Hypothalamus Activation When Smelling Odorous Steroids, *Cerebral Cortex* 18, no. 8 (2008): 1900–1908, http://dx.doi.org/10.1093/cercor/bhm216.

61. See, for example, Sally Satel and Scott D. Lilenfeld, *Brainwashed: The Seductive Appeal*

of Mindless Neuroscience, (New York: Basic Books, 2013).

62. An additional clarification may be helpful with regard to research studies of this kind. Significant differences in the means of sample populations do not entail predictive power of any consequence. Suppose that we made 100 different types of brain measurements in cohorts of transgender and non-transgender individuals, and then calculated the means of each of those 100 variables for both cohorts. Statistical theory tells us that, due to mere chance, we can (on average) expect the two cohorts to differ significantly in the means of 5 of those 100 variables. This implies that if the significant differences are about 5 or fewer out of 100, these differences could easily be by chance and therefore we should not ignore the fact that 95 other measurements failed to find significant differences.

63. One recent paper estimates that 0.6% of the adult U.S. population is transgender. See Andrew R. Flores *et al.*, "How Many Adults Identify as Transgender in the United States?" (white paper), Williams Institute, UCLA School of Law, June 30, 2016, http://williamsinstitute.law.ucla.edu/wp-content/uploads/How-Many-Adults-Identify-as-Transgender-in-the-United-States.pdf.

64. Petula Dvorak, "Transgender at five," *Washington Post*, May 19, 2012, https://www.washingtonpost.com/local/transgender-at-five/2012/05/19/gIQABfFkbU_story.html.

65. *Ibid.*

66. *Ibid.*

67. American Psychiatric Association, "Gender Dysphoria," *DSM-5*, 455. Note: Although the quotation comes from the *DSM-5* entry for "gender dysphoria" and implies that the listed persistence rates apply to that precise diagnosis, the diagnosis of gender dysphoria was formalized by the *DSM-5*, so some of the studies from which the persistence rates were drawn may have employed earlier diagnostic criteria.

68. *Ibid.*, 455.

69. Kenneth J. Zucker, "Children with gender identity disorder: Is there a best practice?," *Neuropsychiatrie de l'Enfance et de l'Adolescence* 56, no. 6 (2008): 363, http://dx.doi.org/10.1016/j.neurenf.2008.06.003.

70. Kenneth J. Zucker *et al.*, "A Developmental, Biopsychosocial Model for the Treatment of Children with Gender Identity Disorder," *Journal of Homosexuality* 59, no. 2 (2012), http://dx.doi.org/10.1080/00918369.2012.653309. For an accessible summary of Zucker's approach to treating gender dysphoria in children, see J. Michael Bailey, *The Man Who Would Be Queen: The Science of Gender-Bending and Transsexualism* (Washington, D.C.: Joseph Henry Press, 2003), 31–32.

71. Kelley D. Drummond *et al.*, "A follow-up study of girls with gender identity disorder," *Developmental Psychology* 44, no. 1 (2008): 34–45, http://dx.doi.org/10.1037/0012-1649.44.1.34.

72. Jesse Singal, "How the Fight Over Transgender Kids Got a Leading Sex Researcher Fired," *New York Magazine*, February 7, 2016, http://nymag.com/scienceofus/2016/02/fight-over-trans-kids-got-a-researcher-fired.html.

73. See, for example, American Psychological Association, "Guidelines for Psychological Practice with Transgender and Gender Nonconforming People," *American Psychologist* 70 no. 9, (2015): 832–864, http://dx.doi.org/10.1037/a0039906; and Marco A. Hidalgo *et al.*, "The Gender Affirmative Model: What We Know and What We Aim to Learn," *Human Development* 56 (2013): 285–290, http://dx.doi.org/10.1159/000355235.

74. Sara Reardon, "Largest ever study of transgender teenagers set to kick off," *Nature* 531, no. 7596 (2016): 560, http://dx.doi.org/10.1038/531560a.

75. Chris Smyth, "Better help urged for children with signs of gender dysphoria," *The Times* (London), October 25, 2013, http://www.thetimes.co.uk/tto/health/news/article3903783.ece. According to the article, in 2012 "1,296 adults were referred to specialist gender dysphoria clinics, up from 879 in 2010. There are now [in 2013] 18,000 people in treatment, compared with 4,000 15 years ago. [In 2012] 208 children were referred, up from 139 the year before and 64 in 2008."

76. Annelou L. C. de Vries *et al.*, "Young Adult Psychological Outcome After Puberty Suppression and Gender Reassignment," *Pediatrics* 134, no. 4 (2014): 696–704, http://dx.doi.org/10.1542/peds.2013-2958d.

77. David Batty, "Mistaken identity," *The Guardian*, July 30, 2004, http://www.theguardian.com/society/2004/jul/31/health.socialcare.

78. *Ibid.*

79. Jon K. Meyer and Donna J. Reter, "Sex Reassignment: Follow-up," *Archives of General Psychiatry* 36, no. 9 (1979): 1010–1015, http://dx.doi.org/10.1001/archpsyc.1979.01780090096010.

80. *Ibid.*, 1015.

81. See, for instance, Paul R. McHugh, "Surgical Sex," *First Things* (November 2004), http://www.firstthings.com/article/2004/11/surgical-sex.

82. Michael Fleming, Carol Steinman, and Gene Bocknek, "Methodological Problems in Assessing Sex-Reassignment Surgery: A Reply to Meyer and Reter," *Archives of Sexual Behavior* 9, no. 5 (1980): 451–456, http://dx.doi.org/10.1007/BF02115944.

83. Cecilia Dhejne *et al.*, "Long-term follow-up of transsexual persons undergoing sex reassignment surgery: cohort study in Sweden," *PLOS ONE* 6, no. 2 (2011): e16885, http://dx.doi.org/10.1371/journal.pone.0016885.

84. 95% confidence interval: 2.0–3.9.

85. 95% confidence interval: 1.8–4.3.

86. MtF transsexuals in the study's 1973–1988 period showed a higher risk of crime compared to the female controls, suggesting that they maintain a male pattern for criminality. That study period's FtM transsexuals, however, did show a higher risk of crime compared to the female controls, perhaps related to the effects of exogenous testosterone administration.

87. 95% confidence intervals: 2.9–8.5 and 5.8–62.9, respectively.

88. *Ibid.*, 6.

89. *Ibid.*, 7.

90. Annette Kuhn *et al.*, "Quality of life 15 years after sex reassignment surgery for transsexualism," *Fertility and Sterility* 92, no. 5 (2009): 1685–1689, http://dx.doi.org/10.1016/j.fertnstert.2008.08.126.

91. Mohammad Hassan Murad *et al.*, "Hormonal therapy and sex reassignment: a systematic review and meta-analysis of quality of life and psychosocial outcomes," *Clinical Endocrinology* 72 (2010): 214–231, http://dx.doi.org/10.1111/j.1365-2265.2009.03625.x.

92. *Ibid.*, 215.

93. 95% confidence intervals: 68–89%, 56–94%, and 72–88%, respectively.

94. *Ibid.*

95. *Ibid.*, 216.

96. *Ibid.*

97. *Ibid.*, 228.