



**Noteworthy Notes:
On the Causes of Same-Sex Attraction
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Introduction

If you live in America today, you have been hearing a lot about the topic of same-sex attraction (SSA). With national headlines of “Love Wins” after the Supreme Court’s decision to legalize same-sex marriage in 2015, this has been an ongoing topic of media coverage.

In the past few years, many Americans have come to see the legalization of same-sex marriage as a social justice issue. This is because considerable numbers of people now say that sexual attraction is an inborn trait, similar to skin color, and that we as a country should not discriminate against people just because they are born with a desire to love someone of the same sex. “Born that Way” has also become a popular slogan, and those who disagree are seen as old-fashioned at best, and bigoted at worst.

In reality, the “Born that Way” slogan that underpins the above motivations is far from clear. The causes of SSA are complex and still mysterious, just as human sexuality in general is complex and multi-faceted. In this essay, we go over some important points of research into the causes of SSA. These notes are not meant to be exhaustive; rather, they are simply meant to be a starting point for more thoughtful conversations about the causes of SSA.

First we will look at a brief history of the American Psychiatric Association’s views of SSA, in order to provide some historical context. Then we turn our attention to whether there is supporting evidence from twin studies for the hypothesis that SSA is a genetically pre-determined trait, similar to skin color.

In popular psychology jargon, we could say that we are exploring the “nature vs. nurture” question: is SSA due to nature (i.e. genes), nurture (i.e. environmental factors), or a combination of both? Taking a look at some possible answers to this question will help us to talk about these issues with our children, family members, and friends in a calm and informative way.

The American Psychiatric Association on SSA

The American Psychiatric Association (APA) is the professional organization for psychiatrists, and its mission is to “promote the highest quality care for individuals with mental illness, ...promote psychiatric education and research, advance and represent the profession of psychiatry, and serve the professional needs of its membership.”¹ Notably, the APA publishes the Diagnostic and Statistical Manual of Mental Disorders (DSM).² It is important to note that, just like any other professional organization, the APA is made up of human beings who are not exempt from the social and political pressures of the time. This can be seen when it comes to the APA’s position on SSA, which has changed frequently over the last few decades.

1950s-1968: Sociopathic Personality Disturbance

The APA first published its Diagnostic and Statistical Manual of Mental Disorders (DSM) in the 1950’s, and it has been used by health care professionals to “list and define mental (psychiatric) disorders” ever since.³ The first edition of the DSM listed homosexuality as a “sociopathic personality disturbance” and described it as a form of “deviant sexuality,” along with “transvestism, pedophilia, fetishism and sexual sadism.”⁴ This version of the DSM used vague language and focused excessively on theoretical concepts rather than on overt symptoms. At this point in time in the United States, those who were found out to be same-sex attracted were categorically labeled with “sociopathic personality disturbance” and were viewed with suspicion, regardless of their behavior. Psychiatric treatment for those with SSA was sometimes cruel, with potential long-term negative effects for the patient.

¹ American Psychiatric Association. “APA’s Vision, Mission, Values, and Goals.” *American Psychiatric Association*. American Psychiatric Association, 2016. Web. 22 Apr 2016. (www.psychiatry.org/about-apa)

² It is worth noting that there are two “APAs,” the American *Psychiatric* Association and the American *Psychological* Association, which represents professionals in the related field of psychology. Here we focus on the American Psychiatric Association, which publishes the Diagnostic and Statistical Manual of Mental Disorders (DSM), but further below we mention the American Psychological Association because of its size and influence in America today. The DSM is a tool used by health care professionals in many different fields, including clinicians in the fields of psychiatry and psychology, to accurately diagnose mental health disorders.

³ American Psychiatric Association. “Homosexuality and Sexual Orientation Disturbance: Proposed Change in DSM-II, 6th Printing, page 44. Position Statement (Retired).” *American Psychiatric Association*. Dec. 1973. Web. 12 Feb. 2016. (http://www.torahdec.org/downloads/dsm-ii_homosexuality_revision.pdf) (http://www.torahdec.org/downloads/dsm-ii_homosexuality_revision.pdf)

⁴ The Committee on Nomenclature and Statistics of the American Psychiatric Association. *Diagnostic and Statistical Manual: Mental Disorders*. American Psychiatric Association Mental Hospital Service. Washington, D.C. 1952. Web. 4 Feb. 2016 (<http://www.turkpsikiyatri.org/arsiv/dsm-1952.pdf>) 4 Feb. 2016.

1968 to 1973: From Sexual Deviation to Sexual Orientation Disturbance

The DSM-II, first published in 1968, went through seven revisions, and moved from classifying homosexuality as a “sexual deviation” to classifying it as “sexual orientation disturbance (homosexuality)” in its final revision in 1973.⁵ This change in language marked a turning point in the fields of psychiatry and psychology. SSA was now seen as “one form of sexual behavior” rather than a “psychiatric disorder.” Sexual orientation disturbance was considered a disorder only in the sense that some individuals felt distress regarding their SSA and wished to change their orientation to a heterosexual attraction.⁶

Notably, the authors of the APA’s position statement maintained that, “In removing homosexuality per se from the nomenclature we are only recognizing that by itself homosexuality does not meet the criteria for being considered a psychiatric disorder.”

The APA emphasized that it was not making any authoritative claims about the origins of SSA, or taking any position on the “desirability of homosexual behavior.”⁷

Further, they stated, “this change should in no way interfere with or embarrass those dedicated psychiatrists and psychoanalysts who have devoted themselves to understanding and treating those homosexuals who have been unhappy with their lot. They, and others in our field, will continue to try to help homosexuals who suffer from what we can now refer to as sexual orientation disturbance, helping the patient accept or live with his current sexual orientation, or if he desires, helping him to change it.”⁸

This is to say that in the early 1970s, the APA still welcomed reparative or conversion therapy for those with unwanted SSA, a position that they have since retracted.⁹

1980-1987: From Ego Dystonic Homosexuality to Unspecified Sexual Disorder

In 1980, the DSM-III changed the name for SSA to “ego dystonic homosexuality,” again referring to individuals who expressed unwanted SSA and a desire to maintain heterosexual relationships. In 1987, a revised version of the DSM (the DSM-III-R) removed this category, and SSA was lumped into the category of “sexual disorder not

⁵ American Psychiatric Association, “Homosexuality and Sexual Orientation Disturbance,” 1973.

⁶ Ibid.

⁷ Ibid.

⁸ Ibid.

⁹ Scasta, David, and Philip Bialer. (2013). “APA Official Actions: Position Statement on Issues Related to Homosexuality.” American Psychiatric Association, Dec. 2013. PDF online document. 5 Apr. 2016.

otherwise specified.”¹⁰ This category was also included in both versions of the DSM-IV, published in 1994 and 2000.

2000-Present: Not a Disorder, Causes Not Precisely Known

Beginning in 2000, the APA began work on its most recent version, the DSM-5 (2013), and hundreds of papers and journal articles were written between 2000 and 2013, some of them regarding sexual orientation. During this time, the decision was made to not include SSA in the DSM-5, even under the heading of “unspecified sexual disorder.” The APA announced that the causes of SSA were “not known at this time” and were likely “multi-factorial, including biological and behavioral roots.”¹¹

In 2008, the mental health organization bearing a similar name, the American *Psychological* Association, made a comparable statement, backing the position that SSA is due to some still-uncertain combination of nature and nurture:

There is no consensus among scientists about the exact reasons that an individual develops a heterosexual, bisexual, gay or lesbian orientation. Although much research has examined the possible genetic, hormonal, developmental, social and cultural influences on sexual orientation, no findings have emerged that permit scientists to conclude that sexual orientation is determined by any particular factor or factors. Many think that nature and nurture both play complex roles; most people experience little or no sense of choice about their sexual orientation.¹²

Although one should have a cautious stance towards both of these organizations’ statements regarding SSA, we believe this latest conclusion accurately captures the significant scientific diversity of opinion on this question. The most reasonable position right now is that SSA is not exclusively biologically/genetically caused, nor exclusively caused by environment, but is caused by some combination of both.¹³

It is also worth noting that neither of the two APAs –neither of the United States’ premiere mental health organizations—endorses the “born that way” theory. Although at different times and moments they have emphasized the possibility of inborn or

¹⁰“Diagnostic and Statistical Manual of Mental Disorders.” *Wikipedia*. 11 Feb. 2016. Web. 15 Feb. 2016. (http://en.wikipedia.org/wiki/Diagnostic_and_Statistical_Manual_of_Mental_Disorders#cite_note-Revolution-21)

¹¹ Scasta, David, and Philip Bialer. (2013). “APA Official Actions: Position Statement on Issues Related to Homosexuality.” American Psychiatric Association, Dec. 2013. PDF online document. 5 Apr. 2016.

¹² American Psychological Association. (2008). “Answers to Your Questions: For a Better Understanding of Sexual Orientation and Homosexuality.” Washington, D.C.: *Author*. Web. 24 Feb. 2016. (<http://www.apa.org/topics/lgbt/orientation.pdf>)

¹³ [Ibid.](#)

genetic factors playing a role,¹⁴ they now adopt a more cautious stance towards this question since there is no scientific consensus about the answer.

We now turn our attention to some recent promising work that uses twin studies to research the possible causes of SSA.¹⁵

Twin Studies

Over the years, researchers in the fields of sociology and genetics have conducted studies of varying degrees of legitimacy regarding the causes of SSA. Some studies have been structurally sound, drawing upon large, random, representative samples; however, most of the studies to date have been done with much more limited methods, using small, convenience samples that cannot be used to draw conclusions about the general population.¹⁶

The trouble is that the general public often does not have a way of distinguishing between the well-designed, methodologically rigorous research and the methodologically weak research, nor does it fully understand how to interpret academic information. Because the public relies on media outlets to interpret and report findings accurately, it is often misled—especially about politicized subjects like SSA.

One strong and appealing method that researchers often use to determine whether a certain trait is genetically pre-determined is to study identical (monozygotic) twins—who share 100% of their genetic material—and compare them to fraternal (dizygotic) twins, who share only about 50% of their genetic material.¹⁷ If a certain trait, such as skin color, is determined solely by genetics, then identical twins should share this trait 100% of the time. If, however, a certain trait is shared only some of the time among identical twins, then one can reasonably conjecture that the trait is determined by a combination of genetic and environmental factors (both nature and nurture).

¹⁴ In 2005, the American Psychological Association published a brochure entitled *Answers to Your Questions about Sexual Orientation and Homosexuality*, which emphasized the role of biology, including “genetic or inborn hormonal factors” in determining a person’s sexuality. In 2005, this organization seemed to be leaning towards embracing the “Born That Way” hypothesis. Three years later in 2008, however, it amended its view and backed away to the more moderate, and in our view, accurate position.

¹⁵ Another promising but nascent area of research is that of epigenetics. See footnote 23.

¹⁶ Bailey, Dunne and Martin point out that “prior twin studies...have been rather consistent in their methodological limitations. Most importantly, all sizable twin studies of sexual orientation recruited probands (subjects) by means of advertisements in homophile publications or by word of mouth.” Bailey, J.M., Dunne, M., Martin, N. 2000. Genetic and Environmental Influences on Sexual Orientation and Its Correlates in an Australian Twin Sample. *Journal of Personality and Social Psychology*, 78: 524-536

¹⁷ Recent research in the field of genetics has actually challenged the supposition that identical (monozygotic) twins share 100% of their genetic material. We will update our materials as more conclusive research on this front becomes available. For now, we will continue with this long-held assumption.

Some Terminology

A few words about the terminology: “Concordance” is a term that is used to describe the probability that *both* siblings in a twin pair will share a particular trait if at least one person in the pair has that trait. So, for example, concordance for left-handedness would be the probability that both twins in a pair are left-handed if at least one of the twins is left-handed.

Among the researchers who have studied different traits in identical twins, concordance has been calculated in two different ways: pair-wise and proband-wise concordance (see Addendum A). Some researchers have instead used a third way, calculating “heritability,” which adds another layer of complexity to analysis. Additionally, it sometimes happens that researchers report different results from the same studies.

Therefore, discrepancies in interpretation often can be explained by the difference in which type of calculation was used in a particular study. Other discrepancies in the research on SSA in twin pairs arise from the factors mentioned above: sample size, whether or not the sample was random, and whether the sample is representative of the twin population at large.

Findings

Let us now turn to the research findings. There are four well-regarded papers on this subject: 1) Bailey, Dunne and Martin (2000) 2) Kendler, Thornton, Gilman, and Kessler, (2000) 3) Bearman and Brueckner (2002) and 4) Langstrom, Rahman, Carlstrom, and Lichtenstein (2010).¹⁸

The first group, Bailey et al. (2000), studied both sexual orientation and gender nonconformity in “a large, representative sample of Australian twins,” and found proband-wise concordance rates of 20% for men and 24% for women in identical twin pairs; for fraternal twin pairs of the same sex, the concordance rates were 0% for men and 10.5% for women.

The second group, conducted by Kendler et al. (2000)¹⁹ found a higher concordance rate of 31.6%, although their sample size was small, with only 19 pairs of twins where at least one member identified as same-sex attracted.

According to these studies, therefore, the concordance rates for SSA in identical twin pairs were between 20%-31.6%. This means that in identical twin pairs where at least

¹⁸ Bearman, P., Bruckner, H. 2002. Opposite-Sex Twins and Adolescent Same-Sex Attraction. *American Journal of Sociology*, 107: 1179-1205.

¹⁹ Kendler, S., Thornton, L., Gilman, S., Kessler, R. 2000. Sexual Orientation in a U.S. National Sample of Twin and Nontwin Sibling Pairs. *American Journal of Psychiatry*, 157: 1843-1846.

one of the twins is same-sex attracted, the other twin is also SSA about 20-32% of the time. While these percentages are not insignificant, they are also nowhere close to 100%, meaning that genes cannot be the only factor in SSA. These studies suggest that a combination of nurture and nature are at work.

The third group, Bearman and Brueckner (2002),²⁰ report much smaller concordance rates, although it is not clear whether they used a pair-wise or a proband-wise concordance rate. Their concordance rates were 6.7% for identical (monozygotic) twins, 7.2% for dizygotic twins, and 5.5% for full siblings. They believe that the higher numbers reported by Kendler et al. (2000), which they acknowledge was a well-done study, can be attributed to the small number of identical twin pairs where at least one member identified as SSA.

The fourth group, Langstrom et al. (2010)²¹ reported heritability rates rather than concordance rates, and therefore it is difficult to compare their results with the above studies. However, the research methodology was strong, and the researchers were modest in stating their results. They concluded, "Our results support the notion that same-sex behavior arises not only from heritable but also from individual-specific environmental sources. Further, although not statistically significant, hereditary effects appeared weaker in women and of the same magnitude as those of the shared environment."²² They urged further research on this topic.

Therefore, until more research is conducted,²³ the claims of science must remain very modest. Currently, the most optimistic evidence reveals that in identical twin pairs where at least one of the twins is same-sex attracted, the other twin is also SSA about 20-32% of the time. This means that the majority (about 70-80%) of the time, when an identical twin has SSA, his or her sibling does not. This strongly suggests that genes cannot be the only factor in SSA.

Conclusion

The three main takeaways from the above notes are that:

1. There is no strong scientific evidence for the "Born that Way" hypothesis.

²⁰ Bearman, P., Bruckner, H. 2002. Opposite-Sex Twins and Adolescent Same-Sex Attraction. *American Journal of Sociology*, 107: 1179-1205.

²¹ Langstrom, N., Rahman, Q., Carlstrom, E., Lichtenstein, P. 2010. Genetic and Environmental Effects on Same-sex Sexual Behavior; A Population Study of Twins in Sweden. *Archives of Sexual Behavior*, 39: 75-80.

²² Ibid. p. 77

²³ One interesting area of research is that of epigenetics, which can be said to explore the area between nature and nurture. Epigenetics looks at how the same genes in identical twins can be expressed differently in each twin due to environmental factors. While a full discussion of epigenetics is beyond the scope of this essay, it is important to acknowledge that epigenetic phenomena may play a role in SSA and that this is a promising area of research. For more on epigenetics, see <http://www.whatisepigenetics.com/fundamentals/>.

2. There is stronger evidence for the hypothesis that the causes of SSA involve both “nature and nurture,” partly biological and partly environmental factors.
3. There is still a great deal of mystery left to this question and the answer, and more research must be done.

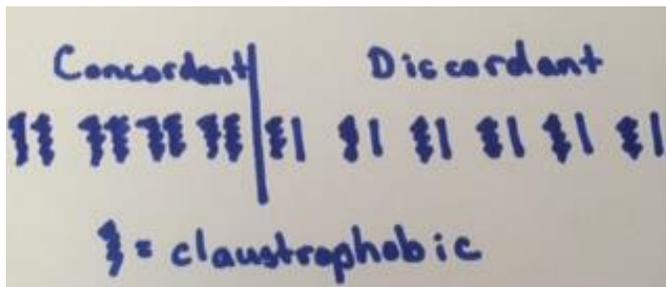
Addendum A

Supplemental Information on Concordance and How it is Calculated

*A Brief Explanation of Concordance and How it is Calculated*²⁴

Pair-wise concordance is a simple observation: among pairs of twins where at least one twin exhibits a certain trait, what is the likelihood that both twins will exhibit the trait? It is an observation about pairs of individuals.

Proband-wise concordance allows researchers to report more individualized results: if you are a twin and the other twin in your pair exhibits a certain trait, how likely is it that *you* will also exhibit this trait? So, for example, let’s say that we are studying claustrophobia in identical twins, and that there are 10 pairs of identical twins where at least one of the twins is claustrophobic. In 4 of these pairs, both individuals are claustrophobic, and in the other 6 pairs, only one of the individuals is claustrophobic.



A simple pair-wise concordance rate would say that there is 40% concordance for claustrophobia among identical twins. This means that 4 out of 10 times, when at least one identical twin is claustrophobic, both twins will be claustrophobic.

A proband-wise concordance rate would be different; it looks at each member of the twin pair individually. Thus, each member of the concordant twin pair (the twin pairs where both twins are claustrophobic) is counted individually and not as a pair. If we look at the equation, it looks like each member of the concordant pair is counted twice;

²⁴ Wyszynski, Diego F. (2002). “Cleft Lip and Palate: From Origin to Treatment.” *Oxford University Press*. 23 Jul 2002. Web. 2 Feb. 2016. ([Online book](#), p. 217)

however, this is not the case. Rather, each member of the concordant pair is counted individually. In this particular case, the results would be stated as follows: of the 14 twins that are claustrophobic, 8 of those individuals are in twin pairs where both twins are claustrophobic. This is a 57% (8/14) concordance rate.

Heritability seeks to explain to what degree genetics contribute to a particular trait, such as SSA. The other factors to consider are the shared environment of the twins and the unique environment/experiences of each twin. One of the ways to calculate heritability is to look at the difference in the concordance rates between identical (monozygotic) and fraternal (dizygotic) twins, and to multiply by two. This is called Falconer's formula.²⁵

Addendum B Notable Quotes

On the research regarding SSA in females:

"About the only finding that many researchers, including social scientists, agree on is that female homosexuality follows a different pattern than male homosexuality. It is unclear, however, what this pattern looks like, that is, whether female sexuality is more (or less) biological." (Bearman & Brueckner, 2002, p. 1184)

On the limitations of research regarding SSA:

"No twin study of sexual orientation except for Kendler et al. (2000) has, to our knowledge, worked with a probability sample. All early studies were based on clinical samples, convenience samples, or prisoners and other captive populations that are clearly biased. Even for twin registry studies, which avoid selecting on the dependent variable, biases are well known. MZ twins are much more likely to participate in twin studies than DZ twins, and males are more likely to enroll than are females. Kendler and Eaves (1989) report that twins who are more alike tend to volunteer for twin studies. Finally, participants in surveys about sexuality may be more educated, have more liberal attitudes, be more novelty seeking, and experience earlier sexual debut than eligible nonparticipants. In contrast, our respondents, drawn from the National Longitudinal Study of Adolescent Health, show no evidence of bias across a wide array of characteristics that may be associated with sexual behavior." (Bearman & Brueckner, 2002, pp. 1185-1186)

On the effects of having an older sibling:

²⁵ Minikel, Eric. "How to Calculate Heritability." Personal Web Log. *CureFFI*. 4 Feb. 2013. Web. 20 Feb. 2016. (<http://www.cureffi.org/2013/02/04/how-to-calculate-heritability/>)

“Among male OS [opposite sex] twins, the proportion reporting a SS [same-sex] romantic attraction is twice as high among those without older brothers (18.7%) than among those with older brothers (8.8%). No such difference obtains for female OS twins...” (Bearman & Brueckner, 2002, p. 1196)

On the effects of gender in twin pairings:

“Male adolescents who have a female twin are more likely to report same-sex attraction than any other group in these data (16.8%, table 1, row 1). Female adolescents with a male twin, while not different from others, are much less likely to report a SSA than their male counterparts. This result points toward gender-specific differences in socialization. Specifically, negative sanctioning of behavior that suggests femininity and/or homosexuality is a stronger component of male socialization than comparable sanctioning of masculinity for female socialization. Girls wear pants but boys do not wear skirts.” (Bearman & Brueckner, 2002, p. 1196)