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Science and Religion on Sexual Orientation

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An analysis of scientific and religious perspectives on sexual orientation will show that the scientific data support a biological origin of sexual orientation that is influenced but not determined by environmental conditions. Religious perspectives will show values affirming equality and integrity are of greater importance than the conditioned attitudes that condemn homosexuality. As a result, forgiveness and acceptance are paramount in dealing with others as they struggle to know Christ. Commitment within a relationship is paramount regardless of the couple's orientation.

Few arguments are as polarizing as those regarding human sexuality. Many cultures have wrestled with the subject resulting in various social, cultural, and religious positions, sometimes changing views from one generation to the next. Regardless of position, scientific studies are almost always called upon, and subsequently twisted, in order to support a specific stance on the matter. Typically committing Moore's naturalistic fallacy, these tortured concatenations of scientific understandings regarding human sexuality, particularly homosexuality, have encouraged prejudice, rejection, and hate toward subgroups of the population. Often, these conflicts arise between conservative religious groups and the lesbian, gay, bisexual, and transgender (LGBT) community. An ethical response, and some common ground for dialogue, and perhaps resolution, should be sought.

Scientific Investigation

The scientific theories on the development of sexuality are abundant and varied. By examining the most prominent theories, as well as the responses of these groups to the topic of sexuality, a place of mutual understanding may be reached that can promote peace between people.

Scientific research regarding the causation of homosexuality has been ongoing for the past several decades and has provided society with many factors that may or may not play a role in orientation, but has found no definitive answers. The primary fields of research on which scientists have focused and found leads are in genetics, neurology, endocrinology, and psychiatry. Each discipline has fathered a plethora of research and intensive studies on the subject, perhaps the most impactful being the studies done by the geneticists.

Researchers have been searching for the ever elusive 'gay genes' for the last forty years and have had remarkably little success in locating them, if they exist at all. Two of the most significant studies done regarding a genetic factor influencing sexual orientation were done by J. Michael Bailey and Richard Pillard in 1991 and 1993. Together, the pair coauthored a study examining male and female sets of monozygotic and dizygotic twins, as well as non-twin and adoptive siblings of the same sex. The two scientists were examining the rates of concordance (i.e. the probability that a pair of individuals share the same characteristic given that one of them has the characteristic) between these sets of siblings. Pillard and Bailey's results showed concordance rates for males were 52

percent for monozygotic twins, 22 percent for dizygotic twins, 9.2 percent for non-twin brothers, and 11 percent between adoptive brothers[1]. The concordance found in females were similarly high at 48 percent between monozygotic twins, 16 percent between dizygotic twins, 14 percent for non-twin sisters, and 6 percent for adoptive sisters[2]. Statistically speaking, the results for both the male and female studies show a strong conclusion that there is some heritable factor that helps to explain the variances in sexual orientation. These results are made even more impactful due to another study done by Whitman, Diamond, and Martin on over 60 sets of twins and triplets that produced similar rates of concordance[3].

Other studies have challenged the findings of Bailey and Pillard's work, including the Minnesota Twin Project, examining twins raised apart since birth, which proposed far lower rates of concordance[4]. Along with these studies, others have speculated that the estimates of heritability that were generated are far too high, as the researchers involved in the study were forced to estimate the base rate of homosexuality in the nation, as well as error rates into their model. Another critique focused on the 50 percent concordance rate between male monozygotic twins. If these two individuals share 100 percent of their genetic code, and are reared in the same environment, how is this high concordance rate to be explained? This phenomenon will be explained further later in the reading when discussing endocrinology.

Another major experiment done regarding the genetic origin of sexual orientation is Dean Hamer's 1993 study where he discovered a 'sexual orientation gene' that so many were looking for. For the study, Hamer and his team performed pedigree analysis of 76 men taken from an AIDS treatment program. Reports from this pedigree analysis indicated that these men displayed a strong pattern of homosexual orientation in their maternal relatives, while little to no pattern in their paternal relatives. From this first pedigree analysis, Hamer's research team was able to begin a second study, which included a DNA linkage analysis of brothers from the previous sample who displayed maternal transmission of homosexual orientation. This study of the subsample found a concordance of the "Xq28 sub-telomeric region of the long arm of the X chromosome"[5].

This study has been replicated twice by American research teams which produced similar results, as well as once by a Canadian research team which did not. There has also been a meta-analysis of the data available that showed a substantial, but not exclusive, connection between the Xq28 sub-telomeric region and homosexual orientation[6].

One of the most compelling recent studies done by post-doctoral researchers at UCLA and published in 2015 is on epigenetics and how tags are able to latch onto genes, effectively regulating their expression.[7] In saliva samples taken from 37 male twin pairs in which one twin was heterosexual and the other was homosexual, and an additional 10 pairs in which both twins were homosexual researchers studied 400,000 methylation marks. The research team found five that were significantly different between homosexual and heterosexual twins. Despite the successful identification of these five methylation marks and the genes they regulate, other researchers are concerned with the influence

[1] Bailey & Pillard, 1991, 1089-96
[2] Bailey & Pillard, 1993, 217-23
[3] Whitman, Diamond, & Martin, 1993, 187-206
[4] Eckert, Bouchard, Bohlen, & Heston, 1986, 421-25
[5] Hamer, Hu, Magnuson, Hu, & Pattatucci, 1993, 321-27
[6] Jones & Yarhouse, 2000, 94
[7] Balter, 2015, 148

of the genes on orientation. The accuracy of the study is also called into question, as the differences in markers between homosexual and heterosexual twins may have been due to chance due to the small sample size. The research done by the team at UCLA must be replicated and with a larger sample size in order for it to be more impactful.

Moving past genetic research into neurology, one is able to find a host of studies. These will be examined as a separate category of studies rather than as an extension of genetics, or as a factor of developmental processes, hormone levels, or disease for simplicity.

Neuropsychological studies have suggested a variety of different things regarding the way that homosexual brains differ from those of their heterosexual peers. In one study, a research team was able to suggest that there was a laterality shift in homosexuals, such as with handedness. Another study called into question the differences in mental abilities between homosexual and heterosexual men. This study, performed by Green and his research team reported that male homosexuals, on average, performed in a manner that was unlike their heterosexual peers and not substantially different than females. The Green research team suggests this contrast in abilities may be due to the difference in brain structures.

While there have been studies done to show the differences of homosexual and heterosexual brains' response to hormone injections (e.g. estrogen injections), most modern findings on the physical differences of the brain come from dissections. These experiments are searching for differences between females, as well as homosexual and heterosexual males. There are seven areas that are searched for evidence of differences between gender and sexual orientation. These studies are awaiting replication, but their findings are as follows.

Swaab and Hofman found in their 1990 study that the suprachiasmic nucleus (SCN) of homosexual men had a greater volume and greater neuron density than heterosexual men[8]. There are no significant differences in area or neuron density between genders in the SCN, however the shape of the area is similar in homosexual men and females. The SCN, through further examination, appears to have little to no effect on sexual orientation or behaviors.

Another major study on anatomical differences between brains by Simon LeVay inspected the third interstitial nuclei of the anterior hypothalamus (INAH 3).[9] Through this examination he was able to determine that the INAH 3 of homosexual males is more similar to females than to heterosexual males in regards to structure. The INAH 3 also varied greatly in size, with the region in heterosexual men being over two times as large as in homosexual men. The significant difference between heterosexual and homosexual males led to LeVay concluding that INAH 3 in males was dimorphic with sexual orientation.

However, there are problems with LeVay's research. The neuroscientist admitted that exceptions to the findings may be possible, and may be a result of technical limitations. One such weakness is that all proclaimed homosexual subjects had died of AIDS, which may have affected and/or produced the anatomical variances as there is research indicating that AIDS suppresses testosterone levels which can directly affect the structure of the INAH 3. Another weakness is that the INAH 3 size may have been influenced by other behaviors, thus indicating that sexual orientation may not be the only factor involved in INAH 3 size. This study has also failed to be replicated[10].

[8] Swaab & Hofman, 1990, 141-48
[9] LeVay, 1991, 1034-37
[10] Jones & Yarhouse, 2000, 98

Along with the neurology and anatomical differences, the brain is also heavily impacted by the endocrine system. The effects of hormone levels during the prenatal and postnatal periods are the most commonly explored.

Some researchers suggest that sexual orientation is primarily determined between the second and fifth month of gestation due to the level of exposure to sex hormones. Several researchers have tested this theory in animals by administering abnormal levels of sex hormones to animal fetuses during a critical development period equivalent to the second to fifth month's gestation period in humans. These researchers have shown that abnormal levels of exposure to sex hormones as a fetus can result in inverted sexual behavior of the animal in regards to mating.[11] These results can be used to suggest that similar hormonal variances in humans could be factors in the etiology of homosexuality. Problems arise when the levels of hormone used to induce this state in animals are examined, as they are highly abnormal. The behavioral reflexes of the animals in question are also speculated upon as homosexual behaviors are present in many species and have been determined to be reflex, and thus are poor comparisons to the experience and behaviors of humans who are homosexual.[12]

Prenatal causation of sexual orientation has been backed by studies in few select areas. The first is regards to the male heterosexual brains being more defeminized than male homosexual brains. Researchers point out that abnormal prenatal hormone levels may be a mechanism that encourages the orientation and/or gender-based differences observed in previous studies. This has been further explored in twin studies in which one monozygotic twin is heterosexual and one is homosexual. As genetics are, in theory, identical, the hormones available to each fetus are called into question. Recent studies suggest that due to the way twins are carried in some pregnancies, one may be in a better position to receive nutrients and hormones from the mother, thus shaping the fetus in a very different way than the twin who is in a position where these resources are lacking.[13]

Another set of research on causation of adult homosexuality is the gender nonconformity displayed by young children. For example, young boys who are particularly effeminate or young girls who display particularly masculine traits are those who would have been exposed to prenatal hormone levels that altered their orientation.[14] This area of research is highly criticized for returning homosexuality to its status as a deviation from what is deemed normal sexual development. These studies also stigmatize homosexuals and are potentially founded under outdated understandings of gender behavior.

Maternal stress is the final area to be covered in regards to prenatal hormonal factors influencing orientation. Studies of German women who were pregnant during World War II show that an unusual number of homosexuals were born.[15] Another study suggests that homosexual men have multiple brothers and fall later in birth order. The mothers, who are more likely to be strained due to the care of the elder brothers, become stressed, which is speculated to cause a deficiency of androgen, which is needed to complete the masculinization of a male fetus, which then leads to homosexual orientation as an adult.[16]

Hormone levels influencing orientation as adults are also under examination. Research has typically

[11] Ellis & Ames, 1987, 233-58
[12] Adkins-Regan, 1988, 335-47
[13] Jones & Yarhouse, 2000, 100
[14] Bailey & Zucker, 1995, 43-55
[15] Jones & Yarhouse, 2000, 101
[16] Blanchard, Zucker, Bradley, & Hume, 1995, 22-30

investigated sex hormone levels of male and female homosexuals and their heterosexual peers. Results from comparison studies on males show no significant hormonal differences between homosexuals and heterosexuals. Female comparison studies also show hormone levels well within normal ranges, with the addition of a subpopulation that may be affected by elevated testosterone levels. However, these findings are limiting due in part due to sample selection, physical exercise routines, and occupation. The general consensus for postnatal hormonal studies is that it is unlikely that sex hormone levels play any role in the etiology of sexual orientation as adults.[17]

Theories of psychological causation are plentiful but frequently dismissed due to the presumption that the research was done on inadequate samples and by therapists who maintain their own biases. The bulk of research done is dealing with families of homosexuals. Patterns have been identified that are consistent with psychoanalytic theory. Some of the observed patterns that may impact orientation include distant or absent relationships with the same-gender parent, a greater amount of time involved in same-sex play or abuse during childhood. Ultimately, there is not enough research to support psychological causation, but there is too much evidence to completely dismiss it.[18]

Research on the topic of causation has produced incredibly varied results in a multitude of studies in a wide array of disciplines. Despite the substantial claims being made by the researchers, the direct evidence in support of the claims is not conclusive. As of now, some of the most respected proponents argue that the inconclusive nature of each individual discipline in fact points to the conclusion that there is not a single cause for sexual orientation. Rather, the development of sexual orientation is most likely to include genetic and biological factors, as well as sociocultural factors and possibly even choice. A single cause may never be determined, and research will continue in attempts to understand the complex phenomenon of sexuality. Until then, one must decide how to respond to the research and theories presented, as well as decide what theories, if any, are deemed most relevant and supportive of various positions in the vast cultural debate that are raging on around the world.

Religious Perspectives

The religious groups of the world have been in disagreement about the topic of sexuality for hundreds of years and seem to be the most vocal parties in the discussion. Viewpoints range from liberal reformist, to orthodox and conservative. This vast range of perspectives is greatly dependent upon one's interpretation of their given religious text. For the purpose of this discussion, Judaism and Christianity will be examined.

David Balch, a biblical scholar and professor at California Lutheran University recommends that when examining what scriptures say in reference to sexuality from a Christian perspective, one should take into account the interpretations of Jewish scholars as well, since the Torah is a part of the biblical canon. He stresses that Jews have given a greater emphasis to the "Old Testament" as a source of ethics than many Christians, who look instead to the New Testament, and that reading other interpretations may help Christian churches to answer questions regarding a communal lifestyle, and how the community as a whole may live ethically.[19]

[17] Jones & Yarhouse, 2000, 102
[18] Jones & Yarhouse, 2000, 103
[19] Balch, 2000, 279

Canonical texts focus primarily on how life is to be lived. In examining how two Abrahamic faiths read scriptures, biblical scholar Hans Frei draws attention to the fact that a conservative Christian reading of biblical passages is remarkably different from an orthodox Jewish reading of the same scriptures. While both readings tend to emphasize a theology of creation and reject homosexual sex, for Christians, the New Testament has the ability to alter interpretation, as it has no passages that clearly communicate a rule against homosexual acts.[20] With this difference noted, Christians may benefit from Jewish discussion on interpretation.

Jewish tradition has explicitly condemned homosexuality. This reaction is based primarily upon interpretations of Leviticus 18:22 and 20:13. The traditional stance holds that homosexuality is a violation of the order of creation, and while the laws forbidding the actions of homosexuals are unenforceable, they must remain as a reminder of societal disapproval. The orthodoxy holds that traditional law is of utmost importance, and modern scientific findings will be unable to alter its rejection of homosexual acts.

Other conservative Jewish interpreters have changed their stance drastically. Robert Kirschner pointed out that interpretation of Halakah, or traditional law, is subject to change. He points out that as understanding of situations change; interpretations of the law also change to fit the new understanding. Kirschner continues by saying that interpretation from Halakic tradition is to overturn the ancient condemnation of homosexual persons and recognize that, being unique in their sexuality, they are God's creations and bear His image.

The values affirming equality and integrity are of greater importance than the conditioned attitudes that condemn homosexuality. Same-sex couples are able to form stable families that embody the qualities deeply valued by the family-oriented Jewish tradition. These couples are able to support one another, any children they may have, and their community in the same way that heterosexual couples are able to. These views held by many reform, reconstructionist and conservative Jews are affirming of same-sex couples, and support marriage and ordination.

Conclusion

The aforementioned differences in interpretations and stances regarding homosexuality in the Jewish community parallel the differences within the Christian community. Moving forward, it is important to make a note that while scientific theories of causation are inconclusive and interpretations of sacred texts differ greatly, diversity has always characterized Judaism and Christianity. Regardless of the diverse nature of these two faiths, both can agree that the command "love your neighbor as yourself" is of utmost importance. May this discussion move forward using peaceful discourse, and may society celebrate the beautiful dichotomy of a unique and united humanity.

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