

HOMOSEXUALITY: A SCIENTIFIC VIEW

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Abstract

Homosexuality has a long history. The public is exposed to scientific findings through media reports; there are many misunderstandings about homosexuality; and as a result, a person who has homosexual feelings suffers minor stress. Two different directions have emerged. One believes that homosexuals are responsible for the spread of diseases. The second one believes that homosexuality is a normal behavior. The main goal of this narrative review is to revisit this issue, emphasizing the need for consistent interpretation and ongoing research. This review is framed using insights from recent scientific resources. Four main terms related to homosexuality (sex, gender, gender identity, and sexual orientation) and their dimensions are discussed. Some data about homosexual orientations and behaviors are explained. Homosexuality in the past and present, its history as a mental disorder until its removal from textbooks, and its relationship with mental health are mentioned. The reasons why a person is homosexual are multifaceted, etiologically complex, and unclear. Both views—biological and environmental factors—are clarified. Changes in the understanding of homosexuality continue due to the influence of politics, society, and religion. We need more research to better understand the phenomenon, all aspects of the causes, and how to deal with them. These efforts must be free from political and religious directions.

Keywords: Gender, Gene, Homosexuality, Sexual Orientation, SOCE

1. INTRODUCTION

Homosexuality is one of the important issues, so that all sections of society are preoccupied with it, society pays great attention to this topic (Bailey et al., 2016). Sometimes, the media and people spread science and information according to their desires and ideologies. For example, there is still a common belief that homosexuality is caused by changes in hormone levels in the human body or defects in the genitalia (Balthazart, 2012). Regarding the causes of homosexuality, Sheldon et al. found that still in the United States; people believe that the brain, hormones, the blood, illness, and abnormalities in genitalia are the possible biological causes (Sheldon et al., 2007). Generally, people don't have knowledge about homosexuality and its causes (Spahiu, 2017). Many materials related to the topic are outside scholarly sources, such as media reports, political propaganda, and social media posts (Bailey et al., 2016). This leads to more misunderstandings, and as a result, people who are homosexual or have homosexual feelings are vulnerable to various forms of victimization and adversity (Herek, 2009).

In the nineteenth century, philosophers and physicians considered homosexuality a disease and a crime, even a form of madness (Lehman et al., 2019). Today, Western society's attitude towards homosexuality has changed. In the past, homosexuality was

viewed as a shame, a problem to be fought for prevention, and a disease to be treated (Balthazart, 2012). Political debates around the world exemplify the disapproval or rejection of homosexuality. Although there have been major changes in the rights and positive attitudes towards homosexuals in most Western countries over the past 50 years, in contrast, in most African, Middle Eastern, Caribbean, and Oceanic countries and parts of Asia, homosexuality is illegal and severely punished (Bailey et al., 2016). Two different directions have emerged: one believes that homosexuals are responsible for the spread of diseases, especially AIDS, so increased proportions of these individuals lead to impaired population growth because they do not reproduce by having sex with the same sex (Pimentel & Garcia, 2022). The second direction believes that homosexuality is normal behavior and does not need to be changed; however, the stigma and discrimination against homosexuals should be removed (American Psychological Association, 2008; Anton, 2010).

Homosexuality has been present in most different societies and cultures throughout human history (American Psychological Association, 2008; Frankowski, 2004). Sexual orientation science is of interest to the general public for two reasons: First, as noted, it is often used to support the political, social, and moral considerations of homosexuals. Second, the science of sexual orientation is also an interesting topic at its core (Bailey et al., 2016). This issue requires scientific interpretation and research; a proper understanding from a medical and psychological perspective must be presented so that we can understand the phenomenon and make decisions about it.

The thematic review is proposed to encapsulate a chosen body of literature and to pursue an advanced understanding of a subject or debate (Ferragina & Seeleib-Kaiser, 2011). Accordingly, a comprehensive review of homosexuality is done, and we discuss the subject within the framework of new scientific resources and try to provide a precise view.

2. RESEARCH METHODS

2.1. Design of the review

This comprehensive thematic review was designed to thoroughly explore and create existing literature on various themes within the subject of homosexuality. The design of the review was informed by recognized strategies for conducting comprehensive reviews, with a focus on detecting and exploring recurring themes across the literature.

2.2. Literature Search Strategy

We conducted a comprehensive literature search to detect relevant research and scholarly studies related to all aspects of homosexuality. The investigation utilized electronic databases such as PubMed, PsycINFO, Web of Science, and Google Scholar. The search phrases comprised numerous combinations of keywords such as "sexual orientation" and "homosexuality" with other themes such as "gender", "etiology", "prevalence", "mental health", "Genes", "Minor Stress" and "sexual orientation change efforts (SOCE)."

2.3. Inclusion and Exclusion Criteria

Studies were involved if they delivered empirical data or scholarly insights on homosexuality themes, including its definitions, prevalence rates, historical perspectives, etiology, mental health considerations, and changes in sexual orientation over time. Both quantitative and qualitative studies were considered.

Articles published in peer-reviewed journals and books were included. We focused on English-language publications. Studies were excluded if they were duplicates, not relevant to the theme of homosexuality, or published in predatory journals.

2.4. Data Extraction and Synthesis

Two independent reviewers screened the titles and abstracts of identified articles to determine eligibility for inclusion. Full-text articles were then reviewed. Data were extracted from included studies using a standardized form. Information extracted included study objectives, participant characteristics, methodology, and key findings.

The extracted data were synthesized narratively to provide a comprehensive overview of the literature on homosexuality, including its definitions, prevalence rates, historical context, mental health considerations, etiology, and SOCE.

3. WHAT IS HOMOSEXUALITY?

To answer this question, we must understand some specific aspects of human sexuality, and then we can introduce it. There are some important aspects that are relevant to the understanding of the whole subject discussed here.

3.1. Terms related to sexual behavior

3.1.1. Sex

It is an aspect determined at birth (or prenatally, known through ultrasound), based on an individual's external sexual organs. When the reproductive organs are formed, their determinants (such as internal reproductive organs, chromosomes, and sex hormones) determine sex. Sex is generally appropriate to the gender of the individual (American Psychological Association, 2015b). They are usually divided into male, female, or intersex groups (American Psychological Association, 2015b):

- Male: people whose genitals (internal and external] are male, have an XY chromosome structure, and have high levels of male sex hormones.
- Female: people with female genitals (internal and external), XX chromosomes, and high levels of female sex hormones.
- Disorders of Sex Development (Intersex): people who have a disorder of the genitals for specific reasons that appear from birth and cannot be easily and visually identified as male or female.

The term intersex nowadays has been changed to Disorders of Sex Development which is a new term for “conditions present from birth where there are atypical developments in chromosomal, gonadal, or anatomical sex” (Bennecke et al., 2021).

3.1.2. Gender

It refers to the perceptions, feelings, and behaviors that a particular culture gives to a person, along with an individual's biological sexual aspect. Individual behaviors that conform to cultural expectations for the person's sexuality are considered gender conformity, and behaviors that do not conform to cultural perceptions constitute gender nonconformity (American Psychological Association, 2012):

- The male gender includes people who behave masculinely in society.
- Female gender includes people who behave femininely in society.

So, sex is used for the biological aspect of being male or female, whereas gender is the psychological, behavioral, social, and cultural aspects of being male or female (APA, 2015b).

3.1.3. Gender Identity

It is the identification of the self as male or female, influenced by biological and environmental factors (American Psychological Association, 2015a). In other words, it is an inner sense of being a boy, a man, a male, a girl, a woman, or a female. This sense of gender may or may not be consistent with the person's inborn sex or secondary sexual characteristics (American Psychological Association, 2015b). Consequently, it can be divided into two main groups (Coleman et al., 2022):

- Cisgender individuals, meaning their gender identity matches the sex they were assigned at birth.
- Gender diverse; used to denote individuals whose gender identities and/or expressions diverge from the social and cultural norms associated with the sex they were assigned at birth. This encompasses a wide range of culturally diverse identities, including but not limited to those who identify as non-binary, gender expansive, or gender nonconforming.

3.1.4. Sexual Orientation

It is an identity structure that includes the sexual attraction and arousal that an individual has towards another person, as well as the behavior and social relationships that are formed by these attractions (American Psychological Association, 2015b). It can also be defined as an individual's constant sexual attraction to a male partner, a female partner, or both. Sexual orientation may be heterosexual, homosexual, or bisexual (American Psychological Association, 2015a). Sexual orientation is used to describe the way an individual is physically aroused toward others (Frankowski, 2004)

- Heterosexuals are people who are attracted to the opposite gender.
- Homosexuals; their attraction is towards people of the same gender.
- Bisexuals; their attraction is to both genders.

Male homosexuals have been identified with the term gay, and female homosexuals are often referred to as lesbians (Frankowski, 2004).

3.2. Dimensions of sexual orientation

Sexual orientation is sexual attraction to a particular person or body type. We can understand sexual orientation as consisting of three different dimensions: sexual identity, sexual desire, and sexual behaviors (Lehman et al., 2019). In other words, it is important to distinguish between three aspects of homosexuality: expression of homosexual behavior, homosexual attraction, and recognition or acceptance of this attraction in society (Balthazart, 2012). Sexual orientation is sometimes divided into four related phenomena that fall within the framework of sexual orientation but are conceptually and empirically distinct from each other (Bailey et al., 2016): (Figure 1)

- a) Sexual behavior: It consists of sexual interaction between two people of the same sex (homosexual), with the opposite sex (heterosexual), or both sexes (bisexual).
- b) Sexual identity is the person's idea about sexual orientation (some people disclose it to the public, some do not) as homosexual, heterosexual, or bisexual.
- c) Degree of sexual attraction to the same sex, both sexes, or the other sex.
- d) Physiological sexual arousal in men or women.

Generally, homosexuality has three levels (Lehman et al., 2019):

- a) Sexual identity: This involves accepting homosexuality and identifying oneself as a homosexual.
- b) Sexual attraction, which includes sexual desire and arousal, occurs when a person has sexual desire for his or her gender and is sexually aroused by the same gender.
- c) Sexual behavior: the person has sexual intercourse with his or her gender.

These components are not always compatible, since aspects of an individual's identity and behavior are influenced by many factors (culture and religion are prominent examples), and the interconnections of these dimensions may be stable and can change over time. For example, a person may be identified with one of the sexual orientations of the group (homosexual or bisexual), but engage in sexual behavior that is not appropriate for his or her sexual identity (Lehman et al., 2019). For instance, occasional or even repeated same-sex sexual behavior is more likely to be related to the absence of the opposite sex for a specific reason, as is the case in animals and humans. This behavior was terminated by the availability of the opposite sex. These people are not considered homosexuals because their motivation is only the satisfaction and emptying of their sexual drive (Balthazart, 2012).

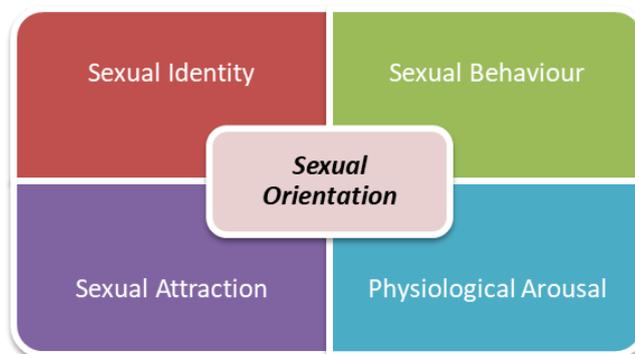


Figure 1. Dimensions of Sexual Orientation

3.3. Sexual orientation is a continuous line

In 1948, Kinsey and his colleagues developed the Kinsey Scale of Sexual Behavior to show how sexual acts cannot be limited to whether someone is gay or heterosexual. Rather, it is a continuous range based on several factors, including behavior, desire, and fantasy (Quinan in Naples et al. (2016)). Over the centuries, studies have shown that sexual orientation ranges over a continuous array, from exclusive attraction to the opposite sex to exclusive attraction to the same sex (American Psychological Association, 2008).

Using the Kinsey scale on more than 11,000 participants, the results show that sexual orientation is very variable, with many reporting experiences and thoughts that range between “heterosexuality” and “homosexuality” (Quinan in Naples et al. (2016)). The Kinsey scale covers seven points, which include:

- a) Exclusively heterosexual, with no homosexuality.
- b) Predominantly heterosexual, only occasionally homosexual.
- c) Predominantly heterosexual, but more than occasionally homosexual.
- d) Equally heterosexual and homosexual.
- e) Predominantly homosexual, but more than occasionally heterosexual.
- f) Predominantly homosexual, only occasionally heterosexual.
- g) Exclusively homosexual.

3.4. Definition of homosexuality

Sexual orientation is generally described in three categories (American Psychological Association, 2008):

- Heterosexual: having affection, romance, or sexual attraction to members of the other sex. That is the sexual arousal and action of women towards men and men towards women.
- Homosexual: having affection, romance, or sexual attraction for members of one's sex. That is, a man has sexual desires with a man and a woman with a woman.
- Bisexual: having affection, romantic, and sexual attraction to both sexes (i.e., sexual excitement and attraction to both men and women).

4. PREVALENCE OF HOMOSEXUALITY

Most women and men are sexually attracted to the opposite sex, i.e., heterosexuals, while there are people who are sexually attracted to individuals of their sex, i.e., homosexuals (Lehman et al., 2019). We cannot determine the exact prevalence of homosexuality for several reasons (Bailey et al., 2016):

- a) The phenomena associated with homosexuality and bisexuality (behavior, identity, attraction) vary in incidence across persons. For example, people with a heterosexual identity still behave homosexually or have homosexual attractions. Therefore, population assessment depends on the dimensions being assessed.
- b) The dimensions associated with homosexuality and bisexuality vary over time. Therefore, different rates may be issued based on the assessment of sexual behavior in the present or the past of the person's life. For example, the proportion of people who have had homosexual experiences in their lives is higher than the proportion of people who have had such experiences in the past year.

- c) Homosexuality is considered a shame, even in developed societies, so some people may hide their homosexual identity and behavior.
- d) Some dimensions of homosexuality (notably gay identity and same-sex attraction) are rare; inferring accurate proportions requires a large sample of the population, which is hard and difficult to conduct.
- e) One aspect cannot be assessed for all places and times, especially gender identity and gender behavior, which are much more flexible and culturally variable than sexual attractions.

Therefore, there are different rates of homosexuality. The first study of the prevalence of homosexuality was conducted in the late 1940s by Kinsey and colleagues, who estimated the rate at 5–10% of American society (Quinan in Naples et al. (2016)). A recent survey of 34,557 adults in the United States found that 96.6% of respondents were heterosexual, 1.6% were homosexual, and 0.7% were bisexual. This number is equivalent to a review of nine other large studies conducted in European countries, which found that 3.5% of US adults are homosexual or bisexual (Bailey et al., 2016).

While data and sources are scarce (Cáceres et al., 2006), and according to research methodology, rates vary, with some sources indicating that overall (2-6%) of people are homosexual (Ngun & Vilain, 2014). The report of the National Center for Health Statistics in 2005, using a self-rated survey, shows that approximately 1.5% of men and 0.7% of women are fully homosexual (Balthazart, 2012).

Homosexuality rates vary according to culture and region, according to a meta-analysis of 67 specific studies on male sexual behavior or male-to-male sexual relationships, with rates varying by geographical area. Lifetime prevalence of male-to-male sex in East Asia (3-5%), South and Southeast Asia (6-12%), Eastern Europe (6-15%), and Latin America (6-20%) (Cáceres et al., 2006). There are differences between the prevalence across countries regarding homosexuality (Balthazart, 2012), Table 1 shows these differences.

Table 1. Homosexuality Prevalence in Men by Country

Countries	Homosexuality rates
United Kingdom	5-9
Japan	5.8
Netherlands	7.8
United States of America	4.8
Philippines	2
Malaysia	4.7
Thailand	3.6

Source: Balthazart (2012)

5. HOMOSEXUALITY AND MENTAL DISORDER

5.1. Homosexuality in the past and present

Homosexuality has a long history; our purpose in this article is to discuss the phenomenon scientifically. Otherwise, it is still considered a socially inappropriate behavior worldwide, and many oppose it (American Psychological Association, 2008; Balthazart, 2012; Lehman et al., 2019). Legally, it was considered a serious crime in Europe in the last century and is still considered a crime in many countries (Xie & Peng, 2018). Homosexuals face many forms of discrimination and violence, and although attitudes have changed slightly, violence against them is still common in American society (American Psychological Association, 2008).

In scientific literature until 1973, homosexuality itself was considered a mental illness (Drescher, 2015; Lehman et al., 2019). Worldwide, there are two scientific sources for the diagnosis of mental illnesses: the International Classification System of Diseases (ICD), issued by the World Health Organization, and the Diagnostic and Statistical Manual of Mental Disorders (DSM), issued by the American Psychiatric Association (APA) (Telles-Correia et al., 2018).

The first edition of the DSM, published in 1952, classified homosexuality as a sociopathic personality disturbance (Drescher, 2015). At the time, homosexuals were not allowed to work, study, or join the army, and psychotherapists attempted to treat homosexuality through the use of psychoanalytic therapy, hormones, castration, and even brain surgery (Lehman et al., 2019). The second edition of the DSM, published in 1968, similarly recognized homosexuality as a mental illness and sexual deviance. In the third edition of the DSM, published in 1973, homosexuality was excluded as a mental illness, but ego-dystonia homosexuality was included as a psychological disorder (Drescher, 2015; Lehman et al., 2019). It was defined as “feelings of guilt, shame, anxiety, and depression about being homosexual” (American Psychiatric Association, 1980). In 1987, after a revision of the third edition, this problem was removed and renamed “persistent and excessive boredom about the individual's sexual orientation.” This diagnosis remained in the fourth edition and was finally removed in 2013 in the DSM-5 (Drescher, 2015).

Homosexuality was first listed as a disease in the sixth edition of the ICD in 1948. In the eighth edition of 1965, homosexuality among men and women remained a mental illness in the section on sexual deviance. In the tenth edition, in 1990, homosexuality was completely removed as a disease and replaced with ego-dystonia sexual orientation (World Health Organization, 1993). It means that the person is distressed for having homosexual feelings and desires, and it finally removed this condition in the eleventh edition in 2019 (Drescher, 2015).

In 2015, 118 countries decriminalized homosexuality. It is legally prohibited in 75 countries in Asia, Africa, and the Middle East, with 11 retaining the death penalty for homosexual behavior. Despite differences in policy approaches, there are many similarities in most nations today, all with anti-gay histories (Bailey et al., 2016). Homosexuality is currently considered by the American Psychiatric Association (APA) to be a normal form of human sexual orientation, not a mental illness (Anton, 2010). It is also not considered a disease by the World Health Organization (Drescher, 2015).

5.2. Ego-dystonic homosexuality

In psychiatry, if a behavior occurs in an individual and the person feels distressed or affects the person's life, i.e., if the person himself does not like the behavior and feels uncomfortable, it is considered a disorder (American Psychiatric Association, 2013; World Health Organization, 2019). What should someone do if they feel worried about having same-sex attraction and don't like that feeling at all? Is it a disease? A study found that homosexuals visit psychiatrists for a variety of reasons and seek help. Six out of 26 homosexuals (23%) feel inner frustration because of their homosexuality (Prashanth et al., 1996). A 2009 study found that one in six psychotherapists helped a client who wanted to change his or her homosexual feelings during his or her career (Bartlett, Smith & King, 2009). In the third edition of the Chinese Classification of Mental Disorders (CCMD-3), published in 2001, ego-dystonic homosexuality was still considered a disease (Janssen, 2014). In a study of homosexual acceptance in China, the majority of respondents (78%) believed that "homosexuality is always wrong behavior" (Xie & Peng, 2018). This issue (if a person is distressed by their sexual orientation) needs more research and follow-up and is a controversial issue; there is no scientific answer, and doctors treat this aspect based on their understanding, while sexual orientation change efforts (SOCE) were prohibited by the American Psychiatric Association (Anton, 2010).

5.3. The relationship between homosexuality and other disorders

Indeed, homosexuality is not a disease, but the rate of mental and physical illnesses among homosexuals is higher than others. Here are some examples:

A 2008 study found that homosexuals had higher rates of suicidal thoughts, depression, and anxiety than heterosexuals. Another study found that suicide attempts among homosexuals are twice as common as those among heterosexuals (31% of homosexuals and 14% of heterosexuals) (Lehman et al., 2019). Research indicates a clear connection between different forms of minority stressors and suicidal thoughts and suicide attempts among adolescents and young adults who identify as homosexuals and bisexuals (de Lange et al., 2022). Homosexual groups use more alcohol, tobacco, and drugs. A survey shows that 72% of homosexuals use alcohol, compared to 61% of heterosexual people (Lehman et al., 2019).

Regarding physical disorders, some cancers are more common among them than in heterosexual people, for example, cervical cancer in women, rectal diseases, and cancer (Lehman et al., 2019). Also, the majority of infected cases of the monkeypox pandemic in 2022 were among gay and bisexual groups (Ajmera et al., 2022). A study shows that in 2014, 37% of gonorrhea cases were in the homosexual group; men who have sex with men accounted for one in four cases of syphilis; and in 2017, the rate of HIV infection among men who have sex with men was 66% (Lehman et al., 2019).

Violence and harassment are notably prevalent, with approximately half of sexual minority adults reporting instances of verbal abuse at some point in their adult lives due to their sexual orientation (Herek, 2009). Friedman found sexual minority individuals are 3.8 times more likely to experience sexual abuse (Friedman et al., 2011). Therefore, the rate of violence against gay groups is higher than the general population (Lehman et al., 2019). Friedman et al. (2011) concluded that the increased rates of abuse encountered by sexual minority youths could be one of the key factors contributing to higher levels of

mental health issues, substance use, risky sexual behavior, and HIV prevalence reported among sexual minority adults (Friedman et al., 2011).

5.4. Stigma and discrimination against homosexual persons

Stigma refers to a negative societal attitude or disapproval directed towards a particular aspect of a person, which can result in prejudice and discriminatory behavior against that individual (American Psychological Association, 2012). Teliti (2015) classified homosexual stigma into two main types: (1) Felt stigma pertains to an individual's expectations regarding the likelihood of encountering stigma in different situations and under various circumstances. (2) Self-stigma occurs when an individual internalizes society's negative assessment of homosexuality, leading to the development of negative attitudes towards oneself and one's own homosexual desires (Teliti, 2015). In the United States, individuals identifying as lesbian, gay, or bisexual often face significant prejudice, discrimination, and violence due to their sexual orientation (American Psychological Association, 2008). According to the Center for American Progress, homosexuals experience significant health disparities (Lehman et al., 2019).

Residing in a society that favors heterosexuality undoubtedly presents obstacles for individuals with non-heterosexual orientations. Numerous lesbian, gay, and bisexual individuals encounter social stigma, prejudice, violence, and discriminatory treatment (American Psychological Association, 2012). These discriminatory beliefs and behaviors are regarded as homophobia, which is a negative reaction to homosexuality, homosexual behavior, and individuals with same-gender attraction or behavior (Lehman et al., 2019). The level of homophobia is high (Teliti, 2015; Xie & Peng, 2018). For example, more than 80% of Albanians claim that they would be very anxious if it turned out that one of their family members or friends is homosexual (Teliti, 2015). Minority stress (discrimination, victimization, family rejection, and internalized homophobia) is the main cause of mental health problems, including suicidal ideation and attempts among homosexuals (de Lange et al., 2022). Another problem facing homosexual individuals is hate crimes, Herek (2009) found that approximately 20% of homosexuals stated having experienced an individual or property crime based on their sexual orientation, including verbal harassment and employment or housing discrimination (Herek, 2009).

6. ETIOLOGY

The reasons why a person is homosexual are multifaceted, etiologically complex, and unclear (Cook, 2021). Scientific research has not been able to determine an exact reason why a person is homosexual (Pimentel & Garcia, 2022). In the past, it was believed that the main cause was related to the individual's social environment, meaning it was entirely derived from the environment (Frankowski, 2004), and nowadays research is directed towards finding biological factors such as genetics and hormones (Bailey et al., 2016; Cook, 2021). The recurring question in this regard is, "Do people choose to be homosexual or heterosexual?" This is a bad question, since "choice" has at least two incompatible meanings: choice as an act of interconnection, which is not in the person's control, or choice as a decision to perform the behavior; the two are opposite (Bailey et al., 2016). There is a long and ongoing debate as to whether environment or genetics cause homosexuality (Pimentel & Garcia, 2022). As of now, no universally accepted

theory fully explains the origins of sexual orientation (Cook, 2021), but the following factors play a role:

6.1. Biological factors

Several studies propose that hormones and genetic factors play a significant role during infancy and early childhood, influencing the development of homosexuality in some individuals (Cook, 2021). Here, we'll examine these elements through three key points:

6.1.1. Male and female hormone levels play no role

In the past, it was believed that gay people had different hormone levels than heterosexual people who were sexually oriented toward the opposite sex, and even hormone therapy was used. For instance, it was believed that a lack of testosterone caused a person to be sexually oriented towards their gender (Balthazart, 2012). This belief is now completely rejected because the levels of these hormones are not related to an individual's sexual orientation but to sexual desire. Several studies have shown that increased testosterone does not change sexual orientation but only increases sexual desire (Cook, 2021). All studies indicate that increasing testosterone in people with low hormone levels can increase sexual activity and fantasies. Conversely, injecting this hormone does not affect people with normal levels. Male hormones only affect the activation of sexual drives (Balthazart, 2012).

6.1.2. Hormonal effects during infancy

Endocrinologist Günter Dörner developed the theory that homosexuality is due to hormonal embryonic imprinting. According to this theory, unborn children who become homosexual in adulthood have abnormal sexual separation in the womb, for example, due to abnormally low exposure to testosterone in boys or high levels of testosterone in girls, or it is due to changes in the brain's response to these hormones (Balthazart, 2012). The theory is currently being worked on and is viewed as a contributing factor (Cook, 2021). This model has addressed the subject theoretically and is consistent with animal studies (Balthazart, 2012). Because of the risk of measuring hormones in the womb, it is very difficult to test this idea on humans (Bailey et al., 2016). A hormonal interpretation is never going to be the final answer because it always leads to the next question: what causes hormones to be released in abnormal amounts in the womb? Is it a random thing, or is it due to genetic control?

6.1.3. Genetic effects

In general, studies point to the role of heredity in the formation of sexual orientation in males (Balthazart, 2012; Ganna et al., 2019). Studies on twins and homosexual genes have yielded several conclusions. Studies indicate that the heredity rate of sexual orientation is 50–60% among men in Western society (Balthazart, 2012). In other studies, the heritability of homosexuality is 52% (Ngun & Vilain, 2014). In their research, Hamer et al. claimed to have discovered a homosexuality gene, arguing that the gene (Xq28) was responsible for this behavior and that homosexuality was entirely hereditary (Bailey et al., 2016). This was so controversial that the results could not be replicated (Ngun & Vilain, 2014), studies failed to find a homosexuality gene; subsequent studies could not

prove this; and other studies pointed to several other genes (such as the 7q36 and 8q12 genes in fathers and the maternal “10q26” gene) that influence homosexuality, without any of them being absolutely proven to be the primary cause of homosexuality (Cook, 2021). We know that a single gene does not contribute to homosexuality or heterosexuality in women or men, but that a network of genes plays a role in determining sexual orientation (Ganna et al., 2019; Ngun & Vilain, 2014).

Still, these studies have error problems in terms of data collection and comparison of identical twins in different environments, so they cannot be fully validated. Heritability is not sufficient to conclude that a behavior is entirely inherited, but there is a strong suggestion of the role of the environment in stimulating sexual orientation (Ngun & Vilain, 2014). In terms of evolutionary theory, if homosexuals do not increase in society and cannot have offspring, the genes responsible for homosexuality would have disappeared throughout history. However, for specific reasons, homosexuals change their sexual orientation and therefore increase, for example, when they marry because of societal pressure. Homosexuals have been shown to reproduce less than heterosexual people, and this low reproduction rate has led to the survival of one or more genes (Balthazart, 2012).

6.2. Environmental factors

Research on twins suggests that environmental factors can influence sexual orientation (Cook, 2021). Environmental factors are comprehensive, and here are some:

6.2.1. Poor parent-child relationships;

Freud and psychoanalytic theory attribute homosexuality to the way parents raise their children (Balthazart, 2012). Psychoanalysts generally blame the breakdown of the relationship between children and parents as a cause of homosexuality (Bailey et al., 2016). This theory states that Child-parent relationships determine a person's sexual orientation in adulthood. For example, a dominant mother and an absent father can produce a homosexual son through a disruption of the oedipal phase of sexual development (Balthazart, 2012). A study in the Philippines also points to the effect of childhood trauma on homosexuality (Pimentel & Garcia, 2022).

6.2.2. Behaviorism and Learning Theories:

This approach places great emphasis on the effect of learning on the development of human behavior; learning theories suggest that sexual orientation can be the result of unconscious or conscious learning by parents, teachers, and even society (Ryan et al., 2021). A study found a strong association between sexual orientation, birth order, and individuals with homosexual siblings (Pimentel & Garcia, 2022). This view holds that homosexual parents have more homosexual children because of social motivations (Bailey et al., 2016). Critics argue that in Western societies, parents typically do not wish for their children to be gay, suggesting that if homosexuality is learned, it would likely not be from them. This raises questions about how such attitudes or orientations are transmitted if they are not actively promoted by parents. There are studies that indicate that children of homosexual parents are less likely to identify as homosexual (Balthazart, 2012).

6.2.3. The Older Brothers Effect:

Several studies have demonstrated that having older brothers is associated with an elevated probability of homosexuality in boys. However, these findings pertain specifically to homosexuality in males and do not extend to females (Cook, 2021). There is evidence of an association between individual homosexuality and the number of older siblings from the same mother (Balthazart, 2012), and the mechanism is not fully understood; it may be related to the influence of education and environment or genetic involvement (Cook, 2021). Studies indicate that the likelihood of a man being homosexual increases based on the number of older brothers he has. Specifically, a man without an older brother has a 2% higher chance of being homosexual, while those with one older brother have a 2.6% higher chance. This likelihood further rises to 3.5% with two older brothers, 4.6% with three older brothers, and 6% with four older brothers (Bailey et al., 2016).

6.3. Which one?

The presence of a correlation between two factors doesn't necessarily imply a direct causal relationship. For instance, if we observe a correlation between a specific behavior, like the frequency of sexual fantasies, and blood testosterone levels, it could be that testosterone influenced the behavior, the behavior influenced testosterone secretion, or both were influenced by a third factor, such as the individual's stress level or state of relaxation (Balthazart, 2012). Indeed, this perspective on the biological underpinnings of homosexuality is also valid. Homosexuality is not caused by a single factor but by a combination of genetic, hormonal, and environmental factors (Frankowski, 2004). Consequently, a specific reason cannot be assigned for this issue (American Psychological Association, 2008). Despite the influence of genetics and hormones in childhood, we cannot deny the influence and importance of cultural, educational, and environmental factors (Cook, 2021). Because of the low heritability coefficient, we cannot conclude that homosexuality is entirely through heredity, but rather a strong suggestion of the role of the environment in inducing sexual orientation (Ngun & Vilain, 2014). The most robust type of research on twins involves studying identical twins who were raised in different environments. In such studies, any similarities between the twins are primarily attributed to genetics. However, the separation of identical twins early in life is uncommon, and it is even rarer among individuals who identify as homosexual. As a result, these types of studies are not readily available (Bailey et al., 2016).

7. CHANGE IN SEXUAL ORIENTATION

7.1. Changes in sexual orientation over time:

Several studies indicate that individuals' sexual orientation changes throughout their lives. A study of 156 young homosexuals and bisexuals was conducted on changes in sexual identity over time. Fifty seven percent of homosexuals remained consistently homosexual, 18% changed from homosexual to bisexual, and 15% remained consistently bisexual (Rosario et al., 2006). The study also notes that many people have turned to heterosexuality. For example, 4% of participants became heterosexual after six months of follow-up (Rosario et al., 2006). Though there are studies, stated that Sexual orientation is generally stable, with only a small percentage of people changing their sexual

orientation over time (Balthazart, 2012). Changes in sexual identity are widespread (Rosario et al., 2006). Research indicates stability as well as changes in sexual attraction and identification over time. In another study by Stock and colleagues on 216 bisexual men (aged 18–30 years), they found that during one year of follow-up, 49% did not change their sexual orientation, 34% moved more toward homosexuality, and 17% moved toward heterosexuality (Ngun & Vilain, 2014). Women are more sexually fluid than men, meaning they change their sexual desire toward a woman or a man for specific reasons (Bailey et al., 2016). Research has shown that bisexual women and those with a nonexclusive preference for one's sex change their sexual orientation more than people who are fully homosexual (Ryan et al., 2020).

7.2. Sexual orientation changes efforts (SOCE)

Efforts to alter sexual orientation are contentious due to the conflict between religiously grounded values and those advocated by gay rights organizations, experts, and scientific bodies. Some individuals and groups contend that homosexuality indicates developmental abnormalities or moral and spiritual deficiencies. They advocate for attempts to change sexual orientation through psychotherapy and religious interventions aimed at altering homosexual feelings and behaviors (Anton, 2010). Changes in homosexuality have been made by psychiatrists and psychologists in the past through conversion therapy because, in the past, homosexuality was considered a disease (Prashanth et al., 1996). There is insufficient research to prove whether new methods of sexual orientation change work to change an individual's sexual orientation or not; older research suggests that sexual orientation cannot be changed with effort, while some individuals learn to limit or forget their attractions (Anton, 2010). However, efforts to change homosexuality are mostly held by religious groups (Ryan et al., 2020). Research suggests that pediatricians should be aware of adolescent homosexuality (coming out), which can lead to strong family disapproval. In many families, it leads to physical and psychological violence (Frankowski, 2004). Although the APA has warned against attempts to change sexual orientation, it encourages mental health professionals to help people who want to change their sexual orientation by making positive use of multicultural components and client-centered approaches that recognize the negative impact of social stigma. It also strikes a balance between the moral principles of benefit and non-harm, justice, and respect for the rights and dignity of individuals (Anton, 2010).

8. CONCLUSION

Changes in the understanding of homosexuality continue due to the influence of politics, society, and religion. In the past, homosexuality has been considered a mental illness and has been gradually removed from the framework of the disease, and even though efforts to remove any stigma on homosexuality continue, it is attempted to analyze the issue from a scientific point of view, which is biological and beyond the control of the individual. This is to reduce violent action and discrimination against individuals based on their sexual orientation. Scientifically, there is no evidence that this behavior is inherited, but all environmental and biological factors interact to cause homosexuality. We cannot consider homosexual feelings, attraction, and behavior as a mental illness because they do not have the characteristics of mental illness, but homosexuals face many

psychological and social problems due to their sexual orientation being incompatible with the majority of society, which is why they need more assistance and support.

In the world today, two opposing forces are at play regarding homosexuality. One direction is heavily influenced by the media and organizations advocating for gay rights and support, aiming to secure equal rights for individuals who identify as homosexual in society. Conversely, there exists a robust cultural, social, and religious orientation that opposes efforts in this direction, viewing homosexuality through ideological and political lenses rather than scientific ones. Meanwhile, people who are homosexual are vulnerable to many psychological problems.

From a scientific standpoint, there is a clear need for further research to comprehensively understand homosexuality, including its causes and potential interventions. It is essential that these research endeavors remain independent of political and religious influences to ensure unbiased and impartial outcomes. Finally, mental health professionals should help homosexuals as much as they can, from treating any illness that co-occurs with homosexuality and learning how to adapt and deal with homosexual feelings and desires. Homosexuals should not be left alone!

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