

CHARLES UNIVERSITY
FACULTY OF HUMANITIES

Bachelor Thesis

**Primary Sexual Experiences and
Sexual Orientation**

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STATEMENT

I declare that I have created the thesis by myself. All sources and literature used have been duly cited. The work was not used to obtain another or the same title.

Nijmegen, Netherlands

12.6.2023

signature:

A handwritten signature in black ink, appearing to read 'Yuya', written in a cursive style.

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ABSTRACT

This study examines the relationship between primary sexual experiences (PSE) and the development of self-identified sexual orientation in humans, initiated by empirical evidence from animal studies. It aims to fill a gap in the existing literature by investigating the acquisition of predictive knowledge about sexual reward from PSE and its impact on sexual orientation. The study has four objectives: (1) exploring the influence of positive conditioning on sexual orientation through PSE, (2) comparing the importance of partnered and solitary PSE in predicting later sexual orientation development, (3) investigating potential discrepancies between the gendered content of first sexual experiences and self-identified sexual orientation in non-/heterosexual individuals, and (4) examining gender differences in sexual fluidity among nonheterosexual individuals, particularly a potential higher prevalence of gender fluidity among those females. Data from 427 participants were collected through a retrospective self-report questionnaire and further analyzed. The statistical findings emphasize the significance of PSE in shaping individuals' self-identified sexual orientation and highlight the role of conditioning and reward in shaping partner preferences. Further research should explore additional factors like satisfaction with sexual fantasies and first masturbation to deepen our understanding of their influence on sexual orientation and improve comparability across different analyses.

Keywords: sexual orientation, sexual identity, sexual behavior, sexual reward, sexual fluidity, orgasm, partner preference, gender

ABSTRAKT

Tato kvantitativní bakalářská práce zkoumá vztah mezi primárními sexuálními zkušenostmi (PSZ) a vývojem sebeidentifikované sexuální orientace u lidí. Výzkumný záměr je vystavěn na základě empirických poznatků ze studií na zvířatech. Cílem studie je zaplnit mezeru ve stávající literatuře zkoumáním toho, jak se prediktivní znalosti o sexuální odměně získané z PSZ mohou reflektovat na sexuální orientaci. Studie má čtyři cíle: (1) probádání vlivu pozitivního podmiňování na sexuální orientaci prostřednictvím PSZ, (2) porovnání vlivu partnerských a solitérních PSZ ve vztahu k pozdější sexuální orientaci, (3) zkoumání potenciálních rozdílů mezi genderovým obsahem prvních sexuálních zkušeností a sexuální orientací u ne-/heterosexuálních jedinců a (4) prozkoumání genderových rozdílů v sexuální fluiditě u neheterosexuálních jedinců s potenciální vyšší prevalencí genderové fluidity u žen. Data od 427 účastníků byla shromážděna prostřednictvím retrospektivního dotazníku a analyzována pomocí statistických metod. Výsledky zdůrazňují význam PSZ při utváření sexuální orientace jednotlivců a vyzdvihují roli podmiňování a odměny ve vývoji partnerských preferencí. Pro rozšíření našich znalostí ohledně vlivu PSZ na sexuální orientaci by se měl budoucí výzkum zabývat i dalšími faktory, jako jsou satisfakce sexuálních fantazií a první masturbace.

Klíčová slova: sexuální orientace, sexuální identita, sexuální chování, sexuální odměna, sexuální fluidita, orgasmus, partnerské preference, gender

1 INTRODUCTION

This bachelor thesis utilizes a quantitative approach to investigate potential connections between the acquisition of predictive knowledge about sexual reward from primary sexual experiences (PSE) and the development of corresponding self-identified sexual orientation (SO) in terms of gender in humans. The study aims to fill a gap in the existing literature by exploring the role of PSE in relation to SO formation, which to date has not been previously examined.

The theoretical part of the thesis begins with an elaboration on the definition of SO and its several dimensions. It then delves into three etiological approaches related to the development of SO, including biological essentialism, social constructivism, criticism of prior both, and then the biobehavioral model of SO is introduced. The conceptualization and operationalization of SO, along with the self-report scales and novel tools for assessing SO, will also be discussed. Additionally, the concordance between subjective and objective sexual arousal will be examined. The prevalence and fluidity of SO, as well as empirical evidence from animal models concerning the role of conditioning in sexual behavior and the primacy of first sexual experiences with reward, will be explored. The theoretical framework and research objectives provide the basis for formulating hypotheses that investigate the associations between PSE with reward and self-identified SO.

In the empirical part, a retrospective research design of the study will be explicated, along with the measurement tools, sampling criteria, and data collection methods employed. The characteristics of the participants and the sociodemographic data collected through a self-constructed questionnaire, incorporating the Kinsey and Gender-Inclusive scales as measures of SO, will be presented. In addition, various analytical tests will be conducted to examine the research objectives expressed as hypotheses, and the results will be further discussed.

Please note that the author of this thesis takes a strong stance against the idea that SO is entirely determined by experiential factors or can be consciously altered. Simultaneously, the study emphasizes that SO may not be immutable or inherently fixed and does not prioritize heterosexuality as a superior or more desirable sexual orientation compared to others. Throughout the work, the thesis strongly opposes any attempts to SO change efforts, aligning with APA's guidelines for psychological practice (Hancock & Haldeman, 2022).

While working on this bachelor's thesis, I made sure to first follow the specific requirements of the Faculty of Humanities regarding the formal and internal structure of the

bachelor thesis. In cases where no specific guidelines were provided, I referred to the supervisor of the thesis and APA Publication Manual, Seventh Edition, to ensure that the formatting of my work aligns with the current standards set by the American Psychological Association (APA, 2020).

2.1 Definition of Sexual Orientation

The definition of sexual orientation (SO) has evolved and lacks universal consensus across fields and cultures (Park, 2022; Valentova et al., 2011). Many researchers have identified and agreed upon at least three dimensions of SO: affective (attraction and desire), cognitive (identity), and behavioral (Dharma & Bauer, 2017; McCabe et al., 2005; Priebe & Svedin, 2013). According to the American Psychological Association ([APA]; 2021), SO refers to "a multidimensional aspect of human experience, comprised of gendered patterns in attraction and behavior, identity-related to these patterns, and associated experiences, such as fantasy" (Katz-Wise & Hyde, 2014; Klein, 1993; Rosario & Schrimshaw, 2014).

In line with current scientific understanding, Galupo et al. (2014) and Ventriglio and Bhugra (2019) emphasize the significance of adopting a definition of SO that accurately reflects how it manifests in the lives of sexual minorities. Hence, within the scope of the current bachelor thesis, it is advised to broaden the interpretation of the APA (2021) definition of SO to encompass individuals who identify outside of the gender binary, as well as consider attraction(s) towards such individuals (Galupo et al., 2017a). This preferred understanding of the definition continues to recognize all SOs as normal variations of human sexuality, irrespective of one's gender identity or expression (Nieves-Lugo et al., 2017).

Although the proposed (comprehension of the) SO definition is rather vague, the requirement for an all-encompassing characterization of SO persists because of the potential for inconsistencies, variations, or misalignments among the three dimensions previously mentioned (Lindley et al., 2012; McCabe et al., 2005). There is the possibility that an individual's sexual behavior may "go beyond" their (self-identified) sexual identity, and vice versa. Hence, individuals may have experienced or engaged in behaviors that may or may not correspond with their self-identified sexual identity (Romanelli et al., 2020), thereby the necessity for involving all three dimensions of SO becomes apparent (Glassgold, 2022).

For another instance, some people might consider themselves heterosexual but still participate in same-sex sexual activities at the same time. Similarly, there are individuals who identify as bisexual but only form romantic connections with one particular gender. This even further reinforces the need for a broader understanding of the complex nature of SO and its multifaceted dimensions rather than solely focusing on attraction or another isolated component from which we would judge one's SO (Garnets, 2002).

Finally, it is crucial to recognize that defining SO can often be a subject of controversy, as different perspectives exist regarding the relative emphasis placed on different and each component of SO among individuals (Priebe & Svedin, 2013). Thus, accurately measuring (the prevalence of) SO poses challenges for its complex and multifaceted nature. Additionally, it is important to acknowledge that sexual identity may not hold the same level of significance or relevance for all individuals, especially those who do not identify as part of a sexual minority (Weinrich, 2014).

2.2 Etiology of Sexual Orientation

2.2.1 *Biological Essentialism*

From the perspective of biological essentialism, sexual orientation (SO) emerges as an inherent and immutable characteristic of a person's identity, determined exclusively by biological factors (Eigenberg, 1992). There are multiple issues with adopting such take on SO. To begin with, biologically essentialist viewpoint is limited and fails to acknowledge individuals who do not fit within the traditional binary classifications of being (n)either heterosexual (n)or homosexual (Galupo et al., 2017a). An instance of this exclusion can be seen with bisexual or “mostly homo-/heterosexual” individuals who are frequently overlooked within essentialist conceptions of SO (Alipour, 2017; Galupo et al., 2017a; Savin-Williams & Vrangalova, 2013).

Moreover, essentialist approaches to sexuality have been widely criticized for their narrow and rigid definitions of SO (Philaretou & Allen, 2001). The essentialist aspect of the theory neglects the notion that homosexuality can be socially and discursively constructed, a perspective embraced by certain homosexual individuals and manifested in male- or female-only penitentiaries (Alipour, 2017; Sit & Ricciardelli, 2013). Lastly, clinging to essentialist beliefs about SO can contribute to the development of internalized homonegativity and psychological distress among (gay) men (Morandini et al., 2015).

2.2.2 *Criticism of Biological Essentialism and Social Constructivism*

Social constructivists critique rigid scientific investigations into the causes of (sexual) identities and orientations. Social constructivism argues that assuming homosexuality, for instance, as a natural and given category is flawed (Lemeire & De Block, 2015). According to the constructivist viewpoint, sexual orientation (SO) is not determined by biology but rather shaped by socially replicated and construed constructs as internalized identity narratives (Finocchiaro, 2021). Consequently, this approach disregards the influence

of biological factors on SO whatsoever, posing a serious set of problems, the most infamous one being SO change efforts (APA, 2021; Glassgold, 2022; Przeworski et al., 2021).

Furthermore, research has indicated that male judges' judgments of sex crimes can be influenced by exposure to social constructivist theories, resulting in more severe evaluations of sex crimes committed by men. Interestingly, exposure to evolutionary psychology theories did not show any discernible impact on the assessments of men's criminal sexual behavior by male judges (Dar-Nimrod et al., 2011). This finding underscores a notable issue with social constructivism, as it lacks a coherent explanation for understanding of the influence of biological factors on human behavior and social dynamics.

Adding to that, and according to Shpigel et al. (2015), parents who do not accept their sexual minority children often attribute their child's same-sex orientation to external factors like early childhood experiences or peer pressure. This implies that they believe SO can be changed and/or controlled by their child/ren. This perspective entirely aligns with social constructivism, which emphasizes the determining influence of social and environmental factors on SO. However, this attribution and belief can contribute to negative attitudes towards sexual minorities, even from within families.

It highlights a limitation of social constructivism in acknowledging the biological basis of SO and the potential harm caused by invalidating individuals' identities and experiences. Nonetheless, in summary, both perspectives (biological essentialism and social constructivism) overlook the intricate interplay of “complementary biological, personal, and cultural influences”, as put out by DeCecco & Elia (1993), when it comes to shaping our comprehension of dynamic human sexuality (Nagoshi et al., 2012).

2.2.3 Biobehavioral Model of Sexual Orientation

The Biobehavioral Model of Sexual Orientation, introduced by Diamond (2003), offers an alternative perspective on the development of sexual orientation (SO) that considers both neurobiological and environmental factors (Clemens et al., 2022). Unlike radical theories that focus solely on genetics or environmental influences, this middle-ground model emphasizes the interaction between the two. It suggests that SO is shaped by a combination of prenatal and postnatal biological mechanisms (e.g., hormonal exposure), genetic influences, and sociocultural factors (Diamond, 2003; Ellis et al., 2015; Garnets, 2002; Swift-Gallant et al., 2018; Lippa, 2003).

Regarding societal influence, Gagnon and Simon (1974) propose that early socialization processes shape an individual's perception of sexual stimuli. Social restrictions on sexual behavior can impact actual experiences and the sexual cues derived from them. In

addition, social interactions can provide individuals with specific cues to incorporate into their sexual fantasies (Storms, 1981). Other scholars, such as Geer and Fuhr (1976), suggest that social and situational factors direct attention towards particular stimuli, potentially influencing formation of associations between sexual arousal and sexual stimuli.

On the other hand, while psychosocial influences remain crucial, research focusing on biological factors indicates that upbringing has limited evidence in shaping SO (Abé et al., 2021). Other studies utilizing magnetic resonance imaging (MRI) have shown differences in brain structure and functional connectivity between individuals with different SOs, suggesting a strong basis for neurobiological mechanisms involved in the developmental trajectory of particular SO (Clemens et al., 2022; Hu et al., 2013; Paredes, 2009). For instance, cortical thickness differences have been observed in males based on their heterosexual or homosexual SO (Abé et al., 2014).

Additionally, approximately one-third of the variability in SO is attributed to genetic factors, implying a significant genetic component (Cook, 2020; Ingelsson et al., 2019). Genetics partially influence childhood gender nonconforming behavior and adult SO, while nonshared environmental effects are considered to account for the remaining influence (Alanko et al., 2009; Bailey et al., 2000; Swift-Gallant et al., 2021). Besides, cross-cultural evidence was obtained to support the idea that prenatal androgens play a role in shaping sexual orientation, at least in men (Ellis et al., 2015; Lippa, 2003). The prenatal stage seems to be a critical period for environmental impact on SO development (Cook, 2021; Ellis et al., 2015). However, the findings also indicate that the effects of prenatal androgen hormones on sexual orientation were more intricate than what was initially proposed by neurohormonal theory¹, suggesting its revision (Ellis & Ames, 1987; Ellis et al., 2015).

Bailey et al. (2000) propose that the influence of the environmental context on sexual behavior may be constrained when individual interests and opportunities differ. This limitation is particularly evident in the context of same-sex sexual behavior. In less urbanized areas with limited social opportunities, connecting with potential same-sex partners can be challenging. Conversely, densely populated locations such as urban China may have an overrepresentation of males, leading to limited access to female partners due to a male-biased sex ratio at birth caused by China's "One-Child Policy" (Tang et al., 2022; Yang et al., 2012). Consequently, the role of learning and adapting to the current contexts (as a nonshared

¹ Neurohormonal theory proposes that sexual orientation is primarily influenced by exposure to prenatal androgens, specifically during early brain development (Ellis & Ames, 1987). It suggests that variations in hormone levels or sensitivity at this stage can determine the development of different sexual orientations.

environmental factor) in shaping adult SO is significant, considering the diverse range of experiences and social opportunities individuals may seek or be presented with throughout their lives.

In conclusion, the development of SO is influenced by various factors, including neurobiological, genetic, and environmental influences such as cultural and societal gender roles, maternal stress, and cognitive factors (Bailey & Zucker, 1995; Lippa & Tan, 2001). While there is an underlying biological basis for all mental phenomena, the specific contribution of biological and genetic factors to SO development remains incompletely understood (Ingelsson et al., 2019). It is essential to acknowledge that psychosocial and environmental influences, along with biobehavioral factors, altogether shape human SO (Cook, 2020; Garnets, 2002). Therefore, considering the collective contribution of all these factors is necessary when examining the complex process of sexual development (Carani et al., 1999; Ingelsson et al., 2019).

2.3 Conceptualization of Sexual Orientation in Quantitative Research

In general, the APA's definition(s) of sexual orientation (SO) are widely accepted and utilized in research and clinical practice due to their ethical considerations, particularly in addressing concerns and issues related to change efforts of one's sexual orientation (SO) through so-called "conversion therapies" (Glassgold, 2022; Hancock & Haldeman, 2022; Nieves-Lugo et al., 2017; Przeworski et al., 2021). However, it remains crucial to acknowledge that SO is not fixed and can undergo evolution and change over time in both men and women, as indicated by studies conducted by Diamond (2008a), Katz-Wise (2015), and Kinnish et al. (2005).

Present study conceptualizes SO as a multifaceted and potentially fluid concept. Hence, SO is more appropriately apprehended as and viewed on a continuum rather than a rigid categorical construct, as suggested by Savin-Williams (2016). Moreover, previous studies in the field of sex research have revealed inconsistencies regarding the definition and usage of terms related to SO, as emphasized by Kendler et al. (2000) and Seto (2012). That inevitably posits challenges and obstacles in combining findings from studies employing varying definitions of SO.

Notwithstanding, it remains crucial to recognize at least partially all the essential components of SO instead of focusing on attraction(s), sexual behavior, or identity separately (Garnets, 2002). Neglecting any of these components, such as the behavioral dimension, could fail to capture the full complexity of SO (Dharma & Bauer, 2017; McCabe et al., 2005;

Priebe & Svedin, 2013). Nonetheless, that only contributes to the difficulty of quantifying and studying the phenomenon of SO.

2.4 Development of Measures Used to Quantify Sexual Orientation

During the late nineteenth century, the concept of sexual orientation (SO) was predominantly framed within binary terms, distinguishing a strict homosexual/heterosexual “border” between individuals within one society (Loos, 2009). Before the onset of sexology and sex research, typically, single-item measures such as asking individuals to identify as either heterosexual, homosexual, or bisexual were used for a quick and straightforward assessment of their SO (Savin-Williams, 2016).

However, these single-item categorical measures may oversimplify the complexity of SO by overlooking other dimensions such as sexual behavior, fantasies and/or attraction. For instance, there may be cases where an individual's sexual behavior does not align with their self-identified SO, underscoring the importance of considering various dimensions (Galupo et al., 2014). This limitation has prompted researchers to emphasize the inclusion of multiple dimensions when conceptualizing SO since Kinsey et al. (1948).

2.4.1 The Development of the Kinsey Scale

In response to the rigid view on SO and its binary heterosexual/homosexual conceptualization, various approaches have since been employed in quantitative research to comprehend and measure SO as continuous variable. Historically, the first most notable contribution is the Kinsey Scale (KS), developed in the US by Kinsey et al. (1948), which aimed to move beyond categorical measures of SO and provide a better understanding of human sexuality (Human Sexuality, 1974).

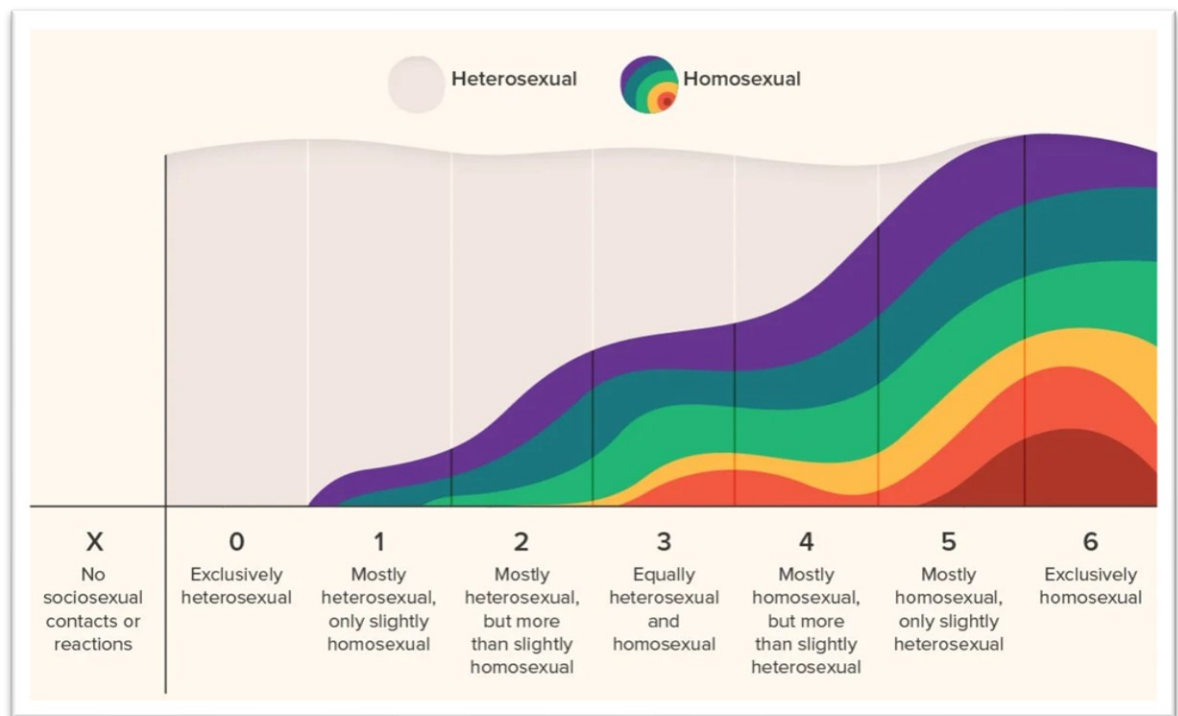
The KS classifies an individual SO along 7-point scale ranging from exclusively heterosexual (0) to exclusively homosexual (6), with bisexuality falling in between on the continuum (Kinsey, 1948). Remarkably, the original version of the KS already included an eighth category labeled 'X' for individuals who reported no sexual attraction or activity, as seen in Figure 1. Hence, the KS does not fail to provide recognition of the multidimensional nature of SO, refutes compulsory sexuality, and can be employed in surveys of ethnically diverse populations (Jans et al., 2015).

It is important to note that the KS was initially developed through interviews with over 5,000 men and women and does not have an official "test" (Kinsey et al., 1948; Kinsey et al., 1953). However, KS has been criticized for ongoing limitation of participants by

keeping them within and between predefined homo-/bi-/heterosexual SO categories, thereby failing to fully capture the greater sexual diversity within the population (Galupo et al., 2017a; Galupo et al., 2017b). Additionally, some argue that the KS fails to capture and distinguish between romantic and sexual attraction, assumes a binary understanding of gender, and views bisexuality as a transitional phase rather than recognizing it as a distinct and valid SO (Bryson et al., 2018).

Figure 1

The Kinsey Scale



Note. From *What Does the Kinsey Scale Have to Do with Your Sexuality?* by Basagoitia, R., 2020, Healthline (<https://www.healthline.com/health/kinsey-scale>)

2.4.2 Other Relevant Measures

There are multiple ways to assess SO in research, in addition to the widely used KS. For instance, the Klein Sexual Orientation Grid (KSOG) was developed to measure various aspects of SO, including sexual attraction, behavior, fantasies, emotional and social preferences, self-identification, and lifestyle (Klein et al., 1985). Another measure, Sell's scale, assesses sexual attraction, contact, and identity (Gonsiorek et al., 1995); and the Multidimensional Scale of Sexuality provides a more diverse description of SO compared to the Kinsey Scale (Berkey et al., 1990).

In recent years, novel measures of SO have emerged. The Sexual-Romantic and Gender-Inclusive scales have been explored in research (Galupo et al., 2017a). Additionally, some studies have utilized genital arousal methodology such as subjective-genital concordance to examine SO (Bailey & Jabbour, 2020). Notably, researchers have also investigated innovative methods to study SO by using resting state functional connectivity, cortical thickness, and regional homogeneity in the brain, revealing insights into the neural correlates of SO (Abé et al., 2014; Clemens et al., 2022; Hu et al., 2013). To conclude, new neuroscientific approaches may contribute to an even more comprehensive understanding of SO in future research.

2.4.3 Gender-Inclusive Scale

The Gender-Inclusive Scale (GIS), developed by Galupo et al. (2017b), is a measurement tool that goes beyond the “traditional” binary understanding of gender identity. It includes dimensions of attraction that encompass same- and other-gender attraction, as well as attraction to individuals across different gender presentations and/or expressions such as masculine, feminine, androgynous, and gender non-conforming (Galupo et al., 2017b).

The GIS has been invented and used to comprehend SO in research with sexual and gender minority individuals more broadly and precisely. Additionally, it has succeeded in being more positively evaluated by transgender individuals than KS, KSOG, or Sexual-Romantic scale (Galupo et al., 2017b). In the present study, an adapted version of the GIS is incorporated into the questionnaire utilized in the present study to capture the diverse aspects of sexual attraction(s) extending beyond binary frameworks.

2.4.4 Subjective-Genital Agreement

To provide a broader context and identify potential gaps in self-report sex research methodology, it is important to discuss the concordance between subjective and objective sexual arousal and their measures. Sexual arousal “consists of interacting components of physiological (particularly genital) changes and emotional expression” (Chivers, 2005). The subjective-genital element, also known as sexual concordance, refers to the extent of correspondence between subjective (self-reported) sexual arousal and physiological genital response (Chivers et al., 2010). The level of agreement between these subjective and objective measures varies among individuals and can be influenced by factors such as biological sex, SO, high levels of chronic stress, or mindfulness (Chivers et al., 2010; Ter Kuile et al., 2007; Rieger et al., 2015; Velten et al., 2018).

Sex differences in the subjective-genital agreement have been observed to be influenced by two methodological factors: stimulus variability and the timing of assessing self-reported sexual arousal (Chivers et al., 2010). Suschinsky et al. (2016) emphasize the importance of understanding these factors in examining sexual concordance and recognizing the complexity of sexual arousal patterns across sexes/genders.

Research conducted by Chivers and Timmers (2012) suggests that sexual arousal patterns in heterosexual females are not exclusively specific to their preferred sexual stimuli. Females may also exhibit genital arousal (in) response to nonpreferred stimuli, indicating that their sexual responses may not align solely with their subjective preferences. Furthermore, Chivers et al. (2010) propose that this reflexive activation of vaginal response in females, irrespective of their preference for specific cues, may serve as a protective mechanism to reduce discomfort and the risk of injury during (unsolicited) vaginal penetration, as suggested by Bailey (2009).

Additionally, there is a potential influence on patterns of sexual arousal induced by contraceptives as well as variability of hormonal fluctuation, occurring throughout the menstrual cycle (Chivers et al., 2010). However, the extent of sex differences in subjective-genital agreement also varies based on how concordance is defined, measured, and calculated (Chivers et al., 2010).

In other words, a general trend indicates higher levels of concordance between genital responses and self-reported sexual arousal in males compared to females, suggesting that male sexual responses align more closely with their subjective experiences (Chivers et al., 2010). However, Laan (2007) conducted a study using fMRI and discovered that only men, not women, displayed increased activation in the prefrontal cortex during inhibition trials, indicating a possibility of conscious effort to suppress sexual arousal in men. This finding approached the notion of automatic genital activation in women as lack of suppression, questioning whether there is “real” sex difference in subjective-genital agreement in general.

Suschinsky et al. (2016) present evidence that further challenges the generalization about female genital response made by Chivers et al. (2010) by demonstrating that the influence of stimulus gender on sexual concordance remains significant even for the majority of females. These findings shed light on the intricate “nature” of sexual arousal and genital concordance and underscore the complicated interplay between physiological and subjective factors in both males and females.

It is important to note that relying solely on self-identifying questionnaires in the study of sexual experiences and orientation presents limitations due to the absence of

objective measures of sexual arousal (Sigre-Leirós et al., 2016). This absence of physiological responses may introduce biases and inaccuracies in self-reported data, potentially impacting the validity and accuracy of the collected information (Sigre-Leirós et al., 2016). Nonetheless, self-reports remain valuable for studying sexual attraction, interest, and arousal in sex research (Chivers et al., 2010; Rieger et al., 2015; Velten et al., 2018).

However, supplementing with additional valid measures is preferable when doubts arise regarding the reliability of self-reported data (Bailey, 2009; Chivers et al., 2010). Although investigating subjective-genital agreement about primary sexual experiences and SO is important component, it is beyond the scope of the current study.

2.5 Prevalence of Sexual Orientation

The prevalence of sexual orientation (SO) varies depending on the specific dimension being measured, the population under study, as well as religious upbringing (Savin-Williams & Ream, 2006; Hayes et al., 2012; Priebe & Svedin, 2013; Omisore et al., 2021). In this study, SO is defined as an individual's distinctive pattern of emotional, romantic, and/or sexual attraction towards others, encompassing their sexual behavior, identity, and associated experiences (APA, 2021). Heterosexuality is unsurprisingly the most prevalent SO (Omisore et al., 2021); and a study by Savin-Williams and Ream (2006) found that:

Prevalence rates for nonheterosexuality varied between 1 and 15% and depended on biological sex (higher among females), sexual orientation component (highest for romantic attraction), degree of component (highest if "mostly heterosexual" was included with identity), and the interaction of these (highest for nonheterosexual identity among females). (p.1)

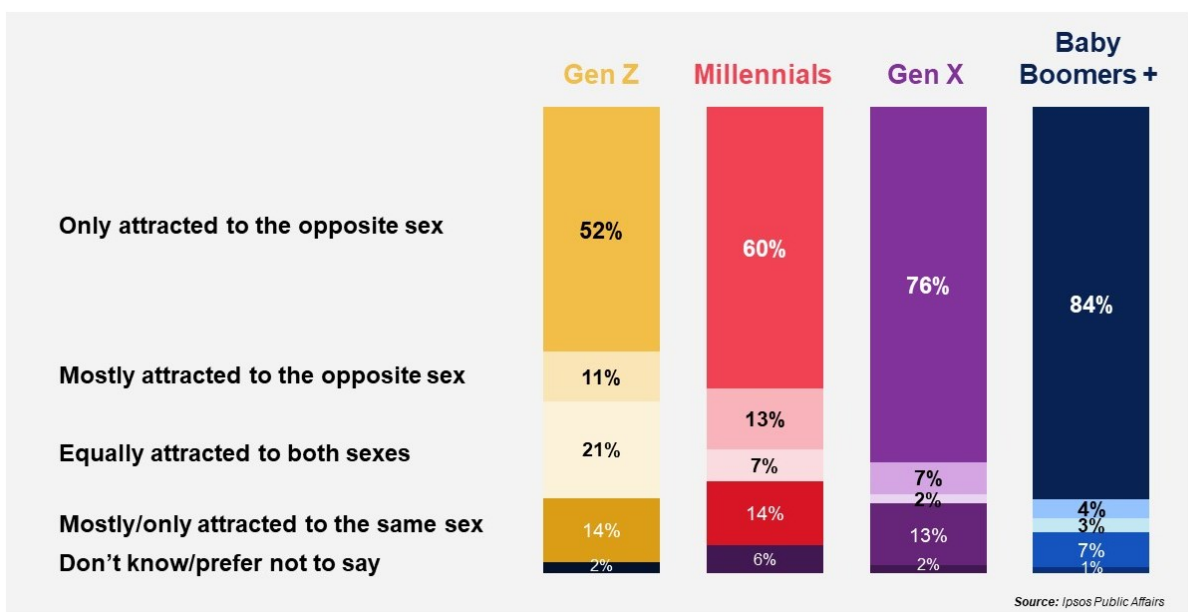
In addition, various studies have explored the prevalence of SO in different populations. For instance, Priebe and Svedin (2013) conducted research among Swedish high-school males and females, finding varying rates of sexual minority orientation. These rates ranged from 4.3% to 29.4% when considering different aspects of sexual behavior and attraction. In a separate study conducted in England by Hayes et al. (2012), more conservative figures were presented. According to the data retrieved from National Survey, 3.6% of men and 4.5% of women acknowledged experiencing some level of same-sex attraction. Farther, a mere 1.5% of men and 0.7% of women explicitly identified themselves as gay or lesbian in comparison.

Generational differences in SO identity were also observed in the U.S. National Health Interview Survey sample (Jackson et al., 2016). In another study, older men had a lower prevalence of identifying as mostly heterosexual compared to younger generations (Savin-Williams & Vrangalova, 2013). As confirmed and shown in Figure 2, most men and women across generations report exclusive attraction to the opposite sex, while Generation Z and Millennials were significantly less likely than Generation X and Baby Boomers to identify as exclusively heterosexual (Jackson & Machi, 2021).

Nonheterosexual individuals (in older generations) may be more inclined to underreport or conceal their sexual orientation, particularly in healthcare settings, due to ongoing stigma (Flynn et al., 2019; Rapoport et al., 2021). Therefore, it is crucial to interpret the prevalence findings of SO while considering for the potential influence of heterosexism and discrimination against sexual minorities (Bränström & Pachankis, 2018; Hall, 2019; Jackson et al., 2016).

Figure 2

Sexual orientation differences by generation



Base: 1,005 U.S. adults ages 18+ interviewed online, February 22-23, 2021



Note. From *Gender identity and sexual orientation differences by generation* by Jackson, C., & Machi, S. (2021), Ipsos (<https://www.ipsos.com/en-us/gender-identity-and-sexual-orientation-differences-generation>.)

Additionally, Hall (2019) emphasizes the importance of recognizing human sexuality as diverse and integral to human growth and development, encompassing the unique experiences of both heterosexual and queer individuals. In relation to that, Omisore et al. (2021) found that heterosexual individuals expressed higher satisfaction with their sexual identity compared to nonheterosexual individuals, highlighting the relevance of equally supporting and embracing diverse SOs. However, negative biases associated with sexual minorities persist and result in minority and stigma-related stress that adversely impacts the mental health of nonheterosexual individuals and increase their likelihood of substance use (Burgess et al., 2007; Bränström & Pachankis, 2018; Matthews et al., 2014; McCabe et al., 2017; Lindley et al., 2012; Rendina et al., 2019).

To conclude, understanding and acceptance of individuals with diverse sexual development are crucial, as they promote positive impacts on safer sex behavior and overall well-being for all individuals, regardless of their SO (Foshay & O'Sullivan, 2020; Krueger et al., 2018; Widman et al., 2016).

2.6 Sexual Fluidity

It is worth noting that sexual orientation (SO) does not always exist in clearly definable and unchangeable categories and may exhibit some degree of sexual fluidity across timespan (Diamond, 2008a; Diamond & Rosky, 2016). Although there are at least four distinct forms of sexual fluidity, each capturing a different dimension (e.g., attraction to both “more-/less-preferred” genders, or focusing on its temporal instability; Diamond, 2020), Katz-Wise (2015) defines sexual fluidity as “changes in one or more dimensions of SO (i.e., identity, attractions, sexual behavior) over time”. For the current study, sexual fluidity is viewed as the evolving mis-/alignment between initial sexual behavior (e.g., primary sexual experiences) and developed self-identified SO at the time of measurement.

Earlier studies indicated that women tend to have less stable SO identities compared to men (Diamond, 2008b; Dickson et al., 2003). Additionally, the study by Mock and Eibach (2012) found that both bisexual and homosexual women exhibited similar levels of instability in their sexual identities. On the contrary, heterosexual women displayed lower levels of instability, suggesting that SO identity fluidity is more common among sexual minority women when compared to heterosexual ones (Mock & Eibach, 2012).

Regarding men, both heterosexual and homosexual individuals demonstrated relatively stable identities compared to the particularly unstable identity of men's bisexuality (Mock & Eibach, 2012). Conversely, Katz-Wise (2015) observed no significant gender

differences in the frequency of sexual fluidity concerning attractions or sexual identity, despite a higher prevalence of sexual fluidity among females. However, a systematic review conducted by Srivastava et al. (2022) revealed a lack of consensus in the operationalization and assessment of self-reported changes in SO (i.e., sexual fluidity) among the reviewed studies. Consequently, it becomes difficult to draw reliable conclusions regarding the extent of gender differences in sexual fluidity.

2.7 Learning and Sexual Behavior in Animals

2.7.1 *Classical and Operant Conditioning*

The paper by Keijsers & Becker (2009) discusses the significance of implicit learning in shaping our behavior and emotional responses to stimuli in our environment. Implicit learning involves the formation of associations between stimulus characteristics, emotions, and behavior without conscious effort. This type of learning is particularly powerful and rapid in emotionally relevant situations. Biological factors such as neuromodulators and hormones contribute to the creation of neural connections, facilitating learning (Quintana et al., 2022). Adaptations in the implicit information processing system, influenced by biological disposition and learning experiences, can result in shifts in perception, attention regulation, and the activation of emotionally colored memories (Phelps & LeDoux, 2005).

Keijsers' (2018) overview of behavior therapy focuses on behavior patterns that are acquired through the learning process of individuals interacting with their environment. Classical conditioning and operant conditioning are two theories that form the basis for learning acquisition. Classical conditioning involves the association between a stimulus or situation (conditioned stimulus) and another meaningful stimulus (unconditioned stimulus), leading to the acquired meaning of the conditioned stimulus and the elicitation of a response (conditioned response). Operant conditioning, on the other hand, involves the association between a behavior (operant) and the subsequent positive or negative consequences (consequence), leading to the control of behavior by its consequences.

2.7.2 *Learning about Sexual Reward*

The role of pleasure (e.g., orgasm) in sexual behavior has been extensively studied (Georgiadis et al., 2012; Coria-Avila et al., 2016; Kippin & Pfaus, 2001; Pfaus et al., 2016; Séguin & Blais, 2019). The acquisition of sexual reward is a crucial aspect of animal as well as human sexual behavior (Georgiadis et al., 2012). It involves experiential learning and conditioning, activating the mesocorticolimbic reward circuitry and playing a significant

role in the development of sexual preferences and performance (Pfaus et al., 2012; Quintana et al., 2022). Through sexual imprinting, environmental cues related to partners or objects become established as sexually attractive and arousing through conditioning (Keijsers, 2018; Quintana et al., 2022). Sexual reward also strengthens the development of sexual behavior and leads to the formation of sexually conditioned place and partner preferences in both male and female rats (Coria-Avila et al., 2005; Kippin & Pfaus, 2001; Pfaus et al., 2012).

Additionally, animals have been also observed exhibiting orgasm-like responses (OLRs) during intercourse, indicating the immediate recognition of a reward in them, resulting in short-term and long-term behavioral changes (Pfaus et al., 2016). The evolutionary behaviorist perspective suggests that the experience of profound sexual pleasure, particularly orgasm, can be seen as a primal reward mechanism shaped by evolution to reinforce sexual behaviors (Fleischman, 2016). Gain of sexual reward via sexual behavior may increase its frequency subsequently leading to higher reproductive success (Fleischman, 2016; Herbenick et al., 2010).

2.7.3 Sex for Fun

Sexual behavior in animals and humans serves multiple functions, including reproduction, social bonding, and pleasure (Georgiadis et al., 2012). Research suggests that orgasm(s), characterized by intense pleasure, changes in pelvic muscles, and a sense of satisfaction, can enhance learning about particular sexual stimulation that leads to such sexual pleasure, potentially promoting behaviors that result in more consistent orgasms (Cervilla et al., 2022; Matsick et al., 2016; Meston et al., 2004). Sexual pleasure and orgasm extend above reproductive sex and can be experienced during non-reproductive activities such as masturbation and same-sex behavior in both humans and animals (Bagemihl, 1999; Georgiadis et al., 2012).

In humans, there is a positive correlation between orgasm and the frequency of sexual behaviors, even when age-related difficulties with erections and lubrication are present (Herbenick et al., 2010). The rewarding nature of sexual interactions encompasses not only the procreational aspect but also social interactions and emotional dimensions (Drechsler et al., 2011; Paredes, 2009). Additionally, for animals, the ability to control the pace of sexual interaction is significant (Drechsler et al., 2011). Hence, it is imperative to emphasize the importance of mutual consent in any partnered human sexual behavior.

2.7.4 Primacy of First Experience(s) with Pleasure in Animal Models

The concept of sexual pleasure encounters (i.e., the significance of initial pleasure experiences) about an animal's first sexual experiences is well-established in the field of behavioral neuroscience (Quintana et al., 2022). This concept, derived from animal studies, suggests that initial sexual experiences play a significant role in shaping and reinforcing an individual's preferences for specific external characteristics in their partners. Certain preferences, like sexual orientation, may develop early, while preferences for physical traits such as hair color, eye color, or facial (coloration) features are likely reinforced as secondary aspects that contribute to the formation of a preferred "type" through pattern recognition (Han et al., 2017; Quintana et al., 2022). This process involves the epigenetic modulation of genes associated with dopamine and oxytocin, which are influenced by opioid activation as a reward-related neurochemical mechanism (Quintana et al., 2022).

Consequently, this conditioning not only heightens sexual motivation but also influences "mate choice," where males selectively deposit their ejaculation in familiar females or those associated with a previously rewarded odor or somatosensory cue (Kippin & Pfau, 2001). Similarly, females exhibit both a partner preference (for solicitations and lordosis) and a mate choice regarding whose ejaculations they accept (Coria-Avila et al., 2005). The epigenetic nature of this phenomenon is supported by the fact that a drug inhibiting gene demethylation, which prevents demethylase enzymes from unraveling genes from histones and making them available for transcription, effectively blocks this conditioning process (Quintana et al., 2022).

To conclude, research has well-demonstrated that the first sexual experience associated with sexual reward (i.e., pleasure), at least in animals, can have a notable influence on their future sexual behavior and mating preferences (Coria-Avilla et al., 2016; Pfau et al., 2012; Quintana et al., 2022).

2.8 Primary Sexual Experiences and Human Sexual Orientation

Primary sexual experiences (PSE), particularly during early adolescence, can play a significant role in shaping one's sexual fantasies and understanding of sexual rewards and preferences (Cary & Reese-Weber, 2021; Michels et al., 2005; Storms, 1981). Positive conditioning during occurring during initial sexual behavior may influence subsequent sexual preferences and self-identified sexual orientation (SO) later in life. During and because of orgasm in humans, there is an elevation in the levels of stimulating

neurotransmitters and bonding-related neurotransmitters in both the cerebrospinal fluid and the bloodstream (Frieling et al., 2006; Marson, 2008).

Encounter of pleasure associated with particular sexual behavior and partner, especially in partnered settings, may yield a strong predictive value for occurrence of such sexual behavior linked to sexual reward (Barragán et al., 2019; Díaz-Loving & Rodríguez, 2008; Herbenick et al., 2010). The impact on the debut of first sexual encounters, with boys showing earlier onset, may be influenced by biological sex, specific attachment style and other factors such as crystallized SO prior to any experience with (partnered) PSE (Barragán et al., 2019; Birnbaum et al., 2006; Dang et al., 2018).

While the role of PSE in SO development is still debated, positive experiences may reinforce same-sex attraction, while negative experiences may hinder it (Birnbaum et al., 2006). The chronological sequence between SO and sexual experiences can be a subject of speculation; however, it is evident that SO is not fixed for every individual throughout their entire lifespan (Diamond, 2008b; Diamond & Rosky, 2016; Katz-Wise, 2015).

Lastly, it is worth noting that the role of PSE associated with the reward and development of SO in humans is unexplored area of research. In addition, sexual experiences during adolescence may be prone to social desirability bias, and there can be cultural and gender differences in reporting such experiences (Neal & Hosegood, 2015). Simultaneously, it is crucial to underscore that conditioning is not considered as the sole determinant of an individual SO (Alanko et al., 2009; Cook, 2020; Garnets, 2002; Ingelsson et al., 2019).

2.8.1 Limitations of Learning about Human Sexual Behavior from Animals

Animal research has been instrumental in advancing our understanding of various aspects of sexual behavior, including the anatomical, neurobiological, and physiological aspects (Marson et al., 2013). For instance, studies have utilized animal models to uncover the underlying neurobiological mechanisms, such as positive conditioning, that contribute to explaining the development and maintenance of many behaviors (Paredes, 2009; Pfaus et al., 2012). Additionally, animal research on sexual behavior continues to provide valuable insights into the understanding of pain and sexual dysfunction pathophysiology in humans (Bialy et al., 2019; Marson et al., 2013).

However, it is crucial to recognize that applying findings from animal studies directly to human sexual behavior has limitations (Bialy et al., 2019; Marson et al., 2013; Paredes, 2009). There are inherent disparities between animal and human physiology, environment, and behavior that must be considered (Marson et al., 2013). For instance, animals do not develop an equivalent complex and multidimensional SO as humans do.

Moreover, an individual's sexual behavior or other components of their SO have the potential to change quite rapidly in response to the current context. As mentioned previously (see instances provided in penultimate paragraph 2.2.3), there can be contextual shifts towards same-sex behavior in certain incarcerated individuals or in places where opposite-sex partners are inaccessible (Sit & Ricciardelli, 2013; Yang et al., 2012).

Although same-sex nonreproductive animal behavior was observed by Bagemihl (1999), the presence of stigma directed towards sexual minorities may continue to create further barriers in translating animal research, as it can contribute to the underreporting of nonheterosexual sexual identities and same-sex sexual contact (Flynn et al., 2019; Laumann et al., 2000; Rapoport et al., 2021). Moreover, longitudinal studies in humans observed sexual fluidity, which suggests that adult SO may not be rigid or solely regulated by early same-sexual contacts (Diamond, 2008b; Diamond & Rosky, 2016).

2.8.2 *Orgasm Rating Scale*

To evaluate the quality of sexual pleasure, specifically orgasm, researchers may utilize (a condensed) version of the Orgasm Rating Scale (ORS) in both solitary and partnered sexual experiences (Cervilla et al.; 2022). The ORS is a well-established measure that demonstrated the psychometric properties and validity of the ORS in measuring orgasmic experiences (Mah & Binik, 2002).

2.9 Research Objectives

Extensive research has shown that the initial sexual experience, specifically the one linked to sexual pleasure, can significantly shape the future sexual behavior and mating preferences of animals (Coria-Avilla et al., 2016; Pfaus et al., 2012; Quintana et al., 2022). To examine this phenomenon in relation to humans and their sexual orientation was the rationale behind four objectives put forward:

Objective 1 Investigate the influence of primary sexual experiences and associated sexual reward on the development of self-identified sexual orientation.

This objective aims to examine the potential impact of positive conditioning (i.e., sexual pleasure/reward) associated with primary sexual experiences (PSE) on the formation of self-identified sexual orientation (SO). It seeks to understand whether those individuals whose PSE are associated to reward with a specific gender are more likely to develop a self-identified SO aligned with that gender compared to individuals with a less rewarding PSE (linked to the same gender).

Objective 2 Examine the predictive value of partnered, compared to solitary, primary sexual experiences with positive conditioning about sexual orientation.

This objective focuses on exploring the predictive value of solitary/partnered PSE characterized by positive conditioning towards a specific gender. It aims to determine whether these partnered PSE have a stronger influence on an individual's later self-identified SO compared to solitary PSE involving the same gender.

Objective 3 Compare the disparity between primary sexual experiences and self-identified sexual orientation in nonheterosexual and heterosexual individuals.

This objective aims to compare and analyze the disparity between the gender of individuals' PSE and their self-identified SO, specifically focusing on nonheterosexual and heterosexual individuals. It seeks to explore whether nonheterosexual individuals experience a greater discrepancy between their SO and their self-perceived SO compared to heterosexual individuals.

Objective 4 Explore gender differences in sexual fluidity among nonheterosexual individuals and examine if the prevalence of gender fluidity is higher among females.

This objective focuses on exploring gender differences in sexual fluidity within the nonheterosexual population. It aims to examine whether there are significant gender differences in the level of sexual fluidity among nonheterosexual individuals, specifically regarding the changing relationship between the gender of their first sexual partner and their subsequent self-identified SO label.

3.1 Research Design

3.1.1 Self-Constructed Questionnaire

To examine the hypotheses, a retrospective questionnaire (see Appendices) was administered, comprised of three subcategories of data: (1) self-identified sexual orientation (SO), (2) details about the primary sexual experience(s) (PSE), and (3) socio-demographic information.

The first assessment of (1) self-identified SO included four dimensions and corresponding questions: self-identified SO, sexual attraction, sexual behavior, and content of sexual fantasies. SO was assessed on the 8-point Kinsey Scale which ranged from ranging from exclusively heterosexual (0) to exclusively homosexual (6) and the 8th option for asexuality (option 'X') was included (Kinsey, 1948). Secondly, the adapted Gender-Inclusive Scale (Galupo et al., 2017b) was incorporated to measure attraction beyond the hetero-/homosexual dimension, ensuring more inclusivity of gender-diverse individuals (see Appendices question 1).

The measurement of primary sexual experiences (PSE) in this study involved the use of a Likert-type 5-point scale (Likert, 1932). Participants were asked to rate their level of either agreement or disagreement with statements related to their solitary or partnered PSE, if applicable. The shortened 25-item version of the Orgasm Rating Scale (ORS), a reliable measure of subjective orgasmic experiences in both solitary and partnered sexual behavior, was included in the questionnaire (Cervilla et al., 2022; Mah & Binik, 2002). However, a simpler measure of satisfaction associated with orgasm occurring during PSE were utilized in the analysis.

Participants were also asked to provide details about their primary sexual fantasies and their engagement in non-partnered masturbation. They were specifically asked to indicate the gendered content involved in these sexual experiences. Additionally, participants were asked to report on satisfaction with their first solitary orgasm and whether they had this orgasm first solitary masturbation. Furthermore, participants were asked to disclose the gender of the individuals with whom they had their first sexual experience. First sex was defined as the first partnered sexual experience involving intercourse, oral, or manual stimulation by or in the presence of a partner (see Appendices question 20).

Participants in the study were also asked about their age at the time of their first solitary and/or partnered sexual experiences. In addition, data from other relevant questions

that aligned with the four research objectives were collected (for more details, refer to the Appendices). Participants were also asked to provide sociodemographic information such as their education level, current age, employment status, racial or ethnic background, and information related to their sex and gender identity (as presented in Table 1).

The questionnaire was developed and administered using the Qualtrics platform (<https://www.qualtrics.com>). Any inconsistencies encountered during the development and administration of the questionnaire were resolved through discussions with the thesis supervisor, ensuring the appropriateness of the included questions.

3.1.2 Sample Selection Criteria

Considering legal limitations and the sensitive nature of the data, the inclusion criteria targeted individuals aged 18 and above of all sexual and gender identities. Participants were required to be willing to disclose personal and sensitive information about their sexual orientation and primary sexual experiences. Furthermore, participants were required to have the ability to read and comprehend the English language employed in the questionnaire.

3.1.3 Recruitment and Data Collection Process

To achieve inclusivity of individuals with diverse gender and sexual identities, a range of convenience sampling methods was utilized during the data collection process. To maximize participant recruitment, personal outreach was conducted through popular social media platforms such as Instagram, WhatsApp, and Facebook. Individuals were directly contacted and provided with a request to participate in the study, along with a link to the questionnaire. Additionally, the questionnaire link was shared across relevant online communities on Reddit (<https://www.reddit.com/>) and Quora (<https://www.quora.com/>), specifically targeting online communities with diverse sexual orientations and identities. Additionally, physical fliers containing a QR code were distributed and displayed prominently in multiple locations at Radboud University in Nijmegen, The Netherlands. Participants were encouraged to share the questionnaire with others who met the study's criteria, thereby expanding the potential participant pool.

Individuals were redirected from a provided link or QR code to access the questionnaire on their preferred device. Participants were briefed about the anonymous nature of the study and details regarding the sensitive nature of the questionnaire, which included potentially distressing or disturbing questions related to topics such as first sexual experiences, sexual orientation, gender, and sexual dysfunction. It was emphasized that participants had to be at least 18 years old to partake in the study.

Finally, to proceed with the questionnaire, participants were asked to provide explicit consent by selecting the option "yes" before accessing the questions, thereby confirming their understanding of the study's purpose and willingness to participate. Data collection spanned from late February 2023 to the beginning of May 2023.

3.2 Participant Characteristics and Limitations

During the data collection period, a total of 723 potential participants entered the questionnaire. However, only 427 participants (59.06%) completed the questionnaire, resulting in a nonprobabilistic sample. Table 1 shows a notable imbalance in the sample's gender distribution, with a higher percentage of women (56.4%) compared to men (36.5%). This gender imbalance may impact the findings and limit the ability to conclude gender-specific experiences.

The majority of participants were students (62.1%), indicating that the study primarily targeted individuals in an educational setting. That is linked to the recruitment methods which may introduce self-selection bias (Heckman, 1990). Self-selection bias hinders the ability to extend the reported results to the larger population, as the study sample systematically differs from the general population (Ludy et al., 2018).

Additionally, the sample is predominantly composed of individuals of European origin (88.5%), with limited representation from other ethnic or racial backgrounds. This lack of diversity may affect the generalizability of the findings to more diverse populations and limits the understanding of cultural or ethnic influences on the research topic (Hall et al., 2016).

The study relies on self-reported as well as retrospective data, which can be subject to recall biases and social desirability biases (Hipp et al., 2020). Participants may have provided responses they perceived as more socially acceptable or had difficulty accurately recalling during completion of the questionnaire, introducing potential inaccuracies in the collected data. Feedback from proactive participants highlighted additional limitations. For example, one participant identified as demisexual², which was not accounted for in the study's measures. The Kinsey Scale used in the questionnaire also lacked options for participants to choose their sexual attraction or orientation that did not fit within the preset categories.

² Demisexual is an individual who does not experience primary sexual attraction based on immediately observable characteristics, but after an intimate bond has developed (Hille et al., 2019).

Table 1***Sociodemographic Characteristics of Participants***

Sex	Female		Male		Full sample	
	n	%	n	%	n	%
Gender ^b						
Woman	239	90.5	2	1.2	241	56.4
Man	4	1.5	152	93.3	156	36.5
Non-binary	11	4.2	2	1.2	13	3.0
Agender	2	0.8	5	3.1	7	1.6
Other	8	3.0	2	1.2	10	2.3
Employment						
Employed full time	44	16.7	64	39.3	108	25.3
Employed part time	26	9.8	11	6.7	37	8.7
Unemployed looking for work	2	0.8	8	4.9	10	2.3
Unemployed not looking for work	1	0.4	0	0	1	0.2
Retired	0	0	2	1.2	2	0.5
Student	190	72.0	75	46.0	265	62.1
Disabled	1	0.4	3	1.8	4	0.9
Education						
Less than high school	5	1.9	2	1.2	7	1.6
High school graduate	139	52.7	64	39.3	203	47.5
Bachelor's degree	85	32.2	57	35.0	142	33.3
Master's degree	35	13.3	31	19.0	66	15.5
Doctorate	0	0	9	5.5	9	2.1
Racial/Ethnic background						
People of African origin	2	0.8	1	0.6	3	0.7
People of Asian origin	8	3.0	4	2.5	12	2.8
People of European origin	239	90.5	139	85.3	378	88.5
Indigenous people	0	0	1	0.6	1	0.2
People of Middle Eastern origin	3	1.1	2	1.2	5	1.2
People of Hispanic or Latinx ethnicity	6	2.3	7	4.3	13	3.0
Multiple ethnicity/ Other	6	2.3	9	5.5	13	3.5

Note. $N = 427$. Participants were on average 24.6 years old ($SD = 6.5$).

^a Refers to anatomical characteristics that a person is born with. Sex is assigned at birth.

^b Reflects how people psychologically identify themselves.

Furthermore, the questionnaire did not include questions about satisfaction with solitary primary sexual experiences (e.g., sexual fantasies and masturbation) or direct data on consent during partnered primary sexual experiences. The data from shortened Orgasm Rating Scale were not utilized in the analysis, however, induced several limitations in terms of questionnaire length and potential language barriers for non-native English speakers.

Table 2

Prevalence of Participants' Attractions and Gendered Primary Sexual Experiences

Attraction(s) ^a	Gender	First fantasy content		First solo masturbation content		First sexual partner	
		n	%	n	%	n	%
Gay males							
Same-sex (<i>N</i> = 39)	Women	10	25.6	5	12.8	2	5.1
	Men	18	46.2	13	33.3	35	89.7
	Both	6	15.4	5	12.8	-	-
	None or Neither	5	12.8	16	41.0	2	5.1
Lesbian females							
Same-sex (<i>N</i> = 11)	Women	2	18.2	1	9.1	5	45.5
	Men	3	27.3	0	0	5	45.5
	Both	4	36.4	4	36.4	-	-
	None or Neither	2	18.2	6	54.5	1	9.1
Heterosexual males							
Opposite-sex (<i>N</i> = 72)	Women	63	87.5	39	54.2	65	90.3
	Men	1	1.4	1	1.4	3	4.2
	Both	3	4.2	2	2.8	-	-
	None or Neither	5	6.9	30	41.7	4	5.6
Multiple (<i>N</i> = 7)	Women	4	57.1	2	28.6	5	71.4
	Men	1	14.3	1	14.3	1	14.3
	Both	1	14.3	0	0	-	-
	None or Neither	1	14.3	4	57.1	1	14.3
Heterosexual females							
Opposite-sex (<i>N</i> = 123)	Women	4	3.3	7	5.7	2	1.6
	Men	91	77.2	33	26.8	116	94.3
	Both	12	9.8	17	13.8	-	-
	None or Neither	16	13.0	66	53.7	5	4.1
Multiple (<i>N</i> = 4)	Women	0	0	0	0	0	0
	Men	3	75.0	1	25.0	2	50.0
	Both	0	0	1	25.0	-	-
	None or Neither	1	25.0	2	50.0	2	50.0

Attraction(s) ^a	Gender	First fantasy content		First solo masturbation content		First sexual partner	
		n	%	n	%	n	%
Bi-and-others males ^b							
Same-sex (<i>N</i> = 2)	Women	1	50.0	1	50.0	1	50.0
	Men	1	50.0	0	0	1	50.0
	Both	0	0	0	0	0	0
	None or Neither	0	0	1	50.0	0	0
Opposite-sex (<i>N</i> = 0)							
Multiple (<i>N</i> = 34)	Women	17	50.0	8	23.5	14	41.2
	Men	6	17.6	2	5.9	16	47.1
	Both	8	23.5	3	8.8	0	0
	None or Neither	3	8.8	21	61.8	4	11.8
Bi-and-others females ^b							
Same-sex (<i>N</i> = 2)	Women	1	50.0	1	50.0	0	0
	Men	0	0	1	50.0	2	100.0
	Both	1	50.0	0	0	0	0
	None or Neither	0	0	0	0	0	0
Opposite-sex (<i>N</i> = 7)	Women	3	42.9	4	57.1	1	14.3
	Men	1	14.3	0	0	5	71.4
	Both	1	14.3	1	14.3	0	0
	None or Neither	2	28.6	2	28.6	1	14.3
Multiple (<i>N</i> = 106)	Women	12	11.3	14	13.2	9	8.5
	Men	53	50.0	18	17.0	83	78.3
	Both	31	29.2	27	25.5	2	1.9
	None or Neither	10	9.4	47	44.3	12	11.3

Note. Participants were on average 12.9 years old ($SD = 3.55$) when they experienced first sexual fantasies, 12.5 years old ($SD = 3.24$) when they engaged in the first solitary masturbation, and 16.8 years old ($SD = 3.27$) when they had their first sex.

^a Reflects one's self-identified attraction towards same-sex (men/women), opposite-sex (men/women), or multiple attractions (more than one attraction towards men/women). Attraction was assessed using Gender-Inclusive scale.

^b Bi-and-others refers to individuals who identify as other than gay, lesbian, homosexual, straight, or heterosexual. Bi-and-others category encompasses individuals who identify as Bisexual, Queer / Nonheterosexual, Pansexual, Asexual, Unsure / Questioning, or Other.

Regarding males in Table 2, the findings indicate that gay males predominantly had their first sexual partner with men, while the gendered content of their first sexual fantasies and solo masturbation varied. Vast majority of heterosexual males reported women as their first sexual partner as well as for their first solo masturbation and sexual fantasy content. Bisexual-and-other males with multiple attractions had an almost equal split between men

and women as their first sexual partner. This aligns with research suggesting that male bisexuality may have a more fluid identity compared to heterosexual and homosexual orientations (Mock & Eibach, 2012).

The data in Table 2 suggest that heterosexual females with opposite-sex attraction primarily had men as their first sexual partners, and a considerable number of them also reported men as the focus of their first solo masturbation experiences. Similarly, bisexual-and-other females with multiple attractions showed a preference for men as their first sexual partners compared to women. About half of them also indicated men as the focus of their first solo masturbation content.

Additionally, these findings may provide some indications of potential instability in sexual identities among bisexual and lesbian females, contrary to heterosexual ones (Mock & Eibach, 2012). However, it is important to note that the Table 2 does not provide information on the long-term stability of sexual identities or individual experiences of sexual fluidity.

3.3 Results

Hypothesis 1 “Individuals who experienced positive conditioning (reward) associated with first sexual experiences involving a particular gender, compared to those who did not, are more likely to develop a self-identified sexual orientation aligned with that gender.”

The first hypothesis is tested on the entire sample (N = 427). Sexual orientation as a dependent variable was assessed by calculating the mean of four scores provided on the Kinsey Scale continuum regarding self-identified sexual orientation, sexual attraction, sexual behavior and content of sexual fantasies (see Appendices questions 4). In order to identify the significant predictor variables (i.e., measures with the highest predictive power) within primary sexual experiences (PSE), the Canonical Correlation Analysis (CCA) was utilized, resulting in two predictor variables employed in the further multiple linear regression analysis.

Table 3***Set 1 – Sexual Orientation, First-Sex Partner Gender, and Satisfaction with First-Sex Orgasm***

Multiple Linear Regression - Model Fit Measures

Model	R	R ²	BIC	Overall Model Test			
				F	df1	df2	p
1	0.604	0.365	492	15.9	4	111	<.001

Model Coefficients – Kinsey Scale (mean score)

Predictor	Estimate	SE	t	p
Intercept ^a	-0.522	0.709	-0.736	0.463
Partner gender, first sex occurrence of orgasm ^b :				
Man – Woman	2.687	0.372	7.215	<.001
Other – Woman	4.476	1.845	2.427	0.017
Satisfaction first sex occurrence of orgasm ^c :				
No – Yes	-0.591	0.466	-1.266	0.208
Participant Gender ^d	1.398	0.336	4.158	<.001

Model Coefficients – Kinsey Scale (mean score)

Predictor	Estimate	SE	t	p
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^a Represents reference level.

^b Other (including non-binary, agender individuals).

^c Assessed on 5-point Likert scale, Yes = Strongly or Somewhat agree; No = Strongly or Somewhat disagree or Neither agree nor disagree.

^d Gender of the participant as covariate(s).

As seen in Table 3, the overall model fit was assessed using first-sex-partner’s gender during which orgasm had occurred and level of satisfaction with that orgasm as two predictor variables on sexual orientation (Kinsey Scale average score) as dependent/response variable. The correlation coefficient (R) was 0.604 indicating a moderate positive relationship between the predictor variables and the average score on the Kinsey Scale. The coefficient of determination (R²) was 0.365, which means that approximately 36.5% of the variance in the average score on the Kinsey Scale can be explained by the predictor variables included in the model, while controlling for gender of a participant.

The Bayesian Information Criterion (BIC) value was 492, suggesting that the model has a relatively good fit while considering model complexity. The overall F-test had an F-value of 15.9 with degrees of freedom of 4 and 111. The associated p-value was < .001, indicating that the overall model is statistically significant. This provides sufficient evidence to reject the null hypothesis and conclude that there is a significant relationship between the predictor variables and the average score on the Kinsey Scale.

The results indicate that positive conditioning, which has been indirectly assessed as level of satisfaction with orgasm linked to a particular gender, is associated with higher likelihood of developing a self-identified sexual orientation aligned with that specific gender.

Hypothesis 2: “Partnered primary sexual experiences involving positive conditioning to a specific gender will be more predictive of self-identified sexual orientation than solitary primary sexual experiences involving identical gender.”

The second hypothesis builds upon the first hypothesis and aims to explore the different predictor variables, such as solitary primary sexual experiences (PSE) included in

Set 2 (see Table 4), as compared to partnered PSE in Set 1 (see Table 3), and their relationship with sexual orientation.

Table 4

Set 2 – Sexual Orientation, First Sexual Fantasies, and Solitary Masturbation Associated with Orgasm

Multiple Linear Regression - Model Fit Measures

Model	R	R ²	BIC	Overall Model Test			
				F	df1	df2	p
1	0.442	0.196	838	7.67	6	189	< .001

Model Coefficients – Kinsey Scale (mean score)

Predictor	Estimate	SE	t	p
Intercept ^a	2.09159	0.556	3.7646	< .001
First sexual fantasy – content women ^b :				
No – Yes	-0.37167	0.349	-1.0661	0.288
First sexual fantasy – content men ^b :				
No – Yes	-1.37628	0.364	-3.7819	< .001
First solitary masturbation – content women ^b :				
No – Yes	0.15003	0.286	0.5247	0.600

Model Coefficients – Kinsey Scale (mean score)

Predictor	Estimate	SE	t	p
First solitary masturbation – content men ^b :				
No – Yes	-0.61861	0.331	-1.8713	0.063
Satisfaction with orgasm occurring during first solitary masturbation ^b :				
No – Yes	0.00807	0.384	0.0210	0.983
Participant Gender ^c	1.27294	0.241	5.2906	< .001

^a Represents reference level.

^b Assessed on 5-point Likert scale, Yes = Strongly or Somewhat agree; No = Strongly or Somewhat disagree or Neither agree nor disagree.

^c Gender of participant as covariate(s).

The analysis of both sets shows statistically significant models, indicated by p-values < 0.001 for the F-test. As shown in Table 3, Set 1 demonstrates higher values of R (0.604) and R² (0.365), indicating a greater proportion of variance in the dependent variable (sexual orientation assessed by Kinsey Scale mean score) compared to Set 2 (see Table 4), which has lower values of R (0.442) and R² (0.196).

Lower BIC values in Set 1 suggest a better model fit, and the higher F-value indicates a better overall fit compared to Set 2. However, it's important to concede that the level of satisfaction with sexual fantasies and first masturbation is not accounted for in the analysis, as there were no available data on those two potential variables. This absence of variables restricts our comprehensive understanding of their potential influence on self-identified sexual orientation and has limiting impact on the comparison between the analyses in Set 1 and Set 2.

Hypothesis 3 “Nonheterosexual individuals may experience a higher discrepancy between their primary sexual experiences and self-identified sexual orientation when compared to heterosexual individuals.”

To test the third hypothesis, three ANOVA (analysis of variance) tests were conducted to examine the relationship between sexual orientation and various variables related to first sexual fantasies, first solitary masturbation, and partnered sexual experiences, all within a specific gender context. The sexual orientation variable in the analysis categorized individuals as either nonheterosexual or heterosexual (as shown in Table 5, 6, and 7), which may be considered an oversimplification. However, when the "Non-/Heterosexual" variable was replaced with a more nuanced sexual orientation variable, such as the mean score of the Kinsey Scale, the results remained consistent. Specifically, all the p-values that were statistically significant (below the alpha level of 0.05) in the presented ANOVA analyses using the binary assessment of sexual orientation remained significant when the Kinsey Scale mean score was used instead as the variable.

Table 5
Gendered Content of First Sexual Fantasies

ANOVA - Non-/Heterosexual Individuals

	Sum of Squares	df	Mean Square	F	p
First sexual fantasy – content women	0.0342	1	0.0342	0.148	0.700
First sexual fantasy – content men	0.6191	1	0.6191	2.684	0.102
First sexual fantasy – content women *	4.6078	1	4.6078	19.975	<.001
First sexual fantasy – content men					
Residuals	90.4240	392	0.2307		

As seen in Table 5, the analysis yielded a significant difference between nonheterosexual and heterosexual individuals in terms of their first sexual fantasies when

considering both contents of first sexual fantasies involving women and men. However, there was no significant difference found when examining each content category of first sexual fantasies separately. The results suggest that there may be a discrepancy, but it is dependent on the specific combination of sexual fantasies considered.

Table 6
Gendered Content of First Solitary Masturbation

ANOVA - Non-/Heterosexual Individuals

	Sum of Squares	df	Mean Square	F	p
First solitary masturbation -content women	0.683	1	0.683	2.91	0.089
First solitary masturbation – content men	2.873	1	2.873	12.25	<.001
First solitary masturbation -content women *	3.419	1	3.419	14.57	<.001
First solitary masturbation – content men					
Residuals	87.261	372	0.235		

The results in Table 6 shown that there was no significant difference between nonheterosexual and heterosexual individuals in their first solitary masturbation experiences related to content involving women. However, there was a significant difference between the two groups regarding their experiences with content involving men. Additionally, when considering both content categories together, there was a significant difference observed.

These findings provide some further support for the hypothesis that nonheterosexual individuals may experience a higher discrepancy between their primary sexual experiences and self-identified sexual orientation, particularly when it comes to content involving men.

Table 7

Gender of the First Sexual Partner

ANOVA - Non-/Heterosexual Individuals

	Sum of Squares	df	Mean Square	F	p
Gender of first-sex partner	5.77	3	1.924	8.13	< .001
Residuals	92.01	389	0.237		

The results in Table 7 indicate that there is a significant difference between nonheterosexual individuals and heterosexual individuals concerning the gender of their first sexual partner. The variable representing the gender of the first sexual partner seems to have a significant influence on the discrepancy in sexual orientation.

In summary, the overall findings from the ANOVA analyses support the hypothesis that nonheterosexual individuals may experience a higher discrepancy between their primary sexual experiences and self-identified sexual orientation compared to heterosexual individuals. The specific aspects of sexual experiences, such as the gendered content of sexual fantasies or solitary masturbation, and the gender of the first sexual partner, contribute to this discrepancy.

Hypothesis 4 “There is not a significant gender difference in sexual fluidity³ among nonheterosexual individuals, but there will be a higher prevalence of sexual fluidity among females.”

The hypothesis suggests that there will not be a significant gender difference in sexual fluidity among non-heterosexual individuals. However, it predicts that there will be a higher prevalence of sexual fluidity among females. To test this hypothesis, independent t-tests were conducted (as seen in Table 8).

³ Higher sexual fluidity here is higher discrepancy between primary sexual experiences and self-identified sexual orientation (in relation to a particular gender in both).

Table 8***Nonheterosexual Males and Females and Primary Sexual Experiences***

Independent Samples T-Test

		Statistic	df	p		Effect Size
First sexual fantasy – content women	Student's t	-2.18	213	0.030	Cohen's d	-0.311
First sexual fantasy – content men	Student's t	3.44 ^a	213	<.001	Cohen's d	0.491
First solo masturbation – content women	Student's t	1.28 ^a	224	0.201	Cohen's d	0.178
First solo masturbation – content men	Student's t	1.63 ^a	204	0.104	Cohen's d	0.238
Gender of first-sex partner	Student's t	-2.47 ^a	206	0.014	Cohen's d	-0.356

^a Levene's test is significant ($p < .05$), suggesting a violation of the assumption of equal variances.

Group Descriptives

	Group	N	Mean	Median	SD	SE
First sexual fantasy – content women	Male	76	1.42	1.00	0.497	0.0570
	Female	139	1.58	2.00	0.496	0.0421

Group Descriptives

	Group	N	Mean	Median	SD	SE
First sexual fantasy – content men	Male	76	1.43	1.00	0.499	0.0572
	Female	139	1.22	1.00	0.413	0.0350
First solo masturbation – content women	Male	80	1.66	2.00	0.476	0.0532
	Female	146	1.58	2.00	0.496	0.0410
First solo masturbation – content men	Male	73	1.64	2.00	0.482	0.0564
	Female	133	1.53	2.00	0.501	0.0435
Gender of first-sex partner	Male	76	1.74	2.00	0.472	0.0542
	Female	132	1.88	2.00	0.350	0.0305

The results of the independent t-tests provide support for the hypothesis in some respects. Firstly, when comparing the content of the first sexual fantasy, a statistically significant difference was found between males and females among non-heterosexual individuals. Females showed a higher prevalence of sexual fluidity in this context. Nonetheless, the effect size was considered small.

Secondly, a significant gender difference was observed when examining the gender of the first sex partner among non-heterosexual individuals. Females were more likely to have experienced sexual fluidity in terms of their choice of partner. The effect size was small.

On the other hand, no significant gender differences were found in the context of first solo masturbation experiences. Both males and females among nonheterosexual individuals showed similar levels of sexual fluidity in terms of the content of their first solo masturbation experiences. The effect sizes in these cases were again small.

It is worth noting that the assumption of equal variances was violated, as indicated by the significant result of Levene's test. This violation should be taken into consideration when interpreting the results. It may indicate that the groups being compared have unequal variability.

In summary, the results provide partial support for the hypothesis. While there is no significant gender difference in sexual fluidity during first solo masturbation experiences, there is evidence of a higher prevalence of sexual fluidity among females in the context of first sexual fantasies and the gender of the first sex partner. These findings contribute to our understanding of gender differences and sexual fluidity among non-heterosexual individuals. All tests were performed in the open statistical software Jamovi (<https://www.jamovi.org/>).

3.4 Discussion

This study investigated the influence of positive conditioning on sexual orientation, the importance of partnered and solitary primary sexual pleasure experiences, potential discrepancies between gendered content of first sexual experiences and self-identified sexual orientation, and gender differences in sexual fluidity among nonheterosexual individuals. The findings suggest that positive conditioning, particularly satisfaction with orgasm linked to a specific gender, is associated with a higher likelihood of developing a self-identified sexual orientation aligned with that gender. The study also revealed that partnered early sexual pleasure experiences had a stronger predictive power for sexual orientation compared to solitary experiences. Additionally, significant differences were found in the gendered content of first sexual experiences among nonheterosexual individuals, contributing to a higher discrepancy between primary sexual experiences and self-identified sexual orientation, as suggested by Mock and Eibach (2012).

Aforementioned findings advance our knowledge by highlighting the role of early sexual pleasure experiences in shaping sexual orientation. The study provides support for the notion that positive conditioning during initial sexual experiences can coalesce a stronger sense of sexual preference and mate choice (Quintana et al., 2022). Moreover, presented evidence emphasizes the complexity of factors influencing sexual orientation, such as gender differences in sexual fluidity and the influence of the gender of the first sexual partner.

However, learning mechanisms, in relation to the formation of sexual orientation, may be influenced by individual differences in sensitivity to sexual rewards (Betts et al., 2020). Individuals who are highly sensitive to sexual rewards may be more likely to develop a self-identified sexual orientation aligned with their positive conditioning experiences,

whereas those with lower reward sensitivity may exhibit a weaker association between initial sexual experiences and self-identified sexual orientation. (Betts et al., 2020).

Limitations regarding the assessment of variables like satisfaction with sexual fantasies and first masturbation call for future research to incorporate a more comprehensive “sexual reward variables” that may impact self-identified sexual orientation. Further research is also necessary to deepen our understanding of the underlying mechanisms involved in the process. The absence of “objective” measures should be considered when interpreting data collected from self-report questionnaires related to sexual orientation. Additionally, to enhance the reliability and validity of the obtained data, incorporating subjective-genital agreement measures would be beneficial (Chivers et al., 2010).

4 CONCLUSION

In conclusion, this bachelor thesis examined the impact of positive conditioning on self-identified sexual orientation in humans, specifically focusing on partnered and solitary primary sexual experiences. By doing so, it addressed a gap in the current literature, and the findings of this study highlight the significant role of sexual pleasure experienced during primary sexual experiences in the formation of sexual orientation. These findings contribute to the existing body of animal research on this topic, which emphasizes the intricate interplay between early sexual experiences, positive conditioning, and the development of sexual preferences and mate choice.

5 LITERATURE

- Abé, C., Johansson, E., Allzén, E., & Savic, I. (2014). Sexual Orientation Related Differences in Cortical Thickness in Male Individuals. *PLOS ONE*, *9*(12), e114721. <https://doi.org/10.1371/journal.pone.0114721>
- Abé, C., Lebedev, A. A., Zhang, R., Jonsson, L., Bergen, S. E., Ingvar, M., Landén, M., & Rahman, Q. (2021). Cross-sex shifts in two brain imaging phenotypes and their relation to polygenic scores for same-sex sexual behavior: A study of 18,645 individuals from the UK Biobank. *Human Brain Mapping*, *42*(7), 2292–2304. <https://doi.org/10.1002/hbm.25370>
- Alanko, K., Santtila, P., Harlaar, N., Witting, K., Varjonen, M., Jern, P., Johansson, A., Von Der Pahlen, B., & Sandnabba, N. K. (2009). Common Genetic Effects of Gender Atypical Behavior in Childhood and Sexual Orientation in Adulthood: A Study of Finnish Twins. *Archives of Sexual Behavior*, *39*(1), 81–92. <https://doi.org/10.1007/s10508-008-9457-3>
- Alipour, M. (2017). Essentialism and Islamic Theology of Homosexuality: A Critical Reflection on an Essentialist Epistemology toward Same-Sex Desires and Acts in Islam. *Journal of Homosexuality*, *64*(14), 1930–1942. <https://doi.org/10.1080/00918369.2017.1289001>
- American Psychological Association. (2020). *Publication manual of the American Psychological Association* (7th ed.). <https://doi.org/10.1037/0000165-000>
- American Psychological Association. (2021). *APA resolution on sexual orientation change efforts*. Retrieved from: <https://www.apa.org/about/policy/resolution-sexual-orientation-change-efforts.pdf>
- Bagemihl, B. (1999). *Biological exuberance: Animal homosexuality and natural diversity*. Macmillan.
- Bailey, J. E., Dunne, M. P., & Martin, N. G. (2000). Genetic and environmental influences on sexual orientation and its correlates in an Australian twin sample. *Journal of Personality and Social Psychology*, *78*(3), 524–536. <https://doi.org/10.1037/0022-3514.78.3.524>
- Bailey, J. E. (2009). What is Sexual Orientation and Do Women Have One? In Springer eBooks (pp. 43–63). https://doi.org/10.1007/978-0-387-09556-1_3
- Bailey, J. E., & Jabbour, J. (2020). Reply to Zietsch and Sidari: Male sexual arousal patterns (and sexual orientation) are partly unidimensional. *Proceedings of the National*

- Academy of Sciences of the United States of America*, 117(44), 27081.
<https://doi.org/10.1073/pnas.2018061117>
- Bailey, J. E., & Zucker, K. J. (1995). Childhood sex-typed behavior and sexual orientation: A conceptual analysis and quantitative review. *Developmental Psychology*, 31(1), 43–55. <https://doi.org/10.1037/0012-1649.31.1.43>
- Bailey, J. M., Dunne, M. P., & Martin, N. G. (2000). Genetic and environmental influences on sexual orientation and its correlates in an Australian twin sample. *Journal of Personality and Social Psychology*, 78(3), 524–536. <https://doi.org/10.1037/0022-3514.78.3.524>
- Barragán, V., Berenzon, S., Tiburcio, M., Bustos, M., & Villatoro, J. (2019). Factors Associated with Sexual Debut in Mexican Adolescents: Results of the National Survey on Drug Use among Students in 2014. *The Journal of Sexual Medicine*, 16(3), 418–426. <https://doi.org/10.1016/j.jsxm.2019.01.008>
- Basagoitia, R. (2020). *The Kinsey Scale* [Infographic]. What Does the Kinsey Scale Have to Do with Your Sexuality? <https://www.healthline.com/health/kinsey-scale>
- Betts, M. G., Richter, A., De Boer, L., Tegelbeckers, J., Perosa, V., Baumann, V., Chowdhury, R., Dolan, R. J., Seidenbecher, C. I., Schott, B. H., Düzel, E., Guitart-Masip, M., & Krauel, K. (2020). Learning in anticipation of reward and punishment: perspectives across the human lifespan. *Neurobiology of Aging*, 96, 49–57. <https://doi.org/10.1016/j.neurobiolaging.2020.08.011>
- Berkey, B. R., Perelman-Hall, T., & Kurdek, L. A. (1990). The Multidimensional Scale of Sexuality. *Journal of Homosexuality*, 19(4), 67–88. https://doi.org/10.1300/j082v19n04_05
- Bialy, M., Bogacki-Rychlik, W., Przybylski, J., & Zera, T. (2019). The Sexual Motivation of Male Rats as a Tool in Animal Models of Human Health Disorders. *Frontiers in Behavioral Neuroscience*, 13. <https://doi.org/10.3389/fnbeh.2019.00257>
- Birnbaum, G. E., Reis, H. T., Mikulincer, M., Gillath, O., & Orpaz, A. (2006). When sex is more than just sex: Attachment orientations, sexual experience, and relationship quality. *Journal of Personality and Social Psychology*, 91(5), 929–943. <https://doi.org/10.1037/0022-3514.91.5.929>
- Bränström, R., & Pachankis, J. E. (2018). Sexual orientation disparities in the co-occurrence of substance use and psychological distress: a national population-based study (2008–2015). *Social Psychiatry and Psychiatric Epidemiology*, 53(4), 403–412. <https://doi.org/10.1007/s00127-018-1491-4>

- Bryson, K. H., Soligo, C., & Sommer, V. (2018). Ambiguity Tolerance Toward Nonbinary Sexuality Concepts: Evidence from British Newspapers. *Journal of Bisexuality*, 18(4), 446–477. <https://doi.org/10.1080/15299716.2018.1495591>
- Burgess, D. J., Lee, R. T., Tran, A. G. T. T., & Van Ryn, M. (2007). Effects of Perceived Discrimination on Mental Health and Mental Health Services Utilization Among Gay, Lesbian, Bisexual and Transgender Persons. *Journal of LGBT Health Research*, 3(4), 1–14. <https://doi.org/10.1080/15574090802226626>
- Carani, C., Rochira, V., Faustini-Fustini, M., Balestrieri, A., & Granata, A. (1999). Role of oestrogen in male sexual behaviour: insights from the natural model of aromatase deficiency. *Clinical Endocrinology*, 51(4), 517–524. <https://doi.org/10.1046/j.1365-2265.1999.00849.x>
- Cary, K. M., & Reese-Weber, M. (2021). Setting the Stage for Emerging Adulthood Sexuality. In *Oxford University Press eBooks* (pp. 23-C2.P88). <https://doi.org/10.1093/oso/9780190057008.003.0003>
- Cervilla, O., Vallejo-Medina, P., Gómez-Berrocal, C., De La Torre, D., & Sierra, J. C. (2022). Validation of the Orgasm Rating Scale in the Context of Masturbation. *Psicothema*, 34(1), 151–159. <https://doi.org/10.7334/psicothema2021.223>
- Chivers, M. L. (2005). A brief review and discussion of sex differences in the specificity of sexual arousal. *Sexual and Relationship Therapy*, 20(4), 377–390. <https://doi.org/10.1080/14681990500238802>
- Chivers, M. L., & Timmers, A. D. (2012). Effects of Gender and Relationship Context in Audio Narratives on Genital and Subjective Sexual Response in Heterosexual Women and Men. *Archives of Sexual Behavior*, 41(1), 185–197. <https://doi.org/10.1007/s10508-012-9937-3>
- Chivers, M. L., Seto, M. C., Lalumière, M. L., Laan, E., & Grimbos, T. (2010). Agreement of Self-Reported and Genital Measures of Sexual Arousal in Men and Women: A Meta-Analysis. *Archives of Sexual Behavior*, 39(1), 5–56. <https://doi.org/10.1007/s10508-009-9556-9>
- Clemens, B. J., Lefort-Besnard, J., Ritter, C., Smith, E., Votinov, M., Derntl, B., Habel, U., & Bzdok, D. (2022). Accurate machine learning prediction of sexual orientation based on brain morphology and intrinsic functional connectivity. *Cerebral Cortex*, 33(7), 4013–4025. <https://doi.org/10.1093/cercor/bhac323>
- Cook, C. C. H. (2020). The causes of human sexual orientation. *Theology and Sexuality*, 27(1), 1–19. <https://doi.org/10.1080/13558358.2020.1818541>

- Coria-Avila, G. A., Herrera-Covarrubias, D., Ismail, N., & Pfaus, J. G. (2016). The role of orgasm in the development and shaping of partner preferences. *Socioaffective Neuroscience & Psychology*, 6(1), 31815. <https://doi.org/10.3402/snp.v6.31815>
- Coria-Avila, G. A., Ouimet, A. J., Pacheco, P., Manzo, J., & Pfaus, J. G. (2005). Olfactory Conditioned Partner Preference in the Female Rat. *Behavioral Neuroscience*, 119(3), 716–725. <https://doi.org/10.1037/0735-7044.119.3.716>
- Dang, S. S., Northey, L., Dunkley, C. R., Rigby, R., & Gorzalka, B. B. (2018). Sexual anxiety and sexual beliefs as mediators of the association between attachment orientation with sexual functioning and distress in university men and women. *Canadian Journal of Human Sexuality*, 27(1), 21–32. <https://doi.org/10.3138/cjhs.2017-0025>
- Dar-Nimrod, I., Heine, S., Cheung, B. Y., & Schaller, M. (2011). Do scientific theories affect men's evaluations of sex crimes? *Aggressive Behavior*, 37(5), 440–449. <https://doi.org/10.1002/ab.20401>
- DeCecco, J. P., & Elia, J. P. (1993). A Critique and synthesis of biological essentialism and social constructionist views of sexuality and gender. *Journal of Homosexuality*, 24(3–4), 1–26. https://doi.org/10.1300/j082v24n03_01
- Dharma, C., & Bauer, G. R. (2017). Understanding sexual orientation and health in Canada: Who are we capturing and who are we missing using the Statistics Canada sexual orientation question? *Canadian Journal of Public Health-revue Canadienne De Sante Publique*. <https://doi.org/10.17269/cjph.108.5848>
- Diamond, L. M. (2003). What does sexual orientation orient? A biobehavioral model distinguishing romantic love and sexual desire. *Psychological Review*, 110(1), 173–192. <https://doi.org/10.1037/0033-295x.110.1.173>
- Diamond, L. M. (2008a). *Sexual fluidity: Understanding women's love and desire*. Harvard University Press.
- Diamond, L. M. (2008b). Female bisexuality from adolescence to adulthood: Results from a 10-year longitudinal study. *Developmental Psychology*, 44(1), 5–14. <https://doi.org/10.1037/0012-1649.44.1.5>
- Diamond, L. M., & Rosky, C. J. (2016). Scrutinizing Immutability: Research on Sexual Orientation and U.S. Legal Advocacy for Sexual Minorities. *The Journal of Sex Research*, 53(4–5), 363–391. <https://doi.org/10.1080/00224499.2016.1139665>

- Diamond, L. M., Alley, J., Dickenson, J. A., & Blair, K. L. (2020). Who Counts as Sexually Fluid? Comparing Four Different Types of Sexual Fluidity in Women. *Archives of Sexual Behavior*, 49(7), 2389–2403. <https://doi.org/10.1007/s10508-019-01565-1>
- Díaz-Loving, R., & Rodríguez, G. (2008). Sociosexual Orientation and Sexual Behavior in Mexican Adults. *Social and Personality Psychology Compass*, 2(3), 1199–1217. <https://doi.org/10.1111/j.1751-9004.2008.00111.x>
- Dickson, N., Paul, C., & Herbison, P. (2003). Same-sex attraction in a birth cohort: prevalence and persistence in early adulthood. *Social Science & Medicine*, 56(8), 1607–1615. [https://doi.org/10.1016/s0277-9536\(02\)00161-2](https://doi.org/10.1016/s0277-9536(02)00161-2)
- Drechsler, M., Campolongo, P., & Vanderschuren, L. J. M. J. (2011). Evaluating the rewarding nature of social interactions in laboratory animals. *Developmental Cognitive Neuroscience*, 1(4), 444–458. <https://doi.org/10.1016/j.dcn.2011.05.007>
- Eigenberg, H. M. (1992). Homosexuality in Male Prisons: Demonstrating the Need for a Social Constructionist Approach. *Criminal Justice Review*, 17(2), 219–234. <https://doi.org/10.1177/073401689201700204>
- Ellis, L. M., & Ames, M. A. (1987). Neurohormonal functioning and sexual orientation: A theory of homosexuality–heterosexuality. *Psychological Bulletin*, 101(2), 233–258. <https://doi.org/10.1037/0033-2909.101.2.233>
- Ellis, L. M., Lykins, A. D., Hoskin, A. W., & Ratnasingam, M. (2015). Putative Androgen Exposure and Sexual Orientation: Cross-Cultural Evidence Suggesting a Modified Neurohormonal Theory. *The Journal of Sexual Medicine*, 12(12), 2364–2377. <https://doi.org/10.1111/jsm.13070>
- Finocchiaro, P. (2021). How to Project a Socially Constructed Sexual Orientation. *Journal of Social Ontology*, 7(2), 173–203. <https://doi.org/10.1515/jso-2021-0005>
- Fleischman, D. S. (2016). An evolutionary behaviorist perspective on orgasm. *Socioaffective Neuroscience & Psychology*, 6(1), 32130. <https://doi.org/10.3402/snp.v6.32130>
- Flynn, K. E., Whicker, D. R., Lin, L., Cusatis, R., Nyitray, A. G., & Weinfurt, K. P. (2019). Sexual Orientation and Patient-Provider Communication About Sexual Problems or Concerns Among US Adults. *Journal of General Internal Medicine*, 34(11), 2505–2511. <https://doi.org/10.1007/s11606-019-05300-3>
- Foshay, J. E., & O’Sullivan, L. F. (2020). Home-based sex communication, school coverage of sex, and problems in sexual functioning among adolescents. *The Canadian Journal of Human Sexuality*, 29(1), 25–31. <https://doi.org/10.3138/cjhs.2019-0025>

- Frieling, H., Schiffer, B., Eikermann, M., Haake, P., Gizewski, E. R., & Schedlowski, M. (2006). Serial neurochemical measurement of cerebrospinal fluid during the human sexual response cycle. *European Journal of Neuroscience*, *24*(12), 3445–3452. <https://doi.org/10.1111/j.1460-9568.2006.05215.x>
- Gagnon, J. H., & Simon, W. (1974). *Sexual conduct: the social sources of human sexuality*. Chicago, Aldine Pub. Co.
- Galupo, M. P., Davis, K. F., Gryniewicz, A., & Mitchell, R. C. (2014). Conceptualization of Sexual Orientation Identity Among Sexual Minorities: Patterns Across Sexual and Gender Identity. *Journal of Bisexuality*, *14*(3–4), 433–456. <https://doi.org/10.1080/15299716.2014.933466>
- Galupo, M. P., Lomash, E. F., & Mitchell, R. C. (2017b). “All of My Lovers Fit Into This Scale”: Sexual Minority Individuals’ Responses to Two Novel Measures of Sexual Orientation. *Journal of Homosexuality*, *64*(2), 145–165. <https://doi.org/10.1080/00918369.2016.1174027>
- Galupo, M. P., Ramirez, J. L., & Pulice-Farrow, L. (2017a). “Regardless of Their Gender”: Descriptions of Sexual Identity among Bisexual, Pansexual, and Queer Identified Individuals. *Journal of Bisexuality*, *17*(1), 108–124. <https://doi.org/10.1080/15299716.2016.1228491>
- Garnets, L. D. (2002). Sexual orientations in perspective. *Cultural Diversity and Ethnic Minority Psychology*, *8*(2), 115–129. <https://doi.org/10.1037/1099-9809.8.2.115>
- Geer, J. H., & Fuhr, R. (1976). Cognitive factors in sexual arousal: The role of distraction. *Journal of Consulting and Clinical Psychology*, *44*(2), 238–243. <https://doi.org/10.1037/0022-006X.44.2.238>
- Georgiadis, J. R., Kringelbach, M. L., & Pfaus, J. G. (2012). Sex for fun: a synthesis of human and animal neurobiology. *Nature Reviews Urology*, *9*(9), 486–498. <https://doi.org/10.1038/nrurol.2012.151>
- Glassgold, J. M. (2022). Research on sexual orientation change efforts: A summary. In *American Psychological Association eBooks* (pp. 19–50). <https://doi.org/10.1037/0000266-002>
- Gonsiorek, J. C., Sell, R. S., & Weinrich, J. D. (1995). Definition and Measurement of Sexual Orientation. *Suicide and Life Threatening Behavior*, *25*, 40–51. <https://doi.org/10.1111/j.1943-278x.1995.tb00489.x>

- Hall, G. C. N., Yip, T., & Zárate, M. A. (2016). On becoming multicultural in a monocultural research world: A conceptual approach to studying ethnocultural diversity. *American Psychologist*, 71(1), 40–51. <https://doi.org/10.1037/a0039734>
- Hall, W. W. (2019). Sexual Orientation. *Encyclopedia of Social Work*. <https://doi.org/10.1093/acrefore/9780199975839.013.1271>
- Han, C., Wang, H., Hahn, A. C., Fisher, C. I., Kandrik, M., Fasolt, V., Morrison, D., Lee, A. J., Holzleitner, I. J., DeBruine, L. M., & Jones, B. C. (2017). Cultural differences in preferences for facial coloration. *Evolution and Human Behavior*, 39(2), 154–159. <https://doi.org/10.1016/j.evolhumbehav.2017.11.005>
- Hancock, K. A., & Haldeman, D. C. (2022). APA’s guidelines for psychological practice with lesbian, gay, and bisexual clients and sexual orientation change efforts: A brief history. In D. C. Haldeman (Ed.), *The case against conversion “therapy”: Evidence, ethics, and alternatives* (pp. 127–146). American Psychological Association. <https://doi.org/10.1037/0000266-007>
- Hayes, J., Chakraborty, A., McManus, S., Bebbington, P., Brugha, T. S., Nicholson, S., & King, M. (2012). Prevalence of Same-Sex Behavior and Orientation in England: Results from a National Survey. *Archives of Sexual Behavior*, 41(3), 631–639. <https://doi.org/10.1007/s10508-011-9856-8>
- Heckman, J. J. (1990). Selection bias and self-selection. *Econometrics*, 201–224. https://doi.org/10.1007/978-1-349-20570-7_29
- Herbenick, D., Reece, M. J., Schick, V., Sanders, S. A., Dodge, B., & Fortenberry, J. D. (2010). An Event-Level Analysis of the Sexual Characteristics and Composition Among Adults Ages 18 to 59: Results from a National Probability Sample in the United States. *The Journal of Sexual Medicine*, 7(Supplement_5), 346–361. <https://doi.org/10.1111/j.1743-6109.2010.02020.x>
- Hille, J. J., Simmons, M., & Sanders, S. A. (2019). “Sex” and the Ace Spectrum: Definitions of Sex, Behavioral Histories, and Future Interest for Individuals Who Identify as Asexual, Graysexual, or Demisexual. *Journal of Sex Research*, 57(7), 813–823. <https://doi.org/10.1080/00224499.2019.1689378>
- Hipp, L., Bünning, M., Munnes, S., & Sauermann, A. (2020). Problems and pitfalls of retrospective survey questions in COVID-19 studies. *Survey Research Methods*, 14(2), 109–114. <https://doi.org/10.18148/srm/2020.v14i2.7741>
- Hu, S., Xu, D., Peterson, B. M., Cao, L., Zhang, M., & Xu, Y. (2013). 563 – Association of cerebral networks in resting state with sexual preference of homosexual men: a study

- of regional homogeneity and functional connectivity. *European Psychiatry*.
[https://doi.org/10.1016/s0924-9338\(13\)75847-4](https://doi.org/10.1016/s0924-9338(13)75847-4)
- Human Sexuality. (1974). *Annals of Internal Medicine*, 80(3), 439.
https://doi.org/10.7326/0003-4819-80-3-439_7
- Ingelsson, E., Verweij, K. J. H., Nivard, M. G., Maier, R. R. J., Wedow, R., Busch, A. S., Abdellaoui, A., Guo, S., Sathirapongsasuti, J. F., Lichtenstein, P., Lundström, S., Långström, N., Auton, A., Harris, K. M., Beecham, G. W., Martin, E. R., Sanders, A. R., Perry, J. R. B., Neale, B. M., & Zietsch, B. P. (2019). Large-scale GWAS reveals insights into the genetic architecture of same-sex sexual behavior. *Science*, 365(6456). <https://doi.org/10.1126/science.aat7693>
- Jackson, C. L., Agénor, M., Johnson, D. A., Austin, S. B., & Kawachi, I. (2016). Sexual orientation identity disparities in health behaviors, outcomes, and services use among men and women in the United States: a cross-sectional study. *BMC Public Health*, 16(1). <https://doi.org/10.1186/s12889-016-3467-1>
- Jackson, C., & Machi, S. (2021). *Sexual orientation differences by generation*. Gender identity and sexual orientation differences by generation. Retrieved June 13, 2023, from <https://www.ipsos.com/en-us/gender-identity-and-sexual-orientation-differences-generation>.
- Jans, M., Viana, J., Grant, D. M., Cochran, S. D., Lee, A., & Ponce, N. A. (2015). Trends in Sexual Orientation Missing Data Over a Decade of the California Health Interview Survey. *American Journal of Public Health*, 105(5), e43–e50. <https://doi.org/10.2105/ajph.2014.302514>
- Katz-Wise, S. L. (2015). Sexual fluidity in young adult women and men: associations with sexual orientation and sexual identity development. *Psychology and Sexuality*, 6(2), 189–208. <https://doi.org/10.1080/19419899.2013.876445>
- Katz-Wise, S. L., & Hyde, J. S. (2014). Sexuality and gender: The interplay. In *American Psychological Association eBooks* (pp. 29–62). <https://doi.org/10.1037/14193-002>
- Keijsers, G.P.J. (2018). Behaviour therapy: *An overview* (pp. 1-12).
- Keijsers, G.P.J., & Becker, E.S. (2009). Psychotherapy and implicit mental processes. Adapted version from S. Colijn, H. Snijders, M. Thunnissen, S. Bogels, & W. Trijsburg (Eds.), *Leerboek psychotherapie*. (Pages 1-10).
- Kendler, K. S., Thornton, L. M., Gilman, S. E., & Kessler, R. C. (2000). Sexual Orientation in a U.S. National Sample of Twin and Nontwin Sibling Pairs. *American Journal of Psychiatry*, 157(11), 1843–1846. <https://doi.org/10.1176/appi.ajp.157.11.1843>

- Kinnish, K., Strassberg, D. S., & Turner, C. F. (2005). Sex Differences in the Flexibility of Sexual Orientation: A Multidimensional Retrospective Assessment. *Archives of Sexual Behavior*, 34(2), 173–183. <https://doi.org/10.1007/s10508-005-1795-9>
- Kinsey, A. C., Pomeroy, W. B., & Martin, C. E. (1948). *Sexual behavior in the human male*. Saunders.
- Kinsey, A. C., Pomeroy, W. B., Martin, C. E., & Gebhard, P. H. (1953). *Sexual behavior in the human female*. Saunders.
- Kippin, T. E., & Pfaus, J. G. (2001). The development of olfactory conditioned ejaculatory preferences in the male rat. *Physiology & Behavior*, 73(4), 457–469. [https://doi.org/10.1016/s0031-9384\(01\)00484-x](https://doi.org/10.1016/s0031-9384(01)00484-x)
- Klein, F. (1993). Haworth gay and lesbian studies. *The bisexual option* (2nd ed.). Harrington Park Press/Haworth Press.
- Krueger, E. A., Meyer, I. H., & Upchurch, D. M. (2018). Sexual Orientation Group Differences in Perceived Stress and Depressive Symptoms Among Young Adults in the United States. *LGBT Health*, 5(4), 242–249. <https://doi.org/10.1089/lgbt.2017.0228>
- Laan, E. (2007). A functional MRI study on gender differences in conscious self-regulation of sexual arousal. Paper presented at the meeting of the International Academy of Sex Research, Vancouver, BC, Canada.
- Laumann, E. O., Gagnon, J. H., Michael, R. T., & Michaels, S. (2000). *The Social Organization of Sexuality: Sexual Practices in the United States*. University of Chicago Press.
- Lemeire, O., & De Block, A. (2015). Philosophy and the Biology of Male Homosexuality. *Philosophy Compass*. <https://doi.org/10.1111/phc3.12233>
- Likert, R. (1932). A technique for the measurement of attitudes. *Archives of Psychology*, 22(1), 140, 55.
- Lindley, L. C., Walsemann, K. M., & Carter, J. W. (2012). The Association of Sexual Orientation Measures With Young Adults' Health-Related Outcomes. *American Journal of Public Health*, 102(6), 1177–1185. <https://doi.org/10.2105/ajph.2011.300262>
- Lippa, R. A. (2003). Are 2D:4D finger-length ratios related to sexual orientation? Yes for men, no for women. *Journal of Personality and Social Psychology*, 85(1), 179–188. <https://doi.org/10.1037/0022-3514.85.1.179>

- Lippa, R. A., & Tan, F. D. (2001). Does Culture Moderate the Relationship Between Sexual Orientation and Gender-Related Personality Traits? *Cross-Cultural Research*, 35(1), 65–87. <https://doi.org/10.1177/106939710103500104>
- Loos, T. (2009). Transnational Histories of Sexualities in Asia. *The American Historical Review*, 114(5), 1309–1324. <https://doi.org/10.1086/ahr.114.5.1309>
- Ludy, M., Crum, A. H., Young, C., Morgan, A. J., & Tucker, R. (2018). First-Year University Students Who Self-Select into Health Studies Have More Desirable Health Measures and Behaviors at Baseline but Experience Similar Changes Compared to Non-Self-Selected Students. *Nutrients*, 10(3), 362. <https://doi.org/10.3390/nu10030362>
- Mah, K., & Binik, Y. M. (2002). Do all orgasms feel alike? Evaluating a two-dimensional model of the orgasm experience across gender and sexual context. *The Journal of Sex Research*, 39(2), 104–113. <https://doi.org/10.1080/00224490209552129>
- Marson, L. (2008). Neurologic and neuroendocrinologic responses during orgasm: What do we know? *Current Sexual Health Reports*, 5(3), 141–145. <https://doi.org/10.1007/s11930-008-0025-6>
- Marson, L., Giamberardino, M. A., Costantini, R., Czakanski, P. P., & Wesselmann, U. (2013). Animal Models for the Study of Female Sexual Dysfunction. *Sexual Medicine Reviews*, 1(2), 108–122. <https://doi.org/10.1002/smrv.14>
- Matsick, J. L., Conley, T. D., & Moors, A. C. (2016). The Science of Female Orgasms: Pleasing Female Partners in Casual and Long-Term Relationships. *The Psychology of Love and Hate in Intimate Relationships*, 47–63. https://doi.org/10.1007/978-3-319-39277-6_4
- Matthews, D. D., Blosnich, J. R., Farmer, G. W., & Adams, B. B. (2014). Operational Definitions of Sexual Orientation and Estimates of Adolescent Health Risk Behaviors. *LGBT Health*, 1(1), 42–49. <https://doi.org/10.1089/lgbt.2013.0002>
- McCabe, S. E., Hughes, T. L., Bostwick, W. B., & Boyd, C. J. (2005). Assessment of difference in dimensions of sexual orientation: implications for substance use research in a college-age population. *Journal of Studies on Alcohol*, 66(5), 620–629. <https://doi.org/10.15288/jsa.2005.66.620>
- McCabe, S. E., Hughes, T. L., Matthews, A. K., Lee, J. H., West, B. T., Boyd, C. J., & Arslanian-Engoren, C. (2017). Sexual Orientation Discrimination and Tobacco Use Disparities in the United States. *Nicotine & Tobacco Research*, 21(4), 523–531. <https://doi.org/10.1093/ntr/ntx283>

- Meston, C. M., Hull, E., Levin, R. J., & Sipski, M. (2004). Disorders of Orgasm in Women. *The Journal of Sexual Medicine*, *1*(1), 66–68. <https://doi.org/10.1111/j.1743-6109.2004.10110.x>
- Michels, T. M., Kropp, R. Y., Eyre, S., & Halpern-Felsher, B. (2005). Initiating Sexual Experiences: How Do Young Adolescents Make Decisions Regarding Early Sexual Activity? *Journal of Research on Adolescence*, *15*(4), 583–607. <https://doi.org/10.1111/j.1532-7795.2005.00112.x>
- Mock, S. E., & Eibach, R. P. (2012). Stability and Change in Sexual Orientation Identity Over a 10-Year Period in Adulthood. *Archives of Sexual Behavior*, *41*(3), 641–648. <https://doi.org/10.1007/s10508-011-9761-1>
- Morandini, J. S., Blaszczyński, A., Ross, M. W., Costa, D. P., & Dar-Nimrod, I. (2015). Essentialist beliefs, sexual identity uncertainty, internalized homonegativity and psychological wellbeing in gay men. *Journal of Counseling Psychology*, *62*(3), 413–424. <https://doi.org/10.1037/cou0000072>
- Nagoshi, J. L., Stephan, Brzuzy, I., & Terrell, H. K. (2012). Deconstructing the complex perceptions of gender roles, gender identity, and sexual orientation among transgender individuals. *Feminism & Psychology*, *22*(4), 405–422. <https://doi.org/10.1177/0959353512461929>
- Neal, S., & Hosegood, V. (2015). How Reliable Are Reports of Early Adolescent Reproductive and Sexual Health Events in Demographic and Health Surveys? *International Perspectives on Sexual and Reproductive Health*. <https://doi.org/10.1363/4121015>
- Nieves-Lugo, K., Rohrbeck, C. A., Nakamura, N., & Zea, M. C. (2017). Interventions with lesbian, gay, bisexual, transgender, and questioning communities. In M. A. Bond, I. Serrano-García, C. B. Keys, & M. Shinn (Eds.), *APA handbook of community psychology: Methods for community research and action for diverse groups and issues* (pp. 555–569). American Psychological Association. <https://doi.org/10.1037/14954-033>
- Omisore, A. G., Oyerinde, I., Abiodun, O. M., Aderemi, Z. A., Adewusi, T., Ajayi, I. C., Fagbolade, T. M., & Miskilu, S. (2021). Sexual Orientation Among Unmarried Final Year University Students in Osun State: Distribution, Determinants and Level of Satisfaction. *International Quarterly of Community Health Education*, *0272684X2110066*. <https://doi.org/10.1177/0272684x211006601>

- Paredes, R. G. (2009). Evaluating the Neurobiology of Sexual Reward. *Ilar Journal*, 50(1), 15–27. <https://doi.org/10.1093/ilar.50.1.15>
- Park, A. (2022). Defining Sexual Orientation: A Proposal for a New Definition. *Michigan Journal of Gender & Law*, 29.1, 1. <https://doi.org/10.36641/mjgl.29.1.defining>
- Pfaus, J. G., Kippin, T. E., Coria-Avila, G. A., Gelez, H., Afonso, V. M., Ismail, N., & Parada, M. (2012). Who, What, Where, When (and Maybe Even Why)? How the Experience of Sexual Reward Connects Sexual Desire, Preference, and Performance. *Archives of Sexual Behavior*, 41(1), 31–62. <https://doi.org/10.1007/s10508-012-9935-5>
- Pfaus, J. G., Scardochio, T., Parada, M., Gerson, C. A., Quintana, G. R., & Coria-Avila, G. A. (2016). Do rats have orgasms? *Socioaffective Neuroscience & Psychology*, 6(1), 31883. <https://doi.org/10.3402/snp.v6.31883>
- Phelps, E. A., & LeDoux, J. E. (2005). Contributions of the Amygdala to Emotion Processing: From Animal Models to Human Behavior. *Neuron*, 48(2), 175–187. <https://doi.org/10.1016/j.neuron.2005.09.025>
- Philaretou, A. G., & Allen, K. R. (2001). Reconstructing Masculinity and Sexuality. *The Journal of Men's Studies*, 9(3), 301–321. <https://doi.org/10.3149/jms.0903.301>
- Priebe, G., & Svedin, C. G. (2013). Operationalization of Three Dimensions of Sexual Orientation in a National Survey of Late Adolescents. *Journal of Sex Research*, 50(8), 727–738. <https://doi.org/10.1080/00224499.2012.713147>
- Przeworski, A., Peterson, E. A., & Piedra, A. (2021). A systematic review of the efficacy, harmful effects, and ethical issues related to sexual orientation change efforts. *Clinical Psychology-science and Practice*, 28(1), 81–100. <https://doi.org/10.1111/cpsp.12377>
- Quintana, G. R., Mac Cionnaith, C. E., & Pfaus, J. G. (2022). Behavioral, Neural, and Molecular Mechanisms of Conditioned Mate Preference: The Role of Opioids and First Experiences of Sexual Reward. *International Journal of Molecular Sciences*, 23(16), 8928. <https://doi.org/10.3390/ijms23168928>
- Rapoport, E., Athanasian, C. E., & Adesman, A. (2021). Prevalence of Nonheterosexual Identity and Same-Sex Sexual Contact Among High School Students in the US From 2015 to 2019. *JAMA Pediatrics*, 175(9), 970. <https://doi.org/10.1001/jamapediatrics.2021.1109>

- Rendina, H. J., Carter, J. W., Wahl, L., Millar, B. M., & Parsons, J. T. (2019). Trajectories of sexual identity development and psychological well-being for highly sexually active gay and bisexual men: A latent growth curve analysis. *Psychology of Sexual Orientation and Gender Diversity*, 6(1), 64–74. <https://doi.org/10.1037/sgd0000308>
- Rieger, G., Cash, B. M., Merrill, S. A., Jones-Rounds, J., Dharmavaram, S., & Savin-Williams, R. C. (2015). Sexual arousal: The correspondence of eyes and genitals. *Biological Psychology*, 104, 56–64. <https://doi.org/10.1016/j.biopsycho.2014.11.009>
- Romanelli, M., Xiao, Y., & Lindsey, M. A. (2020). Sexual Identity–Behavior Profiles and Suicide Outcomes Among Heterosexual, Lesbian, and Gay Sexually Active Adolescents. *Suicide and Life Threatening Behavior*, 50(4), 921–933. <https://doi.org/10.1111/sltb.12634>
- Romanelli, M., Xiao, Y., & Lindsey, M. A. (2020). Sexual Identity–Behavior Profiles and Suicide Outcomes Among Heterosexual, Lesbian, and Gay Sexually Active Adolescents. *Suicide and Life Threatening Behavior*, 50(4), 921–933. <https://doi.org/10.1111/sltb.12634>
- Rosario, M., & Schrimshaw, E. W. (2014). Theories and etiologies of sexual orientation. In *American Psychological Association eBooks* (pp. 555–596). <https://doi.org/10.1037/14193-018>
- Savin-Williams, R. C. (2016). Sexual Orientation: Categories or Continuum? Commentary on Bailey et al. (2016). *Psychological Science in the Public Interest*, 17(2), 37–44. <https://doi.org/10.1177/1529100616637618>
- Savin-Williams, R. C., & Ream, G. L. (2006). Prevalence and Stability of Sexual Orientation Components During Adolescence and Young Adulthood. *Archives of Sexual Behavior*, 36(3), 385–394. <https://doi.org/10.1007/s10508-006-9088-5>
- Savin-Williams, R. C., & Vrangalova, Z. (2013). Mostly heterosexual as a distinct sexual orientation group: A systematic review of the empirical evidence. *Developmental Review*, 33(1), 58–88. <https://doi.org/10.1016/j.dr.2013.01.001>
- Séguin, L. J., & Blais, M. (2019). Pleasure is just the tip of the iceberg: Social representations, personal beliefs, and attributed meanings to partnered orgasm. *Canadian Journal of Human Sexuality*, 28(3), 328–342. <https://doi.org/10.3138/cjhs.2019-0027>
- Seto, M. C. (2012). Is Pedophilia a Sexual Orientation? *Archives of Sexual Behavior*, 41(1), 231–236. <https://doi.org/10.1007/s10508-011-9882-6>

- Shpigel, M. S., Belsky, Y., & Diamond, G. L. (2015). Clinical work with non-accepting parents of sexual minority children: Addressing causal and controllability attributions. *Professional Psychology: Research and Practice*. <https://doi.org/10.1037/a0031824>
- Sigre-Leirós, V., Carvalho, J., & Nobre, P. (2016). The Sexual Thoughts Questionnaire: Psychometric Evaluation of a Measure to Assess Self-Reported Thoughts During Exposure to Erotica Using Sexually Functional Individuals. *The Journal of Sexual Medicine*, *13*(5), 876–884. <https://doi.org/10.1016/j.jsxm.2016.02.162>
- Sit, V., & Ricciardelli, R. (2013). Constructing and Performing Sexualities in the Penitentiaries. *Criminal Justice Review*, *38*(3), 335–353. <https://doi.org/10.1177/0734016813491965>
- Srivastava, A., Winn, J., Senese, J., & Goldbach, J. T. (2022). Sexual Orientation Change among Adolescents and Young Adults: A Systematic Review. *Archives of Sexual Behavior*, *51*(7), 3361–3376. <https://doi.org/10.1007/s10508-022-02394-5>
- Storms, M. D. (1981). A theory of erotic orientation development. *Psychological Review*, *88*(4), 340–353. <https://doi.org/10.1037/0033-295X.88.4.340>
- Suschinsky, K. D., Dawson, S. J., & Chivers, M. L. (2016). Assessing the Relationship Between Sexual Concordance, Sexual Attractions, and Sexual Identity in Women. *Archives of Sexual Behavior*, *46*(1), 179–192. <https://doi.org/10.1007/s10508-016-0874-4>
- Swift-Gallant, A., & Breedlove, S. M. (2018). O Gay New World: Ramifications of the Maternal Immune Hypothesis. *Archives of Sexual Behavior*. <https://doi.org/10.1007/s10508-017-1118-y>
- Swift-Gallant, A., Di Rita, V., Major, C. A., Breedlove, C. J., Jordan, C. L., & Breedlove, S. M. (2021). Differences in digit ratios between gay men who prefer receptive versus insertive sex roles indicate a role for prenatal androgen. *Scientific Reports*, *11*(1). <https://doi.org/10.1038/s41598-021-87338-0>
- Tang, D., Gao, X., Cai, J., & Coyte, P. C. (2022). The Effect of China’s Two-Child Policy on the Child Sex Ratio: Evidence From Shanghai, China. *INQUIRY: The Journal of Health Care Organization, Provision, and Financing*, *59*, 004695802110679. <https://doi.org/10.1177/00469580211067933>
- Tang, D., Gao, X., Cai, J., & Coyte, P. C. (2022). The Effect of China’s Two-Child Policy on the Child Sex Ratio: Evidence From Shanghai, China. *INQUIRY: The Journal of*

- Health Care Organization, Provision, and Financing*, 59, 004695802110679.
<https://doi.org/10.1177/00469580211067933>
- Ter Kuile, M. M., Vigeveno, D., & Laan, E. (2007). Preliminary evidence that acute and chronic daily psychological stress affect sexual arousal in sexually functional women. *Behaviour Research and Therapy*, 45(9), 2078–2089.
<https://doi.org/10.1016/j.brat.2007.03.006>
- Valentova, J. V., Rieger, G., Havlíček, J., Linsenmeier, J. a. W., & Bailey, J. E. (2011). Judgments of Sexual Orientation and Masculinity–Femininity Based on Thin Slices of Behavior: A Cross-Cultural Comparison. *Archives of Sexual Behavior*, 40(6), 1145–1152. <https://doi.org/10.1007/s10508-011-9818-1>
- Velten, J., Margraf, J., Chivers, M. L., & Brotto, L. A. (2018). Effects of a Mindfulness Task on Women’s Sexual Response. *Journal of Sex Research*, 55(6), 747–757.
<https://doi.org/10.1080/00224499.2017.1408768>
- Ventriglio, A., & Bhugra, D. (2019). Sexuality in the 21st Century: Sexual Fluidity. *East Asian Archives of Psychiatry*, 29(1), 30–34. <https://doi.org/10.12809/eaap1736>
- Weinrich, J. D. (2014). On the Design, Development, and Testing of Sexual Identity Questions: A Discussion and Analysis of Kristen Miller and J. Michael Ryan’s Work for the National Health Interview Survey. *Journal of Bisexuality*, 14(3–4), 502–523.
<https://doi.org/10.1080/15299716.2014.952052>
- Widman, L., Choukas-Bradley, S., Noar, S. M., Nesi, J., & Garrett, K. P. (2016). Parent-Adolescent Sexual Communication and Adolescent Safer Sex Behavior. *JAMA Pediatrics*, 170(1), 52. <https://doi.org/10.1001/jamapediatrics.2015.2731>
- Yang, X., Attané, I., Li, S., & Yang, B. (2012). Same-Sex Sexual Behaviors Among Male Migrants in a Context of Male “Marriage Squeeze.” *American Journal of Men’s Health*, 6(6), 485–496. <https://doi.org/10.1177/1557988312453479>
- Yang, X., Attané, I., Li, S., & Yang, B. (2012). Same-Sex Sexual Behaviors Among Male Migrants in a Context of Male “Marriage Squeeze.” *American Journal of Men’s Health*, 6(6), 485–496. <https://doi.org/10.1177/1557988312453479>

Appendices

Questionnaire: Primary Sexual Experiences and Sexual Orientation

You are invited to participate in an anonymous research study conducted by Petr Šupa, Bachelor's student at Charles University in Prague, under the supervision of James Pfaus, PhD.

We are seeking to recruit participants over 18 years old.

The survey contains questions about first sexual experiences, sexual orientation, gender and sexual dysfunction, which some individuals may find distressing or disturbing.

Name of study: Primary Sexual Experiences and Sexual Orientation

Principal Investigator: Petr Šupa

Do you consent to participate?

Yes

No

1. I am attracted to... [multiple choice]

- women
- men
- masculine individuals
- feminine individuals
- androgynous individuals
- gender non-conforming individuals
- I don't experience any attraction towards other people.

2. I self-identify my sexual orientation as...

Gay / Homosexual

Lesbian / Homosexual

Straight / Heterosexual

Bisexual

Queer / Non-heterosexual

Pansexual

Asexual

Unsure / Questioning

Other (please specify) _____

3. How satisfied are you with your sexual orientation?

Very dissatisfied

Somewhat dissatisfied

Neither satisfied nor dissatisfied

Somewhat satisfied

Very satisfied

4. On the Kinsey scale, I would self-identify my sexual orientation as...

Exclusively heterosexual

Predominantly heterosexual, only incidentally homosexual

Predominantly heterosexual, but more than incidentally homosexual

Equally heterosexual and homosexual

Predominantly homosexual, but more than incidentally heterosexual

Predominantly homosexual, only incidentally heterosexual

Exclusively homosexual

Asexual

5. On the Kinsey scale, my sexual attraction towards people is...

Exclusively heterosexual

Predominantly heterosexual, only incidentally homosexual

Predominantly heterosexual, but more than incidentally homosexual

Equally heterosexual and homosexual

Predominantly homosexual, but more than incidentally heterosexual

Predominantly homosexual, only incidentally heterosexual

Exclusively homosexual

Asexual / I don't experience any sexual attraction.

6. On the Kinsey scale, my sexual behavior is...

Exclusively heterosexual

Predominantly heterosexual, only incidentally homosexual

Predominantly heterosexual, but more than incidentally homosexual

Equally heterosexual and homosexual

Predominantly homosexual, but more than incidentally heterosexual

Predominantly homosexual, only incidentally heterosexual

Exclusively homosexual

Asexual / I have never been sexually active.

7. On the Kinsey scale, the content of my sexual fantasies is...

Exclusively heterosexual

Predominantly heterosexual, only incidentally homosexual

Predominantly heterosexual, but more than incidentally homosexual

Equally heterosexual and homosexual

Predominantly homosexual, but more than incidentally heterosexual

Predominantly homosexual, only incidentally heterosexual

Exclusively homosexual

Asexual / I don't experience any sexual fantasies.

8. Have you ever experienced any sexual fantasies?

No

Yes

9. At what age did you experience your first sexual fantasies?

10. I had women in my first sexual fantasies.

Strongly disagree

Somewhat disagree

Neither agree nor disagree

Somewhat agree

Strongly agree

11. I had men in my first sexual fantasies.

Strongly disagree

Somewhat disagree

Neither agree nor disagree

Somewhat agree

Strongly agree

12. Have you ever masturbated (alone)?

No

Yes

13. At what age did you masturbate alone for the first time?

14. During my first solitary masturbation, I had consumed a content (e.g. porn, sexual fantasies) including sexually arousing women.

Strongly disagree

Somewhat disagree

Neither agree nor disagree

Somewhat agree

Strongly agree

15. During my first solitary masturbation, I had consumed a content (e.g. porn, sexual fantasies) including sexually arousing men.

Strongly disagree

Somewhat disagree

Neither agree nor disagree

Somewhat agree

Strongly agree

16. Have you ever experienced an orgasm during solitary masturbation?

No

Yes

17. How satisfying it was when you reached your first orgasm during solitary masturbation?

Very dissatisfying

Somewhat dissatisfying

Neither satisfying nor dissatisfying

Somewhat satisfying

Very satisfying

18. Did you reach this orgasm when you masturbated alone for the first time?

No

Yes

19. How well do the following words describe your first orgasm during solitary masturbation?

	Does not describe it at all (0)	(1)	(2)	(3)	(4)	Describes it perfectly (5)
Elated						
Flooding						
Pulsating						
Satisfying						
Uncontrolled						
Blissful						
Loving						
Quivering						
Shooting						
Euphoric						
Flushing						
Tender						
Close						
Exciting						
Fulfilling						
Peaceful						
Relaxing						
Soothing						

Throbbing

Exploding

Pleasurable

Rising

Spreading

Trembling

Wild

20. Have you ever had any kind of sex with a partner? [Sex here is defined as sexual experience with vaginal/anal/other intercourse, oral stimulation, and/or manual stimulation from a sexual partner.]

No

Yes

21. At what age did you experience your first partnered sex?

22. What your first partnered sex involved? [multiple choice]

- Intercourse (vaginal/anal/other)
- Oral stimulation from the partner
- Manual stimulation from a partner
- Manual stimulation from myself (with a partner present)

23. What was the gender of the person with whom you had your first partnered sex?

Woman

Man

Non-binary

Agender

Other _____

24. Was your first sexual partner someone whom you were in a (committed) relationship with?

No

Yes

25. Did you feel in control of the situation during your first partnered sex?

Definitely not

Probably not

Might or might not

Probably yes

Definitely yes

26. How comfortable did you feel during your first partnered sex?

Very uncomfortable

Somewhat uncomfortable

Neither comfortable nor uncomfortable

Somewhat comfortable

Very comfortable

27. How satisfied were you with your first partnered sex?

Very dissatisfied

Somewhat dissatisfied

Neither satisfied nor dissatisfied

Somewhat satisfied

Very satisfied

28. Have you ever experienced an orgasm during partnered sex?

No

Yes

29. Did you experience orgasm during your first partnered sex?

No

Yes

30. To the best of your memory, how did you reach your first orgasm during partnered sex? [multiple choice]

Through intercourse (vaginal/anal/other)

Through oral stimulation from the partner

Through manual stimulation from partner

Through manual stimulation from myself (with a partner present)

31. What was the gender of the sexual partner with whom you had your first orgasm?

Woman

Man

Non-binary

Agender

Other

32. How satisfying was your first orgasm during partnered sex?

Very dissatisfying

Somewhat dissatisfying

Neither satisfying nor dissatisfying

Somewhat satisfying

Very satisfying

33. How well do the following words describe your first orgasm during partnered sex?

	Does not describe it at all (0)	(1)	(2)	(3)	(4)	Describes it perfectly (5)
Elated						
Flooding						
Pulsating						
Satisfying						
Uncontrolled						
Blissful						
Loving						
Quivering						
Shooting						
Euphoric						
Flushing						
Tender						
Close						
Exciting						
Fulfilling						
Peaceful						
Relaxing						
Soothing						

Throbbing

Exploding

Pleasurable

Rising

Spreading

Trembling

Wild

34. My first sexual experience(s) taught me something new about my sexual orientation.

Strongly disagree

Somewhat disagree

Neither agree nor disagree

Somewhat agree

Strongly agree

35. Which of the following first sexual experience(s) taught you something new about your sexual orientation? [multiple choice]

- Solitary masturbation
- Intercourse (vaginal/anal/other)
- Oral stimulation from the partner
- Manual stimulation from a partner
- Manual stimulation from myself (with a partner present)
- None of the above

36. My first sexual experience(s) made me realize what my sexual orientation is.

Strongly disagree

Somewhat disagree

Neither agree nor disagree

Somewhat agree

Strongly agree

37. Which of the following first sexual experience(s) made you realize what your sexual orientation is? [multiple choice]

Solitary masturbation

Intercourse (vaginal/anal/other)

Oral stimulation from the partner

Manual stimulation from a partner

Manual stimulation from myself (with a partner present)

None of the above

38. I had a clear sense of what my sexual orientation was before any of my first sexual experience(s).

Definitely not

Probably not

Might or might not

Probably yes

Definitely yes

39. Do you have erectile/arousal problems?

- Never
- Sometimes
- About half the time
- Most of the time
- Always

40. What is your sex? [Sex here refers to biological anatomical characteristics that a person is born with. Sex is assigned at birth.]

- Male
- Female
- Intersex
- Other _____

41. What is your gender? [Gender is how you identify yourself.]

- Woman
- Man
- Non-binary
- Agender
- Other _____

42. What is your employment status?

- Employed full time
- Employed part time
- Unemployed looking for work
- Unemployed not looking for work
- Retired
- Student

Disabled

43. What is the highest degree or level of school you have completed? [If currently enrolled, highest degree received.]

Less than high school

High school graduate

Bachelor's degree

Master's degree

Doctorate

44. What is your age?

45. Which racial or ethnic background best describes you?

People of African origin

People of Asian origin

People of European origin

Indigenous people (Native Americans, Aboriginal People etc.)

People of Middle Eastern origin

People of Hispanic or Latinx ethnicity

Multiple ethnicity/ Other (please specify)
