Romanian Journal of Applied Psychology
2025, Volume 27, Issue 1, 12-27

Official journal of West University of Timisoara &
The Euroregional Center for Applied Psychology
DOI: 10.2478/rjap-2025-0003

Is sexual orientation a categorical or spectrum dimension? An exploratory study of different sexual orientation measurements and scales

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Received 12.02.2025; Received revised 14.05.2025; Accepted 02.07.2025;
Available online 15.08.2025

This study explored different sexual orientation measurement scales to determine how participants' responses differ between them. 200 participants were recruited using social media. Sexual orientation was measured indirectly by a viewing time task (milliseconds), and directly by completing seven self-report scales. The main research question asked was: Is sexual orientation a categorical or spectrum dimension? Two hypotheses were proposed. H1: The method used to assess sexual orientation will influence participants' self-identification. H2: Higher scores of sexual orientation uncertainty will be associated with greater indicators of sexual orientation fluidity. Both were supported. Fluidity was measured based on label changes across self-identification sexual orientation questionnaires, self-scores of uncertainty levels of sexual orientation, and reported change over the years of sexual orientation identification. The objective viewing time measure predicted self-identification of sexual orientation. The sexual orientation continuum was supported by the larger sexual self-identification scales; however, age was not a factor influencing sexual orientation fluidity in this study. Research on sexual orientation should focus on raising awareness of the continuum aspect of sexual orientation and guide practitioners and professionals in assisting those identifying outside the main sexual orientation labels. Ultimately, self-reported sexual orientation should be treated as accurate since it is the participant's own self-identity, however, these measures should be inclusive, clear, and sensitive enough to allow for a range of meaningful choices.

Keywords: sexual orientation measurement; sexual orientation fluidity; self-identification; continuum model of sexual orientation; indirect measurement of sexual orientation.

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Introduction

The concept of sexual orientation is an acknowledged aspect of the human condition that is present on each continent, yet it is difficult to undertake an objective historical account on the matter only by applying contemporary labels that define sexual orientation (Parkinson et al., 2013). Even the most widely used terms, "heterosexual" and "homosexual", were first introduced in 1868 (Katz, 2007). The attention is often drawn to "homosexuality" and its medicalisation ideology; however, that is not the full picture. The term "heterosexual" was also subject to cultural changes. For example, the 1901 Dorland's Medical Dictionary defined heterosexuality as an "abnormal or perverted appetite toward the opposite sex" while Merriam Webster's dictionary in 1923 defined it as "morbid sexual passion for one of the opposite sex". The definition changed again in 1934 to "manifestation of sexual passion for one of the opposite sex; normal sexuality" (Ambrosino, 2021). Heterosexual bias in language can have negative consequences, and the word "homosexual" has negative stereotypes attributed to it (APA, 1991). Gay activism has a complex history of reclaiming both terminology and symbols (Campbell, 2019). At present the word gay carries less stigma and is the preferred term by the Lesbian Gays Bisexuals Transgenders Queers + community (GLAAD, n.d.). The term usually refers to men engaging in same-sex relationships rather than same-sex relationships in general, however, the current study will refer to all same-sex phenomena as "gay". It is undeniable that social constructs of sexual identity did come into existence at specific points in human history and that they carry different meanings across cultures.

Research on sexual orientation covers a multitude of factors. Studies examining the development of sexual orientation usually apply the nature vs nurture stance or categories vs continuum (Bailey et al., 2016; Savin-Williamsm, 2016). Prevalence studies are influenced by researcher's pro or against LGBTQ+ attitudes and geo-socio-political factors: religion, urban vs rural, liberal vs totalitarian (Pew Research Center, 2020). The manifestation and identification of sexual orientation is focused on the relationship between identity and behaviour, and the use of various measures or scales (Korchmaros & Stevens, 2013; Sell, 1997; Talley & Stevens, 2015). The way we define sexual orientation comes with important implications for research. Definitions generally either focus on one component or combine several: identity, behaviour, attraction, preferences, desire/fantasy, and physiological arousal (Sell, 1997). Because of this, research on sexual orientation should clearly state what aspect of sexual orientation is being researched (Sell, 1997). Predominantly researchers use "heterosexual", "homosexual" and "bisexual" when referring to sexual orientation (van Anders, 2015). The way we classify sexual orientations is still subject to debate and controversies around the way we recognise sexual orientation as categorical or based on a continuum are still ongoing (Gangestad et al., 2000; Haslam, 1997; Savin-Williams, 2014).

There are different ways of measuring sexual orientation and they should be guided by the researched aspect of sexual orientation phenomena. Self-report measures are the most employed method, yet they might not capture some sexual orientation aspects such as sexual behaviour, fantasy, desire, etc. Other measures include genital arousal (Chivers et al.,2004), pupil-dilatation (Rieger & Savin-Williams, 2012), viewing-time (Israel & Strassberg, 2009; Lippa, 2012, 2013; Quinsey et al., 1996), choice reaction time (Santtila et al., 2009), implicit attitudes (Snowden et al., 2007), and neuroimaging (Diamond et al., 2012). In general, studies that employ different scales report strong correlations between measures with relatively few exceptions (Rönspies et al., 2015). Definitions are important not only for the aspect of sexual orientation being measured but also for the labels used to describe it. For example, when using penile plethysmography, bisexual arousal patterns do not automatically imply equal levels of arousal to male and female stimuli (Cerny & Janssen, 2011; Rieger et al., 2005). Self-report measures are the most commonly used in research and lay contexts. However, when used alone, they tend to measure sexual orientation identity rather than sexual orientation as a whole, which may or may not capture other aspects. In addition to research, there are wider implications on health-related issues (Gonzales & Henning-Smith, 2017), approaches to healthcare (Wolff et al., 2016), and legal matters (Marcus, 2018). Depression, mood disorders and substance abuse have the highest prevalence rates among LGBTQ+ people (Cai et al., 2024; Wittgens et al., 2022). Consequently, being LGBTQ+ is associated with an increased risk of dying from suicide (WHO, 2021). Legal aspects concerning sexual orientation that impose limitations have the negative effect of inducing and perpetuating stigma (e.g., bans on blood donation or serving in the military). When employing self-measurement scales the use of sexual orientation labels might be problematic for two reasons; people might conceal or be confused about their sexual orientation. Incongruence between sexual behaviour and sexual identity is often the main reason why confusion about one's sexual orientation occurs while same-sex attraction is also deemed as indicator of someone's "true" sexual orientation identity (Yarhouse, 2001). Social and cultural influences such as political attitudes, religious beliefs and tolerance are the main factors why someone might experience confusion and/or want to conceal their sexual orientation (Pachankis & Bränström, 2018).

Sexual identity labels are rooted in the works of 19th century physicians Richard von Krafft-Ebing, Magnus Hirschfeld and Henry Havelock. The classification of sexuality changed from a behaviour stance, e.g., sodomy, to an identity, e.g., homosexual. The predominant view was that sexuality was based on the individual biological make-up (Katz, 1996; Phillips & Reay, 2013). Sigmund Freud was the first to propose that human sexuality is developed rather than innate and acknowledged a spectrum of variations (Van Haute & Westerink, 2016). However, it was Alfred Kinsey and his colleagues who methodically challenged a categorical idea of sexual orientation and instead proposed a research-informed continuum classification (Kinsey et al., 1948; Kinsey et al., 1953). Sociologists John Gagnon and William Simon (1986) were the first to view sexuality as a cultural by-product. Their sexual orientation script combines sociocultural development and individual development theories and proposes that sexual behaviour operates on three separate levels: cultural scenarios, interpersonal scripts and intrapsychic scripts. From a psychological perspective, the sexual configuration theory is a biopsychosocial theory that is testable and empirically grounded (van Anders, 2015). The framework accounts for diverse partnered sexualities that are distinctive from solitary sexualities. It strengthens sexuality as a multidimensional, dynamic and fluid phenomena. Despite newer conceptualisations of sexuality, psychological journal articles continue to assume "heterosexuality" as the norm and explain any differences as a deviation from the norm (Hegarty & Pratto, 2001; Hegarty & Massey, 2006). This leads to fragmented identities and perpetuates harmful socio-political outcomes (Johnson, 2007).

Understanding the historical aspect of sexual orientation phenomena and the development of the terminologies associated with it is essential for guiding contemporary research. Their importance is paramount and should guide our current understanding of the matter, yet their study sits outside the remit of this paper. However, the medicalisation ideology behind sexual orientation continues to affect both research and practice. The inclusion of "homosexuality" as a sociopathic personality disorder in the first edition of the DSM (1952) was mainly based on a psychoanalytic approach to pathologising gay males (Taylor, 1964). "Homosexuality" remained a diagnosis until the 6th printing of the DSM-III in 1974 (Johnson & Edsall, 2005). The focus then changed from distress around being gay to the desire to be gay; this permitted and legitimised dangerous practices such as conversion therapies (Drescher, 2015). Despite numerous calls for complete declassification and research showing the detrimental impact of conversion therapies on LGBT+ individuals, the slow change allowed for such harmful practices to perpetuate and strengthen their legitimacy and legal status (Wyatt-Nichol, 2014). Progress within the ICD classification was even slower despite comprehensive research proposals to declassify disease categories that are based on sexual orientation (Cochran et al., 2014) and gender (Reed et al., 2016). Changes did not take place until the 11th version and came into effect on 1st January 2022. Even with the de-pathologising of sexual orientation, conversion therapy remains legal in numerous countries (Robles et al., 2021). Conversion therapy remains a harmful practice, and evidence for its efficacy is rooted in

discriminatory research and practice. Even in the countries where gay rights are ensured by law, conversion therapy allows for such rights to be breached, often under the false premises of rights themselves (Haldeman, 2002). A literature review that looked at the empirical evidence of conversion therapy reported no benefit but instead pointed out at the ethical implications of the practice (Cramer et al., 2008). Despite being unethical and harmful, policy change continues to be slow.

Largely, sexual orientation is still perceived as categorical despite research attempts to classify human sexuality as fluid and therefore subject to change over time; current views define sexuality as stable and mainly bimodal: heterosexual and homosexual (Bailey et al., 2016). This leaves bisexuality and other sexual orientation dimensions poorly understood. In a landmark literature review, Bailey et al. (2016) provide a comprehensive account of sexual orientation research and its impact on society, however, the paper does not promote the idea of a sexual-orientation continuum and explains variations in non-heterosexual prevalence estimates between studies as a result of systematic and random errors or research biases. Savin-Williams (2016) response to Bailey et al.'s (2016) paper presents findings from research that supports a continuum take on sexual orientation for both women and men. One cross-cultural study with 17,785 participants from 47 countries showed results supporting Kinsey's hypothesis that sexual orientation is based on a continuum (Epstein et al., 2012). Polls that employ the Kinsey scale conducted in America and Britain by YouGov (2015, 2017, 2019) show that younger people think of sexuality more as a spectrum and are more likely to place themselves within the two ends of the scale compared to older people. Age and political beliefs are also indicators of favouring viewpoints of sexual orientation as a continuum or as a binary choice; younger and more liberal people adhere to the former. Those who place themself even one point away from 'completely heterosexual' show higher rates of accepting hypothetical scenarios of same-sex attraction, sexual experiences, and relationships; the same trend is observed with younger age (YouGov, 2015; 2017; 2019).

Categorical statements like "Sexual orientation is stable and bimodal. If bisexuality exists it is rare, especially in males" (Wilson & Rahman, 2008) perpetuate in the literature despite ongoing opposing evidence (Weinrich & Klein, 2002). This is a form of bisexual erasure. When assessment tools are not based on dichotomous categories they fail to enclose or poorly define critical aspects of sexual orientation such as eroticism, subjectivity, preferences, behaviour, feelings, or desires. Most studies on prevalence that use self-identification via sociocultural labels might not be sensitive or comprehensive enough to cover all sexual-identity aspects. However, some researchers believe that extended sexual orientation labels can in fact be misleading and obscure the ordinary and simple aspect of sexual orientation phenomena (Epstein et al., 2012). Yet, research shows that when a single-indicator measure is used for sexual orientation, 10%-22% of adolescents and young adults cannot self-identify; moreover, self-identified orientation is often incongruent with preference and behaviour (Korchmaros & Stevens, 2013). Due to the false binary understanding of sexuality, the erasure of bisexuality as a sexual orientation shaped the research, socio-political agenda and lived experience of those identifying as bisexual. Not only are they subject to biphobia, but they also face double discrimination (from straight and non-straight peers) and have higher rates of mental health problems (Taylor, 2018). Culture seems to play an important role in defining attitudes towards certain sexual orientation minorities, and gender often plays an important role. For example, studies report the most negative attitudes towards bisexual men than any other category (Helms & Waters, 2016; Herek, 2002).
LGBTQ+ peers face discrimination and adverse experiences all throughout their lives. Victimisation experiences include violence, physical assaults and isolation (Katz-Wise & Hyde, 2012). Research reports LGBTQ+ peers of having a higher risk of mental disorders, suicidal ideation, substance misuse, and self-harm (King et al., 2008). A meta-analysis looking at non-suicidal self-injury reported that individuals belonging to a sexual minority are at significantly greater risk of engaging in such practices compared to straight people (Batejan et al., 2014). Policies and health initiatives that concern the wellbeing of LGBTQ+ peers should, however be aware of differences among sexual minorities. Differences can also be observed across age and gender and can be different across time and location.

Discrimination and victimisation against LGBTQ+ people can occur in a wide range of circumstances. As school students, they have higher chances of being a victim of violence or bullying (Myers et al., 2020). When seeking employment, they have lower chances of securing a job (Flage, 2019) while in employment, they tend to earn less (Drydakis, 2021). Research shows that only when an inclusive work environment is achieved, LGBT people are more likely to disclose their sexuality (Webster et al., 2017). Being part of a sexual minority group also increases one's chances of being sexually assaulted in the military. The persistent stigma and a culture of fear of being labelled as gay are used by perpetrators as power and control tactics. Because of this, male victims often resort to not reporting sexual assault (Shusta-Hochberg, 2009). Research identified two sexual harassment myths that relate specifically to gays: 1 "If a man was sexually assaulted, then he is a homosexual" and 2 "If a man was sexually assaulted, then he portrayed himself as gay" (Castro et al., 2015). One study showed that homophobia towards lesbians and gays is associated with greater rape myth acceptance for both men and women (Aosved & Long, 2006). Elders who are part of a sexual or gender minority also experience additional barriers when dealing with or expecting grief (Shepherd et al., 2021). The provision of support and services often fails to accommodate or even reach such individuals, allowing for additional negative consequences such as social isolation and a low sense of belonging. In long-term care, elderly LGBTQ people face and fear discrimination from both staff and other service users (Caceres et al., 2019).

Sexual orientation is an important aspect of someone's life, and alongside its lay and administrative use, it is commonly treated as a demographic variable in research (Sell, 1997). Despite earlier calls, researchers do not always produce conceptual definitions of what it is they are measuring about sexual orientation. Only by clearly defining what aspect of sexual orientation research is being investigated, the appropriate sexual orientation measure can then be applied. Two components are often investigated, psychological and behavioural, however, this can occur jointly or singular. To assess and measure them jointly, different scales were proposed, such as Klein's Sexual Grid or Sell's Assessment of Sexual Orientation. They provide multi-variable accounts of sexual attraction, behaviour, fantasies, emotional preferences, social preferences, etc. The Sell Assessment considered "homosexual" and "heterosexuality" separately; this has the advantage of eliminating the trade-off cost. When looking at straight and

gay as separate dimensions, one study reported that only 6.2% of responders had a perfect straight score and only 1.2% a perfect gay score (Epstein et al., 2012). One study that investigated sexual fantasies on two scales for same-sex and opposite-sex showed that bisexuals were likely to report fantasy patterns like both straight and gay participants (Storms, 1980). For administrative forms, multi-dimensional scores are impractical. They can be prone to biases, time-consuming and intrusive (Sell, 1997). When looking from a healthcare perspective, research examining risky sexual behaviours should focus more on sexual behaviour and not sexual orientation per se, while healthcare practitioners dealing with trauma, abuse, discrimination, or victims of conversion therapy should act holistically and approach sexual orientation as an identity with social implications (Beckstead, 2012). Self-report measures are the most employed in research and lay operations, however, they should be inclusive enough to allow rich and meaningful variation, yet appropriately labelled and defined. When looking at sexual orientation as an identity, self-report should be treated as accurate since it is the participants' own self-selected identity and belief, however, they should allow for choice without being confusing.

Current study

The current study aims to explore how participants respond to different measurement tools assessing sexual orientation. It will also incorporate a non-self-report method—viewing time spent looking at images of male versus female models. The central research question is: Is sexual orientation best conceptualised as a categorical or spectrum-based dimension? To investigate this, two hypotheses are proposed: H1: The method used to assess sexual orientation will influence participants' self-identification. H2: Higher scores of sexual orientation uncertainty will be associated with greater indicators of sexual orientation fluidity. These hypotheses are grounded in the assumption that different tools capture distinct aspects of sexual orientation, and that individuals with less certainty about their orientation may express more variation over time or across measures.

Sexual orientation will be assessed using one non-self-report measure (viewing time in milliseconds) and multiple self-report measures: four self-identification questionnaires, a one-dimensional visual analogue scale, a two-dimensional visual analogue scale, and a self-identification orientation grid.

Sexual orientation fluidity is operationalised as observable shifts in reported identity labels or as indicated by the participants, while uncertainty refers to the degree of confidence individuals report in their current orientation, as measured by both quantitative scales and categorical responses. Sexual orientation fluidity will be evaluated using four indicators:

1. Changes in self-labels across questionnaires
2. Incongruent responses on the sexual orientation grid
3. Self-reported uncertainty scores
4. Self-reported sexual orientation changes

The non-self-report measure is expected to predict participants' self-identified orientation. Additionally, the larger and more detailed self-report tools are expected to provide stronger support for a spectrum-based model of sexual orientation. Age is also predicted to be a significant factor influencing fluidity. The novelty of this study lies in its systematic comparison of multiple sexual orientation assessment tools, combining traditional and alternative methods. Thus, it introduces a novel methodological framework by integrating multiple dimensions of orientation and temporal patterns within a single analytic model, extending beyond prior research that has typically focused on static or unidimensional measures. The use of diverse self-report tools - including four questionnaires, visual analogue scales, and a grid - was selected to capture distinct facets of orientation (e.g., attraction, identity, and certainty), allowing for a more nuanced and multidimensional understanding of sexual orientation.

Method

Participants

200 participants took part in this study. Volunteer sampling was used and recruited via social media. Participants needed to be at least 16 years of age. There were no other exclusion criteria for recruitment. In total, 198 participants were included in the analysis. One participant was excluded due to insufficient data, and 1 participant was excluded due to not meeting the age inclusion criteria. The following demographics were collected: gender, age, nationality, and education. The average age was 29 (SD = 8.24, Min = 16, Max = 58).

Table 1. *Frequency Table for Participant's Gender and Education*

Variable	*n*	%
Gender		
Female	108	54.55
Male	82	41.41
Non-Binary	7	3.54
Transwoman	1	0.51
Education		
Highschool / College	31	15.66
University (Bachelor's degree)	100	50.51
Postgraduate studies (e.g. Master; PhD; Dc)	67	33.84

Note. Due to rounding errors, percentages may not equal 100%.

Materials and Apparatus

Participant Information Sheet and Consent Form

Participants received the information sheet and consent form (see Supplemental Material A).

Visual Task

All participants received the same task instructions at the beginning (see Supplemental Material B). An instruction prompt to look at each image and click next when they are ready to move to the next image was displayed. The task contained 30 images selected from the top-ranking models on models.com as of September 2021. The "next" button was centred beneath each image. The images consisted of 15 women and 15 men. Background distractors and visible branding were avoided. The models' ethnicities and levels of clothing were balanced across images. A random order was presented, and all participants received notice (see Supplemental Material B) at the end of the task.
The following questionnaires are available in Supplemental Material C.

Standard Sexual Orientation Questionnaire

Participants were instructed to select the label that best describes their current sexual orientation. There were 4 options: straight, bisexual, gay, and other.

Kinsey Scale

A Kinsey-inspired self-report scale was used (Kinsey et al., 1948). Participants were instructed to select the label that best described their current sexual orientation. There were 8 options: asexual, straight, mostly straight, bisexual, straight, bisexual gay, mostly gay, and gay.

Expanded Kinsey Scale

An adapted, expanded version of the Kinsey Scale (Savin-Williams, 2014) was used. Participants were instructed to select the label that best described their current sexual orientation. There were 10 options: asexual, exclusively straight, straight, mostly straight, bisexual straight, bisexual, bisexual gay, mostly gay, gay, and exclusively gay.

Klein Grid

An adapted version of Klein's Sexual Orientation Grid (2013) was used. Only the self-identification variable was explored. Participants were instructed to think of their past, present, and ideal sexual orientation and choose the label for each dimension that best described them. For each dimension, there were 8 options: asexual, straight, mostly straight, bisexual straight, bisexual, bisexual gay, mostly gay, and gay.

Visual Analogue Scale

Participants were instructed to use an unmarked slider (1-100) to indicate their sexual orientation from "Straight" marked on the left side to "Gay" marked on the right side. For the starting point, the slider was positioned in the middle (50). A tick box for "Asexual" was present below the slider.

Two Dimensions Visual Analogue Scale

Based on Shively and DeCecco (1977) a two-dimensional visual analogue scale was used. Participants were instructed to mark themselves on two marked sliders from 0 to 100 as to how much they identified with the two labels: straight and gay. The starting point for each scale was 0.

Novel Labels Questionnaire

Labels from Epstein et al. (2012) and dating application Tinder (2021) were added to this multiple-answer question. Participants were instructed to select all labels that best described their current sexual orientation. There were 17 options: asexual, demisexual, pansexual, fluid, queer, questioning, curious, exclusively straight, straight, mostly straight, bisexual, bi-curious, bisexual gay, mostly gay, gay, exclusively gay, and other. For the "other" option participants were asked to specify.

Uncertainty Questionnaire

Based on Epstein et al. (2012) criterion questions participants were asked to indicate over the years how much uncertainty they felt about their sexual orientation. A 10-point scale was used where 1 was the least uncertain and 10 was the most uncertain.

Sexual Orientation Change Questionnaire

Based on Epstein et al. (2012) criterion questions participants were asked if over the years their sexual orientation changed. The answer options were "yes" and "no".

Demographic Questionnaire

Participants were asked about their current gender identity, age (in years), nationality, and their current highest level of study, including ongoing studies (see Supplemental Material D).

Participant Debrief Form

Participants received a debrief form (see Supplemental Material E).

Procedure

Ethical approval was obtained from "MASKED FOR REVIEW" for this study ("MASKED FOR REVIEW"). The study was preregistered on the Open Science Framework ("MASKED FOR REVIEW"). The experiment was conducted online using Gorilla. After completing the Consent Form, participants were instructed to look at a series of pictures. The visual task instructions were given to participants at the beginning of the task. The order of all 30 pictures was randomised. Participants were then randomly split into two equal groups; one group received the 9 questions in the following order: 1 - Standard Sexual Orientation Questionnaire; 2 - Kinsey Scale; 3 - Expanded Kinsey Scale; 4 - Klein Grid; 5 - Visual Analogue Scale; 6 - Two Dimensions Scale; 7 - Novel labels Questionnaire; 8 - Uncertainty Questionnaire; 9 - Sexual Orientation Change

Questionnaire, while the other group received a reverse-order condition. After completion, all participants were asked for their demographics. At the end, an online debrief form was available along with the opportunity to either submit their data or withdraw from the study. For the viewing task, any response that is 3 standard deviations over the participant mean will be excluded. This threshold was selected to reduce the influence of inattentive or distracted responding, which can distort results in reaction-time-based paradigms (Ratcliff, 1993). Any participants who will indicate completely opposing answers on different scales will also be excluded, e.g., someone identifying as "straight" and "gay". Such conflicting answers may reflect misunderstandings of the scales, careless responding, or disengagement, all of which can compromise data reliability (Meade & Craig, 2012). This criterion was applied conservatively and only in clear cases of mutual exclusivity across responses.

Statistical Analysis

Descriptive statistics were used to summarise participant responses across the Standard Sexual Orientation Questionnaire, Kinsey Scale, and Expanded Kinsey Scale. Mixed-model analysis of variance (ANOVA) was employed to examine differences in viewing times for visual stimuli based on participant gender and sexual orientation. The Standard Sexual Orientation Questionnaire was chosen because it provides a simple, widely recognised, and categorical self-identification of sexual orientation which is particularly suited for grouping participants in statistical comparisons of visual attention patterns. While more nuanced measures such as the Kinsey Scale or Expanded Kinsey Scale capture the complexity and continuum of sexual orientation, the Standard Questionnaire allows for clearer between-group contrasts in the context of categorical analysis, such as mixed-model ANOVA. This decision was made to balance interpretability with methodological rigour and to ensure that observed differences in viewing times could be directly linked to broadly understood sexual orientation categories. Levene's test and Q-Q plots were used to assess parametric assumptions. Outlier detection and removal were performed for extreme viewing time values. Binary logistic regression analysis was conducted to determine the relationship of Age, Multiple Labels, and Uncertainty Questionnaire scores on the likelihood of self-reported sexual orientation change, with Variance Inflation Factors (VIFs) computed to assess multicollinearity. Additionally, point biserial correlation analyses were performed to explore relationships between Self-Reported Sexual Orientation Change, Label Change, Congruence, and Uncertainty Questionnaire scores. Effect sizes were interpreted based on Cohen's (1988) guidelines for correlation and regression models.

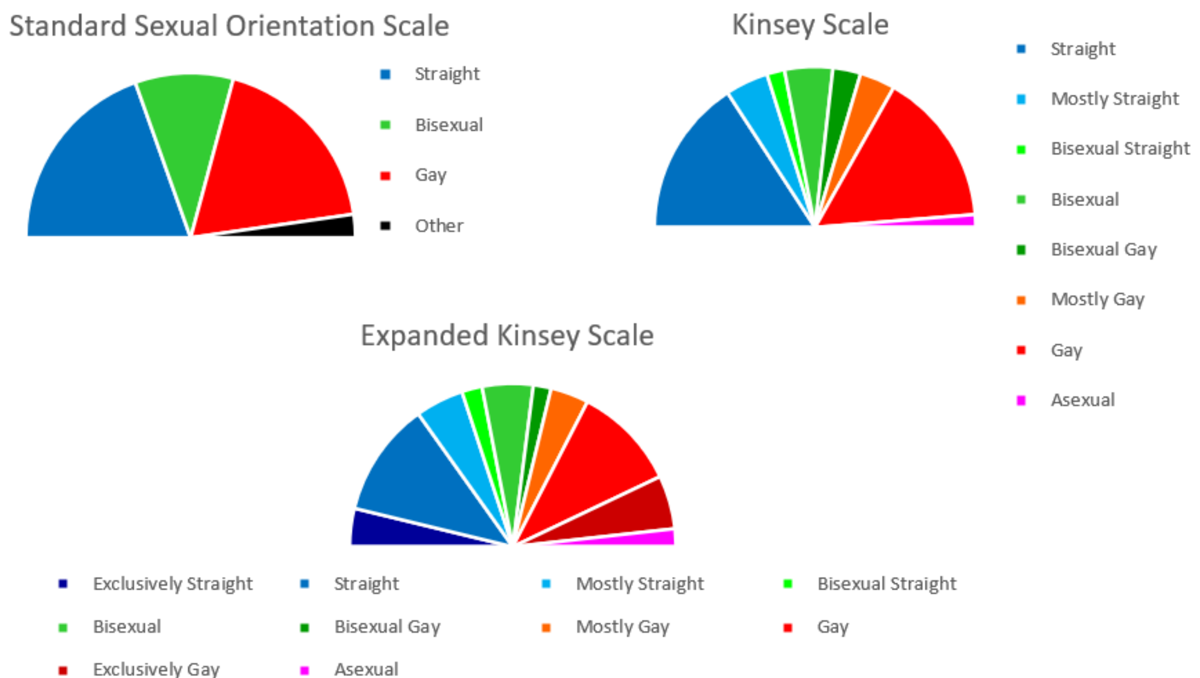
Results

Sexual Orientation Scale

Frequencies and percentages were calculated for the Standard Sexual Orientation Questionnaire, the Kinsey Scale, and the Expanded Kinsey Scale (descriptive data in Table 2). The most frequently observed category across all three scales was 'Straight' (n = 77, 39.09%), followed by 'Gay' (n = 62, 31.63%), and 'Bisexual' (n = 45, 22.73%). Almost half of the participants (n = 97, 48.99%) changed labels when presented with the extended label option scales. The distribution for all labels, excluding 'Straight,' 'Bisexual,' and 'Gay,' on the Expanded Kinsey Scale accounted for 36.87% of all responses, compared to only 4.55% who chose 'Other' on the Standard Sexual Orientation Scale. A visual representation of the sexual orientation labels across the three scales is shown in Figure 1.

Figure 1

Pie Charts of Sexual Orientation Questionnaire (SOQ), Kinsey Scale (KS), Expanded Kinsey Scale (EKS)



When given the option of choosing multiple sexual orientation labels, a total of 393 labels were selected, with a mean of 1.93 labels per participant (SD = 1.30, Min = 1, Max = 7) (see Table 3). The most selected label was Gay (56), followed by Straight (48), Queer (41), Bisexual (35), Exclusively Gay (28), Curious (23), Pansexual (23), Exclusively Straight (20), Mostly Gay (18), Mostly Straight (18), Questioning (17), Bisexual Gay (16), Demisexual (10), Asexual (9), Fluid (8), Lesbian (2), Bisexual but Homoerotic (1).

Summary statistics were calculated for the three analogue scales: Straight-Gay slider, Straight slider and Gay slider (see Table 4). For the Straight-Gay slider, 5 data points were removed as participants ticked the "Asexual" box and did not engage with the slider.

When presented with the two analogue scales divided by Straight and Gay 63 (31.82%) participants underreported a score below the maximum total of 100, while 23 (11.62%) overreported.

Table 2. *Sexual Orientation Labels across the Three Sexual Orientation Scales*

Sexual Orientation Label	*n*	%
Standard Sexual Orientation Scale		
Straight	77	38.89
Gay	73	36.87
Bisexual	38	19.19
Other	9	4.55
n/a	1	0.51
Kinsey Scale		
Straight	62	31.31
Mostly Straight	17	8.59
Bisexual Straight	7	3.54
Bisexual	19	9.60
Bisexual Gay	11	5.56
Mostly Gay	14	7.07
Gay	61	30.81
Asexual	5	2.53
n/a	2	1.01
Expanded Kinsey Scale		
Exclusively Straight	15	7.58
Straight	45	22.73
Mostly Straight	19	9.60
Bisexual Straight	8	4.04
Bisexual	20	10.10
Bisexual Gay	7	3.54
Mostly Gay	15	7.58
Gay	41	20.71
Exclusively Gay	21	10.61
Asexual	7	3.54

Note. Due to rounding errors, percentages may not equal 100%.

Table 3. *Summary Statistics Table for Multiple Label Choice*

Variable	*n*	*M*	*SD*	SE_M	Min	Max	Skewness	Kurtosis
Multiple labels	198	1.93	1.30	0.09	1.00	7.00	1.622	2.45

Visual Task

To reduce the impact of inattentive or distracted responses, participant responses with viewing times more than 3 standard deviations above the participant's mean, as well as those under 100 ms were excluded. Parametric assumptions were checked before considering a mixed model analysis of variance (ANOVA) to determine whether significant differences exist among women and men models viewing time between the levels of gender and sexual orientation. Levene's test was conducted for women models ($F(11, 185) = 0.64$, $p = .792$) and men models ($F(11, 185) = 0.77$, $p = .669$), with no significant violations of variance homogeneity. Q-Q Plots revealed a modest right-skewed distribution. There were 4 observations detected as outliers. Given the study design and the robustness of the mixed ANOVA, this statistical approach was deemed appropriate

(Blanca et al., 2017). A mixed ANOVA was conducted to determine whether significant differences existed in viewing times between women and men models, with participant Gender (Male, Female) and Sexual Orientation (Straight, Gay, Bisexual) as the between-subjects factors. The 2 (Stimulus: Women, Men) × 2 (Participant Gender: Male, Female) × 3 (Sexual Orientation: Straight, Gay, Bisexual) mixed ANOVA showed a significant three-way interaction effect of stimulus, gender, and sexual orientation, $F(1, 184) = 6.18$, $p < .003$, $\eta p^2 = .033$. The interaction effect of stimulus and gender was also significant, $F(1, 184) = 8.10$, $p < .003$, $\eta p^2 = .042$. There were no other significant effects (all p's > .56). Non-binary participants (n = 7) and Transwomen (n = 1) were excluded from the analysis due to the small sample size. Participants who selected "Other" as a sexual orientation (n = 8) were recoded as "bisexual" due to the small sample size for that category.

Table 4. *Summary Statistics Table for Sexual Orientation Analogue Scales by Standard Sexual Orientation Questionnaire*

Variable	*n*	*M*	*SD*	SE_M	Min	Max	Skewness	Kurtosis
Straight – Gay slider								
Straight	76	9.64	14.82	1.70	1.00	58.00	2.09	3.38
Bisexual	38	54.97	18.00	2.92	17.00	91.00	-0.05	-0.53
Gay	73	94.71	9.30	1.09	41.00	100.00	-3.13	13.70
Other	5	68.40	27.92	12.49	21.00	95.00	-1.11	-0.14
Straight slider								
Straight	77	92.42	15.57	1.77	3.00	100.00	-3.29	13.65
Bisexual	38	31.32	27.03	4.38	0.00	82.00	0.27	-1.27
Gay	73	5.89	11.67	1.37	0.00	50.00	2.33	4.67
Other	9	21.56	28.41	9.47	0.00	80.00	1.15	-0.04
Gay slider								
Straight	77	4.10	9.25	1.05	0.00	45.00	2.67	7.00
Bisexual	38	48.42	30.79	4.99	0.00	100.00	-0.25	-0.93
Gay	73	94.37	9.60	1.12	56.00	100.00	-2.14	4.41
Other	9	45.67	38.94	12.98	0.00	100.00	0.02	-1.59

Note. '-' indicates the statistic is undefined due to constant data or an insufficient sample size.

Sexual Fluidity

Each participant's label change across the three Sexual Orientation Scales was recorded, with 'yes' indicating a change and 'no' indicating no change (see Table 5). Overall, 48.99% of participants changed labels across all questionnaires.

Table 5. *Frequency Table for Sexual Fluidity Variables*

Variable	*n*	%
Self-Reported Sexual Orientation Change		
no	134	67.68
yes	64	32.32
Label Change across Questionnaires		
no	101	51.01
yes	97	48.99
Congruence on Klein Grid		
no	122	61.62
yes	73	36.87
n/a	3	1.52

Note. Due to rounding errors, percentages may not equal 100%.

Participants' congruence on the Klein Grid was recorded as 'yes' for congruence (when all answers matched) and 'no' for incongruence (when any answer differed) (see Table 5). In total, 61.61% of participants provided different answers.

The observations for the Uncertainty Questionnaire had a mean score of 4.67 (SD = 3.22, SEM = 0.23, Min = 1.00, Max = 10.00, Skewness = 0.35, Kurtosis = -1.34). A binary logistic regression was conducted to examine whether Age, the total of Multiple Labels, and the scores from the Uncertainty Questionnaire have a significant effect on the odds of observing the "yes" category of Self-reported Sexual Orientation Change. The reference category was "no". Variance Inflation Factors (VIFs) were calculated to detect the presence of multicollinearity between predictors (see Table 6).

Table 6. *Variance Inflation Factors for Age, Multiple Labels Choice, and Uncertainty Questionnaire*

Variable	VIF
Age	1.01
Multiple Labels Choice	1.01
Uncertainty Questionnaire	1.02

The overall model was significant, $\chi^2(3) = 38.75$, $p < .001$, suggesting that age, the total number of multiple labels, and the scores from the Uncertainty Questionnaire significantly affected the odds of observing the 'yes' category of self-reported sexual orientation change (see Table 7). The McFadden R-squared value for this model was 0.16. R^2 was interpreted based on its effectiveness

with linear regressions for binary responses (Cox & Wermuth, 1992; Mittlböck & Heinzl, 2001). The effect of age was not significant, B = -0.03, OR = 0.97, p = .148. The effect of the total number of multiple labels was significant, B = 0.49, OR = 1.63, p < .001, indicating that a one-unit increase in the number of labels chosen increased the odds of observing the 'yes' category by approximately 63.02%. The effect of scores from the Uncertainty Questionnaire was also significant, B = 0.20, OR = 1.22, p < .001, indicating that a one-unit increase in the Uncertainty Questionnaire score increased the odds of observing the 'yes' category by approximately 21.65%.

A point-biserial correlation analysis was conducted between Self-Reported Sexual Orientation Change and the Uncertainty Questionnaire Score (see Table 8). There was a significant negative correlation between these variables, with a correlation coefficient of r = -0.32 (p < .001, 95% CI [-0.44, -0.19]), indicating a moderate effect size. This suggests that moving from the 'yes' category to the 'no' category of Self-Reported Sexual Orientation Change is associated with a decrease in the Uncertainty Questionnaire score. The effect size is interpreted based on the assumption that both values of the binary variable are equally likely to occur (Rice & Harris, 2005; McGrath & Meyer, 2006).

Table 7. *Logistic Regression Results with Age, Multiple Labels Choice, and Uncertainty Questionnaire Predicting Self-Reported Sexual Orientation Change*

Variable	*B*	*SE*	χ^2	*p*	*OR*	95.00% CI
(Intercept)	-1.81	0.74	6.01	.01	-	-
Age	-0.03	0.02	2.09	.15	0.97	[0.93, 1.01]
Multiple Labels Choice	0.49	0.13	13.63	< .001	1.63	[1.26, 2.11]
Uncertainty Questionnaire	0.20	0.05	13.00	< .001	1.22	[1.09, 1.35]

Note. $\chi^2(3) = 38.75$, $p < .001$, McFadden $R^2 = 0.16$.

Table 8. *Point Biserial Correlations for the Self-Reported Sexual Orientation Change and the Uncertainty Questionnaire Score*

Combination	*r*	95.00% CI	*n*	*p*
Self-Reported Sexual Orientation Change - Uncertainty Questionnaire Score	-0.32	[-0.44, -0.19]	198	< .001

Exploratory Analysis

A point biserial correlation analysis was conducted for the Label Change and the Uncertainty Questionnaire Score (see Table 9). There were no significant correlations.

A point-biserial correlation analysis was conducted between Congruence and the Uncertainty Questionnaire Score. There was a significant negative correlation between Congruence and the Uncertainty Questionnaire Score, with a correlation coefficient of r = -0.31 (p < .001, 95% CI [-0.43, -0.18]), indicating a moderate effect size (see Table 10). This suggests that moving from the 'no' category to the 'yes' category of Congruence is associated with a decrease in the Uncertainty Questionnaire Score. Therefore, the 'yes' category of congruence tends to be associated with lower values on the Uncertainty Questionnaire Score.

Table 9. *Point Biserial Correlations for Label Change and the Uncertainty Questionnaire Score*

Combination	*r*	95.00% CI	*n*	*p*
Label Change - Uncertainty Questionnaire Score	-0.06	[-0.20, 0.08]	198	.38

Table 10. *Point Biserial Correlations for Congruence and the Uncertainty Questionnaire Score*

Combination	*r*	95.00% CI	*n*	*p*
Congruence - the Uncertainty Questionnaire Score	-0.31	[-0.43, -0.18]	195	< .001

Discussion

The current study explored different sexual orientation measurement scales. The main research question asked was: Is sexual orientation a categorical or spectrum dimension? There were two hypotheses. H1: The method used to assess sexual orientation will influence participants' self-identification. H2: Higher scores of sexual orientation uncertainty will be associated with greater indicators of sexual orientation fluidity. Both hypotheses were supported. Regarding the first hypothesis, the study found that when participants were presented with extended label options, nearly half of them (48.99%) changed their sexual orientation labels compared to when they were limited to fewer options. This suggests that the method of measurement, particularly the availability of more nuanced

identity categories, affected how participants identified their sexual orientation. Only a few (4.55%) chose "Other" on the Standard Sexual Orientation Scale. However, more than a third of participants (37%) chose different labels on the Expanded Kinsey Scale. Overall, participants selected a total of 393 sexual orientation labels when they were allowed to choose more than one label. On average, each participant selected two labels. The findings indicate that when given the opportunity to select from a broader range of sexual orientation labels, participants were more likely to view their sexual identity as multifaceted, aligning with the idea that sexual orientation exists on a continuum rather than as a fixed category. For the second hypothesis, it was found that the scores from the Uncertainty Questionnaire had a significant effect on sexual orientation fluidity. The prediction that age will be a factor influencing sexual orientation fluidity was not supported. Taken together, the results of the current study contribute to the growing research suggesting that sexual orientation may be better understood as a continuum.

The results on viewing time as a sexual orientation measurement replicate previous findings. Research that looked at straight men and women's viewing times and ratings of sexual appeals and viewing times of sexually suggestive pictures reported viewing time as a reliable measure of categorical sexual interest but a poor measure of within-category sexual interest; participants' sexual orientation was recorded first (Israel & Strassberg, 2009). This is in line with previous research that reported viewing time as a measure of sexual interest for straight men and women participants (Quinsey et al., 1996). One study that looked at gays and lesbians' viewing times of sexually provocative pictures also reported a category-specific pattern of sexual interest (Rullo et al., 2010). Research that asked participants to rate the sexual attractiveness of men and women swimsuit models and recorded viewing times showed that straight men are much more category specific than straight women and women's viewing time was better predicted by the model attractiveness scores than by the model sex (Lippa et al., 2010); subsequently research showed that gays were high on category specificity, however, lesbians showed lower levels of category specificity than men, and occasional higher levels than straight women (Lippa, 2012a); research also looked at bisexual men and women and showed that bisexuals' patterns of attraction and viewing times strongly distinguished them from same-sex straight and gay participants (Lippa, 2012b). The article read that "Results suggest that there are subsets of men and women who display truly bisexual patterns of sexual attraction and interest." This is problematic since there is no objective indication of what a "truly bisexual pattern" is or should be. Research also debates bisexual arousal patterns (Rosenthal et al., 2011). The only other study found in the literature that looked at bisexuals' viewing times reported that the viewing times to pictures of sexually mature men and women did not differ across genders. Researchers reported a moderate correlation between viewing times and rated sexual appeal for all studied groups. The current findings add to the existing research by showing that bisexual participants' viewing times differ from straight and gay participants and had the added advantage of collecting participants' sexual orientation after the visual paradigm. It is also the first study to record participants' viewing time without asking them to rate the attractiveness of the stimuli (no associative priming).

However, using viewing time as a sexual orientation measurement is problematic for three reasons. Firstly, it can only be done in comparison between categories or to a baseline; this is usually 'straight'. Secondly, it does not allow for subtle differences to be detected. Thirdly, it provides no real value to what viewing time represents in relation to sexual orientation, other than the researcher's own interpretation. Current results underscore the importance of considering both individual and contextual factors when assessing sexual orientation, as viewing patterns vary across gender and sexual orientation categories. The observed fluidity, particularly among bisexual individuals, supports the idea that sexual orientation is not merely a static identity but rather a dynamic and multifaceted experience (Epstein et al., 2012; Rosario et al., 2006). The interplay between these factors may reflect social, cognitive, and emotional processes that influence sexual attraction and identity, as suggested by the sexual configuration theory (van Anders, 2015). For example, research that looked at self-identified "gay", "mostly gay", or "bisexual leaning gay" found differences for both behavioural and self-report measures, while pupil dilation response measurements to nude stimuli did not show any significant differences (Savin-Williams et al., 2016). Furthermore, research shows that "mostly heterosexual" and "mostly gay/lesbian" form distinct sexual orientation labels with unique patterns of attraction and partner choice. In addition, those who chose an exclusive label ("heterosexual", "gay", "lesbian") were not automatically exclusive in other domains, e.g., attraction towards the non-preferred sex (Vrangalova & Savin-Williams, 2012). A systematic review that looked at the empirical evidence of "mostly heterosexual" as a distinct sexual orientation found evidence for unique characteristics for both sexual and romantic domains. Self-identification as "mostly heterosexual" increases in teenage years, remains relatively high in young adulthood, while limited evidence indicates lower prevalence rates among older peers (Savin-Williams & Vrangalova, 2013).

One of the most significant findings of this study was the substantial variability in sexual orientation labels across the different measurement scales, suggesting that the way sexual orientation is categorised and understood can significantly influence individuals' self-identification. Almost half of the participants in this study changed labels when extended label option scales were presented. Figure 1 is indicative of the spectrum of sexual orientation when extended scales are used. When participants were given the option to select multiple sexual orientation labels, there was a marked increase in the diversity of responses, with participants often identifying with more than one label. This is consistent with the growing body of research suggesting that sexual orientation is not a binary construct but rather a dynamic and fluid spectrum. Studies such as those by Kinsey et al. (1948) and Savin-Williams (2014) support the idea that sexual orientation should be viewed as a continuum, where individuals may shift in their self-identification over time. Furthermore, the current study indicates that "other" as a sexual orientation category offers no real value to self-identification scales, and participants do not feel represented by it. Only 4.55% of participants opted for this option, however, the expansion of labels accounted for 35.87% of all responses. "Other" category often fails to capture the nuances of sexual identity, as seen in the small percentage of respondents selecting it, in line with previous research by Galupo et al. (2014). However, when novel labels were presented "queer" was the third most selected

label and participants opted for two labels on average to indicate their sexuality. Taken together, these findings add to the support of a continuum of sexuality with distinct groups that may sit outside "traditional" sexual orientation labels. This aligns with the theoretical perspective that sexual orientation can evolve, particularly when given the opportunity to explore more nuanced identity categories.

Single indicator measures of sexual orientation can lead to inconsistent and incongruent results across studies. In addition, they fail to capture other aspects of sexual orientation, such as behaviour and preferences and are unable to detect gender or within-group differences (Korchmaros & Stevens, 2013). Dual scales measures of sexual orientation have the advantage of allowing participants to express their orientation by separating attraction to men from women on several sexual orientation dimensions (e.g., romantic desires, emotional closeness and fantasies) without a trade cost (Hale et al., 2019). Qualitative research that explored the views of sexual minorities on how well the Kinsey Scale and the Klein Sexual Orientation Grid capture their orientation found that the Kinsey Scale was deemed too simple, while Klein's Grid was regarded as complex but better at capturing the fluidity of their sexuality. Participants defined the Kinsey Scale as restricted to attraction only and identified a multitude of other sexual dimensions that both scales fail to explore. However, some participants rejected the idea of a sexual orientation scale (Galupo et al., 2014). Research looking at commonly used labels of self-identified sexual orientation and gender identity across different healthcare settings found that undergraduate university students did not feel represented among the available labels (Scheffey et al., 2019). Despite concerns, research shows empirical validation for multidimensional models of assessing sexual orientation (Chung et al., 2006). The current study showed that participants' choice for a categorical sexual orientation label might not necessarily be reflected when offered dual-scale options. Variability between sexual orientation labels was also observed when participants were presented with the sexual orientation analogue scales. For example, 63 (31.82%) participants underreported a score below the maximum total of 100, while 23 (11.62%) overreported on the two analogue scales divided by Straight and Gay labels. From a psychological perspective, the underreporting and overreporting of sexual orientation scores on the analogue scales can be interpreted through the lens of self-concept clarity and social desirability bias, both of which influence how individuals understand and express their sexual orientation. These results align with a continuum model of sexual orientation, which emphasises the fluid and evolving nature of sexual identity, particularly among individuals who do not strongly identify with rigid, binary categories.

The significant association between sexual orientation uncertainty and Congruence on the Klein grid further emphasises the need for a nuanced understanding of sexual identity, one that recognises the possibility of change and evolution over time. Yet, the correlation between sexual orientation uncertainty and label change was not significant. This suggests that participants change labels according to the availability of suitable options, rather than perceived feelings of uncertainty. The participants in the study had a moderate level of uncertainty about their sexual orientation, with a wide range of responses. Some felt very certain, while others were quite uncertain. Most participants' scores were not extremely high or low, and the distribution of uncertainty scores was relatively even, with no sharp peak in one particular area. This suggests that uncertainty in sexual orientation is a common experience, but it varies greatly from person to person. Additionally, the results highlight the importance of considering both sexual behaviour and identity in any comprehensive model of sexual orientation, reinforcing the notion that sexual orientation is a multidimensional and dynamic phenomenon. The fluidity of sexual orientation is often misunderstood despite substantial research (Epstein et al., 2012; Rosario et al., 2006). Social labels such as "confused" or "just a phase" contribute to the misunderstanding of sexual orientation identity. Practitioners, especially psychotherapists, need to stay away from social stereotypes and make sure that no harm is done when working with sexual identity confusion or conflict (Lefevor et al., 2022), while clinical judgements and diagnosis should not be prejudiced by someone's sexual orientation (Eubanks-Carter & Goldfried, 2006). Research that looked at changes among adults from the Longitudinal Study of Young People in England from 2009 to 2017 in relation to data from the General Practice Patient Survey found that almost half of those 26-32 years of age who identified as a sexual minority in 2017, may not have done so in 2009 with smaller changes occurring for older adults (MacCarthy et al., 2020). Not only may health and care needs differ for different ages, but assuming that sexual orientation is fixed and therefore not subject to change prevents practitioners and service providers from using up-to-date demographics and therefore tailoring the delivery of care accordingly. Policy changes should reflect such knowledge and allow for professionals to discuss sexual orientation freely and in an inclusive manner. The current findings promote the use of a sexual uncertainty questionnaire. This is a numerical tool that can help clinicians to open a conversation about someone's sexual orientation without being intrusive, and without the use of other labels that may carry additional social connotations. Unlike the dichotomy question of "did your sexual orientation change?", a numerical scale adds sensitivity. Our exploratory analysis shows that it is more likely to detect changes in the development of sexual orientation and congruence rather than being pertinent to sexual orientation identity. While previous research showed that age influences sexual orientation fluidity, our results did not support this. Two possible explanations are being considered. The first one, our sample size was not big enough. The second one, the effect of age was only analysed in relation to the categorical binary self-reported sexual orientation change questionnaire; additional analysis and different conceptualisation of fluidity might reveal different insight.

Gender norms and stereotypes may influence sexual preferences and behaviours in ways that are not entirely reducible to simple models of sexual attraction. The findings of the current study contribute to the growing body of research emphasising the fluid and complex nature of sexual orientation. By employing a variety of measurement tools and presenting participants with the opportunity to select multiple labels, the study underscores the inadequacy of traditional binary labels for capturing the full range of human sexual experience. The advances of technology and wider access to the internet allow more people to explore their sexual orientation identity. One study that looked at online culture around the Kinsey Scale found that people think of numbers as depoliticised and flexible, while labels are perceived as carriers of political implications (Drucker, 2011). The dark side is that online quizzes and forums can perpetuate and promote stigma and stereotypes. For example, terminologies like "imperfect bisexual" or

extremely concerning statements like "Go kill yourself" are present on some online quizzes. In general, assuming a stable sexual orientation identity is perceived as a sign of wellbeing while "coming out" is considered a reflection of a stable sexual orientation identity. A systematic review and meta-analysis that looked at the sexual orientation identity development milestones for LGBTQ people found shared milestones but diverse sequences (Hall et al., 2021). Studies that look at people from countries where the political regime supports negative endorsement against non-straight people report reluctance and fear to assume an LGBTQ identity as well as relentless efforts to conceal it (Miles-Johnson & Wang, 2017; Tomori et al., 2016). Religion also plays a damaging role in assuming an LGBTQ identity (Frey et al., 202; Houghton & Tasker, 2019). Even in countries like the United States and Canada, where social attitudes towards LGBT people are more positive, adopting an LGBT identity in a straight perceived industry can have severe consequences; LGBT peers in sport are told to "survive" until they can assume their sexual orientation identity (Petty & Trussell, 2017). In primary care, research reports a fear of sexual identity disclosure (Law et al., 2015). Constant stigma and discrimination force people into engaging in the harmful practice of conversion therapy, hoping to change their sexuality and adopt an identity that is socially accepted. Research shows that a strong endorsement of a straight identity and traditional masculine roles carries negative attitudes towards gay people (Jellison et al., 2004). Supportive strategies to combat stigma and discrimination recommend providing administrative staff with insight and developing educational campaigns (Atteberry-Ash & Woodford, 2017). While the current study did not look at gender differences, previous research shows that men are more likely to adopt categorical sexual orientation labels. Future research should explore the gender and other social identities that can influence sexual orientation identity.

Despite public health initiatives, recent research shows that health disparities between LGBTQ+ and straight people and/or cisgender peers have not declined over time (Liu et al., 2019). The World Health Organisation (2021) places those who experience discrimination at a high risk of suicide and acknowledges the LGBTQ+ as a high-risk vulnerable group. Identifying and tackling the high rates of LGBT mortality is impeded by a lack of accurate recording of suicide and other violent deaths (Haas & Lane, 2015). Sexual minority youth continue to remain extremely vulnerable (di Giacomo et al., 2018; Miranda-Mendizábal et al., 2017), and transgender and bisexual individuals have the highest risk of non-suicidal self-injury (Liu et al., 2019). Bisexual and other non-monosexual (bi+) people are also more likely to conceal their sexual orientation (Feinstein et al., 2020). Governmental initiatives that provide national objectives for improving health and wellbeing acknowledge that a lack of national data systems collecting sexual orientation records hinders the outcomes for LGBT individuals (ODPGP, 2020). Based on the current findings it is encouraged that professionals adopt a more inclusive, subject to change, range of labels when asking about someone's sexuality and disregard assumed norms of heteronormativity and a binary gay-straight hierarchy.

Limitations

To contextualise the study within broader cultural dynamics, it is essential to acknowledge that understandings of sexual orientation are deeply embedded in specific sociocultural frameworks. While this research primarily focuses on a WEIRD (Western, Educated, Industrialised, Rich, and Democratic) framework (Henrich, 2010), the patterns observed must be interpreted in light of the cultural norms, values, and discourses that shape identity formation in such contexts. Notably, the cultural change explored here is likely to differ in important ways from developments in non-Western settings or cultures (Davis, 2019). For example, research in Asian contexts has shown that sexual orientation and identity are often shaped by collectivist values, relational obligations, and societal expectations, rather than individual self-identification alone (Langlois et al., 2017). In many Asian cultures, same-sex attraction may be expressed without adopting a non-heterosexual identity label, reflecting different conceptualisations of identity and behaviour (Szymanski & Sung, 2013). In the current study, one participant opted for 'Bisexual but Homoerotic' when presented with the option of free text. Qualitative research could explore such labels further and explore idiosyncratic meanings. Future comparative work incorporating non-WEIRD perspectives would enrich the current findings by highlighting both universal and culture-specific trajectories in sexual orientation development.

While the recruitment for this study was not targeted, compared with previous research that recruited from LGBTQ events, one limitation of the current study is that it only reached people who are active on social media. Therefore, it excluded participants who do not have a computer or access to the internet. The study was conducted in English, which adds further limitations to the inclusion of participants and therefore limits the generalisation of the findings. The labels used were also predominantly of Western origin, and while the nationality range of our participants was diverse, the results can only be interpreted by applying a Western lens to understanding and defining sexual orientation. Future research should incorporate language and labels associated with a wider diversity of cultures. Another limitation of the current study is that it does not allow for developmental changes in sexual orientation labels to be explored. Future research should focus on the developmental nature of sexual orientation minorities outside the main LGBTQ identities. Improving the care and health outcomes of LGBTQ+ peers should be at the forefront of research, with policy and legislation that adopts and promote positive endorsement of a wide range of sexual orientation identities. Efforts to overcome the binary (straight vs gay) and pathological stance of sexuality, as well as moving beyond specific normative identity categories, are structured around "participatory action research" proposals (Johnson & Martínez Guzmán, 2012) and by raising awareness using combined findings from multiple disciplines (Hyde et al., 2019).

Conclusion

The findings from the current study add to the often-ignored evidence that human sexuality is not a dichotomous, one-dimensional construct. It has implications for both public awareness and research conceptualisation of sexual orientation as a continuum and fluid. Structurally embedded straight-normative value systems need addressing. Policy and public awareness should concentrate on making all aspects of society more inclusive. Still, little is known about the experiences of those identifying as other sexual orientation minorities that sit outside the main sexual orientation labels, however, research is clear that human sexual diversity goes far beyond bisexuality. Future research should focus outside of whether sexual orientation

minorities are discrete or overlapping categories, but on whether societies allow for such identities to be adopted free of discrimination.

Conflict of interests: The authors declare no conflict of interest.

Acknowledgements: The author acknowledges Dr Neil Kirk for supervisor support and constructive comments during the course of this research.

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