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## **Sexual Orientation Belief Profiles, Attitudes, and Identity Development: A Person-Centered Analysis**

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I am submitting herewith a thesis written by David Tierney entitled "Sexual Orientation Belief Profiles, Attitudes, and Identity Development: A Person-Centered Analysis." I have examined the final electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Arts, with a major in Psychology.

Patrick Grzanka, Major Professor

We have read this thesis and recommend its acceptance:

Joseph Miles, Kirsten Gonzalez

Accepted for the Council:

Dixie L. Thompson

Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

**Sexual Orientation Beliefs, Attitudes, and Identity  
Development: A Person-Centered Analysis**

A Thesis Presented for the

Masters of Arts

Degree

The University of Tennessee, Knoxville

David Tierney

August 2020

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## ABSTRACT

In the current study, we integrated the following largely disparate literatures: (a) sexual identity development and developmental milestones; (b) beliefs about sexual orientation; and (c) attitudes regarding sexual identity. We recruited a sample of sexual minority participants ( $n = 416$ ) via Amazon Mechanical Turk (MTurk) who recalled the age of completing sexual identity developmental milestones (Calzo et al., 2011) and completed the Sexual Orientation Beliefs Scale (SOBS; Arseneau et al., 2013), the Lesbian, Gay, Bisexual Identity Scale (LGBIS; Mohr & Kendra, 2011), and the Kessler Psychological Distress Scale (KPDS; Kessler et al., 2002). We conducted a latent profile analysis (LPA) on the SOBS and replicated previous findings of three distinct belief profiles that were high in discreteness, entitativity, and importance beliefs (a group we named *high-DEI*), high only with regards to naturalness beliefs (i.e., *naturalness-only*), and relatively high levels of beliefs across all four types of sexual orientation beliefs (i.e., *multidimensional essentialism*). Sexual orientation predicted participants' profile membership, with gay and lesbian participants being more likely to endorse beliefs consistent with the naturalness-only group. Sexual minority people of color were more likely to have response patterns consistent with the high-DEI profile than any other profile. Those recalling first same-sex attraction later in life were more likely to endorse sexual orientation beliefs consistent with the multidimensional essentialism and high-DEI profiles than the naturalness-only profile. Members of the high-DEI profile endorsed the highest levels of all positive and negative attitudes regarding sexual orientation as measured by the LGBIS and endorsed significantly higher levels of psychological distress than members of both the multidimensional essentialism and naturalness-only profiles. The implications of these findings are discussed.

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## CHAPTER ONE

### INTRODUCTION

Over the last decade, beliefs about the biological origin of sexual orientation appear to have been more widely endorsed in lay-discourses (Pew Research Center, 2017). For example, Lady Gaga's song "Born This Way" asserts, among other messages, that gay people are born gay and, therefore, worthy of celebration and social acceptance (Lady Gaga, 2011). Similarly, in his song "Same Love," the artist Macklemore referred to gayness as "a predisposition" to advocate for marriage equality for sexual minorities (Haggerty et al., 2012). While these songs may seem to be manifestations of popular culture, research suggests that such songs psychologically influence their listeners. Most notably, Jang and Lee (2014) were able to experimentally induce more genetic justifications for the legalization of same-sex marriage by playing "Born This Way" with the lyrics included as opposed to playing the instrumental version. The messages conveyed through popular culture regarding the etiology of sexual orientation can directly influence how people conceptualize sexual minority rights.

The proliferation of these lay beliefs is embedded within larger discourses regarding the etiology of sexual orientation as foundational to civil rights. In particular, activists and lawyers have systematically argued that the biological innateness and immutability of sexuality is a foundational argument in favor of gay rights (Stein, 2013). Diamond and Rosky (2016) argued that conceptions of immutability are neither necessary nor constitutive of an argument for gay rights as immutability is not necessary for conferral of protections, and suggest that sexual minorities who experience their identities more fluidly do not deserve legal protections. Hutchinson (2000) asserts that immutability beliefs can negate the sexual fluidity of queer people of color and those of low socioeconomic status. By drawing an equivalency to the innateness of

sexuality to a characteristic “like race,” this argument separates the experiences of people of color and sexuality minority statuses, thereby erasing the existence of sexual minority people of color (Hutchinson, 1999).

A body of empirical research has focused on the beliefs and attitudes of straight-identifying individuals and how these beliefs influence their attitudes toward sexual minorities. This research indicates that sexual majority individuals’ beliefs about the naturalness of sexuality are associated with more positive attitudes toward sexual minorities (Aguero et al., 1984; Ernulf et al., 1989; Haider-Markel & Joslyn, 2008; Haslam et al., 2002; Hegarty, 2002; Hegarty & Pratto, 2001; Horn & Heinze, 2011; Sakalli, 2002; Whitley, 1990). Researchers have also demonstrated that public opinion has shifted strongly toward the belief that sexual orientation is innate, and that that this opinion affects political decisions (Overby, 2014). This research gives empirical backing to lay and activist agendas hoping to promote equality, particularly among individuals who identify as part of the sexual majority.

Haslam and Levy (2006) found that individuals who believe that “homosexuality” is natural, cross-cultural, universal, and a discrete and unique sexuality predicted “anti-gay” attitudes, even when race and gender were accounted for. These beliefs predicted anti-gay attitudes better than other attitudinal variables more clearly associated with heterosexism, namely right-wing authoritarianism (Haslam & Levy, 2006). Further research suggested that people holding these beliefs were more likely to endorse negative stereotypes about sexual minorities (Bastian & Haslam, 2006). Finally, Grzanka et al. (2016) found that endorsement of biological explanations of sexual minority status was not associated with reduced heterosexism when other forms of essentialist thought were accounted for. Naturalness beliefs may be a double-edged

sword: at times, they encourage more positive attitudes toward sexual minorities, while other times they promote heterosexist attitudes.

In this brief introduction to the literature, it is already clear that beliefs regarding the etiology of sexual orientation are fraught with ethical, political, and social complexities. A plethora of research exists that examines the beliefs straight people hold about sexual minority status and how this influences attitudes and actions regarding sexual minority status.

Comparatively, little research explores what sexual minorities believe about their sexual orientation. The following project seeks to explore how beliefs about sexual orientation among sexual minorities are psychologically meaningful and how they may relate to mental health in this population. In the next chapter, I review the psychological literature on sexual orientation beliefs among sexual minority populations. Subsequently, I explore how these beliefs may relate to attitudes regarding sexual orientation and identity development within sexual minorities.

## CHAPTER TWO

### LITERATURE REVIEW

#### **Sexual Orientation Beliefs Among Sexual Minorities**

Historically, beliefs about the origin of sexual orientation have been classified into three philosophical schools of thought: essentialist, social constructionist, and interactionist (DeLamater & Hyde, 1998). In brief, modern essentialism consists of biological, evolutionary, and scientific explanations of individual group differences. The “born this way” explanations of sexual identity fall within this philosophy. Social constructionist approaches hold that linguistic, social, cultural, and political processes determine experience. Queer theorists such as Butler (2002) fall almost entirely within this framework. Interactionist approaches hold that essentialist and social constructionist schools are not mutually distinct, although it remains to be determined whether these philosophies are truly compatible (DeLamater & Hyde, 1998).

Researchers have not yet systematically examined the relationship between different sexual identities and beliefs about sexual orientation. Instead, researchers have primarily relied upon a variety of other means to assess how different sexual minority groups understand their sexual orientation in a piece-meal fashion. As evidenced below, there appear to be group-level differences in how different sexual minority groups understand the etiology of their own sexual orientation. The use of measurement tools has, to date, been inconsistent, leading to contradictions within the literature. Researchers have rarely examined how these beliefs are influenced and shaped in conjunction with race and ethnicity among sexual minority people of color.

There is a relatively significant body of research that suggests sexual minority women view their sexual orientation fluidly, and perhaps more fluidly than men (e.g., Diamond, 2003).

Following eighty interviews with non-heterosexual women aged 18-25 over the course of five years in central and upstate New York, Diamond (2003) found that women's sexual orientation is often fluid. Forty-seven percent of women changed their sexual orientation during this period, and twenty-seven percent of the women completely relinquished their non-heterosexual identities within the next five years. Given the relatively limited geographic distribution of participants and that the vast majority (85%) of the participants were White, it also stands to reason that the developmental negotiation of these identities could be implicitly racialized. While studies investigating the relationship between race, socioeconomic status, geography, and shifts of sexual identity is necessary and lacking, Diamond (2003) found that women's sexuality is often experienced as a process occurring over time and challenged the notion that sexual minorities believe sexual orientation to be a static, innate, fixed entity.

While understanding sexuality as fluid may be helpful for some sexual minority groups (Diamond, 2003; Diamond 2008), it may result in erasure of identity for others. Gonzalez et al. (2017) analyzed the transcripts of online confessionals compiled by the #StillBisexual Campaign and found that bisexual women expressed their sexuality as an enduring quality, a definable feature, and a defining feature in itself of their being, thereby holding a number of essential qualities. The results suggested that these essential beliefs were used as a means of resisting the monosexism and advocating against bi-erasure. Thus, while Diamond (2008) conceptualizes bisexual women's sexual orientation as being more likely to be understood as nonessential, Gonzalez et al. (2017) demonstrate that essentialist beliefs may be a tool for affirming and validating the existence of non-monosexual identities in a mono-sexist system, particularly among bisexual women. While Gonzalez et al. (2017) expressed the desire to explore the role of

race and ethnicity in these beliefs and narratives, they were unable to do so as these data were not collected by the #StillBisexual Campaign.

Feelings of invisibility among sexual minority people of color are likewise a common theme in the research literature. Alimahomed (2010) interviewed queer Latina and Asian and Pacific Islander women at Pride events and found that queer women of color were systematically marginalized and felt their queerness was often erased within predominantly White sexual minority spaces. Logie and Rwigema (2014) similarly found that queer women of color consistently experienced marginalization within queer spaces, with many women reporting that their identities felt invisible within both racial minority and queer communities. Ramirez et al. (2018) found through qualitative interviews that sexual and gender minority people of color experienced erasure of their racial and ethnic identities following the Pulse Night Club massacre. As Alimahomed (2010) argues, being a sexual minority person of color in spaces of erasure allows for the creation of new social sites of empowerment and dissent. The question remains if sexual minority people of color may be more likely to endorse fewer essentialist beliefs as a means of resisting dominant discourses regarding “born this way” beliefs or disproportionately more likely to endorse more essentialist beliefs to resist erasure.

While the role of fluidity in sexual orientation has largely focused on women, there is also evidence that a population of men may experience their sexual identities as fluid. Savin-Williams et al. (2012) analyzed data from the National Longitudinal Health Survey in the United Kingdom. In six years across more than twelve thousand participants, they found that female participants were, indeed, more likely to change their sexual identities than their male counterparts. Seventy-five percent of bisexual men within the study changed sexual identities over the six-year study, demonstrating an experience (and thus presumably an understanding) of

fluidity within this population as well. These results suggest that men and women's sexual orientations may be considered fluid for a subpopulation of individuals. Fluidity, for the individuals who experience it, is not limited to a single gender but may be more broadly experienced by a subset of sexual minorities. Again, this research did not specifically examine the role of race and ethnicity in these experiences.

Additional research suggests that there is variability regarding sexual orientation beliefs occurring not only between but *within* sexual minority groups as well. Vrangalova and Savin-Williams (2012) found that even discrete identities do not capture the intellectual and behavioral experiences of many people. Instead, through cross-sectional survey research, they found that a significant minority qualified their identification as gay or lesbian, bisexual, or straight with "mostly" (e.g., "mostly gay"). Subsequent qualitative research found that intellectual reasoning and overarching beliefs about sexuality, such as knowledge and philosophical endorsement of queer theory (i.e., a theory that widely holds identities as fluid), play a role in the development of these qualified identities (McCormack & Savin-Williams, 2018). Galupo et al. (2016) similarly found that beliefs about sexual orientation impacted how transgender sexual minority people understood their identities, with one participant noting, "the labels don't work very well" (p. 98). Thus, an emerging trend in the research is that beliefs about sexual orientation and gender identity serve as a means for navigating and identifying or not identifying with specific sexual orientations. Across both of these studies, the researchers did not specifically investigate how race and ethnicity influenced these beliefs, as the samples were limited in their racial and ethnic diversity (McCormack & Savin-Williams, 2018; Galupo et al., 2016).

Additional literature suggests that race and ethnicity may play a foundational role in sexual orientation beliefs of sexual minority people of color. Greene (2009) found that narratives

regarding religious beliefs about sexual orientation are used by dominant groups and White sexual minorities to “divide and conquer” sexual and racial minority groups to draw false equivalencies regarding systems and experiences of oppression (p. 698). Sarno et al. (2015) found that sexual minority people of color often experience conflicts in allegiance between their sexual minority status and their racial and ethnic identities and that experiences with group reference identities were mutually co-constitutive. Similarly, Bowleg (2013) found that Black gay and bisexual men typically do not experience their identities as distinct but rather as a whole. One participant in the study noted, “once you’ve blended the cake, you can’t take the parts back to the main ingredients” (Bowleg, 2013, p. 758). These findings pose a challenge to social scientific frameworks that understand these identities as occurring as separate parts or entities (Grzanka et al., 2017; Bowleg, 2008). Further, they are emblematic of a broader movement within the field of counseling psychology toward utilizing intersectionality, a theory which holds that understanding identity requires understanding group “identities,” such as race, gender, and sexual orientation, as part of a mutually constitutive whole (i.e., as the “cake”) rather than as distinct parts (i.e., “ingredients,” Bowleg, 2013, p. 758; Grzanka et al., 2017; Crenshaw, 1991). This type of analysis also accounts for the ways in which interlocking systems of power, privilege, and oppression, contribute to the experience of identity (Grzanka et al., 2017). These findings suggest that intersectionality is an important analytic strategy for understanding the sexual orientation beliefs of sexual minority people of color.

While many studies have implicitly and explicitly measured beliefs about sexual orientation, Arseneau et al. (2013) were the first to do so with an exclusively sexual minority population. The researchers relied upon sexual minorities to generate items regarding beliefs about sexual orientation. After conducting an exploratory factor analysis upon these items with



sexual minority populations, they developed the Sexual Orientation Beliefs Scale (SOBS), which constitutes four distinct factors: discreteness, importance, naturalness, and entitativity.

Discreteness beliefs are regarding sexual orientation as having fixed, rigid boundaries.

Importance beliefs are that sexual orientation significantly impacts one's personal and social

experiences. Naturalness beliefs are that sexual orientation is innate, enduring, and cross-

cultural. Entitativity beliefs are those that say that members of a sexual orientation hold

something in common that links them. It is these four factors identified by sexual minorities in

the SOBS-Form 1, through which we will continue to most explicitly name beliefs about sexual

orientation. It is important to note that similar, parallel constructs were found to generalize across

both sexual majority and minority populations through the use of confirmatory factor analyses,

as marked by the SOBS-Form 2. The constructs on Form 2 are discreteness, informativeness (in

place of importance), homogeneity (in lieu of entitativity), and naturalness beliefs. For the

current study, we relied upon Form 1, as this form was designed and validated with sexual

minority populations. These subtle differences across populations demonstrate the complexity

and nuance of measuring essentialist sexual orientation beliefs.

Given the complexity of these beliefs and the contradictory findings that have been previously reported, Grzanka (2016) argued that the SOBS lends itself to person-centered analysis rather than variable-centered analyses. In variable-centered approaches (e.g., ANOVAs, linear regressions, path analysis), which are predominantly used in psychology, the analysis focuses on relationships between the variables—in other words, how variable X influences or shapes Y (Grzanka, 2016; Zeiders et al., 2013). Variable-centered approaches, in effect, remove the respondent from the statistical analysis and instead analyze how variables, as independent entities, interact with each other. In contrast, person-centered analyses are mixture models that

look for the aggregates of respondents' unique response patterns in an otherwise presumably homogenous sample (Zeiders et al., 2013). Latent profile analysis (LPA) is one of these person-centered methods and allows for analysis of how participants endorse each of the SOBS subscales simultaneously (Grzanka, 2016). Intersectionality assumes no identity is experienced independently; this method also assumes that analysis must account for how the variables in question are experienced as a whole by participants. The method offers an approach to statistical inquiry wherein participants, rather than variables, are the center of analysis (Grzanka, 2016).

Grzanka et al (2016) administered the SOBS-Form 2, validated on both straight and sexual minority populations, to a primarily straight population, and found three belief profiles. The profiles consisted of people who (a) scored highly across all dimensions, who were deemed members of the *multidimensional essentialism (ME)* profile; (b) scored highly on the discreteness, homogeneity, and informativeness scales only, who were referred to as the *high-DHI* profile; and (c) scored highly only on the naturalness belief subscale, who were referred to as the *naturalness-only (NO)* profile. While these profiles were found in a primarily heterosexual population, there were sexual minority participants in the sample. Identifying as heterosexual predicted membership in the ME profile within the multi-gender sample, but because the research participants were predominantly heterosexual, no conclusions can be drawn regarding if these profiles remain the same among sexual minority populations, leaving a significant gap in the literature. This study again demonstrates the utility of a person-centered approach. Although a variable-centered approach may have demonstrated that all subscales were positively associated with heterosexuality, this person-centered approach showed participants' identification as straight predicted near equal simultaneous endorsement of all subscales. While these results demonstrate that sexual orientation can predict patterns of sexual orientation beliefs,

the study did not explore these response patterns among sexual minorities specifically, nor did it explore how the intersection of sexual orientation, race, and ethnicity may predict these belief patterns.

In conclusion, while research broadly shows that there are differences in beliefs about sexual orientation within and across sexual minority groups, no study has examined how these beliefs occur within sexual minority populations utilizing a person-centered approach. This absence exists despite increasing evidence that sexual orientation beliefs may prove to be useful sites of analysis for understanding sexual minority mental health (Morandini et al., 2017). In the present study, we ask, what are the sexual orientation belief profiles among sexual minorities? Secondly, because research suggests that monosexual people and non-monosexual people may hold different beliefs about sexual orientation (Diamond, 2003; Gonzalez et al., 2017), we ask, does monosexuality or non-monosexuality predict sexual orientation belief profiles? Finally, because research appears to be implicitly and explicitly racialized to varying degrees (e.g., Diamond, 2003), we ask, does race predict sexual orientation belief profile membership?

### **Sexual Orientation Beliefs and Attitudes**

Much of the previous research described below has examined the relationship between beliefs and attitudes, which are distinct yet deeply interconnected constructs. Haddock and Maio (2004) define attitudes as “global evaluations of stimulus objects that are derived from three sources of information: affective responses, cognitions, and behavioral responses” (p. 36). Meanwhile, beliefs are defined as “ontological representations of the world and comprise primary convictions about events, causes, agency, and objects that subjects use and accept as veridical” (Connors & Halligan, 2015, p. 2). Beliefs can be conceptualized primarily as the cognitive component of attitudes, or as “propositional attitudes” in that they hold evaluations of

the veracity of a given proposition (Schwitzgebel, 2010). This theory has in part been validated with research on sexual orientation beliefs. For example, Fry et al. (in press) found that manipulating sexual orientation beliefs through brief, science-based essays changed peoples' attitudes regarding sexual orientation. Other researchers have found competing explanations, including evidence that attitudes develop as a means of suppressing dissonance (Hegarty & Golden, 2008). Still others suggest that behavior may come before explicit attitudes but not implicit attitudes, with more recent work suggesting that explicit naturalness beliefs can moderate implicit attitudes (Gawronski & Strack, 2004; Fritzen et al., 2020). While this remains theoretically debated, for the current study we will rely upon the theoretical assumption that beliefs are theoretically foundational for attitude formation. Research exploring attitudes regarding sexual minority status among sexual minorities can, therefore, be understood at least in part as indirectly measuring underlying belief structures in a sexual minority population. In the present study we aim to more clearly integrate the literature from these two areas, with the assumption per the theoretical literature that beliefs underlie attitudes as opposed to the assumption that attitudes underlie beliefs.

There are perhaps countless attitudes that can be held toward sexual minorities (e.g., identity superiority) among sexual minorities (e.g., internalized homonegativity; Mohr & Kendra, 2011). Given the potentially large scope of this literature, this review focuses on the attitudes that are directly relevant to the current study with the caveat that this is by no means an exhaustive review of sexual minority attitudes. In the current study, we used the Lesbian, Gay, Bisexual Identity Scale (LGBIS), which measures eight different attitudes toward LGB identity among LGB people: acceptance concerns, concealment motivation, internalized homonegativity, difficult process, identity superiority, identity affirmation, and identity centrality (Mohr &

Kendra, 2011). We chose these metrics because they are widely used within sexual minority research, cover multiple content domains, and could be completed without requiring too much additional labor on the part of participants. The current study seeks to investigate how sexual minorities' sexual orientation belief profiles correspond with or predict these attitudes. To date, all research done on these relationships, if extant, relies upon variable-centered approaches for analysis.

### ***Internalized Homonegativity***

Internalized homonegativity is a negative attitude one holds regarding their minority sexual orientation (Mohr & Kendra, 2011). Research suggests that internalized homonegativity mediates negative mental health responses to discrimination and is subsequently related to increased depression and social anxiety (Feinstein, Goldfried & Davila, 2012). Despite the clearly detrimental impact of internalized homonegativity on sexual minority mental health, only two English language studies have directly examined the relationship between beliefs about sexual orientation and internalized homonegativity in sexual minorities. Morandini et al. (2015) examined the relationship between internalized homonegativity and sexual orientation beliefs in 862 gay men in Australia using the SOBS (Arseneau et al., 2013). They found that beliefs about sexual identities as discrete categories were associated with higher levels of internalized homonegativity, while higher levels of entitativity beliefs (e.g., "Individuals with the same sexual orientation seem to be connected in some way") were associated with lower levels of internalized homonegativity. Beliefs in naturalness in this sample were not related to internalized homonegativity, countering the "born this way" narrative (Morandini et al., 2015). When the researchers replicated their study with lesbian and bisexual women, sexual orientation beliefs of naturalness were related to decreased levels of internalized homonegativity (Morandini et al.,

2017). Further, beliefs in the discreteness of sexual orientations were related to increased levels of internalized homonegativity. The differential nature of these results shows that further research is necessary to examine the relationships between beliefs and attitudes regarding sexual orientation.

These previous findings by Morandini et al. (2015; 2017) provide an initial theoretical basis for hypothesizing a relationship between sexual orientation beliefs and attitudes in the current study. Their mixed results may in part be explained by their utilization of a variable-centered approach. Variable-centered approaches assume that these belief types are independent and can gloss over the potentially confounding effects of their mutual co-occurrence. Because intersectionality holds that “identities” are experienced simultaneously as identity, we contend that these identity-related beliefs likewise may be experienced as mutually constitutive and co-occurring. Thus, person-centered analyses could provide greater and more nuanced insight into these relationships. These methods work under the assumption that a person’s experience with the whole, or gestalt, is greater than the sum of their experiences with the parts (Grzanka, 2016). In other words, these analyses account for how these beliefs co-occur within sexual minority participants and thus allow for a holistic examination of a participant’s sexual orientation beliefs. Given the complexity of these constructs, such an analysis would allow for a more holistic evaluation of the cognitive underpinnings of the affective and global evaluations that comprise attitudes.

### ***Identity Uncertainty***

Identity uncertainty per the LGBIS is the attitude that one has regarding how certain they are of their sexual orientation as gay, lesbian, or bisexual. Higher levels of uncertainty are related to elevated depressive symptoms and psychological distress among sexual minorities (Borders,

Guillén, & Meyer, 2014; Feinstein et al., 2012; Morandini et al., 2017). Only two English language studies have examined the beliefs that theoretically may undergird these attitudes. Research suggests that higher levels of discreteness beliefs as measured per the SOBS are associated with higher levels of uncertainty (Morandini et al., 2015; 2017). These results suggest that holding the belief that sexual orientation is a set of rigid, non-overlapping categories may be indirectly associated with poorer mental health outcomes. This previous research relies upon a variable-centered analytic approach and does not interrogate how discreteness may influence identity uncertainty within the context of other sexual orientation beliefs. Research examining these relationships from a person-centered approach could help clinicians navigate working with sexual minority clients, particularly those who remain uncertain of their sexual orientation and identity.

### ***Difficult Process, Concealment Motivation, and Acceptance Concerns***

While psychologists have studied the aforementioned negative attitudes about sexual orientation with regards to their relationships with sexual orientation beliefs, there are several attitudes—difficult process (i.e., viewing the identification process as a source of hardship), concealment motivation (i.e., attitudes about the need or desirability for an LGB person to hide their sexual orientation from others), and acceptance concerns (i.e., attitudes an LGB person has regarding their fear, or lack thereof, of being accepted or rejected by others due to their sexual orientation; Mohr & Kendra, 2011)—that have not been examined, at least to our knowledge. Despite the fact that difficult process is associated with higher levels of depression and lower levels of psychological well-being (Mohr & Kendra, 2011), concealment motivation is a proximal minority stressor associated with health outcomes (Mereish & Poteat, 2015), and acceptance concerns are associated with reduced psychological well-being and higher levels of

depression (Mohr & Kendra, 2011), we are aware of no research examining the relationship between these attitudes and sexual orientation beliefs. We hope to elucidate the relationship between sexual orientation belief profiles and these attitudes with the goal of using this knowledge to inform psychotherapeutic interventions.

### ***Positive Attitudes Regarding Sexual Minority Status***

Empirical research is also necessary to examine the relationship between belief structures and positive attitudes regarding sexual minority identity status among sexual minorities. The literature on working with sexual minority populations has largely focused on negative attitudes about sexual minority status (Lytle et al., 2014), which is in contrast to the strengths-based principles that undergird the field of counseling psychology (Smith, 2006; Kaczmarek, 2006; Seligman & Csikszentmihalyi, 2014). Indeed, positive psychology as applied to sexual minority populations has primarily focused on qualitative themes of social support among sexual minorities with less explicit examinations of attitudes (Vaughan et al., 2014; Lytle et al., 2014; Riggle et al., 2014).

The LGBIS offers three theoretically positively valenced attitudes regarding sexual orientation that should support sexual minority mental health, which consist of identity centrality, affirmation, and superiority. Identity affirmation and identity centrality are related to lower levels of negative affect and higher levels of social connectedness among LGB+ individuals (Mohr & Kendra, 2011) and protect against high-risk behaviors (Meca et al., 2015) and less psychological distress (Fredriksen-Goldsen et al., 2017). Identity superiority is also conceptualized as being a positive aspect of LGB identity and was hypothesized to be associated with greater involvement and contact with other LGB people (Mohr & Kendra, 2011). While Mohr and Kendra (2011) have repeatedly validated these scales, Cramer et al. (2017) failed to



replicate scale validity with identity superiority exhibiting a moderately significant positive correlation with neither internalized homonegativity nor identity affirmation appearing as unique factors at all. Given that the scale was replicated in Portugal (de Oliveira et al., 2012), Turkey (Kemer et al., 2017), and Germany (Niepel, 2019) we felt comfortable in the ability of this scale to generalize. Determining which sexual orientation belief profiles predicate more positive attitudes about sexual orientation could inform strengths-based psychological interventions as well as provide education for clinicians working within this arena from a positive psychological perspective.

In summary, attitudes (i.e., global affective, cognitive and behavioral evaluations; Haddock & Maio, 2004) regarding sexual orientation appear to play an integral role in sexual minority mental health. Despite beliefs (i.e., cognitive and ontological representations; Connors & Halligan, 2015) being theoretically foundational to the development of these attitudes, only two studies have explored this relationship. Moreover, both studies utilized a variable-centered approach that inhibits our ability to analyze how these attitudes manifest in tandem with each other. However, a person-centered analysis would allow for the exploration of how participants' simultaneous endorsement of certain sexual orientation beliefs might predict these attitudes. Perhaps most importantly, research on this topic could inform clinical work with sexual minorities. Accordingly, in the current study we ask: (a) What sexual orientation belief profiles predict which attitudes about sexual orientation? and (b) What sexual orientation belief profiles predict psychological distress among sexual minorities?

### **Sexual Orientation Beliefs and Developmental Milestones**

Sexual identity development models have long, albeit implicitly, served as tools for assessing both beliefs and attitudes regarding sexual orientation within sexual minorities across

the lifespan. The first model for sexual minority identity development found that gay men progress through six stages: identity confusion, comparison, tolerance, acceptance, pride, and synthesis (Cass, 1979). Identity confusion, the first stage, occurs when a gay man is reconciling their previous beliefs of themselves as part of the majority with their actual experiences of sexual attraction. Comparison involves a gay man comparing qualities of himself to other sexual minorities. Pride involves the development of positive attitudes towards one's sexual orientation. Finally, synthesis involves cognitively and affectively integrating one's sense of self with larger group referent identities. While this model was limited to gay men, it set a powerful theoretical and historical precedent for work with sexual minorities more broadly. The stages proposed by Cass (1979) are arguably embedded within larger belief and attitudinal structures, particularly regarding sexual minorities' concepts of the self and others who hold sexual minority identities. This model positioned the integration of beliefs and attitudes as developmental processes.

Later stage models served to reify notions of a sexually driven identity development rooted in naturalistic—as opposed to self-actualizing—psychosocial processes. Troiden (1989) argued that sexual minorities underwent four stages in identity development: sensitization (i.e., a sort of acquired feeling of difference from the majority, potentially driven by childhood contact and attraction to members of the same sex), identity confusion (i.e., engaging in same-sex sexual activity while still identifying as straight), identity assumption (i.e., beginning to identify with the self and others as a sexual minority), and commitment (i.e., identifying as a sexual minority and incorporating this into one's lifestyle long term). It was in large part through this work that many psychologists began to conceptualize sexual minority identity development as rooted in bio-behavioral differences rather than rooted in sociopolitical processes (Calzo et al., 2011).

Following this paradigmatic shift, more recent research has largely focused on the utility of sexual identity milestones for understanding sexual minority identity development (e.g., Floyd & Stein, 2002). The authors identified four milestones that sexual minority individuals went through, namely age of awareness of same-sex attraction, age of acceptance and identification that one is a sexual minority, age of first sexual experience with a member of the same sex, and disclosure or coming out to others as a sexual minority (Floyd & Stein, 2002). Researchers particularly focused upon three patterns that emerged from studying the aforementioned milestones: initiation (i.e., age at which the first milestone was reached), duration (i.e., the length of time taken to reach all milestones), and the time since onset (Groves et al., 2018; Brown et al., 2015; D'Amico & Julien, 2012; Rosario et al., 2011; Calzo et al., 2011).

This move within the social and natural sciences toward a bio-behavioral framework has not been without controversy, particularly since other researchers have consistently demonstrated the utility of intersectional approaches that account for power in the human experience. For example, Fassinger and Arseneau (2007) argued for an identity enactment model wherein sexual orientation, gender orientation, cultural orientation, and individual differences all combined with temporal influences to drive identity development. Bowleg (2008) found that Black women conceptualized “coming out” experiences as occurring with racial and ethnic identities rather than as somehow separate and that these experiences were also driven by relationships to their family and communities. Hammack et al. (2018) demonstrated that gay identity development is in large part tied to the historical, political, and sociological experiences of different cohorts. As the bio-behavioral framework has gained traction, so has the evidence for the necessity of a holistic approach to sexual identity development.

While the utilization of sexual identity developmental milestone models was initially rooted in a theoretical shift toward the bio-behavioral framework, they have repeatedly demonstrated utility for understanding identity processes of sexual minority people at the group level as well. Friedman et al. (2008) were the first to document that there are roughly three different profiles for sexual identity development among sexual minorities after conducting a latent profile analysis (LPA) with sexual minority men under 40; these profiles could be classified as early, middle, and late depending on the age of initiation of sexual minority identity development. Calzo et al. (2011) replicated these three distinct profiles regarding sexual identity development with gay, lesbian, and bisexual adults. The majority of participants across both studies were found to identify as sexual minorities prior to engaging in sexual activity with a member of the same sex. Indeed, Calzo et al. (2011) found that only a small portion of the late-onset profile had sex preceding sexual minority identification. Similarly, Rosario et al. (2011) found that awareness and identification largely preceded behavior. The results from these studies suggest that utilizing milestones facilitates the use of a person-centered, identity-driven model for sexual identity development, in contrast to the earlier stage models that posit sexual behavior as *a priori* to identity development and, therefore, the driving factor (Troiden, 1989). Through the use of person-centered analytic techniques, sexual identity developmental milestones can potentially provide an identity-centered means for investigating the role of beliefs in sexual minority experiences.

Research suggests that milestones and patterns occurring within them are linked to psychosocial outcomes among sexual minorities and that earlier public identification as a sexual minority is associated with more experiences of rejection, discrimination, depression, and anxiety (Pachankis et al., 2015). Conversely, while publicly identifying as queer at a younger age

is associated with these poorer psychosocial outcomes, the act of self-identifying as a sexual minority later in life is associated with greater psychological distress and higher levels of internalized homonegativity (Dubé, 2000; Schindhelm & Hospers, 2004). Recent research also suggests that identifying as a sexual minority at a younger age is associated with more rapid progression through developmental milestones, which, in turn, is associated with poorer mental health outcomes (Rendina et al., 2019). Further, earlier milestones are indirectly associated with poorer mental health and increased homonegativity. Sexual developmental milestones appear to be associated with mental health outcomes, demonstrating the need for incorporating developmental milestones into research programs (Rendina et al., 2019).

In summary, identity development models have always implicitly assessed attitudes and deeply held beliefs regarding sexual orientation. No study to date has directly examined the relationship between sexual orientation beliefs and age of attainment of sexual identity milestones from either a variable- or person-centered approach. We believe this line of research can inform psychotherapy, psychoeducation, and community-based interventions by elucidating how sexual orientation belief structures are developmentally grounded and serve different functions for different sexual minorities over the course of the lifespan. Thus, we ask, how do sexual identity developmental milestones predict sexual orientation belief profile membership?

### **Current Study**

Researchers have previously explored the relationships between sexual identity, sexual orientation beliefs, attitudes, and developmental milestones in a piecemeal fashion, with much of this work somewhat ironically examining these relationships among predominantly straight samples. We seek to integrate these disparate literatures while examining how these different constructs manifest within the lives of sexual

minorities. Specifically, we explore how sexual orientation beliefs relate to identity (e.g., sexual orientation and race), sexual identity development, attitudes about sexual orientation, and psychological distress in an exclusively sexual minority population. In order to accomplish this, we use Latent Profile Analysis (LPA), a person-centered statistical approach, to examine how sexual orientation beliefs co-occur within members of our sample. Unlike more traditional variable-centered analyses, this approach allows us to foreground people, and the gestalt of their beliefs, as the sites of analysis (Grzanka, 2016). Drawing from and synthesizing the existing literature, we work broadly within the conceptual model described in Figure 1. In short, we hypothesize that identity development variables and social identities will predict and simultaneously inform beliefs people held about sexual orientation. In turn, we hypothesize that these beliefs about sexual orientation correspond with the development of attitudes and psychological distress about sexual orientation, as beliefs theoretically underlie attitudes (Haddock & Maio, 2004). Our research questions and hypotheses can be succinctly synthesized as follows, alongside their respective data analytic plans.

### ***Research Question I and Hypothesis I***

The first question we ask is done with the purpose of trying to determine, broadly, what differences in sexual orientation beliefs exist among sexual minorities. We ask, what are the SOBS-Form 1 profiles among sexual minorities? We will utilize latent profile analysis (LPA) to determine how sexual orientation beliefs distribute across and within sexual minority groups. While Grzanka et al. (2016) found three belief profiles among a majority heterosexual population, these profiles have never been examined among sexual minorities specifically. At

present, we can only hypothesize that multiple distinct profiles will exist among sexual minority populations.

### ***Research Question II and Hypothesis II***

The second research question focuses on what types of variables may theoretically predict the development of these attitudes. Scholarship up to this point suggests differences between different sexual orientation groups with regards to these beliefs, different developmental trajectories with regards to these beliefs, and has been implicitly racialized. Thus, we ask, do sexual orientation, race, and age of sexual identity development predict sexual orientation belief profiles among sexual minorities? As we do not yet know what profiles will occur within this population, we can solely hypothesize that these variables will predict sexual orientation belief profile membership.

Methodologically speaking, we will utilize the 3-Step method (Asparouhov & Muthén, 2014a) for determining predictor variables within mixture models, because the 3-step procedure has been shown to maintain model stability while incorporating multiple covariates. In earlier approaches to traditional LPA (e.g., Grzanka et al., 2016), the incorporation of covariates can result in model instability and therefore undermine the interpretability of solutions (Asparouhov & Muthén, 2014a).

### ***Research Question III and Hypothesis III***

The final question we ask is with regards to how these sexual orientation beliefs impact the attitudes and lives of the sexual minorities who hold them. We ask, does holding a specific sexual orientation belief profile membership predict attitudes toward sexual minority status and subsequently predict associated psychological distress? Given that the profiles have not been established before this study, we hypothesized broadly that sexual orientation belief profiles

influence attitudes about sexual orientation and subsequent levels of psychological distress such that we will observe significant differences among belief profiles.

To explore these potential variations across belief profiles, we will use the BCH procedure in LPA. Though not new per se, the BCH procedure has become a popular tool for LPA/LCA researchers because it allows for comparisons of outcomes across observed profiles that, like the 3-step procedure, are stable and interpretable (Asparouhov & Muthén, 2014b). For example, unlike traditional LPA without BCH (e.g., Grzanka et al., 2016), BCH procedures leave profile membership consistent even as multiple covariates—in this case, distress and attitudes—are fit to the model.



## CHAPTER THREE

### METHODS

#### Participants

We recruited participants through Amazon's Mechanical Turk (MTurk) service. To be eligible, participants were required to: (1) have a valid MTurk worker account, (2) be at least 18 years old at the time of the first survey, (3) identify as non-heterosexual at the time of the first survey attempt, (4) reside within the U.S. as verified per MTurk settings, (5) not be utilizing an I.P. address that had already completed the survey, and (6) pass a series of three attention checks and four validity checks. The original sample consisted of 1000 participants who clicked on the survey. 385 of these participants identified as straight and were immediately terminated from the survey and directed to a page that again stated they did not meet inclusion criteria. After accounting for those participants, this left 615 surveys that went past the initial screening question. Ninety participants were excluded because they initially identified as straight at the time of first completing the survey screener, and had already been previously terminated. Fifty-two participants failed at least one attention check. Fifty participants were excluded because they answered that they had completed a developmental milestone at an older age than they currently held, which was literally impossible and thus suggesting their responses were invalid. Seven participants were excluded because their data could not be located due to their failure to correctly transpose their Question Pro ID into MTurk. In total, 199 participants were excluded. The final sample consisted of 416 participants with a mean age of 32.47 years old ( $SD = 7.47$ ).

The demographics of our sample are as follows: 246 (59.1%) of the sample self-identified as men, 151 (36.3%) self-identified as women, 10 (2.4%) identified as non-binary, and 9 (2.2%) identified as transgender. With regards to sexual orientation, 236 (56.7%) participants self-

identified solely as bisexual, 136 (32.7%) gay or lesbian, 12 (2.9%) ace, 9 (2.2%) as pan, 4 (1.0%) as demi, 1 (0.2%) as queer, and 18 (4.3%) held multiple of these identifies. With regards to race and ethnicity, 231 (55.5%) identified as White or European American, 109 (26.9%) identified as Black, African American, or African, 30 (7.2%) identified as Latino/a/x or Hispanic, 15 (3.6%) identified as Asian, Asian American, or Asian Pacific Islander, 7 (1.7%) identified as Native American, and 19 (4.6%) identified with more than one race or ethnicity. With regards to subjective socioeconomic status on a scale of 1 (lower income) to 10 (higher income; Adler et al., 2000), the mean response was 5.18 (SD = 2.10) with 99.3% of participants responding. With regards to current zip code type, 183 (44.0%) identified as currently residing in an urban area, 165 (39.7%) in a suburban area, 67 (16.1%) in a rural area, and 1 (0.2%) in an “other” type of area. With regards to level of education, 0 participants had less than a high school education or equivalent, 33 (7.9%) had a high school degree or equivalent, 74 (17.8%) had some college, 53 (12.7%) had completed a 2-year college degree, 195 (46.9%) had completed a 4-year college degree, and 61 (14.7%) had completed at least some post-graduate education.

## **Measures**

### ***Demographics Questionnaire***

We asked participants for basic demographic information, including race, ethnicity, gender, sexual orientation, geographic region, and level of education. We also asked participants about their subjective socioeconomic status (Adler et al., 2000).

### ***Sexual Orientation Beliefs Scale (SOBS)***

We used the Sexual Orientation Beliefs Scale (SOBS) Form 1, which was found to be reliable for sexual minority groups (Arseneau et al., 2013). The scale consists of 35 items on a Likert-type scale ranging from strongly disagree (1) to strongly agree (5). The scale measures

four domains of beliefs about sexual orientation comprising (a) naturalness, (b) discreteness, (c) entitativity, and (d) personal and social importance to identity.

**Naturalness.** The Naturalness subscale measures the degree to which a participant believes sexual orientation to be a natural category—i.e., innate, immutable, stable across cultures, and fixed at an early age. The subscale contains 12 items and demonstrated the lowest but still acceptable internal consistency ( $\alpha = .69$ ) of all the subscales. Of note, this subscale has been reported as having the highest internal consistency of all the measures ( $\alpha = .86$ ; Arseneau et al., 2013).

**Discreteness.** The Discreteness subscale measures the degree to which a participant believes sexual orientations have distinct and clear boundaries existing between groups. The scale demonstrated acceptable internal reliability ( $\alpha = .72$ ), but this was lower than reported in previous samples ( $\alpha = .82$ ; Arseneau et al., 2013).

**Entitativity.** The Entitativity subscale measures beliefs that sexual orientation is informative about an individual, uniform, and shares a quality across people of a given sexual orientation. The subscale contains ten items and demonstrated excellent internal consistency ( $\alpha = .92$ ). While this was the most consistent subscale for the instrument in our sample, previous research demonstrated significantly less internal consistency for this measure ( $\alpha = .75$ ; Arseneau et al., 2013).

**Personal and Social Importance.** The Personal and Social Importance subscale measures the relative salience and importance of participants' sexual minority identity to participants' overall identity. The scale contains seven items and demonstrated acceptable internal consistency ( $\alpha = .75$ ) in our sample. This was slightly higher than the previously reported samples ( $\alpha = .68$ ; Arseneau et al., 2013).

### ***Retrospective Recall of Sexual Identity Developmental Milestones***

We asked participants to recall their age at the time of four sexual identity developmental milestones. Specifically, we asked (a) the age at which participants experienced their first same-sex attraction, (b) had their first sexual experience with a member of the same sex, (c) first identified as LGB, and (d) the age at which they first came out to others. The first three questions have demonstrated adequate test-retest reliability ( $\kappa = .78, .80, \text{ and } .76\text{-}80$ , respectively; Schrimshaw et al., 2006). The age of first coming out to others has repeatedly been used in previous studies, demonstrating theoretical utility in both profile and cluster analysis (Calzo et al., 2011; Floyd & Stein, 2002).

### ***Lesbian, Gay, Bisexual Identity Scale (LGBIS)***

The Lesbian, Gay, Bisexual Identity Scale (LGBIS) is a 27-item measure with eight distinct subscales: acceptance concerns, concealment motivation, identity uncertainty, internalized homonegativity, difficult process, identity superiority, identity centrality, and identity affirmation (Mohr & Kendra, 2011). The measure assesses a variety of dimensions regarding sexual orientation minority identity and has previously demonstrated construct validity with outside measures ( $r = .20 \text{ -} .73$ ) and internal reliability ( $\alpha = .77\text{-}.88$ , test-retest reliability =  $.70\text{-}.92$ ) across subscales (Mohr & Kendra, 2011). As this instrument is only validated among people who identify as lesbian, gay, and bisexual, this instrument was only administered to participants who identified as holding at least one of these identities. In total this instrument was administered to 389 participants.

**Acceptance Concerns.** The Acceptance Concerns subscale measures a person's concern with stigmatization due to their sexual orientation (Mohr & Kendra, 2011). The scale contains

three items and demonstrated acceptable internal consistency ( $\alpha = .75$ ) in our sample, which is similar to that reported previously ( $\alpha = .79$ ; Mohr & Kendra, 2011).

**Concealment Motivation.** The Concealment Motivation subscale contains three items and measures concern and motivation to protect one's privacy with regards to sexual minority status (Mohr & Kendra, 2011). The subscale demonstrated good internal consistency ( $\alpha = .81$ ) similar to that reported previously ( $\alpha = .78$ ; Mohr & Kendra, 2011).

**Identity Uncertainty.** The Identity Uncertainty subscale measures the degree to which one is uncertain about one's sexual identity (Mohr & Kendra, 2011). The subscale contains four items and demonstrated excellent internal consistency ( $\alpha = .91$ ) similar to that previously reported ( $\alpha = .88$ ; Mohr & Kendra, 2011).

**Internalized Homonegativity.** The Internalized Homonegativity subscale measures the degree to which one rejects one's own LGB identity (Mohr & Kendra, 2011). The subscale contains three items and demonstrated excellent internal reliability in this study ( $\alpha = .908$ ), similar to previous findings ( $\alpha = .87$ ; Mohr & Kendra, 2011).

**Difficult Process.** The Difficult Process subscale measures the degree to which a person perceives their development as an LGB individual as difficult (Mohr & Kendra, 2011). The subscale contains three items and demonstrated poor internal reliability ( $\alpha = .561$ ) compared to the original findings, which suggested acceptable reliability ( $\alpha = .79$ ; Mohr & Kendra, 2011). These results are in line with more recent results that have found poor internal reliability (Cramer et al., 2017).

**Identity Superiority.** The Identity Superiority subscale measures views favoring LGB people over heterosexual people. The subscale contains three items and demonstrated good

internal reliability ( $\alpha = .89$ ) that was higher than previous findings ( $\alpha = .78$ ; Mohr & Kendra, 2011).

**Identity Centrality.** The Identity Centrality subscale measures an individual's view that their LGB identity is central to their overall identity (Mohr & Kendra, 2011). The subscale contains five items and demonstrated acceptable internal reliability ( $\alpha = .747$ ), although it was less reliable than previously reported ( $\alpha = .89$ ; Mohr & Kendra, 2011).

**Identity Affirmation.** The Identity Affirmation subscale measures the degree to which participants affirm their own LGB identity (Mohr & Kendra, 2011). The subscale contains three items and showed good high internal consistency ( $\alpha = .82$ ), similar to previous findings ( $\alpha = .87$ ; Mohr & Kendra, 2011).

### ***Kessler Psychological Distress Scale (KPDS)***

The KPDS is a 10-item questionnaire designed to measure a person's global level of psychological distress as manifested through anxiety and depressive symptoms over the last 30 days (Kessler et al., 2002). Items consist of a 5-point Likert-scale ranging from 1 (none of the time) to 5 (all of the time). This scale demonstrated excellent internal consistency in our study ( $\alpha = .95$ ), similar to those reported by Kessler et al. (2002;  $\alpha = .93$ ).

### ***Validity Checks***

Embedded within the other measures were three validity check questions. These questions were simply to check if participants were indeed reading the material (e.g., "Select Agree here.").

### **Procedure**

The University of Tennessee, Knoxville Institutional Review Board (IRB) approved all materials and procedures used in the current study. Researchers relied upon and adhered to the

American Psychological Association's ethical guidelines (2017) for research involving human participants. All participants were recruited through MTurk in October and November of 2019. Participants were informed in the description of the study provided directly on MTurk that they must identify as a sexual minority to participate in the study. Participants interested in completing the study could then click a link to visit Qualtrics, where the measures were housed. The first page of the Qualtrics survey was the informed consent form approved by the IRB. The informed consent form again stated that individuals must be 18 and identify as a sexual minority to participate. Similarly, participants were told in the informed consent that compensation depended upon passing a series of validity checks, ensuring the truthfulness of their answers. Participants who consented to participate were then immediately directed to the demographics questionnaire page. Participants who were not at least 18 years old, or who did not identify as a sexual minority, were immediately terminated from completing the survey. If participants passed this point, they were then presented with the rest of the survey measures in a randomized order. Only participants who identified gay, lesbian, or bisexual as one of their sexual orientations were given the LGBIS to complete, as this measure has not been validated on other sexual minority groups. Following the completion of the study, participants were provided with their unique Response ID provided by Qualtrics and instructed to enter this into the MTurk Portal if they desired to receive compensation.

Following data collection, we analyzed the data to determine the consistency and validity of participant responses before compensating participants. Participants who failed any validity check were immediately identified using the Microsoft Excel highlight function, and their Response IDs were notated. Participants who had previously been terminated from completing the survey for not identifying as a sexual minority were identified by using the Excel duplicate

data function (i.e., to identify participants who had attempted to complete the survey multiple times). We then examined if the reason for the multiple attempts was another outside factor (e.g., participants did not complete the full survey initially), or if the participants had identified as straight during their first demographics questionnaire and been excluded. Those who had previously identified as straight had their Response IDs noted. Participants who identified as having achieved an identity developmental milestone as occurring at an age older than they currently held (e.g., currently being aged 20 on the demographics survey, but selecting that they began to identify as a sexual minority at 32) were identified using the Excel Differences Function, and their Response IDs were noted. Participants who had their Response IDs noted during the process were specifically removed from receiving compensation. We then went through and verified that the remaining Response IDs provided in Mechanical Turk by participants were valid and had been participants in the study. Participants who were not screened out received \$4.00 each for their participation in the survey.

### **Data Analytic Plan**

We performed preliminary analyses in SPSS 26 to assess for skewness and kurtosis. We also used SPSS to assess for missing data using the frequency count statistics. Preliminary analyses in SPSS 26 found that the data were normally distributed (no items skewed  $> +/- 1.5$ ) and did not exhibit significant kurtosis (no items  $+/- 1.5$ ) per guidelines proposed by Westfall and Henning (2013). For the SOBS measures specifically, 100% of the data were completed. More broadly, across all the data, less than 1% of all responses were missing for a given variable. Following this examination of the data, we then calculated the mean of the SOBS, LGBIS, and KPDS. We created a composite developmental milestone score by calculating the mean age of when identity developmental milestones were reached by all participants. We then conducted



bivariate correlational analyses of the LGBIS subscales, SOBS subscale, and KPDS (see Table 1). In SPSS 26, for reasons more thoroughly described below, we dichotomized all of our predictor variables in SPSS before transferring the data to Mplus. Race and ethnicity were dichotomized into White Non-Hispanic and Non-Latino/a/x participants, and people of color, which included participants who identified as Latino/a/x and Hispanic. Sexual orientation was dichotomized into monosexual participants, who identified solely as gay and lesbian, and non-monosexual participants, with this latter category including participants who identified as queer, bisexual, ace, pan, demi, or identified with multiple sexual orientations. All the milestone variables (e.g., retrospectively recalled age of first same-sex attraction), including the composite milestone variable, were dichotomized using a median split.

Following the preparation of the data, we exported the data in Mplus to begin to conduct latent profile analysis (LPA). LPA is a statistical technique that aims to identify heterogeneous groups within an otherwise theoretically homogenous population by identifying patterns of responses to continuous variables as they occur within individuals and across samples. LPA is a step-wise process, with each successive step representing a solution of adding a profile ( $k+1$ ) and probabilistically comparing the likelihood of the current step to the previous step. We relied upon the Bayesian Information Criteria (BIC), the Adjusted Bayesian Information Criteria (ABIC), and the Lo-Mendell-Ruben Likelihood Ratio Test (LRT) to determine the number of profiles. Lower values on the BIC and ABIC indicate a better solution. Conversely, higher values on the LRT are indicative of higher probabilities that the solution is a better fit than a model with one less profile ( $k-1$ ). To determine the structure of the model, we first conducted the LPA without predictor and outcome variables. We then subsequently included these variables in our model, which is consistent with prior recommendations (Lanza et al., 2013).

After determining the number of profiles we proceeded to test variables that may predict profile membership. Less than 1% of data for any variable in this analysis were missing, and we subsequently used the MISSING function to account for this data, a procedure that relies on list-wise deletion and is consistent with recommendations (Asparouhov & Muthén, 2014a). Full information maximum likelihood imputations are not possible for the 3-Step Model in Mplus (Asparouhov & Muthén, 2014a). We used the standard 3-step method (R3STEP) to determine if there were any variables that predicted profile membership (Vermunt, 2010). The 3-step method requires all independent variables be categorical and binary, and effectively functions as a multinomial logistic regression, whereby the predictor variables are treated as the independent variables, and the referent class or profile is treated as the dependent variable, such that the predictor variables are regressed onto each profile, using one of the other profiles as a control group. In this case, race, sexual orientation, and developmental milestones were regressed onto each profile. This method is advantageous in that it reduces the likelihood of altering the profiles through the introduction of standard error of the auxiliary variables into the model of the profiles themselves. It is recommended when the predictor variables in question are covariates and characteristics of the participants (Asparouhov & Muthén, 2014a). The Mplus output provided the log of the odds of given class membership alongside a significance test value to determine if these differences were, in fact, significant. These values were then transformed out of their log function into odds and, subsequently, into their respective probability of predicting profile membership per the variable in question.

We utilized the BCH method (Asparouhov & Muthén, 2014b; Bolck, Croon & Hagnaars, 2004) to determine if belief profiles were, in fact related to the level of attitudinal endorsement and psychological distress across profiles as distal outcome variables. Like the 3-

step method described above, the BCH method reduces the likelihood of shifting the profiles through the addition of error from the introduction of distal variables. Bakk and Vermunt (2016) demonstrated that the BCH method significantly outperforms the 3-step method described above when distal variables are continuous. The BCH method is recommended when the profile or class variables are theoretically antecedent to the variables in question (Asparouhov & Muthén, 2014b). For the present study and within our proposed theoretical model, belief profiles undergird attitudes about sexual identity and psychological distress, making the BCH the recommended best practice for this particular research question. Given that the BCH can handle continuous variables, the LGBIS subscale and psychological distress variables were interpreted as their means. The BCH subsequently effectively conducts a Wald's Chi-Square Test to compare the means across the profiles, while providing the latent means for each distal outcome per a given profile.

## CHAPTER FOUR

### RESULTS

#### **Hypothesis I: Multiple Sexual Orientation Belief Profiles**

The results of the LRT, BIC, and ABIC for 1 through 5 profile solutions are provided in Table 2. The LRT suggested that both a two and three-profile solution were statistically plausible, although it suggested that a two-profile solution was more likely. According to the LRT, four-profile solutions and above were unlikely ( $p > .05$ ). The ABIC and BIC levels suggested that solutions with more than two profiles better fit the data up to a five-profile. Given the improbability of a four or five-profile solution per the LRT, we removed these from further consideration and more closely examined the two- and three-profile solutions. It was clear that the LRT suggested a two-profile solution, but left open a significant possibility of a three-profile solution. The BIC and ABIC clearly suggested a three-profile solution as these values were significantly lower in the three-profile solution as opposed to the two profile solution. We examined both profiles as solutions and found that the three-profile solution offered a theoretically meaningful and distinct solution when compared with the two-profile solution (see Figures 2 and 3). Comparison of means determined that the three profiles were significantly different from each other with regards to naturalness,  $F(2, 413) = 8.19, p < .001$ , discreteness,  $F(2, 413) = 80.64, p < 0.0001$ , importance,  $F(2, 413) = 83.85, p < 0.0001$ , and entitativity,  $F(2, 413) = 85.840, p < .0001$ . Consequently, we decided upon a three-profile solution.

This three-profile solution replicated the profiles previously reported with predominantly straight samples (e.g., Grzanka et al., 2016). In keeping with these findings, we named the profiles in this case (1) *Naturalness-only* (NO) belief profile, (2) *Multidimensional essentialism* (ME) belief profile, and (3) *High-discreteness, entitativity, and, importance* (high-

DEI) beliefs profile (see Figure 3). Post-hoc Tukey tests demonstrated that there was no significant difference in the naturalness scores between the ME and high-DEI profiles ( $p = .96$ ), but significant differences were found between all other profiles on all other subscales. The only alteration in naming with our profiles occurred with the high-DEI profile, which mirrored the high-DHI (i.e., discreteness, homogeneity, and informativeness, which are three subscales in SOBS-Form 2) found by Grzanka et al. (2016). As we used the SOBS-Form 1, which is validated for use with sexual minority-only samples (as opposed to SOBS-Form 2, which is validated for use with heterosexuals and sexual minorities), several subscales differed by several items. The homogeneity and informativeness aspects of the previous profiles reported in Grzanka et al. (2016) were found using Form 2, which removes three items from the entitativity and importance respectively subscales from Form 1 for use with sexual minorities. Thus, the difference in names of the profiles is the result of our current study having several additional items on two of the subscales.

## **Hypothesis II: Predictor Variables**

### ***Race and Ethnicity***

Results revealed that White people were significantly more likely to be in the NO profile than people of color. In contrast, people of color were significantly more likely to be in the high-DEI group than the NO group,  $b = 1.877$  ( $SE = 5.294$ ,  $p < .0001$ ). White people were also more likely to be in the ME profile than the high-DEI group, while people of color were more likely to be in the high-DEI profile than the multidimensional essentialism profile,  $b = 1.224$  ( $SE = 3.347$ ,  $p = .001$ ). In terms of probabilities, there was an 86.73% chance a participant who identified as a person of color would fall into the high-DEI profile as compared to the NO profile, and a 77.28% chance they would fall in the high-DEI profile when compared to the ME

profile. Conversely, there was only a 13.725% of a participant who identified as a person of color belonging to the NO belief profile, and only a 22% chance of a participant who identified as a person of color belonging to the ME belief profile.

### ***Sexual Orientation***

With regards to sexual orientation, monosexuality predicted membership in the NO profile over the ME profile, while non-monosexuality predicted a higher likelihood of membership in the ME profile over the NO profile,  $b = 0.924$  ( $SE = 2.571$ ,  $p = 0.01$ ). With regards to probabilities, there was a 71.59% chance a non-monosexual participant would belong to the ME profile over the NO profile, and only a 28.41% they would belong to the NO group. Monosexuality and non-monosexuality did not predict membership in the high-DEI profile relative to either of the other profiles ( $p > .05$ ).

### ***Developmental Milestones***

Those who recalled experiencing their first same-sex attraction later in life, from ages 16 to 46, were more likely to belong to the ME profile compared to the NO profile  $b = 1.235$  ( $SE = 3.203$ ,  $p = 0.001$ ). Those recalling later ages of first same-sex attraction were also more likely to be in the high-DEI profile than the ME profile  $b = 0.897$  ( $SE = 2.094$ ,  $p = 0.036$ ). Those who recalled having their first same-sex attraction later in life were significantly more likely to be in the high-DEI profile than in the NO profile  $b = 2.132$  ( $SE = 5.029$ ,  $p = 0.000$ ). With regards to significant probabilities, people who recalled their age of first same-sex attraction later in life, had a 77.47% chance of residing in the ME profile as opposed to the NO profile, a 71.03% chance of belonging to the high-DEI profile in comparison to the ME profile, and an 89.4% chance of belonging to the high-DEI profile when compared to the NO profile. The retrospectively recalled ages at which people first identified as non-heterosexual, first came-out

as non-heterosexual, first sexual experience with a member of the same-sex, and the mean of all milestones together did not predict profile membership ( $p = >.05$ ).

### **Hypothesis III: Outcome Variables**

Finally, to explore the relationship between the belief profiles and attitudes about sexual orientation, we utilized the BCH method to compare the mean levels of attitudinal endorsement across sexual orientation belief profiles (Asparouhov & Muthén, 2014b).

#### ***Acceptance Concerns***

NO profile members endorsed significantly lower levels of acceptance concerns than the ME and high-DEI profiles (see Table 3). The ME profiles endorsed significantly lower levels of acceptance concerns than the high-DEI profile members.

#### ***Concealment Motivation***

The high-DEI profile endorsed significantly higher levels of concealment motivation than both the NO profile and the ME profile (see Table 3). The NO members did not significantly differ from the ME profile.

#### ***Identity Uncertainty***

NO belief profile members endorsed significantly less identity uncertainty than the MEs and the high-DEI profile (see Table 3). Members of the high-DEI profile endorsed significantly more identity uncertainty than the ME profile as well.

#### ***Difficult Process***

The NO and ME profiles did not significantly differ from each other with regards to endorsing difficult process attitudes (see Table 3). Both endorsed significantly lower levels of difficult process than the high-DEI profile.

### ***Internalized Homonegativity***

All three profiles differed with regards to the mean amount of internalized homonegativity members endorsed (see Table 3). The NO profile endorsed significantly less internalized homonegativity than both other profiles. The ME profile endorsed significantly more IH than the NO profile but significantly less IH than the high-DEI profile. The high-DEI profile endorsed significantly more IH than both other profiles.

### ***Identity Superiority***

NO belief profile members endorsed significantly less identity superiority attitudes than both other profiles (see Table 3). The ME profile endorsed significantly more identity superiority than the NO belief profile but significantly less than the high-DEI profile members. The high-DEI profile members endorsed significantly more identity superiority attitudes than both other profiles.

### ***Identity Affirmation***

NO belief profile and the ME belief profiles did not significantly differ from each other with regards to mean endorsement of identity affirmation (see Table 3). The high-DEI profile members endorsed significantly more identity affirmation than both other profiles.

### ***Psychological Distress***

The NO and MEs did not significantly differ with regards to their level of psychological distress (see Table 3). The high-DEI profile had significantly higher mean levels of psychological distress than both the NO and ME profiles.



## CHAPTER FIVE

### DISCUSSION

This study was the first of its kind to explore sexual orientation beliefs exclusively among sexual minority groups using latent profile analysis (LPA), a person-centered statistical approach. This study is also the first of its kind to demonstrate that age of identity developmental milestones, sexual orientation, race, and ethnicity may predict types of sexual orientation beliefs among sexual minority respondents. Perhaps most importantly, the current study provided support and extended previous findings that sexual orientation beliefs may underlie and predict attitudes about sexual orientation among sexual minority individuals. The following section is organized according to the theoretical model that initially drove our procedure, namely, beginning by establishing profiles and then accounting for predictor and outcome variables. First, we will review the findings regarding the belief profiles as a whole and how this contributes to the literature. Second, we will review the ways in which the predictor variables (i.e., sexual orientation, race, and ethnicity, and identity developmental milestones) work to predict profile memberships and how these findings extend the current literature. Third, we will review how the current findings contribute to a growing literature regarding the relationship between sexual orientation beliefs and attitudes regarding sexual minority status. Following the exploration of these findings, we will review implications, limitations, and conclusions.

#### **Belief Profiles**

Our results suggest that there are three distinct sexual orientation belief profiles among sexual minorities. These profiles can be described as the naturalness-only (NO) belief profile, the multidimensional essentialism (ME) belief profile, and the high-discreteness, entitativity, and importance (high-DEI) belief profile. These findings mirror those described by Grzanka et al.

(2016) but contribute to the literature in several ways. These findings are the first to demonstrate that there are distinct sexual orientation belief profiles in an exclusively sexual minority sample. This replication also speaks to the strength of our and previous findings. Two previous studies have found the same profiles among predominantly straight samples utilizing a different data form (Agadullina et al., 2018; Grzanka et al., 2016). The present study replicated these results with a different measurement tool (i.e., Form 1 here), which contained additional items and thus slightly different constructs. Dovetailed with the fact these results were obtained with a different population, these results speak to the robustness and the reliability of these findings.

Before delving further into the statistical analyses, it is important to review what these results mean from a person-centered framework and how these results differ from those obtained through traditional variable-centered methodologies. Within a variable-centered framework, we might have looked for significant correlations between our subscales. For example, bivariate correlations demonstrate that naturalness and discreteness beliefs are significantly correlated with a correlation coefficient of about ( $r = -.187$ ; see Table 1). However, our results move beyond straightforward correlations; our results demonstrate that participants' endorsements of these beliefs are not independent, but, rather, mutually constitutive. In other words, across independent samples, there consistently appear to be three "groups" of people who endorse each type of sexual orientation belief in the three patterns described above. When we understand these profiles as groups of people responding in certain patterns, rather than understand these variables as correlated, we can begin to see how these beliefs actually function for people across these groups.

It is also important to note that while we focus on individuals' response patterns as an aggregate, this does not mean that we ignore the importance of the variables across profiles.

While the multidimensional essentialism and high-DEI profiles differed in their overall responses, they did not significantly differ with regards to naturalness. This suggests that even when the profiles are viewed as a gestalt, the naturalness beliefs are not a primary driver of difference between the groups. While the naturalness-only profile exhibited significantly higher levels of naturalness beliefs than these other two profiles, this difference was small relative to the other differences, and the greatest variation between profiles was seen with regards to the other three belief subscales. Indeed, the findings continue to suggest the variance in belief profiles is driven by differences in discreteness, entitativity (i.e., homogeneity on SOBS-Form 2), and importance (i.e., informativeness on SOBS-Form 2) beliefs (Fry et al., in press; Grzanka et al., 2016). Therefore, person-centered analysis does not mean ignoring each individual axis of sexual orientation beliefs; rather, it means contextualizing these beliefs both *within* and *between* each profile.

### **Predictor Variables**

After determining the number and shape of the belief profiles, we utilized the 3-Step method to determine if the members of each profile differed with regards to their social identities and developmental processes. The data supported our hypothesis that sexual orientation, age of sexual developmental milestones, race, and ethnicity would predict profile membership. The profiles demonstrated unique characteristics with respect to each of these categories, which will be reviewed more extensively below. It is imperative to review what these results actually mean within the framework of person-centered analysis. While variable-centered approaches might have examined how sexual orientation, race, and ethnicity correlated with each specific orientation belief (e.g., naturalness, discreteness, etc.), our method allowed for analysis of how these identities predicted these entire response patterns. Through this person-centered model, we

accounted for how race, ethnicity, sexual orientation, and developmental milestones (albeit through dichotomized variables), predicted a participant's full response pattern to sexual orientation belief measures.

Our results suggested that the naturalness-only profile could be summarized as disproportionately composed of White people relative to the high-DEI profile, and that members were significantly more likely to identify as gay and lesbian (i.e., monosexual) than members of the multidimensional essentialism profile. This profile was also primarily composed of people who recalled first same-sex attraction at a significantly younger age than members of the other profiles. Members of the multidimensional essentialism profile are also disproportionately White compared to the high-DEI profile members but are significantly less likely to identify monosexual than members of the naturalness-only profile. Participants in the multidimensional essentialism profile were also more likely to report their first same-sex attraction as occurring later in life than those in the naturalness-only profile. In the high-DEI profile there was over a 75% chance members identified as people of color when compared to both other profiles. Members of the high-DEI also reported their first same-sex attraction significantly later in life than either of the other profiles. In short, these results suggest that sexual orientation belief profiles may be related to various parts of life experience, including ones not typically thought of as fundamentally sexual. The following section will focus on how both social identity categories, namely sexual orientation, race, and ethnicity, may be predictive of sexual orientation belief responses within the context of the literature. We will subsequently explore these findings in the context of developmental milestones.

### ***Race, Ethnicity, and Sexual Orientation***

Participants who identified as people of color were over 75% more likely to respond in a way consistent with the high-DEI profile than to respond in a way that was consistent with either of the other profiles. There was an 86% chance of a White person responding in a way consistent with the naturalness-only profile as opposed to the high-DEI profile. With regards to sexual orientation, there was a 71.5% chance that participants who identified solely as gay or lesbian would respond in a manner consistent with the naturalness-only profile than the multidimensional essentialism profile. While it would be tempting to handle these findings discretely, strong intersectionality challenges us to examine the ways in which systems of power, privilege, and oppression interweave to shape experience (Moradi & Grzanka, 2017). Sexual minority people of color and non-monosexual people, particularly bisexual people, are both groups whose identities are systematically deemed invisible and are more likely to experience erasure (American Psychological Association, 2012; Dworkin, 2001). Similarly, both of these groups were more likely to have response patterns consistent with higher levels of essentialist beliefs across three of the four belief domains.

These results can be understood through the lens of power as the demarcation of groups as invisible may simultaneously render qualities of these identities as essential (Foucault, 1990). It is equally important to understand these beliefs as holding potential value at the individual level as well. Ryazanov and Christenfeld (2018) describe how essentialist beliefs may also hold strategic value within minority populations as a means of fostering positive identity development. The qualitative research supports this interpretation. Gonzalez et al. (2017) found that bisexual people characterize their sexuality as defining and distinctly definable in attempts to combat erasure. Research also shows sexual minority people of color also turn experiences of

erasure into empowerment via the creation and construction of their own identities (Logie & Rwigema, 2014; Alimahomed, 2010). We can view participants' endorsement of the multidimensional essentialism profile and the high-DEI profile, as potentially reflective of resistance to systems of power, which erase the existence of these groups. Therefore, these beliefs may hold strategic values for sexual minority people of color and non-monosexual people.

We can also understand the naturalness-only profile through the lens of power, particularly with regard to White supremacy and monosexism. This response profile was disproportionately White, gay, and lesbian. Endorsement of naturalness-essentialist beliefs can also be understood as holding strategic value (Ryazanov & Christenfeld, 2018). For these populations, these beliefs may facilitate resistance to oppressive systems that often deem sexual minority status as “unnatural” (Rodriguez, 2009). Simultaneously, this also harkens back to the existing literature demonstrating how naturalness beliefs about sexual orientation are implicitly raced as White and fail to account for the needs of sexual minority people of color (Cole et al., 2012; Robinson, 2013; Hutchinson, 1999). It is also possible the disproportionate endorsement of this belief profile by White and monosexual people may reflect extant findings about how naturalness beliefs are used by White gay and lesbian people to evade the politicization of race and create false equivalencies between oppressions through the rhetoric of immutability (Cole et al., 2012; Robinson, 2013). Our findings provide potential quantitative support for previous literature documenting the ways these beliefs function within systems of power.

### ***Identity Developmental Milestones***

Per the current study, a participant having first recalled same-sex attraction later in life was predictive of sexual orientation beliefs that were consistent with the high-DEI and

multidimensional essentialism profiles relative to the naturalness-only profile. These effects were most substantial for the high-DEI profile, as participants who recalled their first same-sex attraction at or after the age of 16 were at least 77% more likely to belong to this profile as opposed to both others. This suggests that identity development processes throughout the lifespan predict the types of beliefs sexual minority people have about sexual orientation. The multidimensional essentialism and high-DEI profiles did not significantly differ with regards to naturalness beliefs but did exhibit lower naturalness beliefs than the naturalness-only profile. In some ways, these results are intuitive. It suggests that having first same-sex attraction later in life reduces the likelihood of endorsing beliefs that sexual orientation is innate and immutable. Conversely, the results suggest that people who reach these milestones later in life are also more likely to simultaneously endorse beliefs in the discreteness, entitativity, and personal and social importance of sexual orientation. To the knowledge of the authors, this represents a novel finding to the literature, demonstrating that identity developmental milestones are related to how sexual minorities understand the origins of their sexual minority status.

### **Beliefs About Sexual Orientation and Attitudes and Psychological Distress**

While the previous findings have been informative in their own right, the current study's most novel contribution may be in demonstrating the multitude of relationships between sexual orientation beliefs (i.e., the ontological cognitive representations), with attitudes (i.e., global representations encompassing affective, cognitive and behavioral domains) about sexual orientation. Previous work from a variable-centered perspective demonstrated that sexual orientation beliefs predict internalized homonegativity and identity uncertainty attitudes, albeit inconsistently (Morandini et al., 2017; 2015). Ours is the first study to demonstrate that sexual orientation belief profiles can predict all eight sexual orientation attitudes measured within the

widely used Lesbian, Gay, Bisexual, Identity Scale (LGBIS; Mohr & Kendra, 2011). Furthermore, while previous studies have proposed a link between these attitudes and psychological distress, our data exhibit a significant independent association between sexual orientation belief profiles and psychological distress. The following section will begin by exploring the relationship between belief profiles and attitudes regarding identity development and the coming out process. We will then explore the relationship between sexual orientation belief profiles and negative and positive attitudes about sexual orientation. The section will end with an exploration of how sexual orientation belief profile membership independently predicts greater levels of psychological distress.

### ***Attitudes Related to Identity Development***

The high-DEI profile members endorsed a higher mean level of negative attitudes regarding identity development and the coming out process relative to both other profiles. Specifically, the high-DEI profile members endorsed significantly higher levels of concealment motivation, acceptance concerns, and difficult process relative to the other two profiles. These results suggest that co-occurring endorsement of discreteness, entitativity, and importance beliefs, with slightly lower endorsement of naturalness beliefs, are associated with more difficulty with regards to identity development and coming out. This is conceptually consistent with our previous results that the high-DEI profile also recalled first same-sex attraction later in life. For this profile, the identity development process occurred later and was more difficult. It is possible the psychosocial difficulties of identity development faced by this group resulted in a longer period of identity development. Consequently, they may be less likely to view their sexual orientation as “natural” due to later development. As a result of these additional psychosocial stressors, members of this group may have been more likely to endorse negative attitudes about



this process. Together, these findings suggest that sexual orientation beliefs, attitudes, and identity development milestones are related such that the high-DEI profile is associated with a more difficult coming out process and reaching at least one milestone later in life.

### ***Negative Attitudes Regarding Sexual Orientation***

The endorsement of negative sexual orientation attitudes followed a nearly step-wise function across sexual orientation belief profiles. The naturalness-only profile endorsed the lowest level of internalized homonegativity and identity uncertainty. The high-DEI profile members endorsed the highest level of each of these profiles. The multidimensional essentialism profile members endorsed higher levels of these than the naturalness-only profile but endorsed significantly lower levels of these attitudes than the high-DEI profile members. It is through this step-wise nature that the current study can be seen as one of a growing number to suggest that naturalness beliefs regarding sexual orientation are not what determine negative attitudes about sexual orientation in sexual minorities (Morandini et al., 2017; 2015). The multidimensional essentialism and the high-DEI profile members did not endorse significantly different levels of naturalness beliefs, yet their profiles were differentially predictive of internalized homonegativity and identity uncertainty. While the naturalness-only profile members endorsed the lowest levels of internalized homonegativity and identity uncertainty in our data, this profile also had significantly lower levels of essentialist beliefs across the other three subscales. It is these other subscales that were the greatest source of inter-profile variation. These results are consistent with our theoretical model that co-occurring beliefs may, in part, drive negative attitudes regarding sexual orientation. However future work is needed to verify causal directionality.

### ***Positive Attitudes Regarding Sexual Orientation***

The positive attitudes regarding sexual orientation appear to, in part, follow the same step-wise function. Members of the high-DEI profile endorsed higher levels of identity superiority and centrality, than the multidimensional essentialism profile, which endorsed higher levels of the attitudes than the naturalness-only profile. With respect to identity affirmation, the multidimensional essentialism and naturalness-only profile did not significantly differ from each other. Still, they endorsed a lower mean level of these attitudes than the high-DEI profile. These results might suggest that there are well-being benefits conferred with regards to the high-DEI and multidimensional essentialism profiles. One possible explanation for this is that essentialist beliefs may undergird the development of attitudes regardless of valence. Another possibility is that these attitudes may reflect the process of stronger group identification following greater experiences of exclusion and prejudice in community samples (Cramer et al., 2017).

### ***Psychological Distress***

Members of the high-DEI profile endorsed significantly greater psychological distress than members of either of the other profiles. This was slightly surprising given that the high-DEI profile indicated the highest level of positive attitudes as well. These findings are not completely unfounded as previous research demonstrates a positive association between these attitudes and psychological distress (Cramer et al., 2017). Members of this profile also endorsed the highest levels of internalized homonegativity, which is associated with psychological distress (Rosser et al., 2008). These findings are the first of their kind in demonstrating that beliefs about sexual orientation, not just attitudes regarding it, may be related to psychological distress. These results may suggest that the potentially negative impact of sexual orientation beliefs occurs when

discreteness, entitativity, and importance beliefs about sexual orientation are simultaneously endorsed at high levels (e.g., mean scores above the midpoint).

It is also possible this relationship is more complicated. The high-DEI group is disproportionately composed of sexual minority people of color, who often face invalidation of their identities in ways that White sexual minority people do not (Ghabrial, 2017; Ramirez-Valles, 2007). This erasure can be understood as what Burke (1991) called identity interruptions, which are moments wherein a minority receives interpersonal feedback that is incompatible with their concept of the self. Our results suggest that in the face of identity interruptions, sexual minorities, and particularly sexual minority people of color may strategically utilize higher levels of co-occurring discreteness, entitativity, and importance beliefs as a means of facilitating a sense of group identity. These results may also be consistent with the rejection-identification model, which holds experiences of prejudice and minority stress are associated with negative impacts on psychological well-being, and stronger identification with a minority group can act as a protective buffer (Branscombe, Schmitt, & Harvey, 1999). This is further evidenced by membership in the high-DEI profile predicting higher levels of identity superiority and affirmation, which in our sample likely serve as markers for group identification (Cramer et al., 2017).

While endorsement of the high-DEI belief profile may facilitate group identification, these beliefs may also come at the cost of psychological flexibility. Essentialist beliefs are thought to correspond with reduced psychological flexibility (Ryazanov & Christenfeld, 2018). The high-DEI profile members simultaneously endorsed higher levels of three of the four essentialist belief domains than the other two profiles. Previous work has demonstrated specifically that flexibility moderates the relationship between internalized prejudice and

psychological distress in bisexual women and women of color (Brewster et al., 2013).

Researchers also suggested that flexibility moderates the relationship between workplace stress and well-being in sexual minorities (Singh & O'Brien, 2020). Research suggests that among men of color who have sex with men, psychological flexibility moderates the relationship between experienced sexual racism and psychological distress (Bhambhani et al., 2020). Given the theoretical overlap between the constructs of sexual orientation beliefs and psychological flexibility, it is possible that the high-DEI profile may be an indirect marker or cause of reduced flexibility, and thereby an association with psychological distress.

## **Implications**

### *Clinical*

These results suggest that sexual orientation beliefs may play an important role in the clinical process for sexual minority clients. Specifically, our findings suggest that the high-DEI and multidimensional essentialism belief profiles may function as double-edged swords. Both profiles are associated with higher levels of internalized homonegativity, which is predictive of depressive symptoms (Rosser et al., 2008), suicidal ideation (D'Augelli et al., 2001), higher-risk sexual behaviors (Ross et al., 2013), under-utilization of sexual health services (Shoptaw et al., 2009), and intent to seek “conversion therapy” (Tozer & Hayes, 2004). The high-DEI profile is independently predictive of psychological distress. Nonetheless, both profiles are also predictive of higher levels of positive attitudes regarding sexual orientation. Essentialist beliefs may confer strategic utility for minority groups in enhancing a sense of group identity (Ryazanov & Christenfeld, 2018). Broadly speaking, these findings are embedded within broader literature regarding sexual minority mental health outcomes, and clients may benefit from an exploration of how these beliefs both benefit them and simultaneously how these beliefs could contribute to

sources of distress. Still the possible clinical utility of these findings remains largely guided by the theoretical orientation of the therapist, as well the dynamics of a given therapist-client dyad. In the following sections, we hope to briefly demonstrate how these findings could be utilized across three therapeutic modalities including Cognitive-Behavioral Therapy (CBT), Acceptance and Commitment Therapy (ACT), and multicultural and feminist therapies.

**Cognitive-Behavioral Therapy (CBT).** In cognitive-behavioral therapy (CBT), clinical work often focuses on adapting core beliefs (Beck, 1995). According to CBT, these beliefs can underlie maladaptive cognition, emotions, and psychopathology. Therapists often use worksheets in order to explore these beliefs with clients (Beck, 1995). Sexual orientation beliefs could be seen as a unique set of core beliefs for sexual minority clients, constituting simultaneous beliefs about themselves and the world. Thus, therapists working with sexual minority clients could benefit from explicitly working with clients to explore beliefs regarding sexual orientation. However, we implore those applying this research in their clinical work with this modality, do more than focus on the distress associated with beliefs in the discreteness, entitativity, and importance of sexual orientation. Instead, we encourage therapists to focus on how these beliefs may functionally serve sexual minority clients, specifically those who are more likely to experience erasure of their sexual orientation, including bisexual people and sexual minority people of color. Furthermore, we encourage therapists to utilize psychoeducation to normalize the complexity of sexual orientation beliefs with sexual minority clients and how these beliefs are likely multi-functional.

**Acceptance and Commitment Therapy (ACT).** The current research could likely be incorporated into an ACT framework as well. Higher levels of essentialist beliefs may be understood as being interlinked with cognitive fusion and viewing self-as-content, thereby

potentially reducing psychological flexibility (Hayes et al., 2009; Ryazanov & Christenfeld, 2018). Therapists working in this modality with sexual minority clients could incorporate sexual orientation beliefs by facilitating space and defusion from these thoughts and beliefs.

Furthermore, therapists working with sexual minority populations could name the contexts in which sexual orientation beliefs occur, providing a means for clients to view the self-as-context. Such an approach would theoretically allow the therapist to honor the contextual function of these beliefs, while also making the space for clients to experience greater flexibility.

**Multicultural and Feminist Therapies.** The current research findings are particularly applicable to feminist and multicultural therapists working with sexual minority clients. Our work suggests that sexual orientation beliefs remain sites through which systems of power, including patriarchy, monosexism, and White supremacy, are manifested in the lives of sexual minority people. Feminist and multicultural therapists can work to raise consciousness regarding how these beliefs have served to both internalize and resist these systems of power. Likewise, we believe that therapists in this modality could use these findings to encourage consciousness-raising with White gay and lesbian clients, with regard to how naturalness-only beliefs can be used for the racist aims of color and power evasion.

### ***Training***

Given the implications for sexual minority mental health outcomes, psychotherapists could benefit from learning about sexual orientation beliefs, as well as profiles, during training. Specifically, per the APA Guidelines for Working with Lesbian, Gay and Bisexual Clients (2012), training could focus on exploring how belief profiles may be a site of understanding the unique experiences of sexual minority people of color and non-monosexual people. As described above, the current results suggest that specific patterns of essentialist beliefs may be sites of

resistance for these populations. At the same time, these profiles may be psychologically taxing. Training of therapists would likely benefit from exploring how sexual orientation belief profiles are reflective of systems of power, particularly with sexual minority people of color and non-monosexual clients.

### ***Research***

As noted above, these findings suggest that sexual orientation beliefs are an emerging field for understanding sexual minority mental health. These findings demonstrate the importance of accounting for sexual minority beliefs in research, in addition to attitudes. It also suggests that sexual orientation beliefs appear to have meaningful relationships to areas that historically remain outside the domain of sexuality researchers, including race and ethnicity. It also seems that person-centered analyses, such as LPA, possess a unique capacity to elucidate the experiences of sexual minority people. The ability of the current method to demonstrate how significantly participants' beliefs differed according to their sexual orientation, race, and ethnicity demonstrate the method's capacity to center marginalized groups while accounting for systems of power. This suggests a continued need for similar studies in future research. Our results also indicate the need for incorporation of measurements of minority stress and psychological flexibility in future studies in this field.

### ***Advocacy***

Helms (2017) argues that counseling psychologists have a responsibility to make Whiteness visible in our work. The current study suggests that naturalness beliefs have minimal protective value for sexual minorities. As counseling psychologists, this data should be taken as emerging quantitative evidence for what scholars have long said in other fields (Cole et al., 2012; Robinson, 2013; Hutchinson, 2000): the emphasis of naturalness in sexual orientation beliefs can

be seen as an extension of Whiteness that does not substantially contribute to shared liberation. In this context, the study suggests that counseling psychologists should work to develop critical consciousness regarding the role of these beliefs. We should seek to challenge the ways in which advocacy for sexual minorities that is centered on naturalness beliefs may work to reaffirm White supremacy (Grzanka et al., 2019). Likewise, these results suggest that counseling psychologists would benefit from divesting from notions of equality that are primarily based upon the naturalness and immutability of sexual orientation.

### **Limitations**

The current study has four clear sets of overarching limitations: (1) inconsistencies in measuring positive attitudes about sexual orientation, (2) lack of direct measurements for minority stress and psychological flexibility, (3) the dichotomization of predictor variables as required by the 3-Step Method, and, finally, (4) use of distributed data collection and our reliance upon cross-sectional data. The purpose of the following section is to delineate how these limitations impacted the current study. Following this, we hope to outline other methods for future studies to clarify further and enhance understanding of the present findings.

### ***Positive Attitudes and Measurement Inconsistencies***

Similar to Cramer et al. (2017), we found a significant moderate positive correlation between identity superiority and internalized homonegativity subscales on the LGBIS. We also found a positive correlation between psychological distress and identity superiority and identity affirmation. This could suggest that these subscales may not measure what they were intended to in community samples (Cramer et al., 2017). As posited by Cramer et al. (2017), higher endorsement of identity superiority and affirmation may co-occur with experiences of exclusion and subsequent stronger identification with a one's minority group. Together, this suggests that



these scales may actually function more as measures of group identification in our sample rather than as measures of positive attitudes. While our replication of this earlier finding is interesting, it confounds our ability to interpret the current results with regards to these positive attitudes and sexual orientation beliefs. Future research with another method to measure positive identity attitudes, such as the Lesbian, Gay, Bisexual Positive Identity Measure (LGB-PIM), might work on clarifying the relationship between positive sexual orientation attitudes and sexual orientation belief profiles more widely (Riggle et al., 2014). This type of research would allow for a clearer understanding of if these subscales simply fail, or if they instead capture a counter-intuitive phenomenon regarding positive attitudes in the face of social exclusion.

### ***Measurement of Minority Stress and Flexibility***

The current study did not directly account for the psychosocial experiences of prejudice and discrimination often experienced by sexual minority people of color. Our results point to the possibility that certain patterns of these beliefs, particularly endorsement of the high-DEI profile, may be protective against minority stress by facilitating group identification for sexual minority people of color. We did not directly account for experiences of exclusion or minority stress. Future work would benefit by clearly accounting for minority stress experienced by sexual minority people of color. Incorporating measures such as the LGBT People of Color Microaggressions Scale (Balsam et al., 2011) or the Racial and Ethnic Microaggressions Scale (Nadal, 2011) would allow for direct exploration of these relationships. It is worth noting that the rejection-identification model itself is variable-centered (Branscombe, Schmitt, & Harvey, 1999). To examine if sexual orientation beliefs mediate group identification and psychological distress in this model would likely require the incorporation of a variable-centered approach, such as structural equation modeling. Given the complexity of capturing the impacts of these

beliefs, we recommend potentially incorporating both person-centered and variable-centered approaches into future work on this topic, as Mekawi et al. (2020) recently demonstrated how mixed quantitative methods could account for racial and power dynamics.

Our results could also be taken to mean there is a possible relationship between these belief profiles and psychological flexibility. Since we finished our data collection, two studies have been published indicating that psychological flexibility is related to psychological distress among sexual minority populations (Bhambhani et al., 2020; Singh & O'Brien, 2020).

Researchers in this area have likewise found that incorporating flexibility into these minority stress models in part accounts for the unique experiences of sexual minority people of color in particular (Bhambhani et al., 2020; Brewster et al., 2013). Future research could explore this possibility by once again administering the SOBS to a sample of sexual minority respondents. Researchers could also administer a battery of measures to examine psychological flexibility, such as the Acceptance and Action Questionnaire-II (Bond et al., 2011), the Mindful Attention Awareness Scale (Brown & Ryan, 2003), and the Cognitive Fusion Questionnaire (Gillanders et al., 2014). Researchers could then use LPA to determine profiles of psychological flexibility of participants. Subsequently, they could then use the BCH method to determine how flexibility determined endorsement of each belief type. Researchers could also flip that model and create sexual orientation belief profiles using LPA, as we did. Researchers could subsequently use the BCH method to see how these profiles may constrain flexibility.

### ***Dichotomization of Predictors***

Our methods necessitated the dichotomization of race, sexual orientation, and identity development as a consequence of the 3-Step Method's analytic constraints. Due to this dichotomization, we lost significant amounts of variance that would allow for potentially more

nuanced understanding within our data. This dichotomization led us to make generalizations and assumptions within our analytic process that we ourselves do not hold as researchers. Still, the robustness of the current findings suggests that these questions would benefit from future examination utilizing other methods that could account for nuance.

With regards to race and ethnicity, the variable was dichotomized into White Non-Hispanic, Non-Latino/a/x participants, and people of color. In the process, this dichotomization overlooks the complexity of racial identities and experiences and ignores the ways in which the original demographics of our sample may weight into this analysis. A large proportion of our sample identified as Black or African American, and thus race and ethnicity were weighted more heavily toward this population within this variable. Other racial identity groups, such as those who identified as Native Americans, were under-represented (i.e., less than 10 participants identified as Native American), and it remains unclear if these findings would be generalizable for these groups. Further, our analysis statistically conflates Latino/a/x and Hispanic identities. Finally, we did not ask about immigration status or nationality, which influences how racial and ethnic identities are experienced. In these ways, our methods clearly fall short of accounting for the experiences of racial and ethnic minority populations.

This dichotomization also leads to significant limitations with regards to interpreting the profiles of those who identify as non-monosexual per our data. The majority of the non-monosexual participants identified solely as bisexual. In our analyses of these variables, experiences of people who identify as ace, pan, demi, and those with multiple sexual orientations were less represented in our sample. Conversely, the majority of our sample identified solely as bisexual, and thus our analyses do not significantly account for bisexual people who also identified as queer, pan, or another identity. We caution readers with regards to whether these

findings would be generalizable to all non-monosexual populations, who are already under-represented within the literature (Shearer et al., 2016).

Now that these relationships are documented, future research is needed to replicate these findings and to probe the ways specific identities we dichotomized may predict sexual orientation beliefs. One alternative way to explore these relationships in the future that can account for this variance would be to conduct a latent class analysis (LCA) instead of LPA. LCA works to create classes out of categorical variables (Lanza et al., 2007). With such a study, researchers could examine how the co-occurrence of specific social identities, such as race, ethnicity, and sexual orientation, would impact a person's likelihood of endorsing certain sexual orientation beliefs. This would allow for an identity-centered approach and may provide greater insight into the current findings.

Finally, we also lost a significant amount of variability for otherwise continuous variables with regard to sexual identity developmental milestones through the dichotomization process. Still, our methods produced significant odds, with nearly 90% of participants recalling later first same-sex attraction endorsing sexual orientation beliefs consistent with the high-DEI as opposed to the naturalness-only profile. The robustness of these findings is particularly informative and suggests the need for further study. Future work would likely benefit from accounting for the lost variance with our methods to capture greater nuance. One way of accounting for this variance while remaining within the person-centered framework would be to create latent profiles using retrospective recall age of all four developmental milestones. This method has already been done repeatedly (Calzo et al., 2011). Researchers could then utilize the BCH method to determine how these developmental profiles predicted sexual orientation beliefs.

### ***Data Collection***

One potential weakness of the current method is our reliance upon distributed data collection, and that we had to remove a significant number of participants as a result of inadequate quality responses. While relying upon distributed data collection comes with a number of drawbacks, it also comes with a number of advantages. MTurk allows for a more representative sample of the current US population than relying upon sampling through a college campus and other Internet sampling methods and provides quality data (Buhrmester et al., 2016). Furthermore, previous work has shown that MTurk provides a means for collecting representative samples when working with sexual minority populations (Israel et al., 2019; Choi et al., 2017). Given the advantages of this platform of data collection with regards to representation and demonstrated reliability, we believe that our screening procedures alongside this platform provided quality data that might not otherwise be possible through other methods. The biggest weakness of the current study is that we relied upon cross-sectional data. While our analyses were grounded and rooted in theories that involved causation and linear relationships, these data cannot be used to conclude causation.

There are already some longitudinal data that support the current hypothesis regarding causation. Recent work by Fry et al. (in press) utilized an experimental design to demonstrate that manipulations in sexual orientation beliefs resulted in small changes in attitudes about sexual orientation among participants. Future work could determine the causality of these relationships by tracking both sexual orientation beliefs and attitudes over time and utilizing a time series analysis to determine how these variables relate. Conversely, future studies could disprove this theory by experimentally inducing a change in the affective or behavioral component of these attitudes.

## **Conclusions**

The current study provides support for the utility of sexual orientation belief profiles as a useful measure for understanding the experiences of sexual minority people. Our analysis shows that these belief profiles can be predicted by identity development, sexual orientation, and race and ethnicity. Similarly, our analyses show that these profiles predict a myriad of attitudes about sexual orientation and varying levels of psychological distress among sexual minorities. When paired with person-centered analytic techniques, we can begin to understand how these belief profiles may both reflect and constitute sites of power, privilege, and oppression, particularly with respect to race, ethnicity, and sexual orientation. Perhaps most importantly, our results might be taken as suggesting the importance of moving beyond thinking about “born this way” beliefs within psychology. Instead, examining the roles of other beliefs and how these beliefs co-occur and interact with a person’s lived experience can enhance research, practice, and advocacy.

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## **APPENDIX**

Table 1. Correlation Coefficients Between Lesbian Gay Bisexual Identity Scale Subscale Means, Sexual Orientation Beliefs Scale Subscale Means, and Kessler Psychological Distress Scale

	1	2	3	4	5	6	7	8	9	10	11	12
1 LGBIS-AC	--											
2 LGBIS-CM	.36**	--										
3. LGBIS-DP	.40**	.32**	--									
4. LGBIS-IU	.45*	.20**	.32**	--								
5. LGBIS-IH	.51**	.26**	.37**	.62**	--							
6. LGBIS-IA	.03	-.00	-.16**	.02	-.10**	--						
7. LGBIS-IC	.18**	-.03	-.01	.13**	.07*	.42**	--					
8. LGBIS-IS	.41**	.07	.22**	.61**	.55*	.11**	.22**	--				
9. SOBS-Dis	.27**	.09*	.10**	.33**	.37**	.11**	.20**	.42**	--			
10. SOBS-Nat	-.05	.06	-.04	-.20*	-.17**	.07*	.04	-.19**	-.13**	--		
11. SOBS-Ent	.37*	.14**	.16**	.45**	.46**	.22**	.29**	.52**	.49**	-.15**	--	
12. SOBS-	.38**	.15**	.16**	.44**	.41**	.23**	.35**	.49**	.46**	-.09**	.62**	--
13. KPDS	.42**	.17**	.24**	.50**	.47**	.06	.11**	.47**	.26**	-.10**	.35**	.34**

\* Signifies that the correlation is significant at the 0.05 level (2-tailed) \*\* Signifies that the correlation is significant at the 0.01 level (2-tailed). Note: LGBIS-AC= Lesbian, Gay Bisexual Identity Scale- Acceptance Concerns (Mohr & Kendra, 2011), LGBIS-CM= Lesbian, Gay Bisexual Identity Scale- Concealment Motivation (Mohr & Kendra, 2011), LGBIS-DP= Lesbian, Gay Bisexual Identity Scale- Difficult Process (Mohr & Kendra, 2011), LGBIS-IU = Lesbian Gay Bisexual Identity Scale- Identity Uncertainty (Mohr & Kendra, 2011), LGBIS-IH= Lesbian, Gay Bisexual Identity Scale- Internalized Homonegativity (Mohr & Kendra, 2011), LGBIS-IA = Lesbian Gay Bisexual Identity Scale-Identity Affirmation, LGBIS-IC = Lesbian Gay Bisexual Identity Scale-Identity Centrality, LGBIS-IS= Lesbian Gay Bisexual Identity Scale-Identity Superiority, SOBS-Dis = Sexual Orientation Beliefs Scale – Discreteness, SOBS-Nat = Sexual Orientation Beliefs Scale – Naturalness, SOBS-Ent = Sexual Orientation Beliefs Scale-Entitativity, SOBS-Imp = Sexual Orientation Beliefs Scale – Importance, KPDS = Kessler Psychological Distress Scale.

*Table 2. Profile Fit Statistics for 1- through 5- Profile Solutions for Latent Profile Analysis (LPA)*

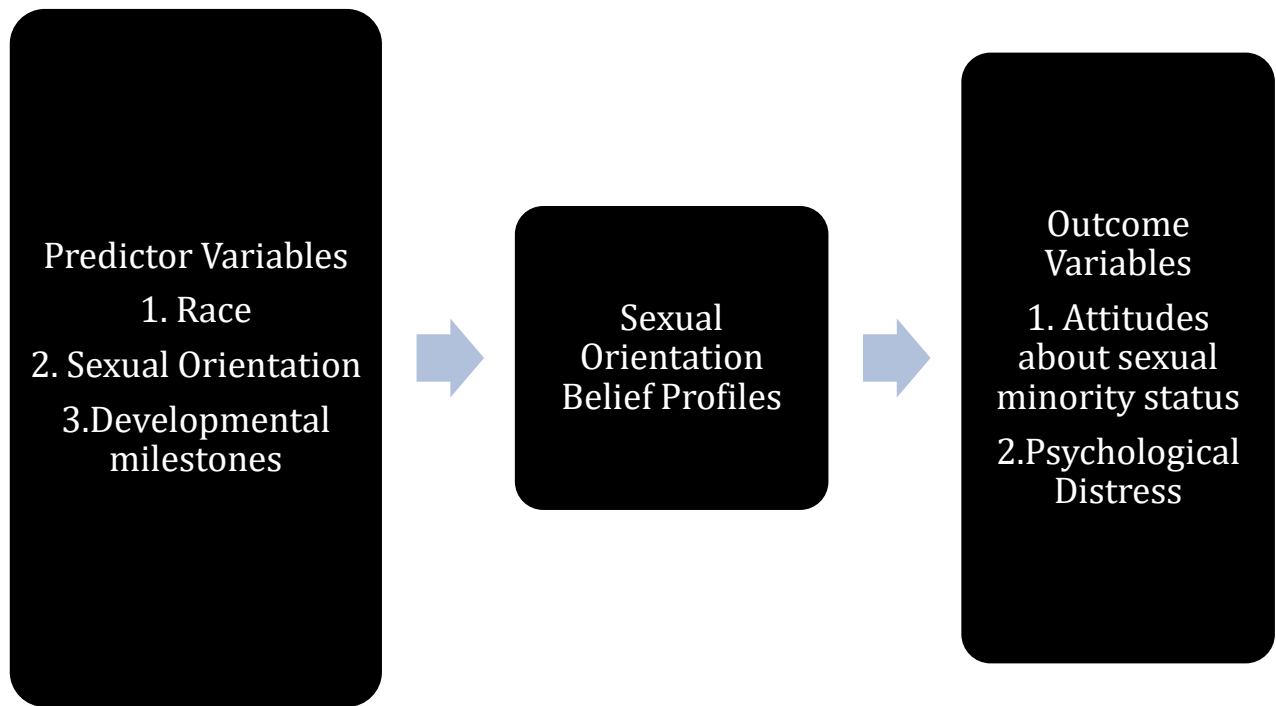
Profile	BIC	ABIC	Lo-Mendell- Rubin (LRT)	LRT <i>p</i> value
1	3782.595	3757.209	--	--
2	3301.63	3260.378	494.712	0.000
3	3217.623	3160.504	110.496	.0139
4	3173.176	3100.191	72.205	0.1733
5	3149.67	3060.816	51.937	.4477

Note: BIC = Bayesian Information Criterion; ABIC = Adjust Bayesian information criterion; LRT = Likelihood Ratio Test.

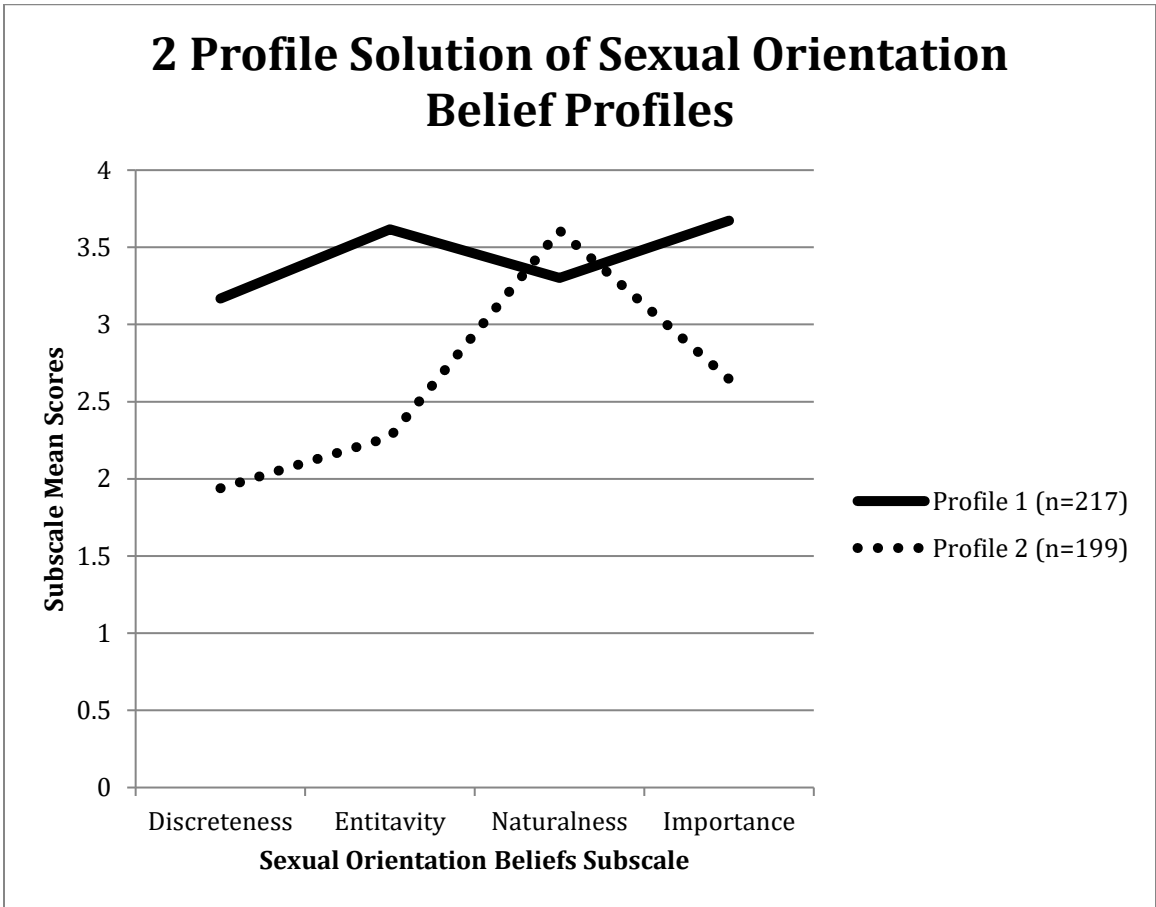
*Table 3. Mean Comparison Between Sexual Orientation Belief Profiles, Attitudes Among Gay, Lesbian, and Bisexual Identifying Participants (n = 389), and Psychological Distress Scale (n = 416)*

	Profile 1: Naturalness-Only	Profile 2: Multidimensional Essentialism	Profile 3: High-DEI
Outcome Variable	M (SE)	M (SE)	M (SE)
Acceptance Concerns	3.137 <sub>a</sub> (.119)	3.689 <sub>b</sub> (.097)	4.766 <sub>c</sub> (.101)
Concealment Motivation	4.139 <sub>a</sub> (.135)	4.203 <sub>a</sub> (.105)	4.864 <sub>c</sub> (.083)
Difficult Process	3.122 <sub>a</sub> (.130)	3.295 <sub>a</sub> (.105)	3.823 <sub>c</sub> (.081)
Internalized Homonegativity	1.867 <sub>a</sub> (.107)	2.728 <sub>b</sub> (.117)	4.613 <sub>c</sub> (.142)
Identity Uncertainty	2.034 <sub>a</sub> (.106)	2.536 <sub>b</sub> (.118)	4.653 <sub>c</sub> (.132)
Identity Centrality	3.355 <sub>a</sub> (.117)	3.77 <sub>b</sub> (.082)	4.451 <sub>c</sub> (.055)
Identity Affirmation	4.291 <sub>a</sub> (.117)	4.259 <sub>a</sub> (.092)	5.075 <sub>c</sub> (.084)
Identity Superiority	1.612 <sub>a</sub> (.087)	2.483 <sub>b</sub> (.110)	4.614 <sub>c</sub> (.120)
Psychological Distress	2.11 <sub>a</sub> (.081)	2.309 <sub>a</sub> (.095)	3.737 <sub>c</sub> (.103)

*Note:* Means not sharing a subscript in a row indicate significant differences ( $p < .01$ ); Acceptance Concerns = LGBIS-Acceptance Concerns Subscale; Concealment Motivation = LGBIS-Concealment Motivation Subscale; Difficult Process = LGBIS-Difficult Process Subscale; Internalized Homonegativity = LGBIS-Internalized Homonegativity Subscale; Identity Uncertainty = LGBIS-Identity Uncertainty Subscale; Identity Centrality = LGBIS-Identity Centrality Subscale; Identity Affirmation = LGBIS- Identity Affirmation Subscale; Psychological Distress = Kessler Psychological Distress Scale.



*Figure 1. Theoretical Model of Hypothesized Relationships Among Variables*



*Figure 2.* Latent Mean Sexual Orientation Beliefs Subscale Scores for a Two-Profile Solution

### 3 Profile Solution of Sexual Orientation Belief Profiles

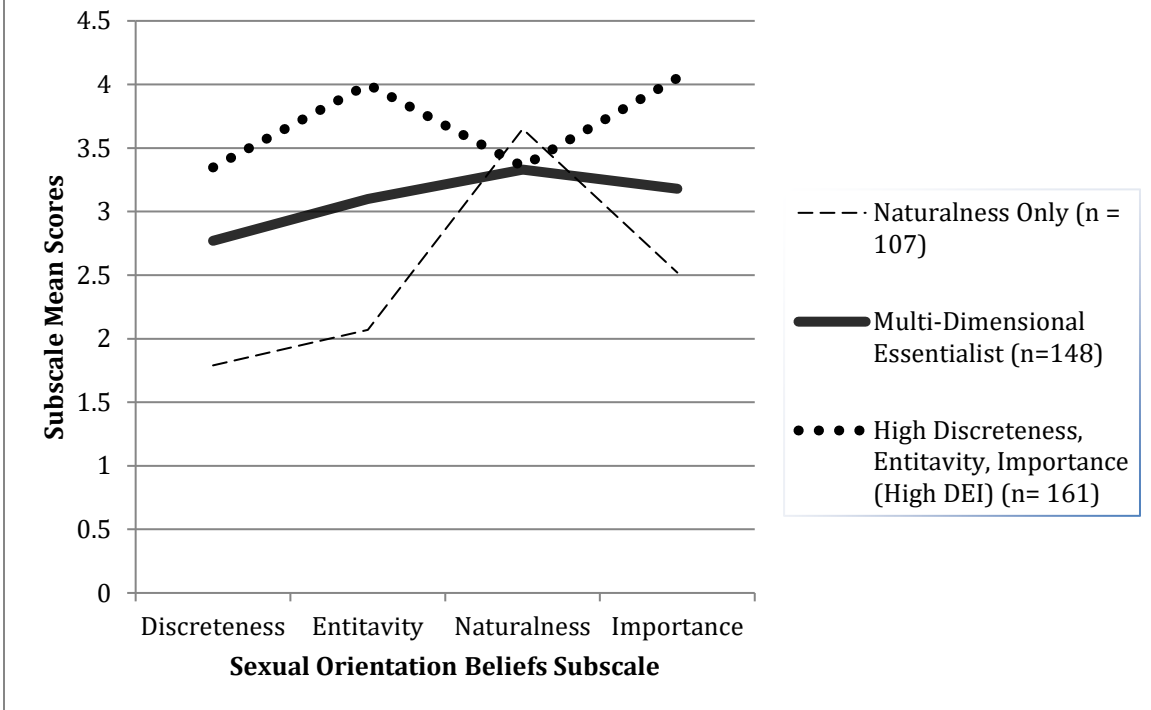


Figure 3. Latent Mean Sexual Orientation Beliefs Subscale Scores for a Three-Profile Solution



## **Vita**

David Tierney was born and raised in a 25-mile radius in the San Francisco East Bay Area. They graduated from Sarah Lawrence College with a Bachelor of Arts, spending a year of that time as a student of Wadham College at University of Oxford. Before starting graduate school, they served as a field coordinator in Eko Refugee Camp in Greece, worked as a behavioral therapist with kids with autism, and studied Spanish while living abroad in Panamá. She is currently pursuing a Doctorate in Counseling Psychology at the University of Tennessee. They finished and defended this paper while living in Johnson City, TN in the midst of a pandemic. They are bigender and prefer all pronouns.