

UCLA

UCLA Electronic Theses and Dissertations

Title

Development, Socioemotional Adjustment, and School Climate Perceptions of Sexual Minority Youth

Permalink

<https://escholarship.org/uc/item/9bv5h8k7>

Author

Smith, Danielle Sayre

Publication Date

2020

Peer reviewed|Thesis/dissertation

UNIVERSITY OF CALIFORNIA

Los Angeles

Development, Socioemotional Adjustment, and School
Climate Perceptions of Sexual Minority Youth

A dissertation submitted in partial satisfaction of the
requirements for the degree of Doctor of Philosophy
in Psychology

by

Danielle Sayre Smith

2020

© Copyright by
Danielle Sayre Smith
2020

ABSTRACT OF THE DISSERTATION

Development, Socioemotional Adjustment, and School
Climate Perceptions of Sexual Minority Youth

by

Danielle Sayre Smith

Doctor of Philosophy in Psychology

University of California, Los Angeles, 2020

Professor Jaana Helena Juvonen, Chair

This dissertation consists of two studies examining development and wellbeing of sexual minority youth. Both studies rely on data from a large, longitudinal study following ethnically and socioeconomically diverse youth across high school. Both studies examine patterns of romantic attraction using a novel and developmentally sensitive measure. In Study 1, the goals are to identify various attraction patterns at each grade level (9th-12th) as well as compare socioemotional wellbeing across romantic attraction groups. Results from latent class analysis of attraction data revealed five patterns of attraction identified at each grade level, including other-gender attraction, same-gender attraction, and attraction to both boys and girls, as well as classes characterized by uncertainty and by limited attraction. One additional class was identified in 11th and 12th grade as having “heteroflexible” attraction. Further, socioemotional correlates of the attraction classes varied, with multi-gender and heteroflexible youth reporting the most

consistent disparities in loneliness and social anxiety, and youth with low or no attraction demonstrating marked differences between the beginning and end of high school. Study 2 focuses on end of high school, examining alignment between romantic attraction and sexual identity at 12th grade. Results indicated that although alignment was high among those attracted exclusively to other gender individuals (identifying as straight) or same-gender individuals (identifying as gay or lesbian), alignment was much lower among the other attraction classes, with high proportions of youth identifying as straight. Disparities in school climate perceptions were demonstrated whether operationalizing sexual orientation as identity or attraction. However, attraction classes with particularly high rates of straight identity—who would be grouped with the sexual majority in identity-based research—were among those reporting that they felt less safe and less like they belonged than sexual majority youth. Taken together, these studies highlight the complexity of adolescent sexual orientation, the importance of focusing on attraction when examining sexual minority adolescents, and differences in wellbeing across sexual orientation groups. These findings make both methodological and conceptual contributions to the current body of literature on sexual minority youth and highlight the need for both researchers and practitioners to broaden their conceptualizations of sexual orientation.

The dissertation of Danielle Smith is approved.

Craig Kyle Enders

Sandra H Graham

Ian W Holloway

Janna Helena Juvonen, Committee Chair

University of California, Los Angeles

2020

TABLE OF CONTENTS

I. General Introduction.....	p. 1
A. Sexual Minority Youth Wellbeing.....	p. 1
B. Sexual Orientation Development.....	p. 4
C. Current Studies	p. 7
II. Study 1.....	p. 10
A. Abstract.....	p. 11
B. Introduction.....	p. 12
C. Method.....	p. 21
D. Results.....	p. 27
E. Discussion.....	p. 36
III. Study 2.....	p. 49
A. Abstract.....	p. 50
B. Introduction.....	p. 51
C. Method.....	p. 57
D. Results.....	p. 63
E. Discussion.....	p. 68
IV. General Discussion.....	p. 82
A. Highly Visible Sexual Minorities.....	p. 83
B. Low Visibility Sexual Minorities.....	p. 84
C. Limitations and Future Directions.....	p. 85
D. Reflections on the Role of Schools.....	p. 89
E. Final Conclusion.....	p. 93
V. Appendices.....	p. 94
A. Appendix A: Romantic Attraction Measure and Recoding, Studies 1 and 2.....	p. 94
B. Appendix B: Developmental Latent Class Analysis, Study 1.....	p. 98
C. Appendix C: Sexual Identity Measure and Recoding, Study 2.....	p. 106
VI. References.....	p. 109

LIST OF FIGURES, TABLES, AND MEASURES

Study 1

Table 1. Attraction Class Enumeration Summary.....	p. 45
Table 2. Percentage of Participants in Each Attraction Class.....	p. 46
Table 3. Coefficients for Regression Models Predicting Social Anxiety and Loneliness from Romantic Attraction.....	p. 47
Figure 1. Responses to Attraction Items Separated by Attraction Class and Grade Level.....	p. 48

Study 2

Table 1. Percentage of Participants in Each Romantic Attraction Class.....	p. 77
Table 2. Percentage of Participants in Each Sexual Identity Group.....	p. 78
Table 3. Percentages of Participants from Each Romantic Attraction Class Falling into Each Sexual Identity Group.....	p. 79
Table 4. Regression Results Predicting Perceived Safety and Sense of Belonging from Romantic Attraction Classes.....	p. 80
Table 5. Regression Results Predicting Perceived Safety and Sense of Belonging from Sexual Identity Groups.....	p.81

Appendices

Romantic Attraction Measure (Appendix A).....	p. 96
Table A1. Response Frequency Percentages for Romantic Attraction Measure.....	p. 97
Table B1. Developmental Class Enumeration Summary.....	p. 104
Table B2. Attraction Class Representation within Developmental Classes by Grade and Participant Sex.....	p. 105
Sexual Identity Measure (Appendix C).....	p. 107
Table C1. Recoding of Sexual Identity Responses into Groups.....	p. 108

VITA

EDUCATION

University of California, Los Angeles

Ph.D., Psychology expected 2020

M.A., Psychology 2015

Major: Developmental Psychology

Minor: Quantitative Psychology

Claremont Graduate University

M.A., Education 2009

Major: Education Specialist, K-12

Scripps College

B.A., Cognitive Neuroscience, *Summa Cum Laude* 2007

Minor: Developmental Psychology

SELECTED FELLOWSHIPS AND AWARDS

•Dena Chertoff Graduate Student Service Award 2020

•J. Arthur Woodward Peer Mentor Award, UCLA Psychology GSA 2020

•UCLA Dissertation Year Fellowship 2018

•UCLA Academic Senate Distinguished Teaching Award 2018

•Shepherd Ivory Franz Distinguished Teaching Award 2017

•UCLA Graduate Summer Research Mentorship Fellowship 2015, 2016

•National Science Foundation Graduate Research Fellowship, Honorable Mention 2015

•Edwin W. Pauley Fellowship, UCLA 2014

PUBLICATIONS

Bell, A. N., **Smith, D. S.**, & Juvonen, J. (2019). Interpersonal attitudes toward cross-ethnic peers in diverse middle schools: Implications for intergroup attitudes. *Group Processes & Intergroup Relations*, *00(0)*, 1-20. doi: 10.1177/1368430219888020

Juvonen, J., Lessard, L. M., Rastogi, R., Schacter, H.L., & **Smith, D. S.** (2019). Promoting social inclusion in educational settings: Challenges and opportunities. *Educational Psychologist*, *54(4)*, 250-270. doi: 10.1080/00461520.2019.1655645

Smith, D. S., Schacter, H. L., Enders, C., & Juvonen, J. (2018). Gender norm salience across middle schools: Contextual variations in associations between gender typicality and socioemotional distress. *Journal of Youth and Adolescence*, *47*, 947-960. doi: 10.1007/s10964-017-0732-2

Smith, D. S. & Juvonen, J. (2017). Do I fit in? Ramifications of low gender typicality in early adolescence. *Journal of Adolescence*, *60*, 161-170. doi: 10.1016/j.adolescence.2017.07.014

SELECTED CONFERENCE PRESENTATIONS

- Smith, D. S.** (2019, March). *Can friendship patterns and middle school norms provide insight into sexual minorities' early adolescent experiences?*. Poster presented at the biennial meeting for the Society for Research on Child Development, Baltimore, MD.
- Smith, D. S.** (2018, October). *Other-gender friends and early adolescent wellbeing: Roles of gender, sexual orientation, and middle school norms*. Poster presented at the biennial Gender Development Research Conference, San Francisco, CA.
- Smith, D. S.** & Juvonen, J. (2018, April). *Social support at school among heterosexual and sexual minority 9th grade youth*. Poster presented at the biennial meeting for the Society for Research on Adolescence, Minneapolis, MN.
- Smith, D. S.** & Juvonen, J. (2017, April). *Gender typicality and romantic attraction: Associations with peer victimization and adjustment during ninth grade*. Poster presented at the biennial meeting for the Society for Research on Child Development, Austin, TX.
- Smith, D. S.** & Juvonen, J. (2016, October). *Perils of gender policing: Socioemotional adjustment and gender typicality in early adolescence*. Poster presented at the biennial Gender Development Research Conference, San Francisco, CA.
- Smith, D. S.**, Bell, A. N., & Juvonen, J. (2016, March). *Do explicit outgroup attitude measures reflect real-life peer relations in multiethnic middle schools?*. Poster presented at the biennial meeting for the Society for Research on Adolescence, Baltimore, MD.
- Dhillon, M. & **Smith, D. S.** (2015, May). *"It's my fault": Peer victimization, gender typicality, and characterological self-blame*. Poster presented at the annual meeting of the Association for Psychology Science, New York, NY.

SELECTED TEACHING AND MENTORING

TEACHING

- Teaching Assistant, UCLA Department of Psychology 2015-2019
 - assisted in a variety of undergraduate courses, including developmental courses, research methodology, and statistics
- Teaching Assistant Consultant, UCLA Department of Psychology 2017-2018
 - instructed graduate pedagogy courses for preservice and first-time TAs
- Mild/Moderate Special Education Teacher, Arroyo Valley High School, SBCUSD 2007-2014
 - modified curriculum and taught 9th-12th grade SDC math courses

MENTORING

- Graduate Undergraduate Mentorship Program, UCLA 2015-2020
 - mentored undergraduates, facilitated workshops, and served as advisory board member
- Research Mentoring of Undergraduate Students 2015-2020
 - provided research mentoring for students working on undergraduate honors theses, McNair projects, and other independent research endeavors

General Introduction

In recent decades, there has been substantial change for sexual minorities in the United States. Although not without backlash, there have been a variety of gains in legal rights and protections, reflecting changing attitudes over recent decades (Horn, 2013). Psychological research on sexual minority experiences has also increased substantially, approximately tripling each decade since the 1970s.¹ However, just as there is still progress to be made in social acceptance of and rights for sexual minorities, there is much yet to be learned about sexual minority experiences and about sexual orientation itself. Young adolescent sexual minorities are navigating a rapidly changing sociopolitical landscape and understanding the implications for their social and psychological adjustment is important, as substantial differences in social-emotional adjustment remain between sexual majority and minority groups.

Sexual Minority Youth Wellbeing

Sexuality-related mistreatment and mental health disparities are evident from early in adolescence (e.g., Kosciw et al., 2018; Pascoe, 2012), and negative experiences during adolescence impact short-term and long-term socioemotional outcomes (e.g., Burton et al., 2013; Toomey et al., 2013). This makes early identification of sexual minority youth—perhaps even before they begin to explicitly identify as such—key to studying their experiences in real time. During secondary school, sexual minority youth face a variety of negative social experiences. These range from being pressured to engage in heterosexual relationships and sexual activity (Pascoe, 2012) to social rejection (Martin-Storey et al., 2015) to verbal and physical attacks (Kosciw et al., 2018). Such negative experiences, in turn, impact adjustment.

¹ Estimate of research is based on a search of the database PsychInfo.

During high school, most sexual minority youth (even those not personally mistreated) are likely to hear homophobic comments or see homophobic behavior around them, and many have reported that adults in their school environments fail to intervene during homophobic incidents (Kosciw et al., 2018). It is unsurprising, then, that sexual minority youth also report perceiving their schools to be less safe than sexual majority youth do, to the point of skipping school because of it (Goodenow et al., 2016). Many schools fail to provide adequate resources or support to sexual minorities—for example, failing to ensure that their policies and curriculum are inclusive (Kosciw et al., 2018). In some school contexts, sexual minority youth are also marginalized, reporting smaller friend networks than their sexual majority peers (Martin-Storey et al., 2015). In addition to feeling less safe, sexual minority students report, on average, a relatively low sense of belonging at school (Galliher et al., 2004), which is likely explained at least in part by such exclusion at both personal and structural levels.

General social support and sexuality-specific support are both important to promoting positive outcomes despite the negative experiences which adolescent sexual minorities are often face (Doty et al., 2010; Williams et al., 2005). Having friends and feeling that those friends truly care is associated with lower social anxiety over time for adolescents (Van Zalk & Van Zalk, 2015). Similarly, both having more friends and having better quality friendships are associated with less loneliness during early and mid-adolescence (Lodder et al., 2017; Vanhalst et al., 2014). In addition to the aforementioned issues of marginalization, sexual minority youth lose friends more often than heterosexual youth and worry more about losing friends (Diamond & Lucas, 2004), and on average have less access to social support than sexual majority youth (Button et al., 2012). There is limited work on young adolescent sexual minorities that has

focused specifically on loneliness or on social, rather than general, anxiety, but sexual minority youth are clearly at risk for elevated levels of both based on trends in social relationships.

Although disparities in comparison to sexual majority youth are robust, group differences *within* the sexual minority community are less well understood. Some literature points to bisexual youth as being at risk in comparison to gay and lesbian youth, although this difference is not as robust as sexual minority to heterosexual comparisons (e.g., Plöderl & Tremblay, 2015). Further, for some “nontraditional” sexual minority youth, there is little research addressing group differences in comparison to other sexual minorities. Asexual youth, for example, may in some ways be protected during adolescence, because they may be less likely to disclose their asexual identities (Robbins et al., 2016), as disclosure is associated with increased victimization (Kosciw et al., 2015). However, there is some evidence that asexual youth fare worse at school in some ways than other sexual minorities (e.g., Kosciw et al., 2018), and that asexual and in particular demisexual youth report markedly high anxiety and depression in comparison to both heterosexual youth and other sexual minorities (Borgogna et al., 2019).

Disparities between sexual minority and majority youth are not dependent on how sexual orientation is operationalized (i.e., disparities are found whether assessment of sexual orientation is based on behaviors, attraction, or identity; Plöderl & Tremblay, 2015; Toomey & Russell, 2016). However, when gaining better understanding of the aforementioned differences within the sexual minority community—especially during early stages of development—operationalization is particularly critical. In fact, some sexual minority subgroups are likely to be left out of studies using common measures of sexual orientation. Thus, I turn next to a discussion of the development of sexual orientation and its implications for those attempting to understand the experiences of sexual minority adolescents.

Sexual Orientation Development

Sexual orientation is a multi-faceted concept, with each facet offering different insight into a person's sexuality. Romantic and sexual attraction, for example, reflect desires or reactions toward other people. Relationship status and sexual behavior, on the other hand, are socially and behaviorally based, reflecting whether and how someone acts on their attraction.² Factors other than attraction—e.g., partner availability, or expectations about others' reactions—may impact behavior. For sexual minorities, small communities and issues surrounding disclosure of sexual orientation may play a particularly strong role in shaping behavior (Hequembourg & Brallier, 2009). Yet another aspect of sexual orientation is sexual identity, which can refer to identification with a particular sexual orientation group or category (i.e., gay, straight, bisexual, asexual, etc.). Alternatively, sexual identity can refer to a complex, multidimensional social identity construct extending beyond labels, that entails exploration and experiences related to sexual orientation (e.g., see Mohr & Kendra, 2012). In the current work, I use *sexual identity* to refer to identification with one or multiple groups rather than the more complex social identity construct. However, it is important to note that simply describing oneself using any sexual minority group label likely implies having engaged in some introspection about one's sexuality.

Because each of the aspects of sexual orientation is distinct, it is not surprising that they do not always align in the ways one might expect (see Savin-Williams, 2006). For example, some people who are attracted to both men and women might identify as straight or gay instead of bisexual. Others who identify as part of the asexuality spectrum (identities characterized by limited or no attraction) may nonetheless have sexual experiences, and some who engage in

² Note that I am referring here to voluntary romantic and sexual behaviors, and not to relationships or sexual activity based in the use of coercion or force.

romantic relationships only with other-gender individuals may be attracted to all genders. Further, during early and middle adolescence, apparent misalignment may be particularly common. Typically, people first experience attraction and later act on and construct an identity around it (e.g., Floyd & Stein, 2002; Katz-Wise et al., 2017). Many gay, lesbian, and bisexual youth do not experience same-gender attraction until their teenage years and do not act on these attractions or explicitly describe themselves as sexual minorities until months or years later (Katz-Wise et al., 2017). Adolescents also report fluidity of sexual orientation; for example, a recent study of over 700 rural U.S. high school students found that one in ten boys and one in three girls reported at least one change in attraction over the course of three yearly surveys, and nearly as many report changes in sexual identity (Stewart et al., 2019). Such development implies that youth in their teens are particularly likely to report both fluid and seemingly incongruous information about their sexual orientation, and in particular to be perceived as sexual majority based on measures of identity but sexual minority based on measures of attraction.

There are certain groups of sexual minorities for whom such apparent lack of alignment is even more likely to be the case. For example, negative attitudes toward and stereotypes about bisexual individuals are prevalent among gay and lesbian, as well as straight, individuals, and bisexuality is often dismissed as an illegitimate sexual identity or transition stage (Feinstein & Dyar, 2017; Hequembourg & Brallier, 2009). Such negativity and mischaracterization might influence those with bisexual attraction to behave or identify monosexually (i.e., identifying as straight, gay, or lesbian) for an extended period of time. Youth who experience bisexual attraction but are more attracted to other-gender individuals may be particularly likely to identify as heterosexual, even after high school (e.g., Hoberg et al., 2004). In addition, those whose

attraction varies by degree rather than by gender—i.e., those who experience limited or no attraction—are also particularly likely to report disconnects between attraction, behavior, and identity. The asexuality spectrum remains unfamiliar to many, and asexuality, too, is often delegitimized as a sexual identity (Bogaert, 2015). Some asexual adults describe having spent much of their adolescence feeling confused or like something was wrong with them due to their lack of attraction and being relieved at discovering information about asexuality (Gupta, 2017; Houdenhove et al., 2015). Such experiences underscore a measurable time gap between realization of non-majority attraction patterns and explicit identification as asexual during adolescence.

There is nothing inherently problematic about the incongruity of various aspects of sexual orientation. However, apparent misalignment presents complications for researchers working with participants at earlier developmental phases and from certain sexual orientation groups. Many studies on sexual minorities, for example, use explicit sexual identity categories or labels (e.g., LGB) as the basis for recruiting study participants; the familiar terminology is an efficient and practical way to recruit sexual minorities in large numbers. However, due to the aforementioned developmental considerations, when used with adolescents this recruitment method may result in overrepresentation of some groups (e.g., gay or lesbian; early-developing sexual minorities) and underrepresentation of others (e.g., those attracted to multiple genders; asexual youth; late-developing sexual minorities) in comparison to rates in the general population. Focusing on attraction, the earliest milestone of sexual minority development, instead of relying only on sexual identity is one way to address this issue. Particularly if attraction is operationalized in a manner that allows adolescents to report complexities such as uncertainty, mixed patterns of attraction, and limited attraction, such developmental sensitivity

may provide insight not only into the nuances of sexual minority development, but into sexual minority adjustment as well.

Current Studies

The following studies address two overarching goals. The first goal is to add to the body of literature on the development of sexual orientation during adolescence by focusing on romantic attraction. Measures of attraction, typically the earliest indicator of sexual minority orientation, are often limited to a single item (e.g., Stewart et al., 2019) or pair of items (e.g., Katz-Wise et al., 2017) regarding the gender or genders of individuals to which someone is attracted. Instead, I identify empirically derived patterns of romantic attraction based on a multi-item attraction scale that allows participants to provide a variety of gendered (e.g., interest in boys, girls, or both) and non-gendered responses (e.g., uncertainty or lack of interest). In the first study, I discuss romantic attraction classes identified by applying latent class analysis (LCA).

In the second study, I examine how the romantic attraction classes align with explicit sexual identity during the last year of high school. As previously described, developmental literature demonstrates that there is typically a gap between realizing sexual minority attraction and use of sexual minority identity labels (Floyd & Stein, 2002; Katz-Wise et al., 2017), and there is a dearth of information about the development and wellbeing of those who continue to identify as straight long-term despite experiencing sexual minority attraction. Thus, examining the combination of romantic attraction and sexual identity can address a knowledge gap about straight-identified sexual attraction minorities, as well as shedding light on the degree to which some sexual minority groups may be under-identified through reliance on sexual identity for participant recruitment.

The second overarching goal of the following studies is to examine differences across sexual orientation groups in youth adjustment and perceptions. In the first study, I examine loneliness and social anxiety across romantic attraction classes at each grade level. Further, I examine these cross-sectional models for evidence of developmental trends over the course of high school. In the second study, I examine perceptions of school safety and sense of belonging at school among 12th grade students, both across sexual identity groups and across romantic attraction classes. One purpose of examining these correlates is to validate the novel measure of attraction through comparison of sexual minority and majority adjustment, as the differences across these two groups are very robust across the studies (regardless how sexual orientation is conceptualized and operationalized). However, particular attention will be given to differences between sexual minority groups, as well as to outcomes for sexual minority groups who tend to be under-identified or mis-identified using common measures of sexual orientation.

Data for these analyses comes from a large, longitudinal project for which three cohorts of ethnically and socioeconomically diverse students from urban California schools were surveyed yearly from 6th grade through one year after their projected high school graduation year. The data for the current analyses came primarily from 9th through 12th grades, for which data collection ranged from the 2012-2013 to the 2017-2018 academic years. Thus, an additional strength of the current studies, beyond use of the novel, nuanced attraction measure to examine development and adjustment, is how recently data were collected and how regularly sexual orientation was assessed. Given the rapid sociopolitical change for sexual minorities and evidence that there are generational differences in sexual orientation development (Meyer, 2018), this recency is particularly important, as much of the quantitative research on sexual minority development, even if published recently, is based on less current sources (e.g., Katz-

Wise et al., 2017). Further, due to the size of the sample—nearly 4,500 youth participated over the course of high school—it is likely that even some small sexual minority groups will be identified in high enough numbers for analysis of socioemotional outcomes despite the lack of targeted sexual minority recruitment.

STUDY 1

Romantic Attraction and Socioemotional Adjustment Across High School

Abstract

Research illuminating adolescent sexual orientation development and sexual minority wellbeing requires the use of developmentally sensitive measures of sexual orientation. Utilizing data collected from 4,448 socioeconomically and racially diverse urban youth on yearly surveys over the course of high school, the current study examined patterns of romantic attraction reported on a novel multi-item measure of romantic attraction. Patterns of attraction identified included other-gender, heteroflexible, multi-gender, and same-gender attraction as well as uncertainty about, and lack of, attraction. Examination of associations between romantic attraction and socioemotional adjustment demonstrated that whereas some groups (those attracted to both boys and girls) reported higher loneliness and social anxiety than the sexual majority at every grade level, others (e.g., those reporting limited attraction) only reported such disparities at the end of high school. The findings suggest that operationalizing sexual orientation in a developmentally sensitive manner reveals both known and more complex patterns of attraction that have distinct implications for adolescent adjustment.

Romantic Attraction and Socioemotional Adjustment Across High School

One of the developmental tasks of adolescence is coming to understand one's place in the romantic and sexual world (Tolman & McClelland, 2011). During high school, many adolescents are engaging in their first romantic relationships, and those who are not are still immersed in a social setting in which romantic relationships and sexuality are highly salient and associated with social status (e.g., Savickaitė et al., 2020). For all youth, navigating the romantic and sexual world may be a challenging endeavor. However, for youth whose attraction does not fit in with heteronormative assumptions³—those who are attracted to others of the same sex or gender, do not experience attraction, or are not sure to whom they are attracted, if anyone—things may be even more complicated. Unfortunately, available research on sexual minority youth development is limited. Some studies quickly become outdated, while those relying on retrospective data provide insight into early experiences that is influenced by participants' continued development. Although much headway has been made in recent years, there remains a lack of real-time information about the experiences of adolescent sexual minorities and the socioemotional ramifications of their development. This is particularly true for those who are still in the process of coming to understand their sexual orientations and may not (yet or ever) explicitly adopt sexual minority identities. The current study aims to shed light on high school youths' developing romantic attraction and how attraction is related to socioemotional adjustment.

Examining Sexual Orientation Development

Sexual orientation is multi-faceted, reflecting attraction, behaviors, and sexual identity,⁴

³ Heteronormativity includes the assumptions that people will identify as straight, experience exclusive other-gender attraction, and engage only in heterosexual romantic and sexual relationships (Harris & White, 2018), as well as assumptions of compulsory sexuality, i.e., that everyone will experience sexual and romantic attraction (Rich, 1980).

⁴ In the current study, I use sexual identity to refer to explicit self-identification using sexual orientation group labels (e.g., gay, lesbian, bisexual, straight, asexual), rather than to a broader multi-dimensional concept of sexual identity more similar to familiar constructs of racial or ethnic identity.

each of which offer unique insight into a person's sexuality (Savin-Williams, 2006). Romantic and sexual attraction reflect desires or reactions, relationships and sexual behavior reflect whether and how someone acts on their desires, and sexual identity reflects a person's self-concept in relation to their sexuality. Accordingly, sexual orientation can be operationalized in a variety of ways. For some research, there may be one aspect of sexual orientation that is most appropriate. For example, for research related to safer sex practices, sexual behavior is most relevant. For survey research on development, social experience, and adjustment, self-reports of behavior, attraction, and sexual identity are all common, but one important consideration is that these measures of sexual orientation do not always align as expected (Savin-Williams, 2006). For practical reasons, recruitment of young sexual minority participants, if not school- or community-based is often based on explicit sexual identity. However, the available research on sexuality minority development suggests that particularly when doing research with younger adolescents, measures of attraction are preferable for identifying diverse groups of sexual minorities (Austin et al., 2007; Katz-Wise et al., 2017).

Among those who eventually identify as gay, lesbian, or bisexual, same-sex attraction usually occurs before other "milestones" of sexual orientation development (e.g., same-sex sexual activity, explicitly identifying with a sexual minority group; Floyd & Stein, 2002; Katz-Wise et al., 2017). Many who experience some degree of same-gender attraction by the end of high school identify as exclusively or mostly heterosexual, and have only other-gender sexual experiences, through their teenage years and into their 20s (Katz-Wise et al., 2017). Those whose sexual minority status is characterized by *lack* of attraction, rather than same-gender attraction, are also likely to report seeming disconnects between attraction and sexual identity for an extended time due to lack of access to information about the asexuality spectrum of sexual

identities (Houdenove et al., 2015). Further, although some on the asexual spectrum do engage in romantic and/or sexual relationships for a variety of reasons, behavioral measures are often focused on sex or gender of those in the relationship rather than degree of sexual interest and would thus not fully encompass the variations in their experiences. As such, attraction is the measure most likely to identify those at the early stages of coming to understand their sexual orientation as well as those whose sexual orientation is characterized by multi-gender or limited attraction.

Although attraction is the preferable measure for young adolescents, not all measures of attraction provide the same information; both developmental appropriateness and level of nuance are important considerations. The aforementioned study by Katz-Wise and colleagues (2017) on developmental milestones, for example, is based on a dataset that used a measure of attraction comprised of two yes-or-no questions about whether they had ever experienced sexual attraction to males and to females, with follow-up questions about age of first experiences. A more recent prospective, longitudinal study of sexual orientation among high school students assessed attraction yearly for three years, using a 5-point scale ranging from attraction only to boys to attraction only to girls (Stewart et al., 2019). The former study allows for the examination of the onset of attraction in comparison to other experiences, and the latter, prospective examination of changes in attraction. However, due to methodological constraints, neither dataset can be used to address questions that include complex patterns of attraction or variation in aspects of attraction other than gender—such as degree of attraction. To answer such questions, attraction measures should allow responses reflecting uncertainty as well as lack of attraction that may characterize the developmental experiences of young sexual minorities (Austin et al., 2007). Using such a

measure of attraction repeatedly would provide nuanced understanding of sexual minorities' development and potentially important data about disparities in socioemotional adjustment.

Sexual Minority Youth Adjustment

Differences between sexual minority and majority individuals are robust, regardless of how sexual minority status is assessed (Toomey & Russell, 2016). Decades of research demonstrates that sexual minorities, on average, are more likely to have negative social experiences (e.g., social isolation, peer victimization; Button et al., 2012; Hatzenbuehler et al., 2012; Toomey & Russell, 2016) and higher levels of internalizing symptoms (e.g., anxiety, depression; Lucassen et al., 2017; Plöderl & Tremblay, 2015). Further, peer mistreatment and social isolation likely contribute to poor adjustment outcomes. Beyond the well-documented connections between victimization and poor adjustment (Juvonen & Graham, 2014), there is evidence that supportive friendship is protective against interpersonally-oriented adjustment outcomes such as loneliness and social anxiety (Van Zalk & Van Zalk, 2015; Vanhalst et al., 2014). Given the aforementioned social isolation of sexual minority youth, it appears that loneliness and social anxiety, although not the typical foci of studies of sexual orientation adjustment, would provide new insights into the social-emotional adjustment of sexual minority youth.

Although it is less common for studies to have adequate sample and subgroup sizes to disaggregate the umbrella category of “sexual minority” further, and information specifically about loneliness or social anxiety is limited, there is some evidence that particular sexual minority groups are at a higher risk than others. For example, some studies find that bisexual adolescents and adults report worse anxiety not only in comparison to heterosexual individuals, but also in comparison to those who are gay or lesbian (Feinstein & Dyar, 2017; Plöderl &

Tremblay, 2015). Pansexual youth (i.e., those who experience attraction to individuals across the gender spectrum) in high school report particularly negative experiences at school compared to other sexual minorities (Kosciw et al., 2018), and pansexual college students report particularly high levels of depression (Borgogna et al., 2019). Thus, those whose sexuality is characterized by multi-gender attraction tend to fare worse than those whose sexuality is characterized by mono-gender (i.e., exclusively same-gender or other-gender) attraction.

Although information on sexual minority groups beyond the “traditional” categories of gender-related sexual minority status (i.e., gay, lesbian, bisexual, etc.) is relatively sparse, there is some evidence that youth on the asexuality spectrum are also likely to fare worse than other sexual minorities (as well as heterosexual youth). Among sexual minority youth in middle and high school, for example, a recent national survey indicated that asexual youth feel less like they belong at school than other sexual minorities (Kosciw et al., 2018). Further, in a recent national study of college students, asexual youth reported the largest disparities in depression in comparison to heterosexual youth, and demisexual youth (those on the asexuality spectrum who experience limited or conditional attraction) reported the largest disparities in anxiety (Borgogna et al., 2019). As such, those who do not experience attraction, or experience very limited attraction, may fare worse than other sexual minorities.

One reason for these disparities within the sexual minority communities is likely that some sexual identities are perceived as less legitimate than others or have specific negative stereotypes associated with them. Bisexual or bisexually attracted individuals, for example, often have to contend with assumptions that their sexual orientation is temporary or invalid, or that bisexuality precludes monogamy (Dyar & Feinstein, 2018), and pansexual youth likely face similar mischaracterizations. Unfortunately, bisexuals sometimes face such discriminatory

attitudes from within the sexual minority community as well as from heterosexuals (Lambe et al., 2017). Similarly, those on the asexuality spectrum may face lack of recognition or support from both sexual majority and sexual minority communities, as asexuality as a sexual identity is an unfamiliar concept for many and is delegitimized or pathologized by others (Gupta, 2017; Houdenove et al., 2015; Przybylo, 2011). Lack of access to or discrimination from the broader sexual minority community likely limits the availability of sexuality-related social support, which is an important factor in sexual minority resiliency (Doty et al., 2010). Further, for those who identify as heterosexual or straight despite experiencing multi-gender or limited attraction, self-identification as part of the sexual majority may further limit access to the support of others with similar sexual orientations and experiences. Thus, adolescents who are asexual or bisexual based on attraction may feel particularly lonely or anxious when among their peers, even if they identify as straight, due to limited support.

Understanding nuances in adjustment across different sexual minority groups is important to intervening effectively and improving outcomes for diverse sexual minority youth.

Unfortunately, there is overlap between those who report worse outcomes and those who are particularly likely to be underrepresented or designated as part of the sexual majority in research. Again, those who experience multi-gender or limited attraction are among those likely not to explicitly describe themselves using sexual minority identity labels until later adolescence or adulthood, if at all (Houdenove et al., 2015; Katz-Wise et al., 2017). Although too few studies provide enough information about asexuality spectrum participants to make a similar comparison, examination of studies using different recruitment methods supports the theory that adolescent participants experiencing multi-gender attraction are under-sampled when using

identity-based recruitment.⁵ Given this, nuanced and developmentally sensitive operationalization of attraction, used with a community-based or school-based sample of youth, is key to gaining further insight into socioemotional adjustment disparities of sexual minority adolescents, including those who tend to be underrepresented in identity-based studies.

Current Study

The current study has two aims. The first is to gain insights into the development of sexual orientation by examining patterns of romantic attraction across four years of mid-adolescence (i.e., during high school). By relying on a novel multi-item romantic attraction measure and latent class analyses (LCA), my goal is to assess patterns of romantic attraction (e.g., same-gender, other-gender, multi-gender, and other nuanced patterns that may emerge) each year (grade level) of high school. Although the small group sizes and complex patterns of change across four waves of data do not lend themselves to longitudinal analyses (e.g., latent transition analyses, LTA), I examine patterns of change in class membership at both the individual level and group level, using a combination of descriptive statistics for a smaller sample of youth who participated across all four years of high school and LCA applied to the four years of cross-sectional attraction classes for all participating youth.

The second aim of the current study is to examine how socioemotional adjustment (i.e., social anxiety, loneliness) is associated with attraction at each grade level. I examine whether those reporting sexual minority attraction also report higher rates of loneliness and social anxiety

⁵ For example, in the 2017 GLSEN National School Climate survey, identity-based recruitment resulted in a sample of sexual and gender minorities that was 48% bisexual or pansexual—identities associated with multi-gender attraction—and 42% were gay or lesbian (Kosciw et al., 2018). By contrast, in school-based studies, estimates of multi-gender attraction are much higher—sometimes over 90% of sexual minorities included in a study (e.g., Stewart et al., 2019).

in comparison to sexual majority youth, as well as whether these associations differ across sexual minority groups. In addition, I discuss apparent developmental trends across grades.

To address the first aim of the study, I relied on a novel measure that includes questions about attraction, crushes, intimate feelings, and interest in romantic relationships. Participants were able to provide a range of gender-specific responses, including interest in only boys, only girls, or three options indicating some degree of interest in both boys and girls. They could also indicate uncertainty about or lack of romantic interest, both of which are valid responses in general and particularly likely to be applicable among younger adolescents. As such, the current measure of romantic attraction allows participants to vary their responses across multiple items in developmentally meaningful ways, and hence provides a more nuanced picture than when simply asked about the source of the attraction with one question. For example, if a girl knew she was romantically attracted to boys, had recently started experiencing crushes toward girls as well as boys, and was uncertain about what that meant for her regarding future romantic relationships, the novel measure would allow her to provide an authentic response that represented her current experience. Likewise, based on this new measure it is possible to capture profiles of attraction that may lead to eventual identification with the asexuality spectrum; e.g., occasional experiences of attraction or crushes with no intimate feelings or interest in being in a romantic relationship.

Although some assumptions about expected patterns could be made based on responses to more limited attraction measures, multi-item attraction measures such as the one used in the current study are uncommon. Therefore, analysis of romantic attraction data will be exploratory, using latent class analysis (LCA) to extract classes from the data at each grade level. Once the best number of classes for the data is determined for a given grade level, participant responses

within each class will be examined to determine conceptual meaning. Further, I will examine robustness of the attraction patterns identified by comparing classes (i.e., participant responses in conceptually similar classes) across grade levels. Finally, to address patterns of attraction over time, I will provide descriptive statistics for both group patterns (i.e., by comparing percentages of youth in conceptually similar attraction classes at each grade level) and individual change (i.e., by examining percentages of individual youth reporting consistent or different classification across a given transition). These patterns over time will be discussed separately for male and female participants, given prior findings of substantive gender differences in attraction and sexual fluidity (e.g., Stewart et al., 2019).

To address the second aim, I will examine differences in socioemotional adjustment across romantic attraction classes at each grade level. Whereas many studies of sexual minority youth focus on depression, general anxiety, or risky behavior, I focus on social anxiety and loneliness—two socioemotional outcomes that are closely tied to interpersonal experiences (Van Zalk & Van Zalk, 2015; Vanhalst et al., 2014). Consistent with prior work on a variety of adjustment outcomes, I expect that sexual minority youth will report disparities in comparison to sexual majority youth (Plöderl & Tremblay, 2015). However, I also expect that some sexual minority attraction groups will stand out as particularly at risk. As previously described, both non-attracted and multi-gender attracted (e.g., bisexual) individuals are likely to experience heightened risk in comparison to adolescents attracted to only one gender category (Borgogna et al., 2019; Feinstein & Dyar, 2017; Kosciw et al., 2018; Plöderl & Tremblay, 2015), and as such I expect that similar disparities may be found for those who are attracted to multiple genders or experience limited attraction. I expect as well that associations between attraction and wellbeing may differ by age. For example, at the beginning of high school, experiencing limited or no

attraction may not make an adolescent stand out beyond being perceived as a late developer. By college, however, youth with limited attraction experience markedly higher anxiety (Borgogna et al., 2019). As such, I expect that limited attraction, in particular, may be more strongly associated with socioemotional adjustment difficulties for youth at the end rather than the beginning of high school.

Method

Participants

The current study relies on data from a longitudinal study of adolescents initially recruited from 26 public middle schools. Re-enrollment in the high school portion of the study included a total of 4,646 participants. Of these, 96% ($n = 4,454$) provided self-report data at least once in grades 9 through 12. An additional 6 students were excluded because they were missing large portions of the survey, including all relevant romantic attraction and socioemotional adjustment data, leaving an overall analytic sample of $n = 4,448$. The current sample is 54% female and 46% male. Participants were racially/ethnically diverse, identifying as 10% Black/African American, 15% East/Southeast Asian, 21% White/Caucasian, 32% Latinx, and 22% other ethnicities, including South Asian, Filipino and Pacific Islander, Middle Eastern, Native American, and multiethnic. Based on parents' reports, 40% of them had a 4-year college degree or higher and 53% reported less education than a college degree (7% unreported).

The current sample differed from those who did not participate in high school in several ways. Participating youth included more female students (46% among nonparticipating youth; $\chi^2(1, N = 4,448) = 101.66, p < .001$), as well as more students whose parents had at least a 4-year college degree (34% among nonparticipating youth; $\chi^2(1, N = 4,448) = 323.85, p < .001$). Ethnic representation differed in that there were fewer Black youth, and more Asian and White

youth, in the current sample ($\chi^2(4, N = 4,429) = 283.19, p < .001$; nonparticipating youth were 18% Black, 10% Asian, 17% White, 32% Latinx, and 23% other ethnicities. The current sample reported similar baseline (8th grade) levels of loneliness ($M = 1.72, SD = .84$) to those who did not participate in high school ($M = 1.65, SD = .81; t(2,910) = 1.63, p = .290$). Those who did participate ($M = 2.12, SD = .78$) reported higher social anxiety than those who did not participate ($M = 1.97, SD = .67; t(2,878) = 3.81, p < .001$).

Students were initially recruited in fall of 6th grade from 26 diverse, urban middle schools in California. Due to the high language demands of the survey, students who received instruction in self-contained Special Education or English Language Learner programs were not recruited. Participating students ($n = 5,991$) received parent consent and provided written assent. Participants were re-recruited in high school in school, by mail, or by email. The aforementioned total of 4,646 participants (78% of the original middle school sample) received consent for the latter portion of the study between 9th grade and one year out of high school—85% ($n = 3,936$) of those in 9th grade. Consent was provided by parents or, if participants had reached the age of 18, by the participants themselves. Consent forms for the high school study were provided in other languages as needed, including Spanish, Chinese, Vietnamese, and Korean. To encourage students to return high school consent forms in 9th grade (whether or not they were given permission to participate), those who did were entered into a raffle to win an electronic tablet and their families were entered into a 1/150 chance raffle to win \$50 gift cards. Participants provided written assent before participating in the high school portion of the study and received an honorarium for each completed survey. Including demographic information, data for the current study come from both the middle school (6th and 8th grades) and high school (9th through 12th grades). Students received honoraria for completing the surveys, with amount paid per survey

increasing as participants aged (\$5 in 6th grade, \$10 in 7th-8th grades, \$20 in 9th-11th grades, and \$30 in 12th grade).

Measures

Romantic attraction. During 9th, 10th, 11th, and 12th grade, participants responded to a novel measure of romantic attraction, consisting of five items regarding whom they are attracted to, get crushes on, have intimate feelings toward, want to be in relationships with, and daydream about (adapted from Ghavami & Peplau, n.d.). For each of these five questions, there were 7 possible responses regarding the objects of their romance: *only boys, mostly boys, boys and girls equally, mostly girls, only girls, not sure, and no one*. Although Cronbach's alpha can be calculated for this measure with removal of *no one* and *not sure* responses, and is extremely high across waves (.98), it is likely an inflated estimate of internal consistency. Sexual minority youth are overrepresented among those who responded with *no one* or *not sure* (and were thus not included in the alpha calculation, which uses listwise deletion), thus the high value is likely biased by overrepresentation of male participants indicating exclusive interest in girls and female participants indicating exclusive interest in boys. The measure and details of recoding and use can be found in Appendix A and the analytic plan below.

Socioemotional adjustment. Social anxiety, and loneliness were measured in 8th through 12 grades. As the goal is to examine adjustment that may be affected by experiences during high school, 8th grade loneliness and social anxiety were included to control for disparities existing prior to high school. *Social anxiety* was measured using six items (α range: .81-.87) adapted from two subscales (Fear of Negative Evaluation; Social Avoidance and Distress-General) of the Social Anxiety Scale for Adolescents (LaGreca & Lopez, 1998). Participants rated items such as "I worry about what others think of me" and "I'm afraid to invite others to do things with me

because they might say no”, using a scale ranging from 1-*not at all* to 5-*all of the time*.

Loneliness at school was measured using five items (α range: .92-.95) adapted from an existing scale (Asher & Wheeler, 1985). Participants rated items such as “I’m lonely at school” and “I feel left out of things” on a scale that was later reverse coded such to range from 1-*not true at all* to 5-*always true*. Averages were created for both scales, oriented such that higher values indicated higher levels of social anxiety and loneliness, respectively.

Demographic data. Participants reported their binary *sex* as male or female in 6th grade. Participants also indicated their *race and/or ethnicity* in 6th grade, using a list of 13 options, including write-in options for multiethnic identities and identities not included in the list. Responses were collapsed into the previously mentioned panethnic groups: Black, East and Southeast Asian, Latinx, White, and other ethnicities (including multiethnic youth). When providing consent, parents or guardians reported their highest *level of education*, including options of elementary or junior high school, some high school, high school diploma, some college, 4-year college degree, or graduate degree. For the current analyses, the lowest two categories were combined into a single category labeled in analyses as no high school diploma.

Data Analysis Plan

After some preliminary analyses, the romantic attraction response scale was recoded. First, gendered responses (from *only boys* to *only girls*) were recoded using participants’ sex to create consistent response categories of *only other sex/gender*, *mostly other sex/gender*, *boys and girls equally*, *mostly same sex/gender*, *only same sex/gender*, *not sure* and *no one* for both male and female participants. Second, the complexity of the romantic attraction scale (i.e., the number of parameters being estimated) was reduced in two ways because preliminary analyses showed poor model convergence. First, for conceptual reasons, backed by an examination of participant

responses, the daydream item was removed from the scale, leaving four items for final analyses. Second, the three response categories indicating interest in both boys and girls (*mostly other sex/gender, boys and girls equally, mostly same sex/gender*) were combined into a single response category of *boys and girls*, thus reducing complexity while maintaining exclusive monosexual (i.e., only other sex/gender; only same sex/gender) as well as multi-gender attraction responses. Further detail on these reductions in the complexity of the measure can be found in Appendix A.

LCA was used to identify romantic attraction classes based on participants' recoded responses to the four attraction items. At each grade level (9th through 12th grades), models were fit iteratively, beginning with a single-class model and increasing the number of classes, comparing the fit for each number of classes with the previous model using a number of indices. Before examination of fit indices, replication of the best loglikelihood value was examined for each model. If the loglikelihood values were not replicated to a high degree (i.e., if different start values produced variable results instead of the same final model), the number of random start values was increased to ensure that the best loglikelihood value was a true minimum and not a local minimum. In the case that different start values resulted in different final stage models with very similar loglikelihood values (i.e., two or more final stage models with the same number of classes were a similarly good fit for the data), classes from each model were examined before moving forward, ensuring that they were similar in terms of estimated responses and estimated proportion of individuals in the class.

Six fit indices were considered in deciding the best-fitting LCA model for each grade level. The Bayesian Information Criterion (BIC; Schwarz, 1978) and sample size adjusted BIC (saBIC; Sclove, 1987) were both examined, with lower values indicating better models. BIC has

been demonstrated to be one of the best indicators of model fit, with saBIC sometimes overestimating the number of classes in the true model (Nylund-Gibson et al., 2007). The remaining four indices compare relative fit between two or more models. Two likelihood ratio tests (LRTs), indexing relative fit by comparing two “neighboring” models (i.e., a model with k classes and one with $k + 1$ classes) were used: the Lo-Mendel-Rubin adjusted LRT (aLMR-LRT; Lo et al., 2001) and the bootstrapped LRT (BLRT; McLachlan & Peel, 2000) were examined. For both LRTs, significant test indicates that the addition of a class improved model fit compared to the previous model, i.e., the first non-significant p value, when systematically increasing the number of classes by 1 for each subsequent model, indicates that the previous model was the best fit. It is noteworthy that of these two LRTs, the BLRT tends to perform better across different model conditions (Nylund-Gibson et al., 2007). In addition, the Bayes Factor (BF; Wagenmakers, 2007; Wasserman, 2000), which calculates a ratio of the probability of a model being “correct” in comparison to a model with one additional class, was examined. For BF, values below 1 are evidence against the model, and greater than 10 are strong evidence for the model under consideration over a model with one additional class (Masyn, 2013). Approximate corrected model probability (cmP; Schwarz, 1978) provides an approximation of the probability of a particular model being correct relative to all models being considered, so the model with the probability closest to 1 (i.e., the highest probability) is considered the best model.

Once a best model was selected for a wave based on the six fit indices, estimated responses to each item for each class were examined conceptually to determine whether the classes were conceptually meaningful. Classification quality was also examined; entropy (ranging from 0 and 1) was recorded, with values over 0.8 indicating good classification of individuals into classes (Nylund-Gibson & Choi, 2018). Because entropy was high—above 0.9—

for all models, a classify-analyze approach (Clogg, 1995) was used, i.e., the classes identified in cross-sectional analyses were treated as observed categories for subsequent analysis. Although this method does not account for classification error, with entropy as high as that in the current model, bias is likely to be negligible (Bolck et al., 2004). Stability within and movement between classes⁶ was then examined descriptively at both the group level (examining percentages of male and female participants in each class over the four years of high school) and the individual level (examining percentages of youth who were classified into consistent or differing classes from one year to the next). Individual change was examined descriptively for participants with romantic attraction data across all high school grades (similar to the approach taken by Stewart et al., 2019). See Appendix B for additional analysis of patterns over time, including LCA using cross-sectional classes from each grade level as observed variables.

Finally, to examine socioemotional correlates of attraction, cross-sectional observed classes were used as observed variables in regressing socioemotional adjustment (loneliness; social anxiety) on romantic attraction, controlling for demographic characteristics (sex, race/ethnicity, and parent education) and baseline (8th grade) adjustment. Full information maximum likelihood estimation was used to account for missing data. All models—both LCA and regression—were estimated using *Mplus* 8.1 (Muthén & Muthén, 2017).

Results

Latent Classes

Across all four grade levels, models with one to seven classes were considered. Loglikelihood values, the aforementioned six fit indices, and entropy for models under

⁶ As is illustrated in the results section, high degree of conceptual similarity between classes identified at each grade level allowed for meaningful comparison across the four grade levels.

consideration are listed in Table 1. Because the classes identified were very similar for 9th and 10th grades, results for both are discussed simultaneously. The same is true for 11th and 12th grade. Note that entropy was high—above 0.9—for all models, indicating that classification was very good, and treating classes as observed categories is thus allowable in further analysis. Due to this, for the sake of readability, class “membership” will be discussed as if classes were observed categories, with the understanding that in actuality these are not truly observed categories but rather the classes to which each participant had the highest likelihood of belonging.

Ninth and tenth grade. For both 9th and 10th grade, BIC, BF, and cmP indicated that a 5-class model was the best fit, with aLMR-LRT indicating fewer classes as the best fit and saBIC and BLRT indicating more classes. Overall, the 5-class models for 9th and 10th grade were selected as the best models, given that they had the most support. The 5-class models for 9th and 10th grade produced classes that were very similar in terms of observed patterns of responses within each class (Figure 1) and similar in proportion of participants in the classes as well (Table 2). The name of each class is based on the most common response or responses participants in said class provided on the attraction measure.⁷

The largest class will be referred to as the *other-gender attraction class*, as $\geq 94\%$ of responses (across all four items and both grades) from participants in this class indicated other-gender interest. The second-largest class will be referred to as the *multi-gender attraction class*. In the multi-gender class, across items and grades, between 76% and 97% of responses indicated

⁷ Distribution of responses varied to some degree across items, but class names were based on the response or responses that were dominant across items. Note also that “gender” is used in class names rather than “sex/gender” for the sake of fluency, but with the acknowledgement that romantic attraction items were originally coded using a combination of participant sex and attraction target gender.

interest in both boys and girls, with most remaining responses indicating primarily other-gender interest. The third and smallest of the classes characterized by gender was the *same-gender attraction class*. Youth in this class reported 87%-100% same-gender attraction across grades and items, with the remaining responses primarily oriented toward both boys and girls.

One of the remaining classes was comprised of those indicating limited or no attraction and as such will be referred to as *low or no attraction class*. Rates of responses indicating attraction to “no one” in this class ranged between 62% and 97% across grades and items (which, at the lower end of this range, is notably less consistent than in the gendered (particularly the other-gender and same-gender) classes. No one in this class reported exclusive same-gender interest on any item, but participants’ remaining answers were mixed across all other response options. The final class for the first half of high school will be referred to as the *uncertain attraction class*, as the defining characteristic of this class was 54%-78% responses of “not sure”. This class had the lowest consistency of responses, and remaining responses were again split between all response options *except* “same gender”.

Eleventh and twelfth grade. The BIC, saBIC, BF, and cmP provided consistent support for a 6-class solution for both 11th and 12th grade data. As with 9th and 10th grade data, BLRT supported models with more classes and aLMR-LRT provided support for a model with fewer classes. Thus, a 6-class model had the most robust support for both grades. The 6-class models for 11th and 12th grade again produced classes that were conceptually similar (Figure 1) and similar in proportion (Table 2).

Of the six classes identified in 11th and 12th grade, five were extremely similar to those described for 9th and 10th grade. Response rates for the *other-gender attraction class* were $\geq 98\%$ other-gender oriented across items, for the *multi-gender attraction class* were $\geq 92\%$ (note that

this minimum value is higher than for 9th and 10th grade), and for the *same-gender* class were $\geq 87\%$. Similar to earlier waves, the *low or no* class responses were primarily “no one” across items (69%--98%) with the remaining responses split between other-gender and multi-gender orientation. The *uncertain* class responses were 45%-66% “not sure” across grades and items—a reduction in comparison to 9th and 10th grade. Across all five classes, the non-dominant responses in each class largely mirrored those from 9th and 10th grade. One exception to this is that there were some “same-gender” responses provided by members of the uncertain class, and in 12th grade non-dominant responses in the uncertain attraction class were more heavily shifted toward “boys and girls”.

The novel class that emerged for the 11th and 12th grade can be described as a *heteroflexible attraction class*. In this class, collapsing across items, approximately three fifths of responses at either grade level indicated exclusive other-gender interest (i.e., heterosexual interest), and approximately two fifths indicated interest in both boys and girls. Combined, these responses represented 97%-100% of responses on any given item. However, unlike in the previously described classes, a single response that was not dominant across all four items; rather, the pair of dominant responses varied across items in relative prevalence (Figure 1). Over 80% of responses to the attraction item, specifically, indicated interest in both boys and girls. The dominant response on the remaining three items indicated other-gender interest, with the most extreme imbalance toward other-gender responses on the item regarding desired relationships.

Gender differences. Based on apparent differences in class membership (Table 2), chi square tests were used to compare female participants’ class membership to male participants.

In 9th grade, there were significant differences between female participants differed in class membership from male participants ($\chi^2(4, N = 1,922) = 77.14, p < .001$), which appeared to be driven by lower proportions of female participants in the other-gender and same-gender attraction classes and a higher proportion of female participants in the multi-gender attraction class. The pattern was similar in 10th grade ($\chi^2(4, N = 2,029) = 252.52, p < .001$). In 11th grade ($\chi^2(5, N = 1,977) = 572.99, p < .001$) and 12th grade ($\chi^2(5, N = 1,878) = 522.07, p < .001$), there was similarly lower proportions of female participants in the mono-gender attraction classes and higher proportions of female participants in the heteroflexible attraction class as well as the multi-gender attraction class.

Attraction patterns over time. Examination of patterns in romantic attraction over time was first attempted using latent transition analysis with participants' recoded romantic attraction responses. However, even limiting analysis to two time points, models consistently failed to converge, likely due to the complexity of the model in combination with uneven distribution of responses. As a substitute for this, I applied latent class analysis (LCA) to the four grade levels combined using the cross-sectional romantic attraction classes from grades 9 through 12 as if they were observed categories. Results from those analyses are presented in Appendix B.

Presented here is a descriptive summary of individual patterns of attraction over time focusing on the 2,352 participants who participated across all four years of high school. Chi square tests were used to compare four-year participants to those who participated one, two, or three times. A slightly larger proportion of four-year participants was classified as having sexual minority attraction at least once ($\chi^2(1, N = 2,352) = 4.59, p = .032$), a larger proportion also changed classes at least once ($\chi^2(1, N = 2,352) = 21.79, p < .001$), and a larger proportion were female

($\chi^2(1, N = 2,352) = 33.96, p < .001$). The two groups did not differ in baseline (8th grade) loneliness ($t(2,460) = 1.12, p = .263$) or social anxiety ($t(2,434) = 0.47, p = .638$).

Among those who participated all four years ($n_{male} = 1,024; n_{female} = 1,328$), 77% of male participants and 65% of female participants were classified consistently (i.e., were in the same class across all four years).⁸ This included 74% of male participants and 59% of female participants consistently in the other-gender attraction class, 2% of male participants and 5% of female participants consistently in the multi-gender attraction class, and less than 1% in the same-gender attraction class (7 male and 4 female participants), low or no attraction class (4 male and 8 female participants), and uncertain attraction class (1 male participant).

Based on group-level percentages (Table 2), there appeared to be little change in classes (a range of 3% or less across grade levels for any given class) for male participants. However, examining individual class differences from year to year provided a more dynamic picture of adolescent male attraction. Among 4-year participants, for 10% of males there was one change in attraction classification at a transition from one grade to the next, for an additional 10% there were two changes in classification, and for 2% there were differences at all three grade transitions. Among female participants, group percentages suggested primarily shift from the other-gender attraction class into the multi-gender and heteroflexible attraction classes over time, with a reduction in other-gender attraction class membership from 80% in 9th grade to 69% in 12th grade (12th grade). However, again, individual attraction class differences far outpaced apparent group-level change. Among 4-year participants, there was one attraction class change

⁸ Note that this percentage is slightly higher—73% for male and female participants combined rather than 70%—if taking the more conservative approach of discounting movement between the heteroflexible class (for which there could be no consistent four-year membership) and its conceptual “neighbors” in the gendered classes: the other-gender and multi-gender attraction classes.

across a grade transition for 18% of females, 13% had two attraction class changes, and for 4% there were differences in attraction class across all three transitions. Altogether, 148 unique patterns attraction class membership over time were identified for 4-year participating youth. This suggests that not only was it common for youth to be classified differently from one year to the next—this occurred for nearly one third of the 4-year participants—but also that these patterns of difference were highly variable in both timing and nature.

In sum, the patterns of attraction identified included both familiar, gendered patterns (exclusive other-gender interest, exclusive same-gender interest, and interest in both boys and girls) as well as more nuanced patterns of attraction (a mix of other- and multi-gender interest, limited attraction, and uncertainty). For the more familiar patterns, participants' responses to all attraction items had a high degree of consistency. However, for the remaining classes responses varied across items. The heteroflexible class was unique in that it was characterized by a combination of responses rather than a single consistent response, and in that the most prevalent answer varied across items with a clear pattern. Finally, examination of individual attraction classification patterns across time suggest a much higher degree of fluidity of attraction than do differences from year to year in the size of any given class. Next, I turn to examining associations between romantic attraction class membership and socioemotional adjustment, focusing on cross-sectional models due to the complexity of change over time.

Socioemotional Adjustment

Differences in loneliness and anxiety across romantic attraction classes were examined at each grade level. In addition to making comparisons between each sexual minority class and the sexual majority, possible differences across the sexual minority classes were examined by rotating the reference group for romantic attraction. All analyses controlled for sex,

race/ethnicity, and highest level of parent education. Coefficients for each model are presented in Table 3. Female participants consistently reported higher social anxiety and across grade levels and higher loneliness at 9th and 11th grades, than male participants. Regarding ethnic differences, Asian and White participants reported the highest social anxiety and loneliness, whereas Black participants tended to report the lowest levels of both outcomes and Latino participants also reported consistently low social anxiety. Finally, differences based on parent level of education revealed that youth whose parents held college and graduate degrees tended to report more social anxiety than those whose parents had lower education levels. Those whose parents held a high school diploma tended to be least socially anxious, and in 12th grade reported lower loneliness as well.

The other-gender attraction class, as the sexual majority, served as the reference group for analyses presented in Table 3. For all significant differences found between the other-gender attraction class and any of the sexual minority classes, the sexual majority reported lower social anxiety and loneliness. Differences across the romantic attraction classes revealed that those in the multi-gender and (when relevant) heteroflexible attraction classes consistently reported elevated social anxiety in comparison to the other-gender attraction class. Rotating the reference group showed that the 9th ($B = .19, SE = .07, p = .009$) and 11th grade ($B = .38, SE = .10, p < .001$) multi-gender attraction classes and the 11th grade the heteroflexible class ($B = .26, SE = .08, p = .001$) also reported higher average social anxiety than the low or no attraction class. However, by 12th grade, as shown in Table 3, the low or no attraction class reported elevated social anxiety in comparison to the other-gender attraction class as well. Taken together, these findings imply that elevated social anxiety is relatively common for those attracted to both boys

and girls across the course of high school, whereas limited attraction does not appear to be a risk category for social anxiety until the end of high school.

Examining loneliness, those in the multi-gender attraction class and (when relevant) the heteroflexible class at each grade level again reported higher loneliness than the other-gender attraction classes. During the first half of high school, those in the multi-gender attraction class also reported higher levels of loneliness than the low or no attraction class (9th grade: $B = .19$, $SE = .08$, $p = .022$; 10th grade: $B = .18$, $SE = .09$, $p = .039$). Most sexual minority classes reported higher loneliness than the sexual majority in 10th and 11th grades, with the exceptions of the uncertain attraction class in 10th grade and the same-gender attraction class in 11th grade. By 12th grade, all five sexual minority classes reported higher loneliness than the other-gender attraction class. In other words, it was again those who expressed attraction to both boys and girls who reported disparities earliest and most consistently, but by the end of high school, any type of sexual minority attraction was associated with worse adjustment.

Taken together, the romantic attraction classes identified differed in average levels of social anxiety and loneliness, with some sexual minority classes (i.e., the multi-gender attraction class) reporting disparities in comparison to the sexual majority across all grade levels. In contrast, other classes reported similar adjustment to sexual majority peers at the beginning of high school but disparities in adjustment by 12th grade, indicating a shift in the social implications of attraction by the end of high school. Those reporting low or no attraction stood out from other attraction classes, in that they reported better adjustment than multi-gender attraction class peers at the beginning of high school but similar disparities to other sexual minorities at the end of high school.

Discussion

Prior work on young adolescent sexuality minority development has been based largely on retrospective reports and/or has relied on limited measures of attraction, represented by a single or pair of items with only gendered response options (e.g., Floyd & Stein, 2002; Katz-Wise et al., 2017; Stewart et al., 2019). However, particularly during early adolescence, youths' understanding of their own attractions may be complex and in flux (Austin et al., 2007; Stewart et al., 2019), making repeated, nuanced assessment key to more in-depth understanding of sexuality development and its implications for socioemotional adjustment. The current analyses, based on a sample of over 4,000 diverse high school youth, revealed nuanced patterns of attraction at each grade level. In addition to same-gender, multi-gender, and other-gender attraction patterns familiar from prior developmental work, three other classes were identified, reflecting lack of attraction, uncertainty, and mixed patterns of other-gender and multi-gender attraction, with the last pattern—the heteroflexible class—emerging only in the latter half of high school. The nuanced responses across items in the attraction measure underscore corresponding complexities in development: uncertainty that can ensue when first experiencing non-heterosexual attractions; mixed reports of attraction and lack of attraction, possibly reflecting the asexuality spectrum; and disconnects between attraction and the desire to act on it through engaging in romantic relationships. The identified attraction classes, in turn, offer added insight into adjustment differences across groups, highlighting issues facing youth whose attraction is characterized by interest in both boys and girls and those who experience little or no attraction.

Patterns of Attraction

Most of those in the other-gender, multi-gender, and same-gender attraction classes would have been similarly identified using only a single attraction item (e.g., Stewart et al.,

2019) or using a pair of items asking about attraction to boys/men and girls/women (Katz-Wise et al., 2017). The two mono-gender attraction classes had higher proportions of male participants, whereas the multi-gender class had a higher proportion of female participants. The other-gender attraction class, as would be expected for the sexual majority, included many youth whose attraction remained stable across the course of high school, whereas those in the multi-gender and same-gender attraction classes, were far more likely to report changes over the course of high school.

The other three patterns of attraction reported were more complex. Based on their responses across items on the attraction measure, many of those in the uncertain and low or no attraction classes, and all of those in the heteroflexible attraction class, would instead have been identified as either other-gender or multi-gender attracted, and many of the remaining youth from the uncertain and low or no classes would have been forced to respond differently on a single-item, gendered attraction question. Yet, these complex classes are most distinctive. The uncertain class, for example, appears to be a transitional class both conceptually (i.e., uncertainty is expected to be temporary) and in terms of stability.⁹ However, the fact that it is transitional does not lessen its legitimacy when examining sexual orientation development. Uncertainty is a logical byproduct of realizing non-heteronormative attraction and other changes in attraction thereafter, making it a particularly important group of youth to identify when examining developing sexuality, despite transient membership.

For some youth, the low or no attraction class also appeared to be a transitional group—by 12th grade, three quarters of those who expressed limited attraction in 9th grade were attracted to boys, girls, or both. However, the size of this group was stable over the course of high school,

⁹ Only one of over 2,000 youth who participated all four years remained in the uncertain class throughout that time.

meaning that it cannot be assumed comprised only of “late bloomers”, in which case it would have steadily decreased in membership. Some youth in this class, then, continue to experience limited attraction over time, possibly indicating asexuality or demisexuality. Individuals who are fully asexual might respond “no” when asked if they ever experienced attraction to a boy or to a girl, and thus be identified as having limited attraction on measures of attraction with less nuance. However, others on this spectrum experience less attraction than is considered typical yet still do experience some degree of attraction (see Hille et al., 2019), and common attraction questions are not sensitive to reduced (rather than absent) attraction. Because sexual orientation is often discussed in terms of target gender rather than level of attraction, this is a group whose experiences have been largely absent from sexuality developmental literature.¹⁰

Finally, the heteroflexible attraction class can be best described as comprised of those who are attracted to both boys and girls but only interested in heterosexual relationships. This class was unique both because there was differentiation across items and because it did not emerge until 11th grade. There are a variety of reasons why this may be the case. Some may experience sexual attraction to both boys and girls but romantic attraction only toward other-gender peers, or vice versa, and want relationships in which both aspects of desire are fulfilled (e.g., Lund et al., 2016). Others may have social or personal reasons, such as fear of disclosure due to negative stereotypes or religious beliefs (e.g., Dyar & Feinstein, 2018; Schrimshaw et al., 2018) for only wanting to be in heterosexual relationships. Regardless of the reasons, this class would not be identified as a unique group using a less nuanced measure of attraction.

Implications for Adolescent Adjustment

¹⁰ Qualitative studies of those who explicitly identify as part of the asexual spectrum provide vital insight into this group. However, the asexual spectrum is absent from many quantitative studies of sexual orientation despite the long history of the concept of asexuality.

Some of the differences in loneliness and social anxiety across romantic attraction classes were consistent with prior research. For example, when there were differences between a sexual minority class and the other-gender attraction class, sexual minorities consistently reported worse adjustment, aligning with prior work on socioemotional adjustment and sexual orientation (e.g., Plöderl & Tremblay, 2015). However, in addition, certain sexual minority classes stood out from others, including the low or no attraction class. Youth classified as having limited attraction at the end of high school reported similar disparities in loneliness and adjustment to other groups of sexual minority youth. However, earlier in high school, not only did the low or no attraction class not differ from the other-gender attraction class, but they in fact reported significantly lower levels of social anxiety and loneliness than youth attracted to both boys and girls (the multi-gender and heteroflexible attraction classes). Of note, this is also a group for which there was very low stability in classification. Thus, those who started high school reporting limited attraction and fared well were a relatively distinct group from those who reported limited attraction at the end of high school and did not.

One explanation for the grade-or age- related pattern is that at the beginning of high school, youth may neither perceive themselves as atypical nor be perceived as others by such based on limited attraction. Although pressure to date or talk about crushes may already be present at the beginning of high school, by virtue of age, more youth are likely not to have begun dating yet, and many likely assume that they will—and based on the low stability of this group across high school, likely will—experience attraction later in adolescence. However, for youth with limited attraction toward the end of high school, even if they do not experience explicit teasing or intentional pressure, assumptions are often made that attraction is a universal experience and that romantic and sexual relationships are a “normal” and desirable end-goal

(e.g., Robbins et al., 2016). In other words, just as a young, closeted lesbian might feel anxious or lonely after a schoolmate asked whether she had a boyfriend yet, or which boy she had a crush on, because of assumptions that she would and should be attracted to boys, a young person who experiences no attraction might feel similarly because of the assumption that they would or should be attracted to anyone. Further exacerbating the issue, many older adolescents turn toward romantic relationships as a source of social support (e.g., Lee & Goldstein, 2016). For those who know they are uninterested in relationships by the end of high school, or who are interested in romantic but not sexual relationships and have yet to learn how to navigate this in a sexually-oriented social landscape, this may make the social setting of high school particularly lonely.

In addition to the low or no attraction group, those who expressed interest in both boys and girls—the multi-gender and heteroflexible attraction classes—stood out from other sexual minorities. Consistent with studies demonstrating worse outcomes for bisexuals (Feinstein & Dyar, 2017; Plöderl & Tremblay, 2015), both of these attraction classes reported higher loneliness and social anxiety than the sexual majority throughout high school, which was not the case for other groups. If attraction to both boys and girls results in youth being excluded from sexual minority as well as sexual majority communities, or in discrimination based on stereotypes of bisexuality, then loneliness and social anxiety are outcomes that, unfortunately, can be expected based on social exclusion or isolation (Van Zalk & Van Zalk, 2015; Vanhalst et al., 2014) and minority stress (Feinstein & Dyar, 2017; Meyer, 2003). Further, those in the heteroflexible class, instead of being protected by “passing” as sexual majority by only seeking heterosexual relationships, might feel particularly excluded from the sexual minority community because they “pass” as straight.

Limitations and Future Directions

Although the current analyses address part of the gap in the literature on sexual orientation development, there are several limitations that must be noted related to use of the romantic attraction measure. The complexity of possible response patterns and imbalanced distribution of those responses necessitated simplifying the measure before using it. In the current analyses, this was achieved by combining responses indicating multi-gender interest into a single category. Although this maintained five important and distinct categorical responses (only boys, only girls, boys and girls, no one, and not sure), further analyses should examine other possibilities for reducing complexity without eliminating the added nuance of attraction “mostly” to one gender. In particular, there is evidence that “mostly heterosexual” is a distinct sexual orientation (Savin-Williams & Vrangalova, 2013). Although this sexual orientation group is likely partially captured in the heteroflexible attraction class of the current study, individuals who consistently responded “mostly other gender” were grouped with those expressing equal attraction to boys and girls. Maintaining the “mostly other” response category, then, might influence either how many classes were identified (i.e., allowing for identification of an additional distinct group) or class membership (e.g., by shifting youth who responded “mostly other” into the heteroflexible rather than multi-gender attraction class).

One possibility would be to maintain all answer options but reduce the number of items used from the measure. For most classes the various items were not strongly differentiated in the distribution of participant responses. However, this was not true for the heteroflexible class. The items asking to whom participants were attracted and with whom they wanted to be in relationships were most differentiated from each other in participant responses in the heteroflexible class (with primarily multi-gender responses on the former item and primarily

other-gender responses on the latter). As such, excluding the item asking on whom participants had crushes or toward whom they had intimate feelings would likely have little impact on what classes were identified. Sensitivity analyses could be conducted, varying which items were included. Alternately, the responses could be reduced based on a combination of conceptual similarity and quantitative backing instead of purely conceptually. The exclusive same-gender and mostly same-gender responses, for example, were endorsed least often among the gendered options and both indicate primarily same-gender attraction, making combining them a reasonable alternative for sensitivity analyses.

Similarly, when examining socioemotional correlates of attraction, one limitation of the current analyses is the fairly extreme difference in class sizes, with the same-gender and uncertain classes representing the smallest groups. Because of this, making strong claims about their wellbeing in relation to other attraction classes is inadvisable. With a large enough sample to identify adequate groups for these smaller attraction classes, using methods such as propensity score matching to create equal-sized analytic groups could alleviate these concerns. In addition, the current analyses do not take changes in class membership into account. Future analyses should be done using a cohesive longitudinal model that accounts for both current romantic attraction class and changes between classes, given that change in and of itself may have socioemotional ramifications.

Finally, the current study addresses differences in and correlates of romantic attraction, but the experiences likely to contribute to elevated loneliness and social anxiety among adolescents are influenced by a variety of factors and identities other than sexual orientation. Future studies should examine representation of various other identities and circumstances (e.g., socioeconomic status, race, gender identity) across romantic attraction groups. Further,

controlling for these demographic factors only accounts for their independent impact on adjustment. Although one or a combination of identities may be more salient in particular circumstances, lived experiences are not cleanly categorized into influences based on sexual orientation, race, gender, etc. (see Ghavami et al., 2016). Thus, factors impacting socioemotional outcomes should be examined using methods that can account for such complexity, e.g., through qualitative interviews or by identifying large enough groups of sexual minorities to perform appropriately nuanced quantitative analyses accounting for multiple identities.

Conclusion

Overall, a key point is that sexual minority youth are far from homogenous. Adolescent patterns of attraction are diverse, and many—nearly a third of participants—were classified differently from one year to the next across at least one grade transition. There are nuances as well to their adjustment, and appear to be developmental differences in the implications for belonging to certain groups (i.e., the low and no attraction class). The continuing trend of poor socioemotional outcomes for sexual minority youth necessitates furthering understanding of the experiences and processes leading to these disparities. To that end, and acknowledging the complexity of adolescent sexual orientation, measurement of orientation must be refined as understanding of sexuality and sexual development expand. The current analyses, demonstrating the utility of a novel romantic attraction measure, are intended to contribute to movement toward inclusive and nuanced assessment of sexual orientation that captures the diversity and complexity within the young sexual minority community. Assessing attraction in a sensitive manner is important, given that many young adolescents are still coming to understand their own sexual orientation, and attraction is both an early indicator of sexual orientation and one to which youth themselves are more comfortable responding. When given the opportunity, some

adolescents describe their attraction in ways that may provide important insight into understudied and often socially invisible groups, such as youth on the asexuality spectrum, as well as into the early experiences that may be shaping socioemotional outcomes before many youth even come to explicitly identify as sexual minorities.

Table 1

Attraction Class Enumeration Summary

Grade	K	LL	BIC	saBIC	BLRT <i>p</i>	aLMR-LRT <i>p</i>	BF	cmP	Entropy
9 th	1	-8821.87	17774.36	17723.52	---	---	<.001	<.001	---
	2	-6033.26	12335.94	12231.08	<.001	<.001	<.001	<.001	0.97
	3	-5457.73	11323.67	11164.79	<.001	0.386	<.001	<.001	0.98
	4	-5242.81	11032.63	10819.73	<.001	0.906	<.001	<.001	0.98
	5	<i>-5121.63</i>	10929.04	<i>10662.14</i>	<i><.001</i>	<i>0.923</i>	>100	>.999	<i>0.98</i>
	6	-5061.47	10947.53	10626.61	<.001	0.844	>100	<.001	0.96
	7	-5029.78	11022.94	10648.00	<.001	0.798	---	<.001	0.92
10 th	1	-9770.59	19672.84	19622.00	---	---	<.001	<.001	---
	2	-6318.31	12908.16	12803.30	<.001	<.001	<.001	<.001	0.98
	3	-5639.87	11691.15	11532.28	<.001	<.001	<.001	<.001	0.99
	4	-5382.90	11317.10	11104.21	<.001	0.388	<.001	<.001	0.99
	5	<i>-5287.06</i>	11265.30	<i>10998.39</i>	<i><.001</i>	<i>0.966</i>	>100	>.999	<i>0.99</i>
	6	-5239.35	11309.77	10988.85	<.001	0.777	>100	<.001	0.97
	7	-5225.10	11421.15	11046.21	0.030	0.919	---	""	0.93
11 th	1	-9552.82	19236.83	19185.99	---	---	<.001	<.001	---
	2	-5948.92	12168.42	12063.56	<.001	<.001	<.001	<.001	0.98
	3	-5263.69	10937.35	10778.48	<.001	0.754	<.001	<.001	0.99
	4	-4972.36	10494.08	10281.19	<.001	0.606	<.001	<.001	0.99
	5	-4868.00	10424.76	10157.85	<.001	0.959	<.001	0.014	0.99
	6	<i>-4794.02</i>	10416.19	10095.26	<i><.001</i>	<i>0.923</i>	>100	0.986	<i>0.97</i>
	7	-4775.84	10519.21	10144.26	<.001	0.913	---	<.001	0.96
12 th	1	-9682.75	19495.58	19444.74	---	---	<.001	<.001	---
	2	-5907.73	12083.72	11978.87	<.001	<.001	<.001	<.001	0.98
	3	-5110.39	10627.26	10468.39	<.001	0.686	<.001	<.001	0.99
	4	-4783.77	10112.20	9899.31	<.001	0.741	<.001	<.001	0.99
	5	-4697.14	10077.16	9810.25	<.001	0.987	<.001	0.007	0.99
	6	<i>-4623.04</i>	10067.15	9746.23	<i><.001</i>	<i>0.891</i>	>100	0.993	<i>0.96</i>
	7	-4605.44	10170.15	9795.21	<.001	0.848	---	<.001	0.96

Note. Number of classes (K), loglikelihood (LL), and entropy were not used to determine the best number of classes. Fit indices included Bayesian Information Criteria (BIC), sample-size adjusted BIC (saBIC), significance values for bootstrapped likelihood ratio tests (BLRT *p*), significance values for Lo-Mendel-Rubin adjusted likelihood ratio tests (aLMR-LRT *p*), Bayesian Factor (BF), and corrected model probability (cmP). Indices indicating the best fit are bolded for each grade level, and final models for each grade level are italicized.

Table 2

Percentage of Participants in Each Attraction Class

		Grade Level			
		9th	10th	11th	12th
Female Participants	Other-Gender Attraction	80%	76%	73%	69%
	Heteroflexible Attraction	--	--	5%	5%
	Multi-Gender Attraction	15%	19%	17%	21%
	Same-Gender Attraction	< 1%	1%	1%	2%
	Low or No Attraction	4%	3%	3%	3%
	Uncertain Attraction	1%	1%	1%	1%
Male Participants	Other-Gender Attraction	85%	86%	86%	84%
	Heteroflexible Attraction	--	--	1%	2%
	Multi-Gender Attraction	9%	9%	6%	8%
	Same-Gender Attraction	1%	1%	2%	2%
	Low or No Attraction	3%	3%	3%	3%
	Uncertain Attraction	1%	1%	1%	1%

Note. Percentages are split by grade level (columns) and participant sex (section). Dashes indicate that the heteroflexible attraction class was not an option at that grade level.

Table 3.

Regression Results Predicting Social Anxiety and Loneliness from Romantic Attraction

	Social Anxiety				Loneliness			
	9 th Gr.	10 th Gr.	11 th Gr.	12 th Gr.	9 th Gr.	10 th Gr.	11 th Gr.	12 th Gr.
Intercept	2.29(.05)***	2.29(.05)***	2.18(.05)***	2.18(.06)***	1.85(.05)***	1.78(.05)***	1.80(.05)***	1.95(.06)***
Baseline Adjustment (8th gr)	.61(.02)***	.55(.02)***	.55(.02)***	.48(.02)***	.53(.02)***	.41(.02)***	.40(.02)***	.38(.02)***
Sex (0 = male, 1 = female)	.05(.02)*	.07(.03)**	.06(.03)*	.05(.03)*	.07(.03)*	.05(.03)	.09(.03)**	.02(.03)
Race/Ethnicity (0 = Latinx)								
Black	-.05(.05) _a	-.12(.05) _a	-.06(.05) _a	-.05(.05) _a	-.09(.05) _a	-.08(.05) _a	-.01(.06) _a	.04(.06)
E/SE Asian	.11(.04)** _b	.10(.04) _b	.16(.04)** _b	.14(.05)** _b	.06(.05) _b	.02(.05) _{ab}	.12(.05)** _b	.01(.05)
White	.09(.04)* _{bc}	.08(.04) _b	.10(.04)* _{bc}	.11(.04)** _b	-.01(.04) _{ab}	.02(.04) _b	.06(.05) _{ab}	.05(.05)
Other	.02(.04) _{ac}	.00(.04) _c	.06(.04) _c	.06(.04) _b	-.04(.04) _a	-.01(.04) _{ab}	.06(.04) _{ab}	.09(.05)
Parent Education (0 = some college)								
No diploma	.00(.04)	-.08(.04) _a	-.02(.04) _{ab}	.04(.05) _{ab}	-.04(.04)	-.04(.05)	.00(.05)	-.05(.05) _a
High School diploma	-.03(.04)	-.08(.05) _a	-.11(.05)* _a	-.07(.05) _a	-.05(.05)	-.02(.05)	-.06(.05)	-.18(.06)** _b
Bachelor's degree	.01(.04)	.04(.04) _b	.02(.04) _b	.05(.04) _b	.02(.04)	.01(.04)	-.02(.04)	.02(.05) _a
Graduate degree	-.02(.04)	.04(.04) _b	.02(.04) _b	.04(.04) _b	-.03(.04)	.02(.04)	-.07(.04)	-.02(.05) _a
Romantic Attraction (0 = other gender)								
Heteroflexible	---	---	.30(.07)** _a	.17(.08)*	---	---	.30(.08)***	.32(.09)***
Multi gender	.14(.04)** _a	.18(.04)***	.19(.04)** _a	.19(.04)***	.25(.04)** _a	.36(.04)** _a	.32(.04)***	.29(.04)***
Same gender	.12(.14) _{ab}	.18(.12)	.14(.10) _{ab}	.14(.10)	.22(.16) _{ab}	.35(.13)** _{ab}	.19(.12)	.24(.11)*
Low or no	-.05(.07) _b	.04(.07)	-.07(.07) _b	.26(.08)**	.06(.07) _b	.19(.08) _b	.20(.08)*	.22(.09)*
Uncertain	.11(.11) _{ab}	.10(.13)	.10(.14) _{ab}	.08(.13)	.22(.11) _{ab}	.23(.14) _{ab}	.45(.16)**	.40(.15)*

Note. * $p < .05$; ** $p < .01$; *** $p < .001$. For each cluster of categorical variables (i.e., all race/ethnicity variables for a given year and outcome), if significant differences were found when rotating reference groups, groups that do *not* differ are marked with the same subscript (subscripts are specific to each cluster of variables). Lack of subscripts on a set of variables implies that no differences were found when rotating the reference group.

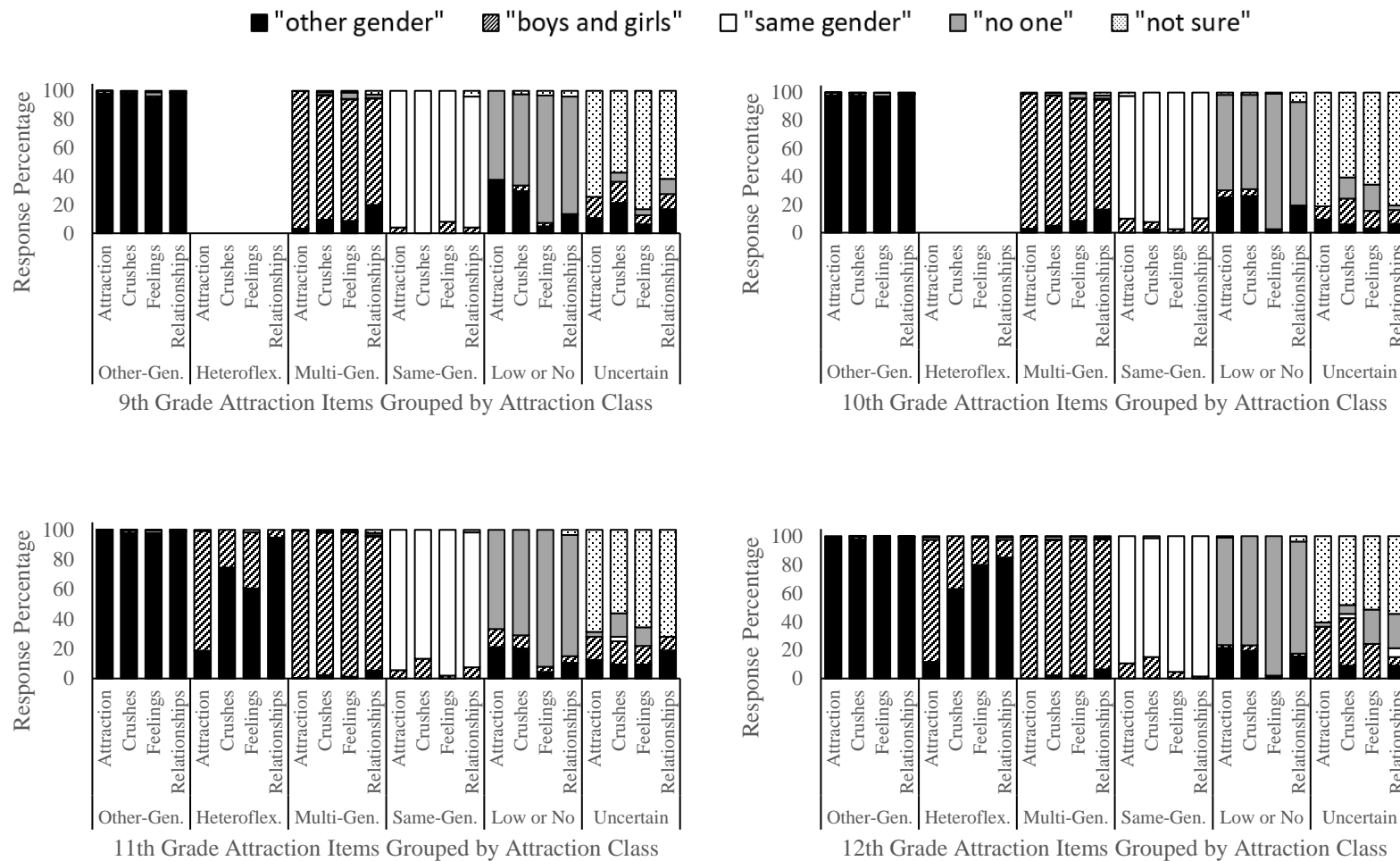


Figure 1. Responses to attraction items separated by attraction class and grade level. Percentage of each response (see key) given on each attraction item (represented by separate bars), separated by romantic attraction class (represented by clusters of bars) and grade level (represented by separate graphs).

STUDY 2

“Invisible” Sexual Minority Youth: Perceptions of High School Climate

Abstract

Adolescents who experience sexual minority attraction may not explicitly identify as sexual minorities (e.g., gay, lesbian, bisexual), especially at early stages of development, yet may still be at risk for not feeling safe or feeling they do not belong at school. The current study relies on data from 3,443 socioeconomically and racially diverse students to examine apparent alignment or incongruity between patterns of romantic attraction and explicit sexual identity at the end of high school, as well as associations between sexual orientation and school climate perceptions. Although youth reporting exclusive other gender or same-gender attraction identified as expected (straight and gay or lesbian) to a high degree, a high proportion of other sexual minority youth—especially those reporting heteroflexible or limited attraction, and to a less degree multi-gender attraction—identified as straight. Youth reporting multi-gender or limited attraction reported significantly lower levels of perceived safety and school belonging than did other-gender-attracted youth. However, bisexual youth differed only in terms of belonging and asexual youth in terms of safety, suggesting that reliance on sexual identity to assess sexual orientation may limit identification of disparities in school climate perceptions during adolescence.

“Invisible” Sexual Minority Youth: Perceptions of High School Climate

Sexual minority youth often encounter negative experiences in school. On average, they report more victimization from peers than sexual majority youth (Toomey & Russell, 2016) as well as limited support from school personnel, and nearly all report hearing homophobic language used at school (Kosciw et al., 2018; Pascoe, 2012). It is unsurprising, then, that in a recent national survey of sexual and gender minority youth, over half of the participants felt unsafe at school due to their sexual orientation (Kosciw et al., 2018). Sexual minority youth also tend to feel less like they belong to their school communities than heterosexual youth (e.g., Galliher et al., 2004). Such perceptions of school climate are important in that they both reflect sexual minority youths’ negative experiences and help to explain academic and health disparities (Birkett et al., 2014; Russell et al., 2011). Extending past research, this study examines perceived safety and sense of belonging at the end of high school among sexual minority adolescents, both in comparison to sexual majority youth and across sexual minority groups. Specifically, my goal is to shed light on “invisible” sexual minority groups: individuals not readily identified through traditional sexual orientation assessments.

Assessment of Sexual Orientation among Youth

Understanding secondary school experiences of diverse sexual minority youth requires first that minority groups can be reliably identified. Typical assessment methods include explicit sexual identity (i.e., self-description as gay, bisexual, straight, etc.), sexual behaviors, and attraction, but the various indicators of sexual orientation do not always correspond (see Savin-Williams, 2006). In one study of young adults who either identified as sexual minorities or reported history of same-sex sexual behavior, for example, only 20% identified as lesbian, gay, or bisexual (LGB; Katz-Wise et al., 2017). An additional 59% identified as mostly heterosexual,

and 21% as heterosexual. Moreover, those who identified as LGB reported an average lag of a year or two between their first same-gender attraction and identifying as a sexual minority. Further, the average ages at which sexual minorities experienced these developmental “milestones” (i.e., first occurrences of same-gender attraction or adoption of a sexual minority identity label) ranged from 15 to 18 years old. These findings are consistent with other studies suggesting even longer lags between development of same-gender attraction and first self-description using a sexual minority identity label (e.g., Calzo et al., 2011; Floyd & Stein, 2002). Even adults sometimes report identities that differ from their attraction or behavior (see Gordon & Silva, 2015). Among high school-age sexual minority youth, inconsistent identification (depending on type of measurement used) is particularly likely, and hence some sexual minority youth are not identified if relying exclusively on self-reports of explicit sexual identity for recruitment or sexual orientation classification.

For many adolescents, the apparent misalignment between assessment methods likely reflects a developmental process. Identity as something other than heterosexual or straight typically requires some period of exploring and interpreting one’s feelings and attractions (Gordon & Silva, 2015). Also, reporting on attractions or behaviors is more concrete than classifying oneself based on those attractions and behaviors. Indeed, some adolescents report that identifying as gay, bisexual, etc. feels too permanent and categorical (Austin et al., 2007). In addition, pre-established lists of identities may exclude those who label themselves using newer or less commonly used terms such as queer, asexual, or pansexual (Austin et al., 2007; Watson et al., 2020), and thus also fail to capture the experiences of certain groups of youth.

Younger adolescents (e.g., those in high school) have an easier time answering questions about attraction, especially if questions are not restricted to sexual attraction and include a

variety of response options, including lack of attraction (Austin et al., 2007). To gain insights about school climate perceptions of a broad and diverse sample of sexual minority adolescents, then, it is advisable to include a nuanced measure of romantic attraction with developmentally sensitive language and include options for youth to report uncertainty or lack of attraction. I argue that those who are experiencing uncertainty or limited attraction are particularly likely to be rendered invisible in studies of sexual minorities. In addition to being unidentifiable on measures of attraction that are focused only on gender, those who are uncertain of their attraction may be particularly likely to identify as straight (as the heteronormative default identity). Those experiencing limited or no attraction are also likely to identify as straight for an extended period of time, as they and others may assume that their lack of attraction is temporary or may be unaware of potentially applicable asexual spectrum identities (Gupta, 2017; Houdenhove et al., 2015). Given the increased romantic social pressures in high school, these two groups of youth are likely to experience lack of “fit” with their mainly heterosexual peers.

Youth interested in both boys and girls may also identify as heterosexual for an extended period of time, as many continue to even into adulthood (e.g. Katz-Wise et al., 2017), thus rendering them invisible in identity-based studies of sexual orientation. Despite their sexual orientations being delegitimized and rendered invisible in society and school (e.g., Elia, 2014; Robbins et al., 2016) as well as research, youth in these groups likely face some of the same struggles in school as other sexual minority youth. In addition, they face unique social difficulties such as discrimination within the sexual minority community (Feinstein & Dyar, 2017; Gupta, 2017), that may uniquely contribute to negative school experiences (Elia, 2014).

School Climate Perceptions of Sexual Minority Youth

As previously mentioned, sexual minority adolescents, on average, have worse

experiences at and perceptions of school than heterosexual youth (e.g., Galliher et al., 2004; Toomey & Russell, 2016). The connection between peer victimization and sexual orientation is well-established (Toomey & Russell, 2016), and is one logical contributor to negative school perceptions. Based on the high prevalence of negative experiences reported in school (Kosciw et al., 2018), even youth who do not privately identify as sexual minorities or who are not “out” to others (i.e., do not make their identities public), are likely to at least observe, if not experience, mistreatment based on actual or perceived sexual orientation. As such, they are also likely to feel unsafe or like they do not belong, based on observations of other students’ experiences.

Perceiving school to be a place that is unsafe or that they do not belong is, in turn, related to sexual minority youths’ increased risk for truancy (Birkett et al., 2014; Poteat et al., 2017), lower grades and academic aspirations (Birkett et al., 2014; Kosciw et al., 2018), lower self-esteem, and elevated depression and suicidality (Kosciw et al., 2018; Russell et al., 2011; Russell & Toomey, 2013). Given the potential severity of outcomes, it is vital, when examining school climate perceptions, to be able to identify both traditionally recognized sexual minority youth and the “invisible” sexual minorities who nonetheless deviate from heteronormative expectations and experiences.

Beyond disparities for sexual minority youth in comparison to sexual majority youth, there are differences in experience within the sexual minority community, although available research (particularly on school perceptions) is limited. As previously mentioned, bisexual individuals experience erasure and exclusion among both straight and sexual minority peers and in school in general (Elia, 2014). One can extrapolate that they would be particularly likely to feel like they do not belong at school. Bisexual youth have also been found to fare worse than gay and lesbian youth at school in terms of perceived safety, fighting and skipping school more

often due to feeling unsafe (Russell et al., 2014). As was also previously described, youth who are uncertain of or experience limited attraction are largely missing from sexual minority narratives. Available evidence on asexual youth, however, suggests that although youth experiencing little or no attraction may not be targeted directly by their peers as often if they are not “out” as sexual minorities (Kosciw et al., 2015) asexual youth still report feeling less like they belong at school than other sexual minorities (Kosciw et al., 2018). Finally, school climate perceptions of those who experience sexual minority attraction but identify as heterosexual or straight remain understudied.

Current Study

The main goal of the current study is to examine how perceived school climate differs by sexual orientation at the end of high school (i.e., 12th grade). Importantly, I rely on two indicators of sexual orientation during high school: reports of romantic attraction and explicit sexual identity. Including both of these measures of sexual orientation allows for the examination of the prevalence of apparent (mis)alignment between attraction and identity—e.g., reporting sexual minority attraction but identifying as straight—among high school youth. Further, examination of differences in school experiences based on both indicators will shed light on the school climate perceptions of unique and understudied groups of sexual minorities. Thus, there are two main aims for the study. The first aim is to examine alignment between romantic attraction patterns (e.g., multi-gender attracted, same-gender attracted, low or no attraction) and explicit sexual identities (e.g., bisexual, gay or lesbian, bisexual, asexual). The second aim investigates school climate perceptions with a particular focus on “invisible sexual minorities”—i.e., youth whose sexual minority status may be missed using traditional assessments of sexual orientation.

To examine romantic attraction, I use a novel, developmentally sensitive, multi-item measure adapted from Ghavami & Peplau (n.d.). Many measures of attraction only include one or two items asking about sexual or romantic attraction, and provide only gendered options as responses (e.g., Katz-Wise et al., 2017; Stewart et al., 2019). In contrast, the current measure frames attraction in a developmentally appropriate way, relying on ecologically valid language (e.g., experiencing romantic attraction, having crushes or intimate feelings, and desired romantic relationships). Further, youth can report varying levels of attraction to boys and girls, uncertainty, or lack of interest. Given the diversity of sexual orientations (Watson et al., 2020), and especially in light of the age of the participants (see Katz-Wise et al., 2017), using a multi-item measure also allows for complex attraction patterns. For example, this measure can capture the experiences of a girl with crushes on boys and girls but who only wants to have relationships with boys, or a boy who is attracted to boys but reports uncertainty about intimate feelings and crushes. By using latent class analysis (LCA) to examine response patterns, I am able to determine whether the expected patterns emerge in youths' attraction reporting. I expect that such analyses will yield not only gender-specific attraction patterns, but also patterns characterized by uncertainty and lack of attraction.

To be able to compare romantic attraction patterns and explicit sexual identity (i.e., labels they use to describe themselves, such as gay and bisexual), it is important to ensure that youth can endorse multiple identities or write in an identity (Austin et al., 2007). Based on developmental studies on sexual minority youth (Calzo et al., 2011; Floyd & Stein, 2002; Katz-Wise et al., 2017), I expect incongruence between attraction and identity, particularly among those who report sexual minority attraction. Due to the prevalence of heteronormativity, youth are likely to assume they are and identify as straight (i.e., heterosexual) unless they have specific

reason not to do so. As such, I predict that more youth will identify as straight than would be expected based on the targets of their attraction at an early point in development (Katz-Wise et al., 2017; Stewart et al., 2019). In contrast, I presume that fewer youth will report sexual minority identities than sexual minority attraction. Further, I expect incongruence between participants' attraction and sexual identity to be highest when youth report attraction to both boys and girls, uncertainty about their attraction, or attraction to no one.¹¹

As part of the second aim of the study, I examine differences in sense of belonging and perceived safety among youth reporting different sexual identities or patterns of romantic attraction at 12th grade. I expect that, whether using romantic attraction or sexual identity as an indicator of sexual orientation, sexual minority youth will report more negative perceptions of school safety and belonging than sexual majority youth (Galliher et al., 2004; Poteat et al., 2013, 2017). Moreover, I also presume that in addition to youth who identify as bisexual or report attraction to both boys and girls (Plöderl & Tremblay, 2015), youth with relatively invisible identities (e.g., asexual youth or those reporting limited attraction) report particularly negative perceptions of school safety and belonging (Kosciw et al., 2018). Finally, I expect that disparities in school climate perceptions will be evident for those reporting straight identity but minority attraction.

Method

Participants

The current study relies on data from a longitudinal study of adolescents initially recruited from 26 public middle schools. A total of 4,646 participants were re-enrolled in the

¹¹Expected patterns of congruence include exclusive other-gender attraction and heterosexual or straight identity; attraction to both boys and girls and bisexual, pansexual, or fluid identity; exclusive same-gender attraction and gay or lesbian identity; uncertain attraction and self-description as questioning; and attraction to no one and asexual spectrum identities such as asexual, graysexual, or demisexual.

study during high school. Data for the current study is primarily from participants' 12th grade year. Twenty-six percent of high school participants lack data from 12th grade; this loss of participants is consistent with mobility and attrition in urban school districts (e.g., Seidman et al., 1994). Of the remaining 3,455 participants, 12 were missing large portions of the survey, including both primary predictors (sexual orientation and romantic attraction) and both school perception outcomes (safety and belonging) for the current analyses, leaving an overall analytic sample of $N = 3,443$. The current sample self-identified as 53% cisgender girls, 44% cisgender boys, 2% gender diverse, and 1% gender questioning (< 1% missing; gender diverse and questioning youth are combined for subsequent analyses due to small group sizes). Although gender identity information was not available for many of the nonparticipating students, a comparison was made on sex reported in 6th grade. They were racially/ethnically diverse, identifying in 12th grade as 11% Black, 15% East/Southeast Asian, 34% Latinx, 21% White, and 19% other or multiple racial/ethnic groups. Based on parents' self-reported highest education level, 39% had a 4-year college degree or higher and 53% did not (7% unreported).

The analytic sample was compared to those who were enrolled in the high school portion of the study but did not participate in 12th grade. Participating and nonparticipating students differed by binary sex ($\chi^2(1, N = 4,646) = 33.01, p < .001$) such that the participating sample had a higher percentage of female youth (55% female among participating youth and 46% among nonparticipating youth). Racial/ethnic composition differed from nonparticipating youth based on 6th grade ethnicity reporting ($\chi^2(4, N = 4,625) = 17.58, p = .001$) such that the participating sample included slightly larger proportions of Asian (15% for participants compared to 12% of nonparticipants) and Latinx (32% to 30%) youth, but smaller proportions of Black (10% to 12%) and White (21% to 24%) youth as well as those identifying with multiple or other racial/ethnic

groups (22% to 24%). Participating and nonparticipating students did not differ significantly in terms of how many parents had at least a 4-year college degree ($\chi^2(1, N = 4,306) = 1.10, p = .295$). The analytic sample reported similar perceptions of school safety in 9th grade ($M = 4.45, SD = .59$) to nonparticipants ($M = 4.46, SD = .61; t(3,569) = .22, p = .822$). Those who did ($M = 3.72, SD = .79$) and did not participate in 12th grade ($M = 3.67, SD = .83$) also reported similar levels of school belonging in 9th grade ($t(3,570) = 1.60, p = .112$).

Procedure

Students were initially recruited in fall of 6th grade from 26 diverse, urban middle schools in California. Due to the high language demands of the survey, students who received instruction in self-contained Special Education or English Language Learner programs were not recruited. Participating students ($n = 5,991$) received parent consent and provided written assent. Participants were re-recruited in high school in school, by mail, or by email. The aforementioned total of 4,646 participants (78% of the original middle school sample) received consent for the latter portion of the study between 9th grade and one year out of high school—85% ($n = 3,936$) of those in 9th grade. Consent was provided by parents or, if participants had reached the age of 18, by the participants themselves. Consent forms for the high school study were provided in other languages as needed, including Spanish, Chinese, Vietnamese, and Korean. To encourage students to return high school consent forms in 9th grade (whether or not they were given permission to participate), those who did were entered into a raffle to win an electronic tablet and their families were entered into a 1/150 chance raffle to win \$50 gift cards. Participants provided written assent before participating in the high school portion of the study and received an honorarium for each completed survey. Including demographic information, data for the current

study come from 6th, 9th, and 12th grade, and students received \$5, \$20, and \$30 honoraria, respectively, for completing these surveys.

Measures

Romantic attraction. Romantic attraction was assessed in 12th grade using a novel measure adapted from Ghavami & Peplau (n.d.), pertaining to the targets of participants attraction, crushes, intimate feelings, and desired relationships. For each of the four items used in the current analyses, participants could indicate that they were interested in only boys, mostly boys, boys and girls equally, mostly girls, only girls, no one, or that they were not sure. Gender-specific responses were recoded using binary sex reported at sixth grade. The remaining responses were “only other sex/gender”, “both boys and girls”, and “only same sex/gender”, in addition to the original responses of “no one” and “not sure” (original and recoded responses can be found in Appendix A).

Sexual identity. Participants were asked how they described their own sexual orientation. They could endorse more than one of eight options provided (heterosexual/straight, gay, lesbian, bisexual, fluid, asexual, unlabeled, questioning/not sure) as well as offer their own write-in option(s). For the purpose of the analyses (sufficient group sizes), responses were recategorized into the groups straight, gay/lesbian, bisexual+, asexual+, questioning, and unlabeled. The groups identifying as straight, gay/lesbian, or unlabeled typically included those who endorsed only those specific terms. The bisexual+ group was comprised primarily of those explicitly identifying as bisexual but included also those identifying with other terms or combinations of terms indicating interest in individuals of multiple genders. Those in the asexual+ group indicated one or more identity that is part of the asexuality spectrum (e.g., asexual, demisexual), and were included regardless of other identities indicated (except

questioning). This was done because the asexuality spectrum can include those with gendered romantic interest across the spectrum. Similarly, anyone who indicated that they were questioning was categorized as questioning regardless of other identities indicated, as questioning indicates a state of uncertainty and potential transition that is not specific to any one group. The original measure and a full description of recategorization is available in Appendix C.

Perceptions of school climate. Items from two subscales of the Effective School Battery (Gottfredson, 1986) were adapted and used to assess sense of belonging at school and perceptions of safety in 9th grade (used as a baseline) and 12th grade. *Sense of belonging* was measured using four items such as “I feel like I am a part of this school” and “I feel respected and valued at this school” ($\alpha_9 = .89$; $\alpha_{12} = .90$), adapted from the school climate subscale. Participants responded on a 5-point Likert scale ranging from “For Sure Yes!” to “No Way!” Responses were reverse-coded, such that higher numbers indicate a higher sense of school belonging. *Perceived safety* was measured using four items such as “How often do you feel safe at school?” and “How often are you afraid that someone will hurt or bother you in your school restrooms?” ($\alpha_9 = .78$; $\alpha_{12} = .79$). Participants responded on a 5-point Likert scale ranging from “Always” to “Never”. Responses were reverse-coded for items asking if participants felt safe, such that higher values reflect higher perceived safety.

Demographic data. Participants indicated their *race and/or ethnicity* each year that they took the survey using a list of 13 options, including write-in options for multiethnic identities and identities not included in the list. Race/ethnicity reported in 12th grade was used for the current analyses. Responses were collapsed into the previously mentioned panethnic groups: Black, East and Southeast Asian, Latinx, White, and other ethnicities (including multiethnic youth). *Gender identity* was assessed at 12th grade, for which participants could select as many options as they

wanted from a list of 7 gender identities, including a write-in option. This, in combination with binary sex reported at 6th grade, was used to categorize participants by gender as cisgender boys, cisgender girls, and gender diverse or questioning participants (including transgender, nonbinary, and agender as well as gender questioning youth). When providing consent, parents or guardians self-reported their highest *level of education*, including options of elementary or junior high school, some high school, high school diploma, some college, 4-year college degree, or graduate degree. For the current analyses, the lowest two categories were combined into a single category of no high school diploma.

Analytical Plan

Latent Class Analyses. As described in Study 1, LCA was used to identify romantic attraction classes. Six fit indices and tests, including the Bayesian Information Criteria (BIC), sample size-adjusted BIC (saBIC), Bootstrap Likelihood Ration Test (BLRT), adjusted Lo-Mendell-Rubin LRT (aLMR-LRT), Bayes Factor (BF), and Correct Model Probability (cmP) were used to identify the model with the best fit. Detailed description of LCA class enumeration procedures for 12th grade romantic attraction can be found in Study 1.

Descriptive statistics. Descriptive statistics and comparisons using chi square tests were used to show the degree of alignment between romantic attraction classes and the sexual identities that are conceptually associated with these classes (based on common usage of the terms).

Regression analyses. Linear regression analyses were conducted to examine differences in school climate based on sexual orientation. Four separate models were used to examine perceived school safety and sense of belonging as predicted by sexual identity and by romantic attraction. Control variables included participants' gender identity, race or pan-ethnic group, and

parent's highest level of education, as well as baseline safety and sense of belonging at 9th grade. Analyses were again run in *Mplus* 8.1 (Muthén & Muthén, 2017) using FIML to account for missing data.

Results

Results are presented in three sections. The first section includes description of romantic attraction classes identified based on the novel multi-item measure. The second section addresses the first main aim of the study by comparing romantic attraction classes and reports of explicit sexual identity. Addressing the second aim, the third section of results examines the associations between sexual orientation (romantic attraction and sexual identity) and school climate (sense of belonging and perceived safety) in 12th grade.

Romantic Attraction

Initially, latent class analysis models were conducted using all seven responses for each item, but models failed to converge even with very limited numbers of classes. To reduce the complexity of the model, responses indicating interest in both boys and girls were combined into a single category. This was the combination of responses that aligned most closely with other measurements of gendered attraction—i.e., interest in men, women, or both—while retaining the options for uncertainty or lack of interest which are both developmentally appropriate and account for asexual populations. As shown in Study 1, in the best-fitting LCA model six classes emerged. Entropy for this model was 96%, meaning that classification was good enough to warrant use of most likely class membership as if it were an observed variable in subsequent analyses.

Classes were labeled based on the most common attraction responses endorsed by those in each class. The *other-gender* attraction class (76% of the sample) was characterized by 99%

responses of “only other gender”, the *multi-gender* attraction class (15% of the sample) by 96% responses of “boys and girls”, and the *same-gender* attraction class (2% of the sample) by 92% responses of “only same gender”. The *heteroflexible* attraction class (3% of the sample) was characterized by a combination of responses that was 99% “only other gender” and “boys and girls”. A *low or no* attraction class (3% of the sample) was characterized by responses primarily (83%) of “no one”. Finally, the *uncertain* attraction class (1% of the sample) was characterized by approximately half “not sure” responses (54%), with the majority of the remaining responses split between “boys and girls” and “no one”.

Table 1 provides percentages of individuals in each romantic attraction class, separated by gender. Overall, cisgender participants were most likely to belong to the other-gender class (85% of cisgender boys and 71% of cisgender girls). The multi-gender class was the second-largest class for cisgender youth, including 8% of cisgender boys and 19% of cisgender girls. All other classes were represented at 5% or less among cisgender youth. Among gender diverse and gender questioning youth, approximately half of them were in the multi-gender class. The next-largest class among gender diverse and questioning participants was the other-gender-attracted class (24%), and the remaining youth were spread across all four remaining classes, represented at 8% or less.

Romantic Attraction and Sexual Identity

A larger percentage of cisgender girls ($\chi^2(1, N = 1,808) = 100.68, p < .001$) and cisgender boys ($\chi^2(1, N = 1,492) = 54.99, p < .001$) fall into the sexual majority category when basing sexual majority status on identification (i.e., straight; 81% and 92%, respectively; see Table 2 for sexual identity percentages) rather than attraction class (i.e., other-gender attraction class; 71% and 85%, respectively; Table 1). Relatively equal proportions of sexual majority youth were

identified as sexual majority youth when basing the estimate on sexual identity (20%) or attraction (24%; $\chi^2(1, N = 84) = .41, p = .524$).

As previously described, explicit sexual identity was recoded into six categories: straight, bisexual+, gay/lesbian, asexual+, unlabeled, and questioning (description of identity group reclassification available in Appendix B). Based on common use of sexual identity terms, it would be expected that the majority of youth in the romantic attraction classes would identify as follow: other-gender as straight, heteroflexible and multi-gender as bisexual+, same-gender as gay or lesbian, low or no attraction as asexual+, and uncertain as questioning. Table 3 includes the percentages of participants from each romantic attraction class in each sexual identity group, split by gender. Overall, 89% of cisgender boys, 81% of cisgender girls, and 55% of gender diverse and questioning youth reported identities that aligned as expected with their patterns of attraction. However, in addition to alignment being lower in sexual minority attraction classes in comparison to the sexual majority ($\chi^2(1, N = 3,369) = 1,675.89, p < .001$), alignment differed across the five sexual minority attraction classes as well ($\chi^2(4, N = 820) = 133.93, p < .001$).

The expected alignment between attraction and identity was found to a high degree across genders in two romantic attraction classes: other-gender and same-gender attracted. As shown in Table 3, the majority of those in the other-gender attraction class (98% of cisgender boys, 99% of cisgender girls, and 71% of gender diverse and questioning youth) identified as straight. Similarly, in the same-gender attraction class, the majority (86% of cisgender boys, 78% of cisgender girls, and 71% of gender diverse and questioning youth) identified as expected: gay or lesbian. In the remaining classes, alignment was much lower, and many participants identified as straight across the heteroflexible, multi-gender, low or no, and uncertain attraction classes. This included over 70% of cisgender youth in the heteroflexible and low or no attraction classes

who identified as straight. Further, among cisgender boys in the multi-gender and uncertain classes, the percentage of straight-identifying youth was higher than the percentage of bisexual+ and questioning youth, respectively.

In sum, those in the mono-gender (i.e., other-gender and same gender) attraction classes were highly likely to identify as expected, whereas half or less of those in other attraction classes did. In addition, many youth—particularly cisgender youth—who expressed sexual minority attraction explicitly identified as straight, meaning that whether or not they were counted as sexual minorities would be dependent on whether romantic attraction or sexual identity was used to make this designation.

Sexual Orientation and School Climate

Here I present multiple regression results examining school climate perceptions across romantic attraction classes identified using LCA, and second present results examining differences in school climate perceptions across sexual identity group. Multiple regression analyses were used to determine whether there were differences between sexual minority and majority groups as well as for inter-minority differences. A summary of the effects of the covariates are described first, followed by romantic attraction and school climate, and finally by sexual identity and school climate.

Overall, cisgender girls felt less like they belonged at school than cisgender boys, and gender diverse and questioning youth felt less like they belonged than cisgender boys and less safe at school than cisgender boys or girls. Black youth felt less safe at school than any other racial/ethnic group, and White youth felt less like they belonged than Latinx youth. Parent education was not significantly associated with belonging, but youth whose parents had more education felt safer at school than those whose parents had less education.

Unstandardized coefficients and standard errors for regression models predicting perceived safety and sense of belonging from attraction class are shown in Table 4. Regarding perceived *school safety*, on average, those in the multi-gender, low or no, and uncertain attraction classes reported feeling less safe at school than those in the other-gender class. Rotating the reference group revealed no additional differences. Regarding *school belonging*, the multi-gender and low or no attraction classes reported lower sense of belonging, on average, than did straight youth. Rotating the reference group revealed no additional differences based on attraction group.

Unstandardized coefficients and standard errors for regression models predicting perceived safety and sense of belonging from sexual identity are shown in Table 5. Regarding perceived *school safety*, asexual and unlabeled youth reported feeling less safe at school than straight youth. Rotating the reference group showed that asexual and unlabeled youth also reported lower perceived safety than bisexual+ (asexual: $B = -.24$, $SE = .10$, $p = .021$; unlabeled: $B = -.26$, $SE = .11$, $p = .021$) or questioning youth (asexual: $B = -.24$, $SE = .11$, $p = .032$; unlabeled: $B = -.26$, $SE = .12$, $p = .031$). Although the expected sexual identity groups for the low or no class (asexual+) and the uncertain class (questioning) reported similar disparities in comparison to the other-gender attraction class, the bisexual+ group, which comprises approximately two thirds of the multi-gender attraction class, did not. This finding suggests that the straight-identified youth who report multi-gender attraction—a group rendered invisible in studies using only sexual identity to measure sexual orientation—may drive the effect.

For 12th grade *sense of belonging*, on average, youth who identified as bisexual+ reported lower belonging than those who identified as straight. Rotating the reference group for sexual orientation identification revealed no further differences between groups. In this case, while the

expected identity group for multi-gender attraction (bisexual+) also reported lower sense of belonging, asexual+ youth did not. Again, this suggests that a group of straight-identified youth who reported limited or no attraction and would thus be invisible if only sexual identity was used to identify sexual minorities, were driving the effect.

Summary

In sum, using either romantic attraction or sexual identity to designate sexual orientation groups revealed expected disparities in school experiences between sexual majority and minority youth. However, far fewer youth reported sexual minority identity than attraction—approximately half the number of cisgender boys and two thirds the number of cisgender girls. Thus, many sexual minority adolescents would have been rendered invisible and combined with the sexual majority if solely relying on explicit sexual identification. Further, youth in the multi-gender, and low or no attraction classes—classes with relatively high proportions of individuals identifying as straight—reported worse school climate than those in the other-gender class, even when their “aligned” sexual identity groups did not.

Discussion

Previous studies examining the school climate perceptions of sexual minority youth frequently recruit youth with LGB-identity (e.g., Kosciw et al., 2018) or identify sexual minorities using on identity-based measures (e.g., Poteat et al., 2013). In the current study, I examined differences in school climate perceptions using a nuanced and developmentally sensitive measure of attraction in combination with a detailed measure of sexual identity. Based on the current sample of ethnically and socio-economically diverse high school seniors, approximately one in four youth reported sexual minority attraction and/or identity in 12th grade. As expected, the novel measure of romantic attraction resulted in the identification of several

groups of sexual minority youth who would have been rendered using more traditional sexual orientation measures—e.g., straight-identified youth reporting limited attraction or complex patterns of other-gender and multi-gender attraction. Further, some of these under-identified groups reported more negative school climate perceptions than sexual majority youth. In some cases, these effects appear to have been driven by straight-identified youth.

Invisible Sexual Minority Youth in School

Nearly all youth in the other-gender attraction class and four out of five in the same-gender attraction class, identified as expected—straight and gay or lesbian, respectively. However, attraction-identity congruence was low in most sexual minority classes. Two in five youth who reported sexual minority attraction identified as straight, including a third of the uncertain and multi-gender attraction classes and three quarters of the heteroflexible and low or no attraction classes. This is particularly noteworthy because some of the school climate disparities identified were specific only to analyses focused on romantic attraction. Although those in the multi-gender and uncertain attraction classes felt less safe than sexual majority youth, and those in the low or no attraction class felt less like they belonged, the same was not true for bisexual+, questioning, and asexual+ youth, respectively. These methodologically dependent disparities reinforce the importance of using community- or school-based sampling methods and assessing attraction. It is developmentally predictable that there are relatively high levels of incongruity between attraction and sexual identity (Katz-Wise et al., 2017), and the current analyses support the assumption that certain groups of sexual minority are more prone to being rendered invisible in research than others.

Limited or no attraction. Asexual individuals, for example, describe experiencing periods of confusion about their lack of attraction before discovering information about asexual

identity (Gupta, 2017; Houdenhove et al., 2015). In addition to scarcity of information on the asexuality spectrum likely contributing to prolonged straight identity, lack of attraction is unlikely to be considered atypical until adolescence. Individuals with limited attraction may not begin considering implications for sexual identity until later than those who experience same-gender attraction, as the latter provides a more direct contrast to heteronormative attraction and the former, for some, may truly be a phase.¹² Many with limited attraction likely identify as straight because it is the heteronormative default, while others who experience some degree of attraction might identify as straight, bisexual, gay, or lesbian based on the gendered nature of their attraction, and it is possible to identify as asexual and as one or more of these other identities simultaneously (e.g., Kosciw et al., 2018). Yet, disparities in perceptions of safety and school belonging—sometimes even in comparison to other sexual minority youth—highlight the need to attend specifically to those who experience limited attraction.

One reason for the observed disparities may be pressure related to compulsory sexuality—the heteronormative assumption that people *will* engage in (or wish to engage in) romantic and sexual relationships (Rich, 1980), in addition to the assumption that those relationships will be heterosexual. For youth who experience limited or no attraction, such pressure may contribute to youth feeling unsafe or like they don't belong, particularly if they are victimized for their lack of interest. However, the finding that only the low or no attraction group—not asexual youth—reported lower sense of belonging suggests that identifying as asexual may in fact be helpful in some way, perhaps because it is either indicative of or grants individuals access to information and a larger asexual community. This aligns with qualitative

¹² Many adolescents in the low or no attraction class in the beginning of high school did, in fact, later report being attracted to boys, girls, or both.

work on the asexuality spectrum in which participants expressed relief at discovering asexual community and a sense of belonging (Gupta, 2017).

“Imbalanced” multi-gender attraction. In addition to youth experiencing limited attraction, those who experience more other-gender than same-gender attraction may identify as straight for extended or indefinite periods of time. “Mostly heterosexual”, for example, is a sexual minority identity group that implies primarily other-gender but also some same-gender attraction (likely describes the attraction of some of the multi-gender attracted participants in the current study as well as the heteroflexible class). Mostly heterosexual individuals experience same gender attraction and identify as sexual minorities later than bisexual individuals, making it likelier that they will remain straight-identified at the end of high school (Katz-Wise et al., 2017). In addition, heteroflexibly attracted individuals might identify as straight because they do not feel like part of the larger sexual minority community and experience similar erasure to bisexually-identified youth (Elia, 2014). Others may identify as straight because if they are interested only in heterosexual relationships despite experiencing some same-gender attraction, “straight” may be the more socially relevant identity for some. Thus, many of those in the heteroflexible and multi-gender attraction classes, as well as the low or no attraction class, are at higher risk of being left out of studies focusing on sexual identity. Although the school climate perceptions of heteroflexibly attracted youth did not differ from the sexual majority in the current analyses, it is still important that their experiences are accounted for.

Unlike heteroflexibly attracted youth, both the multi-gender attraction class and bisexual+ youth reported feeling less like they belonged than the sexual majority. This aligns with the idea that bisexual erasure makes it difficult for youth in these groups to find community in sexual minority *or* majority spaces at school (Elia, 2014). Because only the attraction class,

and not the identity group, reported feeling unsafe, this again begs the question of how explicit identification relates to school perceptions. Although determining the reason is beyond the scope of the current study, this might be explained if youth newly realizing multi-gender attractions feel particularly unsafe, if youth identify as straight despite their attractions partly because they feel less safe, or if identifying as straight further preventing connections with a potentially protective bisexual and larger sexual minority community.

Limitations and Future Directions

The current study makes unique contributions to the research through both use of a nuanced romantic attraction measure with a large, school-based sample and the comparison between attraction and sexual identity. However, one limitation is that the sample, while large, was not large enough to allow for thorough examination of interactions between sexual orientation and other identities (e.g., gender, race/ethnicity), either when examining attraction-identity congruency or school climate perceptions. Because some sexual orientation groups are proportionately very small, the sample size required for such thorough examination is quite large. Inclusion of both developmentally sensitive attraction measures and sexual identity on population-based studies with sexual minority samples similar in size to those of Add Health (e.g., Galliher et al., 2004) or GUTS (e.g., Katz-Wise et al., 2017) would allow for more nuanced analysis of proportionately small groups, including straight-identified youth with minority attractions.

A second limitation of the current study is related to conceptualization and measurement of sexual orientation. The novel measure of attraction has not been validated with different populations, and although confident that the patterns of attraction reported here reflect meaningful patterns in the data, it is unknown whether these patterns are representative across

other age groups, in rural areas, or outside of California. In addition, the current attraction scale, though nuanced, is couched in the gender binary. As such, both reflection and refinement of this scale are needed. Further, although the current work examines attraction and identity, measures of romantic or sexual behaviors (i.e., items accounting for gender of sexual or dating partners), the third commonly-assessed aspect of sexual orientation, were not included. Including behavior in assessment of adolescent sexual orientation has the potential to shed light on differences in experience within sexual orientation groups as well as across them. For example, youth with multi-gender attraction who are in long-term relationships (likely to be interpreted as heterosexual or homosexual), who casually date both boys and girls, or who do not date at all may experience very different treatment based on the visibility of their sexual orientation or assumed promiscuity. Likewise, the experiences of youth on the asexuality spectrum who do or do not engage in dating or sexual behavior are likely very different. Thus, future studies would greatly benefit from also assessing questions about dating or sexual behaviors.

Third, the current analyses do not account for school-level differences in perceived safety and belonging, or other conditions within the school that may influence the degree of disparities between youth of different sexual orientations. For example, schools might have different structures, policies, and practices in place (e.g., student organizations or inclusive curriculum, enumerated anti-bullying or anti-discrimination policies, professional development for teachers) in place to protect and support sexually diverse students which, if effective, should influence the degree of differences in school perceptions across sexual orientation groups (e.g., Heck et al., 2013). Further, school characteristics that are not specific to sexual orientation may influence sexual minority adolescents' experiences as well. Just as there is evidence that increased ethnic diversity at schools is associated with less weight-related victimization (e.g., Lanza et al., 2018),

ethnic diversity or other aspects of diversity in schools may influence the degree of mistreatment related to sexual diversity. Thus, these questions are important for future studies to address.

In general, further work is needed to examine both the development and school experiences of sexual minorities who are often rendered invisible in research on sexual minorities. In the current work we can only make assumptions about the reasons behind apparent misalignment in attraction and identity, or reasons that youth feel unsafe or as if they don't belong. Although qualitative work is well-suited to answering such questions, identifying participants for such work may be difficult. One possible solution to this would be including the possibility of targeted follow-up interviews when designing large population-based surveys, providing an opportunity for researchers examining such under-identified populations to capitalize on the sexual orientation diversity of large samples.

An important consideration for research examining school experiences of sexually diverse youth is that sexual orientation-based mistreatment may be difficult for youth to recognize or report. Although any mistreatment is important in its own right as well as a likely contributor to negative perceptions of school, (sexual) identity-based bullying is particularly impactful (Earnshaw et al., 2017). Moreover, different forms of mistreatment may get interpreted differently. For example, if someone has a homophobic slur used against them, that is easily recognizable as discriminatory against sexual minorities, but if someone is being quietly excluded from a social group or mocked about not being in a relationship, it is likely to be more ambiguous whether that is specifically because of sexual orientation or based on other identities or circumstances. Thus, researchers must think carefully about how to obtain accurate self-reports of experiences contributing to negative school perceptions. The current study focused on safety and belonging broadly, rather than asking youth whether those perceptions were directly

tied to their sexual orientation, and a similar approach can be taken in assessing victimization and other mistreatment experiences. At times it may be more important to examine differences in the social experiences across sexual orientation groups rather than relying on inferences about the intentions or reasons behind others' actions. Ideally, researchers would utilize a combination of broad measure (e.g., school safety, peer victimization) and targeted ones (e.g., sexual orientation discrimination, feeling unsafe due to sexual orientation).

Addressing Negative High School Experiences

It has long been understood that many sexual minority adolescents have negative experiences in school, and in some schools, progress has been made in offering better targeted support. Examples of this progress are anti-discrimination policies, presence of Gay Straight Alliances, and curriculum that is inclusive of sexual minorities (for discussion of how common these are in the United States, see Kosciw et al., 2018). But even at schools that do have such structures in place, they may not meet the needs of different groups of sexual minorities or youth at different points in their sexual orientation development.

One point of difficulty is that there has been, and likely will continue to be, rapid evolution of our understanding of and vocabulary used to describe sexuality. The asexuality spectrum, for example, is a concept and set of identities with which many are unfamiliar and which some do not see as a legitimate sexuality (Bogaert, 2015; Gupta, 2017). Pansexuality, as well, is an identity that has only relatively recently come into wider use and is related to negative outcomes (e.g., Kosciw et al., 2018; Watson et al., 2020). Beyond having such structures in place, school personnel in charge of enforcing policies, delivering inclusive curriculum, and facilitating GSAs need to be well-informed about such diverse sexual orientations. In addition, resources related to sexual orientation need to be normalized on school campuses and distributed

broadly across locations so that the students can access to up-to-date information and resources easily. If youth feel that seeking out such resources may expose them to stigma or ridicule, they may not do so, and may struggle to find quality information elsewhere. This may be particularly true for youth whose attraction patterns and identities are better represented by newer, less common terms.

Conclusion

Research on sexual minorities has expanded in recent decades, becoming increasingly common and covering broader arrays of identities for youth and adults alike. However, there are unique challenges to identifying certain sexual minority populations, especially during earlier adolescence. Even at the end of high school, two in five youth who expressed sexual minority patterns of romantic attraction identified as straight, and these straight-identified youth were among the sexual minorities who viewed school more negatively than their sexual majority peers. Whether these youth eventually identify explicitly as sexual minorities or continue to identify as straight, their views of school climate—which are linked to academic success and wellbeing (e.g., Birkett et al., 2014; Russell et al., 2011)—do appear to be impacted by their non-heteronormative patterns of attraction. As such, considering the unique challenges facing straight-identified youth and those with complex patterns of sexual minority attraction is important for schools attempting to ensure that their schools are inclusive, safe spaces for diverse sexual minority adolescents.

Table 1

Percent of Participants in Each Romantic Attraction Class

Attraction Class	All Participants (<i>N</i> = 3,393)	Cisgender Boys (<i>n</i> = 1,493)	Cisgender Girls (<i>n</i> = 1,803)	Gender Diverse & Questioning (<i>n</i> = 86)
Other-Gender Attraction	76%	85%	71%	24%
Heteroflexible Attraction	3%	2%	5%	2%
Multi-Gender Attraction	15%	8%	19%	51%
Same-Gender Attraction	2%	2%	1%	8%
Low or No Attraction	3%	3%	3%	7%
Uncertain Attraction	1%	1%	1%	7%

Table 2

Percentage of Participants in Each Sexual Identity Group

Sexual Identity	All Participants (<i>N</i> = 3,392)	Cisgender Boys (<i>n</i> = 1,492)	Cisgender Girls (<i>n</i> = 1,808)	Gender Diverse & Questioning (<i>n</i> = 84)
Straight	84%	92%	81%	21%
Bisexual+	8%	3%	10%	31%
Gay/Lesbian	2%	2%	1%	10%
Asexual+	1%	1%	1%	11%
Unlabeled	1%	< 1%	1%	4%
Questioning	4%	2%	5%	22%

Table 3

*Percentages of Participants from Each Romantic Attraction Class Falling into Each Sexual**Identity Group*

Sexual Orientation Identification	Romantic Attraction Class					
	Other-Gender	Hetero-flexible	Multi-gender	Same-Gender	Low or No	Uncertain
<i>Cisgender Boys</i>	<i>n = 1,266</i>	<i>n = 24</i>	<i>n = 117</i>	<i>n = 35</i>	<i>n = 39</i>	<i>n = 12</i>
Straight	98%	75%	51%	11%	77%	42%
Bisexual+	1%	8%	32%	0%	3%	17%
Gay/Lesbian	< 1%	0%	3%	86%	0%	8%
Asexual+	< 1%	0%	2%	0%	13%	0%
Unlabeled	< 1%	0%	2%	3%	0%	8%
Questioning	< 1%	17%	9%	0%	5%	17%
no response	1%	0%	2%	0%	3%	8%
<i>Cisgender Girls</i>	<i>n = 1,272</i>	<i>n = 86</i>	<i>n = 349</i>	<i>n = 23</i>	<i>n = 58</i>	<i>n = 15</i>
Straight	99%	83%	26%	0%	71%	33%
Bisexual+	< 1%	7%	49%	17%	3%	7%
Gay/Lesbian	0%	0%	2%	78%	0%	0%
Asexual+	< 1%	4%	1%	0%	12%	7%
Unlabeled	< 1%	1%	5%	0%	5%	13%
Questioning	< 1%	6%	19%	4%	9%	40%
no response	1%	0%	0%	0%	0%	0%
<i>Diverse & Questioning</i>	<i>n = 21</i>	<i>n = 2</i>	<i>n = 44</i>	<i>n = 7</i>	<i>n = 6</i>	<i>n = 6</i>
Straight	71%	0%	5%	0%	17%	0%
Bisexual+	5%	50%	48%	14%	17%	0%
Gay/Lesbian	10%	0%	2%	71%	0%	0%
Asexual+	10%	0%	11%	0%	0%	33%
Unlabeled	0%	0%	5%	0%	17%	0%
Questioning	5%	0%	27%	14%	33%	67%
no response	0%	50%	2%	0%	17%	0%

Note. Italicized rows indicate gender identity and number of individuals of that gender identity in each attraction class. Bolded percentages indicate groups of youth identifying with the expected sexual orientation term based on their romantic attraction class.

Table 4

*Regression Results Predicting Perceived Safety and Sense of Belonging from Romantic**Attraction Classes*

	Perceived Safety		Sense of Belonging	
	B	(SE)	B	SE
Intercept	2.65	.09***	2.11	.08***
9th Grade Belonging	.39	.02***	.43	.02***
Gender (Reference = Cisgender Boys)				
Cisgender Girls	.03	.02 ^a	-.07	.03**
Gender Diverse and Questioning	-.16	.07* ^b	-.19	.09*
Race/Ethnicity (Reference = Latinx)				
Black/African American	-.10	.04**	-.06	.05
East/Southeast Asian	-.01	.03 ^c	-.04	.04
White/European American	.03	.03 ^c	-.09	.04*
Other, including multiethnic	.00	.04 ^c	-.02	.04
Parent Education (Reference = Some College)				
No high school diploma	-.02	.04 ^d	.00	.05
High school diploma or equivalent	.01	.04 ^{de}	.09	.05
4-year college degree	.07	.03* ^e	.05	.04
Graduate or professional degree	.08	.03** ^e	.04	.04
Romantic Attraction (Reference = Other Gender)				
Heteroflexible Attraction	-.04	.06	-.15	.08
Multi Gender Attraction	-.08	.03**	-.11	.04**
Same Gender Attraction	-.07	.08	-.13	.10
Low or No Attraction	-.20	.06***	-.24	.08**
Uncertain Attraction	-.23	.11*	-.18	.14

Note: * $p < .05$; ** $p < .01$; *** $p < .001$. Categories of variables for which reference group rotation revealed additional differences are marked with superscripts. Groups in the same category with the same superscripts did not differ from each other. For categories without superscripts, rotating the reference group revealed no additional differences.

Table 5

Regression Results Predicting Perceived Safety and Sense of Belonging from Sexual Identity

Groups

	Perceived Safety		Sense of Belonging	
	B	(SE)	B	(SE)
Intercept	2.63	.09***	2.09	.08***
9th Grade Baseline (Safety/Belonging)	.39	.02***	.44	.02***
Gender (reference = Cisgender Boys)				
Cisgender Girls	.03	.02 ^a	-.07	.03**
Gender Diverse and Questioning	-.17	.07** ^b	-.16	.09*
Race/Ethnicity (reference = Latinx)				
Black	-.11	.04**	-.06	.05
E/SE Asian	-.02	.03 ^c	-.06	.04
White	.03	.03 ^c	-.09	.04*
Other, including multiethnic	-.01	.03 ^c	-.02	.04
Parent Education (reference = Some College)				
No high school diploma	-.03	.04 ^d	-.01	.05
High school diploma or equivalent	.02	.04 ^{de}	.09	.05
4-year college degree	.07	.03* ^e	.05	.04
Graduate or professional degree	.09	.03** ^e	.04	.04
Sexual Orientation Identity (reference = Straight)				
Bisexual+	-.03	.04 ^f	-.18	.05***
Gay/Lesbian	-.06	.07 ^{fg}	-.08	.10
Asexual+	-.27	.10** ^g	-.15	.13
Unlabeled	-.29	.11** ^g	-.14	.14
Questioning	-.03	.06 ^f	-.14	.07

Note. * $p < .05$; ** $p < .01$; *** $p < .001$. Categories of variables for which reference group

rotation revealed additional differences are marked with superscripts such that groups in the same category with the same superscripts did not differ from each other. For categories without superscripts, rotating the reference group revealed no additional differences.

General Discussion

Establishing an understanding of and identity around one's sexual orientation is as task undertaken by most adolescents (see Tolman & McClelland, 2011). How that task differs for youth of diverse sexual orientations is a question that an increasing number of researchers are working toward answering, and how to conceptualize and operationalize sexual orientation in order to answer these questions is a vital methodological consideration. In the current dissertation, through repeated implementation of a novel and nuanced measure of romantic attraction and use of latent class analysis, I shed light on patterns of attraction, differences in individual attraction over time, and alignment between attraction and sexual identity during adolescence. Further, I examined differences in socioemotional adjustment and school perceptions across multiple sexual minority groups, including groups often rendered invisible by common measures of sexual orientation.

Although often treated as a homogenous group when compared to sexual majority youth, sexual minority youth are quite diverse based on both current and previous research (Kosciw et al., 2015; Watson et al., 2020). In the current analyses, adolescent attraction varied in terms of the degree to which adolescents experienced attraction, toward which genders, and whether they were certain of their attraction. Further, although many adolescents still identified with "traditional" sexual minority groups (i.e., gay, lesbian, and bisexual), others identified with emerging identity groups such as pansexual, heteroflexible, asexual, and demisexual. In sum, adolescent sexual orientation and development are complex, even when limiting operationalization to attraction and sexual identity.

A majority of adolescents do fit heteronormative expectations, but, based on both the current work and other community- or school-based studies (e.g., Katz-Wise et al., 2017; Stewart

et al., 2019), a sizeable proportion of youth do not. In the current analyses, one in three youth reported sexual minority attraction (some degree of same-gender, limited, or uncertain attraction) at least once—a proportion that is comparable to other estimates from other prospective, longitudinal work (Stewart et al., 2019). By the last year of high school, one in six youth described themselves using a sexual identity other than straight, and one in four reported sexual minority attraction. In the following sections, I address unique developmental and adjustment profiles of several groups within the sexual minority community.

Highly Visible Sexual Minorities

Most of my discussion thus far has not focused on youth reporting exclusive same-gender attraction, as they are one of the better-understood sexual minority groups. However, discussion of this small but distinct group provides important points of contrast. Based on examination of rates of individual consistency and change over time as well as changes in attraction class size, same-gender attraction became noticeably more stable over the course of high school, particularly for male participants. Youths who did not enter high school already reporting exclusive same-gender attraction were often classified first as multi-gender attracted and then as same-gender attracted. By the end of high school, youth with exclusive same-gender attraction also primarily explicitly identified as expected—gay or lesbian.

These patterns stood in stark contrast to the variable attraction patterns and low attraction-identity congruence of other sexual minority attraction classes. As previously noted, much of the early work on sexual minority development was focused on homosexuality (see Savin-Williams, 2011). Thus, such research is likely partly to blame for misconceptions about other sexual minority groups, such as the belief that bisexuality is a transitional stage. For many who eventually report exclusive same-gender attraction, it may be, and this narrative has been

privileged over other narratives of bisexual development. More recently, research has been more inclusive of complex and diverse sexual orientation groups (e.g., Calzo et al., 2011; Katz-Wise et al., 2017). However, sexual minorities—other than exclusively same-gender-attracted youth—continue to be rendered invisible far too often in sexual minority research.

Low Visibility Sexual Minorities

Those reporting multi-gender attraction were the largest group of sexual minorities across all grade levels, especially among female participants, consistent with previous research using community- or school-based samples (e.g., Katz-Wise et al., 2017; Stewart et al., 2019). In addition, they were the group that most consistently reported higher loneliness and social anxiety and lower sense of school safety and belonging in comparison to the sexual majority, also consistent with prior work (e.g., Feinstein & Dyar, 2017; Plöderl & Tremblay, 2015). Those whose attraction was classified as heteroflexible in 11th and 12th grade also reported higher loneliness and social anxiety than the sexual majority, although they did not report feeling less safe or like they belonged at school. Those reporting low or no attraction reported both adjustment difficulties and more negative school climate perceptions at the end of high school, consistent with findings from Kosciw and colleagues (2018) regarding asexuality, despite faring significantly better than multi-gender-attracted or heteroflexible youth at the beginning of high school. Across all three of these attraction classes, stability of romantic attraction classification was low and identification as straight at the end of high school was high (more so for the heteroflexible and low or no attraction classes than the multi-gender attraction class).

The poor outcomes for multi-gender and heteroflexibly attracted youth make unfortunate sense in light of the delegitimization of bisexuality as a concept and an identity, negative stereotypes about bisexuals, and isolation from the social resources of the sexual minority

community (Dyar & Feinstein, 2018; Elia, 2014; Feinstein & Dyar, 2017). For youth with low or no attraction, as well, it is not difficult to make sense of why, at the end of high school, they would experience worse outcomes. Asexual adults describe navigating their adolescent sexual orientation development as a lonely and confusing experience, and recount having been pressured to engage in the romantic world and told their sexuality did not exist by both straight and sexual minority individuals (Gupta, 2017; Houdenove et al., 2015; Robbins et al., 2016). Thus, negativity toward and dismissiveness of sexualities conceptually aligned with these attraction groups likely explains at least some of the heightened risk for poor outcomes.

Considering media representation of identities such as bisexuality and asexuality also highlights disparities for youth with heteroflexible, multi-gender, or low or no attraction. The limited available bisexual representation in the media, for example, reflects the same negative attitudes that are reported in the community—bisexual people are often painted as promiscuous and untrustworthy, as indecisive about their sexuality rather than bisexual, and so forth (Johnson, 2016). For asexual individuals as well there is limited media representation—media is often highly (and for asexual people, sometimes uncomfortably) sexualized (Gupta, 2017). In the absence of other sources of legitimate, scientific information, popular media becomes a relatively uncontested teaching tool that reinforces these negative stereotypes. Thus, one important direction for future research is to delve into the mechanisms behind poor adjustment, particularly for straight-identified youth who are attracted to multiple genders, and a second is to examine educational interventions for the potential to derail popular miseducation about sexualities characterized by no attraction or attraction to multiple genders.

Limitations and Future Directions

Although the studies in this dissertation address gaps in the literature on sexual

orientation development based on the new and developmentally sensitive measure of attraction, there are several limitations to note, including several related to the new measure. First, the novel measure had to be simplified before applying LCA, and it is possible that choices made in this process changed the number or composition of classes that emerged. For low numbers of classes, preliminary analyses using all responses options and analyses using the reduced measure produced similar classes, but lack of model convergence meant it was not possible to confirm that the same final models would have been produced. Thus, sensitivity analyses performed after reducing measure complexity by other means would be beneficial, as described in Study 1.

Second, this measure of attraction has not yet been validated with different populations. Although confident that the patterns of attraction reported here reflect meaningful patterns in the data, it is unknown whether these patterns are representative across other age groups, in groups with different racial and ethnic composition, and those in other geographic regions or suburban and rural areas. Third, although the current attraction scale is nuanced in comparison to other standard attraction measures, the gendered response options are still couched in the gender binary. Further efforts to refine this scale should include exploration of other response options (e.g., attracted to all genders) that are more gender-inclusive. Refining and validating the measure would not only be beneficial on its own but could also be used to provide guidelines for manual classification, making the measure more applicable for use with samples too small for latent class analysis.

A second limiting factor in the current study was the size of the sample. Although over 4,000 youth were included in the current analyses, the number of youths in the smaller romantic attraction classes or sexual identity groups (e.g., the same-gender and uncertain attraction classes; asexual+, unlabeled, and gay or lesbian youth) was very low in comparison to the sexual

majority group. Using a much larger sample and employing methods such as propensity score matching to create equal-sized analytic groups could alleviate some of these concerns. This would also allow for addressing a second sample size-related limitation: the ability to explore interactions between sexual orientation and other identities (e.g., gender, race/ethnicity), when examining both attraction-identity congruence and wellbeing. Inclusion of nuanced measures of attraction and sexual identity on surveys for very large, population-based studies would allow for such analyses without excluding youth at early stages of development or who identify as straight for other reasons.

Finally, the current studies relied largely on cross-sectional analyses, with the exception of the developmental LCA and descriptive statistics regarding group and individual stability in the in Study 1 and Appendix B. In other words, this dissertation largely relied on cross-sectional analysis, although some inferences were made about changes over time. Because over a quarter of youth did not remain in one attraction class throughout high school, analyses that take changes in attraction into account could shed light on points of vulnerability and sources of resilience in sexual minority development. For example, do recent changes in attraction uniquely predict poor adjustment? Is beginning to identify as part of a sexual minority identity group that aligns with one's attraction patterns protective? Such questions are well-suited to longitudinal studies that involve frequent surveying and large, diverse sexual minority populations. Longitudinal analysis where social experiences could be modeled as time-varying covariates would further shed light on risk and protective mechanisms.

Research on young sexual minorities presents unique methodological complications, because by the time many begin to explicitly identify as sexual minorities, they are already well into the process of sexual orientation development and may already be grappling with issues

such as peer mistreatment and poor adjustment. Retrospective and qualitative work, as well as quantitative work using identity-based recruitment, have shed a great deal of light on important issues related to the development and wellbeing of diverse sexual orientation groups. However, most sources of community- or school-based data that allow for prospective examination of sexual minority development over a long period of time are somewhat outdated, include limited measures of sexual orientation and sex or gender, and are limited as well by how often data were collected.

To further the understanding of sexual minority development, extremely large samples are required in order to explore the development of small sexual minority subgroups, and thus, collaboration and partnership are key. Studies such as Add Health and the Growing Up Today Study provided a wealth of information, despite the limitations of their sexual orientation measures, by virtue of the number of participants. If developmentalists focusing on sexual orientation partner with such large-scale studies of public health now and in the future, they can ensure that nuanced measures of sexual orientation and gender are included and that the possibility of targeted follow-up is available. Once youth in these large-scale studies are identified as sexual minorities, whether by attraction, behavior, or identity, they can be recruited to participate in surveys administered at shorter intervals than the larger study, if necessary, to provide frequent, regular time points—perhaps every six months—for longitudinal analysis. These follow-up surveys could include brief measures related to sexual orientation, sources of support and stress related to sexual orientation, information about school environments and inclusive resources, and adjustment outcomes.

With a large enough participant pool, it would be possible also to oversample participants with low-incidence intersecting identities (e.g., a nonbinary, asexual, South Asian youth would

stand at the intersection of three groups that are already numerically small individually, and rare indeed in combination), allowing for exploration of specific intersecting and intersectional experiences. That is, targeted follow-up, ideally, would provide the capacity to follow up on many of the themes illuminated by qualitative researchers. For example, themes presented by Gupta (2017) on asexual invisibility and marginalization, or by Robbins and colleagues (2016) on the complexities of disclosing asexual identity could be incorporated specifically into surveys of youth reporting limited attraction or asexual spectrum identities.

Reflections on the Role of Schools

Currently, schools vary widely in the degree to which they recognize the needs of, and successfully support, sexually diverse students. Based on a national survey of over 20,000 gender and sexual minority youth, approximately half of secondary schools have student groups (gay- and straight alliances or gender and sexuality alliances, i.e., GSAs) geared toward supporting sexual minorities (Kosciw et al., 2018). This same survey indicated that if schools do have policies in place to protect sexual minority students specifically, most youth are not aware of them. Further, most schools do not provide access to sexuality-related information through textbooks, the school library, or school computers, and under a quarter of youth reported having been taught anything positive about sexual minorities (Kosciw et al., 2018). Thus, although most students who participated in this survey could identify at least one supportive adult in their school, there are significant strides to be made in supporting sexual minority high school students in a sustained and structured manner.

It is encouraging that many secondary schools do have GSAs (Gay Straight Alliances, or Gender and Sexuality Alliances) or similar organizations. GSA presence and involvement has been shown to improve a variety of mental and physical health outcomes as well as perceptions

of school environments for sexually diverse youth (e.g., Heck et al., 2013; Li et al., 2019; Poteat et al., 2013). However, not all GSAs are the same: whereas some may serve primarily as safe social spaces, others may function primarily as sources of education for members or for the student body more broadly, and yet others may focus on current events and political action. Often, the teachers facilitating such organizations do so voluntarily and with limited support or resources, and as such the functionality of GSAs is dependent on the knowledge, access, and energy of the students and facilitators. Although nonprofit organizations provide some educational resources¹³, this cannot replace initiatives by teacher training programs, schools, or districts to thoroughly prepare teachers to support sexually diverse students or compensate them for time and energy spent doing so. There is evidence that GSAs could be useful venues to explicitly provide socioemotional education and coping skills to promote resilience (Heck, 2015), but again, this would require support from schools or districts.

Quality education about sexual orientation is likely key to improving outcomes for sexual minorities—but not education only provided in GSAs. Well-taught inclusive curriculum in supportive classroom environments, in courses such as history, literature, biology, and health, in particular could go far to dispel misinformation about sexual orientation. A relatively small amount of quality information presented in a health class might be enough to direct a 15-year-old with limited attraction toward additional information about the asexuality spectrum, potentially alleviating much of the confusion and isolation of which asexual and demisexual individuals speak. Positive examples of highly influential bisexual figures are in fact already present in history and literature courses (for examples, see McAndrews, 2018), although the detail that they are bisexual is usually omitted. The internet is also rife with sources of quality information on

¹³For example, GSA facilitators can register their schools' clubs through GSA Network and receive a variety of resources.

sexual orientation in general,¹⁴ if youth know how to access this information and have a safe place to do so. Schools should then both revise curriculum to be inclusive of sexual minority issues and individuals (including representing the diversity within the sexual minority community) and revisit policies that block youth from accessing information that is already available.

Although, as previously mentioned, around half of secondary schools have student organizations such as GSAs, and other schools may have informational materials that can be obtained through counselors or school psychologists, course-based inclusive education remains important even in schools with such resources. Although many sexual minority adolescents with less well-known sexual orientations eventually locate information and support on their own, not all do—and certainly not all are able to before confusion and self-doubt take a psychological toll. Further, mischaracterization and delegitimization of various sexual orientations cannot be solved without educating people outside of those sexual orientation groups. These are systemic issues, and as such, education of non-group members is key. Negative school perceptions and adjustment problems faced by sexual minority youth are spurred on by peer victimization (Williams et al., 2005) and observed cruelty toward others based on assumed sexual minority status (e.g., Pascoe, 2012).

Although here I digress from the empirical literature, experience as a high school teacher provided anecdotal evidence that at least some of the homophobic incidents in schools are based in ignorance rather than malice, with students assuming everyone around them is straight and thus no one will really be hurt by their words or actions. Of course, many factors other than

¹⁴For example, GLSEN, the Gay, Lesbian and Straight Education Network, provides resources for both youth and adults of various sexual orientations, and AVEN, the Asexual Visibility and Education Network provides both educational material and social support.

knowledge contribute to discrimination against or mistreatment of sexual minorities (e.g., religious or moral beliefs, or toxic masculinity; Birkett & Espelage, 2015; Lindsey Wilkinson & Jennifer Pearson, 2009), and disrupting cycles of mistreatment with such complicated historical, political, and social roots is quite difficult. However, providing quality education is an important starting point.

Further, education on sexual diversity for school personnel—including administrators, counselors, psychologists, coaches, and those running after-school programs, as well as teachers—is vital to the success of creating inclusive schools, as they are the ones in the position to set the social tone, enforce policies, and protect students from mistreatment. For students to be properly educated about sexual orientation, school personnel need to have the tools and knowledge to provide this education. Unfortunately, school personnel likely receive little to no preparation to deal with issues surrounding sexual orientation, based on the limited available reviews of preparation programs (Jennings, 2007) and students reviews of their teachers and administrators ability or willingness to support them (Kosciw et al., 2018).

Although all of this may be seen as yet another “burden” placed on teachers and other school personnel, I would argue that holistic understanding of developmental processes is one of the most basic tools that preparation programs should be providing. If the goal of public schools is to provide education to all students, failure to act when there are glaring disparities between demographic groups in school experiences and educational outcomes is failure to adequately perform their most basic function. Finally, as inclusive curricula for both students and school personnel are introduced, as well as other initiatives geared toward supporting sexual minority youth, partnerships with researchers will play an important role. Intention and impact do not always align, and as such, scientifically sound examination of whether such initiatives have the

intended effects of educating all youth and improving outcomes for diverse sexual minorities, including groups that are less socially visible.

Final Conclusion

Adolescent sexual orientation and development are complex, as are the social landscapes that young sexual minorities navigate. With changing understanding of sexual orientation—including newly emerging sexual identities and continuing research on development and wellbeing of understudied sexual minority groups—researchers must ensure that their methodologies and the language used to discuss young sexual minorities remain up to date and developmentally appropriate. Far from being dry scientific issues, methodological decisions about sampling techniques and operationalizing sexual orientation will determine whether the full diversity of the sexual minority community is represented or whether erasure of certain identities and experiences continues in the field. The success with which sexual orientation researchers communicate about the developmental complexities associated with low-visibility sexual orientations—i.e., those experiencing limited attraction or identifying as asexual, or those experiencing varying degrees of attraction to multiple genders—will likely shape the degree to which these youths' experiences are reflected in more general developmental research (i.e., in which sexual orientation is not the primary focus) in the near future. Broad societal and structural changes are needed, and not only changes in research and school-based education, to address the complex issues contributing to poor outcomes for sexual minority adolescents. However, information from emerging studies of sexually diverse youth is likely key to creating school environments and other spaces in our society where sexual minority youth feel safe, connected, and supported.

Appendix A

Romantic Attraction Measure and Recoding

The 4-item measure of romantic attraction used in the current analyses, including original and recoded responses, is shown below. The measure originally also included an item asking participants about whom they daydreamed. This item was excluded for conceptual reasons which were supported by quantitative ones. Conceptually, daydreams fall into the category of fantasy rather than attraction. Although these are related concepts and are sometimes combined into a single scale, they do not always align, and assessing them separately is considered acceptable and sometimes preferable (e.g., Diamond, 2010). Many young adolescents may not engage in romantic or sexual daydreaming. In adulthood, an estimated one in ten people report never engaging in sexual fantasy (Joyal, 2017), and during early adolescence this proportion is likely higher. Because the estimated proportion of non-fantasizers is much higher than estimates of asexuality in the population (see Yule, Brotto, & Gorzalka, 2017), high proportions of *no one* responses to the daydream item would likely be accurate but misleading. Because such differences had the potential to inflate estimates of sexual minority attraction, response frequencies were examined across items.

Examining participant responses revealed that at each wave, the daydream item did stand out from other items (see Table A1). Consistently, the daydream item had the lowest percentage of exclusive other-gender responses, differing from other items by 6%-12% across items and grade levels. Rates of *no one* responses were low overall, ranging from 2% to 11% across items and grad levels. However, *no one* response rates were to five times higher for the daydream item than for other items in 9th grade, and two to four times higher across 10th-12th grades.

Response Recoding

Responses to the remaining four items, as previously mentioned, were recoded based on

participant binary sex, so that instead of ranging from *only boys* to *only girls* they ranged from *only other sex/gender* to *only same sex/gender*. The choice to combine response options was based on necessity; even reducing the measure to four instead of five items, latent models began failing to converge before fit indices indicated that the best model (i.e., the one with the “correct” number of classes) had been identified. Addressing this through other means (e.g., increasing the maximum number of iterations allowed; including estimated values from the previous model in syntax for the model with one additional class) was ineffective, and thus reducing the complexity of the data was necessary to continue with analyses.

The choice to combine the three answer options indicating interest in both boys and girls was made for several reasons. The three answers that were combined fall under the umbrella of multi-gender interest. Combining responses in this way maintains conceptually important binary categories indicating exclusive mono-gender interest as well as the developmentally important options to indicate no interest or uncertainty. Such an approach is also consistent with both commonly used sexual identity terms (*straight* typically indicating exclusive other-gender interest, *gay* and *lesbian* indicating exclusive same-gender interest, and terms such as *bisexual* and *pansexual* indicating multi-gender interest) and with categories that can be created using common attraction assessment items such as “Are you attracted to men?” and “Are you attracted to women?”.

It is important to note that combining responses in this way may limit the ability to identify certain patterns of attraction. For example, “mostly heterosexual”, a sexual identity that aligns with the *mostly other sex/gender*, has received attention as a distinct sexual orientation group (Savin-Williams & Vrangalova, 2013). Collapsing *mostly other-sex/gender* together with other multi-gender categories could limit identification of this particular group, combining them with multi-gender-attracted youth who experience relatively equally levels of attraction or are more oriented toward same-gender others. Therefore, although this was the best option for the current analyses, ideally the measure will be examined including all seven response options using a different analytic approach and/or larger sample.

Romantic Attraction Measure

Teens often get attracted to boys or girls of their age. Some get crushes and dream about romantic relationships, others date and go out with people they like. These relationships are different from friendships. We would like to know who you feel attracted to.

To better understand your personal experiences, please select the response that best describes your answer.

	Only Boys	Mostly Boys	Boys & Girls Equally	Mostly Girls	Only Girls	Not Sure	No One
I get crushes on...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have intimate feelings toward...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am attracted to...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I want to be in a romantic relationship with...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>Recoded responses, with "only boys" and "only girls" recoded for male participants</i>	<i>Only Other Sex/Gender</i>	<i>Boys and Girls</i>			<i>Only Same Sex/Gender</i>	<i>Not Sure</i>	<i>No One</i>

Table A1

Response Frequency Percentages for Romantic Attraction Measure

		Response Options						
		Only Other Sex/Gender	Mostly Other Sex/Gender	Boys and Girls Equally	Mostly Same Sex/Gender	Only Same Sex/Gender	No One	Not Sure
9th Grade	Attraction	82.4%	8.3%	4.5%	0.6%	0.7%	2.2%	1.0%
	Crushes	83.1%	7.7%	3.7%	0.75	0.8%	3.05	1.0%
	Feelings	78.8%	6.7%	4.0%	0.9%	0.7%	6.1%	2.1%
	Relationships	83.9%	5.8%	3.0%	0.7%	0.7%	4.1%	1.6%
	Daydreams	71.6%	9.2%	4.1%	1.0%	0.6%	10.6%	2.65
10th Grade	Attraction	80.3%	8.8%	5.4%	1.3%	1.0%	2.3%	0.8%
	Crushes	80.4%	9.6%	4.0%	1.4%	1.1%	2.7%	0.8%
	Feelings	78.5%	7.5%	4.6%	1.3%	1.1%	5.6%	1.0%
	Relationships	81.3%	6.4%	3.5%	1.4%	1.15	3.5%	1.1%
	Daydreams	70.9%	9.9%	4.9%	1.8%	0.8%	9.8%	1.7%
11th Grade	Attraction	80.3%	8.3%	5.7%	1.2%	1.4%	2.1%	0.8%
	Crushes	80.5%	8.7%	4.3%	1.5%	1.3%	2.8%	0.7%
	Feelings	79.3%	7.1%	5.2%	1.1%	1.5%	4.8%	0.8%
	Relationships	81.95	6.0%	4.5%	1.1%	1.4%	3.7%	1.1%
	Daydreams	72.7%	8.7%	5.0%	1.4%	1.3%	9.4%	1.2%
12th Grade	Attraction	76.4%	9.9%	6.8%	1.8%	1.7%	2.4%	0.7%
	Crushes	77.0%	10.5%	5.1%	1.9%	1.7%	3.1%	0.6%
	Feelings	77.2%	8.5%	5.7%	1.8%	1.8%	4.2%	0.7%
	Relationships	79.3%	7.5%	5.2%	1.75	2.0%	3.3%	1.0%
	Daydreams	70.3%	10.2%	5.9%	2.0%	1.5%	8.8%	1.0%

Appendix B

Developmental Latent Class Analysis

See Study 1 for a description of fit indices and conceptual considerations used during the class enumeration process. First a one-class model was fit, then the number of models was increased by one for each subsequent model, and models were compared using the indices shown in Table B1. Adjusted aLMR-LRT significance values indicated that a 2-class model was the best fit; BIC, BF, and cmP indicated that a 4-class model was the best fit; and saBIC and significance values for BLRT indicated that a 5-class model was the best fit. A four-class model was selected as the final model, as it had the most robust support. Entropy for this model was .90, indicating that classification was extremely good.

Note that for clarity in this appendix, the phrase “developmental class” will be used whenever referring to these classes based on the four years of attraction classes, and the phrase “attraction class” (e.g., *other-gender attraction class*, *multi-gender attraction class*) will be used exclusively for the cross-sectional attraction classes identified in Study 1. The four developmental classes that emerged each had one cross-sectional class as the dominant attraction pattern represented. They will be referred to as the *other-gender developmental class*, the *multi-gender developmental class*, the *same-gender developmental class*, and the *low or no developmental class*. Each developmental class was examined descriptively in terms of percent of the overall sample, male participants, and female participants in the class. Within each developmental class, the percentage of participants falling into each attraction class at each grade level is reported, split by participant sex, in Table B2.

In addition to examination at the group level, consistency of classification was examined separately by sex within each class at the individual as well as—i.e., percentages of consistent

classification or change from one class to another were examined for every individual who participated in both 9th and 10th grade, referred to as the 9th/10th transition, and again for everyone who participated in both 10th and 11th grade (10th/11th transition) and in both 11th and 12th grade (11th/12th transition). This descriptive information is presented separately for each developmental class below.

Other-gender developmental class. The largest developmental class was overwhelmingly characterized by other-gender attraction class membership and comprised 79% of the overall sample—86% of male participants and 73% of female participants. During any given year the vast majority of participants in the other-gender developmental class (94%-97% for male participants and 89%-97% of female participants) were part of the other-gender attraction class. Classification of individual participants tended to be highly stable across transitions, with 92%-93% of male participants consistently classified in the other-gender attraction class before and after all three transitions. Among female participants, 92% were consistently classified as other-gender attracted across the 9th/10th and 10th/11th transitions, dropping somewhat to 86% consistent classification across the 11th/12th transition.

Overall, the dominant patterns of movement across all transitions were bidirectional between the other- and multi-gender attraction classes for both male and female participants, and movement between the other-gender and heteroflexible classes as well for female participants. Movement between the other- and multi-gender attraction classes (in either direction) included 4%-6% of male participants at any given transition, and 3%-6% of female participants. For female participants, 3% reported shifts from the other-gender to heteroflexible attraction class at the 10th/11th transition, and 5% reported shifts (in either direction) between these two classes at the 11th/12th transition. The reduction in consistent other-gender classification among female

participants across the 11th/12th transition was largely accounted for by increasing movement of female participants into (but not out of) the multi-gender attraction class.

Multi-gender developmental class. The next-largest developmental class was characterized primarily by membership in the multi-gender attraction class and comprised 16% of the total sample—9% of male participants and 22% of female participants. In any given year, 57%-72% of male participants and 54%-76% of female participants in the multi-gender developmental class were in the multi-gender attraction class. Combining representation in the heteroflexible and multi-gender attraction classes, this representation increased to 62%-78% of male participants and 54%-88% of female participants (see Table B2). Their classification was far less consistent than in the other-gender developmental class, with 34%-47% of male participants classified into the multi-gender attraction class before and after any given transition (highest during the 9th/10th transition), and 43%-58% consistent classification among female participants (highest during the 11th/12th transition).

The dominant pattern of movement between classes for both male and female participants was again between the other-gender attraction class and the multi-gender attraction class. For male participants, shifts between these two attraction classes accounted for shifts for 33% of the developmental class across the 9th/10th transition, 42% across the 10th/11th transition, and 25% across the 11th/12th transition. For female participants, these shifts accounted for 36% of the multi-gender developmental class across the 9th/10th transition, 24% across the 10th/11th transition, and 12% across the 11th/12th transition. Toward the end of high school, there was also substantial movement into and out of the heteroflexible attraction class, including 10% of male and 11% of female participants moving into this class over the 10th/11th transition, and across the

11th/12th transition 14% of male participants and 15% of female participants moving into or out of the heteroflexible attraction class.

Same-gender developmental class. The same-gender developmental class was smallest and included only 1% of participants (2% of male participants and 1% of female participants; see Table B2). Among male participants in this developmental class, membership in the same-gender attraction class ranged between 52% and 87%, and among female participants, between 28% and 81%, both increasing in representation and stability over time. Among male participants, consistent classification was at 46% for the 9th/10th transition, 59% for the 10th/11th transition, and 91% across the 11th/12th transition. Among female participants, consistent classification was at 28% across the 9th/10th transition, 48% for the 10th/11th transition, and 81% across the 11th/12th transition.

Most transition movement within the same-gender developmental class was between the multi- and same-gender attraction classes. Movement between these two classes accounted for 18% of male participants across the 9th/10th transition and 33% across the 10th/11th transition (mainly *into* the same-gender attraction class); only 4% of male participants moved from the same- to the multi-gender attraction class across the 11th/12th transition. Among female participants in this developmental class, shifts between the multi- and same-gender attraction classes accounted for 33% of female participants at the 9th/10th transition, 43% at the 10th/11th transition, and 13% at the 11th/12th transition. For both male and female participants, as reflected by group level percentages, movement into the same-gender attraction class was more common than movement out of it.

Low or no developmental class. Finally, the low or no attraction developmental class was the most proportionate in terms of participant sex, including 4% of participants (both male

and female). This class largely comprised youth moving among the low and no, uncertain, and other-gender attraction classes, with highest representation in the low or no attraction class. Among male participants, 48%-62% in this developmental class were in the low or no attraction class, and among female participants, 54%-74%. Consistent classification across transitions as having low or no attraction varied over time for male participants, ranging from 28% to 36%. For female participants, consistent classification as low or no attraction was 44% across the 9th/10th transition, and 34% for both latter transitions.

In the low or no developmental class, movement was highly varied across the other-gender, multi-gender, uncertain, and low or no attraction classes—with movement between the other-gender and low or no attraction classes slightly outpacing other shifts. Movement between the other-gender and low or no attraction classes accounted for 19% of male participants at the 9th/10th transition, 17% at the 10th/11th transition, and 22% across the 11th/12th transition. For female participants such movements accounted for 22% of movement across the 9th/10th transition, 38% at the 10th/11th transition, and 23% at the 11th/12th transition.

Summary

Overall, it is noteworthy that for all three sexual minority developmental classes—collectively comprising 14% of male participants and 27% of female participants—there was a great deal of transition between attraction classes over time. For the other-gender developmental class, there was a marked decrease in stable other-gender attraction class membership over time among female participants, with complementary movement toward the multi-gender class. By contrast, in the multi-gender developmental class, stable classification across transitions increased over time for female participants. In the same-gender developmental class, there was a marked increase in same-gender attraction classification and stability over time for male and

female participants. The low or no developmental class was the least stable in terms of attraction class membership over time, and the most varied in terms of attraction class transitions.

Overall, these unique and sometimes sex-specific developmental patterns of attraction warrant further exploration. There is extremely limited available data on attraction development among young sexual minority adolescents—particularly those who may not yet or may never use sexual minority identity labels to describe themselves, and those who express limited attraction. Thus, it is not known whether the developmental classes described here are generalizable.

Table B1

Developmental Class Enumeration Summary

No. of Classes	Log Likelihood	BIC	saBIC	BLRT p	aLMR-LRT p	BF (K, K+1)	cmP
1	-10269.67	20690.51	20633.32	---	---	<.001	<.001
2	-8634.80	17580.35	17462.78	<.001	<.001	<.001	<.001
3	-8347.15	17164.60	16986.66	<.001	.943	<.001	<.001
4	<i>-8184.95</i>	16999.79	<i>16761.47</i>	<i><.001</i>	<i>.848</i>	>100	1.00
5	-8118.38	17026.20	16727.51	<.001	.895	<.001	<.001
6	-8099.79	17148.61	16789.54	.136	.862	---	<.001

Note. Bolded values indicate the “best” value for a given column. The italicized row indicates the final model selected.

Table B2

Attraction Class Representation within Developmental Classes by Grade and Participant Sex

Attraction Class	Male Participants				Female Participants			
	9th Gr.	10th Gr.	11 th Gr.	12th Gr.	9th Gr.	10th Gr.	11th Gr.	12th Gr.
Other Gender Developmental Class								
	n = 1,370	n = 1,485	n = 1,436	n = 1,307	n = 1,406	n = 1,487	n = 1,457	n = 1,371
Other-Gender	94%	96%	97%	95%	95%	97%	95%	89%
Heteroflexible	--	--	1%	1%	--	--	3%	4%
Multi-Gender	4%	3%	2%	2%	3%	2%	1%	5%
Same-Gender	< 1%	< 1%	0%	< 1%	0%	< 1%	0%	< 1%
Low or No	1%	1%	1%	1%	2%	1%	1%	1%
Uncertain	1%	0%	< 1%	< 1%	< 1%	0%	< 1%	< 1%
Multi Gender Developmental Class								
	n = 141	n = 143	n = 134	n = 127	n = 426	n = 437	n = 426	n = 416
Other-Gender	33%	27%	24%	9%	42%	22%	8%	9%
Heteroflexible	--	--	10%	6%	--	--	12%	6%
Multi-Gender	62%	71%	57%	72%	54%	76%	76%	76%
Same-Gender	0%	0%	2%	6%	0%	0%	0%	3%
Low or No	3%	1%	4%	4%	1%	0%	2%	2%
Uncertain	2%	1%	2%	2%	3%	2%	3%	3%
Same-Gender Developmental Class								
	n = 25	n = 29	n = 30	n = 25	n = 20	n = 25	n = 22	n = 21
Other-Gender	16%	0%	0%	0%	5%	0%	0%	0%
Heteroflexible	--	--	0%	0%	--	--	0%	0%
Multi-Gender	24%	28%	7%	12%	40%	36%	5%	24%
Same-Gender	52%	72%	87%	88%	40%	64%	86%	76%
Low or No	4%	0%	3%	0%	5%	0%	5%	0%
Uncertain	4%	0%	3%	0%	10%	0%	5%	0%
Low or No Developmental Class								
	n = 55	n = 60	n = 62	n = 56	n = 70	n = 80	n = 72	n = 70
Other-Gender	24%	13%	27%	34%	23%	10%	26%	33%
Heteroflexible	--	--	2%	0%	--	--	0%	0%
Multi-Gender	9%	3%	3%	5%	6%	5%	13%	6%
Same-Gender	0%	0%	3%	2%	0%	0%	1%	0%
Low or No	51%	62%	52%	48%	59%	74%	56%	54%
Uncertain	16%	22%	13%	11%	13%	11%	4%	7%

Note. Sample sizes vary within developmental classes due to differences in missingness rates across grade levels.

Dashes indicate that a given attraction class was not an available option during that year. Bolded rows indicate the dominant cross-sectional class(es) for a given developmental class.

Appendix C

Sexual Identity Measure and Recoding

Sexual orientation identification was assessed using the measure shown on the following page. Recoding of responses is shown in Table C1. Of those in the *straight* group, 99.8% marked *only* heterosexual/straight, and the remaining 0.2% marked heterosexual/straight and unlabeled or straight and an unspecified other identity. Of those in the *bisexual+* group, 78% marked only a single identity: 63% bisexual, 5% fluid, pansexual, and 10% write-in identities such as pansexual or heteroflexible. The remaining 22% indicated a combination of identities as described in Table C1 (18% of which included the term bisexual and 4% of which did not). Of those in the *gay/lesbian* group, 93% indicated only that they were gay (55%) or lesbian (38%). The remaining 7% either marked both gay and lesbian (3%) or one of these and unlabeled or queer (4%). Of those in the *asexual* group, 54% indicated only one or more identity from the asexual spectrum (asexual, demisexual, aromantic, demiromantic), 27% indicated a combination of asexual and straight identities, and 19% indicated a combination of asexual and sexual minority identities. Of those in the unlabeled group, all indicated *only* unlabeled or undeclared. Of those in the questioning group, 40% indicated only that they were questioning/not sure, 27% indicated a combination of questioning and straight identities, and 33% indicated a combination of questioning and sexual minorities identities.

Sexual Identity Measure

Earlier, we asked you about your gender identity. We are also interested in learning about your sexual orientation. This question is specifically about what sexual orientation you personally identify with (i.e., who you might be attracted to). If there are any words that you are not familiar with, or you do not see a word that describes you, you can also write (in your own words) what identity you would describe yourself as.

How would you describe your sexual orientation? You can mark as many responses as you need.

- Heterosexual/Straight
- Gay
- Lesbian
- Bisexual
- Fluid
- Asexual
- Unlabeled
- Questioning/Not Sure
- Different Identity

(If you wish, please specify what different identity you describe yourself as)

Table C1

Recoding of Sexual Identity Responses into Groups

Identification group	Original response(s) to sexual identity measure
Straight	Primarily <i>only</i> heterosexual/straight; those responding with a combination of heterosexual/straight and unlabeled also included
Bisexual+	Primarily bisexual, but also includes those who wrote in terms such as heteroflexible, pansexual, or a comparable description (e.g., “I don’t know or care if there’s a word for it. I can like anyone.”), alone or in combination with straight, gay, lesbian, or unlabeled. Also included in this group are those who indicated that they would describe themselves as both straight and gay or lesbian, regardless of whether they also marked bisexual.
Gay/Lesbian	Primarily <i>only</i> gay and/or lesbian; those responding with a combination of gay/lesbian and unlabeled or queer also included
Asexual	Asexual or write-ins indicating the asexual spectrum (aromantic, grayasexual, demisexual, demiromantic), alone or in combination with any response <i>except</i> questioning.
Questioning	Questioning, alone or in combination with any other response(s).
Unlabeled	<i>Only</i> unlabeled and/or a similar write-in such as “undeclared” or “I’m just me”.

References

- Asher, S. R., & Wheeler, V. A. (1985). Children's loneliness: A comparison of rejected and neglected peer status. *Journal of Consulting and Clinical Psychology, 53*(4), 500–505. <https://doi.org/10.1037/0022-006X.53.4.500>
- Austin, S. B., Conron, K. J., Patel, A., & Freedner, N. (2007). Making sense of sexual orientation measures: Findings from a cognitive processing study with adolescents on health survey questions. *Journal of LGBT Health Research, 3*(1), 55–65. https://doi.org/10.1300/J463v03n01_07
- Birkett, M., & Espelage, D. L. (2015). Homophobic came-calling, peer-groups, and masculinity: The socialization of homophobic behavior in adolescents. *Social Development, 24*(1), 184–205. <https://doi.org/10.1111/sode.12085>
- Birkett, M., Russell, S. T., & Corliss, H. L. (2014). Sexual-orientation disparities in school: The mediational role of indicators of victimization in achievement and truancy because of feeling unsafe. *American Journal of Public Health, 104*(6), 1124–1128. <https://doi.org/10.2105/AJPH.2013.301785>
- Bogaert, A. F. (2015). Asexuality: What it is and why it matters. *The Journal of Sex Research, 52*(4), 362–379. <https://doi.org/10.1080/00224499.2015.1015713>
- Bolck, A., Croon, M., & Hagenaars, J. (2004). Estimating latent structure models with categorical variables: One-step versus three-step estimators. *Political Analysis, 12*(1), 3–27. <https://doi.org/10.1093/pan/mp001>.

- Borgogna, N. C., McDermott, R. C., Aita, S. L., & Kridel, M. M. (2019). Anxiety and depression across gender and sexual minorities: Implications for transgender, gender nonconforming, pansexual, demisexual, asexual, queer, and questioning individuals. *Psychology of Sexual Orientation and Gender Diversity, 6*(1), 54–63. <https://doi.org/10.1037/sgd0000306>
- Burton, C. M., Marshal, M. P., Chisolm, D. J., Sucato, G. S., & Friedman, M. S. (2013). Sexual minority-related victimization as a mediator of mental health disparities in sexual minority youth: A longitudinal analysis. *Journal of Youth and Adolescence, 42*(3), 394–402. <https://doi.org/10.1007/s10964-012-9901-5>
- Button, D. M., O'Connell, D. J., & Gealt, R. (2012). Sexual minority youth victimization and social support: The intersection of sexuality, gender, race, and victimization. *Journal of Homosexuality, 59*(1), 18–43. <https://doi.org/10.1080/00918369.2011.614903>
- Calzo, J. P., Antonucci, T. C., Mays, V. M., & Cochran, S. D. (2011). Retrospective recall of sexual orientation identity development among gay, lesbian, and bisexual adults. *Developmental Psychology, 47*(6), 1658–1673. <https://doi.org/10.1037/a0025508>
- Clogg, C. C. (1995). Latent class models. In G. Arminger, C. C. Clogg, & M. E. Sobel (Eds.), *Handbook of Statistical Modeling for the Social and Behavioral Sciences* (pp. 311–359). Springer US. https://doi.org/10.1007/978-1-4899-1292-3_6
- Diamond, L. M., & Lucas, S. (2004). Sexual-minority and heterosexual youths' peer relationships: Experiences, expectations, and implications for well-being. *Journal of Research on Adolescence, 14*(3), 313–340. <https://doi.org/10.1111/j.1532-7795.2004.00077.x>

- Doty, N. D., Willoughby, B. L. B., Lindahl, K. M., & Malik, N. M. (2010). Sexuality related social support among lesbian, gay, and bisexual youth. *Journal of Youth and Adolescence*, *39*(10), 1134–1147. <http://dx.doi.org/10.1007/s10964-010-9566-x>
- Dyar, C., & Feinstein, B. A. (2018). Binegativity: Attitudes toward and stereotypes about bisexual individuals. In D. J. Swan & S. Habibi (Eds.), *Bisexuality: Theories, Research, and Recommendations for the Invisible Sexuality* (pp. 95–111). Springer International Publishing. https://doi.org/10.1007/978-3-319-71535-3_6
- Earnshaw, V. A., Reisner, S. L., Juvonen, J., Hatzenbuehler, M. L., Perrotti, J., & Schuster, M. A. (2017). LGBTQ bullying: Translating research to action in pediatrics. *Pediatrics*, *140*(4). <https://doi.org/10.1542/peds.2017-0432>
- Elia, J. P. (2014). Bisexuality and schooling: Erasure and implications for health. *Journal of Bisexuality*, *14*(1), 36–52. <https://doi.org/10.1080/15299716.2014.872461>
- Feinstein, B. A., & Dyar, C. (2017). Bisexuality, minority stress, and health. *Current Sexual Health Reports*, *9*(1), 42–49. <https://doi.org/10.1007/s11930-017-0096-3>
- Floyd, F. J., & Stein, T. S. (2002). Sexual orientation identity formation among gay, lesbian, and bisexual youths: Multiple patterns of milestone experiences. *Journal of Research on Adolescence*, *12*(2), 167–191. <https://doi.org/10.1111/1532-7795.00030>
- Galliher, R. V., Rostosky, S. S., & Hughes, H. K. (2004). School belonging, self-esteem, and depressive symptoms in adolescents: An examination of sex, sexual attraction status, and urbanicity. *Journal of Youth and Adolescence*, *33*(3), 235–245. <https://doi.org/10.1023/B:JOYO.0000025322.11510.9d>

- Ghavami, N., Katsiaficas, D., & Rogers, L. O. (2016). Toward an intersectional approach in developmental science: The role of race, gender, sexual orientation, and immigrant status. In S. S. Horn, M. D. Ruck, & L. S. Liben (Eds.), *Equity and Justice in Developmental Science: Theoretical and Methodological Issues* (Vol. 50, pp. 31–73). JAI.
<https://doi.org/10.1016/bs.acdb.2015.12.001>
- Ghavami, N., & Peplau, A. (n.d.). *Assessing sexual attraction and identity among urban ethnically diverse early adolescents*. manuscript in preparation.
- Goodenow, C., Watson, R. J., Adjei, J., Homma, Y., & Saewyc, E. (2016). Sexual orientation trends and disparities in school bullying and violence-related experiences, 1999–2013. *Psychology of Sexual Orientation and Gender Diversity*, 3(4), 386–396.
<http://dx.doi.org/10.1037/sgd0000188>
- Gordon, L. E., & Silva, T. J. (2015). Inhabiting the sexual landscape: Toward an interpretive theory of the development of sexual orientation and identity. *Journal of Homosexuality*, 62(4), 495–530. <https://doi.org/10.1080/00918369.2014.986417>
- Gottfredson, G. D. (1986). Using the Effective School Battery in school improvement and effective schools programs. (p. 1-41). Retrieved from
<https://search.proquest.com/docview/63245700/138AF469B2958EB7CFD/1?acco%20untid=14512>
- Gupta, K. (2017). “And now I’m just different, but there’s nothing actually wrong with me”: Asexual marginalization and resistance. *Journal of Homosexuality*, 64(8), 991–1013.
<https://doi.org/10.1080/00918369.2016.1236590>
- Harris, J., & White, V. (2018). *A Dictionary of Social Work and Social Care*. Oxford University Press.

- Hatzenbuehler, M. L., McLaughlin, K. A., & Xuan, Z. (2012). Social networks and risk for depressive symptoms in a national sample of sexual minority youth. *Social Science & Medicine*, 75(7), 1184–1191. <https://doi.org/10.1016/j.socscimed.2012.05.030>
- Heck, N. C. (2015). The potential to promote resilience: Piloting a minority stress-informed, GSA-based, mental health promotion program for LGBTQ youth. *Psychology of Sexual Orientation and Gender Diversity*, 2(3), 225–231. <http://dx.doi.org/10.1037/sgd0000110>
- Heck, N. C., Flentje, A., & Cochran, B. N. (2013). Offsetting risks: High school gay-straight alliances and lesbian, gay, bisexual, and transgender (LGBT) youth. *Psychology of Sexual Orientation and Gender Diversity*, 1(S), 81–90. <http://dx.doi.org/10.1037/2329-0382.1.S.81>
- Hequembourg, A. L., & Brallier, S. A. (2009). An exploration of sexual minority stress across the lines of gender and sexual identity. *Journal of Homosexuality*, 56(3), 273–298. <https://doi.org/10.1080/00918360902728517>
- Hille, J. J., Simmons, M. K., & Sanders, S. A. (2019). “sex” and the ace spectrum: Definitions of sex, behavioral histories, and future interest for individuals who identify as asexual, graysexual, or demisexual. *Journal of Sex Research*. <http://dx.doi.org/10.1080/00224499.2019.1689378>
- Hoburg, R., Konik, J., Williams, M., & Crawford, M. (2004). Bisexuality among self-identified heterosexual college students. *Journal of Bisexuality*, 4(1–2), 25–36. https://doi.org/10.1300/J159v04n01_03
- Horn, S. S. (2013). Attitudes about sexual orientation. In C. J. Patterson & D’Augelli, Anthony R. (Eds.), *Handbook of Psychology and Sexual Orientation* (pp. 239–251). Oxford University Press.

- Houdenrove, E. V., Gijs, L., T'Sjoen, G., & Enzlin, P. (2015). Stories about asexuality: A qualitative study on asexual women. *Journal of Sex & Marital Therapy, 41*(3), 262–281. <https://doi.org/10.1080/0092623X.2014.889053>
- Jennings, T. (2007). Addressing diversity in US teacher preparation programs: A survey of elementary and secondary programs' priorities and challenges from across the United States of America. *Teaching and Teacher Education, 23*(8), 1258–1271. <https://doi.org/10.1016/j.tate.2006.05.004>
- Johnson, H. J. (2016). Bisexuality, mental health, and media representation. *Journal of Bisexuality, 16*(3), 378–396. <https://doi.org/10.1080/15299716.2016.1168335>
- Juvonen, J., & Graham, S. (2014). Bullying in schools: The power of bullies and the plight of victims. *Annual Review of Psychology, 65*, 159–185. <https://doi.org/10.1146/annurev-psych-010213-115030>
- Katz-Wise, S. L., Rosario, M., Calzo, J. P., Scherer, E. A., Sarda, V., & Austin, S. B. (2017). Endorsement and timing of sexual orientation developmental milestones among sexual minority young adults in the Growing Up Today Study. *The Journal of Sex Research, 54*(2), 172–185. <https://doi.org/10.1080/00224499.2016.1170757>
- Kosciw, J. G., Greytak, E. A., Zongrone, A. D., Clark, C. M., & Truong, N. L. (2018). *The 2017 National School Climate Survey: The experiences of lesbian, gay, bisexual, transgender, and queer youth in our nation's schools*. GLSEN. <https://eric.ed.gov/?id=ED590243>
- Kosciw, J. G., Palmer, N. A., & Kull, R. M. (2015). Reflecting resiliency: Openness about sexual orientation and/or gender identity and its relationship to well-being and educational outcomes for LGBT students. *American Journal of Community Psychology, 55*(1), 167–178. <https://doi.org/10.1007/s10464-014-9642-6>

- LaGreca, A. M., & Lopez, N. (1998). Social anxiety among adolescents: Linkages with peer relations and friendships. *Journal of Abnormal Child Psychology*, 26(2), 83–94.
<https://doi.org/10.1023/A:1022684520514>
- Lambe, J., Cerezo, A., & O’Shaughnessy, T. (2017). Minority stress, community involvement, and mental health among bisexual women. *Psychology of Sexual Orientation and Gender Diversity*, 4(2), 218–226. <https://doi.org/10.1037/sgd0000222>
- Lanza, I. H., Echols, L., & Graham, S. (2018). A silver lining: The role of ethnic diversity on co-occurring trajectories of weight status and peer victimization across early adolescence. *The Journal of Adolescent Health : Official Publication of the Society for Adolescent Medicine*, 63(5), 554–560. <https://doi.org/10.1016/j.jadohealth.2018.05.026>
- Lee, C.-Y. S., & Goldstein, S. E. (2016). Loneliness, stress, and social support in young adulthood: Does the source of support matter? *Journal of Youth and Adolescence*, 45(3), 568–580. <https://doi.org/10.1007/s10964-015-0395-9>
- Li, G., Wu, A. D., Marshall, S. K., Watson, R. J., Adjei, J. K., Park, M., & Saewyc, E. M. (2019). Investigating site-level longitudinal effects of population health interventions: Gay-Straight Alliances and school safety. *SSM - Population Health*, 7, 100350.
<https://doi.org/10.1016/j.ssmph.2019.100350>
- Lindsey Wilkinson, & Jennifer Pearson. (2009). School culture and the well-being of same-sex-attracted youth. *Gender & Society*, 23(4), 542–568.
<https://doi.org/10.1177/0891243209339913>
- Lo, Y., Mendell, N. R., & Rubin, D. B. (2001). Testing the number of components in a normal mixture. *Biometrika*, 88(3), 767–778. <https://doi.org/10.1093/biomet/88.3.767>

- Lodder, G. M. A., Scholte, R. H. J., Goossens, L., & Verhagen, M. (2017). Loneliness in early adolescence: Friendship quantity, friendship quality, and dyadic processes. *Journal of Clinical Child & Adolescent Psychology, 46*(5), 709–720.
<https://doi.org/10.1080/15374416.2015.1070352>
- Lucassen, M. F., Stasiak, K., Samra, R., Frampton, C. M., & Merry, S. N. (2017). Sexual minority youth and depressive symptoms or depressive disorder: A systematic review and meta-analysis of population-based studies. *Australian & New Zealand Journal of Psychiatry, 51*(8), 774–787. <https://doi.org/10.1177/0004867417713664>
- Lund, E. M., Thomas, K. B., Sias, C. M., & Bradley, A. R. (2016). Examining concordant and discordant sexual and romantic attraction in American adults: Implications for counselors. *Journal of LGBT Issues in Counseling, 10*(4), 211–226.
<https://doi.org/10.1080/15538605.2016.1233840>
- Martin-Storey, A., Cheadle, J. E., Skalamera, J., & Crosnoe, R. (2015). Exploring the social integration of sexual minority youth across high school contexts. *Child Development, 86*(3), 965–975. <https://doi.org/10.1111/cdev.12352>
- Masyn, K. E. (2013). Latent class analysis and finite mixture modeling. In T. D. Little (Ed.), *The Oxford handbook of quantitative methods: Vol. 2. Statistical analysis* (pp. 551–611). Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780199934898.013.0025>
- McAndrews, M. B. (2018, June 18). 12 historic LGBTQ figures who changed the world. *National Geographic News*.
<https://www.nationalgeographic.com/news/2018/06/historical-lgbt-figures-activists-culture/>

- McLachlan, G., & Peel, D. (2000). *Finite mixture models*. John Wiley & Sons, Inc.
<https://doi.org/10.1002/0471721182>
- Meyer, I. H. (2003). Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: Conceptual issues and research evidence. *Psychological Bulletin*, *129*(5), 674–697. <https://doi.org/10.1037/0033-2909.129.5.674>
- Meyer, I. H. (2018). *Coming out milestones* (pp. 1–2). The Williams Institute.
- Mohr, J. J., & Kendra, M. S. (2012). *The lesbian, gay, & bisexual identity scale (LGBIS)*. Measurement Instrument Database for the Social Science. www.midss.ie
- Muthén, L. K., & Muthén, B. O. (2017). *Mplus user's guide*. (8th ed.). Muthén & Muthén.
- Nylund-Gibson, K., Asparouhov, T., & Muthén, B. (2007). Deciding on the number of classes in latent class analysis and growth mixture modeling: A Monte Carlo simulation study. *Structural Equation Modeling*, *14*(4), 535–569.
<https://doi.org/10.1080/10705510701575396>
- Nylund-Gibson, K., & Choi, A. Y. (2018). Ten frequently asked questions about latent class analysis. *Translational Issues in Psychological Science*, *4*(4), 440–461.
<https://doi.org/10.1037/tps0000176>
- Pascoe, C. J. (2012). *Dude, you're a fag: Masculinity and sexuality in high school*. University of California Press.
- Plöderl, M., & Tremblay, P. (2015). Mental health of sexual minorities. A systematic review. *International Review of Psychiatry*, *27*(5), 367–385.
<https://doi.org/10.3109/09540261.2015.1083949>

- Poteat, V. P., Russell, S. T., & Dewaele, A. (2017). Sexual health risk behavior disparities among male and female adolescents using identity and behavior indicators of sexual orientation. *Archives of Sexual Behavior*, 1–11. <https://doi.org/10.1007/s10508-017-1082-6>
- Poteat, V. P., Sinclair, K. O., DiGiovanni, C. D., Koenig, B. W., & Russell, S. T. (2013). Gay–Straight Alliances are associated with student health: A multischool comparison of LGBTQ and heterosexual youth. *Journal of Research on Adolescence*, 23(2), 319–330. <https://doi.org/10.1111/j.1532-7795.2012.00832.x>
- Przybylo, E. (2011). Crisis and safety: The asexual in sexusociety: *Sexualities*. <https://doi.org/10.1177/1363460711406461>
- Rich, A. (1980). Compulsory heterosexuality and lesbian existence. *Signs: Journal of Women in Culture and Society*, 5(4), 631–660. <https://doi.org/10.1086/493756>
- Robbins, N. K., Low, K. G., & Query, A. N. (2016). A qualitative exploration of the “coming out” process for asexual individuals. *Archives of Sexual Behavior*, 45(3), 751–760. <https://doi.org/10.1007/s10508-015-0561-x>
- Russell, S. T., Everett, B. G., Rosario, M., & Birkett, M. (2014). Indicators of victimization and sexual orientation among adolescents: Analyses from Youth Risk Behavior Surveys. *American Journal of Public Health*, 104(2), 255–261. <https://doi.org/10.2105/AJPH.2013.301493>
- Russell, S. T., Ryan, C., Toomey, R. B., Diaz, R. M., & Sanchez, J. (2011). Lesbian, gay, bisexual, and transgender adolescent school victimization: Implications for young adult health and adjustment. *Journal of School Health*, 81(5), 223–230. <https://doi.org/10.1111/j.1746-1561.2011.00583.x>

- Russell, S. T., & Toomey, R. B. (2013). Risk and protective factors for suicidal thoughts among sexual minority youth: Evidence from the Add Health Study. *Journal of Gay & Lesbian Mental Health, 17*(2), 132–149. <https://doi.org/10.1080/19359705.2012.753398>
- Savickaitė, R., Dijkstra, J. K., Kreager, D., Ivanova, K., & Veenstra, R. (2020). Friendships, perceived popularity, and adolescent romantic relationship debut. *The Journal of Early Adolescence, 40*(3), 377–399. <https://doi.org/10.1177/0272431619847530>
- Savin-Williams, R. C. (2006). Who's gay? Does it matter? *Current Directions in Psychological Science, 15*(1), 40–44. <https://doi.org/10.1111/j.0963-7214.2006.00403.x>
- Savin-Williams, R. C. (2011). Identity development among sexual-minority youth. In S. J. Schwartz, K. Luyckx, & V. L. Vignoles (Eds.), *Handbook of Identity Theory and Research* (pp. 671–689). Springer. https://doi.org/10.1007/978-1-4419-7988-9_28
- Savin-Williams, R. C., & Vrangalova, Z. (2013). Mostly heterosexual as a distinct sexual orientation group: A systematic review of the empirical evidence. *Developmental Review, 33*(1), 58–88. <https://doi.org/10.1016/j.dr.2013.01.001>
- Schrimshaw, E. W., Downing, M. J., & Cohn, D. J. (2018). Reasons for non-disclosure of sexual orientation among behaviorally bisexual men: Non-disclosure as stigma management. *Archives of Sexual Behavior, 47*(1), 219–233. <https://doi.org/10.1007/s10508-016-0762-y>
- Schwarz, G. (1978). Estimating the dimension of a model. *The Annals of Statistics, 6*(2), 461–464.
- Sclove, S. L. (1987). Application of model-selection criteria to some problems in multivariate analysis. *Psychometrika, 52*(3), 333–343. <https://doi.org/10.1007/BF02294360>

- Seidman, E., Allen, L., Aber, J. L., Mitchell, C., & Feinman, J. (1994). The impact of school transitions in early adolescence on the self-system and perceived social context of poor urban youth. *Child Development, 65*(2), 507–522. <https://doi.org/10.1111/j.1467-8624.1994.tb00766.x>
- Stewart, J. L., Spivey, L. A., Widman, L., Choukas-Bradley, S., & Prinstein, M. J. (2019). Developmental patterns of sexual identity, romantic attraction, and sexual behavior among adolescents over three years. *Journal of Adolescence, 77*, 90–97. <https://doi.org/10.1016/j.adolescence.2019.10.006>
- Tolman, D. L., & McClelland, S. I. (2011). Normative sexuality development in adolescence: A decade in review, 2000–2009. *Journal of Research on Adolescence, 21*(1), 242–255. <https://doi.org/10.1111/j.1532-7795.2010.00726.x>
- Toomey, R. B., & Russell, S. T. (2016). The role of sexual orientation in school-based victimization: A meta-analysis. *Youth & Society, 48*(2), 176–201. <https://doi.org/10.1177/0044118X13483778>
- Toomey, R. B., Ryan, C., Diaz, R. M., Card, N. A., & Russell, S. T. (2013). Gender-nonconforming lesbian, gay, bisexual, and transgender youth: School victimization and young adult psychosocial adjustment. *Psychology of Sexual Orientation and Gender Diversity, 1*(S), 71–80. <http://dx.doi.org/10.1037/2329-0382.1.S.71>
- Van Zalk, N., & Van Zalk, M. (2015). The importance of perceived care and connectedness with friends and parents for adolescent social anxiety. *Journal of Personality, 83*(3), 346–360. <https://doi.org/10.1111/jopy.12108>

- Vanhalst, J., Luyckx, K., & Goossens, L. (2014). Experiencing loneliness in adolescence: A matter of individual characteristics, negative peer experiences, or both? *Social Development, 23*(1), 100–118. <https://doi.org/10.1111/sode.12019>
- Wagenmakers, E.-J. (2007). A practical solution to the pervasive problems of p values. *Psychonomic Bulletin & Review, 14*(5), 779–804. <https://doi.org/10.3758/BF03194105>
- Wasserman, L. (2000). Bayesian model selection and model averaging. *Journal of Mathematical Psychology, 44*(1), 92–107. <https://doi.org/10.1006/jmps.1999.1278>
- Watson, R. J., Wheldon, C. W., & Puhl, R. M. (2020). Evidence of diverse identities in a large national sample of sexual and gender minority adolescents. *Journal of Research on Adolescence, 30*(S2), 431–442. <https://doi.org/10.1111/jora.12488>
- Williams, T., Connolly, J., Pepler, D., & Craig, W. (2005). Peer victimization, social support, and psychosocial adjustment of sexual minority adolescents. *Journal of Youth and Adolescence, 34*(5), 471–482. <https://doi.org/10.1007/s10964-005-7264-x>