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Developmental Latent Patterns of Identification as Mostly Heterosexual vs. Lesbian, Gay, and Bisexual

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Abstract

Scant research exists on the development of mostly heterosexual identity, the largest sexual orientation minority subgroup. We used longitudinal latent class analysis to characterize patterns of identification with lesbian, gay, bisexual [LGB], or mostly heterosexual identities from ages 12–23 years in 13,859 youth (57% female) in a US national cohort. Three classes emerged: Completely Heterosexual (88.2%), Mostly Heterosexual (9.5%), and LGB (2.4%). LGB Class youth generally identified with sexual minority identities by ages 12–17 years. In contrast, Mostly Heterosexual Class youth identified with sexual minority identities gradually, with steady increases in endorsement starting at age 14 years. Developmental implications of these differential patterns are discussed.

Sexual orientation identities are theorized to exist along a continuum (Sell, 1997), yet little is known about the development of identities that exist outside the discrete categories of heterosexual, bisexual, or gay/lesbian (Sell, 1997; Thompson & Morgan, 2008; Vrangalova & Savin-Williams, 2012). According to survey research, the number of individuals who self-identify as mostly heterosexual often matches or exceeds the combined total of those who identify as lesbian, gay or bisexual (LGB) (Fergusson, Horwood, Ridder, & Beautrais, 2005; Savin-Williams & Vrangalova, 2013). Although associations vary by gender, mostly heterosexual youth have been found to be at higher risk than completely heterosexual youth for an array of physical and mental health outcomes, including alcohol and illicit drug use, cigarette smoking, eating disorder symptoms, and negative sexual health outcomes (Austin et al., 2009; Corliss, Austin, Roberts, & Molnar, 2009; Corliss et al., 2010, 2013; Corliss, Rosario, Wypij, Fisher, & Austin, 2008; Fish & Pasley, 2015; Vrangalova & Savin-Williams,

2014). Despite the large number of individuals who identify as mostly heterosexual in self-report surveys, and the public health relevance of studying this population, research on the development of mostly heterosexual identity is lacking. Research is needed to understand the similarities and differences in developmental trajectories and developmental experiences between mostly heterosexual and LGB identities. As an example, identifying the ages at which individuals begin to identify with different sexual orientation identity categories, include mostly heterosexual, is relevant for understanding when minority stress processes may onset and for timing social support efforts. This study examined whether mostly heterosexual identity develops differently from LGB identities by (1) identifying patterns of the ages at which individuals identify with different sexual orientation identity categories, and (2) exploring potential gender differences in the developmental patterns of sexual orientation identification.

The emergence of sexual orientation identities is a complex process. Identity is just one facet of the overall construct of sexual orientation, which is multidimensional and also includes attractions and behaviors that may or may not necessarily align with each other (Diamond, 2007; Savin-Williams, 2005). Individuals vary in the timing at which they reach key milestones of sexual orientation development (e.g., age of first self-identification as a sexual minority) (Cass, 1996; Rosario, Schrimshaw, Hunter, & Braun, 2006; Saewyc, 2011; Troiden, 1989). In addition, the identities that individuals endorse can change across time based on multiple factors, including sociopolitical forces that constrain the expression of different identities in men and women (e.g., greater tolerance of same-sex oriented attractions among females compared to males), sex differences in biological processes underlying sexual arousal and attraction, personal reflection upon attractions to same and/or other gender persons, and the ongoing process of integrating identity with sexual and romantic relationship experiences (Diamond, 2007, 2012; Ott, Corliss, Wypij, Rosario, & Austin, 2011; Peplau, Spalding, Conley, & Veniegas, 1999). Although self-reported survey data indicates that mostly heterosexual identity is the largest sexual minority subgroup, mostly heterosexual identity may not be publically recognized as a valid social identity to the same degree as LGB identities (Savin-Williams & Vrangalova, 2013; Thompson & Morgan, 2008; Vrangalova & Savin-Williams, 2012). This lack of public validation and cultural recognition may affect the age at which individuals identify as mostly heterosexual in comparison to LGB identities.

To examine potential differences in the emergence of different sexual orientation identities, we used longitudinal latent class analysis (LLCA) (Feldman, Masyn, & Conger, 2009) to model the age-based pattern of individual endorsement of different identity categories from adolescence through emerging adulthood. By identifying subgroups based on response patterns in a dataset, this analytic approach synthesizes an examination of the emergence of sexual orientation identities while recognizing that individuals may vary in identity endorsement across time. We hypothesized that separate classes would emerge, largely distinguished by whether the individuals within each class predominantly identify as heterosexual or as a sexual minority. We also hypothesized that mostly heterosexuals would be placed in a separate class from those who identify as LGB. Because LGB identities may be more widely recognized than mostly heterosexual identity (Thompson & Morgan, 2008), we hypothesized that individuals who identify predominantly as mostly heterosexual would

begin to identify with sexual minority identities later in adolescence than individuals who predominantly identify as LGB. Research has generally found that males report same-gender attractions and self-identification as a sexual minority earlier than females (Calzo, Antonucci, Mays, & Cochran, 2011; Savin-Williams & Diamond, 2000). In addition, some research indicates that the number of individuals who identify as mostly heterosexual increases across adolescence for females and males, and that the number may continue to increase for females into emerging adulthood (Ott et al., 2011; Savin-Williams & Vrangalova, 2013; Talley, Sher, Steinley, Wood, & Littlefield, 2012). Consistent with this research, we expected that adolescent and emerging adult females would be more likely than males to be classified in typologies characterized by mostly heterosexual identity, and that males would begin to identify as sexual minorities at younger ages than females within each class.

Method

Participants and procedure

Participants were youth from the Growing Up Today Study (GUTS), a US national prospective cohort of 16,882 adolescents (53% female; 96% self-identified as White) who are children of mothers in the Nurses' Health Study II. Participants were 9-14 years old at baseline (1996) and were recruited from all regions of the US. GUTS surveys were administered annually from 1996-2000, and biennially from 2001-present. Self-identified sexual orientation was assessed biennially beginning in 1999 using an item developed to assess both identity and attractions (Austin, Conron, Patel, & Freedner, 2007; Remafedi, Resnick, Blum, & Harris, 1992). Participants were asked to select one from six response options that best described their feelings: completely heterosexual (attracted to persons of the opposite sex), mostly heterosexual, bisexual (equally attracted to men and women), mostly homosexual, completely homosexual (gay/lesbian, attracted to persons of the same sex), and not sure. Because very few participants identified as "mostly homosexual" at each wave, mostly homosexual and completely homosexual were combined into a "gay/lesbian" response category for analyses. Participants were included in the analysis if they reported at least one assessment of sexual orientation between ages 12-23 years old (waves 1999-2007). This resulted in a final analysis sample of 7,964 females and 5,895 males (82% of the total cohort), among who 46% provided sexual orientation data on the maximum of 5 waves of data collection, 18% on 4 waves, 14% on 3 waves, and 12% on 2 waves.

Analysis

To examine developmental patterns with regards to year of age, rather than wave of assessment, the dataset was first reorganized so that participant observations at each wave of assessment were placed in response variables corresponding to the age of the participant at that wave. For example, the Wave 2 response for a participant who was age 16 at that wave was placed in the Age 16 response column. Developmental patterns of endorsement of sexual orientation identity from ages 12-23 years were estimated using LLCA in Mplus with repeated measures observations of sexual orientation at each age modeled as nominal indicators. LLCA utilizes all available data on the sexual orientation identity indicators to identify unobserved, substantively meaningful patterns (i.e., classes) of identification in the

dataset. Missing data were accounted for using full-information maximum likelihood, assuming missing-at-random, in Mplus. Two to five latent class solutions were estimated during the class enumeration process to determine the optimal number of classes. In addition to evaluating solutions for substantive relevance, we used recommended fit statistics to evaluate the fit of different solutions to the data, choosing the model with the lowest Bayesian Information Criterion value, significant Lo-Mendell-Rubin (LMR) and Bootstrap Likelihood Ratio Test (BLRT) fit indices, and Bayes Factor (BF) greater than 10 (Henson, Reise, & Kim, 2007; Kass & Wasserman, 1995; Lo, Mendell, & Rubin, 2001; Masyn, 2013; McLachlan & Peel, 2000). LLCA provides a modal class membership variable for each participant based on the class to which they are most likely to belong. To examine associations between the identified classes and gender, we used the 3-step approach in Mplus (Asparouhov & Muthen, 2014; Lanza, Tan, & Bray, 2013) to calculate gender differences in the odds of being in each class. Finally, plots were generated for males and females separately within each class to examine within-class gender variability in ages of identification with different sexual orientation identities.

Results

Table 1 displays descriptive statistics for the sexual orientation identity indicators for each year of age for the overall sample and by gender. Fit statistics favored three classes (displayed in Figures 1-3, fit indices: BF > 10, LMR and BLRT p 's < .001). The largest overall class was the Completely Heterosexual Class (Figure 1, $n=12,217$; 88.2%), which was characterized by identifying predominantly as completely heterosexual across adolescence and emerging adulthood, but with a small probability of identifying as unsure in early adolescence or as mostly heterosexual across adolescence (approximately 5% doing so towards emerging adulthood). The second largest class was labeled the Mostly Heterosexual Class (Figure 2, $n=1,310$; 9.5%) due to the high probability of identifying as mostly heterosexual by emerging adulthood. The smallest class was labeled the LGB Class (Figure 3, $n=332$; 2.4%) due to high probability of identifying in one of these three categories by emerging adulthood. The developmental profiles of the Mostly Heterosexual and LGB Classes partially supported the hypothesis that sexual minority identities would emerge earlier among LGB individuals than mostly heterosexual individuals. For the Mostly Heterosexual Class, mostly heterosexual identity emerged gradually starting at age 14 (estimated proportion of 20.6%) and increased consistently across adolescence and emerging adulthood (approximately 4%-11% each year between 14-19 years, 1%-6% each year between ages 20-23 years). In contrast, the proportion identifying as sexual minorities increased dramatically in the LGB Class between ages 12-17 years old, from 18.2% to 80.0%.

The 3-step analyses indicated that there were significant gender differences in class membership (Wald χ^2 [df=2]= 182.14, p < .0001). Although there were no gender differences in membership in the LGB class relative to the Completely Heterosexual Class, as hypothesized, females had greater odds than males of belonging to the mostly heterosexual class relative to the completely heterosexual class (odds ratio [OR]= 3.37, 95% confidence interval [CI]= 2.17, 4.56; p < .0001). In addition, females had higher odds than

males of belonging to the Mostly Heterosexual Class relative to the LGB class (OR= 3.28, 95% CI= 1.92, 4.64, $p < 0.0001$).

Contrary to hypotheses, within class gender comparisons did not yield differences in ages of identification as sexual minorities. As displayed in Figure 2, males and females belonging to the Mostly Heterosexual Class generally displayed the same developmental pattern of sexual orientation identification. Males and females in the LGB Class both exhibited a large increase in the proportion endorsing sexual minority identities between 13-16 years (Figure 3). However, in males this manifested in increases in the proportion identifying as gay, and in females this manifested in increases in the proportion identifying as bisexual. Within the LGB Class, a larger proportion of males identified as gay by age 17 than the proportion of females who identified as lesbian at any age.

Discussion

This study examined longitudinal patterns of identification with different sexual orientation identities from early adolescence through emerging adulthood and gender differences in pattern membership and manifestation. The findings bolster previous research indicating that mostly heterosexual identity differs from lesbian, gay, and bisexual identities (Austin et al., 2007; Thompson & Morgan, 2008; Vrangalova & Savin-Williams, 2012). Whereas the predicted proportion of youth who identified as lesbian, gay, or bisexual increased sharply in mid-adolescence (indicating an earlier overall onset of identification), the predicted proportion of youth who identified as mostly heterosexual increased gradually with age across adolescence and emerging adulthood (indicating a later overall onset of identification). The findings also diverge from earlier research which suggested that males may identify as sexual minorities at younger ages compared to females (Calzo et al., 2011; Savin-Williams & Diamond, 2000). The current study found that males and females do not differ in the age-dependency of endorsing mostly heterosexual identity. With regards to lesbian, gay, or bisexual identities, there were no gender differences in the age-dependency of endorsing a sexual minority identity; rather, males and females in this class differed in the sexual minority identities they felt best described them.

The results build upon previous research that has examined developmental heterogeneity through the construct of sexual fluidity (i.e., propensity to change identity across time) (Mock & Eibach, 2012; Ott et al., 2011). Notably, a previous analysis of sexual orientation changes in GUTS applied econometric analyses to investigate individual stability and change in sexual orientation identity across time (Ott et al., 2011). The degree of fluidity was found to be stable and similar for male and female youth who ever reported a sexual minority identity (Ott et al., 2011). The current study used a different analytic approach, LLCA, to estimate overall patterns of identification across adolescence and young adulthood based on individual repeated measures in the dataset. In contrast to the results from the econometric analysis, the results from the current study indicate that the timing of the likelihood of identifying with different types of sexual minority identities across adolescence may differ among those who are most likely to identify as mostly heterosexual vs. as LGB by young adulthood. More specifically, the likelihood of identifying as mostly heterosexual

increases gradually with age, whereas the likelihood of identifying as lesbian, gay, or bisexual increases most between ages 13-17 years old.

The results may have implications for research on sexual orientation health disparities. Prior work indicates that identification as a sexual minority at younger ages may be a potential risk factor for increased lifetime victimization and subsequent negative health outcomes in both males and females (Corliss, Cochran, Mays, Greenland, & Seeman, 2009; D'Augelli, Hershberger, & Pilkington, 2001; Friedman et al., 2007). However, research has also found that after accounting for victimization experiences, earlier identification and disclosure of one's sexual minority identity is connected to positive psychosocial adjustment in young adulthood (Russell, Toomey, Ryan, & Diaz, 2014). Like LGB youth, mostly heterosexual youth have been found to be vulnerable to many of the same adverse physical and mental health outcomes (Austin et al., 2009; Corliss, Austin, et al., 2009; Corliss et al., 2010, 2013, 2008; Fish & Pasley, 2015; Vrangalova & Savin-Williams, 2014). However, the patterns and magnitude of health disparities between mostly heterosexuals and completely heterosexuals compared to disparities between LGB and completely heterosexuals often differ, which could be connected to the later ages at which mostly heterosexuals begin to identify as sexual minorities.

There are several limitations that future research can address. Approximately 10% of participants in the analytic sample provided sexual orientation data for only one wave between 1999-2007, which could potentially bias estimates of the developmental patterns. The GUTS sample is predominantly White and the distribution of socioeconomic diversity is narrower than what is found in the general US population, which could limit generalizability of the results. Strengths of the GUTS dataset are the size, recruitment of youth from all regions of the US, and frequent assessment of sexual orientation spanning ages 12-23 years. Participants had the option to select from multiple sexual orientation identities, yet we combined the small number of participants who identified as "mostly homosexual" with those who identified as "completely homosexual." In addition, the options were not exhaustive and may thus inadequately characterize the experiences of youth who identify with different sexual orientation identities that were not assessed (e.g., queer, pansexual). In addition, GUTS uses an identity item that combines attractions and identity. Because attractions and identity do not always align (Savin-Williams, 2005), such an item may affect the prevalence of sexual minority youth detected in the sample. However, other large scale cohort research that has assessed dimensions of sexual orientation (i.e., identity, gender of sexual partners, attractions) separately to empirically derive sexual orientation categories has found similar distributions of mostly heterosexual and LGB youth (Fergusson et al., 2005; Fish & Pasley, 2015). Furthermore, a cognitive interviewing study investigating respondents' perspectives on the identity item used in GUTS revealed its appropriateness for youth in this age range (Austin et al., 2007).

The ability to view overall longitudinal patterns of identification through LLCA adds important details to the discussion about sexual orientation subgroup and gender differences in sexual orientation identification across time. The greater likelihood of females identifying as bisexual and being classified to the Mostly Heterosexual Class is consistent with prior research on gender differences in recognition, acceptance, and integration of attractions and

physically and emotionally intimate experiences with same or other-gender partners (Diamond, 2007; Kinnish, Strassberg, & Turner, 2005). However, the gender similarity in the rate at which individuals begin to identify as mostly heterosexual throughout adolescence merits additional research on the individual-level processes and contextual forces shaping mostly heterosexual identity for males and females. Future research can explicitly test whether variations in onset of different sexual minority identity endorsement are a reflection of differences in public recognition of mostly heterosexual vs. LGB identities as valid social identities (Thompson & Morgan, 2008; Vrangalova & Savin-Williams, 2012). By examining patterns of identification across adolescence and emerging adulthood, results from this study indicate that social support and health promotion programs should begin targeting mostly heterosexual youth no later than mid-adolescence, when the number of youth identifying as mostly heterosexual begins to increase steadily.

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Figure 1.

Longitudinal latent class analysis profile plots for the Completely Heterosexual Class displaying the predicted percentage identifying with each sexual orientation identity category for the overall sample and by gender from ages 12-23 years in the Growing Up Today Study. *Note: In order to focus attention on the small proportion endorsing sexual minority identities, the y axis ranges from 85%-100%.

Figure 2.

Longitudinal latent class analysis profile plots for the Mostly Heterosexual Class displaying the predicted percentage identifying with each sexual orientation identity category for the overall sample and by gender from ages 12-23 years in the Growing Up Today Study.

Figure 3.

Longitudinal latent class analysis profile plots for the Lesbian, Gay, and Bisexual Class displaying the predicted percentage identifying with each sexual orientation identity category for the overall sample and by gender from ages 12-23 years in the Growing Up Today Study.

Table 1

Sample Descriptive Statistics of Sexual Orientation Identity Indicators Based on Repeated Measures from Ages 12-23 Years in the Growing Up Today Study

	OVERALL	FEMALES	MALES
<u>SEXUAL ORIENTATION (%[column observations n])</u>			
Ages 12-13 Years			
Completely Heterosexual	85.5% (2921)	85.8% (1631)	85.1% (1290)
Mostly Heterosexual	3.1% (106)	3.7% (70)	2.4% (36)
Bisexual	0.4% (14)	0.4% (8)	0.4% (6)
Lesbian/Gay	0.1% (3)	0.0% (0)	0.2% (3)
Unsure	4.7% (159)	5.4% (102)	3.8% (57)
Missing	6.3% (214)	4.7% (90)	8.2% (124)
Ages 14-15 Years			
Completely Heterosexual	89.5% (5275)	89.6% (3130)	89.5% (2145)
Mostly Heterosexual	4.6% (268)	5.4% (190)	3.3% (78)
Bisexual	0.8% (46)	1.0% (35)	0.5% (11)
Lesbian/Gay	0.2% (13)	0.1% (3)	0.4% (10)
Unsure	1.0% (59)	1.1% (40)	0.8% (19)
Missing	3.9% (230)	2.8% (96)	5.6% (134)
Ages 16-17 Years			
Completely Heterosexual	89.0% (8519)	87.7% (5004)	90.8% (3515)
Mostly Heterosexual	6.4% (616)	8.4% (470)	3.8% (146)
Bisexual	1.2% (116)	1.7% (94)	0.6% (22)
Lesbian/Gay	0.6% (55)	0.2% (13)	1.1% (42)
Unsure	0.5% (48)	0.6% (32)	0.4% (16)
Missing	2.3% (220)	1.6% (90)	3.4% (130)
Ages 18-19 Years			
Completely Heterosexual	88.5% (9047)	86.7% (5501)	91.6% (3546)
Mostly Heterosexual	7.8% (793)	9.9% (626)	4.3% (167)
Bisexual	1.4% (143)	1.8% (113)	0.8% (30)
Lesbian/Gay	1.0% (99)	0.6% (37)	1.6% (62)
Unsure	0.2% (25)	0.2% (15)	0.3% (10)
Missing	1.1% (111)	0.8% (53)	1.5% (58)
Ages 20-21 Years			
Completely Heterosexual	86.3% (4561)	84.2% (2776)	89.6% (1785)
Mostly Heterosexual	9.9% (522)	12.0% (395)	6.4% (127)
Bisexual	1.8% (93)	2.4% (79)	0.7% (14)
Lesbian/Gay	1.5% (81)	0.9% (30)	2.6% (51)
Unsure	0.3% (16)	0.4% (12)	0.2% (4)
Missing	0.3% (15)	0.1% (4)	0.6% (11)
Ages 22-23 Years			
Completely Heterosexual	83.6% (5986)	80.7% (3676)	88.7% (2310)

	OVERALL	FEMALES	MALES
Mostly Heterosexual	12.3% (877)	15.0% (683)	7.5% (194)
Bisexual	1.7% (123)	2.4% (109)	0.5% (14)
Lesbian/Gay	1.9% (139)	1.4% (64)	2.9% (75)
Unsure	0.2% (17)	0.3% (13)	0.2% (4)
Missing	0.3% (18)	0.2% (10)	0.3% (8)