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ORIGINAL PAPER

Stability of Self-Reported Same-Sex and Both-Sex Attraction from Adolescence to Young Adulthood

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Abstract This study examined how sexual attraction varied across age, gender of participant, and gender of romantic partner, from adolescence to early adulthood. Comparisons between same-sex and both-sex attracted individuals were of particular interest. Using the National Longitudinal Study of Adolescent Health (AddHealth), we examined the responses of participants who reported experiencing same-sex attractions or both-sex attractions at least once within four waves (n = 1889). Results indicated that same-sex attractions became more stable over time, whereas both-sex attraction remained unstable even into adulthood. Compared with males, females were less stable in same-sex attraction, but more stable in both-sex attraction. The majority of people who reported same-sex attraction did not report having a same-sex romantic partner before they entered adulthood, and those who reported a same-sex romantic partner were more likely to maintain their same-sex attraction than those who did not. As males got older, the gender of their romantic partner tended to become more consistent with their sexual attraction. However, for females, the consistency between the gender of their romantic partner and sexual attraction did not change over time.

Keywords Same-sex attraction · Bisexuality · Gender · Romantic relationship · Transition to adulthood · Sexual orientation

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Introduction

Over the past two decades, studies have been conducted to examine how the awareness of sexual orientation among lesbian, gay, or bisexual (LGB) people develops across the lifespan. Much of the literature has focused on three dimensions of sexual orientation: sexual attraction, sexual behavior (gender of sexual partners), and sexual identity (labeling as heterosexual, bisexual, or lesbian/gay) (Institute of Medicine, 1999; Laumann, Gagnon, Michael, & Michaels, 1994). The order in which individuals acknowledge their sexual attraction, self-label their sexual identity, and engage in sexual behavior can vary (e.g., Savin-Williams & Diamond, 2000). Savin-Williams and Diamond found a 10-year gap between personal acknowledgements of sexual attraction around 8–9 years of age and sexual orientation disclosure at around 18 years of age. The average age of first self-labeling as lesbian, gay, or bisexual can vary. Most research shows that this occurs between 14 and 21 years of age (e.g., Perrin, 2002; Savin-Williams & Diamond, 2000), which implies that the transition from adolescence to young adulthood is a critical period in the development of sexual orientation.

Stability/Mobility in Sexual Orientation

Traditionally, research on sexual orientation has viewed sexual orientation as a stable trait (Bell, Weinberg, & Hammersmith, 1981; Money, 1988). More recent research, however, has found sexual orientation to be more fluid. For example, subsequent studies found that LGB youth report shifts in their sexual attractions, behaviors, and identities over time (Diamond, 2005; Ott, Corliss, Wypij, Rosario, & Austin, 2011; Savin-Williams & Ream, 2007). Also, individuals who self-identified as lesbian do

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not always exclusively report same-sex attraction and some state that their sexual attractions changed over time (Diamond, 2007).

Several longitudinal studies have subsequently examined sexual orientation mobility, defined as changes in self-reported sexual orientation over time (e.g., Ott et al., 2011; Rosario, Schrimshaw, Hunter, & Braun, 2006; Savin-Williams & Ream, 2007). In these studies, sexual orientation was measured by one or more dimensions, and the influences of age and gender in sexual orientation stability/mobility were investigated.

These studies found that same-sex sexual orientation was initially unstable but that it became stable over time, and bisexual sexual orientation was less stable compared to same-sex sexual orientation. Initial same-sex attractions are usually experienced in late childhood or early adolescence (Herdt & McClintock, 2000). Compared to opposite-sex attractions, same-sex attractions have been found to be relatively unstable in early adulthood (21–26 years old), especially among women (Dickson, Paul, & Herbison, 2003). Self-labeling of sexual identity also appears to develop over time. Rosario et al. (2006) interviewed LGB youth and young adults (14–21 years old) and followed up with them at 6- and 12-months after the initial interview. They found that about half of youth consistently identified as LGB and that these youth were more comfortable and accepting of their identity compared to the youth who were less constant in their identity. Ott et al. (2011) conducted a 6 year longitudinal study interviewing participants between the ages of 12–25 years old and found that shifts in sexual orientation identity were occurring through late adolescence and emerging adulthood. However, restricted by their dataset, both of the studies were unable to examine these changes past emerging adulthood. Recently, among a sample of middle-aged self-identified LGB individuals, gay participants reported greater stability of their sexual identity compared to their bisexual peers, over a 10-year period (Mock & Eibach, 2012). Among this sample, greater stability of sexual orientation was observed among older LGB individuals; however, the effect of age was not significant.

Although there is support for the idea that sexual identity is a developmental process, it raises the question of whether bisexuality is a developmental transitional stage to exclusive same-sex attraction or an entirely separate identity. Diamond (2007) explored this question asking a sample of women to self-identify their sexual identity over a 10-year period. Diamond found that many of the women changed their identity labels but that the majority did not make such changes in a transitional fashion of going from a bisexual to lesbian identity. This study supports the idea that bisexuality may not be a transitional stage in sexual orientation development but a separate sexual identity. A longitudinal study in New Zealand (Dickson, van Roode, Cameron, & Paul, 2013) found that people initially identifying as bisexual were more likely to exhibit change in sexual orientation than those who exclusively attracted either to the same or the opposite sex.

Another important consideration is the difference in sexual orientation across gender. In a longitudinal study using the first three waves of the National Longitudinal Study of Adolescent Health (AddHealth), a nationally representative dataset which followed youth (about 11 years of age) into early adulthood (about 28 years of age), young females reported the highest rate of non-heterosexuality (Savin-Williams & Ream, 2007). And the New Zealand study also found that same-sex attraction was significantly more common among women than men at all ages (Dickson et al., 2013). In general, females were more likely to report changes in sexual attraction than males (Dickson et al., 2013; Savin-Williams & Diamond, 2000). However, some studies suggest that the opposite is true. For example, Rosario et al. (2006) found that female youth were less likely to shift self-reported identities than males. Furthermore, Ott et al. (2011) found no significant differences across gender in sexual orientation mobility among adolescents and young adults who endorsed a minority sexual identity. Based on these inconsistent results, the effect of gender on the stability of sexual orientation is still unclear.

Associations Between Sexual Attraction and Behavior

Although there is some congruency among different dimensions of sexual orientation, research has suggested a lack of congruency among some groups of individuals. For example, Sell, Wells, and Wypij (1995) examined sexual attraction and sexual behavior to estimate the prevalence of homosexuality in the United States, the United Kingdom, and France, and found that approximately 10 percent of the people in these countries reported same-sex attraction—but not same-sex behavior—since age 15. Similarly, the number of people who self-identified as LGB was far smaller than the number of people who engaged in same-sex behavior (Black, Gates, Sanders, & Taylor, 2000). Diamond (2000) followed 80 lesbian, bisexual, and unlabeled non-heterosexual women over a 2-year period and found that individuals could start to develop a sexual minority identity after they had experienced sexual attractions towards same-sex individuals, without necessarily after engaging in same-sex sexual behaviors. These studies highlighted the incongruity of sexual attraction and sexual behavior.

Psychological theory has argued that incongruity of affect, cognition, and behavior generates psychological tension (e.g., Devos & Banaji, 2003; Festinger, 1957). Accordingly, in order to achieve psychological comfort, individuals might seek a consistency between their sexual attraction and behaviors, thereby reducing this tension. Thus, we would expect that the incongruity between sexual attraction and sexual behaviors would decrease with age. People would either alter their attraction or their behaviors to reduce incongruity. Similarly, the stability of sexual attraction should be lower for those with sexual behaviors incongruent with their attraction.

The Present Study

The longitudinal research that examines sexual orientation across the life course is limited (Kinnish, Strassberg, & Turner, 2005). Within existing longitudinal studies on sexual orientation stability/mobility in youth, we aimed to remedy some of the limitations of current research in this area. These limitations include: (1) A dearth of evidence on sexual orientation stability across the life span, especially the transition to adulthood, and limited descriptive data on the change pattern of sexual orientation stability, compared to the well-developed research on the mental health of sexual minorities (e.g., Needham, 2012). (2) The conclusions of previous studies on the effect of gender on the stability of sexual orientation lack consensus, so whether females have greater instability of sexual orientation compared to their male peers in sexual orientation needs additional study. (3) In most of the prior research, attraction and sexual behavior were treated as two independent components in various studies, and there was limited evidence to illustrate their relationship (e.g., Needham, 2012; Savin-Williams & Ream, 2007). Moreover, sexual intercourse is often used to represent sexual behavior across all ages; such a premise fails to consider younger teenagers' romantic relationships. Sexual orientation has been found to be associated with romantic or emotional attraction, not just sexual arousal (Russell & Consolacion, 2003). Therefore, romantic relationships can be considered reasonable inferences to adolescent sexual behavior. (4) Finally, few studies have compared same-sex and both-sex attractions, and many tend to combine these distinct orientations into one sexual minority group.

The aim of the current study was to present a description of the change pattern of sexual attraction across adolescence, emerging adulthood, and early adulthood. Specifically, we were interested in the stability of sexual attraction, which was defined here as the probability that an individual reported his or her sexual attraction in a consistent manner across different time points, and how this sexual attraction may change with time, gender of participant, and gender of romantic partner.

Based on previous research, we hypothesized that: (1) Stability of sexual attraction would increase with age, that is, as people get older, they would be more likely to report the same sexual attraction to each next time point. (2) Stability in sexual attraction would be greater in males than in females. (3) Stability in sexual attraction would be greater in people with a romantic relationship history consistent with their sexual attraction. If an individual's self-reported gender of their romantic partners matches their self-reported sexual attraction, we expect this individual to exhibit greater consistency in sexual attraction than those who reported no relationship or a relationship that did not match their sexual attraction. (4) The consistency between romantic relationship and sexual attraction would increase with age and would be greater in males than in females. Lastly, we were particularly interested in comparing the stability of same-sex attraction versus both-sex attraction. We examined (5) whether age influenced the stability of same-sexual attraction and both-sex attraction differently; (6) whether gender influenced the stability of same-sexual attraction and both-sex attraction differently.

Method

Participants

The sample for the current study was drawn from four waves of the National Longitudinal Survey of Adolescent Health (AddHealth) (Harris, 2009). AddHealth is a representative sample of adolescents from 16 schools across the United States. The first wave of data was collected from 1994 to 1995, the second wave was collected in 1996, the third wave was collected from 2001 to 2002, and the fourth wave was collected from 2007 to 2009.

Since the current study addresses the level of change in the individuals' sexual attraction over time, only participants who participated in all four waves were retained for further analysis. In total, 10,120 participants were surveyed in all four waves. Among them, 14 participants changed their sex (0.14 %). The transgender population was beyond the reach of the present study, so this group of people was removed. Therefore, the final dataset consisted of 10,106 participants, with 4588 males and 5518 females.

Measures

Sexual Attraction

For the first three waves, participants were asked the following questions: "Have you (ever) had a romantic attraction to a female?"; "Have you (ever) had a romantic attraction to a male?" Participants could choose either *yes* or *no*. In Wave 4, participants were asked "Are you romantically attracted to females?" and "Are you romantically attracted to males?" Again, they answered *yes* or *no* to each question. Participants' attractions were coded as follows: If the participant endorsed attraction to only opposite gender partners, they were coded as opposite-sex ("O"). If the participant reported only same-sex attraction, they were labeled as same-sex ("S"). If the participant reported both male and female attraction, they were labeled as both-sex ("B"). Lastly, if the participant responded that they were not attracted to either sex, they were labeled as None ("N").

Romantic Relationship

Gender of romantic partner was measured using the individuals' report of their romantic relationship history. In the first two waves, participants were asked to identify three romantic partners and three non-romantic partners. Only the relationships labeled as romantic were included in these analyses. The partic-

Table 1 Descriptive analysis of AddHealth Dataset subgroup (n = 10,106)

Wave	Year	N Missing (percent)	Median age (SD) [range]	Gender	Sexual attraction			
					Same-sex	Both-sex	Opposite-sex	None
1	1994–1995	10,014	16	Total	102	463	8238	1211
		92	(1.62)		(1.0 %)	(4.6 %)	(81.5 %)	(12.0 %)
		(0.9)	[12–21]	Male	35	279	3625	601
					(0.8 %)	(6.1 %)	(79.8 %)	(13.2)
				Female	67	97	4312	51
					(1.5 %)	(2.1 %)	(95.3 %)	(1.1 %)
2	1996–1996	10,056	17	Total	121	330	7738	1867
		50	(1.63)		(1.2 %)	(3.3 %)	(76.6 %)	(18.5 %)
		(0.5)	[13–22]	Male	66	140	3382	969
					(1.4 %)	(3.1 %)	(74.2 %)	(21.3 %)
				Female	55	190	4356	898
					(1.0 %)	(3.5 %)	(79.2 %)	(16.3 %)
3	2001–2002	10,039	22	Total	89	841	8816	293
		67	(1.70)		(0.9 %)	(8.3 %)	(87.2 %)	(2.9 %)
		(0.7)	[18–28]	Male	56	203	4160	141
					(1.2 %)	(4.5 %)	(91.2 %)	(3.1 %)
				Female	33	638	4656	152
					(0.6 %)	(11.6 %)	(85.0 %)	(2.8 %)
4	2007–2009	10,078	29	Total	205	520	9233	120
		28	(1.64)		(2.0 %)	(5.1 %)	(91.4 %)	(1.2 %)
		(0.3)	[25–34]	Male	116	97	4312	51
					(2.5 %)	(2.1 %)	(94.2 %)	(1.1 %)
				Female	89	423	4921	69
					(1.6 %)	(7.7 %)	(89.4 %)	(1.3 %)

ipants were then asked for each partner, "What is [INITIALS]'s sex?" In Wave 3, the participants were asked to list "any romantic relationships and sexual relationships you have had at any time since the summer of 1995." The biological sex of such partners was obtained by asking "Please indicate whether [INITIALS] is male or female." In Wave 4, the participants were asked "Is [initials] male or female?" for each marriage partner, cohabiting partner, pregnancy partner, current romantic partner, and most recent partner. Within each wave, participants' romantic relationship behavior was coded based on the following criteria: If the participants reported uniformly same-sex partners, they were coded as same-sex romantic behaviors ("S"). If the participants reported romantic relationships with both sexes, they were coded as both-sex romantic behaviors ("B"). If the participant reported uniformly opposite-sex romantic partners, they were coded as opposite-sex romantic behaviors ("O"). Finally, if the participants reported no romantic partners, they were coded as no romantic relationships ("N").

Results

Description of Pattern of Change in Sexual Attraction

The descriptive statistics of sample demographic characteristics and frequency of sexual attraction type are shown in Table 1 and the general pattern of change within individual across the four waves is shown in Table 2. Of the population, 81 % indicated opposite-sex or no sexual attraction (non-LGB population), and 19 % indicated that at least one experience of attraction to their same gender or both genders (LGB population). In the non-LGB population, the dominant pattern was no change. The majority of the population consistently indicated that they felt attraction to the opposite gender. Type *N* (being attracted to neither the same-sex nor the opposite-sex) appeared quite frequently in the early waves but not in later waves. This result was not surprising since it reflects adolescents' transition from having no sexual or

Table 2 Frequency of general pattern of attraction trajectories across four waves (n = 10,106)

Subgroup	Non-LGB population 8217 (81.31 % of n)			LGB population 1889 (18.69 % of n)		
Attraction trajectory	Consistent O	Consistent N	Shifting between O and N	Consistent S	Consistent B	Shifting LGB
Frequency	5786	12	2419	3	16	1870
Percentage	57.25	0.12	23.94	0.03	0.16	18.50

S Same-sex, *B* Both-sex, *O* Opposite-sex, *N* None, *Shifting between O and N* indicates participants report only and both O and N during four Waves. *Shifting LGB* indicates participants report at least one time but not consistently report S or B during four Waves. For example, a participant with trajectory O–N–O–O is classified to the *shifting between O and N* group, and a participant with trajectory O–N–S–S is classified to the *shifting LGB* group

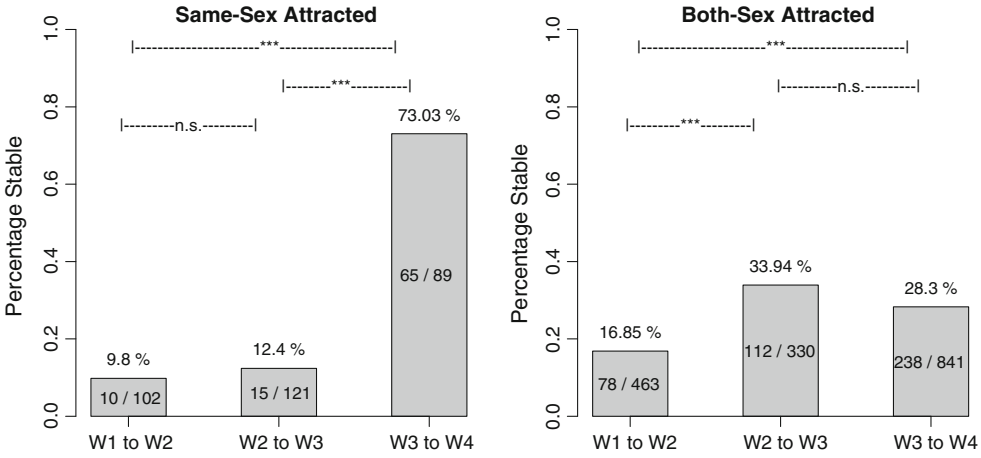

Fig. 1 The relationship between time and the stability of same-sex or both-sex attraction. *Note* W1, W2, W3, W4 stands for Wave 1, 2, 3, 4; *$p < .05$, **$p < .01$, ***$p < .001$. The *y*-axis label "Percentage Stables" stands for the percentage of people who did not change their attraction type. For example, in Wave 1, 102 participants were same-sex attracted, and in Wave 2, 10 of them remained same-sex attracted, so the percentage stable for the transition from W1 to W2 is 10/102 = 9.80 %

romantic interest to being sexually attracted and romantically involved. In the LGB population, the dominant pattern was change. Only 0.03 % of the population consistently indicated being attracted to the same-sex and 0.16 % consistently attracted to both genders.

To examine the trajectory of change in sexual attraction in the LGB population, we summarized the types of pathways towards same-sex attraction in the last wave (Wave 4). In this wave, 205 people (2.0 % of the Wave 4 sample) reported same-sex attraction. Among them, a third (27.8 %) shifted from opposite-sex attracted to both-sex attracted and then to same-sex attracted. Another third (22.9 %) shifted from reporting opposite-sex attraction directly to same-sex attraction, and a small amount (10.7 %) reported a shift from both-sex attraction to same-sex attraction.

Stability of Same-Sex Attraction and Both-Sex Attraction

Only the same-sex and both-sex attracted sub-sample ($n = 1889$) was used to examine the stability in sexual attraction across the four waves and the factors influencing the stability of this attraction. The stability of sexual attraction was defined as the conditional probability of reporting the same sexual attraction between each two adjacent waves. For example, the stability of same-sex attraction from Wave 1 to Wave 2 was calculated as the number of people reporting same-sex attraction in both Wave 1 and Wave 2 divided by the total number of people reporting same-sex attraction in Wave 1. The stability of both-sex attraction from Wave 1 to Wave 2 was calculated as the number of people reporting both-sex attraction in both Wave 1 and Wave 2 divided by the total number of people reporting both-sex attraction in Wave 1. In total, we calculated stability at three transitions: from Wave 1 to Wave 2, from Wave 2 to Wave 3, and from Wave 3 to Wave 4. The following example illustrates this calculation. Suppose one participant reported opposite-sex attraction in the first wave, both-sex attraction in the second wave, and same-sex attraction in the third and fourth wave. This participant will be used to calculate the stability of both-sex attraction at transition 2 as a none-stable person, and will be used to calculate the stability of same-sex attraction at transition 3 as a stable person.

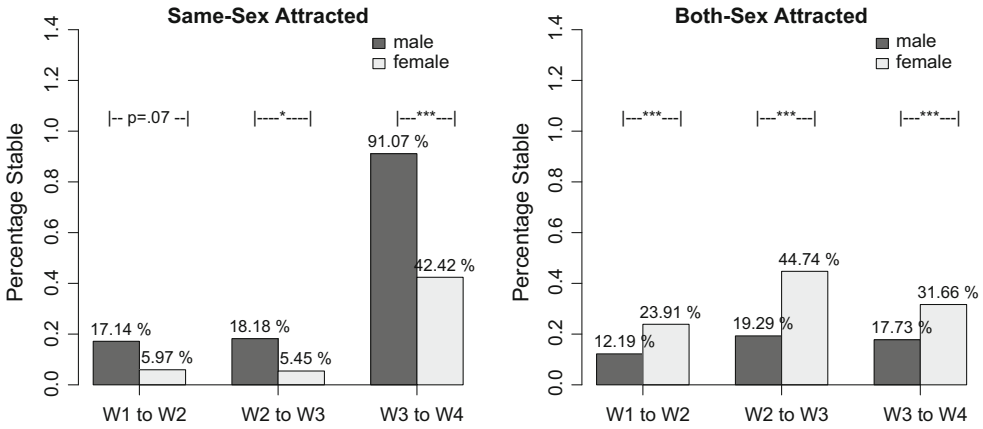

Fig. 2 The relationship between gender and the stability of same-sex or both-sex attraction. *Note* W1, W2, W3, W4 stands for Wave 1, 2, 3, 4; *n.s.* not significant, $*p<.05$, $**p<.01$, $***p<.001$

Time and the Stability of Sexual Attraction

As shown in Fig. 1, the stability of same-sex attraction increased over time, chi square test showed that the third transition (73.03 %) was significantly higher than the first transition (9.8 %), $p<.001$, and the second transition (12.4 %), $p<.001$. In other words, stability of same-sex attraction increased over time. From Wave 3 to Wave 4, 73.03 % of people maintained a same-sex attraction, indicating that individuals became significantly more consistent in their same-sex attraction around age 20 (after Wave 3 and before Wave 4) in the current data.

In comparison, the stability of both-sex attraction was low across all four waves. From Wave 1 to Wave 2, 16.85 % of people maintained their both-sex attraction, from Wave 2 to Wave 3, 33.94 %, and from Wave 3 to Wave 4, 28.3 %. If we compare the same-sex attraction and both-sex attraction at each transition, there is no significant difference at the first transition (9.80 vs. 16.85 %), $p=0.163$, there is a significant difference at the second transition (12.40 vs. 33.94 %), $p<.001$, and there is a significant difference at the third transition (73.03 vs. 28.30 %), $p<.001$. Same-sex attraction appears to be more stable over time compared to both-sex attraction.

Gender and the Stability of Sexual Attraction

Next, we analyzed male and female participants separately. Our finding indicated that gender had distinctly different effects on the stability of same-sex attraction and both-sex attraction. As shown in Fig. 2, for same-sex attraction, males were significantly more stable than females in two transitions, from Wave 2 to Wave 3, $p=.034$, and from Wave 3 to Wave 4, $p<.001$, and marginally significant from Wave 1 to Wave 2, $p=.07$. By contrast, for both-sex attracted individuals, females were significantly more stable than males in all three transitions, $p<.001$.

Gender of Romantic Partner and the Stability of Sexual Attraction

Within each wave, we classified people into two groups: consistent group and inconsistent group. For the consistent group, the gender of their romantic partner was congruent with the attraction reported, and for the inconsistent group, the gender of their romantic partner was not congruent with the attraction reported. We than calculated the percentage of people who remained same-sex attracted in the next wave for both the consistent and inconsistent group.

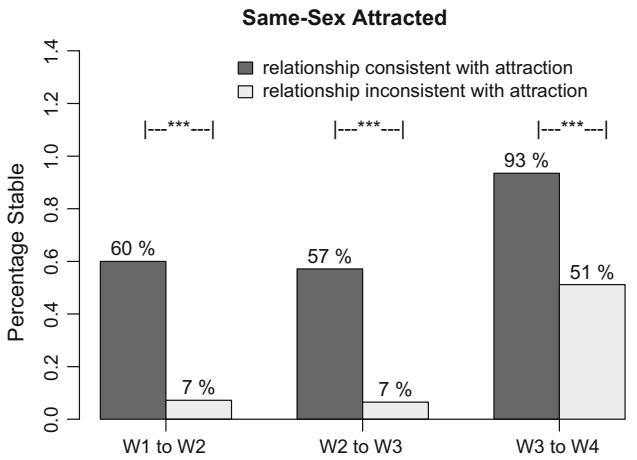

Fig. 3 The relationship between gender of romantic partner and the stability of same-sex attraction. *Note* W1, W2, W3, W4 stands for Wave 1, 2, 3, 4; $*p<.05$, $**p<.01$, $***p<.001$

As shown in Fig. 3, the stability of same-sex attraction was significantly different between the consistent group and the inconsistent group. For the first transition, $\chi^2=6.67$, $p<.001$, for the second transition, $\chi^2=5.30$, $p=.02$, and for the last transition, $\chi^2=17.03$, $p<.001$. This result indicated that the consistent group had a much higher probability of remaining same-sex attracted compared to the inconsistent group. Thus, for a person with same-sex attraction, if they also had a same-sex relationship, they were more likely to report same-sex attraction in later waves. We did not investigate the effect of inconsistent relationship on both-sex attraction, because having a partner with either gender cannot be considered relationship inconsistent with both-sex attracted individuals.

Gender of Romantic Partner Among Same-Sex and Both-Sex Attracted Individuals

The above results suggest that having a relationship with a partner of a particular gender is associated with stability of an individual's sexual attraction, which implies that the gender of a romantic partner is an important aspect of sexuality.

Table 3 shows the romantic partner gender of different sexual attraction groups across four waves. For same-sex attracted individuals, the percentage of people who have a romantic relationship that is consistent with their attraction type was very low in the first two waves: 7.8 % in the first wave and 14.0 % in the second wave. The majority of participants had no romantic relationship or had a romantic relationship inconsistent with their attraction type. In comparison, the majority of people who were opposite-sex attracted and both-sex attracted had a romantic relationship consistent with their attraction type across four waves.

Although low in the beginning, the consistency between gender of romantic partner and sexual attraction type increased over time. Since within each wave, participants' ages were not exactly the same, a better measure of time is age instead of wave. Using the LGB population (n = 1889), at each age, we calculated the number of males and females whose attraction type was consistent with the gender of their romantic partner. Then, a generalized linear model (McCullagh & Nelder, 1989) was applied to analyze the relationship between age, gender, and the probability of consistency. To complement this model, we used "glm" function in R (version 2.15.1, R Development Core Team, 2008) with argument family = binomial (link = "logit"), which told us that the error distribution was binomial and the model link function was "logit," i.e., log $(p/1-p)$. Equation 1 is the generalized linear regression, modeling the relationship between age, gender, and the probability of consistency (romantic partner gender = attraction type), where p stands for the probability of consistency between gender of romantic partner and sexual attraction.

$$\text{Log}\ (p/1-p) = -2.57 + 0.13 * \text{age} + 2.41 * \text{female} - 0.12 * \text{age} * \text{female} \quad (1)$$

There was a significant interaction effect between age and gender, $\beta = -0.12, p < .001$. As shown in Fig. 4, for male participants, the consistency between romantic partner gender and attraction type significantly increased with age; however, for females, the consistency between relationship and attraction did not vary much based on age.

Discussion

We examined the stability of sexual attraction among adolescents and young adults in a nationally representative sample (AddHealth). The current study provided a detailed description of the change pattern of sexual attraction over a 10-year period. We found that the stability of sexual attraction was related to age, gender of participant, and gender of romantic partner.

Hypotheses 1 and 2 were partially supported. For same-sex attraction, the stability of sexual attraction significantly increased with time, and males experienced greater stability than females. This result was consistent with the finding by Ott et al. (2011) that sexual orientation mobility occurs throughout adolescence and emerging adulthood. In addition, our study included emerging adulthood, a period that most LGB research has not explored in detail (e.g., Rosario, Schrimshaw, & Hunter, 2008). We also found that the change

Table 3 Frequency of romantic relationship gender for different attraction types (n = 10,106)

	Feel attraction to	Consistent relation[a]	No relation	Inconsistent relation[b]
Wave 1	Opposite-sex	5311 (64.5 %)	2859 (34.7 %)	68 (0.8 %)
	Same-sex	8 (7.8 %)	41 (40.2 %)	53 (52.0 %)
	Both-sex	306 (66.1 %)	157 (33.9 %)	–
Wave 2	Opposite-sex	5317 (68.7 %)	2372 (30.7 %)	49 (0.6 %)
	Same-sex	17 (14.0 %)	46 (38.0 %)	58 (47.9 %)
	Both-sex	230 (69.7 %)	100 (30.3 %)	–
Wave 3	Opposite-sex	7307 (82.9 %)	1502 (17.0 %)	7 (0.1 %)
	Same-sex	50 (56.2 %)	20 (22.5 %)	19 (21.3 %)
	Both-sex	738 (87.8 %)	103 (12.2 %)	–
Wave 4	Opposite-sex	9013 (97.6 %)	201 (2.2 %)	19 (0.2 %)
	Same-sex	175 (85.4 %)	10 (4.9 %)	20 (9.8 %)
	Both-sex	514 (98.9 %)	6 (1.2 %)	–

[a] Consistent relationship indicates participants have romantic partners consistent with their attraction type

[b] Inconsistent relationship indicates participants only have partners inconsistent with their attraction type

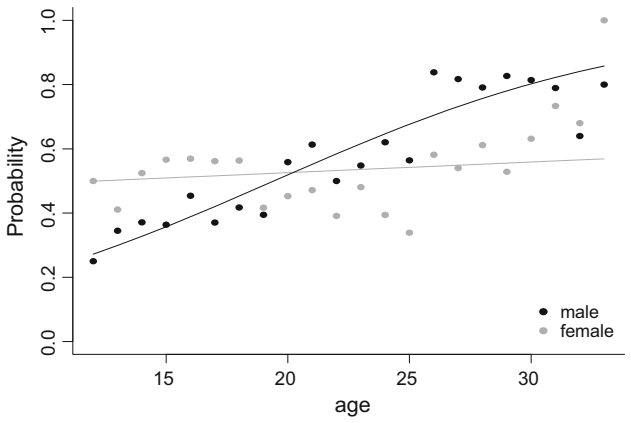

Fig. 4 The relationship between age and the probability of romantic partner gender consistent with attraction type by gender

in sexual orientation stability was not linear. In this data set, before adulthood, there was no significant change. After adulthood, participants' reported sexual attraction became significantly more stable. This result was consistent with Savin-Williams and Diamond's (2000) finding that there was greater fluidity in attractions among females compared to males. Similarly, Ott et al. (2011) also reported significantly higher orientation mobility among females than males.

However, for both-sex attraction, hypotheses 1 and 2 were not supported. The stability of both-sex attraction increased very little and remained low over time. Female participants had greater stability in both-sex attraction compared to their male peers. However, there are some studies suggesting that both-sex attraction is unstable compared with opposite-sex and same-sex orientation (e.g., Mock & Eibach, 2012; Savin-Williams, Joyner, & Rieger, 2012). Thus, even after entering adulthood, this type of sexual attraction is not yet stable. We also reached a very interesting conclusion: females were more consistent than males in reporting both-sex attraction. The different effect of gender in the stability of same-sex and both-sex attraction could explain the previous inconsistent results on gender: if we combine same-sex and both-sex attracted individuals as sexual minorities, the effect of gender would be arbitrary.

Next, we found support for Hypotheses 3 and 4. We investigated the gender of the romantic partners of opposite-sex, same-sex, and both-sex attracted individuals and found that before entering adulthood, people with same-sex attraction rarely have romantic relationships consistent with their attraction type. Most of them have no current romantic relationship or an inconsistent relationship (in relation to their reported attraction). Then, we investigated the association between the gender of romantic partners and the stability of same-sex attraction. The result suggested that people who report same-sex attraction with no relationship or an opposite-sex partner were more likely to shift their same-sex attraction than those who reported a same-sex relationship. It is possible that people who are not sure about their sexual orientation are more likely to test and try different relationship partners. Future research is needed to understand the mechanism underlying this finding.

Although the majority of same-sex attracted people did not report a same-sex relationship during adolescence, we did found that, as they got older, their romantic relationships and attraction became more consistent. After entering adulthood, the majority of those with same-sex attraction (89.4 %) had same-sex romantic relationships. The present study presents a new approach to studying the dynamic relationships between different domains of sexual orientation (attraction and romantic relationships). Previous studies (e.g., Diamond, 2000; Sell et al., 1995) have found incongruity between these different dimensions. However, few studies have examined how this incongruity evolves from adolescence through adulthood. We found that attraction and gender of romantic partners became more consistent with each as the participants aged. In other words, the incongruity between sexual attraction and romantic partner gender decreased as people got older. As our findings indicate, romantic relationships and sexual attraction gained more congruity as adolescents entered adulthood. Surprisingly, this increase in congruity was nearly a perfect linear function of age, as shown in Fig. 4. This pattern of change might reflect a gradual process of self-identity.

Limitation and Future Directions

This study had several limitations and strengths that should be acknowledged. First, the participants were not asked directly to disclose their sexual identity in the first two waves of the study. Therefore, we were unaware of the participants' self-reported sexual identity, and used sexual attraction as the single indicator of sexual orientation. In the future, we could use other indicators of sexual orientation to examine whether these findings could be replicated. Second, some researchers (e.g., Savin-Williams & Joyner, 2014) argued that participants' responses in the first wave of AddHealth Data were unreliable; for example, some adolescents played a "jokester" role by reporting same-sex attraction when none was present. Therefore, we should interpret the result of Wave 1 with caution. However, since the analysis in the current study was relatively independent for each wave transition, all conclusions still hold in the transition from Wave 2 to Wave 3 and the transition from Wave 3 to Wave 4. Third, although this study did follow participants from adolescence to adulthood, we were unable to explore how these experiences develop through adulthood. Future studies could explore sexual attraction and romantic relationships into late adulthood. Based on the results of this study, we expect that in the next wave, the stability of same-sex attraction will continue to increase, and the stability of the both-sex attraction will remain stable.

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