On the Association Between Sexual Attraction and Adolescent Risk Behavior Involvement: Examining Mediation and Moderation

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On the basis of a large-scale survey of high-school youth, the authors compared adolescents reporting exclusively heterosexual, mostly heterosexual, bisexual, and predominately same-sex attraction based on high-risk involvement across a range of risk behaviors. Bisexual and same-sex attracted groups were characterized by heightened high-risk involvement relative to the other two groups. Mediation analysis was used to determine whether these group disparities were explained by a set of normative predictive factors spanning multiple life domains. Differences among a combined exclusively/mostly heterosexual attraction group and both the bisexual and same-sex attraction groups were attenuated (66% and 50%, respectively) after incorporating the hypothesized intervening predictive factors, providing evidence of partial mediation. Primary mediators included intrapersonal (attitudes toward risk-taking; academic orientation), interpersonal (peer victimization; parental relationships; unstructured activities), and environmental (substance availability) factors. Mediation results were consistent across participant age and sex. Implications, limitations, and directions for future research are discussed.

Keywords: adolescence, sexual orientation, same-sex attraction, risk behavior, mediation

A large body of research has documented that nonheterosexual youth are characterized by heightened involvement in health-related risk behaviors relative to their heterosexual peers. Establishing a difference in risk behavior involvement, however, is only the first step toward understanding why this disparity between heterosexual and nonheterosexual youth exists. Although various intervening factors have been proposed, researchers have yet to determine whether the linkage between heterosexual/nonheterosexual status and heightened risk behavior involvement can be explained by these potential mediating variables. Novel to the extant research, in the present work we tested whether a set of normative intrapersonal, interpersonal, and environmental predictive factors mediated the relation between type of sexual attraction (exclusively heterosexual, mostly heterosexual, bisexual, predominantly same-sex attraction) and high-risk involvement across a range of risk behaviors in a large sample of high-school youth. Further, the consistency of the mediational results was examined across participant age and sex.

Sexual Orientation, Risk Behavior Involvement, and the Mediator Hypothesis

Compared with heterosexual peers, nonheterosexual (i.e., lesbian, gay, bisexual) adolescents report higher levels of substance use, risky sexual practices, delinquency, violent acts, and self-harm and suicidality (e.g., Austin et al., 2004; DuRant, Krowchuk, & Sinal, 1998; Garofalo, Wolf, Kessel, Palfrey, & DuRant, 1998; Udry & Chantala, 2002). A growing body of research also suggests that bisexual youth may experience the greatest relative levels of risk compared with their heterosexual peers and, perhaps, compared with exclusively gay or lesbian youth (e.g., Eisenberg & Weschler, 2003; Freedner, Reed, Yang, & Austin, 2002; Galliher, Rostosky, & Hughes, 2004).

As Savin-Williams (2001) has noted, however, it is critical to understand "what it is about being gay or lesbian that places one at risk" (p. 7). Rather than representing a direct effect, sexual orientation is thought to be associated indirectly with risk behavior involvement. That is, compared with their heterosexual peers, nonheterosexual adolescents are expected to experience a greater density of intrapersonal, interpersonal, and environmental difficulties that increase their vulnerability to risk behavior involvement. We refer to this conceptualization as the *mediator hypothesis* because the link between heterosexual/nonheterosexual status and risk behavior involvement is thought to be due to a variety of intermediary, that is, mediating, processes.

Previous Research Related to the Mediator Hypothesis

Extant research provides some support for the mediator hypothesis. For example, with regard to potential mediating factors, in studies comparing heterosexual and nonheterosexual youth, greater challenges and difficulties among nonheterosexual youth have been reported, including compromised mental health and well-being, violence and victimization, lack of social support and relational difficulties, negative life events and stressors, disengagement from school, and school-related problems (e.g., Diamond & Lucas, 2004; Freedner et al., 2002; Lock & Steiner, 1999; Rostosky, Owens, Zimmerman, & Riggle, 2003). Studies based on

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nonheterosexual adolescents exclusively have reported similar findings (e.g., Murdock & Bolch, 2005; Rosario, Schrimshaw, & Hunter, 2005; Williams, Connolly, Pepler, & Craig, 2005).

In addition to investigations delineating potential mediators, a small number of studies have tested whether the disparity in risk behavior involvement between nonheterosexual and heterosexual youth is accounted for by the hypothesized intervening factors. For example, in an American national sample of adolescents, Russell, Franz, and Driscoll (2001) reported higher rates of violence among nonheterosexual youth compared with a heterosexual comparison group. After they accounted for experiences of violence, however, nonheterosexual status was no longer a significant predictor of violence perpetration. Austin et al. (2004) found that tobacco use was greater among nonheterosexual adolescents (particularly among girls) compared with heterosexual youth in a population sample of American adolescents. After they controlled for hypothesized intervening psychosocial factors (depressive symptoms, self-esteem, dieting and weight concerns, familial smoking habits), disparities between the nonheterosexual and heterosexual youth were slightly attenuated but remained statistically significant. Other studies have found mixed evidence concerning whether the link between nonheterosexuality and heightened suicidality is explained by demographic and mental health-related factors (e.g., Fitzpatrick, Euton, Jones, & Schmidt, 2005; Garofalo et al., 1998; Pinhey & Millman, 2004; Russell & Joyner, 2001).

Although promising, previous studies examining the mediator hypotheses (e.g., Austin et al., 2004; Russell et al., 2001) have been limited in terms of how risk behavior involvement has been assessed. Investigations typically have dealt with individual risk behaviors such as tobacco use or violence. Yet a large body of research has documented interrelations among a range of behaviors including various forms of substance use, sexual activity, criminality, delinquency, and aggression (for a recent review, see Willoughby, Chalmers, & Busseri, 2004). Further, to describe involvement in a given behavior as a "risk," one is required to pay attention to the actual level of involvement. To date, however, research on the mediator hypothesis has not examined multiple risk behaviors jointly nor has it differentiated between youth reporting risky levels of each behavior of interest from those who simply have engaged in a particular behavior at some point.

Previous studies examining the disparity between heterosexual and nonheterosexual youth also have been limited in terms of the number and nature of the mediating processes examined. Contemporary models of adolescent risk behavior involvement delineate a wide range of explanatory factors (e.g., Boyer, 2006; Hawkins, Catalano, & Miller, 1992; Dodge & Pettit, 2003; Jessor, 1998) spanning various types of influence, developmental domains, and settings over which youth have varying degrees of control (Petraitis, Flay, & Miller, 1995). More generally, broad models of human development delineate multiple individuals, contexts, and spheres of influence that interact to shape an individual's development (e.g., Bronfenbrenner, 1979; Lerner & Castellino, 2002). Thus, it is unlikely that a small subset of variables would fully mediate the disparity between heterosexual/nonheterosexual status across a range of risk behaviors. Rather, a multivariate approach is required both in terms of the number of predictive factors assessed and the range of risk behaviors examined in a sample comprising both heterosexual and nonheterosexual youth.

Development of Sexual Identities and Risk Behavior Involvement

We examined youths' sexual orientation in terms of sexual attraction. Much of the extant research linking adolescent sexual orientation with risk-behavior involvement has been based on comparisons among self-identified groups of heterosexual, bisexual, and homosexual groups. Recent work, however, has emphasized the psychological component of sexual attraction as a necessary and core component in conceptualizing sexual orientation (e.g., Bogaert, 2003; Diamond, 2003; Friedman et al., 2004; Galliher et al., 2004).

The period of adolescence is a particularly valuable time to study the relation between sexual attraction and risk behavior involvement. During this period, youth are discovering and exploring feelings and attractions, as well as trying out new roles and behaviors en route to defining their emerging sexual identities (Diamond, 2000; Gonsiorek, Sell, & Weinrich, 1995; Rosario, Rotheram-Borus, & Reid, 1996; Savin-Williams & Diamond, 2000). As a developmental milestone, recognition of same-sex attraction may precede self-identification with nonheterosexual labels or same-sex sexual behavior (e.g., Gonsiorek et al., 1995; Rosario et al., 1996). Developmental trajectories in sexual identity formation may differ for boys and girls, however, and for homosexual versus bisexual youth (e.g., Diamond, 2000; Savin-Williams & Diamond, 2000; Rosario, Schrimshaw, & Hunter, 2006). Further, reports of nonheterosexual attraction may increase with age as sexual identity becomes more established (e.g., Remafedi, Farrow, & Deisher, 1991; Rosario et al., 1996; Savin-Williams & Diamond, 2000).

Not only might the reporting of same-sex attraction increase throughout adolescence, but risk behavior involvement also is likely to increase, if not peak, during the adolescent years (e.g., Barnes, Welte, & Hoffman, 2002; Duncan, Duncan, & Strycker, 2001; Patterson, Dishion, & Yoerger, 2000). Further, the prevalence of most forms of adolescent risk behavior is greater among young boys than girls (e.g., Gfellner & Hundleby, 1994; Peretti-Watel, Beck, & Legleye, 2002). Less well understood, however, is whether these age and sex-related developmental trends in risk behavior involvement also apply to gay, lesbian, and bisexual youth (e.g., D'Augelli & Hershberger, 1993; Rosario, Schrimshaw, & Hunter, 2004; Rotheram-Borus, Rosario, Van Rossem, Reid, & Gillis, 1995). In addition, the connection between risk behavior involvement and sexual attraction (as a measure of sexual orientation) across the adolescent years has yet to be explored.

The Present Work

Novel to the extant research, in the present work we assessed whether a broad set of intrapersonal, interpersonal, and environmental factors derived from contemporary theories of adolescent risk behavior could account for the linkage between type of sexual attraction and high-risk involvement in multiple risk behaviors in a large high-school sample. Each of the potential mediating factors that we examine (detailed in the Method section) has been the subject of investigation as normative predictors applicable to all youth. Although not an exhaustive list, these variables provide broad coverage of multiple life domains that have been noted as predictors of adolescent risk behavior, including self, family,

friends, peers, school, and community environments (e.g., Boyer, 2006; Hawkins et al., 1992; Jessor, 1998; Petraitis et al., 1995).

In a recent study utilizing the same data set, we compared groups of high school youth reporting varying types of sexual attraction (exclusively heterosexual, mostly heterosexual, bisexual, and same-sex attraction) across these factors (Busseri, Willoughby, Chalmers, & Bogaert, 2006). On the basis of mean group comparisons, youth in the exclusively heterosexual attraction group had the most positive results on each of the factors we examined, followed by (in descending order) the mostly heterosexual attraction, predominantly same-sex attraction, and bisexual attraction groups. The present article extends this previous work by examining multiple forms of high-risk involvement in this same high-school sample and determining whether the relation between sexual attraction and adolescent risk behavior involvement was mediated by the set of intrapersonal, interpersonal, and environmental predictive factors.

Present hypotheses were consistent with the four steps required for establishing mediation (Baron & Kenny, 1986) detailed below in the *Data Analysis* section. We expected that youth reporting bisexual or predominantly same-sex attraction would report greater risk behavior involvement than those reporting heterosexual attraction. Unique to the extant literature, we examined multiple risk behaviors simultaneously and, for each behavior, we established whether youth were involved at high-risk levels. We also anticipated that bisexual or predominantly same-sex attraction would be associated with multiple intrapersonal, interpersonal, and environmental difficulties and challenges. Further, on the basis of contemporary models of adolescent risk taking (e.g., Boyer, 2006; Jessor, 1998; Petraitis et al., 1995), we predicted that the various potential mediating factors would be associated with high-risk involvement. Finally, we predicted that the relation between type of sexual attraction and high-risk behavior involvement would be attenuated (if not rendered nonsignificant) in the context of the proposed mediating factors.

We also tested whether the mediated model varied as a function of participant age or sex. If both the reporting of same-sex attraction and risk behavior involvement increase with age, the association between them might be stronger among older students. Similarly, if boys are more likely than girls to be involved in high-risk behaviors, then the association between type of sexual attraction and high-risk involvement may be stronger among male students. Given that previous studies have yet to examine these latter issues, analyses were exploratory in nature and provided a first step toward evaluating the consistency of the anticipated mediation results across age and sex.

Method

Participants

This study was part of a larger research project examining youth resilience and lifestyle choices. Students from 25 high schools encompassing a school district in a southern Ontario region in Canada took part in the study. The overall participation rate was 76% of students enrolled in participating schools ($N = 7,430$). Respondents (49% male) ranged in age from 13 to 18 years ($M = 15.71$, $SD = 1.39$). A passive parental consent procedure, approved both by the university research ethics boards and the school board, was used to ensure a representative sample. Active informed assent also was obtained from the adolescent participants.

In total, 3% of parents and 4% of students chose not to participate. Additional nonparticipation was due to student absenteeism (17% of enrolled students). Further, 2% of respondents were screened out from the analysis sample because of acquiescent rating styles; responses from these participants showed no variability on three or more scales containing both positively and negatively worded items. The remaining 7,290 participants (3,475 boys and 3,815 girls) ranged in age from 13 to 18 years ($M = 15.71$, $SD = 1.39$). Consistent with the broader Canadian population (Statistics Canada, 2001), 91% were born in Canada as were 79% of their mothers and 75% of fathers. The most common ethnic background other than Canadian was British (18%), German (15%), French (13%), and Italian (11%). The most common self-identified religion included Protestant (37%), Catholic (27%), and no religious affiliation (11%). Mean levels of education for mothers and fathers fell between some college, university, or apprenticeship program and a college/apprenticeship/technical diploma.

The present analyses focused on a subgroup of 3,876 participants who completed a measure of sexual attraction described in the *Measures* section below. The remaining participants did not complete the later portion of the questionnaire including the question on sexual attraction (see *Treatment of Missing Data* section below). Comparisons indicated only minor differences between students included in the present analysis and excluded respondents; no more than 1% of the between-groups variance was explained by any of the study measures.

Procedure

A 23-page self-report questionnaire was administered to students in classrooms by trained research staff. A total of 2 hr was allotted for survey administration at each school. Students were informed that their responses were completely confidential.

Measures

The study measures are described below. Additional details are provided in Table 1, including the number of scale items, scale anchors, time frame, means, standard deviations, and internal consistency estimates. Several of the scales (denoted by an *) were developed for the research project from which the data used in the present article were drawn.

Risk Behavior Involvement

We measured alcohol use by frequency of use and average consumption per drinking episode (Adlaf, Ivis, & Smart, 1997); standardized scores for these two items were averaged ($r = .67$). Smoking was indicated by the typical number of cigarettes smoked each day (Sadava, 1996). We assessed marijuana use by the frequency of use in the past year (Sadava, 1996). Using the same scale and time frame, we assessed hard drug use by a composite measure of cocaine, stimulants, depressants, heroin, acid, and club drug use. Sexual activity was a composite measure of the frequency of oral sex, sexual touching, and intercourse in the previous year. We assessed delinquent activity on the basis of past year involvement (Shapiro, Siegel, Scovill, & Hays, 1998). For minor

Table 1
Description of Study Measures

Measure	Items/variables	Scale range	Time frame	α	M	SD
		Risk behavior				
Alcohol (frequency)	1	1 (never) to 8 (every day)	Typical episode		2.34	1.30
Alcohol (amount)	1	1 (less than 1) to 6 (10+ drinks)	Typical episode		2.80	1.51
Smoking	1	0 (none) to 8 (more than a pack)	Per day		1.06	1.69
Marijuana use	1	1 (never) to 6 (every day)	Past year		2.12	1.56
Hard drugs use	6	1 (never) to 6 (every day)	Past year	.91	1.19	0.59
Sexual activity	3	1 (never) to 6 (every day)	Past year	.91	2.39	1.54
Condom use	1	1 (always or not applicable) to 5 (never)	Past year		1.27	0.80
Sexual partners	1	0 (none) to 5 (5 people or more)	Past month		0.46	0.73
Delinquency (minor)	4	1 (never) to 4 (more than 5 times)	Past year	.61	1.41	0.54
Delinquency (major)	3	1 (never) to 4 (more than 5 times)	Past year	.71	1.09	0.34
Aggression (direct)	4	1 (never) to 5 (every day)	Past year	.83	1.75	0.82
Aggression (indirect)	4	1 (never) to 5 (every day)	Past year	.76	1.22	0.46
Gambling	8	1 (never) to 5 (every day)	Past year	.79	1.22	0.35
High-risk index	10	0–10 high-risk behaviors			1.90	1.99
		Sexual attraction				
Sexual attraction	1	1 (exclusively other-sex attraction) to 7 (exclusively same-sex attraction)	Not specified		1.16	0.73
		Attitudes toward risk taking				
Tolerance of deviance	11	1 (very wrong) to 4 (not at all wrong)	Not specified	.88	1.97	0.56
How risky for you	5	1 (very high) to 5 (very low)	Not specified	.89	3.33	1.18
How risky for others	5	1 (very high) to 5 (very low)	Not specified	.92	3.36	1.11
Parents would be upset	5	1 (very upset) to 4 (not at all)	Not specified	.80	2.15	0.63
Friends would be upset	5	1 (very upset) to 4 (not at all)	Not specified	.89	2.85	0.92
Composite score	5			.76	0.00	0.72
		Psychological functioning				
Depression	20	1 (most of the time) to 5 (none of the time)	Past two weeks	.92	3.99	0.67
Social anxiety	14	1 (almost always) to 4 (almost never)	Not specified	.92	3.28	0.56
Self-esteem	10	1 (strongly disagree) to 5 (strongly agree)	Not specified	.91	3.74	0.73
Daily hassles	25	1 (often bothers me) to 3 (never bothers me)	Not specified	.87	2.21	0.34
Optimism	4	1 (almost never) to 4 (almost always)	Not specified	.67	2.94	0.56
Composite score	5			.79	0.00	0.73
		Academic orientation				
Grades	1	1 (below 50) to 6 (A−)	Usual marks		4.28	1.00
Aspirations	1	1 (not finish high school) to 6 (professional/ graduate degree)	Not specified		4.48	1.46
Planfulness	1	1 (almost never) to 4 (almost always)	Not specified		2.13	0.82
Bored at school	1	1 (all the time) to 4 (almost never)	Not specified		2.81	0.86
Importance of success	1	1 (not important) to 5 (very important)	Not specified		4.33	0.85
Composite score	5			.66	0.06	0.65
		Parental relationship				
Maternal attachment	17	1 (almost never) to 4 (almost always)	Not specified	.89	3.03	0.59
Paternal attachment	17	1 (almost never) to 4 (almost always)	Not specified	.87	2.88	0.61
Parental warmth	10	1 (usually false) to 2 (usually true)	Not specified	.75	1.80	0.22
Parental knowledge	9	1 (they never know) to 4 (they always know)	Not specified	.90	2.82	0.71
Parental involvement	15	see Method	see Method	.85	1.88	0.44
Composite score	5			.74	0.00	0.73
		Friendship quality				
Best friends	18	1 (almost never) to 4 (almost always)	Not specified	.87	3.20	0.47
Friendship attachment	18	1 (almost never) to 4 (almost always)	Not specified	.94	3.19	0.51
Composite score	2			r = .66	0.02	0.91
		Unstructured activities				
Hanging out with friends	1	1 (never) to 5 (every day)	Past month		3.87	0.97
Dating	1	1 (never) to 5 (every day)	Past month		2.40	1.37
Partying	1	1 (never) to 5 (every day)	Past month		2.31	0.98
Skipping classes	1	1 (never) to 5 (6 or more times)	Past month		1.86	1.14
Composite score	4			.65	2.36	0.82

Table 1 (*continued*)

Measure	Items/variables	Scale range	Time frame	α	M	SD
		Victimization				
Victimization	8	1 (never) to 5 (every day)	Past year	.89	1.48	0.56
		School environment				
School culture	30	1 (strongly disagree) to 5 (strongly agree)	Not specified	.93	3.37	0.56
		Neighborhood				
Neighborhood quality	4	1 (strongly disagree) to 5 (strongly agree)	Not specified	.75	3.94	0.74
		Substance availability				
School and neighborhood	8	1 (almost never) to 4 (almost always)	Not specified	.88	0.00	0.85
		Demographic variables				
Age	1	10 years old to 18+ years old			15.77	1.41
Sex	1	1 (male) or 2 (female)				47% male
		Parental education				
Maternal education	1	1 (not finish high school) to 6 (professional/ graduate degree)			3.24	1.39
Paternal education	1	1 (not finish high school) to 6 (professional/ graduate degree)			3.34	1.47

Note. N = 3,876.

delinquency, ratings for four behaviors were combined (sneaking out at night, joyriding, shoplifting, wrecking other's property). For major delinquency, three ratings were averaged (joined a gang, carried a gun as a weapon, carried a knife as a weapon). For both direct aggression (e.g., pushed and shoved someone) and indirect aggression (e.g., spread rumors and untrue stories) in the past year, four ratings were combined (Marini, Spear, & Bombay, 1999). We assessed gambling with eight items based on involvement in the past month (e.g., played cards for money, bet a sporting event; Winters, Stinchfield, & Fulkerson, 1993).

We defined *high-risk* involvement for each risk behavior using criteria derived from the extant research literature (see Willoughby et al., 2004). These criteria captured a heightened level of risk exposure due to repeated involvement or a pattern of commitment to a given behavior and included: typically consuming four or more drinks per drinking occasion (high-risk alcohol use), daily cigarette smoking (high-risk smoking), using marijuana a few times a month or more often (high-risk marijuana use), using any of the six hard drugs more than once in the past year (high-risk hard drug use), not always using a condom during sexual intercourse or having more than one sexual partner in the past month (high-risk sexual activity), involvement with any of the minor delinquency activities more than once in the past year (high-risk minor delinquency), involvement with any of the major delinquency activities in the past year (high-risk major delinquency), engaging in at least one aggressive act a few times a month or more often in the past year (high-risk direct and high-risk indirect aggression), reporting three or more gambling-related consequences in the past year (high-risk gambling). Each participant was categorized as either high risk or not on each risk behavior. We counted the number of high-risk behaviors for each participant as an index of the extent of high-risk involvement (ranging from 0 to 10).

Sexual Attraction

We assessed sexual attraction* using the item "Please select the point that best represents who you are sexually attracted to." Response options ranged from 1 (*males only*), to 4 (*both males and females*), to 7 (*females only*). Responses were recoded such that scores of 1 indicated exclusively other-sex attraction, whereas scores of 7 indicated exclusively same-sex attraction. Consistent with our previous work (Busseri et al., 2006), participants were classified into one of four sexual attraction groups based on the nature of their sexual attraction: exclusively heterosexual attraction (or EHA) participants had ratings of 1 (92.7% of respondents, $n = 3,594$); individuals with scores of 2 were categorized as mostly heterosexual attraction (MHA; 3.2% of respondents, $n = 124$); bisexual attraction (BSA; 3.1% of respondents, $n = 132$) referred to participants with scores of 3, 4, or 5; and participants with ratings of 6 or 7 were categorized as same-sex attraction (SSA; 0.9% of respondents, $n = 36$).

Hypothesized Mediator Variables

Attitudes toward risk-taking. We assessed attitudes, beliefs, and expectations regarding risk behavior using five scales: attitudes concerning how wrong it is to engage in unconventional and antisocial behaviors (Jessor & Jessor, 1977); evaluations of how risky the respondent believed it was for them to engage in behaviors* such as drinking alcohol, smoking cigarettes, and having sex (e.g., "How risky do you think it is for you to do the following things: smoking marijuana?") and how risky the respondent believed it was for other people their own age to engage in these behaviors* (e.g., "How risky do you believe it is for other people your own age to be doing the following things: having sex?"); perceived social approval of involvement in risk behaviors was assessed in terms of how upset one's parents* and friends* would be by one's involvement with problem behaviors (e.g., "How upset

would your parents be if you were to do the following: smoking cigarettes?"). A composite score was formed on the basis of the average of the five scale scores (after standardizing each scale) such that higher composite scores indicated more permissive risk-related attitudes, beliefs, and expectations.

Psychological functioning. We measured depression-related symptoms using the Center for Epidemiologic Studies Depression Scale (Radloff, 1977). We assessed social anxiety using items from Ginsburg, LaGreca, and Silverman (1998). We measured self-esteem using the Rosenberg self-esteem scale (Rosenberg, 1965). We assessed daily hassles* on the basis of the frequency of experiencing potential life stressors/hassles including friends and peers, school work, and self-image. We assessed optimism using four items (e.g., "I expect the best") from Goodman, Knight, and Durant (1997). Analyses were based on a composite psychological functioning measure formed by averaging the five (standardized) measures; higher scores indicated more positive psychological functioning.

Academic orientation. Five aspects of academic engagement were assessed: typical grades* ("What marks do you usually get in school?"), educational aspirations* ("How far do you plan to go in school?"), planfulness* ("Do you plan ahead for the things you have to do each day?"), frequency of feeling bored at school* ("How often do you feel bored in school?"), and perceived importance of doing well at school (Jessor & Jessor, 1977). Scores were standardized and combined to form an aggregate measure of academic orientation such that higher scores indicated stronger academic engagement.

Parental relationships. We measured paternal and maternal attachment using the Inventory of Parent and Peer Attachment (Armsden & Greenberg, 1987). Parental warmth was a composite based on ratings of parental support and encouragement (derived from Lamborn, Mounts, Steinberg, & Dornbusch, 1991). We assessed parental knowledge using items related to how much one's parents/guardians really know about how the respondent spends his or her free time (Lamborn et al., 1991). Parental involvement* was a composite based on standardized scores for frequency of talking with parents and having fun with parents (1 [*almost never*] to 4 [*almost every day*]) as well as the amount of time spent with parents or guardians on an average school day in other activities such as sports, reading books, doing chores, and eating together (1 [*none at all*] to 4 [*more than two hours*]). We formed a composite measure by averaging the five individual (standardized) measures such that higher scores indicated more positive relations with one's parents.

Friendship quality. We used items adapted from Gauze, Bukowski, Aquan-Asse, and Sippola (1996) relating to the quality of companionship, support, security, closeness, and conflict to assess relationships with one's "best friend." We measured overall friendship quality using items relating to attachment to one's friends, adapted from Armsden and Greenberg (1987). We formed a composite measure by averaging the two measures; higher scores indicated more positive overall friendship quality.

Unstructured activities. We assessed frequency of involvement in unstructured social activities* using four items (e.g., "hanging out with friends," "partying"). We formed a composite measure of unstructured activities by averaging the individual measures; higher scores indicated more frequent involvement in unstructured activities.

Victimization. Victimization by one's peers was a composite of items from Marini et al. (1999) assessing the frequency of experiencing direct (e.g., being pushed or shoved) and indirect (e.g., being excluded) forms of bullying in the past year; higher scores indicated greater victimization. We formed a composite measure by averaging the ratings such that higher scores indicated greater victimization by one's peers.

School climate. We assessed students' perceptions of the school climate using items from Kelly et al. (1996) relating to opportunities for school involvement, peer behavioral values, instructional management, relationships with teachers, student academic orientation, and school administration. We formed a composite score by averaging items such that higher scores indicated more positive perceptions of one's school environment.

Neighborhood quality. We assessed perceived neighborhood quality with four items adapted from the Health Canada Community Action Programs for Children survey (Public Health Agency of Canada, 1994; e.g., "I feel safe in my neighborhood"); higher scores indicated more positive perceptions of one's neighborhood.

Substance availability. Four items assessed availability of substances ("How available are the following substances: alcohol, cigarettes, marijuana, other illicit drugs?") in one's neighborhood and a parallel set of items assessed availability in one's school (adapted from Yardley, 1999). We formed a composite measure by averaging the eight items such that higher scores indicated greater overall substance availability.

Demographic Variables

Age, sex, and parental education (one item per parent, averaged) were assessed. Higher scores indicated greater age, female gender, and greater parental education, respectively.

Data Analysis

Treatment of Missing Data

For multi-item scales, we computed average scale scores for participants who responded to at least 50% of the relevant items. In total, 19% of the data were missing due either to nonresponse or to an insufficient number of responses on a multi-item scale (for additional details, see Busseri et al., 2006; Willoughby et al., 2004). With the exception of the sexual attraction measure, we imputed missing data using the expectation-maximization algorithm in SPSS (see Schafer & Graham, 2002).

Plan of Analysis

The first set of analyses examined the prevalence and extent of high-risk involvement within and among sexual attraction groups. We compared the relative prevalence of high-risk involvement across groups using chi-square tests. Note that in light of the number of statistical tests computed, in these and subsequent analyses only $ps < .001$ were considered statistically significant. We also compared sexual attraction groups on the high-risk index using a one-way analysis of variance and Tukey pairwise comparisons.

The second set of analyses assessed whether the proposed set of intrapersonal, interpersonal, and environmental factors mediated the relation between sexual attraction and high-risk behavior. We

followed the sequence of steps outlined by Baron and Kenney (1986). First, we tested the relation between sexual attraction and high-risk involvement. To do so, we regressed the high-risk behavior index onto sexual attraction. Because the sexual attraction variable was categorical, we entered three dummy codes simultaneously to represent contrasts between the EHA group and the other sexual attraction groups (as described by Aiken & West, 1991). Note that in this and each subsequent regression model, the three demographic variables (age, sex, parental education) also were included. Second, we tested the relations between sexual attraction and the proposed mediators. To do so, we regressed each of the hypothesized mediators onto the sexual attraction dummy codes. We assessed the third and fourth steps in the mediation process by regressing high-risk involvement onto the sexual attraction dummy codes and the set of intrapersonal, interpersonal, and environmental factors simultaneously.

The third set of analyses addressed age and sex differences among sexual attraction groups. We compared the relative distribution of male and female students across sexual attraction groups using a chi-square test, whereas we compared the mean age of students in each group using a one-way analysis of variance and Tukey pairwise comparisons.

We used a final set of analyses to assess the consistency of the mediation results across participant age and sex, using two sets of multiple regression models. For the first set of analyses, we computed interaction terms between participant age and the sexual attraction dummy codes, as well as between age and the set of intrapersonal, interpersonal, and environmental variables after standardizing the continuous measures (as recommended by Aiken and West, 1991). We then reassessed the four steps for establishing mediation, with the age-based interaction terms added as a separate step in each regression model. In the second set of analyses, we repeated these steps using interactions terms based on participant sex instead of age.

Results

Prevalence of High-Risk Involvement Across Sexual Attraction Groups

The proportion of respondents classified as high-risk involvement for each risk behavior is shown in Table 2 for each of the four sexual attraction groups. For each risk behavior except direct aggression, the relative prevalence of high-risk involvement differed significantly across groups. High-risk involvement was greater than expected in the MHA group only in terms of alcohol use. For the BSA group, high-risk involvement was significantly greater than expected for 8 of the 10 risk behaviors (all except direct aggression and gambling). High-risk involvement was significantly greater than expected for the SSA group for four risk behaviors: hard drug use, sexual activity, indirect aggression, and gambling.

Group means and standard deviations for the high-risk index also are shown in Table 2. Overall, the groups differed in the extent of high-risk involvement; $F(3, 3872) = 35.30$, $p < .001$, $\eta^2 = .03$. The EHA group did not differ significantly from the MHA group, but both of these groups had lower mean scores than either the BSA or SSA group. Further, the BSA and SSA groups did not differ significantly from each other. Overall, the BSA and

Table 2
Prevalence of High-Risk Involvement by Risk Behavior and Sexual Attraction Group

High-risk behavior	EHA ($n = 3,594$)	MHA ($n = 124$)	BSA ($n = 122$)	SSA ($n = 36$)
Alcohol use	34%	42%	50%*	42%
Smoking	12%	23%*	38%*	25%
Marijuana use	21%	25%	43%*	33%
Hard drug use	12%	16%	34%*	44%*
Sexual activity	12%	17%	38%*	31%*
Minor delinquency	34%	41%	49%*	50%
Major delinquency	9%	10%	22%*	11%
Direct aggression	34%	35%	41%	61%
Indirect aggression	10%	12%	19%*	28%*
Gambling	3%	2%	6%	22%*
M	1.82$_a$	2.26$_a$	3.42$_b$	3.47$_b$
SD	1.94	2.05	2.47	2.63

Note. Percentages indicate respondents within each group classified as high-risk involvement. EHA = exclusively heterosexual attraction; MHA = mostly heterosexual attraction; BSA = bisexual attraction; SSA = predominantly same-sex attraction. Means with different subscripts are significantly different.
* The prevalence rate is significantly greater than expectation ($p < .001$).

SSA groups were characterized by significantly more high-risk involvement than the EHA and MHA groups.

Assessing for Mediation Between Sexual Attraction and High-Risk Involvement

Concerning the relation between sexual attraction and high-risk involvement, as shown in the top portion of Table 3, two of the three group contrasts were significant: EHA versus BSA and EHA versus SSA. Participants in the BSA and SSA groups were characterized by significantly more high-risk involvement than was the EHA group. The contrast between the EHA and MHA group, however, was nonsignificant. Thus, prior to proceeding to the next step of mediation testing, we combined the EHA and MHA groups into a single group (EHA/MHA, or EMHA) and we reestimated the regression model using two dummy codes: EMHA versus BSA; EMHA versus SSA. (Note that results from all subsequent analyses were consistent when the MHA group was excluded, rather than combined with the EHA group.) As shown in the bottom portion of Table 3, both contrasts were significant such that participants in the BSA and SSA groups reported significantly more high-risk involvement than did the EMHA group.

Results from the regression of the hypothesized mediators on the sexual attraction dummy codes are shown in Table 4. The EMHA and BSA groups differed significantly on each of the proposed mediators except friendship quality. The EMHA and SSA groups differed on four of the proposed mediators: psychological functioning, parental relationships, victimization, and neighborhood safety. In each of these significant group contrasts, the BSA and/or SSA group reported heightened difficulties and challenges relative to the EMHA group.

Results from testing the third and fourth mediation criteria are shown in Table 5. Concerning the third criteria, six of the nine proposed mediators had significant, unique predictive effects: at-

Table 3
Results From the Regression of High-Risk Involvement on Sexual Attraction

Predictor	β	CI	b	CI	p
		Four sexual attraction groups			
Age	.13	.10, .16	0.19	0.14, 0.23	<.001
Sex[a]	−.17	−.20, −.14	−0.68	−0.80, −0.56	<.001
Parental education	−.12	−.15, −.09	−0.26	−0.33, −0.20	<.001
EHA vs. MHA	.04	.01, .07	0.48	0.14, 0.82	.006
EHA vs. BSA	.14	.11, .17	1.58	1.24, 1.93	<.001
EHA vs. SSA	.07	.04, .10	1.45	0.82, 2.07	<.001
		Three sexual attraction groups			
Age	.13	.10, .16	0.19	0.15, 0.23	<.001
Sex[a]	−.17	−.20, −.14	−0.67	−0.80, −0.55	<.001
Parental education	−.12	−.15, −.09	−0.26	−0.33, −0.20	<.001
EMHA vs. BSA	.14	.11, .17	1.56	1.22, 1.91	<.001
EMHA vs. SSA	.07	.04, .10	1.43	0.80, 2.06	<.001

Note. For both models, adjusted R^2 = .08 (p < .001). 95% confidence intervals (CIs) are shown for both standardized and unstandardized regression coefficients. EHA = exclusively heterosexual attraction; MHA = mostly heterosexual attraction; BSA = bisexual attraction; SSA = predominantly same-sex attraction; EMHA = combined exclusively and mostly heterosexual attraction group.
[a] Sex was coded as male (1) or female (2).

titudes toward risk taking, academic orientation, parental relationships, unstructured activities, victimization, and substance availability. That is, high-risk involvement was greater among youth reporting more positive attitudes toward risk taking, weaker academic orientation, less positive parental relationships, more frequent involvement in unstructured activities, greater victimization from peers, and greater perceived substance availability.

With regard to the fourth step of mediation testing, both of the sexual attraction group contrasts were attenuated after the mediators were included in the regression model. As an estimate of effect size, we computed the proportion mediated effect ratio (Shrout & Bolger, 2002) by comparing the unstandardized regression coefficients for the corresponding group contrasts with and without the mediators in the regression model. For the EMHA versus BSA contrast, 66% of the group disparity was mediated, based on comparison of the corresponding unstandardized regression coefficients shown in Tables 3 and 5 (i.e., [1.56 – 0.53] / 1.56). For the EMHA versus SSA contrast, 50% of the group difference was mediated (i.e., [1.43 – 0.72] / 1.43). Although the EMHA versus SSA group contrast was not statistically significant after the mediators were included in the regression model, the contrast between the EMHA and BSA groups remained significant.

Consistency Across Participant Age and Sex

The relative distribution of boys and girls differed significantly across groups. The proportions of boys in the EMHA, BSA, and SSA groups were 47%, 34%, and 69%, respectively. Whereas boys were significantly more likely than girls to be classified in the SSA group, girls were more likely than boys to be classified in the BSA group. With regard to age-related differences among groups, mean ages (and *SD*s) in the EMHA, BSA, and SSA groups were as follows: 15.76 (1.41), 15.98 (1.40), 16.00 (1.43), respectively. The comparison in mean age among sexual attraction groups was nonsignificant; $F(2, 3873) = 1.86$, $p = .16$.

As shown in Table 3, both participant age and sex were unique predictors of high-risk involvement. As expected, older students

reported more high-risk involvement than did younger students, and boys reported more high-risk behavior than did girls. In the context of the full mediation model, however, age and sex were not significant predictors (see Table 5).

In the final set of analyses examining the consistency of the mediation results across age and sex, results were nonsignificant. More specifically, in the full mediation model predicting the high-risk index, the block of age-related interaction effects added a nonsignificant amount of variance to the model ($\Delta R^2 = .004$, $p = .001$). Further, none of the individual interaction terms were statistically significant. Similarly, although the block of sex-based interaction effects added a significant amount of variance to the full mediation model ($\Delta R^2 = .005$, $p < .001$), none of the individual interaction terms were statistically significant. These results suggest that the mediational results did not differ significantly as a function of participant age or sex.

Discussion

Consistent with previous research (e.g., Austin et al., 2004; DuRant et al., 1998; Garofalo et al., 1998; Udry & Chantala, 2002), in the present sample, adolescents reporting BSAs or predominantly SSAs indicated greater risk behavior involvement than those reporting EHAs or MHAs. Unique to the extent research, present results also revealed that elevated levels of involvement among young persons classified as BSA and SSA extends to multiple types of risk taking and occurs at high-risk levels. Of the 10 risk behaviors examined, high-risk involvement in hard drug use and risky sexual practices were heightened among youth in the BSA and SSA groups—emphasizing the need for continued efforts aimed at prevention, harm reduction, and intervention from researchers, clinicians, educators, and policymakers alike.

Although some studies have found that bisexual status is associated with the highest levels of risk behavior involvement (e.g., Eisenberg & Weschler, 2003; Freedner et al., 2002; Galliher et al., 2004), we found no significant difference between youth classified as BSA and SSA in the extent of high-risk involvement. Further,

Table 4
Results From the Regression of the Hypothesized Mediators on Sexual Attraction

Predictor	β	CI	*b*	CI	*p*
Attitudes toward risk (Adjusted R^2 = .12, p < .001)					
EMHA vs. BSA	.10	.13, .07	0.40	0.53, 0.28	<.001
EMHA vs. SSA	.04	.07, .01	0.30	0.53, 0.08	.007
Psychological functioning (Adjusted R^2 = .06, p < .001)					
EMHA vs. BSA	−.11	−.14, −.08	−0.47	−0.59, −0.33	<.001
EMHA vs. SSA	−.06	−.09, −.03	−0.49	−0.72, −0.25	<.001
Academic orientation (Adjusted R^2 = .13, p < .001)					
EMHA vs. BSA	−.09	−.12, −.06	−0.33	−0.44, −0.22	<.001
EMHA vs. SSA	−.01	−.04, .02	−0.08	−0.28, 0.12	.432
Parental relationships (Adjusted R^2 = .05, p < .001)					
EMHA vs. BSA	−.12	−.15, −.09	−0.49	−0.62, −0.36	<.001
EMHA vs. SSA	−.06	−.09, −.03	−0.43	−0.67, −0.20	<.001
Friendship quality (Adjusted R^2 = .18, p < .001)					
EMHA vs. BSA	−.04	−.06, −.01	−0.19	−0.34, −0.05	.011
EMHA vs. SSA	−.01	−.04, .02	−0.04	−0.31, 0.23	.750
Unstructured activity involvement (Adjusted R^2 = .08, p < .001)					
EMHA vs. BSA	.09	.06, .12	0.42	0.27, 0.56	<.001
EMHA vs. SSA	.03	.00, .06	0.24	−0.02, 0.50	.072
Victimization (Adjusted R^2 = .07, p < .001)					
EMHA vs. BSA	.10	.07, .13	0.30	0.21, 0.40	<.001
EMHA vs. SSA	.07	.04, .10	0.38	0.20, 0.56	<.001
School culture (Adjusted R^2 = .01, p < .001)					
EMHA vs. BSA	−.06	−.09, −.03	−0.23	−0.36, −0.10	<.001
EMHA vs. SSA	−.03	−.06, .00	−0.20	−0.44, 0.04	.096
Neighborhood quality (Adjusted R^2 = .03, p < .001)					
EMHA vs. BSA	−.10	−.13, −.07	−0.42	−0.55, −0.29	<.001
EMHA vs. SSA	−.06	−.09, −.03	−0.44	−0.68, −0.20	<.001
Substance availability (Adjusted R^2 = .04, p < .001)					
EMHA vs. BSA	.06	.03, .09	0.31	0.16, 0.45	<.001
EMHA vs. SSA	.00	−.03, .03	0.03	−0.24, 0.31	.812

Note. 95% confidence intervals (CIs) are shown for both standardized and unstandardized regression coefficients. Results for age, sex, and parental education are not shown. EMHA = exclusively or mostly heterosexual attraction; BSA = bisexual attraction; SSA = predominantly same-sex attraction.

whereas some researchers have reported significant differences between groups of youth classified as EHA and MHA in risk behavior involvement (e.g., Austin et al., 2004), we found nonsignificant differences between EHA and MHA groups in the degree of high-risk involvement. Discrepancies between present and previous findings may reflect our operationalization of risk behavior involvement in terms of high-risk involvement across multiple risk behaviors. Youth classified as BSA may be more likely than youth predominantly classified as SSA to engage in some forms of high-risk behavior (e.g., marijuana use, major delinquency). In other cases, high-risk involvement may be more prevalent among youth classified as SSA (e.g., gambling). Furthermore, with few exceptions (e.g., smoking) youth classified as MHA may not differ from their heterosexual peers in terms of high-risk involvement, compared with experimentation or more limited forms of involvement. Thus, consideration of multiple behaviors simultaneously and delineation of high-risk levels of each behavior may have provided a more comprehensive and acute comparison between

BSA and SSA groups and between EHA and MHA groups than has been reported to date.

According to the mediator hypothesis, bisexual and same-sex orientations are thought to be linked to risk behavior involvement indirectly, rather than a direct causal factor. We found that disparities in high-risk involvement among sexual attraction groups were substantively attenuated after accounting for the hypothesized intervening factors, spanning intrapersonal, interpersonal, and environmental domains. Collectively, therefore, present results provide evidence of partial mediation for the disparity among sexual attraction groups in the extent of high-risk involvement.

The primary mediating mechanisms included attitudes toward risk taking, academic orientation, parental relationships, victimization, unstructured activity involvement, and substance availability. Although present results cannot inform the causal relations among variables, we speculate that because some youth classified as BSA and predominantly SSA may experience greater victimization from their peers, participate in unstructured activities more

Table 5
Results From the Regression of High-Risk Involvement on Sexual Attraction and the Hypothesized Mediators

Predictor	β	CI	b	CI	p
Age	.01	−.01, .03	0.01	−0.02, 0.05	.463
Sex[a]	−.04	−.07, −.01	−0.15	−0.27, −0.04	.007
Parental education	.01	−.01, .03	0.01	−0.04, 0.06	.693
EMHA vs. BSA	.05	.03, .07	0.53	0.27, 0.78	<.001
EMHA vs. SSA	.03	.01, .05	0.72	0.25, 1.18	.002
Attitudes toward risk	.32	.29, .35	0.88	−0.96, −0.79	<.001
Psychological functioning	−.03	−.06, .00	−0.08	−0.16, 0.00	.087
Academic orientation	−.07	−.10, −.04	−0.22	−0.31, −0.14	<.001
Parental relationships	−.06	−.09, −.03	−0.16	−0.24, −0.08	<.001
Friendship quality	.02	−.01, .05	0.04	−0.03, 0.10	.252
Unstructured activities	.31	.28, .34	0.75	0.69, 0.82	<.001
Victimization	.11	.09, .14	0.39	0.30, 0.48	<.001
School culture	−.03	−.06, .00	−0.08	−0.15, −0.01	.038
Neighborhood safety	.03	.00, .06	0.07	0.00, 0.14	.050
Substance availability	.11	.09, .14	0.26	0.20, 0.32	<.001

Note. Adjusted R^2 = .50 (p < .001). 95% confidence intervals (CIs) are shown for both standardized and unstandardized regression coefficients. EMHA = exclusively or mostly heterosexual attraction; BSA = bisexual attraction; SSA = predominantly same-sex attraction.
[a] Sex was coded as male (1) or female (2).

frequently, have greater difficulties in their relationships with their parents, are less academically engaged, have more permissive attitudes toward risk taking, and have more ready access to illegal substances, some end up becoming more involved in risk behavior than their heterosexually attracted peers. Consistent with contemporary models of adolescent risk taking (e.g., Jessor, 1998; Petraitis et al., 1995) and broad models of human development (e.g., Bronfenbrenner, 1979; Lerner & Castellino, 2002), which stress the simultaneous role of multiple individuals, contexts, and systems of influence in shaping developmental outcomes, these six mediating factors span multiple life domains (intrapersonal, interpersonal, environment), streams of influence (attitudes, beliefs, social networks), and ecologies (e.g., home, school, neighborhood). Thus, the present work demonstrates the value of applying a theoretically informed, multivariate approach to examining adolescent risk behavior involvement in the context of explaining the connection between sexual attraction and risk behavior involvement.

Despite the range of predictive factors examined, the disparity in high-risk involvement between two groups, EMHA and BSA, remained statistically significant after we accounted for the hypothesized mediators. Our analyses were not exhaustive of the factors that have been implicated as likely predictors of risk behavior involvement, including peer pressure, perceived social norms, and self-efficacy beliefs (e.g., Boyer, 2006; Hawkins et al., 1992; Petraitis et al., 1995). Further, although the mediators we examined have been described in previous research as normative factors that are relevant for all youth, such common factors do not address the unique experiences of gay, lesbian, and bisexual youth. Such stressors, including discomfort with one's sexuality, fear of coming out, social isolation, and victimization related to sexual orientations are a common part of the experiences of nonheterosexual youth (e.g., Rosario et al., 2006). These gay-related factors may play an important role in explaining why nonheterosexual youth are more involved in risk behavior than their heterosexual peers. Thus, the inclusion of additional theoretically derived intervening factors, including gay-related stressors, may have increased

both the degree of mediation observed as well as the overall power of the predictive model.

The attenuation in the group disparities in high-risk involvement after accounting for the hypothesized mediating factors did not differ significantly for boys and girls or across participant age. Although null findings do not provide a conclusive demonstration of equivalence, the present results constitute preliminary evidence that the disparities in high-risk involvement among sexual attraction groups and the mediated relations between sexual attraction and high-risk involvement may be consistent for boys and girls, and across the high school age-range. Given the cross-sectional nature of the present analysis, it is uncertain whether similar patterns would be observed if the same group of youth were followed throughout the adolescent years. Application of a longitudinal approach would provide for a more direct examination of the developmental consistency of the connection between sexual attraction and risk behavior involvement.

Caveats and Limitations

Of the various facets of sexual orientation (e.g., self-labeling, sexual attractions, sexual activity), the present work examined sexual attraction. We used a bipolar rating of the degree of SSA versus opposite-sex attraction. Separate measures of SSA and opposite-sex attraction may have provided a more nuanced assessment of sexual attraction. Further, our findings may have differed had an alternative operationalization been used, such as self-identified sexual orientation or same-sex sexual behavior (Savin-Williams, 2006). Consequently, the extent to which present results generalize to all of the nonheterosexual youth in the schools we surveyed is unknown. In future work, simultaneous assessment of same-sex sexual behavior, self-identification, and sexual attraction would be valuable. Further, although the prevalence of the varying types of sexual attraction in the present sample is consistent with previous research comparing heterosexual and nonheterosexual youth (e.g., Boyce et al., 2006; Eisenberg & Weschler, 2003; Russell et al., 2001), whether results from the present study gen-

eralize beyond the schools in which we conducted our study is uncertain and generalization to other populations is cautioned.

Present findings were based on a count of the number of behaviors in which students were involved at high-risk levels. Mediation results may have differed, had we examined each of the risk behaviors individually. In future work testing the mediation hypothesis, examination of high-risk involvement in individual risk behaviors as well as across risk behaviors would be a valuable extension. In addition, in our study, the time frames for the various survey items and scales varied considerably, which may have introduced an unknown degree of bias. The internal consistency estimates for several of the study measures were moderate, and results involving these variables may have been more robust had the reliabilities been higher. Another limitation stems from our exclusive reliance on self-report. Given the potential biases of self-reports, future work could include other perspectives and sources of information including reports from parents, friends, and teachers.

Summary and Conclusions

In summary, high school students reporting BSA and SSAs were characterized by more high-risk involvement than their heterosexually attracted peers. Results from mediation testing indicated that these disparities may stem (at least in part) from heightened degrees of intrapersonal, interpersonal, and environmental challenges facing youth classified as BSA and SSA, relative to their heterosexual peers. Findings were consistent for young men and women, and across the high school age range, providing initial evidence for the consistency of the mediational results across age and sex. Future research extending the present work in the ways we have outlined will provide additional information concerning why some youth classified as BSA and SSA are more involved in risk behaviors than their heterosexual peers.

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