

Same-sex attraction and successful adolescent development

Michael A. Busseri · Teena Willoughby ·
Heather Chalmers · Anthony R. Bogaert

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Abstract This study investigated the relation of adolescent same-sex attraction to “successful development” (Baltes, P. B., *Am. Psychol.* 32:366–380, 1997). Based on a survey of high-school adolescents, four groups were defined according to the nature of self-reported sexual attraction: exclusively

heterosexual (EHA; $n = 3594$); mostly heterosexual (MHA; $n = 124$); bisexual (BSA; $n = 122$); and same-sex attraction (SSA, $n = 36$). Groups were compared across multiple intrapersonal, interpersonal, and environmental domains based on mean group differences and prevalence of developmental assets. Although the EHA group reported the most positive status across domains, several similarities among the groups were noted. Groups did not differ significantly in friendship quality and perceptions of school climate in the mean group comparisons, as well as academic orientation and (low) peer victimization in the assets-based analyses. Implications for successful development among adolescents reporting same-sex attraction are discussed along with the integration of the study of non-heterosexual youth into mainstream adolescent research.

M. A. Busseri (✉)

Research Associate at the Brock Research Institute for Youth Studies at Brock University, Ontario, Canada. He received his M.A. in Clinical Psychology from the University of North Dakota. His major research interests are adolescent risk behavior involvement and youth activity involvement. To whom correspondence should be addressed at Brock Research Institute for Youth Studies, Brock University, 500 Glenridge Avenue, St. Catharines, Ontario, Canada L2S 3A1
e-mail: mbusseri@brocku.ca

T. Willoughby

Professor in the Department of Child and Youth Studies at Brock University, Ontario, Canada. See received her Ph.D. in Developmental Psychology from the University of Waterloo. Her major research interests include adolescent risk taking and resilience, including academic underachievement and media/technology influences on lifestyle choices and learning.

H. Chalmers

Assistant Professor in the Department of Child and Youth Studies at Brock University, Ontario, Canada. She received her Ph.D. in Developmental Psychology from Brock University. Her major research interests are adolescent risk-behavior involvement, particularly related to gambling, and risk and resilience

A. R. Bogaert

Professor in the Department of Community Health Sciences at Brock University, Ontario, Canada. He received his Ph.D. in Social Psychology from the University of Western Ontario. His major research interests include sexual orientation development, the origins of sexual offending, methodological issues in sex research, effects of pornography on behaviour, and factors associated with high risk sexual behavior

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Introduction

Youth reporting some form of non-heterosexual status (i.e., same-sex attraction; same-sex sexual behavior; self-identification as a gay, lesbian, or bisexual) may be at heightened risk for problematic development compared to their heterosexual peers. For example, research has linked non-heterosexual status in adolescence with heightened substance use and suicidality, as well as a variety of health-related factors including victimization and psychological distress (e.g., Austin et al. 2004a; Bontempo and D’Augelli 2002; Diamond and Lucas 2004; Morrison and L’Heureux 2001). Considerably less is known, however, about other important aspects of the lives of non-heterosexual youth relative to

their heterosexual peers. Indeed, research has yet to adopt an integrative ecological and asset-based approach to studying the lives of non-heterosexual youth that addresses potential strengths and assets in multiple developmental domains (self, family, friends, peers, environments) in addition to difficulties and challenges. Rather, research on non-heterosexual youth has been largely segregated from the mainstream research on adolescent development (Diamond 2003; Goldfried and Bell 2003). The present study sought to address this gap by examining the relation between same-sex attraction and successful adolescent development.

Youth reporting non-heterosexual status tend to report higher levels of substance use, risky sexual practices, self-harm, suicidality, and delinquency compared to their heterosexual peers. Greater challenges and difficulties among non-heterosexual youth compared to their heterosexual peers also have been documented in terms of mental health, violence and victimization, social support, and negative life events and stressors (Austin et al. 2004a; Bontempo and D'Augelli 2002; Diamond and Lucas 2004; Faulkner and Cranston 1998; Freedner et al. 2002; Galliher et al. 2004; Garofalo et al. 1998; Goodenow et al. 2002; Rostosky et al. 2003; Russell et al. 2001a, 2002; Safren and Heimberg 1999; Savin-Williams 2001a).

Not uncommonly, youth reporting gay, lesbian, and bisexual status are combined into a single group for comparisons with non-heterosexual youth (e.g., Bontempo and D'Augelli 2002; Diamond and Lucas 2004; Rostosky et al. 2003). Such an approach increases statistical power by maximizing the total size of the non-heterosexual group—which typically accounts for no more than 6% of (non-selected) research samples. This approach, however, may obscure important differences between youth who vary in the nature of their non-heterosexual status. Research comparing heterosexual and non-heterosexual youth has suggested, for example, that youth reporting a bisexual status may experience the greatest relative levels of risk and difficulties compared to their heterosexual peers and, perhaps, compared to youth characterized by exclusively gay or lesbian status (e.g., Eisenberg 2001; Eisenberg and Wechsler 2003; Freedner et al. 2002; Galliher et al. 2004; Rotheram-Borus et al. 1999; Russell et al. 2001a,b; Udry and Chantala 2002). Further, although less widely studied, some recent research suggests that youth reporting a “mostly heterosexual” status may be at greater risk for smoking or eating disordered behaviors than peers reporting exclusively heterosexual status (e.g., Austin et al. 2004a,b). In the present study, therefore, we differentiate between several types of sexual attraction: exclusively heterosexual, mostly heterosexual, bisexual, and same-sex attractions.

Patterns also have been shown to differ depending on the respondent's sex. That is, differences between heterosexual and non-heterosexual youth may vary for males and fe-

males (Austin et al. 2004a; Bontempo and D'Augelli 2002; Eisenberg 2001; Eisenberg and Wechsler 2003; Freedner et al. 2002; Galliher et al. 2004; Remafedi et al. 1998; Russell et al. 2002). For example, Austin et al. (2004a) reported that the likelihood of smoking was higher among lesbian/bisexual girls compared to heterosexual girls in sample of 12 to 17 year olds, while gay/bisexual boys were not more likely to smoke. Across studies, however, there is limited consistency in the specific nature of these sex-based differences. Further, few *a priori* predictions concerning sex-based interactions have been offered. However, in a study of gender differences in sexual identity development, Savin-Williams and Diamond (2000) proposed that, “sexual minority youths are more similar to heterosexual peers of the same sex than to sexual-minority peers of the other sex” (p. 626). This proposal represents a testable hypothesis concerning expected patterns of sex-based interactions which we address in the present study.

Relative to the amount of evidence concerning heightened risk behavior involvement and health-related challenges, we know comparatively less about the “more normative, mundane aspects of daily adolescent life” (Diamond and Lucas 2004, p. 337) including how non-heterosexual adolescents experience their families, friendships, peers, and environments such as schools and neighborhoods in ways that may be similar to, or different from, their heterosexual peers (Diamond 2003; Goldfried and Bell 2003; Morrison and L'Heureux 2001; Savin-Williams 2001b). Some research has compared heterosexual and non-heterosexual youth in terms of interpersonal relationships and school-related factors. For example, Russell et al. (2001b) examined differences between heterosexual, bisexual, and homosexual youth in terms of school outcomes and interpersonal relationships including family, teachers, and peers (see also Galliher et al. 2004; Rostosky et al. 2003). Other studies have examined peer relationships among heterosexual and non-heterosexual youth. For example, Diamond and Lucas (2004) found that relationship quality and interpersonal experiences mediated the association between non-heterosexual status and mental health problems. To date, however, the lives of non-heterosexual and heterosexual youth have not been compared across a wide range of developmental domains and contexts simultaneously, within the same study. Yet there are several reasons why investigations of this nature are critical.

First, examining a wide range of domains within the same study would provide a more complete description of the lives of non-heterosexual adolescents. Such an approach would be consistent with the ecological systems approach of human development proposed by Bronfenbrenner (e.g., Bronfenbrenner 1979) who delineated multiple contexts and spheres of influence on development. For example, microsystems include those in which the adolescent participates and/or is directly influenced by the youth (e.g., family,

friends) while macrosystems reflect broader forces and contexts (e.g., culture, political climate). An ecological approach highlights the value of examining the person and the interdependent contexts in which he/she lives in order to arrive at a more detailed understanding of the individuals, forces, and settings that impact his/her development. Thus, attention to various contexts and systems of influence is critical for a holistic understanding of development regardless of the nature of an individual's sexual attraction (Morrison and L'Heureux 2001).

Second, limited empirical attention has been devoted to examining strengths, resources, and positive experiences among non-heterosexual youth (Diamond 2003; Diamond and Lucas 2004; Hillier and Rosenthal 2001; Savin-Williams 2001b). Proponents of a positive youth development framework have emphasized the importance of building competencies and enhancing social bonds in promoting and supporting healthy adolescent development (Leffert et al. 1998; Lerner et al. 2003; Roth and Brooks-Gunn 2000; Scales et al. 2003). Some work has delineated key intrapersonal, interpersonal, and environmental assets (e.g., Leffert et al. 1998). However, researchers have yet to assess specifically the resources and strengths in the lives of non-heterosexual adolescents and to examine similarities and differences in the relative prevalence of assets between heterosexual and non-heterosexual youth. Understanding positive aspects of the lives of non-heterosexual youth may provide an important foundation for fostering resilience and building capacities. Further, research on assets and strengths would provide balance to the more common focus on heightened risk behavior involvement and health-related risks in the lives of non-heterosexual adolescents.

Third, information derived from such examinations would produce a more complete understanding of the developmental status of non-heterosexual youth relative to their heterosexual peers. Consider, for example, the notion of "successful development" as defined by Baltes (1997) and Baltes et al. (1999). These authors have proposed that successful development be construed in terms of the joint *maximization* of desirable goals and outcomes along with the *minimization* of undesirable outcomes. Ample research on risk behavior involvement among youth has documented undesirable outcomes in the lives of non-heterosexual youth relative to their heterosexual peers. Less well understood, however, is whether non-heterosexual youth also are characterized by relatively less successful development in other important life domains and contexts in which maximization of outcomes is desirable, including (for example) psychological functioning, friendships, peer relations, family functioning, and environmental conditions.

The present study sought to address these issues. Data from a large-scale survey of high school students were used to examine a broad range of intrapersonal, interpersonal,

and environmental domains in the lives of youth reporting varying types of same-sex attraction. In addition to mean group comparisons, the relative prevalence of developmental strengths and resources were examined across intrapersonal, interpersonal, and environmental domains. Together, these analyses provided an integrative examination of the degree of successful development (i.e., the maximization of desirable outcomes and minimization of undesirable outcomes) in each of the sexual attraction groups. We expected, based on past research, that youth reporting at least some degree of same-sex attraction would be characterized by more negative reports (on average) compared to those reporting exclusively heterosexual attraction. In light of the limited research using an integrative ecological and asset-based approach, however, domain-specific predictions were not made concerning mean group differences or in terms of the relative prevalence of developmental assets within each domain.

Method

Participants

This study was part of a larger research project designed to examine youth resilience and lifestyle choices. As detailed in Willoughby et al. (2004), 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 ($N = 7430$). A passive parental consent procedure was used to ensure a representative sample. See Weinberger et al. (1990) for a discussion on how active parental consent procedures may result in overrepresentation of well-functioning adolescents and families. In addition, in a follow-up to an adolescent study using active parental consent, Baker et al. (2001) found that non-responding parents were more similar to consenting parents than refusing parents on their beliefs about the importance of adolescent lifestyle research. Non-responding parents also were more likely to be employed than consenting parents, suggesting that their non-response may be a result of time pressures.

The issue of a representative sample was particularly important for our community partners, who are using the results from the full survey data to improve or create new youth programs in the community. Because there was a risk of creating more harm than good if youth programming in the region was not reflective of the needs of a representative adolescent community sample, we were given permission from the school board and our Research Ethics Board to use passive parental consent for this study. We made every effort to ensure that parents were aware of the study. First, parents were provided with written correspondence mailed directly to each home

prior to the survey administration outlining the study. This letter indicated that parents could request that their child not participate in the study. Second, several parent information sessions also were held throughout the school district. Third, there was extensive media coverage outlining the broader study. Finally, active informed assent 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 ($n = 140$) were screened out from the analysis sample due to acquiescent rating styles. Responses from these participants showed no variability on three or more scales containing both positively and negatively-worded items. The remaining 7290 participants (3475 males and 3815 females) 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 3876 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. In terms of the analysis variables (see Table 1), the excluded group reported less positive psychological functioning, stronger academic orientation, less parental involvement, lower friendship quality, less positive school culture, younger age, and were proportionally more likely to be male ($ps < 0.001$). The magnitudes of these differences, however, were minimal; no more than 1% of the between-group 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 two hours was allotted for survey administration at each school. The survey was read to students with identified literacy difficulties. Students were informed that their responses were completely confidential.

Measures

The study measures are described below. Additional information, including number of scale items, scale anchors, means, standard deviations, and internal consistencies is provided in Table 1.

Intrapersonal variables

Sexual attraction. Participants' sexual attraction was assessed using a single item: "Please select the point that best represents who you are sexually attracted to." Response options ranged from "males only" (1), to "both males and females" (4), to "females only" (7). Responses were recoded such that scores of 1 indicated exclusively other-sex attraction while scores of 7 indicated exclusively same-sex attraction. Participants were classified into one of four sexual attraction groups based on the nature of their sexual attraction. "Exclusively heterosexual attraction" (EHA) participants had scores of 1; individuals with scores of 2 were categorized as "mostly heterosexual attraction" (MHA); "bisexual attraction" (BSA) 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).

Attitudes towards risk-taking. Attitudes towards risk-taking were assessed using five scales: beliefs about how wrong it is to engage in unconventional and anti-social behaviors (Jessor et al. 1991); cognitive evaluations of how risky the respondent believed it was for them to engage in various behaviors (such as drinking alcohol, smoking cigarettes, having sex) and how risky the respondent believed it was for other people their own age to engage in these behaviors; perceived social approval of involvement in risk-taking was assessed in terms of how upset one's parents would be by one's involvement with problem behaviors and how upset one's friends would be by one's involvement in these behaviors. After standardizing each scale, a composite (average) score was formed ($\alpha = 0.78$ based on the five scores) such that higher composite scores indicated more permissive attitudes towards risk-taking.

Psychological functioning. Depression-related symptoms were measured using the CES-D scale (Radloff 1977, 1991). Social anxiety-related symptoms were assessed using 14 items from Ginsburg et al. (1998). Self-esteem was measured using the Rosenberg self-esteem scale (Rosenberg 1965). Daily hassles were assessed based on the frequency of experiencing 25 potential life stressors/hassles including finances, friends and peers, school work, and self-image. Optimism was assessed using four items (e.g., "I expect the best"). Analyses were based on a composite

Table 1 Summary of study measures

Domain	Variable	Measure	Items	Scale range	Alpha	Mean	SD	
Intrapersonal	Sexual attraction	Sexual attraction	1	1 to 7 (see Method section)	—	1.16	0.73	
	Attitudes towards risk	Tolerance of deviance	11	1 (very wrong) to 4 (not at all wrong)	0.88	1.97	0.56	
		How risky for you	5	1 (very high) to 5 (very low)	0.89	3.33	1.18	
		How risk for others	5	1 (very high) to 5 (very low)	0.92	3.36	1.11	
		Parents would be upset	5	1 (very upset) to 4 (not at all)	0.80	2.15	0.63	
		Friends would be upset	5	1 (very upset) to 4 (not at all)	0.89	2.85	0.92	
	Psychological functioning	Depression	20	1 (most of the time) to 5 (none of the time)	0.92	3.99	0.67	
		Social anxiety	14	1 (almost always) to 4 (almost never)	0.92	3.28	0.56	
		Self-esteem	10	1 (strongly disagree) to 5 (strongly agree)	0.91	3.74	0.73	
		Daily hassles	25	1 (often bothers me) to 3 (never bothers me)	0.87	2.21	0.34	
		Optimism	4	1 (almost never) to 4 (almost always)	0.67	2.94	0.56	
		Academic orientation	Grades	1	1 (below 50%) to 6 (A +)	—	4.28	1.00
	Aspirations		1	See Method section	—	4.48	1.46	
	Planfulness		1	1 (almost never) to 4 (almost always)	—	2.13	0.82	
Bored at school	1		1 (all the time) to 4 (almost never)	—	2.81	0.86		
Importance of success	1		1 (not important) to 5 (very important)	—	4.33	0.85		
Interpersonal	Parental relationship		Maternal attachment	17	1 (almost never) to 4 (almost always)	0.89	3.03	0.59
		Paternal attachment	17	1 (almost never) to 4 (almost always)	0.87	2.88	0.61	
		Parental warmth	10	1 (usually false) to 2 (usually true)	0.75	1.80	0.22	
		Parental knowledge	9	1 (they never know) to 4 (they always know)	0.90	2.82	0.71	
	Friendship quality	Parental involvement	15	See Method section	0.85	1.88	0.44	
		Best friends	18	1 (almost never) to 4 (almost always)	0.87	3.20	0.47	
		Friendship attachment	18	1 (almost never) to 4 (almost always)	0.94	3.19	0.51	
	Victimization	Direct/indirect victimization	8	1 (never) to 5 (every day)	0.86	1.48	0.56	
	Environment	School climate	School culture	30	1 (strongly disagree) to 5 (strongly agree)	0.93	3.28	0.49
		Neighborhood	Neighborhood quality	4	1 (strongly disagree) to 5 (strongly agree)	0.75	3.94	0.74
Demographics	Age	Age	1	10 years old to 18 + years old	—	15.77	1.41	
	Gender	Gender	1	1 (male) or 2 (female)	—	47% male		
	Parental education	Maternal education	1	1 (not finish hs) to 6 (professional/grad degree)	—	3.24	1.39	
Paternal education		1	1 (not finish hs) to 6 (professional/grad degree)	—	3.34	1.47		

Note. *N* = 3876.

well-being measure formed by averaging the standardized measures ($\alpha = 0.79$ based on the five scores) such that higher scores indicated more positive psychological functioning.

Academic orientation. Several aspects of academic engagement were assessed using single-item measures, including: typical grades; educational aspirations; planfulness, frequency of feeling bored at school; perceived importance of doing well at school. Scores were standardized and combined to form an aggregate measure of academic orientation ($\alpha = 0.67$ based on the five items) such that higher scores indicated stronger academic engagement.

Interpersonal variables

Parental relationships. Paternal and maternal attachment were measured using the Inventory of Parent and Peer Attachment (Armsden and Greenberg 1987). Parental warmth was a composite based on ratings of parental support and encouragement (derived from Lamborn et al. 1991). Parental knowledge was assessed using items related to how much one’s parents/guardians really know about how the respondent spends their free time. 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 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*). A composite measure was formed by averaging the standardized measures ($\alpha = 0.79$ based on the five scale scores) such that higher scores indicated more positive relations with one's parents.

Friendship quality. Items adapted from Gauze et al. (1996) relating to the quality of companionship, support, security, closeness, and conflict were used to assess relationships with one's "best friend." Also assessed was overall friendship quality based on items relating to attachment to one's friends, adapted from Armsden and Greenberg (1987). A composite measure was formed by averaging the two measures ($r = 0.66$) such that higher scores indicated more positive friendship quality.

Victimization. Victimization by one's peers was measured using 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. A composite measure was formed by averaging the ratings such that higher scores indicated greater victimization by one's peers.

Environmental variables

School climate. Students' perceptions of the school culture was assessed using 30 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. A composite score was formed by averaging all 30 items such that higher scores indicated more positive perceptions of one's school environment.

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

Demographic variables

Age, participant sex, and parental education (one item per parent, averaged; $r = 0.55$) were assessed. Higher scores indicate greater age, female gender, and greater parental education respectively.

Data analysis

Treatment of missing data

As previously mentioned, some students did not finish the entire study questionnaire. The amount of missing data was directly related to survey length such that missing values were greatest towards the end of the survey, likely as a reflection of participant fatigue. The amount of missing data per participant, however, was not substantively related to any of the study measures (see Willoughby et al. 2004). For each multi-item scale shown in Table 1, average scores were computed for participants who completed at least 50% of the items in the scale. For participants responding to fewer than 50% of the items, mean scale scores were imputed. In total, 19% of the data was missing due either to non-response on single-item measures or insufficient number of responses on multi-item scales. With the exception of the sexual attraction measure, missing data were imputed using the expectation-maximization (EM) algorithm in SPSS. The EM procedure estimates missing values based on all available data from all respondents using a multi-stage, iterative procedure. Methodological work has demonstrated that this procedure is preferable to more common methods to handling missing data such as pairwise deletion, listwise deletion, or mean substitution (Schafer and Graham 2002).

Defining assets

For each intrapersonal, interpersonal, and environmental variable, participants scoring in a strong, positive direction were identified. Those with a relative asset were identified as: (a) falling in the top 25% of the distribution for psychological functioning, academic orientation, parental relationships, friendship quality, school culture, and neighborhood quality and (b) falling in the bottom 25% of the distribution for permissive attitudes towards risk-taking and victimization.

Overview of statistical analyses

The sexual attraction groups (EHA, MHA, BSA, SSA) were compared on the demographic variables using ANOVAs (and pairwise comparisons) to examine mean group differences in age and parental education, and a chi-square analysis (and the magnitude of the standardized residuals) to compare the distributions of participant sex across groups.

Second, sexual attraction groups were compared on the eight intrapersonal, interpersonal, and environmental developmental indices using MANCOVA, ANCOVA, and pairwise contrasts.¹ Prior to analysis, each of the developmental

¹Results were consistent when mean group differences were examined using the separate measures of attitudes towards risk-taking,

indices was standardized such that each index had a mean of zero and a standard deviation of 1. The MANCOVA provided an overall test of the mean group differences across the developmental indices. The ANCOVA models examined mean group differences on each developmental index. In the MANCOVA and ANCOVA analyses, sexual attraction group was treated as an independent variable along with participant sex, and the interaction between sexual attraction group and participant sex was estimated in order to test the consistency of the pattern of group differences across participant sex. Age and parental education were entered as covariates. Pair-wise comparisons were used to examine mean group differences between each pair of sexual attraction groups. In light of the number of statistical comparisons computed, mean group differences were considered statistically significant at $p < 0.001$. To estimate the magnitudes of the group differences, Cohen's d effects sizes were computed for comparisons between the EHA group and each of the other three sexual attraction groups.

Third, logistic regression analyses were performed in order to estimate the odds of being classified as having a developmental asset on each of the indices for participants classified as MHA, BSA, or SSA relative to the EHA group. Each developmental asset (coded as 1: *present*, or 0: *absent*) was regressed onto age, participant sex, and parental education and one of three contrasts: EHA vs. MHA, EHA vs. BSA, or EHA vs. SSA (each contrast was coded as 0 for EHA and 1 for the comparison group). The interaction between participant sex and the group contrast was added to each regression model in a separate step in order to assess the consistency of results across participant sex. In light of the number of effects that were tested, odds ratios were considered statistically significant at $p < 0.001$.

Given the comparatively small size of the SSA group (see Table 2), the mean group comparisons and logistic regression analyses also were estimated after combining the BSA and SSA groups into a BSA/SSA group.

Results

Demographic comparisons

Table 2 displays group sizes and demographic information for each of the four sexual attraction groups. Overall, the groups differed in terms of mean respondent age. Participants in the MHA group were significantly older than those

psychological functioning, and parental relationships shown in Table 1, instead of composite indices. For example, mean group comparisons based on separate self-esteem, optimism, depression, daily hassles, and social anxiety scores produced the same patterns of results as those reported for the composite well-being index.

Table 2 Sexual attraction group sizes and demographic comparisons

Group	Size (%)	Mean age (SD)	Mean parental education (SD)	Sex (% male)
EHA	3594 (92.7)	15.74a (1.40)	3.30 (1.26)	47
MHA	124 (3.2)	16.27b (1.45)	3.28 (1.26)	27
BSA	122 (3.4)	15.98a,b (1.40)	2.94 (1.28)	34
SSA	36 (0.9)	16.00a,b (1.43)	3.25 (1.30)	69
Sample	3876	15.77 (1.41)	3.37 (1.44)	47

Note. Means with different letters within a column indicate significant pairwise differences.

in the EHA group. Further, the distribution of males and females differed from expectation across the sexual attraction groups. There were fewer males than expected in the MHA and BSA groups as well as more males than expected in the SSA group. Sexual attraction groups did not differ significantly, however, in terms of mean level of parental education.

Group comparisons based on intrapersonal, interpersonal, and environmental indices

In the MANCOVA model, the overall multivariate effects for sexual attraction group and participant sex were significant; the group by participant sex interaction was non-significant. In the ANCOVA models, the main effect of sexual attraction group was significant for each of the intrapersonal, interpersonal, and environmental indices except for friendship quality and school culture. The main effect of participant sex was significant for friendship quality and victimization; in both cases, female participants reported more positive results than did males. The group by sex interaction was non-significant in each model. Adjusted means and standard errors are shown by sexual attraction group in Table 3 for each developmental index along with results from pair-wise comparisons and effect size estimates.

Across the eight domains, the *MHA group* differed from the EHA group on only two indices: well-being and parental relationships. Effect size estimates ranged from 0.10 (academic orientation) to 0.53 (parental relationships), with an average of 0.26 standard units. Also, the MHA group did not differ significantly from either the BSA or SSA groups on any of the developmental indices. The *BSA group* differed from the EHA group on *each* index except friendship quality and school culture. Across the eight developmental indices, effect sizes ranged from 0.25 (friendship quality) to 0.71 (parental relationships) with an average of 0.53 standard units. Further, the BSA did not differ from either the MHA or SSA groups on any of the indices. The *SSA group* differed from the EHA group on four indices: well-being, parental relationships, victimization, and neighborhood quality. Effect sizes ranged from 0.06 (friendship quality) to 0.71

Table 3 Mean group comparisons between sexual attraction groups by intrapersonal, interpersonal, and environmental indices

Index	Group means (standard errors)				Effect sizes				
	EHA (n = 3594)	MHA (n = 124)	BSA (n = 122)	SSA (n = 36)	BSA/SSA (n = 158)	EHA vs. MHA	EHA vs. BSA	EHA vs. SSA	EHA vs. BSA/SSA
Attitudes towards risk	-0.03a (0.02)	0.21a,b (0.09)	0.54b (0.09)	0.40a,b (0.16)	0.51b (0.08)	0.26	0.61	0.46	0.57
Psychological functioning	0.04a (0.02)	-0.33b (0.09)	-0.61b (0.09)	-0.64b (0.16)	-0.62b (0.08)	0.38	0.67	0.70	0.68
Academic orientation	0.02a (0.02)	-0.07ab (0.08)	-0.49b (0.09)	-0.11ab (0.16)	-0.40b (0.07)	0.10	0.54	0.13	0.45
Parental relationships	0.04a (0.02)	-0.47b (0.09)	-0.65b (0.09)	-0.56b (0.16)	-0.63b (0.08)	0.53	0.71	0.62	0.69
Friendship quality	0.02 (0.02)	-0.22 (0.08)	-0.22 (0.08)	-0.04 (0.15)	-0.17 (0.07)	0.26	0.25	0.06	0.20
Victimization	-0.03a (0.02)	0.13ab (0.09)	0.52b (0.09)	0.66b (0.16)	0.55b (0.08)	0.17	0.57	0.71	0.60
School culture	0.02 (0.02)	-0.08 (0.09)	-0.31 (0.09)	-0.27 (0.17)	-0.30a (0.08)	0.10	0.33	0.28	0.32
Neighborhood quality	0.03a (0.02)	-0.27ab (0.09)	-0.55b (0.09)	-0.57b (0.16)	-0.55b (0.08)	0.31	0.59	0.62	0.59

Note. Means and standard errors are shown by sexual attraction group for each developmental index (row variable) controlling for age, sex, and parental education. Means with different letters (within rows) are significantly different in pair-wise contrasts ($ps < 0.001$).

(victimization), with an average of 0.45 standard units. The SSA did not differ from either the MHA or BSA groups on any of the developmental indices.

The combined *BSA/SSA group* was significantly different from the EHA group on *each* developmental index except friendship quality. Across the eight domains, effect size estimates ranged from 0.20 (friendships) to 0.69 (parental relationships) with an average of 0.51 standard units. The combined group did not differ from the MHA group on any of the developmental indices.

In summary, the EHA group had the most positive self-reports (on average) for each developmental index, followed by the MHA group and then the BSA and SSA groups. The most consistent and pronounced mean group differences were found between the EHA and BSA (and combined BSA/SSA) groups. Differences between the MHA, BSA, and SSA groups, however, were not statistically significant on any of the intrapersonal, interpersonal, and environmental indices.

Group comparisons based on developmental assets

The percentages of respondents in each sexual attraction group categorized at asset-levels are shown in Table 4 for each domain, adjusted for demographic differences. Also shown are the odds-ratios from the logistic regression analyses. The participant sex by group contrast interaction did not add a significant amount of explained variance in any of the logistic regression models. Consequently, the odds ratios shown in Table 3 are estimates from the regression models without the interactions included.

Independent of the demographic variables, the odds of being classified at the asset level were significantly higher among respondents in the EHA group compared to those in the *MHA and BSA groups* for attitudes towards risk-taking and parental relationships. For the remaining indices, odds did not differ significantly in contrasts between the EHA and either the MHA or BSA groups. For the *SSA group*, the odds of being classified at the asset-level did not differ from the EHA group for *any* of the developmental indices, despite odds ratios of substantial magnitudes (e.g., well-being, parental relationships).

Contrasts between the EHA and *BSA/SSA groups*, however, were statistically significant for four domains: risk attitudes, parental relationships, well-being, and neighborhood quality. In each domain, the odds of being classified at the asset-level were significant lower for those in the combined BSA/SSA group relative to the EHA group. For the remaining four indices—academic orientation, friendship quality, victimization, and school culture—the odds of being classified at the asset-level were not statistically different for the EHA and BSA/SSA groups.

Table 4 Percent of respondents classified at asset levels and odds ratios for developmental indices by sexual attraction group

Index	Participants classified at asset level (%)					Odds ratio			
	EHA (n = 3594)	MHA (n = 124)	BSA (n = 122)	SSA (n = 36)	BSA/SSA (n = 158)	EHA vs. MHA	EHA vs. BSA	EHA vs. SSA	EHA vs. BSA/SSA
Attitudes towards risk	26	13	8	19	11	0.40*	0.24*	0.60	0.30*
Psychological functioning	26	15	13	3	11	0.50	0.40	0.15	0.33*
Academic orientation	25	22	15	25	17	0.82	0.49	0.98	0.58
Parental relationships	26	9	11	8	11	0.26*	0.34*	0.19	0.31*
Friendship quality	26	16	18	22	19	0.61	0.67	0.79	0.69
Victimization	26	13	21	13	19	0.49	0.77	0.39	0.68
School culture	25	21	23	28	24	0.80	0.90	1.17	0.96
Neighborhood quality	30	19	19	17	18	0.51	0.50	0.47	0.49*

Note. Asset-level frequencies and odds ratios are adjusted for age, participant sex, and parental education.

* $p < 0.001$.

Discussion

Our examination of a range of intrapersonal, interpersonal, and environmental factors and contexts provided evidence of important similarities and differences in the lives of youth reporting varying types of same-sex attraction. In the mean group comparisons, youth reporting exclusively heterosexual attraction (EHA) were characterized by the most positive self-reports across each developmental domain compared to the other three sexual attraction groups. These trends are consistent with previous research indicating that, in comparison to youth reporting exclusively heterosexual attractions, identification, or behaviors, non-heterosexual status is associated with heightened risk and difficulties (Austin et al. 2004a; Bontempo and D’Augelli 2002; Diamond and Lucas 2004; Freedner et al. 2002; Galliher et al. 2004; Goodenow et al. 2002; Rostosky et al. 2003; Russell et al. 2001a, 2002; Savin-Williams 2001a). The mean group comparisons reported in the present study, therefore, highlight differences between youth reporting exclusively heterosexual attraction and those reporting some type of non-heterosexual attraction.

The magnitude and statistical significance of the differences between the EHA group and each of the other three sexual attraction groups, however, varied depending on the developmental domain and type of same-sex attraction considered. Participants reporting mostly heterosexual attractions (MHA) differed from the EHA group on only two domains: psychological functioning and parental relationships. Youth characterized by bisexual sexual attraction (BSA) reported the most negative results, overall, and were significantly different from the EHA group in *each domain* except friendship quality and school culture. The same-sex attracted group (SSA) had significantly less positive results than the EHA group in four domains: psychological functioning, parental relationships, victimization, and neighborhood quality. These results are consistent with previous research in suggesting that com-

parisons with heterosexual youth may be most negative and substantive for youth reporting bisexual attractions, behavior, or orientation (Eisenberg 2001; Eisenberg and Wechsler 2003; Freedner et al. 2002; Galliher et al. 2004; Rotheram-Borus et al. 1999; Russell et al. 2001a,b; Udry and Chantala 2002).

An important distinction also can be drawn between comparisons involving the EHA group versus the non-EHA groups, and comparisons among the three non-EHA groups. Mean group differences among the MHA, BSA, and SSA groups were *non-significant* in each developmental domain we examined. It appears, therefore, that the primary difference among the four sexual attraction groups was between youth reporting exclusively heterosexual attraction and individuals reporting any degree of same-sex attraction.

There were several important exceptions to the the rank order of group means in which results were most positive for the EHA group, followed by the MHA group and then the SSA and BSA groups. Two developmental domains showed small and non-significant mean differences among the four sexual attraction groups: friendship quality and school climate. The results for school climate contrast with reports by Galliher et al. (2004) and Rostosky et al. (2003) who found that lower levels of a sense of school belonging were reported by sexual minority adolescents. School belonging in these studies measured adolescents’ personal feelings of being respected and valued at school. In contrast, the school climate scale included in our study assessed students’ perceptions of their school being a fair, supportive, and academically oriented environment for all students. It is not clear, therefore, whether there might have been significant differences between the groups if a more personal assessment of their school experiences had been used in the present study (Elze 2003; Murdock and Bolch 2005).

The similarity in friendship quality found between the four sexual attraction groups is consistent with findings reported by Diamond and Lucas (2004). It may be that, regardless

of the nature of their sexual attraction, adolescents choose friends who are accepting and supportive. Alternatively, for some adolescents, the quality of their friendships may not be affected because they have not made their friends aware of their same-sex attraction. These possibilities merit further investigation. Present findings suggest, however, that friendships may act as a positive context for adolescents irrespective of the nature of their sexual attraction.

A unique aspect of the present study was the examination of developmental strengths and assets in relation to same-sex attraction. Results from the assets-based analyses highlighted the presence of several positive features in the lives of adolescents reporting varying types of non-heterosexual attraction. Because these analyses identified youth at the “top end” of the continuum for a given developmental domain, they were less affected than the mean group comparisons by negative skews. That is, the group contrasts based on the presence or absence of developmental assets highlighted a different part of each developmental continuum and, unlike the mean group comparisons, were less likely to be influenced by any differential skews across groups at the lower ends of the distributions. Consequently, results based on the asset-level contrasts provided insights that were not apparent in the mean group comparisons.

The relative odds of being classified at the asset-level did not differ significantly among sexual attraction groups in four developmental domains: academic orientation, friendship quality, victimization, and school culture. Two of these domains (friendship quality and school culture) were identified in the mean group comparisons as potential positive features. In both cases, the asset-based comparisons confirmed this expectation. Two additional domains in which substantial proportions of adolescents reported particularly positive levels regardless of the nature of their sexual attractions included academic orientation and (lack of) peer victimization. It may be that some students had not experienced victimization from their peers, and had not experienced their school context as negative because they had yet to be open with their friends about (or act on) their non-heterosexual attractions. More optimistically, however, it seems reasonable to expect that a certain proportion of youth will achieve academic success and have strong educational aspirations regardless of the nature of their sexual attraction. Further, the presence of academic and peer-related strengths in a substantive proportion of youth in each of the sexual attraction groups may be a positive indicator of thriving and/or resilience. These possibilities deserve further empirical attention.

School context and peer-related domains present opportunities for success and strengths among youth characterized by exclusively heterosexual attraction *as well as* adolescents reporting some type of non-heterosexual status. Together, developmental factors such as these may comprise a critical foundation upon which other strengths and assets could be

fostered and developed. Although asset-related intervention and health promotion efforts have been described in the mainstream adolescent development literature on positive youth development (e.g., Leffert et al. 1998; Scales et al. 2003), such programs will likely prove to be equally critical to promoting developmental success and resilience in the lives of youth reporting some form of non-heterosexual status.

Consistent with the notion of successful development proposed by Baltes and colleagues (Baltes 1997; Baltes et al. 1999), the mean group comparisons and the assets-based analyses provided a joint examination of both desirable and undesirable adolescent outcomes. These approaches were complementary, but not redundant. Rather, identification of developmental assets highlighted particularly positive results for the non-EHA groups in two domains (academic orientation and peer victimization) in which the pattern of mean group differences suggested worse outcomes compared to the EHA group. Further, drawing on the ecological model of human development proposed by Bronfenbrenner (1979), the present study examined a range of ecological contexts spanning intrapersonal, interpersonal, and environmental domains. Although far from exhaustive, the eight domains we examined provide a rich picture of both difficulties *and* strengths in the lives of youth reporting non-heterosexual attractions compared with their heterosexual peers.

In each of the analyses, we examined whether participant sex moderated the patterns of similarities and differences among sexual attraction groups. Overall, no support was found for the hypothesis derived from Savin-Williams and Diamond (2000) in which youth of the same sex in the exclusively heterosexual group were expected to be more similar to each other than to youth of the opposite sex in the non-heterosexual groups. Indeed, the sex-based interactions were non-significant in each of the statistical comparisons. Although some studies have examined differences between heterosexual and non-heterosexual groups separately for male and female adolescents (Austin et al. 2004a,b; Bontempo and D’Augelli 2002; Eisenberg 2001; Remafedi et al. 1998; Russell et al. 2002), future research is needed based on *a priori* hypotheses concerning why differences between males and females may vary as a function of same-sex attraction or (more generally) sexual orientation. A potential candidate includes the degree of psychosexual development (e.g., self-awareness of sexual attraction, sexual behaviors) which has been shown to differ among male and female adolescents (e.g., Rosario et al. 1996; Savin-Williams and Diamond 2000).

Limitations

We used a dimensional rating of the degree of same-sex attraction. Recent research has emphasized sexual attraction as a key psychological aspect in conceptualizing sexual

orientation (e.g., Bogaert 2003; Diamond 2003; Friedman et al. 2004). Further, previous research has indicated that same-sex attraction may precede self-awareness of, or self-identification with, non-heterosexual orientation labels such as gay, lesbian, or bisexual (e.g., Gonsiorek 1995; Savin-Williams and Diamond 2000). Given the wide age range of the present sample (with participants as young as 14 years old), we believe this approach was appropriate. Nonetheless, the degree of same-sex attraction is not a sufficient indicator of sexual orientation. Present results may have differed had an alternative criterion been used to define non-heterosexual status such as self-identified sexual orientation or same-sex sexual behavior (e.g., Bontempo and D'Augelli 2002).

Although the present study examined same-sex attraction in relation to multiple developmental contexts, the reasons *why* some youth reporting same-sex attraction are characterized by relatively less positive self-reports in some domains were not addressed. Indeed, because results were based on a cross-sectional design, we can provide no evidence for the causal status of same-sex attraction. Longitudinal research is needed to understand better how the lives of youth reporting varying types of same-sex attraction unfold over time in relation to their developmental ecologies.

Although the sample was large and spanned an entire school district, the experiences of the youth in the study sample may be unique to the sample; generalizability to samples from other regions and political climates is cautioned. It is also unclear whether youth reporting at least some degree of same-sex attraction were representative of all youth with same-sex attractions in their high schools. More generally, without knowing about other aspects of their sexuality (e.g., sexual behavior, self-identified orientation), the extent to which youth reporting same-sex attraction represent all non-heterosexual youth in their schools is unknown.

Finally, present results were based exclusively on self-reports. We believe such a strategy to be an appropriate means to assess youths' subjective perceptions and evaluations of their lives. Nonetheless, given the potential biases of self-reports, future work could extend the present results by including other perspectives and sources of information on developmental status, including reports from parents, friends, and school records.

Conclusions

A large body of research has documented that youth reporting some form of non-heterosexual status face a variety of risks and difficulties in their personal and interpersonal lives. The approach taken in the current study provides an important extension to the extant research by examining the relation of same-sex attraction to various facets of successful adolescent development based on mean group comparisons and developmental assets across multiple life domains.

This study identified several positive developmental features that characterized substantial proportions of youth reporting various types of *non*-heterosexual attraction, including: intrapersonal strengths (academic orientation), interpersonal resources (friends), and environmental conditions (school culture). Thus, desirable and undesirable features coexist in the lives of adolescents and both merit consideration regardless of the nature of youths' sexual attraction. By examining multiple developmental factors and identifying developmental strengths, the approach illustrated in the present study provides a framework for integrating the study of non-heterosexual youth into contemporary, mainstream adolescent research.

Despite several positive trends in our findings concerning similarities in group means and in terms of developmental strengths in each of the sexual attraction groups, results also indicate that the struggles of some youth reporting some types of same-sex attraction may extend into multiple areas of their lives. Programs aimed at assisting these youth will likely need to take a broad-based approach to intervention in order to manage these complex issues. Relationships with friends and peers as well as academic and school-related factors may represent supportive contexts and areas of strength, and may assist in developing resilience among youth reporting some form of non-heterosexuality. Together, these factors may comprise a critical scaffolding upon which other strengths and assets can be fostered in lives of heterosexual and non-heterosexual youth alike.

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