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Differences in Parental Monitoring Components and Their Associated Health Indicators Between Sexual-Minority and Heterosexual Girls

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Abstract

Our study sought to assess whether parental monitoring and their associations with health behaviors differed for heterosexual girls compared to sexual minority girls (girls who identified as lesbian or bisexual, endorsed same-sex attraction, or had same-sex romantic or sexualpartners). We analyzed three components of parental monitoring—adolescent disclosure, parental solicitation, and parental knowledge—between heterosexual and sexual minority girls. We also tested if the associations between these three constructs and adolescent relationship abuse, suicidality, heavy drinking, binge drinking, anxiety symptoms, and depressive symptoms were different for heterosexual girls compared to sexual minority girls. Sexual minority girls were less likely to disclose accurately to their parents their location and activities and perceived their parents asked less and knew less about their location and activities than did heterosexual girls. Heterosexual girls who reported higher levels of adolescent disclosure were less likely than were sexual minority girls to report suicidality and anxiety symptoms. Additionally, heterosexual girls who reported higher levels of parental knowledge were also less likely than were sexual minority girls to report anxiety and depressive symptoms. These findings suggest that parental monitoring may not be as protective for sexual minority girls as it is for heterosexual girls.

Keywords

familial relationships; mental health; sexual minorities; parental monitoring; substance use

Introduction

Sexual minority youth—youth who identify as gay, lesbian, or bisexual, endorse same-sex attraction or have same-sex romantic or sexual partners—are at greater risk for adverse health outcomes such as victimization, suicidality, substance use, anxiety, and depressive symptoms compared to their heterosexual peers (Kann et al., 2011; Liu & Mustanski, 2012; Marshal et al., 2011; Marshal et al., 2008). Several professional organizations interested in reducing health care disparities—such as the Institute of Medicine (2011)—have called for research to determine what drives these differential outcomes between sexual minority and heterosexual youth. Meyer's Minority Stress Theory (2003) posits that stigma and discrimination against sexual minorities are stressors that create a hostile social environment that may ultimately lead to health problems, contributing to these health disparities.

Sexual minority girls (SMGs) are a subpopulation of sexual minority youth who are particularly vulnerable and deserve special focus. First, disparities in substance use (Marshal et al., 2008; Talley, Hughes, Aranda, Birkett, & Marshal, 2014) and peer victimization (Friedman et al. 2011) are more pronounced between SMGs and heterosexual girls compared to disparities seen between sexual minority and heterosexual boys. Second, girls may respond to stress differently than do boys, which may indicate a different pathway to maladaptive behaviors. They tend to have greater investment in interpersonal relationships than do boys (Rose & Rudolph, 2006) and have a stronger physiological response to social stress than do boys (Rudolph, Troop-Gordon, & Granger, 2010). This is particularly important in parent-child relationships in SMGs, in which negative parental attitudes against sexual minorities can be a source of significant stress. Third, there is a general societal concern about adolescent girls' engagement in maladaptive behaviors (Pettit, Keiley, Laird, Bates, & Dodge, 2007), such as substance use, as these behaviors are considered more normative in boys (Mash & Barkley, 2002). Therefore, parents may be more invested in parenting girls to prevent these maladaptive behaviors. Moreover, society views same-sex attraction in girls as a violation of feminine gender norms (Doyle, Rees, & Titus, 2015); thus there may be differences in how parents raise SMGs compared to how parents raise heterosexual girls. Because parents can serve a protective role against adverse health outcomes in all youth, it is important to determine if such differential in parenting behaviors exists, and if such differences can help explain poor health outcomes among SMGs.

Most research on parent-child relationships in sexual minorities focuses on the affective dimension of parenting—behaviors characterized by acceptance versus rejection of a child's sexual orientation. This appears to be a critical component in parent-child relationships in sexual minority youth. Previous research has demonstrated strained parent-child relationships in this population (Darby-Mullins & Murdock, 2007), with mothers reporting decreased affection for their sexual minority children, sexual minority youth reporting less secure attachment to their parents (Rosario, Reisner, Corliss, Wypij, Frazier, et al., 2014) and perceiving less support from their parents than do heterosexual youth (Needham & Austin, 2010). This decrease in the affective dimension of parenting may have a devastating impact on the health outcomes of sexual minority youth. For example, sexual minority youth whose parents reacted negatively to their same-sex sexual orientation are more likely to

report substance use, depressive symptoms, and suicidality (Ryan, Huebner, Diaz, & Sanchez, 2009). Conversely, positive parental reactions to their child's same-sex sexual orientation are associated with fewer mental health problems (Floyd, Stein, Harter, Allison, & Nye, 1999; Ryan, Russell, Huebner, Diaz, & Sanchez, 2010).

There is little research on the correlation between the instrumental dimensions of parenting—behaviors characterized by controlling versus granting freedom to the child—and the health outcomes of sexual minority youth. Research on this dimension of parenting, in particular parental monitoring, in sexual minority youth is now emerging. Scholars define parental monitoring as “a set of correlated parenting behaviors involving attention to and tracking of the child's whereabouts, activities, and adaptations” (Dishion & McMahon 1998, p. 61). Previous research had used parental knowledge of their child's activity to measure parental monitoring (Racz & McMahon, 2011). Seminal work by Stattin and Kerr in 2000 challenged this approach. They argued that although parental knowledge is correlated with reductions in risky behaviors in adolescents, they also argued that it is the *end product* of a process that involves both parents and children. Therefore, it is not a type of parenting behavior. They hypothesized that parental knowledge requires three sources: “adolescent disclosure,” “parental solicitation,” and “parental control.” They defined adolescent disclosure as the degree to which adolescents spontaneously inform their parents about their behavior outside their direct supervision. They defined parental solicitation as a process in which parents seek information about their child's whereabouts, friends, and behavior. This is distinct from parental control, in which parents set and communicate limits on their child's behavior. In their study of Swedish teenagers, adolescent disclosure was a stronger predictor of parental knowledge and conduct problems than were parental solicitation and parental control. The investigators concluded that parental monitoring involves a set of three distinct components leading to parental knowledge: adolescent disclosure, parental solicitation, and parental control; thus, this behavior is both a parent and an adolescent activity (Stattin & Kerr, 2000). In this paper, we distinguish parental knowledge separately from behaviors that *lead* to parental knowledge (i.e., parental solicitation and adolescent disclosure).

Although Stattin and Kerr (2000) and others have established a strong link between higher levels of parental monitoring and fewer conduct disorders (Racz & McMahon, 2011), this important parenting behavior may also be associated with reductions in other adverse health outcomes. Higher levels of parental monitoring are also associated with a lower risk of being a victim of adolescent relationship abuse (ARA; East et al., 2010), a lower likelihood of reporting suicidality (King et al., 2001), a lower likelihood of reporting drinking alcohol in the past 12 months (Beck, Boyle, & Boekeloo, 2004), a reduction in anxiety symptoms (Murphy, Marelich, Herbeck, & Payne, 2009), and a reduction in depressive symptoms (Hamza & Willoughby, 2011). Among sexual minority youth, one study examined the relationship between parental monitoring and adverse health outcomes in a sample of 257 young men who have sex with men ages 14 to 19 years old. They used a six-item scale that measured the degree of parental knowledge, solicitation, control and disclosure from the perspective of the participant and combined them into a mean score. They found that higher mean scores were associated with higher rates of risky sexual behaviors—such as multiple sex partners and sex without a condom—in young men who have sex with men. This was

contrary to the authors' hypothesis that higher levels of parental monitoring would be associated with reductions of these risky behaviors. They thus concluded that parental monitoring might not be protective for this population (Thoma & Huebner, 2014). As the study sample only had young men who have sex with men, they could not make direct comparisons in these relationships to young heterosexual men. Additionally, because they did not distinguish parental knowledge from its sources (solicitation, control, and disclosure), it was difficult to determine which among these behaviors played a role in the increase in risky sexual behaviors.

The Present Study.

We intend to add to the existing literature on parental monitoring of sexual minority youth by focusing on SMGs, determining if the process of parental monitoring and knowledge is different for SMGs compared to heterosexual girls, and making direct comparisons of the correlation of parental monitoring and adverse health indicators between SMGs and heterosexual girls. Combining a modified interpretation of parental monitoring proposed by Stattin and Kerr (2000) and Minority Stress Theory (2003), this study has several hypotheses. The first hypothesis is that SMGs will disclose their behaviors less accurately to their parents than will heterosexual girls. We also hypothesize that SMGs will perceive less parental solicitation and less parental knowledge than heterosexual girls do. Additionally, because previous research suggests sexual minority youth may experience increased conflict with their parents (Rosario, Reisner, Corliss, Wypij, Calzo, et al., 2014), we hypothesize that same-sex sexual orientation will moderate the relationships between two potential sources of perceived parental knowledge (adolescent disclosure and perceived parental solicitation) and perceived parental knowledge itself. Furthermore, we hypothesize that same-sex sexual orientation will also moderate the relationships among parental monitoring and knowledge and health outcomes disparities often quoted in the literature of sexual minority youth: adolescent relationship abuse (ARA), suicidality, heavy drinking, binge drinking, anxiety symptoms, and depressive symptoms. (Marshal et al. 2013; McCauley et al. 2014; Garofalo et al. 1999; Marshal et al. 2011; Marshal et al. 2012b). Finally, as part of an exploratory analysis, we will test if the above relationships are different between SMGs whose parents know about their sexual orientation (i.e. being out to parents) versus SMGs who are not out to their parents.

Method

Participants

We recruited girls seen by adolescent medicine specialists for routine or consultative medical care at two urban adolescent medicine clinics in Ohio and Pennsylvania. Patients who were 14 – 19 years old, able to read and understand English at the 6th grade level, and came for a clinical visit regardless of health status or presenting problem were eligible to participate. To recruit a large enough sample of SMGs to accomplish the study's goals, we implemented a purposive sampling strategy using confidential information provided by adolescent medicine patients to identify same-sex attracted youth. This strategy allowed us to have balanced comparison groups across age, race, and sexual minority status. Informed consent was obtained from all individual participants greater than 17 years old. We obtained

parental consent and youth assent for participants 14 – 17 years old. Institutional Review Boards at the University of Pittsburgh and at Nationwide Children's Hospital approved this study. Participants completed mental health and psychosocial health questionnaires on a computer in a private room at a research facility.

Demographic Data

We collected demographic data from the participants including age, race, and eligibility for free lunch as a proxy for socioeconomic status (SES). We asked participants to self-identify as White, Black or African-American, Asian American, American Indian/Alaskan Native, Native Hawaiian, Other, or Pacific Islander. We categorized any response besides "White" as "Non-White." Among non-whites, 86% (n=128) identified as Black, African-American, or biracial.

Assessments and Measures

Parental monitoring.—We sought to assess the two components of parental monitoring described by Stattin et al. (2000): adolescent disclosure and parental solicitation. To assess for adolescent disclosure, we asked a one-item question "In the past six months, how often did you lie to your parents about where you were or who you were with?" Responses ranged from 0=never, 1=once, 2=two times 3=three or four times, and 4=five or more times. We reverse-coded the responses to be consistent with the theory that this component of parental monitoring is inversely correlated with externalizing and internalizing behaviors. To assess "parental solicitation," we used a scale developed by Fletcher et al. (2004) to capture any monitoring efforts that the participants may have perceived. We asked participants if their parents *tried* to know who their friends were, where they were at night, how they spent their money, what they did during their free time, and where they were most afternoons after school. Responses ranged from 0 = didn't try, 1 = tried rarely, 2 = tried sometimes 3 = tried most of the time, and 4 = tried all the time, calculated as a mean score of the five items (Cronbach's $\alpha = 0.86$).

Parental knowledge.—To assess parental knowledge, we used a scale developed by Brown et al. (1993) asking participants to rate how much their parents *really* knew who their friends were, where they were at night, how they spent their money, what they did during their free time, and where they were most afternoons after school. Responses ranged from 0 = didn't know, 1 = rarely knew, 2 = sometimes knew 3 = knew most of the time, and 4 = knew all the time. We took the mean scores of the five items (Cronbach's $\alpha = 0.88$).

Same-sex sexual orientation.—As recommended by Badgett and Goldberg (2009), we identified SMGs by asking participants about their sexual identity, sexual attractions, and dating and sexual behaviors. For sexual identity, we asked participants to choose a description of what best fits how they feel about themselves. Responses included "100% heterosexual (straight)," "mostly heterosexual," "bisexual," "mostly gay" and "100% homosexual (gay)." For sexual attraction, we asked how much participants were attracted to girls in the last 6 months. Responses include "not at all sexually attracted to girls," "a little bit attracted to girls," "somewhat attracted to girls," "very much attracted to girls," and "extremely attracted to girls." For sexual behaviors, we asked participants the sex of current

and past sexual and romantic partners. We considered any participant who endorsed an identity other than “100% heterosexual,” who endorsed any attraction to the same sex, or who indicated a current or past same-sex sexual or romantic partner as a SMG.

Disclosure of same-sex orientation to parents.—We asked only SMGs whether they told any of the following people about their same-sex sexual orientation: “mother,” “father,” “other adult relative,” “male sibling,” “female sibling,” “male friend,” “female friend,” “school teacher,” “school counselor,” “health professional,” or “other.” We considered participants as being out if they informed at least one parent of their same-sex sexual orientation.

Adolescent relationship abuse.—We assessed for ARA using modified questions from previous intimate partner violence intervention studies (Miller et al., 2010). We asked participants if, in the last 6 months, they had: a) been hit, pushed, slapped, choked or otherwise physically hurt by someone they were dating or going out with, b) a partner who insisted on sex with them when the participant did not want to, and c) a partner who threatened or forced the participant to have sex with them. Responses ranged from “I’ve never been in a relationship,” “No this has not happened to me,” or “Yes, this has happened to me.” We considered any participant who chose “yes, this has happened to me” to any of these three items as having experienced ARA.

Suicidality.—To assess for suicidality, we asked participants if they ever thought about or tried to commit suicide. Responses were 0 = never, 1 = it was a brief passing thought, 2 = I have had a plan at least once to kill myself, but did not try it, 3 = I have had a plan at least once to kill myself and really wanted to die, 4 = I have attempted to kill myself, but did not want to die, and 5 = I have attempted to kill myself, and really hoped to die. We considered any responses other than “never” as evidence for history of suicidality. We dichotomized this variable as 1) the variable was highly skewed (1.67) with median score being close to one, and 2) the rate of suicidal ideation in this sample is within the range of rates seen in other studies (Faulkner & Cranston, 1998; Lewinsohn, Rohde, & Seeley, 1996).

Alcohol misuse.—We asked two questions to identify those who drink heavily and those who binge drink. To identify heavy drinkers, we asked how often in the past 6 months the participant had gotten drunk or “very high” on alcohol. To identify binge drinkers, we asked how often a participant drank 5 or more alcoholic drinks when they were drinking in the last 6 months. Responses ranged from 0 = not at all, 1 = one to two times, 2 = three to five times, 3 = once a month, 4 = two to three times a month, 5 = once a week, 6 = two to three times a week, 7 = four to six times a week, 8 = once a day, 9 = twice a day, and 10 = several times a day. We considered any participant who responded anything besides “none at all” to be a heavy drinker. We considered any participant who responded anything besides “none at all” to be a binge drinker. We dichotomized these responses because they were highly skewed (2.20 for heavy drinking and 2.17 for binge drinking). Furthermore, we believe that any episode of heavy or binge drinking is high-risk for adolescents because such behavior is a major factor in physical and sexual violence, suicide, and unintentional injuries (Faden & Goldman, 2004). Our dichotomization of the substance use outcomes is also consistent with

previous studies on substance use in adolescents (Marshall et al., 2013; Marshall, Molina, & Pelham, 2003; Marshall et al., 2012a).

Anxiety and depression—We used the Screen for Child Anxiety Related Disorders (SCARED) Scale, a 38-item self-report questionnaire that screens for anxiety, to assess for anxiety symptoms (Cronbach's $\alpha = 0.93$). Per Birmaher et al. (1999), we categorized a cut-off score of 25 and above as high anxiety symptoms and scores below 25 as low anxiety symptoms. We assessed for depressive symptoms in our participants using the Center for Epidemiologic Studies Depression Scale (CES-D) (Cronbach's $\alpha = 0.80$). Per recommendations from Radloff (1991), we categorized a cut off score of 16 and above as high depressive symptoms and scores below 16 as low depressive symptoms in our participants.

Data Analysis

We used a χ^2 test (and Fisher's exact test for cell sizes less than 5) to test differences in demographic data and dichotomous health indicators between SMGs and heterosexual girls. Because the adolescent disclosure score was highly skewed (-2.01), we ran a Wilcoxon signed-rank test to compare the differences in this variable between SMGs and heterosexual girls. Perceived parental solicitation and parental knowledge had a more normal distribution, so we ran a Student's *t*-test to compare the differences of these two variables between SMGs and heterosexual girls.

To test if same-sex sexual orientation moderated the relationship between the sources of perceived parental knowledge (adolescent disclosure and perceived parental solicitation) and perceived parental knowledge itself, we ran several linear regression models. In the first set of models, one model used adolescent disclosure as the predictor variable for perceived parental knowledge. Another model used perceived parental solicitation as the predictor variable for perceived parental knowledge. We adjusted for age, race, SES, and site for both models. In the second set of models, we added the terms "adolescent disclosure x SMG" to the model assessing the relationship between adolescent disclosure and parental knowledge and the term "perceived parental solicitation x SMG" to the model assessing the relationship between parental solicitation and parental knowledge, with all models adjusted for age, race, SES, and study site. As the sample size was not large enough to establish power to detect small interaction effects (Aiken, West, & Reno, 1991), we designated a $p < 0.10$ to identify potentially meaningful interaction terms.

To test if same-sex sexual orientation moderated the relationships between the individual components of parental monitoring and several adverse health indicators, we first ran several cross-sectional multivariate logistic regression main effects models using adolescent disclosure, perceived parental solicitation, and perceived parental knowledge variables as individual predictor variables and ARA, suicidality, heavy drinking, binge drinking, high anxiety symptoms, and high depressive symptoms as individual outcome variables, with adjustments for age, race, SES, and study site. We then ran several logistic regression models adding several interaction terms. We added the term "adolescent disclosure x SMG" to the models assessing the relationships between adolescent disclosure and the adverse

health indicators. We added the term “perceived parental solicitation x SMG” to the models assessing the relationships between perceived parental solicitation and the adverse health indicators. Finally, we added the term “perceived parental knowledge x SMG” to the models assessing the relationships between perceived parental knowledge and adverse health indicators. Again, as the sample size was not large enough to establish power to detect small interaction effects (Aiken et al., 1991), we designated a $p < 0.10$ to identify potentially meaningful interaction terms. We tested the goodness-of-fit for all logistic regression models using the Hosmer-Lemeshow method (Hosmer & Lemeshow, 2000). If the model with the interaction term was statistically or marginally significant, we calculated the effect of these parental monitoring variables for each comparison group using a linear combination of estimators. We handled missing data using complete case analysis. We performed all analyses using STATA v13.

Results

Demographics and Adverse Health Indicators

Table 1 summarizes the proportion of SMGs who endorsed same-sex sexual attraction, sexual behavior with same-sex partners, and a sexual identity other than completely heterosexual. Seventy-seven percent of SMGs endorsed more than one measurement of sexual orientation, with almost half of SMGs endorsing all three measurements. A small number endorsed either identity only ($n = 7$), behavior only ($n = 5$), or attraction only ($n = 2$). Table 2 summarizes demographic and dichotomous adverse health indicators between SMGs and heterosexual girls. SMGs comprised 48% of the sample ($n = 118$). No significant differences emerged for race, education, SES, or study site comparing SMGs to heterosexual girls. SMGs were slightly older than heterosexual girls, but this was marginally significant (17.34 ± 1.26 versus 17.04 ± 1.59 ; $t = -1.67$, $df = 223$, $p = 0.05$). No statistically significant differences emerged for ARA, heavy drinking, and binge drinking between SMGs and heterosexual girls. There was a higher proportion of SMGs reporting suicidality (Pearson $\chi^2 = 31.29$, $p < 0.001$), high anxiety symptoms (Pearson $\chi^2 = 4.34$, $p = 0.04$), and high depressive symptoms compared to heterosexual girls (Pearson $\chi^2 = 12.38$, $p < 0.001$).

Differences in Parental Monitoring between SMGs and Heterosexual Girls

Table 3 summarizes the differences in the components of parental monitoring between SMGs and heterosexual girls. SMGs had lower adolescent disclosure scores than did heterosexual girls (Wilcoxon signed-rank $z = 2.08$, $p = 0.04$). SMGs also had lower perceived parental solicitation scores ($t = 2.10$, $df = 232$, $p = 0.02$) and lower perceived parental knowledge scores than did heterosexual girls ($t = 5$, $df = 212$, $p < 0.001$).

Relationships between Components of Parental Monitoring

There was a statistically significant correlation between adolescent disclosure and perceived parental knowledge and between perceived parental solicitation and perceived parental knowledge ($R^2 = 0.20$, $F(5, 211) = 10.45$, $p < 0.001$, 95% CI [0.20, 0.37] and $R^2 = 0.22$, $F(7, 209) = 11.43$, $p < 0.001$, 95% CI [0.25, 0.45], respectively); however, the interaction terms added to both models were non-significant ($\beta = 0.10$, $t = 1.21$, $p = 0.23$, 95% CI [-0.06,

0.27] for “disclosure x SMG” and $\beta = 0.07$, $t = 0.75$, $p = 0.45$, 95% CI [- 0.12, 0.27] for “solicitation x SMG”).

Relationships between Components of Parental Monitoring and Adverse Health Indicators

Table 4 summarizes the relationships between the components of parental monitoring and adverse health indicators. In the main effects models, there was a statistically significant association between perceived parental knowledge and suicidality (Adjusted Odds Ratio, AOR = 0.57, 95% Confidence Interval, CI, [0.42, 0.79]). There were no statistically significant associations between perceived parental solicitation and ARA, suicidality, heavy drinking, binge drinking, or high depressive symptoms, and there were no statistically significant associations between adolescent disclosure and ARA, heavy drinking, binge drinking, or high depressive symptoms. There were also no statistically significant associations between perceived parental knowledge and ARA, heavy drinking, or binge drinking.

Our interaction analysis showed the following: the relationships between adolescent disclosure and suicidality ($p = 0.07$), between adolescent disclosure and high anxiety symptoms ($p = 0.04$), between perceived parental solicitation and high anxiety symptoms ($p = 0.05$), between perceived parental knowledge and high anxiety symptoms ($p = 0.04$), and between perceived parental knowledge and high depressive symptoms ($p = 0.05$) in heterosexual girls were different than they were for SMGs. To calculate the AOR for each comparison group, we ran post-estimation calculations using a linear combination of estimators. There was a statistically significant association between adolescent disclosure and suicidality in heterosexual girls only (AOR = 0.70 95% CI [0.50, 0.99] versus AOR = 1.06 95% CI [0.80, 1.41]), and there was a statistically significant association between adolescent disclosure and high anxiety symptoms for heterosexual girls only (AOR = 0.67 95% CI [0.49, 0.92] versus AOR = 1.06 95% [0.80, 1.40]). There was an association between perceived parental solicitation and a lower AOR of high anxiety symptoms in heterosexual girls compared to SMGs, but this did not approach statistical significance (AOR = 0.82 95% CI [0.56, 1.20] and AOR = 1.37 95% [0.97, 1.95]). There was also a statistically significant association between perceived parental knowledge and high anxiety symptoms for heterosexual girls only (AOR = 0.53 95% CI [0.31, 0.90] versus AOR = 1.07 95% CI [0.72, 1.59]), and there was a statistically significant association between perceived parental knowledge and high depressive symptoms in both heterosexual girls and SMGs, with both relationships associated with lower likelihood of reporting high depressive symptoms (AOR = 0.26 95% CI [0.13, 0.50] for heterosexual girls and AOR = 0.56 95% CI [0.36, 0.88] for SMGs).

We graphically represented these interactions by plotting the predicted probabilities of suicidality, high anxiety symptoms, and high depressive symptoms calculated from the logistic regression equations (Vittinghoff, 2012) from the four significant interaction models against the adolescent disclosure and perceived parental knowledge variables. For every one unit increase in the adolescent disclosure score, there was an increase in the proportion of SMGs who reported suicidality (figure 1A) and high anxiety symptoms (figure 1B) while there was a decrease in the proportion of heterosexual girls who reported those two health

indicators. For every increase of mean perceived parental knowledge score, there was an increase in the proportion of SMGs who reported high anxiety symptoms versus a decrease in proportion of heterosexual girls who reported high anxiety symptoms (figure 1C). For every one unit increase in mean perceived parental knowledge score, the proportion of SMGs who reported high depressive symptoms did not decrease as steeply as the proportion of heterosexual girls who reported high depressive symptoms (1D).

We explored whether other factors may play a role in the relationship between components of parental monitoring and between parental monitoring and adverse health outcomes. We first wanted to explore whether being out to parents impacted these relationships. Among our sample of SMGs ($n = 118$), 34 % ($n = 40$) were out to their parents. We then reran our analyses among SMGs only using “out to parents” as a moderator. The relationships between the components of parental monitoring and between parental monitoring and adverse health outcomes were no different between SMGs who were out and SMGs who were not out to their parents (results available upon request).

We also explored whether assessing the domains of sexual orientation separately may impact the relationships between the components of parental monitoring and between parental monitoring and adverse health indicators. We ran separate interaction models using same-sex sexual identity, same-sex sexual attraction, and same-sex sexual behavior as moderating variables, respectively. These analyses resulted in findings similar to the ones we found using our composite measurement of sexual minority status. Specifically, these distinct measurements of sexual minority status did not moderate the relationships between the components of parental monitoring. Additionally, in our analysis of the relationship between the components of parental monitoring and adverse health indicators, we found the following differences: 1) same-sex behavior did not moderate the relationship between adolescent disclosure and anxiety symptoms; 2) same-sex behavior did moderate the relationship between parental solicitation and suicidality; 3) sexual minority identity did moderate the relationship between parental knowledge and ARA and suicidality; and 4) same-sex attraction and same-sex behavior did moderate the relationship between parental knowledge and suicidality (results available upon request).

Discussion

The first aim of our study was to determine whether the relationship between the sources of parental knowledge (i.e. adolescent disclosure and parental solicitation) and parental knowledge itself is different in SMGs compared to heterosexual girls. The second aim of our study was to determine whether the association between parental monitoring and knowledge and ARA, suicidality, heavy drinking, binge drinking, anxiety, and depressive symptoms were different among SMGs compared to heterosexual girls. Our findings showed that the relationship between the sources of parental knowledge and parental knowledge itself is no different in SMGs compared to heterosexual girls. However, parental monitoring and knowledge appear to be less protective against adverse health indicators among SMGs compared to heterosexual girls. The general adolescent health literature indicates that parental monitoring may be protective against many adverse health indicators, but our study

suggests that parental monitoring may not be as protective for SMGs as it is for heterosexual girls.

In our analysis, SMGs had lower adolescent disclosure scores than did heterosexual girls. This suggests that SMGs are less likely than heterosexual girls to disclose accurately their behaviors to their parents. Although our measurement of adolescent disclosure did not capture the exact information the participant did or did not disclose to their parents, we speculate that SMGs may have compelling reasons to disclose less accurate information about their behaviors to their parents. For example, they may avoid disclosure of any location and activity that is suggestive of their same-sex sexual orientation, such as joining a gay-straight alliance at school. This is a significant concern for many sexual minorities, because many fear a negative reaction from their parents (Wisniewski, Robinson, & Deluty, 2010) or have experienced verbal and physical abuse from their parents once their parents became aware of their same-sex sexual orientation (Jadwin-Cakmak, Pingel, Harper, & Bauermeister, 2015).

Additionally, our analysis showed that SMGs had lower perceived parental solicitation and knowledge scores than did heterosexual girls. This suggests that SMGs are less likely than are heterosexual girls to believe that their parents are seeking information about their behavior, and it suggests that SMGs are less likely to believe that their parents actually know their behavior outside their immediate supervision. We hypothesize that these beliefs may be reflective of the quality of parent-child relationship in SMGs. There is a positive association between these two components of parental monitoring and a supportive and positive parent-child relationship (Fletcher et al. 2004). Nevertheless, many sexual minority youth perceive lower support from their parents (Needham & Austin, 2010) and, therefore, may perceive lower parental solicitation and knowledge.

In contrast to the differences in parental monitoring components between SMGs and heterosexual girls, sexual orientation did not moderate the relationship between adolescent disclosure and perceived parental knowledge. This suggests that for both SMGs and heterosexual girls, the more they disclose to their parents, the more likely they believe their parents actually know about their behavior. Research suggests that adolescents are selective of what and how much they tell their parents to maintain privacy (Kerr, Stattin, & Engels, 2008). This may be highly relevant for SMGs, who may not want to disclose anything that may be suggestive of their same-sex sexual orientation. Furthermore, there is consistent evidence that adolescent disclosure is positively correlated with parental knowledge (Willoughby & Hamza, 2011). Other factors, however, play a role in altering this correlation, such as a supportive parent-child relationship (Laird, Pettit, Bates, & Dodge, 2003). As previously mentioned, sexual minority youth may perceive lower parental support than do heterosexual youth (Needham & Austin, 2010); therefore, we propose that the quality of the parent-child relationship in SMGs is a more plausible moderator of the relationship between adolescent disclosure and perceived parental knowledge.

Sexual orientation also did not moderate the relationship between parental solicitation and parental knowledge. This suggests that for both SMGs and heterosexual girls, the more they perceive that their parents are seeking information about their behavior, the more likely they

believe that their parents will actually know about their behavior. It appears that sexual orientation does not change the relationship between parental solicitation and parental knowledge. Therefore, we hypothesize another factor—such as parental acceptance of a child's sexual orientation—may be moderating this relationship. Many sexual minority youth may view certain parenting behaviors as rejecting of their same-sex sexual orientation (Ryan et al., 2009). These behaviors may be subtle, such as blaming the child for anti-gay victimization. We suspect that many SMGs may view parental solicitation as a subtle form of rejection because they may perceive that their parents are tracking their behaviors to prevent them from engaging in same-sex relationships. Nevertheless, in the context of a supportive parent-child relationship, this may not be the case, especially if parents are accepting and supportive of their child's same-sex sexual orientation. In other words, SMGs who have good relationships with their parents may perceive parental solicitation as less invasive and rejecting than do SMGs who have poor relationships with their parents. This positive perception of parental solicitation may then be correlated with higher perceptions of parental knowledge, but this requires further investigation to confirm our hypothesis.

Despite the fact that sexual orientation did not moderate relationships between the sources of perceived parental knowledge and perceived parental knowledge itself, we have evidence to support the hypothesis that the relationships between the components of parental monitoring and some adverse health indicators were different between SMGs and heterosexual girls. For heterosexual girls, higher levels of adolescent disclosure were associated with reduced odds of suicidality and anxiety symptoms, but not for SMGs. Furthermore, unlike heterosexual girls, higher levels of perceived parental knowledge were not associated with reduced odds of anxiety and depressive symptoms among SMGs. Several studies in the general youth population have demonstrated that higher levels of parental monitoring are associated with lower suicidality (King et al., 2001), anxiety symptoms (Bacchini, Miranda, & Affuso, 2011), and depressive symptoms (Hamza & Willoughby, 2011). Disclosure to parents and subsequent parental knowledge may provide opportunities for parents to support or counsel their children (Hamza & Willoughby, 2011), which may then reduce suicidality, anxiety symptoms, and depressive symptoms. There may be several possibilities for why this is not the case for SMGs. One possibility is that parents may choose to dismiss or ignore their child's mental health problems if they are rejecting of their child's sexual orientation. Alternatively, SMGs may view any attempt by their parents to counsel them as irrelevant, because they may perceive that their parents are approaching their mental health problems from a heteronormative point of view. Finally, there may be other confounding factors, such as bullying at school, which may contribute to mental health problems in SMGs despite higher levels of parental monitoring and knowledge.

Although our analysis showed differences in parental monitoring and knowledge between SMGs and heterosexual girls, our exploratory analysis showed that there were no differences in parental monitoring components between SMGs who were out to their parents versus SMGs who were not. Furthermore, parental awareness of a child's same-sex sexual orientation did not moderate the relationships between the sources of perceived parental knowledge and perceived parental knowledge itself. Parental awareness of a child's same-sex sexual orientation also did not moderate the relationships between the individual components of parental monitoring and many adverse health indicators of interest. This

suggests that parental knowledge of their child's sexual orientation does not impact the relationship between the components of parental monitoring and between parental monitoring and adverse health indicators. Thoma and Huebner's (2014) study also suggested that being out to parents had little impact on parental monitoring. In their study, sexual minority boys who were out to at least one of their parents engaged in risky sexual behaviors despite higher levels of parental monitoring. Nevertheless, bias towards the null hypothesis in these exploratory analyses may exist partly due to low statistical power.

The findings from this study bring us closer to understanding how parental monitoring influences the health of sexual minority youth. To date, there is only one other study that examined the role of parental monitoring in the health of this high-risk population. Thoma and Huebner (2014) found that among young men who have sex with men (YMSM), there was an association between higher parental monitoring and parental awareness of a participant's sexual orientation and higher rates of unprotected sexual intercourse. This informative study speculated that parental monitoring may not be as protective for YMSM compared to their heterosexual peers. Our study builds upon this seminal work in three ways. First, our study shows analogous associations between components of parental monitoring and some health indicators in SMGs, with higher levels of parental monitoring associated with a higher proportion of SMGs reporting some adverse health indicators. This has not been done previously in SMGs. Second, there appear to be discrepancies between SMGs and heterosexual girls in their perceptions of the components of parental monitoring. Finally, we found differential associations between the components of parental monitoring and several adverse health indicators comparing SMGs to heterosexual girls.

Assessing the protective effects of specific parental practices such as parental monitoring is critical to inform potential interventions. There are several interventions that train parents in specific skills like parental monitoring that can reduce symptoms of anxiety and depression, delinquent behaviors, and substance abuse among participants (Hawkins, Kosterman, Catalano, Hill, & Abbott, 2005; Stanton et al., 2004). However, many of these interventions assume that parental monitoring functions similarly between sexual minority and heterosexual youth. Thoma and Huebner's study (2014) and our study suggest that parental monitoring alone may not be protective against many adverse health indicators for sexual minority youth; however, one must use caution in concluding from our study that same-sex sexual orientation itself alters the relationship between the components of parental monitoring and adverse health indicators. Many sexual minority youth experience trouble with parent-child relationships (Bouris et al., 2010). We thus propose that future studies on parental monitoring of SMY should focus more on the acceptance and support of the child's same-sex sexual orientation instead of the child's same-sex sexual orientation itself. Such research may guide the development of interventions aiming to address the unique challenges parents face when monitoring their sexual minority children.

Limitations and Future Directions

The strength of this study is our purposive sampling strategy in a clinical setting. This allowed us to directly compare SMGs versus heterosexual girls in the associations between the components of parental monitoring and several important adverse health indicators. The

majority of research on sexual minority youth relies on convenience sampling from LGBT venues (Bouris et al., 2010). Convenience sampling in this population may overestimate maladaptive behaviors (Binson, Blair, Huebner, & Woods, 2007) and adverse health outcomes such as gay-related victimization (Elze, 2007). Furthermore participants recruited via convenience sampling tend to be more open about their sexual orientation (Hershberger, Pilkington, & D'Augelli, 1997), which may lead to biased results. In contrast, we measured sexual orientation using a composite of sexual identity, same-sex sexual attraction, and same-sex sexual behavior. The composite measurement makes the results of this study generalizable.

There are several limitations to keep in mind. First and foremost, parental monitoring experiences may not be universal to subgroups of SMGs. A girl who is attracted to the same sex, but does not endorse same-sex behavior or a sexual minority identity, may have a different experience with parental monitoring than does a girl who identifies as a lesbian or bisexual. In this study, we found significant overlap of SMGs who endorsed more than one domain of sexual orientation (i.e. a girl who was attracted to the same-sex also endorsed same-sex behavior and a lesbian or bisexual identity). Because of this significant overlap, it is difficult to draw conclusions from the interaction analyses using only one of the measurements of sexual orientation. Additionally, there was a small number of SMGs who endorsed only one of the three measurements. Thus, any interaction analysis using only one of the measurements of sexual orientation will have low statistical power. Future research should recruit a large enough sample of girls using these various measures for sexual minority status to examine whether parental monitoring operates differently between these subgroups of SMGs.

Additionally, although we postulated many factors that may explain our findings, this study is a cross-sectional analysis; therefore, we could not make causal inferences between the components of parental monitoring and adverse health indicators in SMGs. Future studies should examine the temporal and bidirectional associations between the components of parental monitoring and adverse health indicators in SMGs using a longitudinal design. Furthermore, although we do have a higher proportion of SMGs compared to other studies, we were still underpowered to detect interaction effects (i.e. group differences). We thus used a p -value < 0.10 to detect meaningful interaction effects in our study. Nevertheless, the vast majority of statistically significant interaction effects had p values less than 0.05. Future studies that make direct comparisons between sexual minority and heterosexual youth should use larger samples to detect important interaction effects.

Another limitation is our measurement of being out to parents, for which girls only had to indicate disclosing their sexuality to one parent to be coded as being out. One potential explanation for our findings that the relationship between parental monitoring components and adverse health indicators did not vary by being out to parents may be due to only one parent being aware of the adolescent's sexual orientation. We suspect that it may be difficult for a parent to monitor effectively their sexual minority child and, at the same time, keep the child's sexual orientation secret from the other parent. Future studies should analyze how being out to both parents or to one parent only can differentially impact the effectiveness of parental monitoring in preventing adverse health outcomes.

Additionally, the survey relied on the participants' *perceptions* of parental solicitation and knowledge. Data from parents' reports of monitoring their sexual minority children may better elucidate potential pathways for protection against adverse health indicators. Future studies in this population should obtain parental reports of their monitoring behavior. Nevertheless, there is some evidence to suggest that adolescent perception of parental solicitation and parental knowledge may be a good proxy for parental perceptions of solicitation and knowledge (Stattin & Kerr, 2000).

Moreover, our cohort consisted of older adolescents (14 – 19 years old). One may argue that parental monitoring may be less relevant for this age group compared to elementary and middle school children, as they have achieved greater independence from their parents than have younger adolescents. We did adjust for age in our analysis and recent studies suggest that the correlation between parental monitoring and lower reports of many high-risk behaviors may extend beyond the high school years (Napper, Hummer, Chithambo, & LaBrie, 2015).

Although we attempted in our analysis of parental monitoring to be as consistent as we could with the interpretation established by Stattin and Kerr (2000), we did not use the same measures. We only had one item asking if our participants lied to their parents about their behavior. We recognize that there are various strategies that adolescents employ to control what or how much parents know about their behaviors or friends (Tilton-Weaver et al., 2010). These strategies include: 1) not telling their parents any information (i.e. nondisclosure), 2) avoiding parents so parents do not have the opportunity to solicit information about their behavior, 3) outright lying, or 4) selective disclosure of information to parents (i.e. secrecy) (Finkenauer, Engels, & Meeus, 2002; Smetana, 2008). Because of the stigma surrounding same-sex attraction and behavior, SMGs may be more likely to use these strategies to prevent their parents from knowing about their same-sex sexual orientation or behaviors. It is therefore important for future studies to examine these various strategies of adolescent disclosure among SMGs. Ultimately such research can identify ways to encourage SMGs to disclose their behaviors to their parents.

Additionally, our items on parental solicitation were non-specific and asked participants on their perception of their parents seeking information about their behavior. Other measures on parental solicitation are more specific on the behaviors parents used to obtain this information and the type of information solicited. Such behaviors include parents talking to the parents of their child's friends (Guilamo-Ramos, Jaccard, & Dittus, 2010). Additionally, SMGs may perceive parental solicitation in two ways depending on their relationship with their parents. For SMGs whose parents are rejecting of their sexual orientation, parental solicitation may be a form of punishment or an effort by parents to dissuade SMGs from engaging in same-sex behavior. On the other hand, for SMGs whose parents are accepting, parental solicitation may be an over-reaction by parents to protect their children from a homophobic environment. Our measurement of parental solicitation neither captures the specific behaviors parents use to obtain information or parental motivation for monitoring their children's behaviors. Information on these two factors may be crucial in developing interventions aimed at improving parental monitoring to be relevant to the psychosocial needs of sexual minorities. Nevertheless, despite the non-specificity of our parental

solicitation measures, this approach has consistently shown to have a strong correlation between adolescent disclosure and parental knowledge (Guilamo-Ramos et al., 2010) and adverse health outcomes (Fletcher et al., 2004; Hamza & Willoughby, 2011; Willoughby & Hamza, 2011). Our results prompt additional research on the specific behaviors and attitudes that may be useful for parents of sexual minorities.

Finally, the data set did not have any questions about another important component of parental monitoring: parental control (i.e., parents creating rules and environments that would make it difficult for their children to go to locations or to engage in activities without parental knowledge). Future studies should also explore if same-sex sexual orientation moderates the relationship between parental control and knowledge, and if same-sex sexual orientation moderates the relationship between parental control and adverse health indicators.

Conclusions

Our study highlights significant differences in adolescent disclosure and in perceptions of parental solicitation and knowledge between SMGs and heterosexual girls. Furthermore, there is a significant disparity between SMGs and heterosexual girls in the association between adolescent disclosure, parental solicitation, and parental knowledge and adverse health indicators—with increased adolescent disclosure, perceived parental solicitation, and perceived parental knowledge associated with decreased odds of several adverse health indicators in heterosexual girls only. This suggests that some components of parental monitoring may not be as protective for SMGs as they are for heterosexual girls. These results add to the emerging literature on disparities in the characteristics of parent-child relationships among sexual minority youth. Ultimately, these findings can inform potential interventions that address the unique challenges parents face in rearing their sexual minority children.

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Figure 1.

Interactions between parental monitoring variables (x – axis) by sexual orientation on the predicted proportion of participants who reported these adverse health indicators (y – axis): A) suicidality, B) and C) high anxiety symptoms, and D) high depression symptoms. Models adjusted for age, race, education, socioeconomic status, and study site. *Note.* SMG = sexual minority girl. * $p < 0.10$. ** $p < 0.05$

Table 1

Proportion of SMGs endorsing all three, only two, or only one measurement of sexual orientation

Sexual orientation measurement	n(%) ^{a,b}
Endorsed identity, attraction, and behavior	58 (49.2)
Endorsed identity and attraction only	26 (22.0)
Endorsed identity and behavior only	2 (1.69)
Endorsed attraction and behavior only	5 (4.24)
Endorsed identity only	7 (5.93)
Endorsed attraction only	2 (1.69)
Endorsed behavior only	5 (4.24)

Note: SMG = sexual minority girl.

^aTotal SMG n = 118

^bCumulative prevalence will not equal 1 due to missing data

Table 2

Binary Demographic Variables and Adverse Health Indicators of Girl Participants 14 – 19 Years Old by Sexual Orientation

Variable	Heterosexual (n, %)	SMG (n, %)
Total sample (n) ^a	128 (52.0)	118 (48.0)
Age	17.04 ± 1.59	17.34 ± 1.26
Site ^b		
Pittsburgh	65 (50.8)	57 (48.3)
Columbus	63 (49.2)	61 (51.7)
Race ^b		
White	55 (43.0)	43 (36.4)
Non-white	73 (57.0)	75 (63.6)
SES ^b		
Higher SES	42 (36.2)	32 (30.8)
Lower SES	74 (63.8)	72 (69.2)
ARA ^b		
No	32 (82.1)	35 (79.6)
Yes	7 (18.0)	9 (20.5)
Suicidality ^b		
No	96 (75.6)	47 (40.5)
Yes	31 (24.4)	69 (59.5) ^{**}
Heavy Drinking ^b		
No	19 (36.5)	23 (33.3)
Yes	33 (63.5)	46 (66.7)
Binge Drinking ^b		
No	32 (61.5)	37 (53.6)
Yes	20 (38.5)	32 (46.4)
Anxiety Symptoms ^b		
Low	85 (66.4)	63 (53.4)
High	43 (33.6)	55 (46.6) [*]
Depression Symptoms ^b		
Low	96 (75.0)	62 (53.5)
High	32 (25.0)	54 (56.6) [*]

Note.SMG = sexual minority girl; SES = socioeconomic Status; ARA = adolescent relationship abuse.

^a Row total.

^b Column total.

*
 $p < 0.05$.

**
 $p < 0.001$

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Table 3

Components of Parental Monitoring by Sexual Orientation

Component	Heterosexual	SMG
Adolescent Disclosure ^a	3.16 (± 0.11)	2.83 (± 0.13) *
Perceived Parental Solicitation	2.62 (± 0.10)	2.32 (± 0.11) *
Perceived Parental Knowledge	3.09 (± 0.07)	2.48 (± 0.10) **

Note. SMG = sexual minority girl.

^aVariable highly skewed, Wilcoxon signed-rank test performed instead

*
 $p < 0.05$.

**
 $p < 0.01$

Table 4

Logistic Regression Main Effects Models and Conditional Logistic Regression Models by Sexual Orientation

Variable	Main Effects AOR [95% CI] ^a	Heterosexual AOR [95% CI] ^a	SMG AOR [95% CI] ^a
<u>Adolescent Disclosure</u>			
ARA	0.75 [0.48, 1.18]	—	—
Suicidality ^b	—	0.70 [0.50, 0.99] [*]	1.06 [0.80, 1.41]
Heavy Drinking	0.99 [0.74, 1.31]	—	—
Binge Drinking	0.89 [0.67, 1.17]	—	—
Anxiety Symptoms ^b	—	0.67 [0.49, 0.92] [*]	1.06 [0.80, 1.40]
Depressive Symptoms	0.85 [0.69, 1.04]	—	—
<u>Parental Solicitation</u>			
ARA	0.77 [0.45, 1.31]	—	—
Suicidality	0.87 [0.68, 1.12]	—	—
Heavy Drinking	0.98 [0.68, 1.41]	—	—
Binge Drinking	0.99 [0.69, 1.41]	—	—
Anxiety Symptoms ^b	—	0.82 [0.56, 1.20]	1.37 [0.97, 1.95]
Depressive Symptoms	0.80 [0.62, 1.03]	—	—
<u>Parental Knowledge</u>			
ARA	0.63 [0.36, 1.11]	—	—
Suicidality	0.57 [0.42, 0.79] ^{**}	—	—
Heavy Drinking	0.88 [0.58, 1.35]	—	—
Binge Drinking	0.78 [0.51, 1.18]	—	—
Anxiety Symptoms ^b	—	0.53 [0.31, 0.90] [*]	1.07 [0.72, 1.59]
Depressive Symptoms ^b	—	0.26 [0.13, 0.50] ^{**}	0.56 [0.36, 0.88] [*]

Note. AOR = adjusted odds ratio; SMG = sexual minority girl; CI = confidence interval; ARA = adolescent relationship abuse;

^a Adjusted for age, race, SES, and site.

^b Interaction $p = 0.10$ —conditional model by sexual orientation reported instead.

^{*} $p < 0.05$.

^{**} $p < 0.001$