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Gender differences in relations among perceived family characteristics and risky health behaviors in urban adolescents

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Abstract

Background—Research regarding the role of gender in relations between family characteristics and health risk behaviors has been limited.

Purpose—To investigate gender differences in associations between family processes and risk-taking in adolescents.

Methods—Adolescents ($N = 249$; mean age = 14.5 years) starting their first year at an urban high school in the northeastern U.S. completed self-report measures that assessed family characteristics (i.e., parental monitoring, family social support, family conflict) and health behaviors (i.e., tobacco use, alcohol use, marijuana use, sex initiation) as part of a prospective, community-based study. Multivariate logistic regression models were used to investigate gender differences in associations between the family characteristics and health behaviors.

Results—Among males, higher levels of perceived parental monitoring were associated with lower odds of using tobacco and having ever engaged in sex. Among females, higher levels of perceived parental monitoring were associated with lower odds of marijuana use, alcohol use, and having ever engaged in sex. However, in contrast to males, among females (a) higher levels of perceived family social support were associated with lower odds of alcohol use and having ever engaged in sex and (b) higher levels of perceived family conflict were associated with higher odds of marijuana use and having ever engaged in sex.

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Ethical approval: All procedures performed involving human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent: Parental consent and adolescent assent were obtained for all individual participants included in the study.

Conclusion—Family processes were more strongly related to health behaviors among adolescent females than adolescent males. Interventions that increase parental monitoring and family social support as well as decrease family conflict may help to protect against adolescent risk-taking, especially for females.

Keywords

Adolescent; risk-taking; gender; parental monitoring; social support; family conflict

Introduction

Adolescence is a developmental period marked by significant biopsychosocial changes (1,2). Important life transitions occur, including increasing independence and establishment of health (and risk) behaviors (3). Although adolescents are capable of abstract thought, metacognition, and deductive reasoning (4), the brain's cognitive control system is still developing (5). Neural mechanisms in the developing brain lead to heightened responsiveness to both reward and emotional cues, while adolescents' self (e.g., behavioral and emotional) regulation capacities remain relatively less mature (6). Health risk behaviors, such as substance use and sexual risk-taking, are commonly initiated during adolescence (3).

As health and risk behavior patterns established early in life can progress into adulthood, early initiation of unhealthy behaviors places individuals at risk for both acute and long-term health consequences. For example, initiation of substance use in adolescence has been associated with an increased likelihood of injuries, violence, substance dependence, mental health problems, and chronic diseases and conditions later in life (7–9). Earlier sexual debut is associated with an increased risk of later sexual risk-behaviors, inconsistent contraceptive use, sexually transmitted infections, unintended pregnancy, as well as experiencing and perpetrating intimate partner violence (10–12).

Age of initiation of substance use and sexual behaviors differs by gender. Most research indicates that substance use (e.g., alcohol, marijuana, and tobacco use) is initiated by male adolescents earlier than female adolescents (7,9). Males are also more likely to report an earlier sexual debut than females (10,12). Furthermore, gender differences in age of sexual debut also differ by race/ethnicity, with more substantial gender differences occurring among Black/African American and Hispanic youth than White or Asian/Pacific Islander youth (10). Although the majority of research indicates that males initiate substance use and sexual behaviors earlier than females, three recent studies reveal a more nuanced view of these differences. Specifically, two studies used the National Longitudinal Study of Adolescent Health (Add Health) dataset to assess gender difference in substance use and sexual behavior trajectories from early adolescence to the early thirties. They found that females reported higher levels of substance use and numbers of sexual partners early in adolescence (~ages 12–14) compared to males, whereas males exhibited greater changes over time and higher levels of these risk factors by mid-adolescence (~ages 15–20) and early adulthood (ages 20+) (13,14). A third study, using data from the U.S. National Surveys on Drug Use and Health, supported the narrowing gender gap in substance use initiation. This study found

that females may be at higher risk of drinking initiation in early- to mid-adolescence (~ages 12–20) compared to males (15).

An important factor that influences the initiation of health risk behaviors among adolescents is the family environment (3,16). Research has shown that positive family processes, like parental monitoring and family social support, decrease risk-taking among adolescents (3), whereas negative family processes, like family conflict, often have the opposite effect (16). Parental monitoring is consistently linked with lower levels of risk behaviors, including substance use and sexual risk behaviors, and protects against early initiation (17–22). Although the beneficial effects of parental monitoring are well established (3), there may be gender differences in the impact of parental monitoring on risk-taking among adolescents. Specifically, a study of 692 adolescents in the 9th and 10th grade found that high perceived parental monitoring was associated with less alcohol use and more consistent condom use among males, whereas it was not associated with female's risk behaviors (23).

Another family characteristic associated with risk-taking in adolescents is perceived family social support. Adolescents who feel that they are connected with and supported by their family are more likely to delay sexual initiation and report lower levels of cigarette, alcohol, and marijuana use (3). Similar to parental monitoring, family social support may be differentially associated with decreased substance use by gender. For example, a study of 140 male and 131 female adolescents in middle school found that parental social support was negatively associated with substance use among males but no association was found between parental social support and females' substance use behaviors (24).

Higher levels of family conflict have been associated with earlier sexual debut and initiation of substance use (25–27). There is also evidence that the association between family conflict and risk behaviors among adolescents may differ by gender. Specifically, a study of 1,421 adolescents (ages 10–16) in the Chicago area found that family conflict was significantly associated with an increased risk for substance use disorders among females, but not among males (28).

Overall, research regarding the moderating role of gender in the relations between family characteristics and health risk behaviors has been limited. If health risks do differ by gender, part of the reason for that gender difference may involve disparate reactions to family processes by female and male adolescents. To explore this possibility, we assessed whether perceived family characteristics (i.e., parental monitoring, family social support, family conflict) are differentially associated with health risk behaviors (i.e., tobacco use, alcohol use, marijuana use, sex initiation) among female and male adolescents. Given previous research in this area (23,24,28), we hypothesized that male adolescents' risk behaviors would be negatively associated with perceived parental monitoring and family social support, whereas female adolescents' risk behaviors would be positively associated with perceived family conflict.

Methods

Participants and Procedures

Data for this study were collected as part of the first assessment in a prospective, community-based study of 250 adolescents (29,30). Adolescents were recruited from both school and community venues. To be included, participants had to be English speaking, entering or currently in the 9th grade, and attending one of four public high schools in a northeastern U. S. city. Parental consent and adolescent assent were obtained. Assessments were completed between August 2010 and May 2011 and included a paper-and-pencil survey. Participants received \$30 for the assessment. All procedures were approved by the Syracuse University Institutional Review Board.

Measures

Socio-demographics—Socio-demographic characteristics were assessed with standard formats and coded as follows: age (continuous); race/ethnicity (1, Black/African American; 0, other). The race/ethnicity coding was chosen because Black/African American adolescents composed a large proportion of the population from which our sample was drawn. The other category included American Indian/Native American, Asian, White/Caucasian, Native Hawaiian/Pacific Islander, and Latino adolescents.

Substance use—Tobacco and marijuana use questions were adapted from the Youth Risk Behavior Surveillance (YRBS) questionnaire (31,32). In two separate questions, participants were asked whether they had smoked a cigarette (even one puff) ($Kappa = .82$) or used chewing tobacco, snuff, or dip in the past month ($Kappa = .71$). Participants who responded yes to either were coded as using tobacco in the past month (yes, no). Participants were also asked if they used marijuana in the past month (yes, no) ($Kappa = .76$). The alcohol use question was adapted from the Monitoring the Future survey (33). Participants were asked how often they drank alcoholic beverages in the last month. Individuals who indicated that they drank alcoholic beverages 1 or more days in the past month were coded as using alcohol in the past month (yes, no).

Sexual behavior—In two separate questions, participants were asked if they had ever had oral or vaginal sex. Participants who indicated yes on either of these questions were coded as having had oral or vaginal sex in their lifetime (yes, no).

Family characteristics—An abbreviated version of the Parental Monitoring Scale (19,20,34) was used to measure *perceived parental monitoring*. Participants were asked to assess the degree to which their parents know where they are and who they are with. The four items included: “My parent(s) know where I am after school,” “If I am going to be home late, I am expected to call my parent(s),” “I tell my parent(s) who I am going to be with before I go out,” and “When I go out at night, my parent(s) know where I am.” Response options ranged from “never” (0) to “always” (4). Internal consistency was strong in the current sample ($\alpha = 0.82$). Mean scores were calculated with higher scores indicating increased perceived parental monitoring.

Perceived family social support was assessed using two questions from the family subscale of the Multidimensional Scale of Perceived Social Support (35). The items were preceded with the prompt, "Are there people in your life you feel you can turn to for help and understanding?" Specific items included, "I can talk to my family about my problems" and "My family really tries to help me." Response options ranged from "never true" (0) to "always true" (4). Internal consistency was good in the current study ($\alpha = 0.79$). Mean scores were calculated with higher scores indicating increased perceived family social support.

Perceived family conflict was assessed using the conflict subscale (9 items) of the Family Environment Scale (36). This subscale measures angry conflict within a family. Example items include, "We fight a lot in our family" and "Family members sometimes get so angry they throw things." Participants were asked to indicate whether each statement was "True" (1) or "False" (0). Items with positive wording (e.g., "Family members hardly ever lose their tempers") were reverse coded. Internal consistency was adequate ($\alpha = 0.65$). Scores were summed, with higher scores indicating more perceived family conflict.

Analyses

Analyses were restricted to participants who self-reported their gender ($n = 249$). To assess differences by gender in socio-demographics, substance use, sexual behavior, and family characteristics, we conducted chi-square and t -tests. To assess gender patterns in relations between family characteristics and risk behaviors, we fit multivariate logistic regression models stratified by gender. Each logistic regression model included one of the family characteristics (i.e., parental monitoring, family social support, family conflict) with one of the four risk variables (i.e., tobacco use, marijuana use, alcohol use, ever having oral or vaginal sex) as the outcome. Family characteristics were entered as continuous variables. Family characteristics were not simultaneously entered into models due to collinearity. To account for potential confounders, we adjusted logistic models for age and race/ethnicity. All analyses were conducted using Stata 12.1 (37).

Results

Characteristics of the sample are shown in Table 1. Participants were male ($n = 107$) and female ($n = 142$) adolescents between the ages of 13 and 17 years ($M = 14.5$; $SD = 0.73$). More than half of the sample self-identified as Black/African Americans (51%). Male participants were more likely to be Black/African American and report having ever had oral or vaginal sex. Female participants were more likely to report alcohol use in the past month. Tobacco and marijuana use did not differ by gender. Perceived family characteristics differed by gender; female participants reported higher levels of parental monitoring and family conflict and lower levels of family social support.

Parental monitoring was positively correlated with family social support ($r = 0.32$, $p < .001$) and negatively correlated with family conflict ($r = -0.26$, $p < .001$). Family social support was negatively correlated with family conflict ($r = -0.48$, $p < .001$). In the multivariate analyses, adjusted for age and race/ethnicity (Table 2), only perceived parental monitoring was associated with risk behaviors among male participants. Specifically, higher levels of

perceived parental monitoring were associated with lower odds of using tobacco and having ever engaged in oral or vaginal sex. Among female participants, higher levels of perceived parental monitoring were associated with lower odds of marijuana use, alcohol use, and having ever engaged in oral or vaginal sex. However, in contrast to males, among females higher levels of perceived family social support were associated with lower odds of alcohol use and having ever engaged in oral or vaginal sex. Also, among females only, higher levels of perceived family conflict were associated with higher odds of marijuana use and having ever engaged in oral or vaginal sex.

Discussion

Despite evidence that the prevalence of health risk behaviors among adolescents differs by gender (7,9,10,12–15,38), few studies have examined how gender differences may be related to youths' perceptions of family processes and environments. In this sample, only two of the four assessed risk behaviors were found to differ by gender. Females were more likely to report alcohol use in the past month, whereas males were more likely to report having engaged in oral or vaginal sex in their lifetime. Although most research indicates that males initiate both substance use and sexual behaviors earlier than females (7,9,10,12), present results suggest the possibility that early adolescent females may be more likely to engage in alcohol use than early adolescent males (14,15,39,40). It is possible that these alcohol initiation patterns among earlier adolescents are related to gender differences in pubertal timing and corresponding maturity levels (39,41). Developmental research investigating how gender, biology, and family processes interact to shape the emergence of substance use patterns over time is greatly needed.

Female participants also reported higher perceived levels of parental monitoring and family conflict and lower levels of family social support. These findings are consistent with the findings of other current studies (20,23,42,43). Increasing adherence to gender roles during adolescence may help to explain these patterns. For example, female adolescents may experience an increased proclivity towards interpersonal connectedness and concern for the welfare of others (4) which may cause them to be more sensitive to and observant of family processes. It also is possible that traditional gender norms lead parents to more closely monitor, control, and experience conflict with female than with male offspring (4). Additional research assessing gender differences in relations between parental monitoring and family conflict is warranted.

Research suggests gender difference in substance use and sexual behavior initiation by race/ethnicity, with more substantial gender differences occurring among Black/African American youth (10,38). In this sample, after controlling for age and race/ethnicity, more family characteristics were associated with risk-taking behaviors among female than among male adolescents. In males, perceived parental monitoring was the only family characteristic associated with any health risk behaviors. In females, however, all three perceived family characteristics exhibited the predicted associations with health risk behaviors. Generally, these results corroborate the limited body of research evidence on this topic, which indicates that adolescent male risk-taking is more likely to be associated with positive family

processes and adolescent female risk-taking is more likely to be associated with both positive and negative family processes (23,24,28). These associations merit further study.

The current findings should be interpreted in light of the study's limitations. First, given the cross-sectional design, it is not appropriate to infer causal relationships among the variables. Future studies exploring these relations would benefit from a longitudinal design. Second, we used a low, "single-puff" threshold to identify tobacco use. Although this is a conservative measure of tobacco use within the past month, a recent systematic review suggests that the transition from never-use to first-use is best measured using this marker, and that the optimal time to intervene on smoking initiation is prior to the "first puff" (44). Additionally, the question assessing gender in this study asked participants "Are you male or female?" Although we believe that participants' answers to this question likely indicated their current gender identity, one cannot exclude the possibility that answers may have indicated biological sex. Furthermore, the sexual behavior measure included questions about oral and vaginal sex, but did not include a measure of anal sex. Thus it is possible that it did not fully capture the sexual behaviors of participants who engaged in penetrative sex. Third, due to collinearity between the family characteristics, we were unable to assess the independent contributions of the various family processes. Future research might seek to tease apart the individual contributions of these family characteristics to risk-taking among female and male adolescents. Fourth, the internal consistency of the perceived family conflict scale ($\alpha = .65$) was suboptimal in this sample. Lastly, this study enrolled school-attending adolescents in a northeastern city. It is possible that these results will not generalize to out-of-school youth, or to those from other settings.

In conclusion, the perceived family context in which adolescents are raised plays an important role in their adoption of health risk behaviors. This may be particularly true for female adolescents. Although parental monitoring has been shown to be an effective preventive intervention for both male and female adolescents (3), it appears that other family processes, including family social support and conflict, may be important for females. Family interventions that increase parental monitoring and family social support, while decreasing family conflict, may serve as effective deterrents to risk-taking, particularly for female adolescents.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1

Sociodemographic, risk behaviors, and family characteristics of 249 urban adolescents by gender.

	Total	Gender		<i>p</i> -value
	<i>N</i> = 249	Female <i>n</i> = 142	Male <i>n</i> = 107	
	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	
Black/African American	119 (51)	57 (44)	62 (59)	.02
Tobacco Use (past month)	24 (10)	13 (9)	11 (10)	.75
Marijuana Use (past month)	47 (19)	25 (18)	21 (20)	.68
Alcohol Use (past month)	55 (22)	38 (27)	16 (15)	.03
Sex Initiation (lifetime)	99 (40)	48 (34)	51 (48)	.03
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>p</i> -value
Age	14.5 (0.7)	14.4 (0.7)	14.6 (0.8)	.06
Parental Monitoring (0–4)	3.3 (0.8)	3.4 (0.8)	3.2 (0.8)	.03
Family Social Support (0–4)	3.0 (1.0)	2.9 (1.1)	3.2 (0.9)	.02
Family Conflict (0–9)	4.1 (2.1)	4.4 (2.3)	3.6 (2.1)	.01

Note. Chi-square and *t*-tests were conducted on all categorical and continuous variables, respectively; *M* = mean; *SD* = standard deviation.

Table 2

Relations between family characteristics and risk behaviors among 249 adolescents by gender.

	Tobacco Use	Marijuana Use	Alcohol Use	Sex Initiation
	AOR (95% CI)	AOR (95% CI)	AOR (95% CI)	AOR (95% CI)
Males (n =107)				
Parental monitoring	0.41 (0.18–0.95)	0.68 (0.36–1.28)	0.51 (0.23–1.10)	0.39 (0.21–0.72)
Family social support	0.56 (0.27–1.13)	0.83 (0.49–1.43)	0.84 (0.47–1.51)	0.79 (0.51–1.24)
Family conflict	1.29 (0.89–1.85)	0.94 (0.73–1.21)	1.05 (0.81–1.37)	1.14 (0.94–1.37)
Females (n = 142)				
Parental monitoring	0.62 (0.32–1.18)	0.42 (0.25–0.72)	0.58 (0.36–0.92)	0.52 (0.31–0.86)
Family social support	0.68 (0.39–1.19)	0.74 (0.48–1.13)	0.58 (0.39–0.85)	0.63 (0.43–0.93)
Family conflict	1.37 (0.99–1.88)	1.29 (1.02–1.62)	1.20 (1.00–1.46)	1.26 (1.04–1.53)

Note. AOR = Adjusted Odds Ratio; CI = Confidence Interval; AOR adjusted for age and race/ethnicity; Bold AORs are significant at $p < .05$.