



## Parent–child communication and substance use among adolescents: Do father and mother communication play a different role for sons and daughters?

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### ABSTRACT

The purpose of this study was to investigate gender-specific variations in the associations between communication with father and mother, cigarette smoking, alcohol drinking and marijuana use in male and female adolescents. Cross-sectional data were collected from a national sample of 1308 tenth graders who participated in the 2005/06 U.S. HBSC. Outcome variables were self-reported substances used in the past 30 days. Logistic regression analyses controlling for race/ethnicity, family structure and socioeconomic status showed that the association of mother and father communication with adolescent substance use varied by substance and gender. Among sons, father communication was protective against marijuana use and mother communication was protective against smoking. Neither father nor mother communication was protective against substance use by daughters. Research is needed to understand gender-specific differences in correlates of adolescent substance use and the implications for prevention and intervention.

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### 1. Introduction

Parent–child communication is a potentially modifiable protective factor of adolescent substance use (DeVore & Ginsburg, 2005). Substantial literature indicates that greater frequency and quality of general parent–child communication are negatively associated with adolescent substance use (Kafka & London, 1991; Stoker & Swadi, 1990). For instance, Ackard, Neumark-Sztainer, Story, and Perry (2006) found that perceived difficulty talking to parents about problems is associated with increased risk of substance use in both boys and girls. Based on children's self-reports, Cohen, Richardson, and LaBree (1994) suggested that the amount of time parents spend with their children and the frequency of parent–child communication are both associated with reduced risks for tobacco onset and alcohol use in the past month. Consistent with these findings, enhancing parent–child communication is a common target in substance use interventions for adolescents (Beatty, Cross, & Shaw, 2008; Kosterman, Hawkins, Spoth, Haggerty, & Zhu, 1997; Litrownik et al., 2000; Shortt, Hutchinson, Chapman, & Toumbourou, 2007).

Despite the well-established inverse association between parent–child communication and adolescent substance use, gender-specific differences in this relationship have received limited attention. It is important to address this gap in research because recent trend analyses suggest that the gender gap in substance use outcomes such as smoking (Erguder, Soydal, Ugurlu, Cakir, & Warren, 2006; Hammond, 2009) and

alcohol use (Keyes, Grant, & Hasin, 2008; Pritchard & Cox, 2007) is narrowing in younger cohorts. Amaro, Blake, Schwartz, and Flinchbaugh (2001), for example, demonstrated the relevance of gender for substance use prevention research by reviewing gender differences in risk factors for adolescent substance use, and recommended the development of substance use interventions that target female adolescents. Similarly, Kumpfer, Smith, and Summerhays (2008) suggested that many existing substance use prevention programs are not sensitive to the specific needs of females. Thus, they recommended the development of gender-specific programs for females which focus on promoting family bonding, communication and supervision, as well as acknowledging the crucial roles of body image, depression and social assertiveness. Taken together, these findings indicate increasing recognition of the need to understand gender-specific factors associated with substance use.

Because parent–child communication is an important interpersonal construct that is reflective of the parent–child relationship, it may serve as a protective factor that is especially relevant to female adolescents (Razzino et al., 2004; Yeh, Chiang, & Huang, 2006). Choquet, Hassler, Morin, Falissard, and Chau (2008) found that parental control and parental emotional support were more strongly related to substance use outcomes in girls than in boys. Based on data from a longitudinal sample in Oregon, Tildesley and Andrews (2008) found that the effect of growth over time in parent alcohol use on growth in children's intentions to use alcohol was mediated by parental monitoring/supervision in girls only. These studies point to the importance of gender in the association between parent–child communication and adolescent substance use.

While existing research has considered how interpersonal and family factors might be associated with substance use differentially in

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male and female adolescents, few studies have examined whether fathers and mothers have unique influences on adolescent substance use or whether these effects are gender specific. It is known that fathers are more likely to be seen as less effective, involved and significant than mothers in the context of family relationships (Stoker & Swadi, 1990; Williams & Kelly, 2005). Moreover, mothers were found to communicate with their children more openly than fathers (Rosnati, Lafrate, & Scabini, 2007). Consistent with these findings, Ackard et al. (2006) demonstrated that more girls than boys felt unable to talk to their father about problems, whereas boys and girls felt equally comfortable talking to their mother about problems. Based on these findings, it is of interest to delineate how fathers and mothers may play different roles in the association between parent–child communication and adolescent substance use in their sons and daughters.

In the substance use literature, findings regarding gender-matching between parental variables and adolescent substance use outcomes are sparse. Ashley et al. (2008) reported that mother cigarette smoking was more strongly associated with cigarette smoking in daughters than in sons. Similarly, Patock-Peckham and Morgan-Lopez (2006) found that when the parent was the same gender as the child, permissive parenting was directly related to impulsivity, a significant mediator of parenting effects on drink control. The same authors also found that perceptions of having an authoritarian father were positively associated with higher levels of neuroticism in males only, where neuroticism was directly linked to alcohol problems and pathological reasons for drinking and indirectly linked to alcohol use (Patock-Peckham & Morgan-Lopez, 2009). However, it is unclear whether the protective effect of parent–child communication varies by the gender of the parent and that of the adolescent.

Most studies of associations between parent–child communication and substance use have focused on either cigarette smoking or alcohol drinking as adolescent substance use outcomes (e.g., Beatty, Cross, & Shaw, 2008), and few have considered marijuana use. When marijuana was included, it was often as part of an index of substance use, rather than as a separate outcome (e.g., Ackard et al., 2006). However, in one study parental influences on adolescent marijuana use were reported to be stronger than parental influences for alcohol use and similar to those for cigarette use (Choquet et al., 2008). Thus, it is of interest to include marijuana use as an outcome variable and to examine these outcome variables separately.

Few studies have used a nationally representative sample, limiting the generalizability of previous findings. For example, Pokhrel, Unger, Wagner, Ritt-Olson, and Sussman (2008) found that parental monitoring and parent–child communication were both negatively associated with cigarette, alcohol, and marijuana use in the past 30 days in a sample of Hispanic adolescents. However, it is unclear whether these patterns are comparable in other ethnic groups because the negative association between parenting and adolescent drug use was found to be stronger for Latino adolescents than for African and White adolescents in another study (Broman, Reckase, & Freedman-Doan, 2006). Therefore, it is also of interest to evaluate the association between parent–child communication and adolescent substance use in a nationally representative sample.

The purposes of the present study are as follows: (1) to examine the extent to which easy father communication and easy mother communication are associated with substance use in a diverse and nationally representative sample of male and female adolescents; (2) to investigate the unique associations among males and females; and (3) to evaluate whether these patterns are consistent across cigarette smoking, alcohol drinking and marijuana use. Based on previous studies, we first hypothesized that easy father and mother communication are protective for adolescent substance use, especially in females. Second, we expected that the mother–daughter dyad is the most protective pair as compared to mother–son, father–daughter and father–son dyads. Third, as inferred in a previous study on parental control and adolescent substance use (Choquet et al., 2008), we predicted that the inverse

relationship between parent–child communication and substance use is significant for tobacco and cannabis use but not for alcohol use. Clarifying gender-specific variations in the associations between parent–child communication and three important adolescent substance use outcomes could provide important information to guide prevention and intervention efforts, particularly among female adolescents (Schinke, Cole, & Fang 2009).

## 2. Methods

### 2.1. Participants

The Health Behavior in School-aged Children Survey (HBSC) is a World Health Organization international school-based survey designed to promote knowledge of adolescent health and risk behaviors, associated psychosocial correlates, and the context in which these behaviors occur (Currie et al., 2008). The survey is administered according to a standardized protocol which protects participants' anonymity. Our sample consisted of 1308 tenth graders who participated in the 2005/2006 U.S. HBSC survey. Students in Grades 6 to 10 were selected through weighted probability methods to ensure that the sample was representative of the U.S. school population. The survey was completed by 85% of eligible students (9016). Because of their low rates of substance use, sixth through ninth graders were excluded from analyses; 1559 10th graders were therefore eligible to be included in the sample. Additionally, we excluded 251 cases (16.1%) with missing data in any of our variables of interest including father and mother communication, and smoking, drinking or marijuana use in the past month, resulting in a study sample of 1308 adolescents. The selection of the current analytic sample is presented in Fig. 1.

### 2.2. Measures

#### 2.2.1. Substance use

For cigarette smoking and alcohol drinking, participants were asked two questions “On how many occasions (if any) have you done the following things (“smoked cigarettes”, “drunk alcohol”) in the last 30 days?” For marijuana use, participants were asked “Have you ever taken marijuana (pot, weed, hashish, joint) in the past 30 days?” Cigarette smoking, alcohol drinking and marijuana use had the same response scale with 7 categories (never; once or twice; 3–5 times; 6–9 times; 10–19 times; 20–39 times; 40 times or more). Because participant responses were skewed, with few reporting high levels of substance use, we dichotomized the categories into a binary variable (“never” vs. “once to 40 times or more”).

#### 2.2.2. Parent–child communication

Participants were asked separate questions about how easy it is for them to talk to their fathers, stepfathers, mothers and stepmothers

#### Recruitment and Attrition Information for the Current Analytic Sample

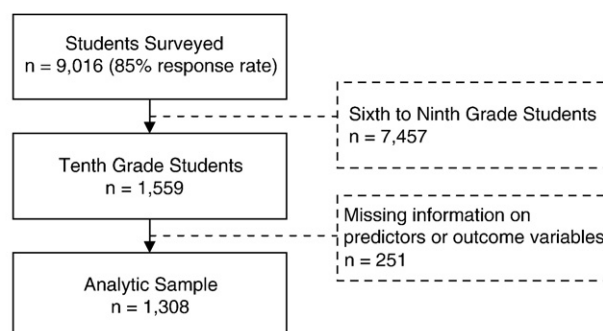


Fig. 1. Recruitment and attrition information for the current analytic sample.

about things that really bother them. This item did not measure substance use-specific parental communication but general parent-child communication. Five response choices were provided (0 = don't have or see this person; 1 = very difficult; 2 = difficult; 3 = easy; 4 = very easy). The highest response to the questions about ease of communication with fathers and stepfathers was selected to represent the level of "father communication." If a participant did not respond or responded "0" to both items, the resulting "father communication" variable was coded as missing. A similar process was used to compute the variable "mother communication." The resulting father and mother communication variables were dichotomized and recoded as "very easy/easy" and "difficult/very difficult".

### 2.2.3. Socioeconomic status

The Family Affluence Scale was used as a proxy for respondents' socioeconomic status (SES) (Currie et al., 2008). This validated measure of SES was composed of four questions. Participants were asked "How many computers does your family own?" "Do you have your own bedroom for yourself?" "Does your family own a car, van or truck?" and "During the past 12 months, how many times did you travel away on vacation with your family?" The resulting scale was further divided into tertiles, to reflect low, medium and high socioeconomic status.

### 2.2.4. Family structure

Participants were asked about the home where they live "all or most of the time" and were instructed to "check all the people who live there" from a list of family members including mother, father, stepmother or father's girlfriend, stepfather or mother's boyfriend, grandmother, grandfather, living in a foster care home and others. Because of the small proportion of single parent and other families, we constructed a two-category variable (two parents vs. single parent and other) used in all logistic regression analyses.

### 2.2.5. Ethnicity/race

Participants were asked "What do you consider your ethnicity to be?" (Hispanic or Latino vs. Not Hispanic or Latino) and "What do you consider your race to be?" (Black/African American, White, Asian, American Indian/Alaska Native, Native Hawaiian/Other Pacific Islander). Due to small sample sizes, American Indian/Alaskan Native, Asian, Hawaiian/Pacific Islander and other were combined as one group in all logistic regression analyses. Participants' reports were recoded as White, African American, Hispanic, and Other.

### 2.3. Statistical analysis

All statistical analyses were performed using SAS software version 9.1 (SAS Institute Inc., Cary, NC) and accounted for the complex sampling design of HBSC. Because we hypothesized gender differences in the associations between parent-child communication and adolescent substance use, we conducted the analyses separately for males and females. To summarize the characteristics of our study sample, we produced descriptive statistics (frequencies, percentages, mean, and standard errors) including all the demographic, independent and dependent variables of interest. To evaluate potential gender differences in all categorical variables, we conducted a series of chi-square tests. To test our three hypotheses, we conducted six weighted logistic regressions (three for males and three for females), with smoking, drinking and marijuana use as independent outcomes, and father and mother communication as the predicting variables. In these regression models, we controlled for demographic variables including ethnicity/race, socioeconomic status and family structure.

## 3. Results

### 3.1. Sample characteristics

Sample characteristics are presented in Table 1. Consistent with existing literature, a higher percentage of adolescents reported difficulty in communicating with father (53%) than with mother (33%). In analysis across gender, more males (53%) indicated ease in communicating with their fathers than females (41%),  $\chi^2 = 17.64$ ,  $p < 0.01$ . A comparable percentage of males (69%) and females (65%) reported easy communication with their mothers. No gender differences were observed in ethnicity/race, socioeconomic status and family structure. Prevalence rates of smoking, drinking and marijuana use in the past 30 days were 18.2%, 48.5%, and 17.5% respectively for the overall sample. No gender differences were observed in smoking or alcohol use. A slightly higher percentage of males (20%) used marijuana than females (15%),  $\chi^2 = 6.51$ ,  $p = 0.08$ , although this difference did not reach statistical significance. Approximately 79% of the sample came from a two-parent family. A description of responses to the question regarding family structure is presented in Table 2.

### 3.2. Communication with father and mother and substance use outcomes

Results of weighted logistic regressions for smoking, drinking and marijuana use are presented in Tables 3 to 5. These logistic regression analyses showed that father communication was not protective against smoking by either sons or daughters. Mother communication was protective against smoking by sons (OR = 0.61, 95% CI = 0.38–0.98) but not by daughters. Father communication and mother communication were not protective against alcohol drinking. Father

**Table 1**

Sample characteristics of 10th grade adolescents who reported their communication level with father and mother ( $N = 1308$ ).

Variables	Frequency (weighted percent) <sup>a</sup>		
	Overall	Males	Females
Gender			
Female	649 (49.77)		
Male	655 (50.23)		
Race/ethnicity			
White	695 (48.52)	349 (50.12)	343 (46.84)
African American	234 (16.50)	116 (15.85)	118 (17.17)
Hispanic	260 (24.35)	117 (22.62)	143 (26.10)
Other	114 (10.63)	66 (11.41)	48 (9.88)
Socioeconomic status			
Low	335 (26.38)	151 (23.65)	184 (29.13)
Moderate	659 (49.29)	332 (50.79)	325 (47.74)
High	308 (24.33)	164 (25.56)	143 (23.13)
Family structure			
Two parents	1031 (78.73)	509 (79.11)	520 (78.40)
Single parent and other	277 (21.27)	140 (20.89)	135 (21.60)
Father communication			
Easy	634 (46.85)	359 (52.67)	272 (41.06)
Difficult	674 (53.15)	290 (47.33)	383 (58.94)
Mother communication			
Easy	905 (66.60)	459 (67.81)	444 (65.47)
Difficult	403 (33.40)	190 (32.19)	211 (34.53)
Cigarette smoking in past 30 days			
Never	1036 (81.83)	517 (81.92)	516 (81.75)
At least once	272 (18.17)	132 (18.08)	139 (18.24)
Alcohol drinking in past 30 days			
Never	660 (51.47)	331 (52.94)	327 (49.99)
At least once	648 (48.53)	318 (47.06)	328 (50.01)
Marijuana use in past 30 days			
Never	1078 (82.49)	520 (79.77)	554 (85.14)
At least once	230 (17.51)	129 (20.23)	101 (14.86)
Age: mean (SD)	16.04 (0.42)	16.08 (0.45)	16.00 (0.40)

<sup>a</sup> Except for age where means and standard deviations were reported.

**Table 2**  
Description of family structure.

People living at home most of the time	Frequency (weighted percent)
Mother	1176 (89.73)
Father	882 (68.47)
Stepmother	55 (4.36)
Stepfather	190 (13.53)
Grandmother	70 (6.40)
Grandfather	31 (2.66)
Living in foster home or children's home	4 (0.22)
Living with someone else or somewhere else (including, for instance, brother, sister, uncle and aunt)	94 (6.52)

communication was protective against marijuana use by sons (OR = 0.38, 95% CI = 0.24–0.62) but not daughters.

**4. Discussion**

The present study is, to our knowledge, the first systematic evaluation of gender-specific variations in the association between parent–child communication and substance use outcomes in a diverse and nationally representative sample. The prevalence rates of tenth grade adolescent substance use in this study were 18.2% for smoking, 48.5% for alcohol use, and 17.5% for marijuana use. These estimates were comparable to those in other national surveys during the same period of time. For example, the prevalence rates of smoking, alcohol and marijuana use reported by 2005 Monitoring the Future were 23.2%, 47.0%, and 19.8% respectively (Johnston, O'Malley, Bachman, & Schulenberg, 2009).

We found inconsistent support for our first hypothesis that easy communication with father and mother would be protective against adolescent substance use. Easy communication with mothers was negatively associated with smoking among sons and easy communication with fathers was negatively associated with marijuana use among sons, but easy parent–adolescent communication was otherwise not associated with adolescent substance use. Our findings are in contrast to the literature that has found that the frequency and quality

**Table 3**  
Logistic regression analyses for variables predicting ever smoked cigarettes in the past 30 days.

Variables	Boys (n = 603)			Girls (n = 626)		
	Adjusted OR	95% CI	p	Adjusted OR	95% CI	p
Father communication						
Difficult	1			1		
Easy	0.62	0.37–1.05	NS	0.68	0.40–1.16	NS
Mother communication						
Difficult	1			1		
Easy	0.61	0.38–0.98	0.04	0.68	0.35–1.31	NS
Family structure						
Two parents	1			1		
Single parent or other	1.14	0.62–2.11	NS	2.12	0.82–5.43	NS
Socioeconomic status						
Low	1			1		
Moderate	2.17	1.06–4.47	NS	0.79	0.50–1.24	NS
High	1.74	0.69–4.39	NS	0.48	0.22–1.07	NS
Ethnicity/race						
White	1			1		
African American	0.68	0.30–1.53	NS	0.65	0.19–2.21	NS
Hispanic	0.87	0.46–1.64	NS	2.02	0.72–5.73	NS
Other	0.69	0.31–1.58	NS	1.26	0.31–5.18	NS

Note. Demographic variables including family structure, socioeconomic status and race/ethnicity were controlled for in the model. Odd ratios and 95% confidence intervals for each variable were reported separately by gender and were adjusted for all other variables in the model.

**Table 4**  
Logistic regression analyses for variables predicting ever drank alcohol in the past 30 days.

Variables	Boys (n = 603)			Girls (n = 626)		
	Adjusted OR	95% CI	p	Adjusted OR	95% CI	P
Father communication						
Difficult	1			1		
Easy	0.68	0.42–1.11	NS	0.74	0.45–1.19	NS
Mother communication						
Difficult	1			1		
Easy	0.92	0.56–1.52	NS	0.71	0.44–1.15	NS
Family structure						
Two parents	1			1		
Single parent or other	0.86	0.60–1.25	NS	1.15	0.67–1.97	NS
Socioeconomic status						
Low	1			1		
Moderate	1.09	0.60–1.97	NS	1.26	0.65–2.45	NS
High	1.45	0.74–2.83	NS	1.17	0.71–1.94	NS
Ethnicity/race						
White	1			1		
African American	0.76	0.38–1.54	NS	0.65	0.19–2.21	NS
Hispanic	0.83	0.13–5.29	NS	2.02	0.72–5.73	NS
Other	0.58	0.16–2.12	NS	1.26	0.31–5.18	NS

Note. Demographic variables including family structure, socioeconomic status and race/ethnicity were controlled for in the model. Odd ratios and 95% confidence intervals for each variable were reported separately by gender and were adjusted for all other variables in the model.

of general parent–child communication is negatively associated with adolescent substance use (Kafka & London, 1991; Stoker & Swadi, 1990; Ackard et al., 2006).

Our second hypothesis suggesting that the mother–daughter dyad would be the most protective pair among the four possible dyads was not supported. Our data provided no support for the notion that daughters would benefit from protective interpersonal and family factors in substance use prevention and intervention. We found that sons benefited from easy parent–adolescent with respect to smoking

**Table 5**  
Logistic regression analyses for variables predicting ever used marijuana in the past 30 days.

Variables	Boys (n = 603)			Girls (n = 626)		
	Adjusted OR	95% CI	p	Adjusted OR	95% CI	p
Father communication						
Difficult	1			1		
Easy	0.38	0.24–0.62	<0.001	0.70	0.39–1.26	NS
Mother communication						
Difficult	1			1		
Easy	1.06	0.62–1.82	NS	0.85	0.53–1.38	NS
Family structure						
Two parents	1			1		
Single parent or other	0.95	0.39–1.84	NS	1.49	0.58–3.84	NS
Socioeconomic status						
Low	1			1		
Moderate	1.51	0.71–3.23	NS	1.01	0.53–1.91	NS
High	2.59	1.07–6.27	NS	0.77	0.34–1.75	NS
Ethnicity/race						
White	1			1		
African American	0.82	0.41–1.63	NS	0.66	0.19–2.22	NS
Hispanic	1.07	0.55–2.06	NS	1.27	0.52–3.11	NS
Other	0.64	0.26–1.60	NS	1.75	0.85–3.58	NS

Note. Demographic variables including family structure, socioeconomic status and race/ethnicity were controlled for in the model. Odd ratios and 95% confidence intervals for each variable were reported separately by gender and were adjusted for all other variables in the model.

and marijuana and that easy parent–adolescent communication was not associated with substance use among daughters. Our findings are inconsistent with current literature suggesting that girls are particularly influenced by interpersonal and family factors (e.g., Razzino et al., 2004; Tildesley and Andrews, 2008), at least to the extent that ease of communication is representative of such factors.

Consistent with our third hypothesis, the inverse relationship between parent–child communication and substance use was significant for tobacco and cannabis use but not for alcohol use. Our results focusing on parent–child communication and substance use outcomes are similar to those presented by Choquet et al. (2008) on parental control and adolescent substance use. Our findings suggest that the widely assumed protective association between parent–child communication and substance use might differ across substances such as smoking, alcohol, and marijuana use. Methodologically, these patterns highlight the advantage of examining multiple substance use outcomes in a single study as it provides an opportunity for comparisons across substances. Practically, these findings demonstrate the possible advantages of tailoring prevention and intervention efforts to address modifiable protective and risk factors that are associated with each particular kind of substance use.

One possible explanation for the non-replication of previous findings regarding the greater protective effect of parental communication for daughters compared to sons is that parents might vary the content of their communication for sons and daughters because of gender stereotypes in regards to adolescent substance use risks. Previous studies indicate that parents may misperceive the prevalence of adolescent substance use, particularly under conditions such as low parental monitoring and high parental psychological distress (Fernandez Hermida, Secades Villa, Vallejo Seco, & Errasti Perez, 2003; McGillicuddy, Rychtarik, Morsheimer, & Burke-Storer, 2007). Evidence further suggests that parents are more likely to underestimate the prevalence of risk behaviors among daughters than sons (O'Donnell et al., 2008). Based on the stereotype that sons are more likely to engage in risk behaviors such as substance use, it is plausible that parents would communicate more with their sons about substance use than with their daughters. Communication about substance use might protect sons alone from using cigarettes and marijuana (e.g., de Leeuw, Scholte, Harakeh, van Leeuwe, & Engels, 2008). However, this speculation remains to be tested.

Parent–child communication, as defined in the current study, is a broad measure of communication (Riesch, Anderson, & Krueger, 2006). While ease of communication with parents reflects positively on general parent–child relationship, it does not necessarily indicate the degree to which parents know about their sons' and daughters' substance use behaviors (Forehand, Miller, Dutra, & Chance, 1997). Moreover, our measure does not capture the content of the parent–child communication. It is therefore unclear to what extent parents who communicate easily with their adolescents actually talk about substance use, which has been associated with reduced adolescent substance use in previous studies (e.g., Chassin et al., 2005). These findings indicate that easy parent–child communication as measured by adolescents' perceptions of comfort may serve as a prerequisite for positive parenting practices that could be protective against adolescent substance use. Yet easy parent–child communication alone may not be sufficient to protect all adolescents from substance use.

The present study extends previous investigations by examining gender-matching in the association between parent–child communication and adolescent substance use. The significant association between easy mother communication and smoking in sons only suggests that sons may benefit from easy mother communication as a protective factor against smoking. Similarly, the significant association between easy father communication and marijuana use in sons could indicate that sons may benefit from easy father communication as a protective factor against marijuana use. These observed gender-specific variations provide a rationale for researchers to consider the

important role of gender-matching in examining how parent–child relationship might be linked to adolescent substance use outcomes in future investigations.

The results of this study may have important implications for prevention and intervention efforts in substance use, particularly in light of the closing gender gap in substance use in younger cohorts. Guided by informed theoretical considerations, previous studies have correctly pointed out the urgency of addressing the relative increase in adolescent substance use among females (Amaro et al., 2001; Kumpfer et al., 2008). However, our findings indicate that a focus on parent–child communication, an important interpersonal and family factor, may not have significant impact in prevention and intervention programs for female adolescents. Yet parent–child communication might be an important protective factor against smoking and marijuana use in male adolescents. Research is needed to extend our current investigation and identify the minimum level of parent–child communication and parenting practices which is sufficient to offer protective benefit to adolescents. Future research could examine the associations between a wider range of parental variables and substance use outcomes to determine those parental variables that are most protective for female adolescents.

Despite the strengths of this paper, including the use of a nationally representative sample, the availability of predicting and outcome variables by gender, and the inclusion of several substance use outcomes, the results of this study are to be interpreted with caution because of some limitations. First, the cross-sectional nature of this study limits our ability to draw directional or causal conclusions. Second, missing data in communication and substance use variables and the subsequent exclusion of 251 participants (16.1%) from the present study might have slightly skewed the representativeness of the sample. Third, the present study relied on adolescents' self-reports of their substance use behavior, which could introduce recall bias. Finally, our dataset did not have a variable on the frequency of contact with a parent. Therefore, we could not include this variable in our analyses. To address the first two limitations, future studies should examine the associations between parent–child communication and substance use outcomes longitudinally, and provide greater incentive to reduce missing data. In regards to the third limitation, our use of past 30 days substance use, rather than lifetime substance use, as the outcome variables minimized potential recall errors in self report (Brener, Billy, & Grady, 2003). Research also indicates good reliability and validity for self-reported data concerning adolescent risk behaviors (Kentala, Utriainen, Pahkala, & Mattila, 2004; Levy et al., 2004).

In summary, the present study demonstrates that, among male adolescents, easy mother–son communication was a protective factor for smoking, whereas easy father–son communication was a protective factor for marijuana use. Contrary to expectations, we did not find support for the notion that interpersonal and family factors such as parent–child communication would benefit females but not males. This study adds to the current literature by indicating gender-specific variations in the association between parent–child communication and adolescent substance use. The present study also suggests the value of testing gender-matching hypotheses and underscores its potential implications on prevention and intervention research. Given the narrowing gender gap in substance use among young people, future studies should test gender-specific hypotheses when examining social influences on adolescent substance use.

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## Contributors

All the authors contributed substantially to the conceptualization and design of this study. Jeremy Luk conducted literature searches and wrote the first draft of the manuscript. Dr. Tilda Farhat, Dr. Ronald Iannotti and Dr. Bruce Simons-Morton provided detailed comments on the first and subsequent drafts and have approved the final manuscript.

## Conflict of Interest

None.

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