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Substance Use among Early Adolescent Girls: Risk and Protective Factors

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Abstract

Disquieting rates of alcohol and drug use among adolescent girls call for original research on gender-specific risk and protective factors for substance use. Particularly salient are data on theory-driven factors that can inform prevention programming. Surveying 781 adolescent girls and their mothers, we found relationships between girls' use of alcohol, prescription drugs, and inhalants and girls' after-school destinations, body images, depression, best friend's substance use, maternal drinking behavior, mother-daughter interactions, and family norms surrounding substance use. Study findings have implications for the design of responsive gender-specific prevention programs.

Keywords

Drug and alcohol use; female adolescents; risk and protective factors

Adolescent girls are beginning to surpass adolescent boys in their substance use [1,2]. Among eighth- and tenth-graders, girls drink more than their male counterparts; girls are also more likely than boys to use inhalants and stimulants. Girls start smoking at younger ages, and they subsequently smoke more regularly than boys. Once girls use harmful substances, they are more apt than boys to become dependent.

Family interaction theory offers a framework to understand the forces that may move girls toward and away from substance use [3]. According to this theory, girls' intrapersonal characteristics, social influences from their environments and peers, and emotional attachment to their parents combine to influence substance use. The theory focuses on parent-child attachment, especially that between mother and child. If mothers have warm, nurturing relationships with their daughters, girls may be less likely to drink and take drugs. Conversely, if mothers fail to supervise and support their daughters, girls may attach to their peers, particularly deviant ones.

Studies find that girls are more likely than boys to smoke, drink, and use drugs when they overly concerned with peer approval [4]. Around puberty, girls are vulnerable to depression, a risk factor for substance use and abuse [5]. Strong family bonds are associated with lower rates of substance use for all youths. Yet low parental attachment correlates more highly with smoking, drinking, and drug use among girls than among boys [6]. Low parental monitoring and concern and an unstructured home environment are strongly correlated with substance use

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among girls; parents' failure to monitor their children's activities can put girls at risk [7]. To learn more about gender-specific risk and protective factors that might inform prevention programming, we surveyed a sample of early adolescent girls and mothers about relevant correlates of alcohol, prescription drug, and inhalant use.

Methods

Study sample and Procedures

Study participants were recruited through advertisements, buses, and a radio station serving greater New York City. The advertisements directed respondents to a website that gave details about the study, specified inclusion criteria, and asked for contact information so interested persons could receive informed consent forms. Signed consent forms were returned by 1,562 respondents, representing 781 mother-daughter pairs. Consenting mothers and assenting girls who had parental consent received usernames and passwords to access online surveys. Survey items came from previously validated questionnaires on adolescent and adult substance use and related risk and protective factors [8-10]. Internal reliabilities for girls' and mothers' questionnaires were 0.75 and 0.74, respectively.

Data Analysis

To control for girls' ages, ethnic-racial backgrounds, and school grades, and for their mothers' places of birth, educations, and nature of employment, multivariate logistic regression was employed to analyze the relationship between each independent variable and girls' alcohol, prescription drug, or inhalant use.

Results

Over three-fourths of girls in the sample were African-American or Latina (Table 1). Girls had an average age of 12.6 years. Most girls reported that their school grades were mostly As or Bs. Across the sample, 40.6% of girls had drunk alcohol, 12.6% had illicitly taken prescription drugs, and 9% had used inhalants. Slightly more than one-half of girls' mothers were single parents; most were born in the United States; and all but 16% had attended or graduated from college. Almost 86% of the mothers were in paid employment. Roughly one-half of the mothers regularly attended church.

Girls who engaged in unstructured activities after school drank more (odds ratio [OR] = 2.56, $p < 0.001$) and used more inhalants (OR = 2.96, $p < 0.01$) than girls who went home after school (Table 2). Girls who reported a positive image of their bodies (4.0 or higher on a 5-point scale, where 5 = completely satisfied with my body) were less likely to drink (OR = 0.56, $p < 0.01$) and to illicitly use prescription drugs (OR = 0.45, $p < 0.01$) than girls who reported relatively less satisfaction with their bodies (those who scored 3.99 or lower). Girls with higher levels of depression (4.0 or higher on a 6-point scale, where 6 = very depressed) reported more use of alcohol (OR = 2.13, $p < 0.01$), prescription drugs (OR = 2.94, $p < 0.001$), and inhalants (OR = 2.67, $p < 0.001$) than less depressed girls (those who scored 3.99 or lower). Girls whose best friend used substances were more apt to drink (OR = 5.52, $p < 0.001$), illicitly take prescription drugs, (OR = 5.11, $p < 0.001$), and use inhalants (OR = 7.17, $p < 0.001$), than girls whose best friend did not use substances.

Maternal alcohol use was positively related to girls' drinking (OR = 1.51, $p < 0.01$) and inhalant use (OR = 1.82, $p < 0.05$). Mothers' knowledge of their daughters' whereabouts was linked with girls' reduced use of alcohol (OR = 0.48, $p < 0.001$). Similarly, mothers' knowledge of their daughters' companions predicted girls' reduced alcohol (OR = 0.57, $p < 0.001$) and prescription drug use (OR = 0.55, $p < 0.01$). Girls' ability to always contact their mothers was

associated with girls' reduced drinking (OR = 0.58, $p < 0.001$), illicit use of prescription drugs (OR = 0.45, $p < .001$), and inhalant use (OR = 0.41, $p < 0.001$).

Girls whose families had rules against substance use were less likely to drink (OR = 0.44, $p < 0.001$) and use inhalants (OR = 0.36, $p < 0.01$). Girls whose parents encouraged their children to abstain from substance use reported commensurately lower rates of alcohol, (OR = 0.37, $p < 0.001$) and inhalant use (OR = 0.37, $p < 0.01$).

Discussion

Study findings suggest that where adolescent girls go after school, how they view and think about themselves, who their friends are, what their mothers know about their comings and goings, and whether their families articulate nonuse messages are associated with girls' use of alcohol, prescription drugs, and inhalants. Whereas the roles of positive after-school activities, peer use, and certain psychosocial variables in explaining substance use risk among youth are well examined, little previous work has studied the contributions of parental behavior, monitoring, and norms. Clearly, if girls do not go home after school, they are not helped by simply hanging out and engaging in unstructured activities. That girls' body images and affective states of depression relate to substance use is evident in our data. Whether girls use substances to change their bodies or numb perceptions of their bodies cannot be verified by our results. Likewise, study data cannot address whether depressed girls use substances or whether substance use exacerbates depression. The well-known influence of best friends in determining adolescent substance use is underscored by large ORs in our findings.

Maternal factors associated with adolescent girls' substance use are complex, yet understandable. Mothers' single-parent status and tobacco habits appear to offer little explanation for their daughters' drinking and drug taking. But mothers' alcohol use behavior and knowledge of their daughters' whereabouts, companions, and accessibility helped explain girls' substance use. Finally, our data point up the value of overt family expectations about their children's substance use. Parents who set rules about drug nonuse and who articulate messages of abstinence from drugs may raise daughters who incorporate those rules and messages into their own reduced risk behavior. These conclusions fit well with family interaction theory.

Our research is not without flaws. The self-selection of girls and mothers is a major limitation. Though participants' demographic profiles matched the population from which they came, girls and mothers responding to an invitation for an online survey are likely more motivated, computer-savvy, and on better terms with one another than those who chose not to be in our sample. The cross-sectional design precludes causal inferences regarding our independent and dependent variables. Boys were not engaged in the study, thereby leaving unanswered questions about gender differences. Last, lifetime use reports of drinking and drug taking are not the most sensitive indicators.

Subsequent research can address these weaknesses to further advance the scientific database of why girls are escalating their substance use behavior. The loss of protective factors that heretofore may have accounted for girls' lower risks is an appealing topic for further study. Still greater investment should be made in work that can directly inform prevention programming for girls. The potential for parent involvement, especially the participation of girls' mothers, is an especially profitable area for future research. Perhaps our findings will stimulate follow-on research to investigate and prevent substance abuse among adolescent girls.

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References

1. Johnston, LD.; O'Malley, PM.; Bachman, JG.; Schulenberg, JE. Monitoring the future national results on adolescent drug use: overview of key findings, 2005. NIH Publication No. 06-5882. Bethesda, MD: 2006.
2. National Center on Addiction and Substance Abuse. The formative years: pathways to substance abuse among girls and young women ages 8-22. New York: Author; 2003.
3. Brook JS, Brook DW, de la Rosa M, Dunque LF, Rodriquez E, Montoya ID, et al. Pathways to marijuana use among adolescents: cultural/ecological, family, peer, and personality influences. *J Am Acad Child Adol Psych* 1998;37:759–66.
4. Rohrbach, LA.; Milam, J. Gender issues in drug prevention. In: Bukoski, WJ.; Sloboda, Z., editors. *Handbook of drug use theory, science, and practice*. New York: Plenum Press; 2002. p. 343-355.
5. Silberg J, Rutter M, D'Onofrio B, Eaves L. Genetic and environmental risk factors in adolescent substance abuse. *J Child Psychology and Psychiatry* 2003;44:664–76.
6. Johnson RE, Marcos AC. Correlates of adolescent drug use by gender and geographic location. *Am J Drug Alc Abuse* 1988;14:51–63.
7. Li X, Feigelman S, Stanton B. Perceived parental monitoring and health risk behaviors among urban low-income African-American children and adolescents. *J Adol Health* 2000;27:43–8.
8. Kovacs, M. *Children's Depression Inventory (CDI)*. Los Angeles, CA: WPS/Western Psychological Services; 1992.
9. Rocky Mountain Behavioral Institute. *American Drug and Alcohol Survey: reliability and validity*. Retrieved May 3, 2007, from <http://www.rmbsi.com/relvalid.html>
10. Thomson NR, Zand DH. The Harter self-perception profile for adolescents: Psychometrics for an early adolescent, African-American sample. *Inter J Testing* 2002;2:297–310.

Table 1**Daughter and Mother Sample Characteristics**

	% ^a	<i>n</i>
Daughters (N = 781)		
Ethnic-Racial Background		
African-American	46.7	365
Latina	29.6	231
White	13.6	106
Asian-American	1.3	10
American Indian	2.7	21
Age in Years (<i>M, SD</i>)		
< 11	16.0	125
12	32.9	257
13	30.2	236
> 14	20.9	163
School Grades		
Mostly A's	32.9	257
Mostly B's	44.8	350
Mostly C's or below	16.2	135
Lifetime Substance Use		
Alcohol	40.6	317
Prescription drugs ^b	12.9	101
Inhalants ^c	9.0	70
Mothers (N = 781)		
US Born		
Yes	80.8	631
No	19.2	150
Single Parent		
Yes	52.4	409
No	47.6	372
Education		
< High School	16.4	128
Attended or graduated from college	64.1	501
Graduate degree	19.5	152
Regular Church Attendance		
Yes	50.7	396
No	49.2	384
Paid employment		
Yes	85.8	670
No	14.2	111

^aWithin category percentages may not add to 100 because of rounding and missing data.

^bPrescription drugs are defined as those used recreationally, used for off-label purposes, or taken by other than the intended recipient.

^cInhalants include glue, spray paint, cleaning fluid, and any chemical inhaled for intoxication purposes.

Table 2 Risk and protective factors related to alcohol, prescription drug, and inhalant use among adolescent girls (N = 781)

Independent Variable	Alcohol		Prescription Drugs ^b		Inhalants ^c	
	%	OR (95% CI) ^a	%	OR (95% CI)	%	OR (95% CI)
After-School Activity						
Home	19.7	1.00	6.4	1.00	3.5	1.00
Formal program	12.7	.76 (.55 - 1.05)	3.6	.67 (.41 - 1.09)	2.6	1.01 (.55 - 1.87)
Hang out	6.1	2.56 ^{***} (1.49 - 4.43)	1.9	1.59 (.83 - 3.08)	2.0	2.96 ^{**} (1.45 - 6.02)
Psychosocial Factors						
Body image	24.7	.56 ^{**} (.39 - .80)	6.8	.45 ^{**} (.27 - .74)	4.8	.58 (.32 - 1.04)
Depression	7.4	2.13 ^{**} (1.37 - 3.31)	3.3	2.94 ^{***} (1.75 - 4.95)	2.4	2.67 ^{***} (1.46 - 4.90)
Best friend uses substances	18.2	5.52 ^{***} (3.60 - 7.56)	3.1	5.11 ^{***} (2.89 - 9.03)	4.5	7.17 ^{***} (4.14 - 12.43)
Maternal Factors						
Single parent	20.6	1.28 (.95 - 1.72)	6.0	.99 (.65 - 1.52)	4.5	1.21 (.73 - 2.02)
Drinks	17.4	1.51 ^{**} (1.12 - 2.05)	4.7	1.01 (.65 - 1.57)	4.5	1.82 [*] (1.09 - 3.03)
Smokes	4.4	1.00 (.62 - 1.64)	1.5	1.03 (.51 - 2.05)	.9	.92 (.39 - 2.18)
Knows where I am	32.6	.48 ^{***} (.31 - .74)	11.2	.91 (.49 - 1.71)	7.6	1.06 (.52 - 2.15)
Knows who I am with	27.3	.57 ^{***} (.41 - .80)	8.3	.55 ^{**} (.35 - .86)	5.8	.68 (.40 - 1.17)
Always able to reach her	26.5	.58 ^{***} (.42 - .81)	7.4	.45 ^{***} (.29 - .69)	4.9	.41 ^{***} (.24 - .69)
Family Norms						
Anti-drug rules	21.3	.44 ^{***} (.28 - .69)	8.0	.79 (.41 - 1.52)	4.2	.36 ^{**} (.18 - .69)
Urges abstinence	8.6	.37 ^{***} (.26 - .52)	2.9	.65 (.33 - 1.27)	1.4	.37 ^{**} (.19 - .74)

^a OR denotes odds ratio and CI denotes confidence interval from multivariate logistic regression tests of each independent variable within substance use categories.

^b Prescription drugs are defined as those used recreationally, used for off-label purposes, or taken by other than the intended recipient.

^c Inhalants include glue, spray paint, cleaning fluid, and any chemical inhaled for intoxication purposes.

* $p < 0.05$;

** $p < 0.01$;

*** $p < 0.001$.