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PERSONAL ATTITUDES, PERCEIVED SOCIAL NORMS, AND HEALTH RISK BEHAVIOR AMONG FEMALE ADOLESCENTS WITH CHRONIC MEDICAL CONDITIONS

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Abstract

Purpose—To examine whether perceived peer/parent norms or personal beliefs about adolescent substance use influence substance use among female adolescents with chronic medical conditions.

Methods—68 females reported on substance use, personal beliefs, and perceived peer/parent norms.

Results—Personal beliefs and perceived peer/parent norms were associated with adolescent's current and future substance use. Although perceived peer norms accounted for variance in current substance use, only personal beliefs accounted for variance in future alcohol use.

Conclusions—Targeting perceived peer norms may be effective for intervention efforts among adolescents endorsing current substance use, whereas alcohol use prevention efforts should target personal beliefs.

Keywords

Adolescence; Chronic Illness; Smoking; Drinking Behavior; Norms

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Conflict of Interest Disclosure

The authors have no conflicts of interest to disclose.

Introduction

Adolescence is a period of developmental transition characterized by significant biological and psychosocial changes which influence future health behavior patterns (Holmbeck, 2002). Health behaviors that develop during adolescence may alter adult developmental trajectories in both positive and negative directions. Although substance use has adverse health consequences for all adolescents, youths with chronic medical conditions (CMCs) are at increased risk for medical complications resulting from substance use (Tercyak, Britto, Hanna, et al., 2008). Alcohol or tobacco use may intensify disease symptoms in patients with respiratory problems (i.e., asthma, cystic fibrosis), cardiovascular conditions, or compromised immune functioning (i.e., childhood cancer, Crohn's disease). Other health concerns that may be exacerbated by substance use include inadequate nutrition, poor growth, and impaired quality of life (Oeffinger & Hudson, 2004; Verma, Clough, McKenna, et al., 2001). Substance use may also result in hazardous interactions with prescription medication or interfere with regimen adherence, thereby increasing illness morbidity and mortality.

Among healthy adolescents, engagement in health risk behaviors including alcohol or tobacco use is highly influenced by the behavior and attitudes of important others (Tolson & Urberg, 1993). The theory of reasoned action (TRA) purports that personal attitudes and subjective norms (i.e., beliefs about the normative expectations or beliefs of important others) each influence health behaviors (Bogart & Delahanty, 2002). In support of the model, among adults, personal attitudes and subjective beliefs predict health behaviors such as condom use, exercise, and dietary behavior (Bogart & Delahanty, 2002). Additionally, among typically-developing adolescents, beliefs about greater frequency and acceptance of peer substance use are associated with higher rates of current substance use and/or intention to engage in substance use (Kuntsche & Stewart, 2009; Nash, McQueen, & Gray, 2005; Olds, Rhombs, & Tomasek, 2005). Similarly, perceived parent norms related to substance use are associated with greater substance use among healthy adolescents (Nash, et al., 2005). Although the TRA is supported among typically developing populations, little is known about the role of personal beliefs or perceived peer/parent norms in the context of pediatric CMCs. It is plausible that these factors use may impact health risk behavior differently among youths managing chronic illness.

Regardless of health status, peer relationships become highly salient as youths approach adolescence and research suggests that substance use is likely to develop through peer encouragement (LaGreca, Bearman, & Moore, 2002). Peers influence both initiation and continuation of substance use (e.g., smoking cigarettes and consuming alcohol) among adolescents with and without chronic illness (LaGreca, et al., 2002). Youths with CMCs often endorse social isolation (Orr, Weller, Scatterwhite, et al., 1984; Valencia & Cromer, 2000) and stigmatization as a result of feeling different from others due to illness symptoms (e.g., delayed growth or pubertal maturation), illness-related functional limitations, and undesirable medication side effects. Consequently, it has been postulated that social pressures to "fit in" may place this population at high risk for engaging in health risk behavior (Valencia & Cromer, 2000). Adolescents with CMCs may view smoking cigarettes

or drinking alcohol as a straightforward way to gain peer acceptance (La Greca, et al, 2002, Valencia & Cromer, 2000).

Although peer relationships are highly valued by adolescents, parents continue to exert significant influence on youth adjustment during adolescence (Holmbeck, 2002), and among youths with CMCs, caregivers typically play a fundamental role in daily condition management tasks (Anderson, Ho, Brackett, et al., 1997). Moreover, greater social difficulties may also result in increased reliance on parents for guidance and emotional support within this population (Valencia & Cromer, 2000). Thus, in addition to considering the role of perceived peer norms on substance use, it is also essential to consider how perceived parent views on substance use during adolescence may impact substance use within this population.

The primary aim of this study was to test the TRA model in a population of adolescent females with various CMCs to determine whether youth beliefs, perceived peer norms, and perceived parent norms account for significant variance in tobacco and alcohol use. A secondary aim was to evaluate whether youth beliefs and perceived peer and parent norms are associated with the intention to engage in future substance use. Since little is known about substance use in the context of inflammatory bowel disease (IBD), juvenile arthritis, and cardiac conditions, these populations were specifically targeted in the present study along with adolescents diagnosed with other hematologic or pulmonary conditions. Moreover, among all pediatric chronic conditions included, use of alcohol or tobacco may pose specific challenges for disease management.

We hypothesized that personal beliefs about the acceptability of substance use, peer norms, and parent norms would each be independently associated with current substance use and intention to engage in future substance use. Given that the TRA does not stipulate which factors are most influential, analyses to determine which factors were most influential in predicting current and future substance use were exploratory.

Methods

Eligibility criteria included: (1) female sex, (2) patient age 14–19 years, (3) presence of a female parent/guardian willing to participate, (4) diagnosis of a CMC for at least one year, (5) no history of cognitive or developmental delay that would preclude the adolescent from completing questionnaires, and (5) English fluency.

Data were drawn from a larger research initiative examining mother-daughter communication about health risk behavior. Thus, this sample was limited to female adolescent-mother dyads, given that research among adolescents without CMCs suggests that different processes may operate in mother-male adolescent, father-female adolescent, and father-male adolescent dyads (Blum, Kelly, & Ireland, 2001). Prior to initiating recruitment, approval was obtained from the institutional review boards of participating institutions. Eligible families were approached during outpatient clinic appointments in pediatric subspecialty clinics by study staff and given information about the study. Written informed consent/assent was obtained. Study measures were completed following clinic

visits. Adolescents and parents completed the questionnaires independently and in separate locations to maximize privacy of reporting. Individuals were compensated for participation.

Measures

Demographic and disease information—Female adolescents reported on basic demographics including age, race, household composition, and type of chronic condition. Mothers also completed a demographic questionnaire in which they provided information about parent age, race/ethnicity, marital status, level of education, and family income.

Frequency of substance use—Items to assess frequency of alcohol and tobacco use were taken from the National Longitudinal Study of Adolescent Health Survey (Sieving, Buehring, Resnick, et al., 2001). Female adolescents rated their alcohol use during the past 12 months (defined as beer, wine/wine cooler, or hard liquor use) on a Likert scale ranging from 0 (none) to 6 (every day or almost every day). They rated their current tobacco use (defined as cigarette or other tobacco use, such as chewing tobacco or “snuff”) during the past year on the same scale.

Intention to engage in future substance use—Female adolescents who did not endorse current substance use also responded to questions modeled after Cromer and colleagues’ measure (Cromer, Enrile, McCoy, et al., 1990) to assess the likelihood that the adolescent would initiate substance use in the next six months. Responses to the two items (e.g., “What is the chance that you will drink alcohol [use cigarettes or tobacco] in the next 6 months?”) were coded on a Likert scale ranging from 0 (no chance) to 4 (definitely).

Personal beliefs about substance use—Female adolescents also completed two items pertaining to their beliefs about the acceptability of adolescent substance use. Participants responded to questions asking how the adolescent feels about kids their age drinking alcohol and smoking (Nash, et al., 2005) using a Likert scale ranging from 0 (very much against it) to 4 (very much for it). The two items were averaged to create this scale, with higher scores representing greater personal approval of the health risk behaviors ($\alpha = .72$).

Subjective peer norms about substance use—Female adolescents responded to two items in which they reported about perceived peer support for adolescent use of alcohol and tobacco (Nash et al., 2005). The two items were measured on a 5-point Likert scale ranging from “very much against it” to “very much for it.” The two items were averaged to create this scale, with higher scores representing greater perceived peer approval of the health risk behaviors ($\alpha = .90$).

Subjective parent norms about substance use—Perceived parental approval of substance use was assessed by two items (Nash et al., 2005) in which female adolescents responded to items inquiring about their perceptions of the degree to which their parent approved or disapproved of adolescents their age using alcohol or tobacco. Responses were measured on a 5-point Likert scale ranging from “very much against it” to “very much for it.” The two items were averaged to create this scale, with higher scores representing greater parental approval of the health risk behaviors ($\alpha = .78$).

Data Analytic Plan

Descriptive statistics were computed to summarize demographic and medical information. Bivariate correlations examined associations of personal beliefs, peer norms, and parent norms with current or future alcohol and tobacco use. Finally, multiple regression analyses (with simultaneous entry) were conducted to examine individual and combined contributions of personal beliefs, peer norms, and parent norms on current and future substance use. Regressions examining future substance use included only participants who were at risk of initiating future substance use; thus, those who endorsed already having used alcohol or tobacco were not included in these analyses, which resulted in a smaller n for these analyses. Finally, squared semi-partial correlations were computed for each independent variable in regressions as effect size estimates, with 0.01 = small effect, 0.09 = medium effect, and 0.25 = large effect (Cohen, 1992).

Results

Participant Characteristics

See Table 1 for participant demographic and medical information. Sixty-eight adolescent female-mother dyads participated. Adolescents were primarily Caucasian (81%), and most caregivers were the adolescent's biological mother (93%), were married (78%), and were employed (78%). Yearly income ranged from under $10,000 to over $200,000, with the median annual family income falling in the $80,000 – $90,000 category.

Prevalence of Substance Use

In the past year, 44% (n=30) of adolescents reported using alcohol and 15% (n=10) reported using tobacco. Of the 27 (44%) who reported alcohol use in the past year, 10% were ages 14–15, 21% ages 16–17, and 13% 18–19 years. Of the 10 (15%) who reported tobacco use during the past year, 3% were ages 14–15, 6% ages 16–17, and 6% 18–19 years. Among those youths who did not endorse having already used alcohol, 21% (n = 7) estimated a 50% or more likelihood of consuming alcohol during the next 6 months. On the other hand, of those youths who did not endorse having already used tobacco, only 2% (n = 1) reported a 50% of more likelihood of using tobacco during the next 6 months.

Associations between Beliefs, Perceived Norms, and Substance Use

See Table 2 for bivariate correlations among study variables. As hypothesized, personal beliefs, subjective peer norms, and perceived parent norms were each positively correlated with current alcohol and tobacco use, with correlations ranging from .32 to .71, the equivalent of medium and large effects. Contrary to hypotheses, only personal beliefs about the acceptability of substance use was significantly correlated with intention to engage in future alcohol use; whereas, perceived peer and parent norms were not significantly associated with future alcohol use. Similarly, neither personal beliefs nor perceived norms were significantly associated with future tobacco use.

Combined and Unique Contribution of Personal Beliefs, Peer Norms, and Parent Norms

Regression analyses supported the hypothesis that personal beliefs, peer norms, and parent norms combined would account for significant variance in current alcohol (R^2 = .54, F (3, 64) = 24.99, p < .001) and tobacco use (R^2 = .30, F (3, 64) = 9.17, p < .001). In both cases, the effect sizes for the impact of all three variables on current substance use were large. Conversely, regression analyses failed to support the hypothesis that personal beliefs, peer norms, and parent norms combined would account for significant variance in future alcohol (R^2 = .19, F (3, 34) = 2.74, p > .05) and tobacco use (R^2 = .02, F (3, 54) = .31, p > .05).

With regard to the unique contribution of the independent variables, analyses indicated that only peer norms accounted for unique variance in alcohol (6%) and tobacco (15%) use, small and medium effect sizes, respectively. Despite the fact that the overall models were nonsignificant for future alcohol and tobacco use, personal beliefs accounted for significant unique variance (12%, a medium effect) in intention to engage in future alcohol use. None of the independent variables accounted for unique variance in future tobacco use (See Table 3).

Discussion

This study provides insight into the influence of perceived peer and parent norms and personal beliefs on current substance use and intention to initiate future substance use among female adolescents with CMCs. Findings suggest that the TRA is an applicable model to utilize in the conceptualization of social-cognitive factors that impact current substance use behavior within this population. Specifically, significant associations between personal beliefs/perceived norms and current substance use were documented, and results of regression analyses suggested that the combined impact of these factors on current substance accounted for between 30 and 54% of the variance in current substance use.

On the other hand, findings provided mixed support for the application of the TRA to explain future initiation of substance use. Although personal beliefs and perceived social norms were associated with adolescents' reports of their intention to initiate alcohol and tobacco use at the bivariate level, regression analyses failed to support the hypothesis that the combined impact of personal beliefs, peer norms, and parent norms would account for significant variance in future substance use. This is contrary to research among healthy adolescents which suggests that perceived peer and sibling norms related to substance use may be associated with the initiation of substance use (Olds, Thombs, Tomasek, et al., 2005), and indicates that other psychosocial factors, such as social support or family environment, may be more influential in explaining future alcohol and tobacco use among adolescents with CMCs.

Regarding the unique contribution of each factor, adolescent perceptions of peer norms related to substance use are influential in both current alcohol and tobacco use, and peer norms are more influential than parent norms or personal beliefs in influencing current substance use. Similarly, research among healthy adolescents suggests that adolescents who value peer over parent beliefs related to substance use are more likely to endorse alcohol and tobacco use (Ackard, Neumark-Sztainer, Story, et al., 2006). Thus, perceptions of peer

beliefs appear to play a similar role in adolescents with and without CMCs. Moreover, it is important to note that female adolescents with CMCs may be particularly vulnerable to the impact of perceived peer norms given that substance use may be viewed as a means of gaining peer acceptance.

Interestingly, perceived parent norms had less influence over youth substance use than expected in this sample. It is plausible that parenting may impact substance use in other ways, such as parental use of tobacco or alcohol in the presence of the child. Similarly, parent involvement might exert more influence on adolescent substance use than perceived parent norms. Lack of parental monitoring (Steinberg, Fletcher, & Darling, 1994) and poor communication (Ackard, et al, 2006) are risk factors for substance use among healthy adolescents. Specifically, poorly monitored children are more likely initiate substance use and seek out peers who engage in substance use. Personal beliefs were the only factor to account for unique variance in intention to initiate alcohol use. Studies examining the TRA have yielded mixed results with regard to the relative importance of personal beliefs versus subjective norms (Bogart & Delahanty, 2002), but findings from this study suggest that personal beliefs are associated with the intention to begin using alcohol among female adolescents who do not currently endorse alcohol use. This information is valuable insofar as it could inform efforts to prevent alcohol use among female adolescents with CMCs. By targeting personal beliefs and factors that influence personal beliefs about the acceptability of adolescent substance use, it is plausible that female adolescents could be discouraged from initiating substance use behavior.

Clinical Implications

Findings from this study have the potential to inform intervention and prevention efforts among adolescent females with CMCs. Efforts to intervene among youths who are already using alcohol and tobacco would likely be most effective if perceived peer norms related to substance use were targeted. On the other hand, prevention of alcohol use initiation in this population would likely be bolstered by challenging personal beliefs related to adolescent substance use.

Limitations and Future Directions

These results should be interpreted in the context of certain limitations, each of which provides an avenue for future research. This was a preliminary investigation of alcohol and tobacco use among older female adolescents diagnosed with CMCs, and as such, results are not generalizable to male or younger female adolescents. Additionally, the sample was relatively small and homogeneous with respect to ethnicity and income, and future research efforts would benefit from a larger, more demographically varied sample. Similarly, our analyses examining factors associated with the initiation of substance use behavior utilized only those adolescents who did not report current use and thus were quite small. It should be noted however, that effect sizes for these analyses were small and as such low power is not likely to fully explain the lack of associations among variables.

Future examinations of factors that influence substance use in the context of pediatric chronic illness would benefit from expansion to include additional illness groups and to

systematically examine condition-related factors that may influence substance use. Certain disease symptoms, such as pain (Heaps, Davis, Smith, & Straker, 2011), may predispose adolescents to initiate substance use. Similarly, youths with pulmonary conditions may experience more severe immediate health consequences from cigarette smoking than youths with gastroenterologic conditions; hence, it is plausible that different factors may influence tobacco use in these populations. Health risk behavior may also vary as a function of the unique impact of substance use on morbidity and mortality. It may be that adolescents diagnosed with medical conditions that could shorten the life span (i.e., cystic fibrosis) are less concerned about the long-term impact of substance use on health. The current study lacked a sufficient number of participants in each diagnostic group to draw such conclusions; thus, future research utilizing larger subgroups of illness populations is needed to answer these questions. Moreover, there were relatively low rates of alcohol and tobacco endorsed by the female adolescents participating in this study. It is important to note that the prevalence of alcohol and tobacco use in this sample was comparable to rates documented within other pediatric chronic illness groups, such as youths with sickle cell disease, survivors of childhood cancer, and T1DM (Valencia & Cromer, 2000; Tercyak, 2003; Britto, Garrett, Dugliss, et al., 1998; Frey, Guthrie, Loveland-Cherry, et al., 1997). Thus, although the documented rates in this study are lower than the rate of substance use endorsed by typically developing adolescents, these behaviors are still noteworthy given that they are comparable to other pediatric chronic illness groups and because alcohol and tobacco use pose such a serious threat to the health status of youths with CMCs. Finally, longitudinal data are required to confirm the temporal relationship between beliefs/norms and substance use behavior.

Future research should also be directed toward identifying psychosocial factors that may buffer against the impact of subjective peer norms on substance use, such as improvements in self-efficacy, social competence, social problem solving, or self-management of illness (to promote autonomy). Moreover, given the influence of personal beliefs on substance use, it is important for future research to identify factors that impact female adolescent beliefs about substance use. As mentioned, social isolation may place youths with CMCs at higher risk for perceiving substance use as a way to project a certain image to peers (i.e., as more grown up or as a person who is engaging) or as a means of gaining peer acceptance. Conversely, other factors such as education or cultural beliefs may play a role in the development of personal beliefs about adolescent substance use during adolescence. Finally, since perceived norms and personal beliefs do not account for all variance in substance use, it will be important for future research to identify other psychosocial factors associated with substance use. For example, among youths with asthma, depressive symptoms are associated with increased substance use, as are family stressors (Tercyak, 2003).

This work is an important first step in understanding psychosocial influences on current and future substance use among adolescent females with CMCs. Although youths with CMCs do not commonly evidence higher rates of substance use than typically developing adolescents, the rate of use is quite high given the adverse consequences of substance use on both current health status and on developmental trajectories within this population.

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Table 1

Demographic and Disease Variables

Adolescent Females	
Age M (SD)	16.18 (1.53)
Ethnicity	
Caucasian	81%
African American	7%
Hispanic or Latino	7%
Asian or Pacific Islander	2%
Biracial	3%
Diagnosis*	
Pulmonary Condition (cystic fibrosis)	18% (n=12)
GI Condition (inflammatory bowel disease)	13% (n=8)
Rheumatologic Condition (arthritis)	32% (n=22)
Hematologic Condition	1% (n=1)
Cardiac Condition	28% (n=19)
Multiple Conditions	7% (n=5)

Female Caregivers	
Age	M (SD) = 46.03 (9.39)
Ethnicity	
Caucasian	85%
African American	6%
Hispanic or Latino	6%
Asian or Pacific Islander	0%
Biracial	3%
Mother Education (College degree or higher) % (n)	36% (35)
Family Income (Median category)	$80,000 – $90,000

Note

*Diagnosis (missing = 1)

Table 2

Bivariate Correlations between Study Variables

	Personal beliefs	Peer norms	Parent norms
Current alcohol use	.68**	.71**	.49**
Current tobacco use	.32**	.51**	.37**
Future alcohol use	.41*	.23	.24
Future tobacco use	.06	.12	.13
Personal beliefs	--	.76**	.52**
Peer norms	--	--	.47**

* $p < .05$

** $p <. 01$

Table 3

Regressions using Personal Beliefs, Peer Norms, and Parent Norms to Predict Current and Future Substance Use

Current Substance Use[±]	B	β	t	Effect Size
Alcohol				
Personal Beliefs	.35	.27	1.82	.02
Peer Norms	.38	.44**	2.88	.06
Parent Norms	.17	.06	.87	.01
Tobacco				
Personal Beliefs	−.39	−.33	−1.79	.03
Peer Norms	.55	.32**	3.65	.15
Parent Norms	.28	.16	1.23	.02

Future Substance Use	B	β	t	Effect Size
Alcohol [§]				
Personal Beliefs	.71	.51*	2.22	.12
Peer Norms	−.23	−.19	−.84	.02
Parent Norms	.29	.13	.77	.01
Tobacco[§§]				
Personal Beliefs	.02	.08	.36	.00
Peer Norms	.01	.05	.25	.00
Parent Norms	.00	.00	.00	.00

Note: Peer Norms = Perceived peer beliefs about substance use; Parent Norms = Perceived parent beliefs about substance use; Effect size refers to the squared semi-partial correlation and was interpreted as follows: 0.10 to 0.30 small effect, 0.31 to 0.50 medium effect, and 0.51 to 0.80 large effect.

* $p < .05$,

** $p <. 01$

[±] n = 68,

[§] n = 38,

[§§] n = 53