Short Communication

Perceived parental reactions and peer respect as predictors of adolescent cigarette smoking and alcohol use

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ABSTRACT

Cigarette smoking and alcohol use contribute substantially to the global burden of morbidity and premature mortality. Most use begins during adolescence, often with experimentation taking place between 11 and 15 years of age. This study examined the importance of perceived parental reactions to, and peer respect for, cigarette smoking and alcohol use. Particular attention was given to the relative importance of these variables compared with the more widely examined influences of perceived parental and peer support. Our final models explained 44% of the variance in cigarette smoking and 46% in alcohol use. Most of the explained variance in both cigarette smoking and alcohol use was accounted for by only three variables: peer use, perceived parental reaction to use, and perceived respect from peers if using. Our findings indicate that perceived parental reaction to use and peer respect for use may be important contributors to adolescent cigarette smoking and alcohol use.

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1. Introduction

Adolescents participate in two overlapping social networks consisting of the family and peers (Helsen, Vollebergh, & Meeus, 2000; Thorlindsson, Sigfusdottir, & Bjarnason, 2007), and adolescent cigarette smoking and alcohol use are influenced by parental and peer behavior and relationships (Asbridge, Tanner, & Wortley, 2005; Avenevoli & Merikangas, 2003; Kristjansson, Sigfúsdóttir, Allegrante & Helgason, 2008; Kuendig & Kuntsche, 2006; Simons-Morton, 2004). For example, studies have found an inverse (protective) association between perceived parental support and adolescent smoking (e.g., Catanzaro & Laurent, 2004; Kristjansson et al., 2008), whereas perceived peer support is positively correlated with adolescent smoking (e.g., Kristjansson et al., 2008). However, in the context of alcohol abstinence, Groh, Jason, Davis, Olson, and Ferrari (2007) reported that perceived peer support decreased the likelihood of use. That is, although perceived parental support is generally understood as being supportive of normative behavior, and therefore protective

against substance use, ambiguity exists in relation to the implications of perceived peer support. Thus, although peer and adolescent substance use are strongly correlated, key aspects of the support process require further clarification (Simons-Morton & Chen, 2006; Wills, Resko, Ainette, & Mendoza, 2004).

Findings indicate that the relatively under-researched variables of perceived parental reactions to, and perceived peer acceptance of, adolescent smoking and alcohol use may be important (Borsari & Carey, 2006; Simons-Morton, 2004). For example, peer acceptance has been found to be related to adolescent cigarette smoking in the form of perceived attitudes to smoking (De Vries, Backbier, Kok, & Dijkstra, 1995). More specifically, in previous studies by our group, peer respect has emerged as a potentially important variable (Kristjansson et al., 2008). In contrast, to date, little attention has been given to parental reactions to adolescent substance use. Moreover, when comparing relevant studies, inconsistencies exist regarding the inclusion or not of gender as a variable (e.g., Avenevoli & Merikangas, 2003; Scholte, Poelen, Willemsen, Boomsma, & Engels, 2008; Zhang, Welte, & Wieczorek, 1999). Accordingly, the aim of the present study was to examine whether perceived parental reaction to smoking and alcohol use and peer respect for such use add substantially to understanding predictors of adolescent substance use. The study included separate covariates of perceived parental and peer support, mothers' and fathers' smoking and alcohol use, and measures of peer smoking and alcohol use.

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2. Methods

2.1. Sample

Participants were pupils aged 14 to 15 years attending all Icelandic secondary schools during March 2006. They were surveyed as part of the population-wide *Youth in Iceland* program, which has been previously described in detail (Sigfusdottir, Thorlindsson, Kristjansson, Roe & Allegrante, 2009). A total of 7430 students (51% girls) completed a questionnaire in a school setting, yielding a response rate of 81%.

2.2. Variables

2.2.1. Cigarette smoking and alcohol use

Cigarette smoking was measured with two questions: (a) "How often have you smoked cigarettes in your lifetime" (1 = "Never" to 7 = "40 times or more"); and (b) "How much have you smoked on average during the last 30 days" (1 = "Nothing," to 7 = "More than 20 cigarettes per day"). The questions were summed forming a scale ranging from 2 to 14 (Cronbach's Alpha = .80). Because of skewed distribution the composite variable was inverted and reflected to give a more acceptable distribution of scores. This was done by taking the inverse of each score and subtracting the result from the highest score possible and adding 1 to yield scores ranging from 1.00 to 1.43. Following transformation, the psychometric properties of the variable were acceptable for multivariate analyses (Skewness = 1.04, Kurtosis = −0.60). Regarding alcohol use, respondents were asked "How often have you had a drink of alcohol of any kind in your lifetime." Response alternatives were as for cigarette smoking and the distribution of scores was acceptable.

2.2.2. Perceived parental and peer support

Parental support was measured using a five-question scale (Kristjansson et al., 2008; Thorlindsson & Vilhjalmsson, 1991). Respondents were asked "How easy or hard would it be for you to receive the following from your parents" (1 = "Caring and warmth," 2 = "Discussions about personal affairs," 3 = "Advice about the studies," 4 = "Advice about other projects," 5 = "Assistance with things"). Response alternatives were from 0 = "Very difficult" to 3 = "Very easy." The items were summed creating a scale ranging from 0 to 15 (Cronbach's Alpha = .86). Substituting "friends" for "parents," peer support was measured using the same five-question scale as for parental support (Cronbach's Alpha = .86).

2.2.3. Perceived parental reactions to, and perceived peer respect for, cigarette smoking and alcohol use

To assess perceived parental reactions to substance use, participants were asked to indicate how their parents would react if they (a) "would smoke cigarettes," and (b) "would become drunk" (1 = "Almost would not care" to 4 = "Very much against"). Perceived peer respect for substance use was measured with the following two items: "How much do you think the following matters to gain respect from your peers" (a) "To drink alcohol," and (b) "To smoke cigarettes" (1 = "Increases respect a lot" to 5 = "Decreases respect a lot").

2.2.4. Parental and peer smoking and alcohol use

Parental smoking was measured with questions about parental smoking: "Is there someone in your home that smokes cigarettes daily." 1 = "Father," 2 = "Mother." The response alternatives were: 0 = "No," and 1 = "Yes." The amount of parental alcohol use was assessed with the question "Does either one of the following drink alcohol so as to become drunk." 1 = "Father," 2 = "Mother." Response alternatives varied from 1 = "No, never" to 5 = "Yes, very often." Peer smoking status was measured by asking: "How many of your friends smoke cigarettes," and the response alternatives were as

for parental alcohol use. Peer alcohol use was measured with the following question: "How many of your friends drink alcohol," and the response alternatives were as for peer smoking.

2.2.5. Gender and interaction variables

Boys serve as the reference group in analyses reported below, and interaction effects for continuous variables and gender were calculated by multiplying their mean-centred score with the gender score. The Variance Inflation Factor was computed and in no instance exceeded the 4.0 criterion recommended by Gujarati (2003).

2.2.6. Family structure

Family structure was measured using a single-item question: "Which of the following persons live in your home." Those living with both parents served as the reference category (70%) against all other alternatives.

2.2.7. Parental education

Respondents were asked to indicate the highest level of education attained by their father/stepfather and mother/stepmother. Responses were from 1 = "Completed secondary school or less," to 5 = "Graduated from university." Answers for both parents were mean-centred and then summed into a scale ranging from −5.81 to 4.19.

2.3. Statistical analyses

We used OLS regression, run in a stepwise manner, to study the relative importance of each of the independent variables on adolescent smoking and alcohol use, with F significance tests for differences in variance explained between models (Gujarati, 2003). Adopting this approach, the first model reveals the variable accounting for the largest amount of variance in the dependent variable, the second model reveals the two variables accounting for the most variance in the dependent variable, and so on, until no significant additional variance is accounted for by adding new variables. This method leaves out any variable that does not account for any significant additional variance explained in the dependent variable. Descriptive statistics for all study variables are available upon request.

3. Results

Table 1 shows that all ten variables entered in the stepwise analyses added significantly to variance explained in cigarette smoking. First, peer smoking accounted for the largest amount of variance, 34.9%, with a standardized beta coefficient of .59 in the first model but .41 in the 10th and final model. In model 2, perceived parental reactions to cigarette smoking added a further 5.7% of variance explained, with a beta of −.26 in the second model and −.21 in the 10th and last model. Respect from peers if smoking cigarettes added a further 2.4% of variance explained, with the total being 43.0% in the third model, with a standardized β of −.18, and continuing to be stable throughout the 10 models. Fathers and mothers smoking added a further 0.6% of variance explained. The remaining 5 variables of parental support, peer support, gender, family structure and parental education together added a combined 0.8% of the explained variance, increasing the total to 44.4% in the 10th and final model. Two interaction tests were significant but revealed only 0.2% additional variance explained (data not shown).

In Table 2, all variables, except for parental education, added significantly to variance explained in alcohol use. First, peer use accounted for the largest amount of variance in alcohol use, being 35.8%, with a standardized beta coefficient of .60 in the first model and .40 in the final model. Perceived parental reactions to drunkenness added a further 6.5% of variance explained in model 2, with a beta of

Table 1
Unstandardized and standardized OLS predictors from stepwise models of cigarette smoking among adolescents.

Variables	Model 1 Unstand. coeff. (stand. β)	Model 2 Unstand. coeff. (stand. β)	Model 3 Unstand. coeff. (stand. β)	Model 4 Unstand. coeff. (stand. β)	Model 5 Unstand. coeff. (stand. β)	Model 6 Unstand. coeff. (stand. β)	Model 7 Unstand. coeff. (stand. β)	Model 8 Unstand. coeff. (stand. β)	Model 9 Unstand. coeff. (stand. β)	Model 10 Unstand. coeff. (stand. β)
Constant	.932*	1.173*	1.277*	1.264*	1.255*	1.278*	1.265*	1.265*	1.259*	1.258*
Peer smoking	.084* (.591)	.071* (.498)	.060* (.426)	.060* (.421)	.059* (.419)	.059* (.415)	.058 (.409)	.058* (.412)	.058* (.410)	.058* (.409)
Parental react. to smok.		−.058* (−.256)	−.052* (−.230)	−.050* (−.221)	−.048* (−.214)	−.047* (−.210)	−.048* (−.210)	−.047* (−.210)	−.047* (−.208)	−.047* (−.207)
Res. from peers if smok.			−.026* (−.178)	−.026* (−.177)	−.026* (−.176)	−.025* (−.172)	−.026* (−.176)	−.026* (−.175)	−.026* (−.175)	−.026* (−.174)
Father smoking				.025* (.068)	.019* (.053)	.019* (.052)	.019* (.052)	.019* (.052)	.017* (.049)	.017* (.048)
Mother smoking					.018* (.050)	.017* (.048)	.017* (.047)	0.17* (.047)	.016* (.044)	.015* (.042)
Perceived par. support						−.002* (−.042)	−.003* (−.061)	−.003* (−.065)	−.003* (−.062)	−.003* (−.060)
Perceived peer support							.003* (.059)	.003* (.072)	.003* (.072)	.003* (.071)
Gender								−.012* (−.038)	−.012* (−.038)	−.012* (−.039)
Family structure									.011* (.033)	.012* (.034)
Parental education										−.001* (−.024)
Adj. R^2	.349	.406	.430	.434	.436	.438	.441	.442	.443	.444
F for R^2 change	$F(1.6285) = 3366.6^*$	$F(1.6284) = 602.0^*$	$F(1.6283) = 268.9^*$	$F(1.6282) = 50.4^*$	$F(1.6281) = 24.5^*$	$F(1.6280) = 19.0^*$	$F(1.6279) = 34.4^*$	$F(1.6278) = 14.2^*$	$F(1.6277) = 11.4^*$	$F(1.6276) = 6.3^{**}$

* $p < .01$.
** $p < .05$.

Table 2
Unstandardized and standardized OLS predictors from stepwise models of alcohol use among adolescents.

Variables	Model 1 Unstand. coeff. (stand. β)	Model 2 Unstand. coeff. (stand. β)	Model 3 Unstand. coeff. (stand. β)	Model 4 Unstand. coeff. (stand. β)	Model 5 Unstand. coeff. (stand. β)	Model 6 Unstand. coeff. (stand. β)	Model 7 Unstand. coeff. (stand. β)	Model 8 Unstand. coeff. (stand. β)	Model 9 Unstand. coeff. (stand. β)
Constant	.413*	3.015*	4.368*	4.256*	3.935*	4.286*	4.193*	4.142*	4.081*
Peer alcohol use	.944* (.598)	.781* (.495)	.647* (.410)	.641* (.406)	.632* (.400)	.630* (.399)	.620* (.393)	.633* (.401)	.630* (.400)
Parent react. to drink.		−.634* (−.276)	−.569* (−.248)	−.555* (−.241)	−.528* (−.230)	−.520* (−.226)	−.520* (−.226)	−.512* (.223)	−.509* (−.221)
Res. from peers if drink.			−.343* (−.189)	−.343* (−.189)	−.337* (−.186)	−.328* (−.181)	−.335* (−.184)	−.328* (−.181)	−.327* (−.180)
Family structure				.275* (.063)	.272* (.063)	.248* (.057)	.248* (.057)	.251* (.058)	.253* (.058)
Mother drunkenness					.153* (.061)	.144* (.057)	.142* (.056)	.138* (.055)	.101* (.040)
Pers. parental support						−.032* (−.047)	−.040* (−.060)	−.043* (−.064)	−.042* (−.063)
Peers. peer support							.023* (.038)	.033* (.055)	.033* (.055)
Gender								−.190* (−.048)	−.189* (−.048)
Father drunkenness									.058* (.028)
Adj. R^2	.358	.423	.449	.452	.456	.458	.459	.461	.461
F for R^2 change	$F(1.6329) = 3525.1^*$	$F(1.6328) = 716.5^*$	$F(1.6327) = 296.6^*$	$F(1.6326) = 45.2^*$	$F(1.6325) = 39.6^*$	$F(1.6324) = 24.3^*$	$F(1.6323) = 15.2^*$	$F(1.6322) = 23.5^*$	$F(1.6321) = 5.9^{**}$

* $p < .01$.
** $p < .05$.

−.28 falling to −.22 in the 9th and last model. Respect from peers if drinking added a further 2.6% of variance explained, with the total being 44.9% in the third model, having a standardized β of −.19 and continuing to be stable throughout all models. The remaining 6 variables explained an additional 1.2% of variance. The total variance explained for alcohol use was 46.1% in the 9th and final model. Two interaction tests were significant but revealed only 0.2% additional variance explained (data not shown).

4. Discussion

The present study sought to extend existing knowledge by analysing perceived parental reactions to cigarette smoking and alcohol use and perceived peer respect for such use in the context of several additional variables that have previously been deemed important. Although perceived parental reactions to cigarette smoking and perceived peer respect have been largely ignored in previous research, present findings suggest that both variables are important in understanding adolescent substance use. It is noteworthy that the same variables, in the same order of importance, accounted for most of the explained variance in both smoking and alcohol use. Although previous studies have argued that parental support is important (Catanzaro & Laurent, 2004; Wills et al., 2004), we found that variable to be of relatively minor importance compared to perceived parental and peer reactions to use. Similarly, parental smoking and drunkenness were found to be of relatively minor importance compared to parental reactions and peer respect.

Present findings suggest the possibility that previous studies of adolescent smoking and alcohol use may have exaggerated the importance of perceived parental and peer support. Perceived parental and peer support had relatively little effect once the variables of parental reactions to, and peer respect for, adolescent smoking and alcohol use had been entered in our models. As such, our data suggest that perceptions of parental reactions to, and peer respect for, adolescent smoking and alcohol use may be important specific elements of the more global construct of perceived support. Moreover, further study of gender differences is warranted. Whereas some previous studies have reported adolescent gender differences associated with parental substance use (e.g. Blokland, Hale, Meeus, & Engels, 2007; Marsden et al., 2005; Zhang et al., 1999), we found no such differences.

The main limitation of the present study is that it utilized cross-sectional data, thereby limiting the capacity for drawing causal inferences. Secondly, our measures of perceived parental and peer support would benefit from further validation, including use by independent research groups. Thirdly, although the models employed explain a high proportion of variance in the dependent variables, a substantial proportion of variability remained unexplained. Finally, our analyses were carried out only with individual-level data. Some recent studies have suggested that multilevel approaches could add to our understanding of key factors in adolescent substance use (Maes & Lievens, 2003; Thorlindsson et al., 2007).

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