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Parental Social Support as a Moderator of Self-Medication in Adolescents

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Abstract

Objective—We examined the moderating effects of parenting on the temporal relationship between negative affect and subsequent alcohol use in adolescents as an indicator of self-medication. Specifically, we tested whether youth are more likely to self-medicate if they receive less parental social support.

Method—We used a multi-method, multi-reporter strategy and an experience sampling paradigm to examine these mechanisms in an elevated risk sample preparing for the transition to high school. Seventy-one adolescents and their parents completed home-based interviews and adolescents completed a 21-day experience sampling protocol in which they reported their alcohol use daily and their affect thrice daily.

Results—Parent-reported family communication, though no other parental support indicators, moderated the relation between daily negative affect and alcohol use. Plotting of interactions showed a greater likelihood of drinking on days characterized by greater negative affect only in adolescents with higher levels of parent-reported family communication.

Conclusions—This study offers tentative support for parental support as a moderator of the relation between daily negative affect and alcohol use. Parental support may be a response to alcohol use and self-medication in teens such that parents become more involved and open in talking with their teens when they notice these patterns of behavior.

Keywords

self medication; negative affect; alcohol use; adolescents; parenting; social support

1. Introduction

Several theories share a focus on the desire to minimize or avoid negative affective states as an important motivating factor for substance use (e.g., Wills and Shiffman's (1985) stress-coping theory, Conger's (1956) tension reduction theory and Khantzian's (1997) self-

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Contributors

Author Andrea Hussong designed the study and conducted the statistical analyses. Authors Alison Reimuller and Julia Shadur wrote the draft of the manuscript and all authors contributed to and have approved the final manuscript.

Conflict of Interest

All authors declare that they have no conflicts of interest.

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medication theory). Although most youth do not report using alcohol to reduce negative affect, drinking to cope with negative affect may be a particularly important indicator of risk because it is associated with heavy and problematic alcohol use in adults (Cooper, Russell, & George, 1988). For this reason, it is important to identify youth at risk for engaging in styles of alcohol use that can be broadly characterized as “self-medication.”

Different methodologies are used in studies to assess these theories of self-medication and choice of methodology can affect study findings (Kassel, Hussong, Wardle, Veilleux, & Heinz, 2009). Between- and within-subjects designs both test aspects of the self-medication hypothesis, though between-subjects designs are far more common in studies of adolescents. Between-subject designs examine whether individuals with greater negative affect are more involved in alcohol use compared to individuals with less negative affect. These designs primarily use cross-sectional or multi-year longitudinal assessments. Thus, between-subjects studies identify whether heightened negative affect is a risk factor that we can use to determine “who” is at risk for subsequent alcohol use. Within-subjects designs assess whether increases in an individual’s level of negative affect at a particular time is associated with greater alcohol use compared to that individual’s typical level of negative affect. Within-subject designs require intensive repeated assessments of negative affect and alcohol use and typically occur within daily assessment (i.e., daily diary, ecological momentary analysis or experience sampling) or controlled laboratory studies. Thus, these studies identify whether heightened negative affect is a risk factor that we can use to determine “when” an individual is at risk for subsequent alcohol use.

Because between- and within-person designs assess different relations between negative affect and alcohol use, the match of methodology to proposed mechanism is particularly important in reconciling discrepant findings across studies of this relation. In the current study, we used methods that allow us to examine both between- and within-person effects of negative affect on alcohol use. However, we emphasize within-person effects because these are most consistent with predictions associated with the negative-reinforcement model inherent to theories of self-medication. Thus, we posit that daily elevations in negative affect will increase short-term (next day’s) risk for alcohol use following a self-medication hypothesis. This prediction requires intense repeated assessment of affect and alcohol use over short-time lags, dictating the experience sampling design of our study.

Experience sampling studies of college students and adults support elevated risk for drinking associated with daily increases in negative affect (a within-person effect; Hussong, Hicks, Levy, & Curran, 2001; Swendsen et al., 2000), although these daily associations are often moderated by such factors as gender and drinking context (Armeli et al., 2003). Although few daily assessment studies of negative affect-substance use associations have examined youth, Mermelstein and colleagues (Mermelstein, Flay, Hedeker, & Shiffman, 2003; Mermelstein, Hedeker, Flay, & Shiffman, 2003; Turner, Mermelstein, & Flay, 2004) used an ecological momentary analysis to show that adolescents who experiment with cigarettes report higher levels of negative affect and lower levels of positive affect before smoking episodes. Moreover, in previous analyses of our experience sampling study we found that adolescents who had more depressive symptoms, fewer conduct problems and poorer parent emotion socialization were more likely to drink on days following high negative affect (Feagans Gould, Hersh, & Hussong, 2007; Hersh & Hussong, 2009; Hussong, Feagans Gould, & Hersh, 2008). Thus, as with adult populations, only a subset of youth appears to engage in self-medication.

In an effort to further identify the subset of youth at risk for self-medication, we focus in the current study on a mechanism that may moderate the daily negative affect-alcohol use relation. Following Wills and Shiffman’s (1985) stress-coping theories of substance use, we

posit that families engaging in behaviors consistent with social support (i.e., positive family communication and high parental involvement) will provide youth with alternative support that they can use instead of alcohol as a means of reducing negative affect. Thus, self-medication will be less common in youth with greater parental support. Although no previous studies have examined whether parenting factors moderate within-person effects of negative affect on alcohol use, low parental support is related to greater substance use involvement in youth and, in some cases, to greater between-person effects of negative affect on substance use.

In general, lower parental social support predicts greater risk for substance use (Piko, 2000; Spooner, 1999; Wills, Resko, Ainette, & Mendoza, 2004; Wills & Vaughan, 1989). In particular, positive parent-child communication is inversely related to drug use patterns (Piercy, Volk, Trepper, & Sprenkle, 1991). Even as early as kindergarten and throughout development, a lack of parental involvement increases a child's risk for substance use later in life (Kaplow, Curran, Dodge, & Conduct Problems Prevention Research Group, 2002; Kandel & Andrews, 1987). Less is known about risk for affect-related drinking in youth with lower parental social support, although Wills and Cleary (1996) provided support for the buffering effect of social support on the impact of negative life events on substance use. Additionally, some evidence shows that social support from others buffers within-person negative affect-alcohol use relations. For example, Hussong et al. (2001) found that support from peers dampened self-medication patterns in young adults.

In the current study, we tested the hypothesis that parenting behaviors moderate the within-person relations between daily negative affect and subsequent alcohol use in adolescents. We expected that adolescents with less parental social support (i.e., parental involvement and family communication) will be more likely to self-medicate. We used a multi-method, multi-reporter strategy to examine these mechanisms in an elevated risk sample preparing for the transition to high school, typically a time of increased developmental stress.

2. Method

2.1 Participants

Participants in the current study, reviewed and approved by the University of North Carolina at Chapel Hill Institutional Review Board, completed all study procedures in the spring of their eighth grade year (Phase I) and the summer before starting ninth grade (Phase II). In Phase I, 399 (out of 436 enrolled) eighth grade students from seven schools in North Carolina completed school-based surveys. Valid data were provided by 365 students, determined by an honesty item assessing whether or not participants felt they were honest in their responses to the questionnaire. Recruitment for Phase II began with rank-ordering these participants based on a risk index that indicated current substance use, any initiation of substance use by eighth grade, or affiliation with peers who had been involved in substance use prior to ninth grade.

For phase II, parents were contacted by phone and screened in order of risk, such that the families of adolescents with the highest risk indices were contacted first, yielding an elevated-risk sample. In order to be eligible, they had to speak English with enough proficiency in order to complete consent procedures. Participants were not excluded based on gender, ethnicity, or socioeconomic status. One parent, identified as the child's primary caregiver, was selected to participate in the current study. We attempted to contact the first 196 participants on the recruitment list (including all 169 participants who listed any level of risk on the 6-point index as well as 27 participants who indicated no risk on this index), with 81 completing the study (i.e., 41% of those targeted for recruitment, $n = 196$, or 57% of those eligible and contacted for recruitment, $n = 142$). Primary reasons for non-participation

were inability to contact (n=33), ineligibility (n=21, language barrier, moving, did not pass grade, child death), limited availability (n=17), discomfort with the sampling paradigm (n=5), and privacy concerns (n=11). Twenty-eight individuals who did not participate provided no reason. The adolescents in Phase II are representative of the original elevated-risk targets initially contacted for recruitment, suggesting a lack of recruitment bias (see Hussong et al., 2008, for details). This sample also evidences greater risk than the Phase I school-based sample, suggesting the successful recruitment of an elevated-risk sample.

To be eligible for analysis in the current study, participants had to complete the assessment involving experience sampling methodology (ESM). Of the original 81 from Phase II, two participants did not complete the ESM procedures and six were missing more than 16 of the 21 days of ESM data and were not included in the analyses. An additional two participants were dropped from the current analyses due to missing data on parenting variables, the key predictors of interest. Our final sample includes 71 target adolescents from Phase II, with a total of 1233 observations of daily negative affect and alcohol use scores. The 71 participants are 54% female, have a mean age of 13.58 years ($SD=0.58$), and self identify as 58% Caucasian, 19% African American, 1% Hispanic, 1% American Indian or Alaska Native, 1% Asian, and 20% Other. Among caretakers, 83% of participating parents were biological mothers, 7% were biological fathers, 3% were step mothers, 4% are “other relatives, all of which were women (1 grandmother, 1 adoptive aunt, 1 adoptive mother), and 3% did not indicate their relation to the child.

2.2 Procedure

In the summer between eighth and ninth grade, students completed in-home assessments during both an initial and final visit (three weeks apart) and completed an experience sampling procedure during the three intervening weeks. During the initial visit, adolescents and their parents were assessed on self-reports of alcohol use, symptomatology, and several parenting and family variables. At the end of the initial visit, adolescents were given instructions for completing the daily diary recordings and they were provided with related materials (i.e., a wristwatch, a recording device and booklets, and a security box). Both adolescents and their parents were paid \$15 for their participation. The final visit (not included in our analyses) consisted of a second series of self-report questionnaires. Parents were not included in this last component of the study.

The experience sampling procedure occurred during the 21 days in between the initial and final visits. Target adolescents were asked to complete brief surveys (1–2 minutes) in response to a pre-programmed wrist-watch alarm. Each day, three pre-set alarms prompted participants to rate their levels of negative affect (sad, mad, worried, and stressed) at the moment that the alarm sounded. Measures of daily affect were contained in a recording device that was attached to the back of the wrist-watch. A fourth and final daily alarm prompted adolescents to record their alcohol use for the entire day. In order to protect participant confidentiality, the alcohol use recordings were kept in a security box in the adolescent’s home. As a back-up source of data collection and to minimize data loss, participants also placed a phone call into the study office phone to leave a message with their daily recordings. Precautions were taken to help ensure the privacy and confidentiality of all daily recordings and messages, including the use of response codes that were not interpretable to anyone outside of the study. Additional precautions were taken to further prevent the disclosure of personal information, which included acquiring a Certificate of Confidentiality.

2.3 Measures

2.3.1 Demographics—During the initial visit, adolescents self-reported gender, age, and ethnicity, and parents self-reported their highest level of education. The highest level of education obtained any parent was used to indicate parent education. The majority of parents (65%) had either partially or fully completed college or technical/vocational school.

2.3.2 Adolescent Daily Alcohol Use (ESM)—The experience sampling of alcohol use involved adolescents recording their alcohol use at 10:00 pm every night (when the last daily alarm sounded) or before adolescents went to bed during the 3-week period. Alcohol use was rated on a 6-point scale from 0 to 5 or more standard drinks of alcohol. In order to protect reports of alcohol use, recordings were made by using numbers (0–5). The outcome measure for overall daily alcohol use was dichotomized to represent use versus no use. During the 21-day experience sampling period, 25% of participants endorsed using alcohol ($n=18$). Compared to national data from the same year that the current study was conducted, which show that in retrospective 30-day reports 20% of eighth graders endorsed using alcohol (Johnston et al., 2009), the current sample reflects notably elevated risk for overall substance use. On average, across the entire sample, adolescents reported using alcohol on 3% of days in which they provided a response (Table 1). However, adolescents who endorsed alcohol use on at least one day over the 21-day sampling period ($n=18$) reported using alcohol on 13% of days. There were no significant differences in mean levels of alcohol use over the 21-day experience sampling paradigm across gender or the adolescent's ethnic minority status. However, there was a significant positive correlation between mean levels of alcohol use over the 21-day experience sampling paradigm and parent education ($r=0.32$, $p=0.007$).

2.3.3 Adolescent Daily Negative Affect (ESM)—Variation in negative affect was assessed through the experience sampling of daily mood across the 3-week period. Adolescents reported the degree to which they felt sad, mad, worried, and stressed when prompted by three daily random pre-set alarms. For each type of negative affect, item responses ranged from (1) not at all to (5) very much indicating the degree to which adolescents endorsed feeling each emotion at that moment. Items reflecting negative affect were chosen based on the dimensions that are often used in self-medication research (e.g., Hussong et al., 2001). The descriptions of the types of negative affect were adapted from the Multiple Affect Adjective Check List – Revised (MAACL-R; Lubin et al., 1986) in order to use age-appropriate wording. To create a daily negative affect composite score for each of the 21 days, the maximum ratings given to each type of emotion (sad, mad, worried, and stressed) were averaged together within any given day. In previous research, reports of daily negative affect were found to be adequately reliable (average $\alpha = .79$; Hussong et al., 2008). Results from the current sample yielded a mean negative affect score of 1.64 ($SD=0.57$) with scores ranging from 1.00 to 3.10; alphas for the daily negative affect measures ranged from .67 to .90 with an average alpha of .78. There were no significant differences in mean levels of negative affect across gender, parent education or the adolescent's ethnic minority status.

2.3.4 Family Communication – adolescent and parent report (initial visit)—Twenty items assessed the extent of communication among family members using a measure from Olson et al. (1985), reported by both target adolescents and their parents. The response scale ranged from (1) strongly disagree to (5) strongly agree, with half of the item responses reverse scored. The twenty items are comprised of two different subscales, including problem communication (ten items) and open communication (ten items). The scale for family communication was constructed by taking the mean score across all items, separately for each reporter. For target-report of family communication, results from the current sample yielded a mean score of 3.16 ($SD=0.64$), with adequate internal reliability (α

= .85). For parent-report of family communication, results from the current sample yielded a mean score of 3.56 ($SD=0.46$), with adequate internal reliability ($\alpha = .79$). The correlation between parent- and target-report of family communication was significant ($r = 0.25, p = .03$). Parents of white adolescents reported significantly higher levels of family communication than parents of ethnic minority youth ($t(69)=2.07, p=.04$). However, there were no differences across race in adolescent report of family communication. No differences in parent- or self-reported family communication were found across adolescent gender or parent education.

2.3.5 Parental Involvement – adolescent and parent report (initial visit)—Three items assessed the degree of parental involvement with the target adolescent. Both targets and parents were asked to report the degree to which parents were involved with their children in the past three months in regards to general involvement in life, caring about daily activities, and involvement with hobbies. Item responses ranged from (1) strongly agree to (5) strongly disagree. The three items were developed by study staff. The scale for parental involvement was constructed by taking the mean score across all items, separately for each reporter. For target-report of parental involvement, results from the current sample yielded a mean score of 3.96 ($SD=0.84$), with adequate internal reliability ($\alpha = .72$). For parent-report of parental involvement, results from the current sample yielded a mean score of 4.52 ($SD=0.43$), with adequate internal reliability ($\alpha = .60$). There was a weak correlation between parent- and target-report of parental involvement ($r = 0.17, p >.05$). Within reporter, the correlation between target-reports of parental involvement and family communication was strong and significant ($r = .51, p <.001$), and the correlation between parent-reports of parental involvement and family communication was also strong and significant ($r = 0.43, p <.001$). There was a significant positive correlation between parent report of parental involvement and parent education ($r=0.29, p=.02$) but not adolescent report. There were no differences across race or gender in either parent- or adolescent-reported parental involvement.

3. Results

We used a mixed modeling approach to test study hypotheses following established guidelines for distinguishing within- (i.e., self-medication) and between-person effects of interest (Bryk & Raudenbush, 1987). Because our outcome measure was dichotomous, we estimated these models using maximum likelihood with five points of quadrature in Proc Glimmix (SAS Institute, 2009). We conducted separate models to test each of our proposed moderators (four total) and estimated for each a two-level model in which repeated observations were nested within individual. Predictors at level 1 (for each observation) included whether the observed day occurred on a weekend or weekday (as a control for within-week variation in drinking) and person-centered affect. Predictors at level 2 (for each individual) of alcohol use intercepts included control variables (gender, parent education, and ethnicity), the aggregated (averaged) repeated assessments of affect, and the parenting moderator main-effect. Predictors at level 2 for the daily affect-alcohol use slope included the parenting moderator, which represents the cross-level interaction between daily negative mood and parenting that tests our primary hypotheses.

As reported in Table 2, we found a greater likelihood of drinking for individuals with poorer (target-reported) family communication ($\beta=-1.14, OR=.38, p<.10$) and higher parent education ($\beta=0.83-0.95, OR=2.29-2.59, p<.05$). The between-person effect of aggregated negative mood was inconsistent and weak (i.e., in two models reaching marginal significance). In addition, we found that parents' reports of family communication ($\beta=1.31, OR=3.71, p<.05$) moderated daily mood-alcohol use relations. To probe this significant interaction, we plotted predicted values for daily drinking as a function of negative affect at

varying levels of parents' report of family communication (Curran, Bauer, & Willoughby, 2006; see Figure 1). We picked values of 2.66, 3.16, 3.66, 4.16, and 4.66 to characterize the family of curves depicting the relation between daily negative affect and daily alcohol use across the range of observed values on parental communication. Plotting of interactions showed a greater likelihood of alcohol use on days characterized by heightened negative mood in adolescents with higher levels of parental communication.

4. Discussion

The current study examined whether adolescents with poorer parental support (as indexed by less involved parents and poorer family communication) show greater risk of self-medication. Strengths of the study include use of experience sampling to examine daily covariation between negative affect and drinking behavior in adolescents as an index of self-medication as well as use of multiple reporters of parental involvement and family communication. Modest support for the moderating effect of parental support on adolescents' self-medication emerged. However, rather than buffering adolescent risk for self-medication, greater parental support was associated with stronger risk for self-medication.

4.1 Parental Support

More specifically, we found that adolescents whose parents reported more positive forms of family communication (i.e., more open and with less conflict) were more likely to drink on days on which the adolescent reported elevated negative affect. This effect must be interpreted with caution given that only one of our four indicators of parental support significantly moderated the affect-drinking relation. Nonetheless, it appears that family communication may be associated with engaging in self-medication.

In interpreting this finding, we draw on transactional theories of parent-adolescent interaction which argue that individuals are affected by as well as affect their environment indicating bidirectional influences of individual and environment (Sameroff, 1975). Several studies have assessed the bidirectional influence of adolescent substance use and parenting behaviors and found that with increased substance use, there is a decrease in parental behaviors such as parental support, parental control and family involvement (Coley, Votruba-Drzal, & Schindler, 2008; Stice & Barerra, 1995). However, to our knowledge, no study has examined the bidirectional relationship within the context of self-medication. In the current study, parental support may be a response to drinking and self-medication in adolescents such that parents become more involved and open in communicating with their teens about the distress these teens are feeling when they notice these patterns of behavior. In contrast to other forms of drinking, self-medication is associated with higher levels of negative affect which may attract more parental support and concern, thereby resulting in influences opposite to previous findings. Future studies are needed that address such transactional influences, including how parenting changes in response to self-medicating patterns of drinking in teens.

This moderating effect of parental support was found only in parent, not teen, reports. Such reporter differences argue against the potential influence of reporter bias (i.e., in which teen but not parent reports would be predictive of teen-reported outcomes). Moreover, the modest correlation between parent and teen reports ($r=.25$) is consistent with prior literature showing low parent-adolescent agreement on reports of parenting (Gaylord, Kitzmann, & Coleman, 2003), leading some to argue that the two reporters actually tap into different constructs (Guion, Mrug, & Windle, 2009). In the current study, parents' reports of family communication may include their efforts to engage youth, whether or not those efforts are acknowledged by the youth (and thus reflected in teens' reports) or are successful. Thus,

parent reports of greater family communication may be more likely to reflect parental attempts to intervene with youth showing problem behaviors, like self-medication, even if those attempts are unsuccessful or unacknowledged.

In contrast to this positive association between parent-reported family communication and self-medication, the main effect of target-reported family communication on adolescents' drinking was marginally significant and negative. Thus, adolescents who reported more positive family communication also reported lower alcohol involvement. This finding is consistent with the larger literature, mirroring the findings of Kerr and Stattin (2000) in showing that positive, open communication that includes adolescent disclosure is associated with lower risk for adolescent substance use. Such adolescent-reports of family communication may be more likely, then, to reflect perceived support and the adolescent's willingness to engage with the parent.

4.2 Negative Affect

Using multilevel modeling, our analyses parsed within- and between-person effects of negative affect on alcohol use. There was some evidence, albeit inconsistent, for a between-person effect of aggregated negative mood on alcohol use. Such findings provide weak support for higher alcohol use among those adolescents who have high mean level negative affect when compared to individuals with lower levels of negative affect. Between-person effects help to identify who is at risk for alcohol use, specifically those adolescents with high negative affect. However, this cross-sectional finding tells us little about why these youth are at risk.

On the other hand, within-person analyses examine daily variation in negative affect and alcohol use and allows for a comparison of an individual's daily negative affect to his/her baseline affect. This comparison is more consistent with predictions associated with the self-medication hypothesis. However, as in studies of adult populations, the current study found no evidence of a within-person main effect of negative affect on daily alcohol use. These findings underscore the larger recognition in the literature that self-medication is not a pattern of drinking that broadly characterizes adolescent alcohol use. Rather, self-medication appears to occur within certain vulnerable populations of adolescents such as those with more depressive symptoms, fewer conduct problems and poorer parent emotion socialization (Feagans Gould et al., 2007; Hersh & Hussong, 2009; Hussong et al., 2008).

4.3 Implications and Conclusions

The current study used an experience sampling paradigm to assess self-medication in adolescents. Our multilevel modeling approach allowed for an analysis of groups of individuals at risk (between-person effect) as well as when they are at risk (within-person effect). Although results provide some evidence that parents may play a role in self-medication patterns, these findings were in the opposite direction as hypothesized. Parental social support was associated with a greater likelihood of self-medication. This association may indicate that parents who recognize self-medication in their adolescents react by increasing their open communication. However, additional work is necessary to clarify the direction of the effect found in the current study. Importantly, the finding also adds to our growing understanding of factors that identify vulnerable sub-populations for self-medication. Because self-medication occurs in only a minority of youth, identifying who is at risk for engaging in this risky pattern of drinking has the potential to inform future prevention efforts.

Although our assessment methods allow for confidence in our study findings, limitations of the current study should be noted. Due to the limited sample size and low endorsement rate

of alcohol use, findings should be considered preliminary until replicated. Additionally, there is no indication of whether parental behavior was in response to self-medication patterns that were already in place before the beginning of the study assessment period. Future studies should use a longitudinal design to capture the temporal precedence of parental moderators and self-medication patterns which would allow for a clear interpretation of the relationship that exists. The current study included only one parent so it is unclear whether measures of parental moderators provide a correct depiction of the family support system. Furthermore, additional indicators of parental support, such as perceived parental support, could allow for a direct examination of parental support (as opposed to indirect measures such as perceived parental involvement and family communication).

In conclusion, the current study is unique in its use of an experience sampling paradigm to assess parenting behaviors as a moderator of negative affect-alcohol use relations. Although we found preliminary evidence that parents may affect the negative affect-alcohol use relation, high levels of parental support was associated with a greater likelihood to self-medicate and therefore does not support study hypotheses that parental support would reduce the likelihood of self-medication. Further study of the role of parenting in self-medication is indicated and has implications for prevention and intervention of adolescent self-medication. Additionally, use of multilevel models allowed an analysis of interindividual as well as intra-individual differences in self-medication. By identifying individuals at risk and the mechanism by which they are at risk for self-medication, interventions could be tailored in order to more effectively stop such patterns of alcohol use.

Research Highlights

- We used an experience sampling paradigm to examine parental factors that are associated with self-medication in an elevated risk sample.
- Parent-reported family communication moderated the relation between daily negative affect and alcohol use.
- Findings showed a greater likelihood of drinking on days characterized by greater negative affect only in adolescents with higher levels of parent-reported family communication.
- Parental support may be a response to alcohol use and self-medication.

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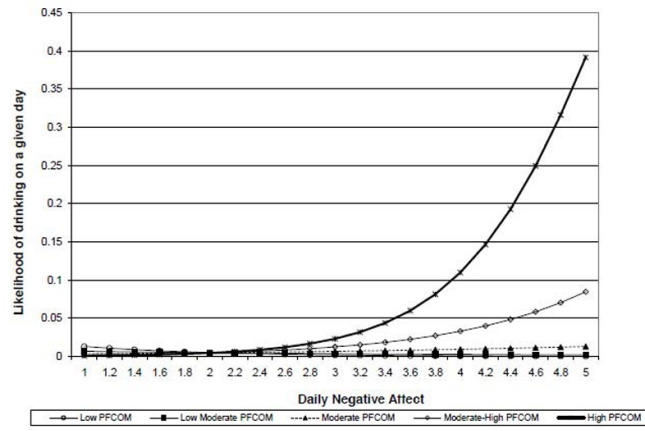


Figure 1.
Parent reported Family Communication and Self-Medication

Table 1

Descriptive statistics for study predictors and outcomes

Study Variable	Mean (SD)	Range
Adolescent Alcohol Use (ESM)	0.03 (0.07)	0.00 – 1.00
Adolescent Daily Negative Affect (ESM)	1.64 (0.57)	1.00 – 3.10
Family Communication	---	---
Adolescent Report	3.16 (0.64)	1.70 – 4.55
Parent Report	3.56 (0.46)	2.65 – 4.55
Parental Involvement	---	---
Adolescent Report	3.96 (0.84)	1.67 – 5.00
Parent Report	4.52 (0.43)	3.67 – 5.00

Table 2

Results of Mixed Models Testing Parenting Effects on Self-Medication

PREDICTORS	Family Communication (Parent-report)		Family Communication (Target-report)		Parental Involvement (Parent-report)		Parental Involvement (Target-report)	
	B	OR	B	OR	B	OR	B	OR
Between-Person								
Gender	0.35	1.42	0.24	1.27	0.29	1.34	0.36	1.43
Race	0.35	1.42	0.17	1.19	0.28	1.32	0.32	1.38
Parent Education	0.91*	2.48	0.91*	2.48	0.95*	2.59	0.83*	2.29
Aggregated Affect	0.94⁺	2.56	0.55	1.73	0.74	2.10	0.83⁺	2.29
Parenting	-0.05	0.95	-1.14⁺	0.38	-0.64	0.53	-0.37	0.69
Within-Person								
Weekday	-0.06	0.94	-0.01	0.99	-0.02	0.98	-0.02	0.98
Daily Affect	0.21	1.23	-0.07	0.93	0.20	1.22	0.24	1.27
Cross-level Interaction								
Parenting × Daily Affect	1.31*	3.71	-0.67	0.51	0.06	1.06	0.11	1.12

Note: Reported values are unstandardized betas. Significance levels are indicated by ⁺ (for p<.10) and * (for p<.05).