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Stress-Induced Drinking in Parents of Adolescents with Externalizing Symptomatology: The Moderating Role of Parent Social Support

Elizabeth D. Handley, MA and Laurie Chassin, PhD

Department of Psychology, Arizona State University, Tempe, Arizona

Abstract

Parenting adolescents with externalizing symptomatology has been repeatedly shown to be stress-inducing for parents. One possible coping strategy for parents dealing with this chronic stress may be drinking. The current study extended previous research by examining the prospective relations between adolescents' externalizing behaviors and parents' negative affect and alcohol consumption. Additionally, the present study tested whether this mediated effect is a function of parental social support. Adolescents' externalizing symptoms prospectively predicted mothers' negative affect. Interestingly, however, mothers' negative affect prospectively predicted mothers' drinking only for those mothers with low social support. Furthermore, the mediated effect (Wave 1 adolescent externalizing symptoms → Wave 2 mother negative affect → Wave 3 mother drinking) was significant only for mothers with low social support. There were no effects of adolescents' externalizing symptoms on fathers.

Approximately 7% of children between the ages of 9 and 16 are affected by disruptive behavior disorders (DBDs), including attention deficit hyperactivity disorder (ADHD), oppositional defiant disorder (ODD), and conduct disorder (CD).¹ The symptoms of these disorders are broadly categorized as externalizing symptomatology, behaviors that are distressing to others, and represent the most common form of mental health problems in children.² Externalizing symptoms include behaviors such as aggression, defiance, inattention, impulsivity, and hyperactivity.

CHILD EXTERNALIZING BEHAVIOR AND PARENT EMOTIONAL DISTRESS

It is well-documented that parenting children with externalizing symptoms is stressful for adults. For example, mothers of hyperactive children not only experience greater levels of stress than do mothers of non-hyperactive children, but they have also been found to experience stress levels comparable to parents of autistic children.³⁻⁷ Although it is more common for boys rather than girls to exhibit externalizing symptoms, the stress associated with parenting these children does not vary by child's gender.⁸ Parents of children demonstrating disruptive

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Address correspondence to Ms. Handley, Department of Psychology, Arizona State University, P.O. Box 871104, Tempe, AZ 85287-1104. E-mail: elizabeth.handley@asu.edu..

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behaviors are faced with not only the daily stress of these behaviors, but also numerous associated hardships such as communication with frustrated teachers or disturbed neighbors, possible embarrassment associated with public displays of inappropriate behavior, difficulty finding childcare, and so on.⁹

In addition to heightened daily stress, parents of externalizing children are also at risk for increased symptomatology and psychopathology. For example, Nigg and Hinshaw¹⁰ found that mothers of children with DBDs were more likely to experience a major depressive episode and anxiety symptoms in the past year than were mothers of control children. Relations between child externalizing behaviors and parental depression are likely to be bi-directional and stem from a complex and reciprocal interplay of both genetic and environmental factors. However, results from experimental studies suggest that some of the relation reflects the effects of children on their parents.

In a series of laboratory studies conducted by Pelham and colleagues,¹¹⁻¹⁴ adult participants interacted with a child confederate trained to either display externalizing symptoms or act as a control. Results of these studies consistently demonstrated that interacting with a deviant child was distressing for adults. Adults exposed to the deviant child reported significantly greater feelings of unpleasantness, anxiety, depression, and hostility after the interaction than did adults in the control condition.¹¹⁻¹⁴ Therefore, both naturalistic and experimental studies provide evidence that parenting and interacting with children displaying externalizing behaviors is not only stressful for adults, but can elicit psychological distress and symptomatology.

In addition to eliciting distress, child externalizing behaviors can also lead to alcohol consumption among adults.¹¹⁻¹⁴ In the laboratory studies conducted by Pelham and colleagues described above, participants exposed to the disruptive child not only experienced distress, but also consumed more alcohol after the interaction than did participants exposed to the control child.^{11,12} For example, male college students who interacted with the deviant child drank 54% more alcohol after the interaction than did male students in the control condition. Moreover, parents of children without a history of disruptive behaviors who interacted with the deviant confederate child drank 30% more alcohol than did the parents who interacted with the control child. These studies indicate that in an experimental setting, adults who interact with externalizing children are at risk for psychological distress and alcohol consumption.

Stress-Induced Drinking

Drinking alcohol in response to interacting with a child displaying disruptive behaviors can be understood, at least in part, as a method of regulating the distress associated with the interaction. For example, drinking in laboratory studies by Pelham and colleagues¹¹⁻¹⁴ can be conceptualized as a method of coping with the distress that is elicited from exposure to an externalizing child. This conceptualization employs the tension reduction theory of alcohol consumption, which posits that alcohol reduces tension and, therefore, that people drink to experience relief from their stress.¹⁵

Although previous studies have found much support for the general tension reduction theory,¹⁶⁻¹⁸ many researchers have suggested that the process may be more complex than a simple cause-effect model.¹⁹ For example, in a review of the literature on work stress and alcohol consumption, Frone¹⁹ asserted that a simple cause-effect model suffers from two significant limitations. First, this model does not address the underlying processes by which stress relates to drinking. Second, this model assumes that all individuals are at equivalent risk for drinking when faced with a stressful situation.

To address these limitations, a number of researchers have explored the role of negative affect in mediating the link between stress and drinking.²⁰⁻²² Results from these studies have been mixed. For example, the relations between work stressors (ie, work pressure and work content) and alcohol consumption were mediated by negative emotions.²¹ However, work distress (a measure of how bothered, upset, or frustrated an individual feels when thinking about work) was not found to mediate the link between work stressors and alcohol use.²⁰

One explanation for the inconsistent findings may be that vulnerability or protective factors moderate the mediation model. In other words, not all individuals are at equivalent risk for engaging in stress-induced drinking. For example, when parents of children diagnosed with DBDs were exposed to the deviant confederate child in a laboratory experiment, although they were significantly distressed by the interaction, they did not drink more than parents of DBD children in the control condition.¹³ Pelham and colleagues¹³ suggest that these parents, for whom disruptive behaviors are not new, may have developed other, more adaptive coping mechanisms from their experience with their own children.

Social Support as a Moderator

One moderator that may affect an individual's likelihood of engaging in stress-induced drinking is his or her available social resources. For instance, social support has been found to moderate the link between financial stress and alcohol consumption, such that individuals with higher social support were less likely to drink in response to financial stress.²² Also, a lack of social support may explain the fact that single adults (as opposed to married adults) are at increased risk for stress-induced drinking.^{12,23} Specifically, Pelham and colleagues¹² found that single mothers consumed alcohol at a rate of nearly three times that of married mothers, after interacting with a child displaying disruptive behaviors. This is not surprising given the findings that single mothers do not have social support from a spouse, and that separated and divorced mothers are more likely to engage in heavy drinking than are married mothers.²⁴

Therefore, previous research provides support for both negative affect as one of the underlying processes in the stress-drinking link and for social support as a moderator of these associations. Taken together, the literature points to a moderated mediation model as the best representation of the phenomenon of stress-induced drinking. A moderated mediation model is illustrated in Figure 1 and classically refers to different relations between a predictor (here, adolescent externalizing behavior) and a mediator (here, parent negative affect) across levels of the moderator (parent social support), as well as different relations between the mediator (parent negative affect) and the outcome (parent drinking) across levels of the moderator (parent social support). Moderated mediation also implies an indirect or mediated process:

(adolescent externalizing behavior →

parent negative affect →

parent drinking)

that differs across various levels of the moderator (parent social support).^{25,26}

Present Study

Although the work of Pelham and colleagues¹¹⁻¹⁴ provides strong experimental evidence that interacting with a child displaying externalizing symptoms is stressful for adults and that certain individuals may be at risk for consuming alcohol as a means of regulating that distress, this moderated mediation model of parenting stress and alcohol consumption has yet to be tested outside of the laboratory. It is important to understand how these effects play out in a real-life setting, where parents have a broader range of coping strategies than in the laboratory and where parents have real responsibilities for childrearing. Therefore, the current study sought

to expand on previous research by examining the prospective relations between adolescents' externalizing symptoms, parents' negative affect, and parents' alcohol consumption longitudinally, in a naturalistic setting, and using parent-child pairs. Moreover, because fathers are largely understudied and because men are more likely than are women to engage in stress-induced drinking,¹¹ the present study included a sample of both mothers and fathers.

We tested a moderated mediation model (see Figure 1) in which adolescent externalizing behaviors were hypothesized to significantly increase parent negative affect, which in turn was hypothesized to predict increased parent alcohol consumption. Additionally, parent social support was hypothesized to moderate both links in the mediation model. That is, adolescent externalizing behavior was hypothesized to predict parents' negative affect more strongly for parents with low social support (ie, moderation of the first link in the model). Similarly, negative affect was expected to predict drinking more strongly for parents with low social support (ie, moderation of the second link in the model). Consistent with these two moderated links, the entire mediated effect (adolescent externalizing behavior → parent negative affect → parent drinking) was then hypothesized to be stronger at lower levels of parent social support.

METHOD

Participants

Participants in the current study were from a larger ongoing longitudinal study of familial alcoholism.²⁷⁻²⁹ The total sample at Wave 1 consisted of 454 adolescents and their parents. COAs ($n = 246$) had at least one biological alcoholic parent who was also a custodial parent, whereas demographically matched controls ($n = 208$) had no biological or custodial alcoholic parents. Adolescents and their parents were interviewed annually for three years. 97% of families had a child and at least one parent interviewed at all three waves. The current study employed a sub-sample of alcoholic and nonalcoholic families as described below.

Parents were included in the current study if they were interviewed at all three waves of data collection ($n = 395$ mothers and $n = 306$ fathers). One alcoholic mother who entered treatment during the study was identified by model diagnostics as an influential outlier and was deleted. Mothers were, on average, 39.2 years old at Wave 1 and had completed technical school. Eighty-one percent of mothers were Caucasian, 12.2% met DSM-III criteria for lifetime alcohol abuse or dependence at Wave 1 using a computerized version of the Diagnostic Interview Schedule, version III (CDIS-III),³⁰ and 34.3% abstained from drinking at Wave 1. Sixteen percent of mothers reported heavy drinking at Wave 1 (defined as three or more drinks on a usual drinking occasion). Fathers were, on average, 41.3 years old at Wave 1 and had completed technical school; 77.8% of fathers were Caucasian, 50.7% met DSM-III criteria for lifetime alcohol abuse or dependence at Wave 1,³⁰ and 28.8% abstained from drinking at Wave 1. In addition, 21.2% of fathers reported heavy drinking at Wave 1 (defined as five or more drinks on a usual drinking occasion). Adolescents were on average 12.7 years old at Wave 1; 46.1% of adolescents were female and 50.6% had at least one biological parent who met DSM-III criteria for lifetime alcohol abuse or dependence using a computerized version of the Diagnostic Interview Schedule, version III (CDIS-III)³⁰ at Wave 1.

Differences between mothers included in the maternal analysis ($n = 395$) and those excluded ($n = 59$) because of missing data were tested on all variables of interest (t -tests). Women excluded from the current sub-sample were more likely to be younger ($t = 3.36, p = .001$), less highly educated ($t = 2.87, p = .004$), meet criteria for alcohol use disorder ($t = 2.19, p = .04$), and report higher levels of alcohol consumption at Wave 1 ($t = 2.11, p = .04$). Adolescents included in the mother analysis were more likely to be the child of a nonalcoholic parent ($t = 3.68, p = .001$). Because of these differences, caution is warranted when generalizing the results

of the present study to a broader sample of mothers. However, there were no differences between included and excluded mothers in child's gender, age, or externalizing symptoms, as well as mother's marital status, negative affect, drinking at Wave 3, social support, or family history of alcoholism. Differences between fathers included in the paternal analysis ($n = 306$) and those excluded ($n = 148$) because of missing data were also tested on all variables of interest (t -tests). No differences were found between included and excluded fathers or the adolescents who were included or excluded in the father analysis.

Recruitment

COA families were recruited via court records, health maintenance organization (HMO) wellness questionnaires, and community telephone screenings. Direct verification of parental alcoholism was ascertained in a face-to-face interview using the DIS version III³⁰ to obtain a DSM-III diagnosis of lifetime alcohol abuse or dependence. Interviews were conducted with the alcoholic parent unless they refused to participate, in which case he or she was diagnosed alcoholic by spousal report using the Family History-Research Diagnostic Criteria (FH-RDC).³¹

Matched control families were recruited via telephone interview using reverse directories to find families living in the same neighborhood area as the COA families. Control families were matched according to child's age (within one year), family composition (one-parent or two-parent), ethnicity, and socioeconomic status (based on property value codes or reports of parental income). The final criterion was that neither biological nor custodial parent met DSM-III or FH-RDC³¹ lifetime diagnosis of alcohol abuse or dependence. Seventeen families who reported indicators of alcohol problems, which were close to the diagnostic threshold, during this face-to-face interview were eliminated from the study in order to decrease the chance of being diagnosed alcoholic later in the project. A complete description of sample recruitment and representativeness is reported elsewhere.²⁸

Procedure

Institutional Review Board approval was attained for the protocol. The Adolescent and Family Development Project was explained to families as a study supported by the National Institute on Drug Abuse that was designed to explore the reasons why certain adolescents develop problems while others do not. All participants were informed that they would be asked questions pertaining to drug and alcohol use, but parental alcoholism was not mentioned as a selection criterion. Families were interviewed on three occasions, each one year apart.

Interviews were conducted either at the family's residence or at the Arizona State University campus. Trained project personnel used laptop computers to enter data. Interviewers read items aloud, and participants had the options either to enter responses themselves or to respond verbally to questions. In most cases, family members were interviewed simultaneously but in separate rooms to avoid threats of contamination and to increase privacy of response. Interviews lasted approximately one to two hours and families were paid \$50 for their participation. Sample maintenance activities included birthday cards and semi-annual newsletters, both of which served to provide updated address information and maintain enrollment over study waves.

MEASURES

Alcohol Consumption

Parents self-reported their alcohol consumption using two items at baseline (Wave 1) and again two years later (Wave 3). To assess frequency of alcohol consumption, participants were asked "During the past year, how often have you had a drink of beer, wine, wine cooler, or liquor?"

with response options ranging from 0 (not at all) to 8 (everyday). To assess quantity of alcohol consumption, participants were asked “When you drink, about how many cans of beer, glasses of wine, bottles of beer, or drinks of liquor do you usually have?” with response options ranging from 0 (none) to 8 (nine or more drinks). Quantity was multiplied by frequency to index alcohol consumption. Because modeling techniques are sensitive to non-normality, a log transformation was used to reduce skewness and kurtosis. The log transformed variable was multiplied by 10 to facilitate interpretation. See Table 1 for descriptive statistics.

Externalizing Symptomatology

Mothers and fathers reported on their adolescents' externalizing symptoms at Wave 1 using eight items from the Child Behavior Check List (CBCL).³² These included “argues a lot,” “cruelty to others,” “destroys things,” “gets in many fights,” “lying or cheating,” “physically attacks people,” “threatens people,” and “steals.” The data were originally collected using a three-response format (0 = not at all, 1 = somewhat true, 2 = very true), but there were sparse responses in the highest category. Because of this, the trichotomous response was collapsed to a binary response. Item response theory (IRT) was then used to create mother-report and father-report scores for each child. IRT allows for differential contributions of items within a scale to the underlying construct. A complete description of this scale construction is reported elsewhere.³³ Mother-report of adolescent externalizing behavior was used in the mother model of stress-induced drinking, and father-report of adolescent externalizing behavior was used in the father model. Higher scores on the externalizing variable indicated greater externalizing symptoms. See Table 1 for descriptive statistics.

Social Support and Conflict

Mothers and fathers self-reported on their social support at Wave 2 using 12 items modeled after the Arizona Social Support Schedule.³⁴ Six items were designed to tap social support (eg, “I have people who are important to me who I can talk to about things that are very personal and private”), and six items were designed to tap conflict (“I have people who are important to me who take advantage of me”). Response options ranged from 1 (strongly agree) to 5 (strongly disagree). Conflict items were reversed scored, and a mean of both support and conflict items was calculated so that higher scores indicated higher levels of social support and lower levels of conflict. In the current subsample, internal consistency was .81. See Table 1 for descriptive statistics.

Negative Affect

At Waves 1 and 2, parents self-reported their negative affect during the past three months using 23 items adapted from Veit and Ware's mental health inventory.³⁵ Items included “How much of the time did you feel depressed?” and “How much of the time have you felt tense or `high-strung?’” Response options ranged from 1 (all of the time) to 6 (none of the time).

A mean score was calculated such that higher scores indicated higher levels of negative affect. In the current sample, internal consistency was .95. See Table 1 for descriptive statistics.

Family History of Alcoholism

Parents' family history of alcoholism was calculated based on parents' reports of their biological parents' drinking problems using the Family History-Research Diagnostic Criteria collected at Wave 2.³¹ A participant was considered to have a positive family history of alcoholism (FH +) if at least one parent met FH-RDC criteria for alcoholism.

Lifetime Alcoholism Diagnosis

At Wave 1, parents' DSM-III diagnosis of lifetime alcoholism (abuse or dependence) was assessed using a computerized version of the Diagnostic Interview Schedule (DIS, version III).³⁰

Ethnicity

Parents' self-reported their ethnicity at Wave 2 using an item written by project staff. Response options were as follows: (1) Caucasian, (2) Hispanic, (3) Asian, (4) American Indian, (5) Black, and (6) other.

Educational Attainment

Parents' self-reported their educational attainment at Wave 1 using one item written by project staff. Responses were as follows: (1) grade school, (2) some high school, (3) high school graduate, (4) technical school, (5) some college, (6) college graduate, and (7) graduate school or professional school.

Data Analytic Strategy

Path analysis was used to test the hypothesized moderated mediation models. Sample size precluded the inclusion of both mothers and fathers within the same model. Therefore, two path models were tested. Models were tested using MPlus version 4.21.³⁶ For all analyses, full-information maximum likelihood (FIML) was performed to treat missing data. FIML identifies the population parameters most likely to have generated the observed data through the use of iterative logarithms that “audition” different values for the unknown parameters. The values that maximize the log likelihood are ultimately chosen as parameter values. All cases, including partially complete cases, contribute to estimation of parameters.³⁷

Parents' age, ethnicity, educational attainment, lifetime alcoholism diagnosis, and family history of alcoholism were evaluated as potential covariates but were not uniquely related to parents' Wave 3 drinking over and above Wave 1 drinking, and were therefore trimmed from the final models. Refer to Figure 2 for a visual representation of the tested model. Parents' drinking, negative affect, and adolescents' externalizing behavior (all measured at Wave 1) were entered as correlated exogenous variables. Parents' negative affect at Wave 2 was predicted from all exogenous variables, correlated with parents' social support at Wave 2, and predicted from the interaction of adolescents' externalizing behavior and parents' social support. This interaction term was included to test for the moderation of parents' social support on the path between adolescent externalizing behavior and parents' negative affect (the first link in the mediation chain). Finally, parents' Wave 3 drinking was predicted from parents' Wave 2 negative affect and social support, parents' Wave 1 negative affect, adolescent externalizing behavior, and drinking. Wave 3 drinking was also predicted from the interaction of parents' Wave 2 social support and negative affect. This interaction term was included to test for moderation of parents' social support on the path between parents' Wave 2 negative affect and parents' Wave 3 drinking (the second link in the mediation chain).

RESULTS

All continuous study variables were within the acceptable range of skew and kurtosis and were centered to reduce multicollinearity.³⁸ Zero-order correlations among the study variables indicated high stability in parental drinking across waves of data collection (mothers: $r = .79$, $p < .001$; fathers: $r = .80$, $p < .001$).

Mother Model

The hypothesized moderated mediation model for mothers fit the data well ($\chi^2(1) = 2.79, p = .09$, comparative fit index (CFI) = 1.00, root mean square error of approximation (RMSEA) = .06, and standardized root mean square residual (SRMR) = .007. See Figure 2 for a graphical representation of the results of the mother model. Results indicated significant stability in mothers' negative affect ($\beta = .65, p < .001$) and drinking ($\beta = .82, p < .001$) across waves.

Predicting Mothers' Negative Affect—As expected, higher levels of adolescents' externalizing behavior at Wave 1 predicted higher levels of mothers' Wave 2 negative affect ($\beta = .12, p < .001$), over and above baseline levels of negative affect. This provides evidence for the first link in the mediational chain. However, the interaction of adolescents' externalizing behavior and mothers' social support (a test of moderation at this link) was non-significant ($\beta = .02$) in predicting mothers' negative affect. This indicates that the relation of adolescents' externalizing behavior to mothers' negative affect did not depend on mothers' social support.

Predicting Mothers' Drinking—Mothers' social support ($\beta = .01$) and adolescents' externalizing behavior ($\beta = -.01$) did not significantly predict mothers' Wave 3 drinking, over and above Wave 1 drinking. However, higher levels of mothers' negative affect at Wave 1 predicted less drinking at Wave 3 ($\beta = -.15, p < .05$). (This result is unexpected and likely reflects a statistical phenomenon known as suppression; that is, the zero-order correlation between mothers' negative affect at Wave 1 and mothers' drinking at Wave 3 was positive ($r = .11, p < .05$), indicating that higher negative affect was associated with more drinking. The sign reversal that takes place from the zero-order correlation to the path coefficient is likely the result of the high stability between mothers' drinking across waves.) Mothers' Wave 2 negative affect ($\beta = .07$) did not significantly predict mothers' drinking at Wave 3. However, the interaction of mothers' social support and negative affect (a test of moderation of the second link in the mediation chain) did significantly predict Wave 3 drinking ($\beta = -.08, p < .01$). Thus, the effect of mothers' negative affect on their later drinking depended on mothers' level of social support. The interaction of mothers' social support and negative affect was probed at one standard deviation above and below the mean of social support, following the guidelines of Aiken and West³⁸ to determine the form of the interaction. For mothers with low social support (one standard deviation below the mean), mothers' Wave 2 negative affect significantly predicted mothers' Wave 3 drinking ($\beta = .14, p < .05$), such that higher negative affect predicted greater drinking. Interestingly, at the mean of mothers' social support ($\beta = .07$), and at one standard deviation above the mean of social support ($\beta = .003$), the effect of mothers' Wave 2 negative affect on mothers' Wave 3 drinking was non-significant. These results indicate that mothers' negative affect predicted mothers' drinking only for mothers with low social support, and thus supported the hypothesized moderation for the second link in the mediation chain.

The Mediated Effect—The significance of the mediated, or indirect, effect (ie, Wave 1 adolescent externalizing behavior $\rightarrow$ Wave 2 mothers' negative affect $\rightarrow$ Wave 3 mothers' drinking) was tested using the bias-corrected bootstrapped confidence limits. Because the mediated effect is rarely normally distributed, re-sampling methods, such as the bias-corrected bootstrap, are a more appropriate test of the indirect effect than traditional approaches, which divide the indirect effect by its standard error and compare the resulting z statistic with a critical value from the normal distribution.³⁹ To test for moderated mediation, the simple mediation effects were probed following the guidelines of Aiken and West.³⁸ Results indicated that the mediated effect of adolescent externalizing behavior on mothers' drinking, by way of mothers' negative affect, was significant only for mothers with low social support. Specifically, using a 95% bias-corrected bootstrapped confidence interval at one standard deviation below the mean of mothers' social support, the indirect effect was statistically significant (upper confidence limit [UCL] = .021; lower confidence limit [LCL] = .002). At the mean of mothers'

social support, the indirect effect was non-significant (UCL = .000; LCL = .012). Finally, at one standard deviation above the mean of mothers' social support, in indirect effect was non-significant (UCL = .006; LCL = -.004). These findings indicate moderated mediation such that adolescent externalizing behavior predicted greater negative affect among mothers, which in turn predicted more drinking only for those mothers with low social support.

Father Model

The hypothesized moderated mediation model for fathers was a poor fit to the data ($\chi^2(2) = 13.10, p = .001, CFI = .98, RMSEA = .14, SRMR = .02$). The only significant paths in the model were stability paths. Fathers' Wave 1 drinking significantly predicted Wave 3 drinking ($\beta = .79, p < .001$), and fathers' Wave 1 negative affect significantly predicted Wave 2 negative affect ($\beta = .70, p < .001$). The interaction of adolescent externalizing behavior and fathers' social support did not significantly predict Wave 2 negative affect ($\beta = .07$), and the interaction of fathers' social support and negative affect did not significantly predict fathers' Wave 3 drinking ($\beta = .06$). The mediated effect (ie, Wave 1 adolescent externalizing behavior $\rightarrow$ Wave 2 fathers' negative affect $\rightarrow$ Wave 3 fathers' drinking) was non-significant using 95% bias-corrected bootstrapped confidence limits (UCL .005; LCL = -.008). (Because Pelham and colleagues¹¹⁻¹⁴ did not include abstainers in their laboratory studies, the above mother and father models were re-estimated without the parents who abstained from alcohol across all three waves of data collection (n = 110 continuously abstaining mothers; n = 67 continuously abstaining fathers). Results did not change when only drinkers were included.)

DISCUSSION

To our knowledge, the current study was the first to utilize naturalistic longitudinal data to examine parent negative affect as a mediator in the link between adolescent externalizing behavior and parent drinking. Moreover, this was also the first study to explore the role of parent social support in moderating the hypothesized mediated effect. Results point to the importance of considering parent gender and parent social support when examining stress-induced drinking among parents.

Adolescent Externalizing Behavior and Parent Distress

First, adolescent externalizing behavior prospectively predicted parent negative affect for mothers only. This finding is consistent with previous research that has demonstrated that women experience higher levels of parenting stress than do men.⁴⁰ Interestingly, the laboratory studies of Pelham and colleagues¹¹⁻¹⁴ examining the impact of interacting with a deviant child on adult distress found that *both* male and female adults were significantly distressed by the interactions. The seemingly contradictory findings may be a result of the different contexts in which this effect was examined. In a real-life setting, fathers, in general, spend less time with children than mothers do and may also experience fewer parenting demands than mothers typically experience.⁴¹

Moreover, the effect of adolescent disruptive behaviors on mothers' negative affect did not depend on mothers' perceived social support. Rather, parenting an adolescent with externalizing symptoms was generally distressing to mothers across all levels of social support. This is in contrast to the findings of Suarez and Baker,⁴² who demonstrated the utility of social support in buffering the negative effect of child externalizing behavior on parent outcomes. However, the current study examined mothers' negative affect (eg, feelings of depression, nervousness) as a result of this type of parenting stress, whereas Suarez and Baker⁴² examined the impact of child externalizing behaviors on parents' perceived social consequences and parenting satisfaction. Social support may buffer the effect of children's disruptive behaviors

on social consequences and parenting satisfaction but not moderate its influence on mothers' emotional distress.

Emotional Distress, Social Support, and Drinking among Parents

Results indicated that, in general, parents' negative affect did not prospectively predict parent drinking. This suggests that not all adults respond to emotional distress by drinking. These findings are in line with previous laboratory studies¹¹⁻¹⁴ and the general stress-induced drinking literature,²² which indicate that only certain individuals are at heightened risk for using alcohol to regulate distress. That is, in the absence of a main effect of parents' negative affect, there are moderator variables that specify subgroups of individuals who are more likely to drink in response to stress.

An examination of parents' social support as a vulnerability factor indicated that for mothers with low levels of perceived social support, negative affect prospectively predicted mothers' drinking. The link between negative affect and drinking was non-significant for mothers with average and high levels of social support, as well as for fathers, regardless of their perceived social support. This suggests that women with low levels of support from friends and family may be at risk for attempting to regulate their distress by drinking. Moreover, women who perceive themselves as at least adequately supported by others appear to be protected from this maladaptive coping strategy. These results corroborate those of previous studies on affect, alcohol consumption, and social support. For example, Hussong, Hicks, Levy, and Curran⁴³ found that individuals at risk for engaging in a negative cycle of weekend sadness and hostility followed by weekday heavy drinking were those with less intimate friendships or lower levels of social support from friends. Therefore, the present findings lend additional support to the notion that drinking as affect regulation is not a universal coping mechanism, but rather one engaged in only by a certain subgroup of vulnerable individuals. Current findings extend previous research by indicating that mothers of adolescents with externalizing behaviors who perceive themselves as having low social support are another at-risk group.

Moderated Mediation Model of Stress-Induced Drinking

In addition to buffering the path between mothers' negative affect and drinking, social support also moderated the entire mediated effect, or process, of stress-induced drinking. Specifically, mothers' negative affect mediated the relation between adolescent disruptive behaviors and mothers' drinking only for those women with low social support. Therefore, drinking among women with low social support can be conceptualized, at least in part, as a maladaptive coping response to the distress associated with parenting a disruptive child. Moreover, women with moderate to high levels of perceived social support were protected from engaging in the process of stress-induced drinking, likely because of their tendency to seek out support from loved ones.

The notion that negative affect explains a portion of the process by which adolescent externalizing behavior influences drinking in mothers with low social support is in accordance with Frone's¹⁹ proposal that a moderated mediation model of work-related stress-induced drinking is the most appropriate representation of the phenomenon. The present study extends previous research by providing evidence for the applicability of the moderated mediation model in the parenting stress domain as well.

Limitations and Future Directions

Although this study was the first to extend laboratory findings into a naturalistic setting, it is important to consider its limitations. First, the current study employed a sample of parents of early adolescents. It is conceivable that the present study missed the most developmentally salient time period in which to assess stress-induced drinking in parents. Research designed to

examine parents' stress-induced drinking during the transition to parenthood or when childhood externalizing symptoms first arise would be an important next step for the field. Also, the present study employed a sample of parents of children with varying levels of externalizing symptoms. There is evidence to suggest that parents are distressed by specific aspects of the externalizing spectrum and, furthermore, that this distress may vary by parents' gender.⁴⁴ For example, Podolski and Nigg⁴⁴ found that mothers, but not fathers, were distressed by their children's DSM-IV diagnosed ADHD inattention symptoms, over and above DSM-IV diagnosed ODD or CD symptoms. On the other hand, fathers' parenting distress was uniquely associated with children's aggressive and oppositional symptoms, but not ADHD symptom severity. Future research would benefit from the exploration of stress-induced drinking among parents of children with various types of disruptive behavior disorders. Finally, the fact that parents' drinking was very stable across waves of data collection is a statistical limitation to the present study. This made prediction of Wave 3 drinking, over and above baseline levels of drinking difficult. Diary data that could capture day-to-day changes in parents' drinking in relation to the day-to-day stress associated with parenting a disruptive adolescent would be an interesting and important next step for researchers.

CONCLUSION

In summary, the present study sought to extend previous laboratory studies of the relation between child disruptive behaviors and parent negative affect and alcohol consumption by utilizing naturalistic longitudinal data. High levels of externalizing behaviors in adolescents prospectively predicted high levels of negative affect among mothers, which in turn predicted higher levels of drinking among mothers with low social support only. Additionally, the present study indicates that mothers with low social support are at risk for engaging in the process of stress-induced drinking. In other words, for mothers who lack sufficient support from friends and family, drinking can be conceptualized, at least in part, as a maladaptive coping response to the stress of parenting an adolescent with externalizing symptoms. Last, the demonstrated protective effect of social support for mothers of children with high levels of externalizing symptoms has direct implications for intervention. Specifically, when treating children with externalizing symptomatology, it is important for practitioners to consider not only the needs of the child, but also the needs of the mother. Because mothers without adequate social support are at risk for emotional distress and drinking, boosting mothers' support may be a worthwhile goal for practitioners.

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FIGURE 1.
Hypothesized model.

FIGURE 2.

Correlations among Wave 1 variables were modeled. The mediation path of interest is bolded. Standardized path coefficients are shown. * $p < .05$; ** $p < .01$; *** $p < .001$.

TABLE 1

Descriptive statistics of study variables

Variable	N	Minimum	Maximum	Mean	SD
Mothers' Wave 1 drinking	395	0	1.76	.41	.40
Mothers' Wave 3 drinking	394	0	1.76	.38	.39
Mother report of adolescents' externalizing (Wave 1)	391	-1.24	1.94	0	.80
Mothers' Wave 1 negative affect	394	1.04	5.74	2.23	.73
Mothers' Wave 2 negative affect	395	1.04	4.91	2.32	.69
Mothers' Wave 2 social support	392	1.00	3.92	2.09	.54
Fathers' Wave 1 drinking	305	0	1.76	.69	.57
Fathers' Wave 3 drinking	306	0	1.76	.65	.56
Father report of adolescents' externalizing (Wave 1)	306	-1.07	2.49	0	.80
Fathers' Wave 1 negative affect	305	1.17	4.43	2.10	.66
Fathers' Wave 2 negative affect	306	1.09	4.22	2.11	.58
Fathers' Wave 2 social support	305	1.00	4.00	2.22	.52

Notes. High scores on all variables indicate greater levels of the construct. The drinking variables are log-transformed versions of the quantity by frequency variables.