Published in final edited form as:

J Adolesc Res. 2006 March ; 21(2): 185–204.

Does Problem Behavior Elicit Poor Parenting?: A Prospective Study of Adolescent Girls

David Huh, Jennifer Tristan, Emily Wade, and Eric Stice

University of Texas at Austin

Abstract

This study tested the hypothesis that perceived parenting would show reciprocal relations with adolescents' problem behavior using longitudinal data from 496 adolescent girls. Results provided support for the assertion that female problem behavior has an adverse effect on parenting; elevated externalizing symptoms and substance abuse symptoms predicted future decreases in perceived parental support and control. There was less support for the assertion that parenting deficits foster adolescent problem behaviors; initially low parental control predicted future increases in substance abuse, but not externalizing symptoms, and low parental support did not predict future increases in externalizing or substance abuse symptoms. Results suggest that problem behavior is a more consistent predictor of parenting than parenting is of problem behavior, at least for girls during middle adolescence.

Keywords

adolescents; females; externalizing symptoms; substance abuse; parenting; prospective

Does Problem Behavior Elicit Poor Parenting?: A Prospective Study of Adolescent Girls

Adolescent problem behaviors, such as externalizing symptoms and substance abuse, can result in marked functional impairment (e.g., school failure), adverse health outcomes, and societal costs (Chassin, Ritter, Trim, & King, 2003; Hinshaw, 1992). Conduct problems and substance abuse have become an increasing problem among adolescent girls. Between 1993 and 2002, arrests of females under 18 increased more or decreased less than males for most offenses (e.g., simple assault, curfew and loitering; Office of Juvenile Justice and Delinquency Prevention, 2004). In the same period, drug abuse violations grew at twice the rate for adolescent girls (120%) than boys (51%).

Considerable research has attempted to elucidate the risk factors that predict emergence of these problem behaviors, in an effort to illuminate etiologic processes and inform the design of more effective prevention programs targeting these disturbances. However, theory on the development of problem behavior in adolescents has evolved primarily from studies relying on samples of boys (Calhoun, Jurgens, & Chen, 1993; Silverthorn & Frick, 1999). Surprisingly little research has specifically examined the development of problem behavior with adolescent girls. The increasing prevalence of externalizing problems and substance abuse among adolescent girls illustrates a need to test theoretical models with females.

Corresponding Author David Huh Oregon Research Institute 1715 Franklin Boulevard Eugene, Oregon 97403 E-mail: dhuh@ori.org, Telephone: (541) 484-2123, Fax: (541) 484-1108. Correspondence should be addressed to Eric Stice, who is currently at the Oregon Research Institute, 1715 Franklin Blvd., Eugene, Oregon, 97403. E-mail: estice@ori.org..

This study was supported by a career award (MH01708) and research grant (MH64560) from the National Institute of Mental Health.

Theorists have posited that parenting behaviors are one important factor that increases risk for the development of adolescent problem behaviors (Barnes, 1990; Baumrind, 1991; Kazdin, 1987; Patterson, 1982). Numerous cross-sectional studies have found that deficits in parental emotional support and control of discipline are correlated with adolescent externalizing symptoms and substance use (Barnes, 1990; Baumrind, 1991; Lamborn, Mounts, Steinberg, & Dornbusch, 1991; Patterson & Stouthamer-Loeber, 1984). Although there is considerable support for the association between parenting practices and adolescent problem behaviors, these cross-sectional data cannot be unambiguously interpreted. These correlations could occur because parenting style caused problem behaviors, problem behaviors caused parenting style, parenting style and problem behaviors were reciprocally related, or if a third variable were responsible for both.

The relation between parenting and female externalizing problems and substance use has been particularly understudied. We focused solely on adolescent females in this report because our data were drawn from a study of risk factors for eating disorders, which are substantially more prevalent among females (Wilson, Becker, & Heffernan, 2003). It has been commonly assumed that the link between parenting style and problem behavior is the same for females as it is for males. However, correlations between parenting and problem behavior have been found to vary by gender (Hoyt & Scherer, 1998). Evidence from cross-sectional studies suggests that parental support is more strongly correlated with problem behavior in females versus males and that monitoring is more strongly correlated with male outcomes (Cernkovich & Giordano, 1987; Seydlitz, 1991). Delinquency has been found to be a stronger predictor of future reductions in parental control for males versus females (Laird, Pettit, Bates, & Dodge, 2003). These findings collectively suggest that gender might moderate these relations. The aim of the present longitudinal study was to examine the temporal relations between parenting practices and adolescent problem behavior in an effort to resolve the nature of these relations in adolescent girls.

Theories of Socialization

Theories of child and adolescent socialization can be broadly classified into two groups: those that assert that parenting practices determine child development and those that maintain that socialization is a reciprocal process in which parenting affects child development and child behavior influences parenting practices.

Social Mold Model. Most studies of child problem behavior are based on what Hartup (1978) termed the social mold model. This theory likens family socialization processes to a mold into which the child is placed and posits that a lack of parental support and control produces child problem behavior. According to this perspective, lenient or inconsistent parental discipline and deficits in parental support may result in a disruption in children's identification with their parents (Hirschi, 1969; Jacob & Leonard, 1991), which in turn might interfere with the internalization of parental and societal mores. Additionally, parents may unintentionally promote children's antisocial behavior via inept disciplinary practices and erratic expressions of anger towards their children (Vuchinich, Bank, & Patterson, 1992). Finally, heightened parental support and monitoring are also thought to decrease the likelihood that adolescents will affiliate with deviant peer groups (Durbin, Darling, Steinberg, & Brown, 1993), which has been linked to the development of substance use (Jacob & Leonard, 1991).

Evidence from experimental and prospective studies provides considerable support for the social mold model of parenting effects. First, when parental control of discipline is improved through parent training (i.e., increasing monitoring and consistency), children show reductions in externalizing symptoms (Kazdin, 1987; Reid & Patterson, 1991). This effect has been found in both laboratory experiments (Gardner, Forehand, & Roberts, 1976; Hobbs, Forehand, & Murray, 1978) and treatment evaluations (Forgatch, 1991; Patterson, Chamberlain, & Reid,

1982). However, because these studies did not use placebo control conditions, it is possible that the observed effects were a product of demand characteristics or participant expectancies. Second, prospective studies have found that initial deficits in parental control and support predict future increases in delinquency (Jang & Smith, 1997) and substance use and abuse (Brook, Whiteman, Gordon, Nomura, & Brook, 1986; Dishion, Capaldi, & Yoerger, 1999; Kandel, Kessler, & Margulies, 1978; Reifman, Barnes, Dintcheff, Farrell, & Uhteg, 1998; Stice, Barrera, & Chassin, 1998). It should be noted that we focused exclusively on longitudinal studies that provided a truly prospective test of these relations by controlling for the initial level of the dependent variable when testing whether initial levels of the independent variable predicted future levels of the dependent variable (i.e., modeled future change in the dependent variable).

Reciprocal Effects Model. An alternative theory of parental socialization influences is the reciprocal effects model, which holds that parenting affects child behavior, but also that child behavior affects parenting (Lerner & Spanier, 1978; Sameroff, 1975). Theorists posit that child behavior serves to elicit parental reactions, and that parenting practices also influence children's behavior (Bell & Chapman, 1986; Lytton, 1990). Patterson's (1986) "coercive cycles" theory is a prototypic example of reciprocal influences between parents and children: a child's antisocial behavior elicits aversive reactions by the parent, which then escalate the child's aggressive behavior. Additionally, the lack of a strong parent-child bond may increase the likelihood that adolescents affiliate with a deviant peer group (Jacob & Leonard, 1991; Mason & Windle, 2001) which, in turn, could prompt parents to emotionally reject defiant adolescents because of their antisocial identity (Baumrind & Moselle, 1985). Parents may also respond to adolescent problem behavior by raising their tolerance level for deviant behavior (Bell & Chapman, 1986) which may result in decreased control attempts. Finally, parents might become less supportive and controlling when their adolescent's behavior becomes more aggressive and threatening.

It is important to note that the nature of these bi-directional relations may change over the course of children's development (Hartup, 1978; Jang & Smith, 1997; Scarr & McCartney, 1983). Parenting practices might influence children's problem behavior more during childhood than adolescence. Frick, Christian, and Wootton (1999) studied families with children between the ages of 6 and 17 and found that the level of parents' monitoring and supervision decreased as their children aged. Conversely, the ability of a child's problem behavior to influence parenting may be greater during adolescence than childhood due to an increase in autonomy as the child grows older. Delinquent behaviors likely exert a stronger impact on parenting as the power balance shifts from parent to child during adolescence (Jang & Smith, 1997). Thus, the reciprocal effects theory provides a developmental perspective that depicts dynamic relations between parenting and child socialization.

Longitudinal studies have been the predominant method for testing the reciprocal effects model of parenting. One prospective study of early adolescents by Stice and Barrera (1995), in which half of the participants were high-risk children of alcoholics, found that initial deficits in parental support and control predicted future increases in substance use but not externalizing symptoms. However, elevated adolescent substance use and externalizing symptoms predicted future decreases in both parental support and control. Another prospective study of early adolescents by Chen, Liu and Li (2000) found a full reciprocity between paternal control and aggressive-disruptive behavior where high levels of control predicted increases in aggressive-disruptive behavior and elevated aggression predicted increases in paternal control two years later. Elevations in paternal warmth also predicted decreases in adolescent aggression. A prospective study of middle adolescents by Laird and colleagues (2003) found a full reciprocal relation between parental monitoring and adolescent delinquency where low levels of monitoring predicted increases in delinquent behavior and elevated delinquency predicted

decreases in parental monitoring. A prospective study of middle adolescents by Kerr and Stattin (2003) found that elevated delinquency predicted decreases in parental control and emotional support two years later; however, parenting behavior did not significantly predict change in delinquency over time. Several other studies purported to provide prospective tests of these reciprocal relations, but did not control for initial levels of the dependent variables (e.g., Barnes, Reifman, Farrell, & Dintcheff, 2000; Larzelere & Patterson, 1990; Scaramella, Conger, Spoth, & Simons, 2002) and therefore did not establish temporal precedence. Across the four prospective studies that tested for reciprocal effects, 5 out of the 13 models provided evidence of full reciprocity; 10 out of the 13 child to parent effects and 6 out of the 13 parent to child effects were significant.

Aims of the Present Study

Although a large body of literature has documented that deficits in parental control and support are associated with adolescent problem behaviors, questions remain regarding the direction of these relations. Because the social mold and reciprocal effects models of the relation between parenting and adolescent problem behavior have very different etiologic, prevention, and treatment implications, it is important to resolve which of these conceptualizations is more accurate. To date, however, only four studies have conducted prospective analyses to test for full reciprocal relations between these variables. Although these four studies all utilized mixed-gender samples, only one (Laird et al., 2003) conducted separate analyses for males and females. Despite the increasing incidence of externalizing problems and substance use among adolescent females, few prospective studies have documented the relationship between parenting and female problem behavior. Hoyt and Scherer (1998) cited the need to investigate these research questions with female and male samples to advance our understanding of how these models apply to both genders. Accordingly, the aims of the present study were to examine the full reciprocal relations of both parental support and control to adolescent substance abuse and externalizing symptoms in a community sample of adolescent girls.

Methods

Participants

Participants were 496 adolescent girls from four public (82%) and four private (18%) middle schools in a metropolitan area of the Southwestern United States. Adolescents ranged in age from 11 to 15 ($M = 13$) at baseline. The sample included 2% Asian/Pacific Islanders, 7% African Americans, 68% Caucasians, 18% Latina, 1% Native Americans, and 4% who specified *other or mixed* racial heritage. The ethnic composition of the sample was representative of the schools from which we sampled (2% Asian/Pacific Islanders; 8% African Americans; 65% Caucasians; 21% Hispanics; 4% *other or mixed*). Average parental education (a proxy for socioeconomic status) was 29% high school graduate or less, 23% some college, 33% college graduate, and 15% graduate degree, which was similar to census data for comparably aged adults in the county (34% high school graduate or less; 25% some college; 26% college graduate; 15% graduate degree).

Procedures

The study was described to parents and participants as an investigation of adolescent mental and physical health. An active parental consent procedure was used to recruit participants. An informed consent letter describing the study and a stamped self-addressed return envelope were sent to parents of eligible girls (a second mailing was sent to nonresponders). Adolescent assent was secured immediately before data collection took place. This resulted in an average participation rate of 56% of all eligible girls, which was similar to that of other school-recruited longitudinal studies that required active consent and involved structured interviews (e.g., 61% for Lewinsohn, Hops, Roberts, Seeley, & Andrews, 1993). Moreover, the one-year prevalence

rates of major depression (4.2%), bulimia nervosa (0.4%), and substance abuse (8.9%; Stice, Presnell, & Bearman, 2001) were similar to the prevalence rates from epidemiological studies (Lewinsohn et al., 1993; Newman et al., 1996).

Girls completed a questionnaire, participated in a structured interview, and had their weight and height measured by female research assistants at baseline (T1) and at three annual follow-ups (T2, T3, & T4). However, the current report focuses on data collected at T3 and T4 because not all of the relevant scales were administered at earlier assessments. All assessments took place during regular school hours or immediately after school on the school campus or at participants' houses. Girls received a \$15 gift certificate to a local book and music store as compensation for participating in the study.

Measures

Perceived social support. Perceived parental support was measured using 6 items from the Network of Relationships Inventory (Furman & Buhrmester, 1985) assessing companionship, guidance, intimacy, affection, admiration, and reliable alliance (e.g., *My parent(s) treated me with respect and admiration* and *I shared my private feelings with my parents*). Response options ranged from 1 = *strongly disagree* to 5 = *strongly agree*. Items were averaged to form a perceived parental support composite with higher scores reflecting greater parental support. This measure has been found to possess internal consistency ($M \alpha = .89$), 1-month test-retest reliability ($M r = .92$), and predictive validity (Burton, Stice, & Seeley, 2004; Furman, 1996; Furman & Buhrmester, 1985). Cronbach's alpha was .91 for the perceived parent support scale at T3.

Parental control. Perceived parental control was assessed with 6 items from the Child Report of Parental Behavior Inventory (Schaefer, 1965) assessing parental consistency, enforcement, and monitoring (e.g., *My parent(s) frequently changed the rules I was supposed to follow* and *My parent(s) let me get away without doing work I had been given to do*). Response options ranged from 1 = *strongly disagree* to 5 = *strongly agree*. Items were averaged to create a parental control composite with higher scores reflecting greater parental control. This measure has been found to possess internal consistency ($M \alpha = .91$), 1-year test-retest reliability ($r = .57$), and predictive validity (Stice & Barrera, 1995). Cronbach's alpha for this measure was .81 at T3.

Externalizing symptoms. Thirteen items from the Externalizing scale of the Child Behavior Checklist (Achenbach & Edelbrock, 1983) were used to assess externalizing symptoms (e.g., *I started fights*, *I ran away from home*, *I was mean or cruel to others*). Response options ranged from 1 = *never* to 5 = *always*. Items were averaged to form an overall externalizing symptom composite with higher scores reflecting greater externalizing behavior. This symptom composite evidenced internal consistency ($\alpha = .88$), 1-year test-retest reliability ($r = .62$), and predictive validity for future increases in substance use and abuse (Stice et al., 1998). Cronbach's alpha was .90 for the externalizing symptom scale at T3.

Substance abuse. The diagnostic symptoms for substance abuse from the Diagnostic and Statistical Manual (DSM-IV; American Psychiatric Association, 1994) were assessed with a scale adapted from Stice et al. (1998). The scale consisted of 8 items specifically developed to assess negative consequences related to alcohol and drug use in adolescents. Items focused on obligation impairment, health problems, physically hazardous behavior, legal problems, and social difficulties resulting from substance use that occurred over the past year (e.g., *got arrested because of substance use*, *had an accident or injury because of substance use*, *lost a job or got kicked out of school because of substance use*). Items were averaged to form an overall substance abuse composite with higher scores reflecting greater negative consequences related to substance use. This scale has been found to possess adequate internal consistency

($\alpha = .85$), 1-month test retest reliability ($r = .78$), and convergent validity with measures of substance use and psychopathology (Stice et al., 1998; Stice, Burton, & Shaw, 2004). Cronbach's alpha was .85 for the substance abuse scale at T3.

Results

Preliminary Analyses

Preliminary multiple regression analyses tested whether adolescent age and parental education (a proxy for socioeconomic status) predicted future change in perceived parental support, perceived parental control, externalizing symptoms, and substance abuse symptoms. In these models, the T4 outcome was regressed on the T3 demographic factor and the T3 version of the outcome. Because adolescent age, maternal education, and paternal education did not show significant relations to change in any of the four outcomes, we did not control for these demographic factors statistically.

The bivariate correlations, means and standard deviations and skew coefficients for all parenting and adolescent problem behavior variables are presented in Table 1. An examination of the correlation matrix reveals that Time 3 perceived parental support and control were significantly correlated with Time 4 adolescent substance abuse and externalizing symptoms. Similarly, Time 3 problem behaviors and substance abuse symptoms all evidenced significant correlations with Time 4 perceived parenting variables.

Test of Reciprocal Effects Model

We used path analysis to investigate the reciprocal effects between perceived parenting and adolescent problem behavior. We examined the reciprocal relations of parental support and parental control to adolescent externalizing symptoms and substance abuse symptoms in separate models because this is the analytic approach used in previous studies that have examined this research question and because we were concerned that the colinearity between predictors could generate unstable parameter estimates (Tabachnick & Fidell, 2000). Thus, four separate path models examined the prospective reciprocal relations between: (Model 1) perceived parental support and adolescent externalizing symptoms, (Model 2) perceived parental control and adolescent externalizing symptoms, (Model 3) perceived parental support and adolescent substance abuse, and (Model 4) perceived parental control and adolescent substance abuse. In each model, each T4 outcome was regressed on the T3 predictor and the T3 version of the outcome. The inclusion of the baseline version of the outcome as a covariate ensured a prospective test of relations. The results of the models are depicted in Figure 1.

In the first model, elevations in T3 externalizing symptoms predicted subsequent decreases in perceived parental support over the one-year period ($b = -.15$, 95% $CI = -.27 - -.03$, $\beta = -.10$, $p = .014$, *semi-partial* $r = -.113$). However, T3 parental support was not significantly related to future change in adolescent externalizing symptoms ($b = -.04$, 95% $CI = -.08 - .01$, $\beta = -.06$, $p = .112$, *semi-partial* $r = -.073$).

In the second model, elevations in T3 externalizing symptoms predicted subsequent decreases in perceived parental control over the one-year period ($b = -.16$, 95% $CI = -.26 - -.05$, $\beta = -.11$, $p = .005$, *semi-partial* $r = -.130$). However, T3 parental control was not significantly related to future change in adolescent externalizing symptoms ($b = -.003$, 95% $CI = -.05 - .05$, $\beta = -.005$, $p = .902$, *semi-partial* $r = -.006$).

In the third model, elevations in T3 adolescent substance abuse showed a marginally significant relation to future increases in perceived parental support over the one-year period ($b = .10$, 95% $CI = -.01 - .21$, $\beta = .07$, $p = .080$, *semi-partial* $r = .080$). However, T3 parental support

was not significantly related to future change in adolescent substance abuse ($b = -.03$, 95% $CI = -.09 - .03$, $\beta = -.04$, $p = .360$, *semi-partial* $r = -.042$).

In the fourth model, elevations in T3 substance abuse predicted subsequent decreases in perceived parental control over the one-year period ($b = -.14$, 95% $CI = -.24 - -.05$, $\beta = -.11$, $p = .004$, *semi-partial* $r = -.130$). Conversely, elevation in T3 parental control was significantly related to future decreases in adolescent substance abuse over the one-year period ($b = -.10$, 95% $CI = -.17 - -.02$, $\beta = -.11$, $p = .009$, *semi-partial* $r = -.119$).

Discussion

Contrary to the hypothesis of reciprocity between parenting and problem behavior in adolescent girls, this study provided more consistent evidence that problem behavior had a greater impact on parenting than parenting did on girls' problem behavior. Elevations in adolescent female externalizing behavior prospectively predicted decreases in both perceived parental support and parental control. Greater adolescent substance abuse also predicted decreases in perceived parental control. Conversely, deficits in perceived parental control predicted increases in adolescent female substance abuse, but not externalizing symptoms, and deficits in perceived parental support did not predict problem behavior. The high proportion of child effects relative to parent effects seems incompatible with the commonly held view that parenting shapes the behavioral outcomes of children, at least during middle adolescence for females.

The consistent support of child effects is congruous with findings from male and mixed-gender studies and suggests that adolescent behavior may be a powerful determinant of future parenting practices and that deficits in parenting practices are a consequence rather than a cause of problem behavior. In theory, increases in adolescent problem behavior raise parental tolerance of deviant behavior (Bell & Chapman, 1986), resulting in decreased parental control attempts. As an adolescent's behavior becomes increasingly threatening, parents may respond by becoming less supportive and controlling. Eventually, parents may come to emotionally reject adolescents exhibiting problem behavior (Baumrind & Moselle, 1985). In this fashion, early child characteristics may dynamically shape later parenting behaviors.

The overall trend towards prospective effects of adolescent female problem behavior on parenting practices is consistent only with that aspect of the *reciprocal effects model* that allows for child influences on parenting practices. These results suggest that the *social mold model* of socialization may be overly simplified because it focuses on parents' effects on children but ignores children's effects on parents. Although the present findings do not necessarily disprove the reciprocal effects model, they certainly do not provide strong support for this model. Reciprocity was found between substance abuse and parental control, which supports the assertion that deficits in parental control and monitoring are important risk factors for increases in substance abuse (Dishion, Nelson, & Kavanagh, 2003). However, results from the present study and previous investigations seem to suggest that, on the whole, the flow of effect from adolescent child to parent is the most robust. While the prospective effects were modest, they were comparable to effects found in prior studies.

Interestingly, three-quarters of the significant cross-lag paths involved the control dimension of parenting. The lack of prospective effects between parental support and problem behavior suggests that parental support is not as strongly related to female adolescent outcomes as previously thought. The pattern of effects also suggests that parental control is more strongly associated with externalizing problems such as substance abuse and externalizing symptoms than parental support. It is possible that parental support shows stronger relations to internalizing outcomes, such as depression and anxiety. An earlier publication using data from earlier waves of this study found that elevated parental social support predicted future decreases in depressive symptoms (Stice, Ragan, & Randall, 2004). To further explore this hypothesis,

path analyses were performed to examine the prospective relationship of parental support and control to female depression. Parental support at Time 3 was marginally related to change in depressive symptoms at Time 4 ($\beta = -.07, p = .082$), while parental control had no relationship to levels of depression ($\beta = -.02, p = .574$). These *post hoc* findings are congruent with the theory that parental support is more closely linked female internalizing problems while parental control is more linked with female externalizing problems. To our knowledge, the current data are the first to suggest that internalizing and externalizing problems may be related differentially to parental support versus control, at least among adolescent girls.

A notable finding was that elevations in externalizing behavior predicted decreases in both parental support and control, while elevated substance abuse only predicted subsequent decreases in parental control. This suggests that externalizing behavior may be more harmful to the parent-daughter relationship than substance abuse. Antisocial and delinquent behaviors might be frequently directed towards the parents, putting more serious strain between parent and daughter. The emotional toll taken by externalizing behavior may lead parents to withdraw from their involvement with their adolescent girls. In contrast, substance abuse is often more detrimental to the adolescent and society than it is for the parent. It is also more often engaged in outside of parental awareness, which may mitigate its adverse effects on parenting relative to externalizing symptoms.

Finally, the results showed a high association between adolescent girls' externalizing behaviors at Time 3 and Time 4. These findings indicate that an adolescent's relative standing at Time 3 was highly predictive of their standing at Time 4. Furthermore, the descriptive statistics revealed that the mean level of externalizing symptoms in adolescent girls was relatively stable over time. The current findings are consistent with past research documenting the stability of externalizing behaviors (Huesmann, Eron, Lefkowitz, & Walder, 1984; Moffit, 1993). Also noteworthy was the fact that adolescent female externalizing behavior showed greater temporal stability than substance abuse symptoms. The probable explanation is the typical emergence of antisocial behavior during late childhood and early adolescence (Barkley, 1990; Patterson, 1992) and its relative stability by middle adolescence. In contrast, substance abuse typically begins in middle adolescence (Chassin, 1984) and continues to increase throughout the adolescent developmental period. These results highlight the need for early prevention efforts during childhood to stem the onset of substance abuse later in adolescence in girls. With regard to externalizing behaviors, manipulating parenting practices during childhood, before antisocial behaviors become deep-seated, would likely be more productive (Coie et al., 1993).

The findings of this study indicate the need to refine intervention models to more fully account for the putative influence of adolescents on parents. The lack of prospective effects of perceived parenting on adolescent female problem behaviors does not rule out the possibility that interventions that change ineffective parenting practices will be effective in decreasing conduct problems in adolescence. Indeed, the consistency with which adolescent female problem behavior appears to erode parenting across prospective studies is strong evidence that effective interventions must engage both adolescent and parent. The integration of parent and adolescent training may be the most effective approach to prevent problem behaviors in adolescents from escalating. Notably, Kazdin, Siegel, and Bass (1992) found that a combination of parental management and child problem solving training resulted in greater reductions in antisocial behavior than either intervention alone.

Limitations of the Current Study

It is important to consider the limitations of this study when interpreting the findings. First, the present investigation relied on adolescent reports of both problem behavior and parenting. More confidence could have been placed in the results if all of the effects were replicated using

parent reports or behavioral observations. Despite this limitation, adolescent self reports of substance use and antisocial behavior are generally deemed to be valid (Smart, 1975; Thornberry & Krohn, 2000; Winters, Stinchfield, Henly, & Schwartz, 1991). The validity of perceived parenting measures is less clear, but Gonzales, Cauce, and Mason (1996) found that adolescent reports had the highest correspondence with independent ratings of parenting. Second, whereas the longitudinal nature of these analyses eliminates questions concerning the temporal precedence of effects, it does not exclude the alternative explanation that a third variable accounts for the relations between parenting and adolescent problem behavior. Only randomized experiments that manipulate the independent variable are able to rule out third variable explanations. Third, perceived parenting measures were not completed separately for mother and father. It is possible that adolescent problem behaviors may be related differently to maternal and paternal parenting style (Chen et al., 2000). Finally, this study examined only a one-year interval between assessments. Intervals of shorter or longer duration might result in different prospective effects (Gollob & Reichardt, 1987).

Directions for Future Research

Although this study focused on adolescent girls, our findings indicate several directions for future research on both adolescent male and female problem behavior. Given the apparent predominance of child effects during adolescence, gender differences in the magnitude of these prospective effects should be tested. Second, analyses of prospective relations in other age ranges would be invaluable in tracing the possible changing pattern of effects across development. A longitudinal study tracking the full emergence of a specific behavior problem through adolescence would be particularly informative. Third, experimental prevention trials could be used to further assess the nature of the relations between parenting and adolescent problem behavior, though it would be important to use placebo control conditions to ensure any observed effects are not a product of expectancy or demand characteristics. The results of this study suggest the need for continued refinement of the *reciprocal effects model* with particular consideration of child effects on parenting.

Acknowledgements

Thanks go to project research assistants, Sarah Kate Bearman, Emily Burton, Melissa Fisher, Natalie McKee, and Katy Whitenton, our undergraduate volunteers, the Austin Independent School District, and the participants who made this study possible.

References

- Achenbach, T.; Edelbrock, C. Manual for the child behavior checklist and revised child behavior profile. University of Vermont, Department of Psychiatry; Burlington, VT: 1983.
- American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 4th. Washington, DC: 1994. Author
- Barkley, RA. Attention-deficit hyperactivity disorder: A handbook for diagnosis and treatment. Guilford Press; New York: 1990.
- Barnes, GM. Impact of the family on adolescent drinking patterns. In: Collins, RL.; Leonard, KE.; Searles, JS., editors. Alcohol and the family: Research and clinical perspectives. Guilford Press; New York: 1990. p. 137-161.
- Barnes GM, Reifman AS, Farrell MP, Dintcheff BA. The Effects of Parenting on the Development of Adolescent Alcohol Misuse: A Six-Wave Latent Growth Model. *Journal of Marriage and the Family* 2000;62:175–186.
- Baumrind D. The influence of parenting style on adolescent competence and substance use. *Journal of Early Adolescence* 1991;11:56–95.
- Baumrind D, Moselle KA. A developmental perspective on adolescent drug abuse. *Advances in Alcohol and Substance Use* 1985;5:41–67.

- Bell RQ, Chapman M. Child effects in studies using experimental or brief longitudinal approaches to socialization. *Developmental Psychology* 1986;22:595–603.
- Brook JS, Whiteman M, Gordon A, Nomura C, Brook D. Onset of adolescent drinking: A longitudinal study of intrapersonal and interpersonal antecedents. *Advances in Alcohol and Substance Abuse* 1986;5:91–110. [PubMed: 3728195]
- Burton EM, Stice E, Seeley JR. A prospective test of the stress-buffering model of depression in adolescent girls: No support once again. *Journal of Consulting and Clinical Psychology* 2004;72:689–697. [PubMed: 15301654]
- Calhoun G, Jurgens J, Chen F. The neophyte female delinquent: A review of the literature. *Adolescence* 1993;28:461–471. [PubMed: 8317289]
- Cernkovich S, Giordano P. Family relationships and delinquency. *Criminology* 1987;25:295–319.
- Chassin, L. Adolescent substance use and abuse. In: Karoly, P.; Steffan, JJ., editors. *Adolescent behavior disorders: Foundations and contemporary concerns*. D. C. Health; Lexington, MA: 1984. p. 99-152.
- Chassin, L.; Ritter, J.; Trim, RS.; King, KM. Adolescent substance abuse disorders. In: Mash, EL.; Barkley, RA., editors. *Child psychopathology*. 2nd. Guilford Press; New York, NY, US: 2003. p. 199-230.
- Chen X, Liu M, Li D. Parental warmth, control, and indulgence and their relations to adjustment in Chinese children: A longitudinal study. *Journal of Family Psychology* 2000;14:401–419. [PubMed: 11025932]
- Coie JD, Watt NF, West SG, Hawkins D, Asarnow JR, Markman HJ, et al. The science of prevention: A conceptual framework and some directions for a national research program. *American Psychologist* 1993;48:1013–1022. [PubMed: 8256874]
- Dishion TJ, Capaldi DM, Yoerger K. Middle childhood antecedents to progressions in male adolescent substance use: An ecological analysis of risk and protection. *Journal of Adolescent Research* 1999;14:175–205.
- Dishion TJ, Nelson SE, Kavanagh K. The family check-up with high-risk young adolescents: Preventing early-onset substance use by parent monitoring. *Behavior Therapy* 2003;34:553–71..
- Durbin DL, Darling N, Steinberg L, Brown BB. Parenting style and peer group membership among European-American adolescents. *Journal of Research on Adolescence* 1993;3:87–100.
- Forgatch, MS. The clinical science vortex: A developing theory of antisocial behavior. In: Pepler, D.; Rubin, KH., editors. *The development and treatment of childhood aggression*. Lawrence Erlbaum; Hillsdale, NJ: 1991. p. 291-315.
- Frick PJ, Christian RE, Wootton JM. Age trends in the association between parenting practices and conduct problems. *Behavior Modification* 1999;23:106–128.
- Furman, W. The measurement of friendship perceptions: Conceptual and methodological issues. In: Bukowski, WM.; Newcomb, AF.; Hartup, WW., editors. *The company we keep*. Cambridge University; New York: 1996. p. 41-65.
- Furman, W.; Buhrmester, D. *Developmental Psychology*. 21. 1985. Children's perceptions of the personal relations in their social networks; p. 1016-1024.
- Gardner HL, Forehand R, Roberts M. Time-out with children: Effects of explanation and brief parent training on child and parent behaviors. *Journal of Abnormal Child Psychology* 1976;4:277–288. [PubMed: 972210]
- Gonzales NA, Cauce AM, Mason CA. Interobserver agreement in the assessment of parental behavior and parent-adolescent conflict: African American mothers, daughters, and independent observers. *Child Development* 1996;67:1483–1498. [PubMed: 8890496]
- Gollob HF, Reichardt CS. Taking account of time lags in causal models. *Child Development* 1987;58:80–92. [PubMed: 3816351]
- Hartup, WW. Perspectives on child and family interaction: Past, present, and future. In: Lerner, RM.; Spanier, GB., editors. *Child influences on marital and family interaction: A life-span perspective*. Academic Press; San Francisco: 1978. p. 23-46.
- Hinshaw SP. Academic underachievement, attention deficits, and aggression: Comorbidity and implications for intervention. *Journal of Consulting and Clinical Psychology* 1992;60:1992.
- Hirschi, T. *Causes of delinquency*. University of California Press; Berkeley: 1969.

- Hobbs SA, Forehand R, Murray RG. Effects of various durations of time-out on the non-compliant behavior of children. *Behavior Therapy* 1978;9:652–656.
- Hoyt S, Scherer DG. Female juvenile delinquency: Misunderstood by the juvenile justice system, neglected by social science. *Law and Human Behavior* 1998;22:81–107. [PubMed: 9487792]
- Huesmann LR, Eron LD, Lefkowitz MM, Walder LO. Stability of aggression over time and generations. *Developmental Psychology* 1984;20:1120–1134.
- Jacob, T.; Leonard, K. Family and peer influences in the development of adolescent alcohol abuse; Paper presented at the NIAAA conference, Working Group on the Development of Alcohol-Related Problems in High-Risk Youth: Establishing Linkages Across Biogenetic and Psychosocial Domains; Washington DC. November; 1991.
- Jang S, Smith CA. A test of reciprocal causal relationships among parental supervision, affective ties, and delinquency. *Journal of Research in Crime and Delinquency* 1997;34:307–336.
- Kandel, DB.; Kessler, RC.; Margulies, RZ. Antecedents of adolescent initiation into stages of drug use: A developmental analysis. In: Kandel, DB., editor. *Longitudinal research on drug use*. Hemisphere; Washington, DC: 1978. p. 73-99.
- Kazdin, AE. *Conduct disorders in childhood and adolescence*. 9. Sage; Beverly Hills, CA: 1987.
- Kazdin AE, Siegel TC, Bass D. Cognitive problem solving skills training and parent management training in the treatment of antisocial behavior in children. *Journal of Consulting and Clinical Psychology* 1992;60:733–747. [PubMed: 1401389]
- Kerr, M.; Stattin, H. Parenting of adolescents: Action or reaction?. In: Crouter, AC.; Booth, A., editors. *Children's influence on family dynamics: The neglected side of family relationships*. Lawrence Erlbaum; Mahwah, NJ: 2003. p. 121-151.
- Laird RD, Pettit GS, Bates JE, Dodge KA. Parents' monitoring-relevant knowledge and adolescents' delinquent behavior: Evidence of correlated developmental changes and reciprocal influences. *Child Development* 2003;74:752–768. [PubMed: 12795388]
- Lamborn SD, Mounts NS, Steinberg L, Dornbusch SM. Patterns of competence and adjustment from authoritative, authoritarian, indulgent and neglectful families. *Child Development* 1991;62:1049–1065. [PubMed: 1756655]
- Larzelere RE, Patterson GR. Parental management: Mediator of the effect of socioeconomic status on early delinquency. *Criminology* 1990;28:301–323.
- Lerner, RM.; Spanier, GB. A dynamic interactional view of child and family development. In: Lerner, RM.; Spanier, GB., editors. *Child influences on marital and family interaction: A life-span perspective*. Academic Press; San Francisco: 1978. p. 1-22.
- Lewinsohn PM, Hops H, Roberts RE, Seeley JR, Andrews JA. Adolescent psychopathology I. Prevalence and incidence of depression and other DSM-II-R disorders in high school students. *Journal of Abnormal Psychology* 1993;102:133–144. [PubMed: 8436689]
- Lytton H. Child and parental effects in boys' conduct disorder: A reinterpretation. *Developmental Psychology* 1990;26:683–697.
- Mason WA, Windle M. Family, religious, school and peer influences on adolescent alcohol use: A longitudinal study. *Journal of Studies on Alcohol* 2001;62:44–53. [PubMed: 11271963]
- Moffitt TE. Adolescence-limited and life-course persistent antisocial behavior: A developmental taxonomy. *Psychological Review* 1993;100:674–701. [PubMed: 8255953]
- Newman DL, Moffitt TE, Caspi A, Magdol L, Silva PA, Stanton WR. Psychiatric disorder in a birth cohort of young adults: Prevalence, comorbidity, clinical significance, and new case incidence from ages 11 to 21. *Journal of Consulting and Clinical Psychology* 1996;64:552–562. [PubMed: 8698949]
- Office of Juvenile Justice and Delinquency Prevention. *Juvenile Arrests 2002*. Sep. 2004 <http://www.ncjrs.org/html/ojjdp/204608/contents.html> Retrieved June 3, 2005, from
- Patterson, GR. *Coercive family process*. Castalia; Eugene, OR: 1982.
- Patterson GR. Performance models for antisocial boys. *American Psychologist* 1986;41:432–444. [PubMed: 3717751]
- Patterson, GR. Developmental changes in antisocial behavior. In: Peters, RD.; McMahon, RJ.; Quinsey, VL., editors. *Aggression and violence throughout the life span*. Sage; Newbury Park, CA: 1992. p. 52-82.

- Patterson GR, Chamberlain P, Reid JB. A comparative evaluation of a parent training program. *Behavior Therapy* 1982;13:638–650.
- Patterson GR, Stouthamer-Loeber M. The correlation of family management practices and delinquency. *Child Development* 1984;55:1299–1307. [PubMed: 6488958]
- Reid, JB.; Patterson, GR. Early prevention and intervention with conduct problems: A social interactional model for the integration of research and practice. In: Stoner, G.; Shinn, M.; Walker, H.; Bilter, K., editors. *Interventions for achievement and behavior problems*. NASP Monograph; 1991. p. 715-739.
- Reifman A, Barnes GM, Dintcheff BA, Farrell MP, Uhteg L. Parental and peer influences on the onset of heavier drinking among adolescents. *Journal of Studies on Alcohol* 1998;59:311–317. [PubMed: 9598712]
- Sameroff A. Early influences on development: Fact or fancy? *Merrill-Palmer Quarterly* 1975;21:263–294.
- Scaramella LV, Conger RD, Spoth R, Simons RL. Evaluation of a social contextual model of delinquency: A cross-study replication. *Child Development* 2002;73:175–195. [PubMed: 14717251]
- Scarr S, McCartney K. How people make their own environments: A theory of genotype → environmental effects. *Child Development* 1983;54:424–435. [PubMed: 6683622]
- Schaefer ES. Children's reports of parental behavior: An inventory. *Child Development* 1965;36:413–424. [PubMed: 14300862]
- Seydlitz R. The effects of age and gender on parental control and delinquency. *Youth & Society* 1991;23:175–201.
- Silverthorn P, Frick PJ. Developmental pathways to antisocial behavior: The delayed-onset pathway in girls. *Development and Psychopathology* 1999;11:101–126. [PubMed: 10208358]
- Smart RG. Recent studies of the validity and reliability of self-reported drug use, 1970–1974. *Canadian Journal of Criminology and Corrections* 1975;17:326–333.
- Stice E, Barrera M Jr. A longitudinal examination of the reciprocal relations between parenting and adolescents' substance use and externalizing symptomatology. *Developmental Psychology* 1995;31:322–334.
- Stice E, Barrera M Jr, Chassin L. Prospective differential prediction of adolescent alcohol use and problem use: Examining mechanisms of effect. *Journal of Abnormal Psychology* 1998;107:616–628. [PubMed: 9830249]
- Stice E, Burton EM, Shaw H. Prospective relations between bulimic pathology, depression, and substance abuse: Unpacking comorbidity in adolescent girls. *Journal of Consulting and Clinical Psychology* 2004;72:62–71. [PubMed: 14756615]
- Stice E, Presnell K, Bearman SK. Relation of early menarche to depression, eating disorders, substance abuse, and comorbid psychopathology among adolescent girls. *Developmental Psychology* 2001;37:608–619. [PubMed: 11552757]
- Stice E, Ragan J, Randall P. Prospective relations between social support and depression: Differential direction of effects for parent and peer support? *Journal of Abnormal Psychology* 2004;113:155–159. [PubMed: 14992668]
- Tabachnick, BG.; Fidell, LS. *Using multivariate statistics*. 4th. Allyn and Bacon; Boston: 2000.
- Thornberry, TP.; Krohn, MD. The self-report method for measuring delinquency and crime. In: Duffee, D.; Crutchfield, RD.; Mastrofski, S.; Mazerolle, L.; McDowall, D., editors. *Criminal Justice 2000* (v. 4): *Innovations in measurement and analysis*. US Department of Justice; Washington DC: 2000.
- Vuchinich S, Bank L, Patterson GR. Parenting, peers, and the stability of antisocial behavior in preadolescent boys. *Developmental Psychology* 1992;28:510–521.
- Wilson, GT.; Becker, CB.; Heffernan, K. *Eating Disorders*. In: Mash, EJ.; Barkley, RA., editors. *Child Psychopathology*. 2nd. Guilford Press; New York: 2003. p. 687-715.
- Winters KC, Stinchfield RD, Henly GA, Schwartz RH. Validity of adolescent self-reports of alcohol and other drug involvement. *The International Journal of the Addictions* 1991;25:1379–1395. [PubMed: 2132719]

Figure 1.

Path models depicting the relations between perceived parental support and control and adolescent externalizing symptoms and substance abuse. Standardized path coefficients are shown. $*p < .05$, $**p < .01$, $***p < .001$, $^{\wedge}p = .08$.

Table 1

Correlations among the Time 3 and 4 Perceived Parenting and Adolescent Behavior variables with Means, Standard Deviation, Skew Coefficients

	2.	3.	4.	5.	6.	7.	8.	Mean	SD	Skew
Time 3										
1. Parental support	.51	-.41	-.28	.61	.38	-.32	-.16	3.88	0.92	-0.83
2. Parental control		-.38	-.31	.37	.60	-.26	-.25	3.82	0.81	-0.51
3. Externalizing behavior			.51	.33	.32	.66	.38	1.67	0.60	1.89
4. Substance abuse				.11	.28	.34	.46	-1.69	0.64	1.73
Time 4										
5. Parental support					.42	-.40	-.18	3.85	0.93	-0.78
6. Parental control						-.33	-.27	3.79	0.83	-0.57
7. Externalizing behavior							.46	1.61	0.54	1.95
8. Substance abuse								-1.61	0.69	1.36

Note. All correlations are reported for log10 transformed variables and significant at $p < .05$.