

## Relation of Parental Support and Control to Adolescents' Externalizing Symptomatology and Substance Use: A Longitudinal Examination of Curvilinear Effects

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*Past research has generated inconsistent findings regarding the relation of parental control and support to adolescent problem behaviors. Using two waves of data collected 1 year apart, the current study examined the influence of parental control and support on adolescents' externalizing symptoms, alcohol use, and illicit substance use. A sample of adolescents and their parents (N = 454) was studied, within which approximately half of the adolescents were at high risk because of parental alcoholism. Multiple-regression analyses of cross-sectional data showed a negative quadratic relation between parental control and adolescent externalizing symptomatology, and between parental control and adolescent illicit substance use. Parental control had a negative linear relation to adolescent alcohol use. Parental support showed a negative quadratic relation to adolescent illicit substance use, and negative linear relations to adolescent alcohol use and externalizing symptoms. Although longitudinally adjusted contemporaneous results were consistent with cross-sectional findings, parental support and control were prospectively related only to adolescent alcohol use. The quadratic relations suggest that adolescents who receive either extreme of parental support or control are at risk for problem behaviors.*

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Parenting styles have been linked to the development of childhood and adolescent problem behaviors such as externalizing disorders, alcohol use, and illicit substance use (Baumrind, 1991; Patterson, DeBaryshe, & Ramsey, 1989). In many conceptualizations, parenting is thought to be composed of two relatively orthogonal dimensions: parental control and support (Maccoby & Martin, 1983; Rollins & Thomas, 1979). Disturbances in either or both of these parenting dimensions can impair children's social, emotional, and cognitive functioning. The major aim of this study was to examine the relation of these two parenting dimensions to adolescents' externalizing symptoms, alcohol use, and illicit substance use.

### *The Relation of Parental Control to Adolescent Problem Behaviors*

Social learning models suggest that parents promote children's antisocial behavior through inconsistent monitoring and noncontingent responding to children's behavior (Patterson et al., 1989). Additionally, lax or inconsistent parental discipline may result in a disruption in children's identification with their parents (Hirschi, 1969), which in turn may interfere with the internalization of parental and societal values and norms. These omissions leave children lacking in self-control which is thought to result in externalizing behaviors and substance use. Although these theories explain the relation between low levels of parental control and problem behaviors, they do not account for the curvilinear relations between parental control and problem behaviors that have been found in some studies (e.g., Pandina & Schuele, 1983; Rollins & Thomas, 1979). Extreme parental control is thought to preclude a successful child-parent identification. Excessive parental discipline and monitoring may cause rebelliousness in the adolescent that takes the form of externalizing behaviors and illicit substance use. Moreover, children who experience highly restrictive parenting may seek social support outside of the family from delinquent peer groups (Klein, Jorgensen, & Miller, 1978), which has been linked to deviance and substance use initiation (Jacob & Leonard, 1991).

There are data to support both theories that predict linear and quadratic relations between parental control and externalizing symptoms. Several studies found negative relations between parental control and children's problem behavior (Baumrind, 1991; Lamborn, Mounts, Steinberg, & Dornbusch, 1991; Patterson & Reid, 1984; Patterson & Stouthamer-Loeber, 1984). However, researchers have also reported curvilinear relations between parental control and childhood aggression (Becker, Peterson, Luria, Shoemaker, & Hellmer, 1962; McCord, McCord, & Howard, 1961; Rollins & Thomas, 1979), and childhood delinquency (Glueck & Glueck, 1968; West

& Farrington, 1973). Findings concerning the relation of parental control to adolescent substance use are more complex. As with externalizing behaviors, research has found both negative (Baumrind, 1991; Dishion & Loeber, 1985; Lamborn et al., 1991; Mercer & Kohn, 1980) and quadratic (Akers, Krohn, Lanza-Kaduce, & Radosevich, 1979; Braucht, Brakarsh, Follingstad, & Berry, 1973; Pandina & Schuele, 1983; Rollins & Thomas, 1979) relations between parental control and adolescent alcohol and illicit substance use. Surprisingly, researchers have also reported positive relations between parental control and adolescent drug use (Brook, Whiteman, & Gordon, 1983; Kandel, Kessler, & Margulies, 1978).

These mixed findings are consistent with the supposition that there is a negative quadratic relation between parental control and problem behaviors. First, if there is a negative quadratic relation between control and problem behaviors, and only a linear solution was tested, the best fit solution would be a negative linear one. Indeed, most researchers apparently did not check for quadratic effects. For example, Foxcroft and Lowe (1991) noted that curvilinear effects are apparent in the results of some studies but were not reported.

Second, researchers often dichotomized the parenting variables, resulting in three or four types of parenting styles (e.g., Lamborn et al., 1991). Although focusing on parenting styles (such as authoritarian and indulgent parenting styles) has heuristic value, this approach renders it impossible to find anything other than a linear relation between these parenting variables and problem behaviors. Hence, there may be quadratic effects between control and problem behaviors that are obscured by categorizing continuous variables.

Another explanation for the inconsistent findings may be sampling variation. If the relation between parental control and problem behavior is truly quadratic, but the sampling methods used in some studies produced a truncated sample of problem behaviors, then linear findings would be expected. In fact, many of the studies reporting negative linear effects between parental control and substance use employed high school samples that were likely biased toward better adjusted adolescents (e.g., Mercer & Kohn, 1980). However, in a study that included adolescents referred for substance abuse treatment, quadratic effects were obtained (Pandina & Schuele, 1983).

Interestingly, the impact of parental control may also differ depending on whether the criterion is alcohol use or illicit substance use. Regarding the relation of parental control to adolescent alcohol use, all of the researchers reported negative linear findings. However, for parental control's relation to adolescent illicit substance use, researchers reported negative, positive, and quadratic findings. The first aim of the present study was to examine the form of the relations between parental control and adolescent

externalizing behavior, alcohol use, and illicit substance use, using a continuous measure of parental control. Both linear and quadratic relations were examined.

### *The Relation of Parental Social Support to Adolescent Problem Behaviors*

A supportive parental relationship and strong parent-child bond are thought to promote adolescents' internalization of their parent's conventional attitudes and behaviors (Baumrind, 1991; Jacob & Leonard, 1991). Parental support is also thought to decrease the likelihood that adolescents will affiliate with a deviant peer group which has been linked to the development of problem behaviors (Kandel & Andrews, 1987; Patterson & Stouthamer-Loeber, 1984). Finally, supportive parents are thought to contribute to children's self-acceptance and self-efficacy, which are important for healthy emotional and psychosocial development.

Investigators have reported negative relations between parental support and conduct problems (Wolchik, Beals, and Sandler, 1989), delinquency (Patterson & Stouthamer-Loeber, 1984; West & Farrington, 1973), problem behavior (Lamborn et al., 1991), adolescent alcohol use (Barnes, 1984; Barnes, Farrell, & Cairns, 1986; Margulies, Kessler, & Kandel, 1977), and adolescent illicit substance use (Brook, Whiteman, & Gordon, 1983; Kandel et al., 1978; Mercer & Kohn, 1980; Pandina & Schuele, 1983). However, two studies found a quadratic effect of parental support on adolescents' substance use (Baumrind, 1991; Smart, Chibucos, & Didier, 1990). Foxcroft and Lowe (1991) suggested that extremes of parental support may reflect enmeshment and disengagement, which are both dysfunctional for child development. The inconsistent pattern of findings suggest that it would be important to check for quadratic relations between support and problem behaviors.

Previous studies have differed in the operationalization of support, which is a multifaceted construct including domains such as provisions of companionship, intimacy, affection, instrumental aid, and expression of admiration (Barrera, 1986; Furman & Buhrmester, 1985). Relatively few investigators have used measures of support with adequate content validity. Moreover, as described above, studies that dichotomize families as high and low support cannot detect curvilinear effects. Consequently, a second aim of the current study was to examine the form of the relation between parental support and adolescent problem behaviors, using a continuous measure of support with adequate content validity, and testing for quadratic effects.

In addition to the points detailed above, there are two general methodological limitations of this body of literature. First, many studies rely completely on adolescent self-reports, which raises questions about the va-

lidity of these findings. Accordingly, the current study used multiple reporters. Second, most previous research has been cross-sectional, so that the directionality of effects cannot be determined. Thus, the current study used a longitudinal design.

Two analytic approaches were used with the current longitudinal data. Because prior symptoms are often the best predictor of future symptoms, it is important to control for initial symptoms in longitudinal research (Monroe, 1983). Thus, we examined if parenting at wave 1 predicted wave 2 problem behavior, after controlling for wave 1 problem behavior. However, criticisms have been leveled at traditional prospective designs (Gollob & Reichardt, 1987; Rogosa, 1988; Rogosa & Willett, 1985). One central problem is selecting the appropriate time lag to capture the effect. If the time lag chosen is too long for the variables under study, the prospective analyses will yield nonsignificant results (Gollob & Reichardt, 1987). Accordingly, a longitudinally adjusted contemporaneous analysis was employed that is not subject to the difficulty in specifying the time lag. In this analysis the effects of wave 2 parenting on wave 2 problem behavior were assessed, while adjusting for initial levels of both wave 1 parenting and problem behavior. This technique was suggested by Cronbach and Furby (1970) as a method of measuring concomitant change across different domains, and is a simple extension of analysis of partial variance as proposed by Cohen and Cohen (1983). Although this approach cannot demonstrate temporal ordering like prospective analyses, it represents an improvement over cross-sectional analyses because the effects of the initial levels of the predictors as well as the criteria are partialled out. As noted above, this analysis technique also does not present the time lag specification difficulties inherent in traditional prospective analyses.

### *Aims of the Present Study*

The purpose of this study was to examine the relations of parental control and support to adolescent externalizing symptomatology, alcohol use, and illicit substance use. The main focus was to determine the form of the relation of parental control and support to adolescent problem behaviors. Because of the focus on problem behaviors, this study oversampled adolescent children of alcoholics who are at high risk for these problems (Chassin, Rogosch, & Barrera, 1991; Sher, Walitzer, Wood, & Brent, 1991). Accordingly, approximately half of the current sample consisted of children of alcoholics and the remainder were children of nonalcoholic parents.<sup>3</sup>

<sup>3</sup>A published report, using wave 1 data from this project, addressed the effects of parental alcoholism on adolescent psychopathology (Chassin et al., 1991).

We attempted to address limitations of past literature by using multiple reporters, a longitudinal design, a broadly operationalized parental support measure, and continuous measures of control and support. The two-wave design allowed us to test the hypotheses in the initial wave of data, replicate the findings in the second wave of data, conduct prospective analyses, and perform longitudinally adjusted contemporaneous analyses.

## METHOD

### *Subjects*

At wave 1 the sample consisted of 454 adolescents (214 females and 240 males), and their parents. The adolescents ranged in age from 10.5 to 15.5 (average age = 12.7) at wave 1 data collection. Families were categorized as either Hispanic (22.9%) or non-Hispanic Caucasians (77.1%) according to self-reports. Parental education ranged from grade school to graduate school with a modal response of some college attendance. Because the attrition rate was only 1.2% from wave 1 to wave 2, attrition analyses were not performed. The sample was comprised of children of alcoholics (COAs) and matched controls, with 54% of the adolescents in the sample residing with a biological alcoholic parent. There were 211 alcoholic fathers and 59 alcoholic mothers. Twenty-four families had two alcoholic parents. Parental alcoholism was characterized by an early onset of drinking problems, with 74.6% of the alcoholic fathers, and 58.5% of the alcoholic mothers reporting drinking problems before age 25. Of the alcoholic parents, 31% of the fathers and 33% of the mothers reported receiving alcoholism treatment. Regarding recency, at the initial interview 32% of the alcoholic fathers and 46.4% of the alcoholic mothers reported the occurrence of alcohol abuse or dependency symptoms within the last year.

### *Recruitment Procedures*

COA families were recruited using community telephone surveys, questionnaires from a health maintenance organization, and court driving while intoxicated (DWI) records. COAs had to meet the following criteria: Anglo or Hispanic ethnicity, Arizona residency, ages 10 to 16, English-speaking, and no cognitive limitations that would preclude interview (e.g., psychosis). Direct interview data had to confirm that a biological and custodial parent met DSM-III criteria for lifetime diagnosis of alcohol abuse or dependence by the Diagnostic Interview Schedule (DIS) or by spouse-

report on Family History Research Diagnostic Criteria (FH-RDC) if a parent could not be interviewed. After COA families were selected, they were matched with control families. Potential controls were identified through reverse directories that listed households in the same neighborhoods as COA families. Telephone screening interviews were used to find participants who matched COA families on (a) child's age within 1 year, (b) family structure, and (c) ethnicity of alcoholic parent. Families were matched for socioeconomic status using property value codes in reverse directories or parents' report of income. Direct interviews verified that neither parent met DSM-III or FH-RDC criteria for lifetime diagnosis of alcohol abuse or dependence. The recruitment procedures are presented in greater detail elsewhere (Chassin, Barrera, Bech, & Kossak-Fuller, 1992).

### *Procedure*

When subjects were recruited, the study was presented as an attempt to understand why some children have an easy and successful time adjusting to adolescence, and others develop problems. Data were collected in annual computer-assisted interviews with the adolescents and their parents. Interview items required close-ended responses which were entered directly into laptop computers. To minimize contamination, family members were interviewed separately during the same time interval by different interviewers (in all but 11 cases). Confidentiality was assured with a Certificate of Confidentiality from the Department of Health and Human Services. Interviewers were blind to the hypotheses of the study. Interviews lasted 1 to 2 hr and families received \$50 for their participation.

### *Measures*

*Covariates.* Adolescent age, gender, and ethnicity,<sup>4</sup> as well as parental education and lifetime alcoholism diagnosis (by RDC or DIS criteria) were used as covariates.<sup>5</sup>

<sup>4</sup>For the regression analyses, a dichotomous variable was created that coded families as Hispanic if either the adolescent, the mother, or the father classified themselves as Hispanic, otherwise they were coded as non-Hispanic Caucasians.

<sup>5</sup>Diagnosis of parent antisocial personality disorder (APD) was also available. Although research has found that parental APD is related to adolescent externalizing behaviors, preliminary analyses indicated that the precision of the analyses was not improved by the inclusion of this covariate. Covariates are used for the purpose of controlling extraneous variables statistically, thereby increasing the precision of the analyses (Pedhazur, 1982). There were no differences in the pattern of significant findings with and without parental APD diagnosis in the equation, indicating that the precision of the analyses was not improved by

*Parenting Variables.* Perceived parental support was measured with an adapted version of the Network of Relationships Inventory (Furman & Buhrmester, 1985). Adolescents answered six questions about the types of social support they received over the preceding 3 months from each of their parents. This scale assessed the domains of companionship, guidance, intimacy, affection, admiration, and reliable alliance. Because the adolescents' reports of mother and father support were correlated (wave 1  $r = .60$ , wave 2  $r = .63$ ), they were combined by averaging. Cronbach's alpha for the parental support scale was .88 for wave 1 and .89 for wave 2. In families with only one parent, that parent's social support score was used. Perceived parental control was measured with 10 items from the nonenforcement and inconsistent discipline subscales of the Child Report of Parental Behavior Inventory originally constructed by Schaefer (1965). Adolescents rated the items separately for mother and father parenting over the past 3 months. Because the adolescents' reports of mother and father control were correlated (.72 for both wave 1 and wave 2), the two were combined. The internal consistency for the scale was .89 for wave 1 and .90 for wave 2. In families with only one parent, that parent's control score was used. Because both parenting variables were assessed exclusively with adolescent reports, they should be regarded as measures of perceived social support and control.

*Externalizing Symptoms.* The adolescents' level of externalizing symptomatology was assessed using mother, father, and adolescent reports of items from the Child Behavior Checklist (Achenbach & Edelbrock, 1983). All items reflected a 3-month time window. This scale consisted of 22 items that loaded on the externalizing factor for both girls and boys ages 12 to 16. In adolescent self-report, the response scale was expanded to a 5-point scale to increase the variance. Because mother and father reports of externalizing were correlated (wave 1  $r = .65$ , wave 2  $r = .66$ ), the two reports were combined. Cronbach's alpha for the parent report was .92 for wave 1 and .93 for wave 2. Cronbach's alpha for the adolescent report was .88 for both waves 1 and 2.

*Substance Use.* Adolescents self-reported their frequency of consumption during the past 3 months of beer/wine/winecoolers, and hard liquor, as well as their frequency of heavy drinking (five or more drinks on one occasion). The alcohol use measure was formed by summing across these three items. This variable was raised to the .25th power to normalize the distribution. Cronbach's alpha for the alcohol use measure was .85 for wave 1 and .86 for wave 2. Adolescents also self-reported their frequency of use

the inclusion of this variable. Omitting APD as a covariate permitted the inclusion of 99 families that would have been dropped because of missing APD diagnoses. Similarly, family structure was omitted as a covariate because preliminary analyses indicated that the pattern of significant effects was the same with and without the inclusion of this covariate.



during the past 3 months of marijuana/hashish, amphetamines, quaaludes/barbiturates, tranquilizers, hallucinogens, cocaine/crack, opiates, and inhalant drugs. Items were summed to form a composite measure of illicit substance use. This variable was also raised to the .25th power to normalize the distribution. Cronbach's alpha for the illicit substance use measure was .77 and .75 for waves 1 and 2, respectively.

Because of the young age of the sample, the prevalence of adolescent substance use was generally low. Accordingly, the current study is best viewed as an examination of substance use initiation. At the wave 2 data collection, 26% of the adolescents reported alcohol use over the past 3 months. Within the past 3 months, 15% reported drinking beer/winecoolers one to two times, 3% reported drinking beer/winecoolers three times, 4% reported drinking beer/winecoolers six to nine times, and 3% reported drinking beer/winecoolers over 10 times. Regarding illicit substance use, 7% of the adolescents reported illicit substance use over the past 3 months at wave 2. These rates are comparable to national data for older adolescents (ages 12 to 17), as indicated by the National Household Survey (National Institute on Drug Abuse, 1989).

## RESULTS

Preliminary multiple-regression analyses revealed no substantively meaningful Covariate  $\times$  Predictor interactions, a condition that must be satisfied when using covariates (Pedhazur, 1982). Specifically, tests were performed for two-way interactions between each covariate (parental alcoholism status, ethnicity, age, gender, and parental education) and each predictor (support and control). Multiple-regression analyses also indicated that there were no substantively meaningful interactions between parental alcoholism status and any of the other covariates which would have indicated that the effects of parental alcoholism were moderated by that covariate. Further, analyses found no parental support by control interaction that would have necessitated the inclusion of an interaction vector in the analyses. The zero-order correlation matrix among the predictor and criterion variables for waves 1 and 2 are provided in Table I.

To investigate the joint and unique effects of parental control and support on the criteria, hierarchical multiple-regression analyses were performed with covariates entered on step 1 and parental support and control entered on step 2. For each wave of data, multiple-regression analyses were performed for the following criteria: adolescent and parent reports of externalizing symptoms, adolescent reports of alcohol use, and adolescent reports of illicit substance use. To test the prediction that each parenting

Table I. Zero-Order Correlations Between Parental Support, Parental Control, and Criteria<sup>a</sup>

	1	2	3	4	5	6
Wave 1						
1. Parental support		.45 <sup>b</sup>	-.42 <sup>b</sup>	-.23 <sup>b</sup>	-.28 <sup>b</sup>	-.27 <sup>b</sup>
2. Parental control			-.42 <sup>b</sup>	-.15 <sup>b</sup>	-.27 <sup>b</sup>	-.22 <sup>b</sup>
3. Adolescent reports of externalizing symptoms				.42 <sup>b</sup>	.41 <sup>b</sup>	.29 <sup>b</sup>
4. Parent reports of externalizing symptoms					.20 <sup>b</sup>	.22 <sup>b</sup>
5. Adolescent reports of alcohol use						.51 <sup>b</sup>
6. Adolescent reports of substance use						
Wave 2						
1. Parental support		.47 <sup>b</sup>	-.39 <sup>b</sup>	-.23 <sup>b</sup>	-.32 <sup>b</sup>	-.27 <sup>b</sup>
2. Parental control			-.48 <sup>b</sup>	-.20 <sup>b</sup>	-.35 <sup>b</sup>	-.26 <sup>b</sup>
3. Adolescent reports of externalizing symptoms				.45 <sup>b</sup>	.43 <sup>b</sup>	.29 <sup>b</sup>
4. Parent reports of externalizing symptoms					.22 <sup>b</sup>	.28 <sup>b</sup>
5. Adolescent reports of alcohol use						.49 <sup>b</sup>
6. Adolescent reports of substance use						

<sup>a</sup>Note: All significance tests were two tailed.

<sup>b</sup> $p < .001$ .

variable would have a unique effect, the partial regression coefficients (B) associated with parental control and support were tested for significance. Table II provides the *F*-changes, Bs, and the amount of variance accounted for by the joint and unique effects of parental support and control on all criteria for waves 1 and 2. The joint effects of parental control and social support were statistically significant for all criteria, and nearly all of the unique effects of parental control and support were significant.

Quadratic effects were tested with hierarchical multiple-regression analyses where covariates were entered on step 1, linear terms for parental control and support were entered on step 2, and a power vector representing the quadratic trend for either control or support was entered on step 3. For each wave of data, multiple-regression analyses were performed for all criteria. Table III presents the *F*-changes and the amount of variance accounted for by the quadratic effects of control and support on all criteria for waves 1 and 2. Parental control showed a quadratic relation to adolescent and parent reports of externalizing symptoms at wave 1, and to parent reports of externalizing symptoms and adolescent reports of illicit substance use at wave 2. Support was related quadratically to adolescent reports of

**Table II.** Joint and Unique Effects of Parental Support and Control on Externalizing Symptomatology and Substance Use: Cross-Sectional Results from Waves 1 and 2<sup>a</sup>

Dependent variables	Joint effects of support and control, <i>F</i> change (% of variance)	Support unique, <i>B</i> (% of variance)	Control unique, <i>B</i> (% of variance)
Wave 1			
Adolescent reports of externalizing symptoms	57.6 (18.9) <sup>d</sup>	-.178 (5.7) <sup>d</sup>	-.208 (5.1) <sup>d</sup>
Parent reports of externalizing symptoms	12.3 (4.9) <sup>d</sup>	-.065 (3.5) <sup>d</sup>	-.010 (0.1), n.s.
Adolescent reports of alcohol use	15.6 (5.7) <sup>d</sup>	-.117 (2.2) <sup>d</sup>	-.100 (1.1) <sup>c</sup>
Adolescent reports of illicit substance use	15.9 (6.3) <sup>d</sup>	-.066 (3.5) <sup>d</sup>	-.029 (0.5), n.s.
Wave 2			
Adolescent reports of externalizing symptoms	58.0 (18.6) <sup>d</sup>	-.121 (2.9) <sup>d</sup>	-.253 (8.0) <sup>d</sup>
Parent reports of externalizing symptoms	14.6 (5.8) <sup>d</sup>	-.062 (2.9) <sup>d</sup>	-.036 (0.6) <sup>b</sup>
Adolescent reports of alcohol use	23.8 (8.5) <sup>d</sup>	-.129 (2.4) <sup>d</sup>	-.161 (2.3) <sup>d</sup>
Adolescent reports of illicit substance use	13.9 (5.8) <sup>d</sup>	-.057 (2.6) <sup>d</sup>	-.039 (0.8) <sup>b</sup>

<sup>a</sup>Note: Joint tests,  $df = 2/434$ ; unique tests,  $df = 1/434$ . Column 1 presents the combined effects of parental support and control on the criteria when entered after the covariates were in the equations. Columns 2 and 3 present the unique effects of parental support and control for all criteria as assessed by the partial regression coefficient (*B*) from the full regression model.

<sup>b</sup> $p < .10$ .

<sup>c</sup> $p < .05$ .

<sup>d</sup> $p < .001$ .

illicit substance use at both waves and to parent reports of externalizing symptoms at wave 2.

To depict the nature of the quadratic effects, we adopted the graphing procedure recommended by Hayduk (1987). Because all of the quadratic effects had a negative sloping curvilinear shape, two illustrative examples were selected. Examples of quadratic effects for both support and control, on adolescent as well as parent-reported outcomes, were chosen. Observed values of parental control were entered into the full regression equation predicting parental reports of externalizing symptoms, and observed values of parental support were entered into the full regression equation predicting child reports of illicit substance use. The predicted values are plotted in Fig. 1.

Longitudinal relations between parenting and adolescent problem behaviors over the 1-year period were investigated using hierarchical multiple-regression analyses. First, prospective analyses were performed to

**Table III.** *F*-Change and the Percent of Variance Explained by the Quadratic Effects of Parental Support and Control: Cross-Sectional Results from Waves 1 and 2<sup>a</sup>

Dependent variables	Quadratic effects of parental support, <i>F</i> change (% of variance)	Quadratic effects of parental control, <i>F</i> change (% of variance)
Wave		
Adolescent reports of externalizing symptoms	3.58 (0.6) <sup>b</sup>	4.92 (0.8) <sup>c</sup>
Parent reports of externalizing symptoms	1.07 (0.2), n.s.	7.01 (1.4) <sup>d</sup>
Adolescent reports of alcohol use	0.94 (0.2), n.s.	0.50 (0.1), n.s.
Adolescent reports of illicit substance use	16.26 (3.1) <sup>e</sup>	3.77 (0.7) <sup>b</sup>
Wave 2		
Adolescent reports of externalizing symptoms	2.65 (0.4), n.s.	0.19 (0.0), n.s.
Parent reports of externalizing symptoms	21.67 (4.0) <sup>e</sup>	12.16 (2.3) <sup>e</sup>
Adolescent reports of alcohol use	0.73 (0.1), n.s.	0.27 (0.1), n.s.
Adolescent reports of illicit substance use	6.25 (1.3) <sup>e</sup>	5.43 (1.1) <sup>e</sup>

<sup>a</sup>Note: For wave 1 tests, *df* = 1/433; for wave 2 tests, *df* = 1/428. Quadratic terms were entered after the linear terms for parental support and control and covariates were in the equations.

<sup>b</sup>*p* < .10.

<sup>c</sup>*p* < .05.

<sup>d</sup>*p* < .01.

<sup>e</sup>*p* < .001.

ascertain if wave 1 parenting was predictive of wave 2 problem behaviors while controlling for wave 1 problem behaviors. Separate hierarchical multiple-regression analyses were performed for all wave 2 criteria where covariates and the wave 1 measure of the criterion was entered on step 1, and wave 1 support and control were entered on step 2. Table IV presents the *F*-changes, *B*s, and the percentages of variance accounted for in the prospective analyses. The only significant prospective finding was the joint effect of parental support and control on adolescent alcohol use. There were no statistically significant quadratic effects in the prospective analyses.

Second, longitudinally adjusted contemporaneous analyses were performed. These hierarchical multiple-regression analyses examined the relations between wave 2 parenting and wave 2 problem behavior after adjusting for wave 1 levels of parenting and problem behaviors. These analyses were accomplished by entering wave 2 parental control and support after the covariates, wave 1 parental control and support, and the wave 1 version of the criteria were already entered into the equation. Significance at this step indicated that parenting at wave 2 predicted problem behavior at wave 2, above and beyond the effects predictable from initial levels of these variables. Table IV reports the *F*-changes, *B*s, and the percentages of variance

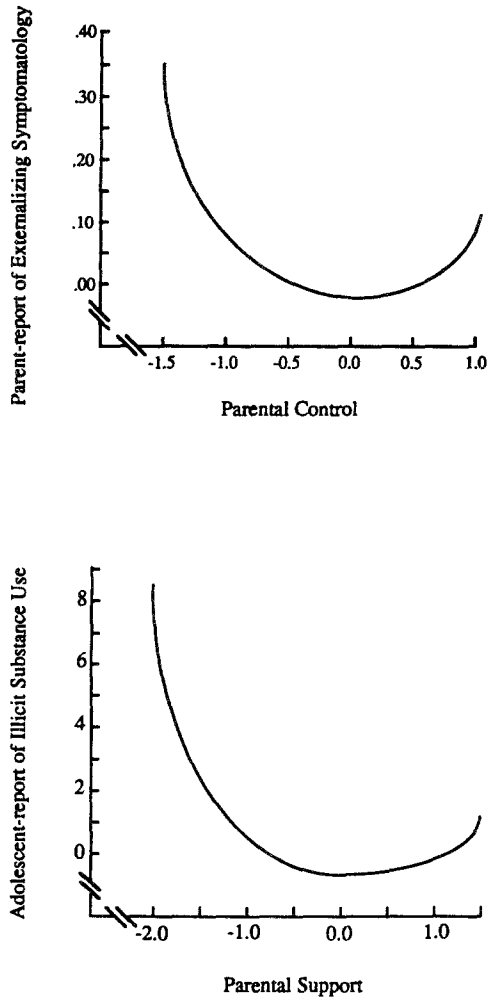


Fig. 1. Predicted values of externalizing symptoms from the regression of parental reports of externalizing symptoms on support and the linear and quadratic terms of control at wave 1, and predicted values of adolescent illicit substance use from the regression of adolescent reports of illicit substance use on control and the linear and quadratic terms of support at wave 1.

accounted for by the joint and unique effects of parental control and support in the longitudinally adjusted contemporaneous analyses. All of the joint effects and many of the unique effects were statistically significant.

**Table IV.** Percent of Variance Accounted for by the Joint and Unique Effects of Parental Support and Control in the Prospective and Longitudinally Adjusted Contemporaneous Analyses<sup>a</sup>

Wave 2 dependent variables	Joint effects of support and control, <i>F</i> change (% of variance)	Support unique, <i>B</i> (% of variance)	Control unique, <i>B</i> (% of variance)
Prospective analyses using wave 1 predictors			
Adolescent reports of externalizing symptoms	0.03 (0.0), n.s.	-.01 (0.0), n.s.	-.01 (0.0), n.s.
Parent reports of externalizing symptoms	0.48 (0.1), n.s.	-.01 (0.0), n.s.	-.00 (0.0), n.s.
Adolescent reports of alcohol use	5.9 (1.9) <sup>d</sup>	-.07 (0.6) <sup>b</sup>	-.08 (0.6) <sup>b</sup>
Adolescent reports of illicit substance use	2.1 (0.7), n.s.	-.02 (0.3), n.s.	-.01 (0.1), n.s.
Longitudinally adjusted contemporaneous analyses using wave 2 predictors			
Adolescent reports of externalizing symptoms	21.4 (4.8) <sup>e</sup>	-.08 (0.8) <sup>d</sup>	-.18 (3.0) <sup>e</sup>
Parent reports of externalizing symptoms	6.2 (1.0) <sup>d</sup>	-.04 (0.9) <sup>e</sup>	-.00 (0.0), n.s.
Adolescent reports of alcohol use	7.1 (2.2) <sup>e</sup>	-.08 (0.7) <sup>b</sup>	-.13 (1.1) <sup>d</sup>
Adolescent reports of illicit substance use	4.6 (1.5) <sup>c</sup>	-.03 (0.5) <sup>b</sup>	-.04 (0.6) <sup>b</sup>

<sup>a</sup>Note: Prospective analyses: joint tests,  $df = 2/434$ ; unique tests,  $df = 1/434$ . Longitudinally adjusted contemporaneous analyses: joint tests,  $df = 2/432$ ; unique tests,  $df = 1/432$ . For prospective analyses column 1 presents the joint effects of parental support and control when entered after the covariates. For longitudinally adjusted contemporaneous analyses column 1 presents the joint effects of wave 2 parental support and control when entered after the covariates and wave 1 variables. Columns 2 and 3 present the unique effects of parental support and control as assessed by the partial regression coefficient (*B*) from the full regression models.

<sup>b</sup> $p < .10$ .

<sup>c</sup> $p < .05$ .

<sup>d</sup> $p < .01$ .

<sup>e</sup> $p < .001$ .

Quadratic relations were tested in the longitudinally adjusted contemporaneous analyses by entry of power vectors for wave 2 parental support or control after the previously specific wave 2 linear effects were in the equation. Quadratic relations were detected between parental support and parent reports of externalizing symptoms [ $F$  change (1, 429) = 6.87,  $p < .01$ ], between parental control and parent reports of externalizing symptoms [ $F$  change (1, 429) = 3.82,  $p < .05$ ], and between parental control and child reports of illicit substance use [ $F$  change (1, 431) = 2.84,  $p < .10$ ].

As with the cross-sectional quadratic results described earlier, negative sloping quadratic effects were obtained.

## DISCUSSION

### *Summary of Findings*

In cross-sectional analyses the joint and unique effects of parental support and control were generally negatively related to adolescent and parent reports of externalizing symptomatology, and adolescent reports of alcohol and illicit substance use. Parental control showed quadratic relations to adolescent externalizing symptoms and illicit substance use, but not to adolescent alcohol use. Quadratic effects were also found for parental support's relation to adolescent externalizing symptoms and illicit substance use. The only prospective finding when controlling for initial problem behaviors was the joint effect of support and control on adolescent alcohol use. However, after adjusting for initial levels of parental support, control, and adolescent problem behaviors, wave 2 parental support and control were predictive of all wave 2 problem behaviors. Generally the magnitude of the effects was stronger for adolescent-reported criteria than for parent-reported criteria.

### *Effects of Parental Control*

The quadratic relation between parental control and adolescent externalizing symptomatology was a novel finding. Although this relation has been found with substance use, it has not been reported in relation to general adolescent externalizing symptomatology. The results are consistent with findings reported for specific types of externalizing problems (aggression and delinquency) in younger age groups (Glueck & Glueck, 1968; Rollins & Thomas, 1979; West & Farrington, 1973). Parental control also showed quadratic relations to adolescent illicit substance use, but not to adolescent alcohol use. Other studies have found quadratic relations between parental control and adolescent illicit substance use (e.g., Pandina & Schuele, 1983), and negative relations between parental control and adolescent alcohol use (e.g. Baumrind, 1991). However, previous research has also reported both negative relations between parental control and illicit substance use (Dishion & Loeber, 1985) and positive relations (Brook et al., 1983; Kandel et al., 1978).

It is interesting to speculate why quadratic effects would be found for illicit substance use but not for alcohol use. These findings might reflect the fact that alcohol use is a more normative parental behavior in our society than is illicit substance use. Extreme parental control is thought to disrupt parent-child relationships, resulting in rebellion against parental norms, rather than internalization of them. Illicit substance use, because it is a less normative behavior for parents, may be perceived by adolescents as a more rebellious behavior than alcohol use. Adolescents with overly controlling parents might be less likely to emulate their parents' use of alcohol, but rather might use illicit substances in acts of rebellion. This explanation is consistent with the work of Braucht and associates (1973), who noted that illicit substance use is more likely to serve as an act of rebellion for adolescents than alcohol use.

Alternatively, a reverse direction of influence might explain the findings. High levels of adolescent illicit substance use might be more likely than high levels of adolescent alcohol use to elicit increased control attempts from parents. This explanation would be consistent with the lack of prospective effects of control on adolescent illicit substance use and the presence of prospective effects of control on adolescent alcohol use.

When interpreting the differential effects of parenting on adolescent illicit substance use and alcohol use, it is important to acknowledge that the curvilinear relation between parental control and adolescent illicit substance use for wave 1 was not large nor completely replicated in wave 2. However, by necessity the power vectors representing quadratic effects were highly collinear with the linear effect vectors, resulting in a stringent test for quadratic effects.

These findings are generally supportive of compliance training theory (Patterson et al., 1989) and adolescent identification theory (Hirschi, 1969), but also suggest that these linear theories might break down at high levels of parental control. Extremely high parental control, as well as extremely low parental control, were associated with adolescent externalizing symptoms and illicit substance use. These findings suggest that extreme parental control is not a deterrent of adolescent externalizing behaviors and illicit substance use as implied by previous reports of negative linear relations. Parental overcontrol may disrupt the parent-child bond so that, instead of adolescents internalizing parental norms, they are more likely to rebel against them and identify with deviant peers. However, regarding adolescent alcohol use, high levels of parental control appear to be more beneficial. Additional research on the differential effects of parental control on various adolescent problem behaviors is needed before firm conclusions can be drawn concerning these findings. Independent replication would be an important first step in addressing this issue. Future research in this arena



should utilize continuous measures of parental control and support in order to detect nonlinear relations and to increase statistical power.

### *Effects of Parental Support*

The quadratic relation between parental support and adolescent externalizing symptomatology has not been previously reported. However, the quadratic relation between parental support and adolescent illicit substance use was consistent with previous reports (Baumrind, 1991; Smart et al., 1990). Other studies have found negative linear relations between parental support and adolescent substance use, but these studies have not tested for quadratic effects (e.g., Brook et al., 1983; Kandel & Andrews, 1987). Finally, the negative relation between parental support and alcohol use was in accord with past findings (e.g., Barnes et al., 1986; Margulies et al., 1977).

Family systems theory offers an explanation for the quadratic effects of parental support by asserting that moderate cohesion is optimal for family functioning but that extremes of disengagement and enmeshment are problematic (Foxcroft & Lowe, 1991; Minuchin, 1974). A warm and supportive parent-child bond with a balanced amount of cohesiveness encourages the child's identification and internalization of the parent's conventional attitudes and behaviors (Jacob & Leonard, 1991). This is thought to lead to social competence and low levels of externalizing behavior (Baumrind, 1991). The findings indicate that a moderate level of parental support may be ideal, suggesting that excessive cohesiveness inhibits optimal social development. Although focusing primarily on marital relations, Coyne, Wortman, and Lehman (1988) discussed how emotional overinvolvement could produce negative consequences for support recipients.

### *Joint Effects of Parental Support and Control*

The joint effects of parental support and control were demonstrated repeatedly in the present study. The variance accounted for by the joint effects of these variables on adolescent externalizing symptomatology, alcohol use, and illicit substance use ranged from 5 to 19%. This pattern of findings was stable and was replicated across reporters, as well as across waves of measurement. Although the longitudinally adjusted contemporaneous analyses were consistent with the cross-sectional results, there were few significant prospective effects. It is important to note that the longitudinally adjusted contemporaneous findings do not imply unidirectional effects. These analyses are an improvement over cross-sectional analyses

because they adjust for prior levels of the predictors and criteria, but they cannot identify the direction of influence.

The prospective findings provide little evidence that parenting exerts a temporal effect on problem behaviors during adolescence. Two interpretations may be given regarding the minimal prospective effects. First, the lack of effects may be due to a misspecification of the causal time lag that is operating between the variables. As Gollob and Reichardt (1987) discussed, if the time lag chosen is too long for the variables under study, the prospective analyses will yield nonsignificant results. Thus, parenting might exert its effects over a shorter time period than a year. The fact that the longitudinal adjusted contemporaneous results converge with the cross-sectional results suggests that perhaps the causal time lag between parenting and problem behavior is shorter than 1 year. Second, reverse directionality may be responsible for the lack of prospective effects, with an adolescent's problem behaviors eliciting extremes in parental control and support. Indeed, research has found that child behavior influences parent behavior (Lytton, 1990).

#### *Limitations of the Present Research*

It is also important to consider some of the study's limitations. For externalizing symptomatology, parent reports did not perfectly replicate child reports. There are two factors that may account for this fact. First, adolescents might be considered to be more informed reporters than parents for many symptoms of psychopathology. Parents only observe a small segment of the adolescent's behavior, and are not exposed to many of the other environments such as the school setting or the peer setting in which the adolescent interacts. Research has documented that parents underreport child externalizing symptoms compared to child self-reports (Weissman et al., 1987). This fact may attenuate the correlations for the parent reports. Second, the imperfect replication may be due to the fact that non-independent data sources were used. That is, the within-reporter correlations might be biased high because adolescents reported both the predictors and the criteria. However, because most of the cross-reporter results were significant, and several of the effects were actually stronger for parent reports than adolescent reports, this explanation is unlikely.

Another limitation of this study was the reliance on adolescent perceptions of parental support and control. More confidence could have been placed in the findings if multiple reporters or behavioral observations of parenting were employed. Finally, it is important to acknowledge that the present study focuses only on parenting influences. Many other important

variables that were not included in the present model are related to the development of adolescent problem behaviors, such as peer influences, parental modeling, and temperament.

### *Directions for Future Research*

The results of the present study provide additional evidence of the relation between parenting and adolescent problem behaviors. Future research should explore possible mediators of the relations of parental support and control to adolescent problem behaviors. The quality of the parent-child bond could be tested as one potential mediator. Regarding parental control, parent's use of appropriate reinforcement and punishment strategies could be examined as possible mediators. Future studies might examine the relative importance of the different dimensions of the social support construct, such as provisions of companionship, affection, instrumental aid, and expression of admiration, to adolescent externalizing problems. Finally, investigators also need to examine the probable bidirectional effects between parenting and problem behaviors. A fuller understanding of the bidirectional effects would significantly advance our understanding of the relations between parenting and adolescent problem behaviors.

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