

Parent Styles Associated With Children's Self-Regulation and Competence in School

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This study assessed three dimensions of parent style, autonomy support, involvement, and provision of structure in 64 mothers and 50 fathers of elementary-school children in Grades 3-6, using a structured interview. Construct validity data for the interview ratings suggested that the three parent dimensions were reliable, relatively independent, and correlated with other parent measures in hypothesized ways. Aspects of children's self-regulation and competence were measured through children's self-reports, teacher ratings, and objective indices. Parental autonomy support was positively related to children's self-reports of autonomous self-regulation, teacher-rated competence and adjustment, and school grades and achievement. Maternal involvement was related to achievement, teacher-rated competence, and some aspects of behavioral adjustment, but no significant relations were obtained for father involvement. The structure dimension was primarily related to children's control understanding. Results are discussed in terms of the motivational impact of the parent on school competence and adjustment and in terms of transactional models of influence.

Since Coleman et al.'s (1966) controversial conclusion that family background and social context are the primary influences in determining children's achievement, there has been a growing body of research regarding the connections between home and school (Hess & Holloway, 1985). A number of studies have shown associations between home characteristics, demographic variables, and achievement-relevant outcomes (e.g., Belz & Geary, 1984; Jencks, 1972; Marjoribanks, 1980). More recently, large-scale survey studies have begun to link specific attributes of parent style or behavior to child achievement and adjustment in school (e.g., Dornbusch, Ritter, Leiderman, Roberts, & Fraleigh, 1987; Stevenson & Baker, 1987).

The purpose of the current study is to further explicate the nature of parental influences on children's school-related adjustment and performance. Specifically, we investigate how relevant parent practices are associated not only with achievement per se, but also with the development of attitudes, motives, and self-evaluative outcomes that facilitate negotiation of the social and cognitive demands of school. The relations between parental inputs and the nonintellective, inner resources that are involved in school adaptation remain an area that to date has been underexplored.

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Among those child attributes or inner resources that are expectably influenced by parents are those involving self-regulatory and self-evaluative capacities. One of the most significant affective goals of education is the capacity to be self-regulating or autonomous with respect to the learning process and to one's own behavior (Deci & Ryan, 1985; Krathwohl, Bloom, & Masia, 1974; Thomas, 1980). Previous studies have shown how individual differences in autonomy (Ryan & Grolnick, 1986) and self-regulation (Ryan, Connell, & Deci, 1985) in school are associated with greater motivation and adjustment. A second affective goal of education is the building of a sense of competence (White, 1963) in relation to learning and achievement. The sense of competence in school is reflected in the child's knowledge concerning control over academic outcomes (Connell, 1985; Skinner & Chapman, 1987), and in the internalized belief that one is able to effect such outcomes. Harter (1983) referred to this internalized belief as perceived competence. Finally, on a more objective level, self-regulation and competence outcomes can be gauged by examining performance outcomes such as grade or standardized achievement scores and by obtaining ratings of classroom adjustment and behavior. These latter indexes represent tangible outcomes of central importance to many parents and educators.

We hypothesized that both self-regulation and competence-relevant outcomes could be linked to parents' styles of motivating and supporting the child's school-related behavior. To investigate this hypothesis, we sought to identify relevant dimensions of parent styles believed to be associated with these child characteristics, building both upon our previous work on children's school motivation (Ryan et al., 1985; Ryan, Connell, & Grolnick, in press) and the existing literature on parent styles. Beyond this, we had two further purposes: (a) to present and provide initial validity data for a three dimensional classification and interview measure of father, mother, and combined parenting styles, and (b) to empirically examine relations between these parental dimen-

sions and multiple aspects of children's self-regulation and competence within the academic domain.

Parenting Styles

There is a large body of research exploring parental attitudes, child-rearing behaviors, and parent-child relationships as they relate to aspects of children's development (Maccoby & Martin, 1983). A variety of parenting dimensions has been identified in this literature, often through empirical means. However, because of differing methods, theoretical approaches, and developmental foci, there has been no general consensus on the most significant axes along which to compare parents.

One dimension that has been linked to school performance outcomes (Hess & Holloway, 1985) and that appeared to us to be particularly relevant to the development of self-regulation is that of parental control. Described by such terms as "restrictive" (Becker, 1964), "controlling" (Schaefer, 1959), and "autocratic" (Baldwin, 1949), this extreme pole of the control dimensions is characterized by the parent's use of power in achieving compliance as well as a paramount valuing of obedience in children.

Although there is relative agreement that such a pole on which parents can be distinguished exists, there has been less agreement about what constitutes the opposite pole of this dimension. For example, Becker (1964) identified a permissive style as the other end of the restrictive dimension, described as a lack of control and a passive approach to child rearing. Baldwin (1949), on the other hand, distinguished a democratic style that implies an active approach in which the child's views are taken into account and information is provided to facilitate choice toward appropriate behavior.

Baumrind (1967, 1971) has also delineated two relevant dimensions, namely firm versus lax control and psychological autonomy versus psychological control. In her research, she classified parents who were high in psychological autonomy and firm control as authoritative, whereas those high in psychological control and firm control were labeled authoritarian. Children of authoritative parents were found to be more self-reliant and independent whereas those of authoritarian parents were more withdrawn and discontent.

A recent study by Dornbusch et al. (1987) explored the relation between child-reported parent style, using Baumrind's typology, and adolescent achievement. Findings of this study indicated that lower grades were associated with reports of more authoritarian, more permissive, and less authoritative parenting. Although this study used students' reports of parental behavior and objective indices of school performance only, it underscored the importance of parental styles to school-related competence.

In the present study of parenting styles relevant to the academic domain, we built upon previous work by attempting to clearly differentiate between autonomy versus control orientations, and firm versus lax parental control. We conceptualized two separable dimensions, autonomy support and structure. *Autonomy support* was defined as the degree to which parents value and use techniques which encourage independent problem solving, choice, and participation in

decisions versus externally dictating outcomes, and motivating achievement through punitive disciplinary techniques, pressure, or controlling rewards. *Structure*, in contrast, was defined as the extent to which parents provide clear and consistent guidelines, expectations, and rules for child behaviors, without respect to the style in which they are promoted.

Previous research (e.g., deCharms, 1976; Deci, Nezlek, & Sheinman, 1981) has suggested that the dimension of autonomy support may be particularly relevant to self-regulation and competence in school. In these studies it was found that pupils of teachers who valued autonomy were more intrinsically motivated and evidenced greater perceived competence and self-esteem than did pupils of more control-oriented teachers. Furthermore, those children who experience more autonomy support, regardless of teacher style, evidence greater intrinsic motivation and perceived competence (Ryan & Grolnick, 1986). Such individual differences in experienced autonomy may stem from home influences, particularly the issue of parental autonomy support (Grolnick, Frodi, & Bridges, 1984). Nonetheless, in those previous studies no attempt was made to specifically assess parental style. We believe that parental autonomy support should lay the groundwork for self-regulation and independence necessary for school success (Ryan et al., in press) and thus would be predictive both of self-regulation and achievement outcomes. In addition, autonomy support is expected to be associated with greater perceived competence for school tasks, because it is essential input to confidence in approaching learning tasks. Finally, consistent with studies of teacher styles, parent autonomy support was expected to be associated with adjustment in classroom behavior and achievement.

Parental provision of structure, on the other hand, would not necessarily predict self-regulation, because a high degree of structure could be either supportive or undermining of autonomy. However, structure should play an important role in children's control perceptions. Home environments low in provision of guidelines for action and consistent follow-through on contingencies would make it more difficult for children to differentiate who or what controls outcomes. Thus, we expected that parental structure would be predictive of children's control understanding, with parents who are low in structure having children who have difficulty determining who or what controls outcomes in school. Structure was also predicted to be associated with achievement indices, because children who have a clear sense of action-outcome relations should be able to better direct their efforts in achievement-related activities.

Facilitation of children's self-regulation and competence requires more than parental autonomy support and provision of structure. We have also hypothesized that these outcomes would be related to parental *involvement*, conceptualized as the extent to which the parent is interested in, knowledgeable about, and takes an active part in the child's life. Involvement reflects the parent's dedication and positive attention to the child-rearing process and in our model is a facilitator of both identification and internalization of social values (Grolnick & Ryan, 1987b; Ryan et al., in press).

Involvement has been widely studied as a dimension of parenting style (Maccoby & Martin, 1983). Studies showing

relations between parental involvement and children's locus of control (Gordon, Nowicki, & Wickern, 1981; Patterson, 1976), behavioral regulation (Hatfield, Ferguson, & Alpert, 1967; Patterson, 1976), and emotional outcomes (Baldwin, Kalhoun, & Breese, 1945; Loeb, Horst, & Horton, 1980) support the view that it will be predictive of self-regulation and success within elementary school. More specifically, we hypothesized that more involved parents would provide the emotional resources essential to a sense of self-direction and confidence as well as more concrete resources that could aid in achievement *per se*.

The dimensional approach to parent style, while building on previous research, contributes to the literature on school competence and parenting in several ways. First, by assessing various aspects of children's school-related self-regulation and competence, we hoped to see how each might be differentially impacted by the three different parent variables. Second, the use of conceptually distinct dimensions makes it possible to explore the relative and independent effects of these processes on child outcomes. Finally, both mothers and fathers can be placed along these dimensions, facilitating the evaluation of their separate contributions and joint influence on children's school adjustment.

Child Outcomes

Children's Academic Self-Regulation

Self-regulation is a general rubric that pertains to one's role (or lack thereof) in eliciting and maintaining behaviors (Deci & Ryan, 1987; Ryan et al., in press). Most pertinent is the degree to which behaviors are externally initiated and controlled versus self-initiated and managed. Self-regulation can be presented in this view as a continuum from less to more autonomy (Ryan et al., 1985; Ryan & Connell, 1988). Children who autonomously initiate achievement-related behaviors and learning are from this perspective more self-regulated than those who do so only out of internal feelings of pressure and anxiety, and even more so than those who are dependent on direct interpersonal controls or rewards. Academic self-regulation was measured using a self-report instrument (Ryan & Connell, 1988)

Children's School Competence

Competence is a broad term that refers to a person's capacity to interact effectively with the environment (White, 1963). It involves the acquisition of knowledge and skills relevant to adaptation within the school domain; within that domain, competence is strongly linked with achievement outcomes that are assessed through both standardized tests and classroom grades. Grades and standardized achievement test scores are one type of competence assessment, and ratings of classroom teachers provide another index of children's school-related competence and performance.

Competence also has an internalized aspect that White (1963) referred to as the *sense of competence*. Through effective and independent action there is a growth of understanding

about who or what controls outcomes and of confidence in oneself to produce success. Harter's (1982) domain-specific theory identifies academic perceived competence as a major input to successful outcomes in school, whereas Connell (1985) has focused on the importance of children's knowledge of how successful school-related outcomes are attained (i.e., control understanding).

Behavioral Adjustment

A further manifestation of both self-regulation and competence in school is reflected in children's behavioral adjustment. We reasoned that children who have behavioral problems or who "act out" in the classroom are less capable of self-regulation. Similarly, shy-anxious children manifest problems both in initiation and confidence. These aspects of children's behavioral adjustment were assessed with a teacher rating device that taps three dimensions: acting out, shy-anxious, and learning problems (Hightower et al., 1986). The latter dimension more properly is an index of competence.

In summary, child outcomes were assessed through three methods: (a) children's self-reports, (b) teacher ratings, and (c) objective indexes of achievement. Although these components of school functioning are separable for measurement purposes, they are interrelated. School achievement, in some studies, has been associated with self-reported perceived competence (Harter, 1982) and self-regulation (Grolnick & Ryan, 1987b;). Evidence also suggests that teachers may attribute the fewest behavior problems to children most academically skilled (Blechman, Tinsley, Carella, & McEnroe, 1985). Despite these interconnections, the differential impact of parent dimensions on these aspects of self-regulation and competence was of interest.

Method

Subjects

The population from which the sample was drawn was almost exclusively caucasian and largely middle class. Subjects were children, parents and teachers from 20 classrooms (5 each of third through sixth grades) in an elementary school approximately 1 hr outside a middle-sized northeastern city. The approximately 480 children in these classrooms brought home a packet with letters for a mother and a father inviting participation in a study on parenting. Slips requesting permission for the research team to contact them regarding the study were included. Of approximately 350 mothers and 300 fathers in the sample (many families had more than one child within the school), 254 mothers and 193 fathers returned the slips. Of those responding, 51% of the mothers and 40% of the fathers responded affirmatively. In 72 families, both mother and father agreed to participate and the family met our inclusion criterion of being intact, with two biological parents living in the home. Fifty mother-father pairs were randomly chosen from these respondents, 48 of which actually participated and were used for the primary analyses. Other parents responding affirmatively were mailed questionnaires but did not participate in the interview study. In addition to these families, 2 fathers and 14 mothers who met the criteria for inclusion but whose spouse was unable to be interviewed were also included in the study. If the participating family had more than 1 child in the school sample, 1 child was randomly

chosen to be the focus of the interview. Thus, the total sample included 66 children (36 boys, 30 girls) and 114 parents (64 mothers and 50 fathers). The child sample consisted of 17 third-, 13 fourth-, 19 fifth-, and 17 sixth-grade children. The mean number of children in the participating families was 2.78 ($SD = 1.14$). All but two of the families were White.

The socioeconomic status of each family was evaluated using Hollingshead's (1975) four-factor index of social position, which weights education ($\times 3$) and coded occupation ($\times 5$) of the parents and provides a socioeconomic status classification (SES) from 1 (highest) to 5 (lowest). Thirty-three of the 64 mothers were employed full-time outside of the home; all but 2 of the fathers were employed full-time. One of the unemployed fathers had been recently laid off while the other was retired. The families were distributed across the five social classes (I = 11 (17%), II = 19 (29%), III = 23 (35%), IV = 10 (15%), V = 3 (5%). Mean years of education were 13.47 ($SD = 2.75$, range = 8–20) and 13.25 ($SD = 2.41$, range = 10–20) for mothers and fathers, respectively. Parents who agreed to participate in the study were somewhat higher in level of educational attainment relative to those who declined to participate (mothers = 12.14, $SD = 2.01$; fathers = 12.10, $SD = 2.20$). Because the sample was drawn from a range of socioeconomic classes, the relation between SES and parent variables will be specifically examined.

Parent Interview

Each parent was interviewed separately for approximately 1 hr by a two-member team consisting of one interviewer and an observer, both naive to all child and family data. In no case was the spouse present for the session. Teams alternated members to prevent observer drift and both interviewer and observer took extensive notes on the parents' responses.

The structured interview¹ focused on the ways in which parents motivate their child for various activities and on how they respond to child behaviors. The parent was first asked to describe his or her child generally and then to talk about the child's school experience. Following this, the interviewer inquired about the approximate amount of time per week (in hours) that the parent typically spends with the child and assessed the parent's educational and occupational aspirations for the child. The interview then focused on four areas of children's lives. Two were school related, doing homework and doing well in school, and two were home related, cleaning one's room and going to bed on time. Previous research (Chandler & Connell, 1987; Connell & Ryan, 1986) supports the relevance and salience of these behaviors to both parents and children within this developmental range. For each area the parent was asked a series of open-ended questions about how he or she motivates the child, whether there are specific rules or expectations, and how he or she responds to positive and negative behaviors (e.g., good or poor performance in school). Finally, the parent was asked to describe typical conflicts that occur with the child in each of the four areas and how conflict usually gets resolved.

Interview Ratings

Immediately after the interview, both the interviewer and the observer separately rated the parent on eight 5-point scales associated with the three parenting dimensions: autonomy support, involvement, and structure. Ratings were made completely independently, immediately following each interview. For each dimension, the parent was rated on a series of component scales describing specific manifestations of the dimension. For autonomy support, there were three component scales, rated primarily from the portion of the interview in which parents discussed the ways they motivate specific behaviors

and their response to positive and negative behaviors. *Values autonomy* was the extent to which the parent expressed a value for the child's autonomy and saw its promotion as a goal versus valued obedience and conformity first and foremost. *Autonomy-oriented techniques* were rated from the specific motivational and disciplinary strategies employed. Controlling, power-assertive techniques, such as physical punishment and controlling use of rewards, were rated low, whereas more autonomy-promoting techniques, such as reasoning, encouragement and empathic limit setting (Koestner, Ryan, Bernieri, & Holt, 1984), were rated high. The final subscale for autonomy support was *nondirectiveness*, which was assessed from the extent to which the parent included the child in decisions and problem solving versus imposed his or her own agenda on the child or allowed few choices. These were two component scales for the structure dimension, largely derived from two interview areas: the description of rules and expectations the parent has set for specific behaviors and the parent's description of typical conflicts with the child within a given area and how they typically are resolved. *Information* represented the parent's clear provision of rules, expectations and guidelines for behavior, and the stipulation of consequences for not meeting expectations. *Consistency* was rated from the degree to which rules and expectations are consistently applied or promoted. Finally, there were three component scales associated with the involvement dimension. The first, *parental knowledge*, that is, the parent's awareness of psychological and behavioral aspects of the child's life, was primarily derived from interview questions in which the parent described the child's activities and preferences. *Time spent* was rated from the parent's report of the number of hours per week that he or she spends with the child. *Enjoyment* was rated largely from both the affective tone and content of the parent's description of the child and reflected the extent to which the parent's attention to the child had a positive, warm character.

Summary scores for each dimension were computed by obtaining the mean of the component scales for each parent. In addition, a parent composite score was obtained for each dimension by computing the mean of mother's and father's summary scores.

Self-Report Scales

Academic Self-Regulation Questionnaire (ASRQ). The ASRQ (Connell & Ryan, 1986) assesses children's styles of regulating their behavior in the academic domain on a continuum from external control to autonomous self-regulation. The 26 items comprising the questionnaire present reasons why children engage in school-related behaviors such as doing homework, doing classwork, and answering difficult questions in class. Following each reason, children rate, on 4-point Likert-type scales, how true the reason is for their own behavior. Items were associated with four subscales representing less to more autonomy in children's self-regulation: external (to avoid negative consequences or because of externally imposed rules); introjected (to gain adult approval or avoid negative affects); identified (to achieve a self-valued goal); and intrinsic (for inherent enjoyment of the activity). Alpha reliabilities for these subscales range from .75 to .88. Subscale scores are weighted according to the simplex structure of the scale to form one score referred to as the Relative Autonomy Index (RAI). The RAI represents the degree of autonomy in children's school-related self-regulation. Connell and Ryan (1986) have presented extensive evidence of the construct validity of the RAI using a variety of school samples. The RAI has, for example, been found to correlate positively with scales of intrinsic motivation (Harter,

¹ The interview and rating scales are available upon request from Wendy S. Grolnick.

1981), children's perceptions of classroom autonomy (deCharms, 1976), and children's learning in nondirective settings (Grolnick & Ryan, 1987a).

Multidimensional Measure of Children's Perceptions of Control (MMCPC). The MMCPC (Connell, 1985) assesses children's understanding of who or what controls success and failure outcomes in their everyday lives. The scale measures three sources of control (internal, powerful others, and unknown) across three content domains (cognitive, social, and physical) and in general. Items are worded as statements about the control of everyday events (e.g., "When I get a good grade in school, I usually don't understand why I did so well"), and children indicate how true they believe the statement to be. In this study, relations were predicted between parent dimensions and the degree to which children know or do not know the sources of control in their environments. Therefore, only the unknown control score in the domain of interest (cognitive) was examined. The internal consistency coefficient for this subscale is .68 (Connell, 1985). Perceptions of unknown control in the cognitive domain have been shown to be negatively related to children's perceptions of competence (Harter, 1982) and to their achievement (Connell, 1985; Harter & Connell, 1984).

Perceived Competence Scale. Children's perceptions of their academic competence were obtained using the Perceived Competence Scale (Harter, 1982). Children are asked to decide whether they are more like one of two types of children, one representing a low and one a high competence level. They then decide whether the description is *really true* or only *sort of true* for them. All items are scored on a scale from 1 to 4 (low to high perceived competence). Of interest for the present study was the cognitive perceived competence subscale, for which Harter reports an internal consistency estimate of .76.

Teacher Rating Measures

Teacher-Classroom Adjustment Rating Scale. Children's school difficulties were measured by teachers' ratings on the Teacher-Classroom Adjustment Rating Scale (T-CARS, Hightower et al., 1986). This scale consists of 18 problem behaviors rated for severity on 5-point scales (1 = *not a problem*, 5 = *very serious problem*). Six items are associated with each of three factor clusters: (a) acting out (aggressive, disruptive, impulsive behaviors), (b) shy-anxious (shy, withdrawn and nervous behaviors), and (c) learning problems (academic motivation and performance difficulties). Internal consistency coefficients (Cronbach's alpha) range from .88 to .94 for the three subscales, and test-retest reliabilities range from .76 to .88.

Teacher Rating Scale. Teacher's perceptions of children's academic competence were measured by the Teacher Rating Scale developed for this study. This 8-item questionnaire evaluates three aspects of children's school-related competence: academic performance (e.g., "How well does this child do in school?"), motivation (e.g., "How hard does this child try in school?"), and independence (e.g., "How independent is this child in seeing that his/her school work gets done?"). Each item is worded as a question to which the teacher responds on 4-point scales. Factor analysis of the questionnaire revealed a clear one-factor solution (eigenvalue = 3.48). Accordingly, all items were averaged to form a summary score.

Achievement Indexes

Standardized achievement. Academic achievement was measured by the mean of the current year's Math and Reading MAT (Metropolitan Achievement Test) scores for Grades 4 and 5, and PEP (Pupil Educational Progress) test scores for Grades 3 and 6. The PEP test is a New York State mandated test administered to children in

Grades 3 and 6. Scores were standardized using each grade's mean and standard deviation.

Classroom grades. Children's class performance was measured by year-end grades in math and reading. Grades were coded on a 7-point scale (1 = E, . . . 7 = A+), and were averaged across these two subject areas.

Results

Parent Interview

Reliability. The parent interview and ratings were developed on an independent sample of parents obtained from a different school system and proved to be both interesting to parents and reliable. For the actual study sample, interrater reliability for the mother and father variables was estimated by computing intraclass correlations (Type 2, Shrout & Fleiss, 1979) between independent ratings of interviewers and observers.² For the 8 mother ratings, reliabilities ranged from .71 (information) to .78 (autonomy techniques) with an average of .75. For fathers, reliabilities ranged from .75 (nondirectiveness) to .84 (knowledge) with an average of .80. For each of the 8 mother and 8 father rating scales, discrepancies between assigned rating were, in greater than 95% of cases, between adjacent scale points. Discrepancies were evenly distributed throughout all five points of the scales.

Descriptive statistics. Table 1 presents the means and standard deviations for mother and father interview ratings. For purposes of equivalent *N* comparison, only the 48 families where both mothers and fathers participated are included. Means and standard deviations suggest that there is considerable variability in ratings for both mothers and fathers. Results of *t* tests, also depicted in Table 1, indicate that mothers spent more time with their children and were higher on the summary involvement index than fathers. In addition, they provided more information than fathers. There were no differences between mothers and fathers on autonomy-support variables.

Internal structure. To determine whether the interview ratings cohered in a manner consistent with the hypothesized dimensions of involvement, autonomy support, and structure, correlations among component ratings were computed. Results indicated that, in each case, component ratings hypothesized to assess a given dimension were more highly correlated with one another than with component ratings hypothesized to tap different dimensions. Because dimensions were expected to be nonorthogonal, a principal-components factor analysis of the component scales was computed using a promax (oblique) rotation. As expected a three-factor solution³

² The intraclass correlation provides an estimate of interrater reliability which takes into account the fact that ratings were made in terms of an ordered scale such that some disagreements are larger than others. It also takes into account the likelihood of chance agreement given the base-rate probabilities of scores at each level.

³ Three factors were retained according to both the Scree test (Cattell, 1966), which plots the incremental variance accounted for by each successive factor to determine the point at which the variance levels out, and the Mineigen criterion, which requires that only factors with eigenvalues of 1.0 or greater be retained.

Table 1
Component and Summary Interview Ratings

Rating	Mother		Father		<i>t</i> (94)
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Knowledge	3.60	0.84	3.25	1.00	1.81
Time spent	3.44	1.01	2.77	1.10	2.89*
Enjoyment	3.48	1.03	3.35	1.04	0.62
Involvement	3.51	0.78	3.12	0.90	2.26*
Values autonomy	3.06	1.06	3.08	1.05	-0.09
Autonomy techniques	2.88	0.91	2.71	0.92	0.86
Nondirective	2.98	1.04	2.79	0.97	0.92
Autonomy support	2.97	0.90	2.86	0.87	0.69
Information	3.38	1.20	2.81	1.00	2.64*
Consistency	3.33	1.14	3.15	1.13	0.82
Structure	3.35	1.10	2.98	0.96	1.76

Note. All component and summary parent ratings have possible and actual ranges between 1 and 5. To facilitate comparison of mothers and fathers on interview ratings, only families where both mothers and fathers were interviewed are included. *N* = 96.

* *p* < .05.

emerged for both mother and father ratings and for the combined parent sample with each component scale loading most highly on the appropriate dimension (see Table 2). Accordingly, the component scales were averaged to form three dimension scores for mothers and three for fathers. Alpha reliabilities (Cronbach's Alpha) were computed as a measure of the internal consistency of dimensions. These values were, for mothers and fathers, respectively: involvement, .82, .84; autonomy support, .91, .91; and structure, .92, .87. Mother and father ratings were also averaged to form combined parent dimensions. Subsequent analyses use only these summary scores.

Correlations among the summary combined parent dimension scores indicated the following results: autonomy support with structure, *r* = .23, *ns*; autonomy support with involvement, *r* = .33, *p* < .03; and structure with involvement, *r* = .42, *p* < .01.

Demographics

Children's gender and grade level were examined for relations with parent interview dimensions using one-way anal-

Table 2
Factor Loadings and Eigenvalues of Mother (*M*) and Father (*F*) Ratings From Structured Interview

Parent rating	Factor 1		Factor 2		Factor 3	
	<i>M</i>	<i>F</i>	<i>M</i>	<i>F</i>	<i>M</i>	<i>F</i>
Values autonomy	.90	.86	-.01	.18	.02	-.16
Autonomy techniques	.83	.88	.12	.06	-.10	.14
Nondirectiveness	.95	.91	-.14	-.03	-.13	.03
Knowledge	.14	.12	.63	.77	.31	.04
Time spent	-.26	-.12	.90	.90	-.13	.05
Enjoyment	.14	.11	.88	.83	-.09	-.05
Information provided	-.11	-.18	-.15	.23	.99	.83
Consistency	.04	.19	.07	-.14	.89	.93
Eigenvalue	2.97	3.72	2.03	1.59	1.44	1.07

yses of variance (ANOVAS). Results indicated that for both mothers and fathers there were no gender effects on either the involvement or structure dimensions. However, significant gender effects emerged on the autonomy-support dimension indicating that both mothers, *F*(1, 62) = 10.70, *p* < .001, *MS_e* = .71, and fathers, *F*(1, 48) = 4.05, *p* < .05, *MS_e* = .76, were more autonomy-supportive with girls than with boys. There were no significant effects for grade level.

Next, relations between family socioeconomic variables and interview dimensions were examined. A summary score for family socioeconomic status (SES) was computed by coding both parents' highest levels of education and occupational levels according to Hollingshead's (1975) procedure. There was a significant relation between family SES and maternal involvement (*r* = .45, *p* < .001), indicating that mothers in higher SES families were rated as more involved with their children. No other SES effects were in evidence. There were also no significant differences in parent ratings for mothers or fathers in homes where mothers were employed full-time versus in the home full-time.

Relations of Interview Dimensions With Related Constructs Using Other Methods

In order to address the external component of the construct validity (Loevinger, 1957) of the interview dimensions, relations with two self-report questionnaires, one administered to parents (Stanford Parent Questionnaire; Winder & Rau, 1962) and one to children ("Children's Perceptions of Parents Scale"; Ryan, Deci, & Grolnick, 1987), are reported. Following each interview, parents were given a stamped addressed envelope containing selected subscales of the Stanford Parent Questionnaire (SPQ), which assesses child rearing attitudes. Only those subscales whose content showed obvious conceptual linkage to interview ratings were included. Fifty-three mothers (83%) and 42 fathers (84%) returned completed questionnaires. Because the SPQ is a self-report questionnaire, relations between parents' responses and interview ratings were expected to be moderate. Nonetheless, it was included to provide some evidence that our interviewers were not rating aspects of *children* picked up in the interview (e.g., parents' report of their competence) but rather characteristic styles of parents. Those subscales predicted to be related to involvement were "affection demonstrated," "contingent rewards," and "rejection." Those expected to be associated with autonomy-support ratings were "punitiveness," "reasoning," and "deprivation of privileges." The SPQ "nonrestrictiveness" subscale was expected to be related to structure ratings. Table 3 presents correlations between parent dimensions and SPQ subscales. Significant correlations were obtained between affection demonstrated, contingent rewards, and rejection and involvement, as expected. As predicted, punitiveness and deprivation of privileges were negatively associated with autonomy support, although use of reasoning was unrelated. As predicted, nonrestrictiveness was negatively correlated with provision of structure. It was also associated with involvement and autonomy support.

Table 3
Correlations between Interview Ratings of Parents and
Selected Subscales of the Stanford Parent Questionnaire

Subscale	Involvement	Autonomy support	Structure
Affection	.33**	.15	.05
Rejection	-.20*	-.11	-.14
Contingent reward	.35**	.19	.12
Punitiveness	-.11	-.25*	.12
Deprivation of privileges	-.15	-.21*	-.01
Reasoning	.12	.14	-.01
Nonrestrictiveness	-.34**	-.24*	-.33**

Note. $N = 95$.

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

Children completed the Children's Perceptions of Parents Scale (Ryan et al., 1987), which assesses children's perceptions of their mothers and fathers on two factorially verified dimensions: involvement and autonomy. Children's perceptions of their mother's involvement were significantly related to interview measures of maternal involvement ($r = .28$, $p < .03$). Similarly, mothers rated as more autonomy-supportive based upon the interview were also rated by their children as more autonomy-oriented ($r = .36$, $p < .005$). There were no other significant nonpredicted correlations between children's perceptions of mothers and interview dimensions indicating discriminant validity. Children's perceptions of fathers' involvement were positively related to father interview rated involvement ($r = .33$, $p < .03$). However, there was no significant relation between children's perceptions of their fathers' autonomy support and interview dimensions.

Relations Between Parent Interview Ratings and Child Outcome Variables

Before examining relations between each parent interview dimension and either individual child outcome variables or sets of child outcome variables (i.e., self-report, teacher-ratings and objective achievement indexes), we wanted to determine whether there were overall relations between the three non-orthogonal parent dimensions (defined as a set) and each of the three sets of child outcome indexes (i.e., self-report, teacher ratings, and objective achievement indexes). The establishment of these overall relations would guard against overinterpretation of individual findings between specific dimensions and specific child outcomes that may be spurious. Accordingly, we conducted three canonical correlation analyses, correlating the set of three combined parent dimensions with each of the three sets of child outcome variables. The initial canonical correlations derived from these analyses were significant in each case: for the three self-report variables, $R_c = .56$, Wilks's λ (9, 96) = 3.10, $p < .003$, for the four teacher ratings, $R_c = .67$, Wilks's λ (12, 100) = 2.27, $p < .02$, and for the set of objective achievement indices, $R_c = .48$, Wilks's λ (6, 84) = 2.79, $p < .02$.

Having established overall relations between the parent dimensions and the sets of dependent variables, the next step

in our data-analytic strategy was to examine the effects of individual dimensions of parent style on variables obtained through three types of methods, that is, self-report, teacher rating and achievement indexes. To control for correlation within method, each parent dimension was regressed simultaneously onto each set of child outcome variables. This regression procedure allowed us to examine the effects of parent dimensions on child outcome indices within each set. The F values for the overall R^2 for each equation were obtained and, when this statistic was significant, the regression coefficients for individual child variables were interpreted. This criterion was selected to help assure that we were not capitalizing on chance findings in interpreting large numbers of individual regression coefficients. The results of the regression analyses described earlier are presented separately by parent interview dimension in Table 4.

Finally, in order to provide a more differentiated examination of relations between parent style and child outcomes, Pearson correlations of the interview ratings of mothers, fathers and combined mother/father pairs are presented in Table 5. By examining these dimension ratings the relative contribution of mothers and fathers could be explored. Our specific interest was in those dimension ratings associated with significant effects within the multivariate model. Results for each parent dimension are discussed separately.

Autonomy Support

Regression analyses in which combined parent autonomy support was regressed onto each set of outcome variables revealed significant overall effects (R^2) for all three sets; child self-report measures, teacher ratings, and achievement indexes (see Table 4). For the regression analysis of autonomy support on the self-report indexes, there was a significant unique effect for the RAI with greater parental autonomy support associated with more autonomous self-regulation in children. The regression analysis for teacher ratings revealed unique effects of two variables: acting out and teacher-rated competence. More autonomy-supportive parenting was associated with less acting out and with greater classroom competence. Finally, the regression for competence indices revealed significant relations of autonomy support with both achievement and grades.

As can be seen in Table 5, there was a significant positive correlation between parental autonomy support and the Relative Autonomy Index (RAI). Examination of separate maternal and paternal ratings revealed that maternal support for autonomy was associated with more autonomous self-regulation in children whereas the paternal rating did not reach significance. Combined parental autonomy support was not significantly related to either children's unknown perceptions of control or perceived competence. Component ratings showed, however, a significant positive association between paternal autonomy support and children's perceptions of cognitive competence.

For the teacher ratings examined, significant negative relations were in evidence for maternal and combined parent autonomy support and ratings of acting out and learning problems in the classroom. Significant positive correlations

Table 4

Multiple Regression Analyses Regressing Each Parent Dimension Onto Sets of Child Outcome Variables

Index	Autonomy support		Involvement		Structure	
	<i>F</i>	Beta	<i>F</i>	Beta	<i>F</i>	Beta
Self-report						
Relative Autonomy Index	7.65**	.25	1.78	.01	.29	-.10
Cognitive unknown	.68	-.08	5.14*	-.23	16.22**	-.51
Cognitive perceived competence	1.36	.14	2.14	.16	.26	-.06
Overall model ^a	<i>F</i> (3, 44) = 3.23*, <i>R</i> ² = .20		<i>F</i> (3, 44) = 3.02*, <i>R</i> ² = .18		<i>F</i> (3, 44) = 5.59**, <i>R</i> ² = .30	
Teacher ratings						
Acting out	11.67**	-.23	—	—	—	—
Shy-anxious	1.47	.09	—	—	—	—
Learning problems	1.56	.45	—	—	—	—
Teacher-rated competence	16.14**	.71	—	—	—	—
Overall model ^a	<i>F</i> (4, 43) = 7.71**, <i>R</i> ² = .45		<i>F</i> (4, 43) = .96, <i>ns</i>		<i>F</i> (4, 43) = .35, <i>ns</i>	
Achievement						
Achievement	6.54*	.10	6.29*	.27	—	—
Grades	5.43*	.30	.00	.00	—	—
Overall model ^a	<i>F</i> (2, 45) = 5.98**, <i>R</i> ² = .22		<i>F</i> (2, 45) = 3.15, <i>R</i> ² = .13		<i>F</i> (2, 45) = 1.99, <i>ns</i>	

^a Overall model represents significance of the simultaneous regression of the parent dimension onto all variables within the set.* $p < .05$. ** $p < .01$.

were also found between mother, father, and combined parent autonomy support and teacher-rated classroom competence.

Finally, relations between autonomy-support ratings and the objective achievement indexes were examined. There was a positive association between combined parent autonomy support and children's achievement scores and grades. Both mother and father ratings were significantly correlated with grades, whereas only the paternal rating was significantly associated with standardized achievement.

Structure

Regression analyses in which combined parent structure was regressed onto the sets of child outcome variables revealed a significant overall effect for the set of child self-report variables. The only effect obtained in the multiple regression analyses within this set was the predicted negative relation between structure and children's unknown perceptions of control.

Table 5

Correlations between Mother (M), Father (F), and Combined Parent (C) Dimension Scores and Child Self-Report, Teacher Ratings, and Achievement Indexes

Index	Autonomy support			Involvement			Structure		
	M	F	C	M	F	C	M	F	C
Self-report									
Relative Autonomy Index	.36*	.22	.34*	-.20	.03	.13	.03	-.03	.00
Cognitive unknown	-.27	-.19	-.27	-.46**	-.17	-.37**	-.33*	-.41**	-.44**
Cognitive perceived competence	.15	.31*	.26	.24	.16	.24	.00	-.04	.00
Teacher ratings									
Acting out	-.43**	-.29	-.41**	-.30*	.00	-.16	-.13	-.13	-.15
Shy-anxious	.24	.08	.16	-.20	-.08	-.16	-.06	-.10	-.07
Learning problems	-.42**	-.24	-.38**	-.32**	-.05	-.21	-.07	-.11	-.15
Teacher-rated competence	.55**	.49**	.60**	.33**	.11	.26	.11	.10	.13
Achievement									
Standardized achievement	.19	.34**	.30*	.43**	.15	.34*	.24	.22	.28
Grades	.46**	.33*	.46**	.32*	.05	.21	-.01	-.02	.08

Note. Mother $N = 48$; Father $N = 48$; combined $N = 48$.* $p < .05$. ** $p < .01$.

Examination of the correlational findings for the unknown control variable shows that maternal, paternal and combined parent ratings of provision of structure were each significantly related to this variable. In each case higher levels of structure were associated with lower child report of unknown control.

Involvement

Regression analyses in which combined parent involvement scores were regressed onto each of the three sets of child outcome variables (see Table 4) revealed a significant R^2 only for the set of self-report variables. F values for the individual self-report indices revealed a significant effect for unknown perceptions of control, with high parent involvement associated with low unknown control. There was a marginally significant overall effect for the regression model involving achievement indexes ($p < .06$). Within that model there was a significant unique relation between parental involvement and standardized achievement. Nonetheless, because the overall model failed to reach significance, this latter finding should be interpreted with caution.

Examination of component ratings (Table 5) showed that the overall models may have been diluted by the inclusion of father ratings of involvement. Indeed, maternal involvement was significantly correlated with six of the nine dependent variables. Greater maternal involvement was positively associated with higher grades, standardized achievement, and teacher-rated competence, and negatively associated with student's perceived unknown control, teacher-rated acting out and learning problems. This pattern of findings is particularly intriguing given the prior results showing the overall greater level of involvement by mothers versus fathers.

Given the strength of relations between maternal involvement and the child outcome variables evident in the correlational analyses, we sought to further evaluate these relations within a regression format. Maternal involvement was thus regressed onto each set of outcome variables in the same manner as was followed for the combined parent dimensions. The results indicated significant effects for the set of self-report variables, $F(3, 44) = 6.31, p < .01, MS_e = .48$, and for the set of achievement indexes, $F(3, 45) = 5.82, p < .01, MS_e = .51$. Further examination suggested that, within the self-report set, there was a unique effect for cognitive unknown perceptions of control, $F(3, 44) = 15.59, p < .01, \beta = -.38$, and, within the achievement set, there was a significant unique effect for standardized achievement, $F(3, 45) = 11.41, p < .01, \beta = .35$.

One final issue we were concerned with, given that our parent dimensions were moderately correlated, was whether the results of the regressions, which analyzed dimensions separately, would hold up if all three parent dimensions were examined simultaneously. In other words, we wanted to be sure that the shared variance between dimensions was not accounting for some of our regression effects. In order to address this issue, we conducted a series of simultaneous multiple regressions in which, for each dependent variable significant in the previously described regressions (see Table 4), the index was regressed onto the three parent dimensions. The results of these analyses indicated equivalent findings; in

no case was an F value for a dimension insignificant ($p < .05$) when a significant effect was noted in the Table 4 regression analyses.

Discussion

In the present study, we examined dimensions of parent style that were expected to have significance for children's development of autonomy and competence in school. Parental autonomy support, involvement, and provision of structure were assessed using an in-depth structured interview. Analyses of the interview ratings indicated that these three aspects of the home environment were differentially associated with varied school outcomes.

The dimension of autonomy support was most consistently related to self-regulation, competence, and adjustment variables. Combined parental autonomy support positively predicted children's self-regulation and was inversely related to acting out and learning problems. This dimension also predicted achievement as measured by standardized tests and grades.

The strong results for autonomy support are compatible with the consistent importance of parental control noted in the literature on families and schools (Hess & Holloway, 1985). However, as has been the case with other studies in the area, the correlational nature of the findings leaves open at least two alternative interpretations. The most obvious is that by fostering autonomy in their children, parents better prepare their children for an educational environment that requires independent mastery and self-regulation. An alternative interpretation is that children who exhibit little autonomous self-regulation "pull" for external control and punitiveness from their parents while those who are more independent make the provision of autonomy support more rewarding and effective. Although the direction of influence cannot be definitively established from the current findings, we suggest that the results index a transactional process and bidirectional influence between parent and child. Such an interpretation is consistent with a control systems model (Bell & Chapman, 1986) of parent-child regulatory processes and with recent formulations regarding the specific dynamics of the development of autonomy (Grolnick & Ryan, 1987b, in press).

One possible mechanism through which the transactional process described above may occur is that of internalization. Although many experimental studies have documented that excess control can undermine the motivation to engage in interesting tasks (e.g., Deci & Ryan, 1987; Koestner et al., 1984), recent studies have suggested that surplus control may also undermine internal regulation for nonintrinsically motivated tasks (Eghrari & Deci, 1986) and compliance with regulations when not monitored (Lepper, 1983). Because much of what is required in school is *not* intrinsically or spontaneously motivating (Ryan et al., in press), excess control at home may prevent children from taking on or internalizing the regulation for their own school-related behavior. Conversely, when the regulation of behavior is not internalized, environmental control and monitoring is necessary to ensure compliance. As these interpretations are speculative,

more research is needed to identify the mechanisms through which autonomy support facilitates self-regulation and competence.

The overall models of combined parental involvement showed significant relations only with child self-report variables and, more specifically, children's control understanding. This finding suggests that parents who are more dedicated to the child-rearing process have children who have a greater sense about who or what controls outcomes in school. Despite the general absence of overall effects for parental involvement, correlational and regression analyses pointed to the relative importance of mother versus father involvement in the prediction of children's school self-regulation and competence. More involved mothers had children who were both better adjusted according to teachers and who evidenced higher achievement. Results also indicated that mothers are more involved than fathers in child rearing. Specifically, they spend more time actively interacting with their children. The greater interaction of mothers relative to fathers is consistent with studies of younger children and toddlers (Belsky, 1979; Clarke-Stewart, 1978; Russell & Russell, 1987). This may account for the greater predictive value of mother versus father involvement.

Parental involvement was significantly and positively associated with SES. This finding suggests that one way in which economic factors impact upon child development is by affecting the degree to which parents, and particularly mothers, are available for their children and provide them with their psychological resources. Interestingly, maternal work status was not associated with involvement, suggesting that it may not be the actual hours spent at home with the child but rather availability with regard to specific school issues that may account for our findings. Socioeconomic status was not associated with either parental autonomy support or provision of structure.

The dimension of parental provision of structure was most highly correlated with children's control understanding within the academic domain. It appears that home environments where there are clear and consistently applied expectations and rules facilitate children's differentiation of control processes within school, and we suggest generally. Thus, structure within the home may guard against a sense of "helplessness" (Seligman, 1975) in which the path to achieve outcomes is unclear or experienced as out of one's control. Provision of structure was not, however, directly related to the other indices of child self-regulation or competence. The absence of such findings for the structure dimension might appear to be anomalous with respect to past literature (e.g., Baumrind, 1971). However, the absence of a linear relation does not necessarily suggest that parental structure is without importance (Maccoby & Martin, 1983). Post hoc inspection of our data revealed, in fact, a nonsignificant trend towards a curvilinear relation on some outcome variables such that moderate levels of structure appeared optimal. Future research could further examine level of structure as a complex influence on the development of competence.

In general, the present findings support the idea that, within intact, two-parent families, parents exert important influences on children's school-related self-regulation and competence,

particularly through their support of autonomy. Applicability of this study's findings to families that differ in structure or ethnicity from the present sample is unknown. Single parents in particular may differ considerably from our sample in mean ratings on these parenting dimensions. Given that single-parent families represent over 20% of American families with school-age children (National Center for Educational Statistics, 1988), it will be important to include them in future studies of parenting styles and school-related outcomes. Generalizability of the findings is also affected by the characteristics of the school from which outcome variables were derived. This rural/suburban school district operated under relatively favorable circumstances, with moderate class sizes and a staff with reasonable available resources. In school districts with larger classrooms or less favorable circumstances, the variables promoting school adjustment may differ. In addition, urban classrooms typically differ in both student demographics and classroom circumstances from the type of school district studied herein. Again, further studies with variable samples are needed to clarify such issues.

Finally, because our dimensional assessment was selective, rather than exhaustive, it is possible that additional parent variables may be related to children's competence, such as their achievement-related attitudes and interests, their emotional adjustment, or numerous other factors. It is also possible that different investigators might otherwise dimensionalize parental styles, or prefer typological approaches. Nonetheless these findings do suggest that the current approach to parent styles has predictive value for children's adaptation to the educational domain in middle childhood. They also suggest that the "search for excellence" in education should proceed beyond the classroom context per se to what is perhaps the most pervasive socializing influence on children's school related functioning—namely, their parents.

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Mineka Appointed Editor of *Journal of Abnormal Psychology*, 1990-1995

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