

Examining the components and concomitants of parental structure in the academic domain

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Abstract Self-Determination Theory posits and research supports that caregiver autonomy support, involvement, and structure facilitate children’s motivation and well-being. However, to attain a comprehensive understanding of these caregiving behaviors and thus make informed practical recommendations, their key components must be identified. While a significant literature examines autonomy support and involvement, structure has been less extensively researched. This study thus attempted to provide an in-depth exploration of parental structure. Drawing from past literature, six components were identified. Seventy-five seventh and eighth graders completed semi-structured interviews and students and parents completed questionnaires assessing structure, other parenting dimensions, and motivational outcomes in the academic domain. Findings indicate that structure (a) is multi-faceted, (b) is independent from autonomy support, and (c) makes unique contributions to children’s motivation and school performance. Implications for providing facilitative contexts for children’s motivation and success as well as for future work are discussed.

Keywords Self-determination · Parenting · Structure · Adolescent motivation · Perceived competence · Academic achievement

Introduction

From a Self-Determination Theory perspective, parenting that supports children’s autonomy, supplies high levels of warmth and involvement, and provides structure, should facilitate children’s motivation and persistence as well as adjustment and well-being (Deci and Ryan 1985; Grolnick and Ryan 1989). While there is evidence for the importance of all three parenting dimensions to children’s motivational and adjustment outcomes, it is important to understand the key components of these dimensions so that recommendations can be made to parents regarding how to implement parenting strategies. While there is ample research on the first two of these parenting dimensions and their components have been fairly well delineated, there has been much less attention devoted to parental structure. The present study is an attempt to address this issue, exploring the components of structure and delineating their contributions to children’s competence. Specifically, the goals of this study are to (a) provide an SDT conceptualization of parental structure and link it to extant literature on parenting from other theoretical traditions, (b) delineate multiple components of parental structure, (c) explore relations of structure with other parenting dimensions, and (d) examine relations of structure and interactions between structure and autonomy support with theoretically linked child outcomes including children’s perceptions of control and competence as well as achievement outcomes.

Self-Determination Theory (SDT) (Deci and Ryan 1985) posits that individuals have three psychological

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needs—those for competence, autonomy, and relatedness—which, when satisfied, result in motivation and well-being. Relatedly, contexts that facilitate the satisfaction of these needs should facilitate motivation and adjustment. Autonomy concerns the need to feel like one's actions are undertaken with a sense of volition and willingness, and that one's behaviors reflect personally endorsed beliefs, values, thoughts, desires, and/or decisions. The dimension of autonomy support to control, whereby important others take people's perspectives, support their initiations, and help them solve problems on their own versus push and pressure behavior and solve problems for them, should facilitate autonomous motivation. Involvement, whereby others provide both tangible and intangible resources, should promote relatedness. Finally, structure, whereby environments provide clear and consistent guidelines, contingencies, and information, should facilitate competence.

Research supporting the importance of the first of the social contextual dimensions has been conducted across a wide variety of domains. In particular, the provision of autonomy support by teachers (e.g., Deci et al. 1981; Reeve 2006; Ryan and Grolnick 1986), physicians (e.g., Williams 2002; Williams et al. 2005) and managers (e.g., Baard et al. 2004) has been associated with self-regulation in children, patients, and subordinates respectively. A large literature on parenting, both from self-determination and other perspectives, has supported the importance of autonomy support for children's self-regulation and adjustment. For example, parents' autonomy support has been associated with children's self-regulation and achievement (e.g., d'Ailly 2003; Ginsburg and Bronstein 1993; Grolnick and Ryan 1987; Grolnick et al. 1991; Soenens and Vansteenkiste 2005; Vansteenkiste et al. 2005) and psychological control with children's internalizing problems and low achievement (e.g., Barber 1996; Gray and Steinberg 1999; Wang et al. 2007). Key components of autonomy support such as taking the other's perspective, using autonomy supportive motivational techniques, allowing for input into decision making (e.g., Deci et al. 1981; Grolnick and Ryan 1989), use of noncontrolling language (e.g., Deci et al. 1994), and acceptance of criticism and negative affect (e.g., Assor et al. 2002; Jang et al. in press) have been identified and measured. Parent involvement has been linked to a wide variety of outcomes including perceived competence and control (Grolnick and Slowiaczek 1994). Multiple components of involvement including behavioral, cognitive, and personal, have been examined in several studies (e.g., Grolnick and Slowiaczek 1994). Meta-analyses (e.g., Hill and Tyson 2009; Jeynes 2005, 2007) support the importance of parent involvement in children's schooling across a wide range of ages and achievement outcomes.

Fewer studies from an SDT perspective have examined the structure dimension. From a self-determination

perspective, structure, with regard to parenting, involves parental provision of a systematic framework oriented to the development of children's competence. This conceptualization is similar to Reeve's (2006) definition of teachers' provision of structure as teachers "communicating clearly what they expect students to do to achieve achievement goals" (pp. 231–232). Such a framework would specify the relations between children's actions and outcomes through the use of clear and consistent guidelines, expectations, and rules for children as well as predictable consequences for children's actions and clear feedback to them. As with structured tasks (Frederiksen 1984), parental structure would allow children to anticipate outcomes and plan their behavior accordingly. Thus, structure would give children a sense of how their actions are connected to important outcomes (successes and failures), in other words, structure should facilitate perceived control in children (Skinner et al. 1990). By contrast, when parental structure is low, children may not feel in control of key outcomes and may experience themselves as ineffective in regard to these outcomes, resulting in both low perceived control and low perceived competence.

What is the evidence for this theory and how have others operationalized this construct? Below we discuss studies of structure and related parenting variables.

Conceptualizations of structure

Within the parenting literature, variables relevant to how parents set up and manage the environment for children have been identified though the term structure has not typically been used (Grolnick and Pomerantz 2009). Schaefer (1965a, b) identified firm versus lax control (in addition to dimensions of psychological control and acceptance/rejection) which includes the degree to which the parent sets rules, regulations, and limits on the child's activities, and enforces these rules and limits. It was operationalized as the presence versus absence of permitting extreme independence (e.g., allowing children to go any place they like without asking) and lax discipline (e.g., letting children get away without doing the work they have been told to do). Baumrind's (e.g., 1966, 1971) highly influential parenting types included a similar dimension of firm enforcement which involved such practices as requiring children to pay attention, not being coerced by children, and enforcing compliance after initial noncompliance. Drawing on Baumrind's work, Maccoby and Martin (1983) characterized demanding parenting as making expectations for mature behavior, setting standards, and enforcing rules. In more contemporary approaches, Steinberg and his colleagues (e.g., Lamborn et al. 1991) described, in addition to acceptance and psychological control, a dimension labeled

strictness-supervision which included monitoring of and setting limits on children's behavior. Barber (1996) identified a similar dimension that he labeled behavioral control which he defined as parents' "attempt to manage or control children's behavior" (p. 3296). This dimension has often been operationalized as parents' monitoring of children's behavior—most typically by asking children how much their parents "really know" about their children's whereabouts and actions. Notably, while all of these parenting dimensions are linked to parental structure, many are conceptualized atheoretically (e.g., Schaefer's firm control and Baumrind's firm enforcement were identified empirically), and thus, are not clearly linked to particular child needs.

Some studies have directly assessed behaviors conceptualized as structure. Reeve et al. (2004) had observers rate teachers on several dimensions relevant to structure including clarity of introduction of directions, quality of leadership, and informativeness of feedback. In a more recent study, coders rated classrooms on clear directions, a plan of action, and constructive feedback (Jang et al., in press). These ratings were highly correlated and thus combined to form a composite of classroom structure which was positively correlated with children's classroom engagement. Grolnick and Ryan (1987), using an interview measure with parents of elementary school children, coded parental structure on two dimensions, information provided which included rules, expectations, and guidelines, as well as consistency, which indexed the degree to which rules, expectations, and consequences for action were consistently adhered to. Higher levels of structure were associated with greater control understanding in children. Grolnick and Wellborn's (1988) questionnaire measure of structure assessed the predictability of consequences for children's actions (e.g., "When I don't do well in school I never know how my mother will act"—reverse coded) and clarity of expectations (e.g., "A lot of times I don't know what my father wants me to do"—reverse coded). Higher scores on this questionnaire were associated with lower levels of maladaptive control beliefs and higher perceived competence. Skinner et al. (2005) developed parent and child reports of parental structure and its opposite, chaos. Parents reported on items such as, "I make it clear what will happen if my child does not follow our rules," and children on items such as "when I want to do something my parents show me how." High parental structure and low parental chaos were associated with higher levels of perceived control, engagement in school, and self-worth. These studies support the importance of parental provision of structure in relation to child outcomes, though none attempted to measure structure in a comprehensive manner.

One of the key contributions of this paper is to measure aspects of structure that are relatively orthogonal to autonomy support to control. Within the parenting

literature, structure and control have often been confounded. For example, Baumrind's firm enforcement rating included requiring children to pay attention, not being coerced by children and enforcing compliance after initial noncompliance. It included willingness to stand up to the child but also willingness to exercise power to obtain compliance. Rodrigo et al. (1999) created a demandingness factor that includes holding children responsible for their actions but also ratings of overprotection and punishment. Finally, the firm control subscale from the Child's Report of Parental Behavior Inventory (CRPBI) includes items "believes in having a lot of rules and sticking with them" (clear rules) but also "is very strict with me," which again could be a mix of firmness and controllingness. One of the goals of examining these dimensions independently is to explore possible interactions between structure and the overall climate provided by parents on the dimension of autonomy support. When structure is implemented in a context that supports children's autonomy, children are more likely to feel responsible for their own behavior and thus feel more competent and in control. Importantly, studies using global measures of structure have found interactions between structure and autonomy support. For example, Sierens et al. (2009) found that teacher-provided structure was associated with more self-regulated learning in students when students reported moderate or high levels of autonomy support, but not low levels.

Keeping within the SDT definition of structure as the organization of the environment to promote competence, we drew from prior constructs to develop a six-component conceptualization of structure. Each of these components is described below.

The first component is clear and consistent rules, guidelines, and expectations. This component is assessed in both the Skinner et al. (2005) and Grolnick and Wellborn (1988) questionnaires. Further, it is a key aspect of the constructs of family management (Patterson and Stouthamer-Loeber 1984; Patterson and Dishion 1985) and strictness/supervision (Gray and Steinberg 1999; Steinberg et al. 1992, 1994) in which rules about curfew and other key areas are included. In their work with teachers, Jang et al. (in press) included clearly communicating expectations and guidelines in their ratings of structure.

The second component, predictability, involves clearly conveyed and consistent consequences of and contingencies for actions. This dimension is inherent in Baumrind's notion of firm enforcement and is manifest in several CRPBI firm versus lax enforcement items (e.g., "sticks to a rule instead of allowing a lot of exceptions"). Items reflecting predictability are present in both the Skinner and the Grolnick and Wellborn questionnaires. Further, this construct is closely related to consistent (inconsistent) discipline which has been a key parenting construct in the

delinquency literature (Hill and Bush 2001; Lempers et al. 1989) predicting acting out (Lempers et al. 1989) and aggressive behavior (Hill et al. 2003; Mills and Rubin 1998).

A third component, task-focused information feedback, involves feedback from the environment on children's meeting expectations. The importance of feedback is a key tenet of SDT in which feedback on performance enhances one's belief that he or she can attain success (Vallerand and Reid 1984). Constructive feedback (whether positive or negative) enhances perceptions of competence and control as opposed to feelings of helplessness. Constructive feedback has been included in classroom ratings of structure (Jang et al. in press).

The fourth component is provision of opportunities to meet expectations. Parents provide opportunities for children to meet expectations by providing children time (e.g., to meet the expectation to do homework before dinner), resources (e.g., a minimum of distractions if the expectation is that homework is to be done in a quiet place), and assistance (e.g., if the expectation is that all homework be completed). The inclusion of this dimension acknowledges that children need to have the resources to meet rules and guidelines if they are to experience competence. The opportunity to succeed has proved to be a key construct in predicting children's academic success (Kurdek and Sinclair 1988).

A fifth component of structure is the provision of rationales for rules and expectations. Rationales give children information about how their behavior affects others and the world and is thus linked with children's sense of competence. Within the discipline literature, induction is a key aspect of successful discipline (Hoffman 1994). Baumrind recognized the importance of rationales, coding, for example, "gives reasons with directives." Lamborn et al. (1991) asked whether parents explained "why" when they wanted their children to do something. In their model, Grusec and Goodnow (1994) stress the importance of parents providing an appropriate rationale to assure accurate perception of the parental message. Importantly, the presence of rationales is not dependent on the rationale being meaningful to the child or consistent with his/her goals or experience. We suggest that these aspects would make the provision of rationales either autonomy supportive (relevant to the child's goals and experiences, provided with empathy, etc.) or controlling (from the parents' perspectives, disconnected from the child's goals). This distinction has been made in previous studies. For example, Reeve et al. (2002) provided students engaging in a lesson in conversational Chinese rationales in either an autonomy supportive manner (explaining how the Chinese lesson would be useful to them) or a controlling manner (because we are going to test you on it). We

recognize that rationales have been included in many conceptualizations of autonomy support and have been hypothesized to facilitate internalization. However, whether an expectation is likely to be internalized would be dependent on whether it is provided in a more autonomy supportive or controlling manner.

The sixth and final structure component, authority, involves caretakers taking a leadership role in the home and serving as authorities. Baumrind (1971) recognized this quality in codings such as "must defer to parental expertise" and parents do "not share decision making power with the child" (p. 13) though the latter rating could be seen as confounded with the autonomy supportive to controlling dimension. Jang et al. (in press) argued that during lessons, low structure is manifested as little teacher leadership while high levels involve strong leadership. This component is relevant to the large literature on family decision making. In particular, several investigators have measured behavioral control as the balance of child, parent, and joint decision making in the home. In homes in which youth make key decisions alone, children exhibit higher levels of deviance (Dornbusch et al. 1985; Fletcher et al. 2004) and lower GPA's (Steinberg et al. 1989). As with rationales, the dimension is separate from autonomy support in that when parents act as authorities they can do so in an autonomy supportive or controlling manner.

The present study employed a semi-structured interview of children to examine the six components of structure. We elected to use an interview because we wished to learn about parent structure by allowing parents to respond in their own ways to questions about rules and expectations. The interview focused on structure in relation to academics, specifically, homework and grades. The interview questions were designed to assess each of the components of structure. For each domain children were asked whether they had rules/expectations, how consistent the rules/expectations are, how their parents respond when they do not follow the rules/expectations, whether their parents tell them "why" they have the rules/expectations, and whether their parents provide feedback if they do not follow the rules/expectations. On the basis of the interview, coders rate the parents on the six components of structure.

In order to address our research questions we examine how the structure components are correlated, their relations with available questionnaires measures of structure and constructs relevant to structure (e.g., firm control, behavioral control), and how the components are related to measures of other key dimensions of parenting: autonomy support to control and involvement. We also examine relations between structure components and child outcomes of perceived control, engagement, and school grades. Our sample included seventh and eighth grade students. We chose this age range because at this point,

children have somewhat more independence and structure when in place in the home is thus likely to be more explicit.

We hypothesized that (a) the six components of structure would be moderately correlated, (b) structure components would be moderately correlated with questionnaire measures of structure but only the components that have been included in the questionnaire measures, (c) structure would be independent of autonomy support and moderately correlated with involvement as involvement is a prerequisite for structure, and (d) higher levels of structure would be associated with children's perceived control, perceived competence, engagement in school, and grades.

Method

Participants

Seventy-five seventh (64%) and eighth (36%) graders from two urban public middle schools and their caregivers participated. Students included 36 (48%) boys and 39 (52%) girls with ages ranging from 12 to 15-years-old ($M = 13.1$, $SD = .77$). Participants self-identified in the following racial/ethnic categories: 45.3% European-American, 24% Hispanic, 20% African American, 1.3% Indian, 1.3% Native American, 8% biracial. Forty-three children (57.3%) were from two-parent homes and 32 (42.7%) from single-parent homes. Five (6.7%) parent interviews were conducted in Spanish. Parent education levels were diverse: Mothers: 4.29% 8th grade, 5.72% some high school, 31.43% high school, 1.43% trade school, 12.86% associates degree, 17.14% some college, 18.75% 4 years of college, 8.58% school beyond college; Fathers: 6.12% 8th grade, 30.61% high school, 12.24% trade school, 10.20% associates degree, 12.24% some college, 18.37% 4 years of college, 6.12% school beyond college.

Procedure

Students received a letter (in both English and Spanish) at school describing the study to take home to their parents and return to school with parents indicating if they were interested in learning more about the study. Of the forms returned, 77 mothers indicated interest and 37 declined to participate. This response rate is comparable to that of other studies that involve extensive in-person parent participation. Interested parents were contacted and 76 scheduled to either come to the laboratory (23.68%) or be visited in their homes (76.32%). Mothers and children completed questionnaires and children were interviewed. Parent questionnaires were translated into Spanish and

back-translated by another native Spanish speaker. Seven percent of the mothers elected to complete the questionnaires in Spanish. Participants received \$25.00 for participating. One family was excluded because of the child's severe cognitive disabilities.

Measures

Parental structure interview

This semi-structured interview addressed structure in the domains of grades and homework. First, children were presented with an open ended question regarding their home in regard to the specific domain (e.g., "The first set of questions is about homework. I'd like to start by asking you to tell me about your home and homework"). Next, children were asked what rules and expectations they have in their homes about homework, how consistent these rules/expectations are, what happens if they don't follow the rules about homework, whether parents provide information about how to do better next time if rules/expectations are not followed, whether there are things in the home that make it hard for them to follow rules and expectations about homework, and whether (and if so what) parents tell them about why they have the rules/expectations. The interview questions were then repeated for children's grades.

Each interview was coded independently by two coders for each domain (homework and grades) on six 7-point Likert rating scales: clarity and consistency of rules and expectations, predictability of consequences for rule/expectation violation, feedback about how rules were being followed, opportunity to meet/exceed expectations, provision of rationales for rules/expectations, and authority of parents (see Table 1). The rating scales were each connected to a question in the interview (e.g., what happens when you don't follow the rule/expectation—for predictability) except for authority, which was based on the raters' overall perceptions of the home. However, the rater could use any part of the interview to complete his/her ratings. A coding manual included anchors for the points on the scales. Raters discussed their ratings until consensus. Consensus scores were used in all analyses.

Interrater reliability, measured by intra-class correlations of independent ratings prior to discussion, ranged from .83 to .99. Some structure ratings had to be discarded. One participant report of the predictability of their parents' behaviors indicated that the participant was confused about the topic. Six participants' responses about feedback regarding homework-related behaviors and three regarding grade-related behaviors could not be rated as children reported having never failed to meet expectations.

Table 1 Interview rating scales: anchors of structure component scales

Structure component	Structure rating: anchors	
	Highest	Lowest
Clarity and consistency of guidelines	Guidelines in home are completely clear and consistent (e.g., easily recalled and articulated, operationalized)	No sense of expectations in the home, may report vague guidelines but unable to provide specifics
Predictability	Knows the response in the home to rule related behavior (positive and negative), <u>always</u> the same and <u>always</u> applied	No idea what consequences might be and/or reports no consistent follow through
Information feedback	Communicates what child can do better if does not meet expectations and what did well if does, information is step-by-step, behavioral, and comprehensive	May give general feedback such as “good job” or “next time do better” but gives no information on what did well or how to do better
Opportunity	Has the resources needed to meet expectations without exception, expectations are reasonable given what is available	Because necessary resources are not available, child cannot meet expectations even if exerts full effort and intention
Rationales	Consistently communicates why expectations are important, i.e., reference to secondary or tertiary goals, articulates a long term well-being or competence goal	Does not provide rationale—why important or put into place (e.g., “they just know why” or simply reiterates the rule “e.g., because it is the rule” or “because I said so”)
Authority	Parents clearly maintain role of authority, e.g., have final decision making power, make decisions when conflict present, are leaders with ability to impose consequences	Parents do not make final home decisions in this domain and are not seen as in a leadership role regarding the child’s behaviors in this domain

High and low anchors of 7-Point anchored Likert scales

Parenting questionnaires: Child report

Parenting Context Questionnaire (PCQ) (Grolnick and Wellborn 1988)

This 20-item questionnaire assesses children’s perceptions of their mothers’ autonomy support versus control (e.g., “My mother lets me do school things my own way”), structure (e.g., “I don’t know what my mother expects of me in school”), and involvement (e.g., “My mother is interested in my school”) in relation to school and in general. Children indicate on 4-point Likert scales how true they think statements about their parents are. Cronbach alphas for subscales ranged from .70 to .90 in previous studies (e.g., Grolnick et al. 1999; Grolnick and Wellborn 1988). In this study, the alphas were .71, .74, and .73 for autonomy support to control, involvement, and structure, respectively.

Parents as Social Context Questionnaire (PSCQ) (Skinner et al. 2005)

The PSCQ measures children’s perceptions of their mothers on six scales, autonomy support, coercion, structure, chaos, acceptance, and rejection. In this study, only the eight structure (e.g., “when I want to do something my mother shows me how,”) versus chaos (e.g., “when my mother makes a promise, I don’t know if she will keep it,”) items were administered. Children respond on 4-point Likert scales (not at all true to very true). These subscales

were significantly correlated ($r = -.31, p < .01$) and thus combined. In this study the Cronbach alpha for the combined structure/chaos (reverse coded) items was .72.

Children’s Report on Parent Behavior Inventory (CRPBI) (Schaefer 1965a, Schludermann and Schludermann 1988)

The 30-item version of the CRPBI was used to assess three dimensions of parenting; acceptance versus rejection (e.g., “my mother is a person who... often praises me”), psychological control (e.g., “my mother is a person who... will avoid looking at me when I have disappointed her”), and firm versus lax control (e.g., “my mother is a person who... lets me go any place I please without asking”). Participants respond on 3-point Likert scales (not like, somewhat like, or a lot like my mother). Reliabilities in this study were .81 for acceptance, .79 for psychological control, and .59 for firm control.

Parent–child communication scale

A 13-item questionnaire (e.g., Brown et al. 1993) assessed how much children think parents “really know” about aspects of the children’s daily lives (e.g., “do your parents REALLY know... what you do during your free time”). Participants responded on 5-point Likert scales ranging from yes, always to no, never. Kerr and Stattin (2000) found a test–retest reliability of $r = .83$ and a Cronbach alpha of .85 for this scale. In this study the Cronbach alpha was .90.

Parenting questionnaires: Parent report

Parents as Social Context Questionnaire (PSCQ) (Skinner et al. 2005)

This measure assesses parenting behaviors on three dimensions, structure versus chaos (e.g., “I make it clear what will happen if my child does not follow our rules”), autonomy versus coercion (e.g., “I can’t afford to let my child decide too many things on his or her own”), and warmth versus rejection (e.g., “I let my child know I love him/her”). The mothers responded on 4-point Likert scales (not at all true to very true). The reliabilities of these dimensions were .72 for autonomy support versus coercion, .61 for structure versus chaos, and .75 for warmth versus rejection.

Child outcomes: Child report

Self-perception profile (Harter 1982)

Children’s perceptions of competence were measured in two domains, cognitive and general self-worth. Harter reported alphas of .76 and .73 for these scales, respectively. The 14 items ask children to identify which of two opposing statements is more true for them and the extent to which it is true (really true for me or sort of true for me), for example, “some kids feel that they are very good at their school work BUT other kids worry about whether they can do the school work assigned to them.” In this study, Cronbach alphas were .80 for the cognitive scale and .85 for self-worth.

Student perceptions of control questionnaire (Skinner et al. 1990, 1998)

This measure assesses children’s perceptions of control over their successes and failures. Only the academic domain was included in this study. One 6-item scale assessed children’s overall control perceptions (e.g., “I can do well in school if I want to”) with three items reversed. Six 4-item scales addressed beliefs about strategies for success, including effort (e.g., “If I get bad grades, it is because I didn’t try hard enough”), attributes (e.g., “I have to be smart to get good grades in school”), powerful others (e.g., “I won’t do well in school if my teacher doesn’t like me”), luck (e.g., “If I get good grades, it is because I am lucky”), and unknown (e.g., “I don’t know how to keep myself from getting bad grades”). Children responded on 4-point Likert scales (not at all true to very true). Skinner found split-half reliabilities from .75 to .85. In this study the Cronbach alpha for the control scale was .71 and the effort scale was .64. Consistent with the findings of Skinner

et al. (1998) the three maladaptive strategy belief scales, or “strategy beliefs indicating a reliance on uncontrollable or external factors” (p. 41): luck, unknown, and powerful others were highly intercorrelated, r ’s of .50, .61, and .69, p ’s < .001, and were combined to form the “maladaptive strategy beliefs scale” with an alpha of .84.

School engagement (Marchand and Skinner 2007)

Students respond to 10 items measuring their behavioral engagement in school (e.g., “In class, I work as hard as I can”), with five items phrased positively and five phrased negatively. Children respond on 4-point Likert scales ranging from almost always to almost never. Skinner et al. (1990) found a split-half reliability of .82 and in this study the alpha was .83.

Child outcomes: School records

School performance

Students’ grades were obtained from school records. End of year grades in math, English, science, and social studies were highly correlated (r ’s .70–.78, p < .001) and therefore averaged to create summary scores.

Results

Interview ratings of structure for homework and grades

With the exception of information feedback, structure components were highly correlated (r ’s from .43 to .83, p < .001) across the domains of grades and homework. Thus, ratings were collapsed across these two domains. The two information feedback ratings (r = .21, p < .10) were kept separate.

Relations amongst structure components

With the exception of correlations for information feedback and one other exception, intercorrelations of the structure component summary variables were moderate, with r ’s ranging from .24 to .51, p < .05. The correlations between opportunities and rationale, r = $-.02$ was not significant. Further, information feedback on homework was not significantly related to any of the other variables. Information feedback on grades was significantly correlated with predictability (r = .24, p < .05), rationale (r = .31, p < .01), and authority (r = .31, p < .01) (see Table 2). Though in our study we were interested in findings for the separate components of structure and utilized them in further analyses, in order to examine the joint

Table 2 Intercorrelations among structure components (2-tailed)

Component	<i>n</i>	<i>M</i>	SD	1	2	3	4	5	6	7
1. Clear	75	4.78	1.21	–	.51***	.42***	.30**	.39***	.19	.20
2. Predictable	74	4.40	1.46		–	.27*	.30**	.42***	.20	.24*
3. Opportunity	75	6.42	.85			–	–.02	.33**	.06	.03
4. Rationale	75	5.53	2.04				–	.43***	.07	.31**
5. Authority	75	6.14	1.12					–	.10	.31**
6. HW Info	69	3.21	1.86						–	.21
7. GR Info	72	3.62	1.79							–

* $p < .05$, ** $p < .01$, *** $p < .001$

effects of the components, we also created a structure composite and examined it in further analyses. Given the above correlations, we computed a mean of five of the six components: clear and consistent guidelines, predictability, opportunities, rationale, and authority. Because of its lack of relations with the other components, information feedback was not included in the composite.

Relations between demographic variables and structure components

Two-way ANOVAs (sex, grade) indicated that there were no main effects of the sex or the grade of the children or their interaction on the seven structure ratings, $F(1, 68-74)$ ranged from .00 to 3.59, $p > .05$. Second, there were no significant relations between education levels of either mothers or fathers and the structure components, r 's ranged from .01 to .23, $p > .05$.

Relations between structure assessed via interview and previous self-report measures

Correlations between the interview-based ratings of structure and established self-report measures of structure-related constructs were conducted. Measures of structure-related constructs in the literature related to structure components they measured most directly (see Table 3). Children's reports of structure on the PSCQ were correlated with clear and consistent guidelines, $r = .31, p < .01$, predictability, $r = .26, p < .05$, authority, $r = .24, p < .05$, information feedback in the grades domain, $r = .25, p < .05$, and the structure composite, $r = .39, p < .01$. Structure assessed by the PCQ was significantly and positively correlated with predictability, $r = .27, p < .05$, opportunity, $r = .29, p < .05$, and the structure composite, $r = .27, p < .05$, and marginally significantly correlated with clear and consistent guidelines, $r = .22, p < .10$, and authority, $r = .20, p < .10$. Children's reports of the extent to which parents "really know" about aspects

of their lives and activities correlated with ratings of the predictability of parents' responses to behavior, $r = .32, p < .01$, authority, $r = .39, p < .01$, and the structure composite, $r = .37, p < .01$. The parent report of structure on the PSCQ significantly correlated with clear and consistent guidelines, $r = .27, p < .05$, rationales, $r = .24, p < .05$, and the structure composite, $r = .27, p < .05$, and marginally correlated with predictability, $r = .21, p < .10$. However, the measure of firm control from the CRPBI did not correlate significantly with any of the structure components or the structure composite, r 's ranging from .00 to .13, $p > .10$.

Relations between structure components and other dimensions of parenting

Neither individual components of structure nor the structure composite significantly related to children's reports of autonomy support/control as measured by the PCQ, the PSCQ, or the CRPBI (psychological control). Parent report of their autonomy supportive (vs. coercive) behaviors on the PSCQ correlated with provision of rationale, $r = .25, p < .05$, and information feedback regarding grades, $r = .28, p < .05$. There were significant correlations between parental involvement and structure components (see Table 4). For example, the involvement scale of the PCQ related to four of the six components of structure: clear and consistent guidelines, $r = .38, p < .01$, predictability, $r = .39, p < .01$, information feedback regarding both homework, $r = .26, p < .05$, and grades, $r = .27, p < .05$, and authority, $r = .25, p < .01$, as well as the structure composite, $r = .44, p < .01$. Acceptance on the CRPBI was significantly correlated with clear and consistent guidelines, $r = .45, p < .01$, predictability, $r = .39, p < .01$, opportunity, $r = .26, p < .05$, authority, $r = .33, p < .01$, and the structure composite, $r = .43, p < .01$, while warmth on the Parenting Styles Questionnaire was associated with only information feedback on homework, $r = .33, p < .01$.

Table 3 Correlations between structure components and self-report measures of structure (2-tailed)

Component	<i>n</i>	Child report				Parent report
		PCQ structure	PSCQ structure	CRPBI firm control	Really know	PSCQ structure
Clear	75	.22	.31**	.10	.22	.27*
Predictable	74	.27*	.26*	.12	.32**	.21
Opportunity	75	.29*	.23	−.07	.15	−.09
Rationale	75	.05	.20	.01	.21	.24*
Authority	75	.20	.24*	.13	.39***	.10
HW info	69	.08	.04	.00	.05	.09
GR info	72	.11	.25*	.09	.07	.10
Composite	74	.27*	.39**	.11	.37**	.27*

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 4 Correlations between structure components and other dimensions of parenting (2-tailed)

Component	<i>n</i>	Child report				Parent report	
		PCQ		CRPBI		PSCQ	
		Involv.	Aut. Sup.	Accept	Psych. Con.	Aut. Sup.	Warmth
Clear	75	.38***	−.02	.45***	−.17	.14	.06
Predictable	74	.39***	.00	.39***	−.07	.07	.12
Opportunity	75	.21	−.07	.26*	−.10	.12	.01
Rationale	75	.12	.06	.09	−.05	.25*	.21
Authority	75	.25*	.11	.33**	−.03	.21	.13
HW info	69	.26*	−.09	.18	.01	.03	.33**
GR info	72	.27*	.20	.12	−.10	.28*	.23
Composite	74	.44***	.08	.43***	−.10	.22	.19

* $p < .05$, ** $p < .01$, *** $p < .001$

Relations between structure components and outcome variables

Correlations were conducted between structure components and child outcome variables, including control beliefs, perceived cognitive competence and self-worth, and engagement in school as well as child grades (see Table 5).

Results indicated that some of the components of structure were associated with child outcomes—particularly clear and consistent guidelines and predictability. Higher levels of clear and consistent guidelines were positively associated with children's feeling in control of academic outcomes, $r = .26$, $p < .05$, and their perceived cognitive competence, $r = .50$, $p < .001$, engagement in school, $r = .44$, $p < .001$, and grades, $r = .55$, $p < .001$. Clear and consistent guidelines were also negatively correlated with children's maladaptive strategy beliefs, $r = −.28$, $p < .05$. Predictability was associated with perceived cognitive competence, $r = .31$, $p < .01$, and children's

grades, $r = .29$, $p < .05$. Opportunity to succeed was positively related to cognitive perceived competence, $r = .37$, $p < .01$, self-worth, $r = .25$, $p < .01$, classroom engagement, $r = .25$, $p < .05$, and grades, $r = .37$, $p < .01$, and negatively related to maladaptive strategy beliefs, $r = −.35$, $p < .01$. Rationale was positively related to belief in effort, $r = .26$, $p < .05$, while authority related to higher class engagement, $r = .23$, $p < .05$, and demonstrated a negative trend with maladaptive control beliefs, $r = −.20$, $p < .10$. Information feedback in the grade domain, was only associated with effort beliefs, $r = .24$, $p < .05$, though positive trends were noted between information feedback regarding homework practices and perceived control as well as cognitive perceived competence, $r = .20$ and $.21$, respectively, $p < .10$. The structure composite was positively correlated with children's reports of effort, $r = .28$, $p < .05$, and negatively correlated with children's maladaptive control strategy beliefs, $r = −.23$, $p < .05$, and trends indicated positive relations with perceived control, $r = .20$, $p < .10$. The composite was positively correlated with perceived cognitive competence, $r = .33$, $p < .01$, as well as academic engagement, $r = .26$, $p < .05$, and grades, $r = .36$, $p < .01$.

Regression analyses: Structure components and other parenting dimensions

In order to determine whether structure components added to the prediction of child outcomes above and beyond autonomy support to control and involvement, regressions were conducted in which the composite of the structure components was added into a regression along with PCQ involvement and autonomy support to control. For effort strategies, none of the dimensions were significant. For maladaptive control, autonomy support and involvement each added significant variance. Provision of structure positively predicted perceived control as did autonomy

Table 5 Correlations between structure components and composite and child outcome measures (2-tailed)

Component	n	Perceived control			Perceived competence		Academic	
		Control	Effort	Maladaptive	General	Cognitive	Engaged	Grades
Clear	75	.26*	.17	-.28*	.02	.50***	.44***	.55***
Predictable	74	.17	.15	-.16	.13	.31**	.15	.29*
Opportunity	75	.15	.06	-.35**	.25*	.37**	.25*	.37***
Rationale	75	.02	.26*	.04	.04	.00	.00	.06
Authority	75	.08	.17	-.20 ⁺	.11	.10	.23*	.11
HW info	69	.20 ⁺	.03	.05	.05	.21 ⁺	-.01	.15
GR info	72	.03	.24*	-.11	-.09	.13	.12	.07
Composite	75	.20 ⁺	.28*	-.23*	.12	.33**	.26*	.36**

⁺ $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 6 Simultaneous regressions of child outcomes on structure composite, involvement, and autonomy support

Child Outcomes	Structure			Involvement			Autonomy support		
	F	B	SE	F	B	SE	F	B	SE
<i>Perceived control</i>									
Effort	2.83	.16	.14	1.24	.22	.21	.41	.14	.22
Maladaptive control	.43	-.03	.12	5.66**	-.51	.19	12.53**	-.70	.19
Perceived control	4.48*	.19	.05	.41	.04	.09	12.10**	.32	.09
<i>Perceived competence</i>									
Self worth	.17	.03	.12	2.13	.34	.20	11.27**	.69	.20
Cognitive perceived competence	7.06**	.22	.12	8.25**	.58	.19	4.59*	.42	.20
<i>Academic</i>									
Engagement	2.94 ⁺	.13	.13	6.54**	.53	.20	2.18	.30	.20
Grades	12.75**	.34	.12	5.94**	.49	.18	8.90**	.56	.19

⁺ $p < .10$, * $p < .05$, ** $p < .01$

support. Cognitive perceived competence was significantly predicted by all three parenting behaviors: autonomy support, involvement, and structure. For self-worth, there was only a significant effect for autonomy support. In regards to engagement, there were significant effects of both involvement and structure. Finally, for grades, there were positive effects of structure, involvement, and autonomy support (see Table 6).

Interactions between structure and other parenting dimensions: ANOVA analyses

Two-way ANOVAs were conducted to examine interactions between structure components and autonomy support.¹ The structure composite was used. Mean splits were

¹ Given the specificity of our interactive hypothesis and our relatively small sample size, we elected to use ANOVA rather than regression analyses to test the interactions between structure and autonomy support. We recognize that when testing the significance of interactions between two continuous variables a regression analysis is often the statistical test of choice. However, such an interaction requires a

conducted to identify families high and low on each of the dimensions (structure, autonomy support to control).

There was one significant interaction identified. Structure interacted with autonomy support in relation to academic engagement, $F(4, 74) = 6.44, p < .01$. The ANOVA indicated that when structure and autonomy support were low children’s engagement was lowest, $M = 2.64, SD = .50$. These scores were significantly lower than the scores when structure was high regardless of

Footnote 1 continued

significant sample size and high level of power to obtain a stable estimate. This is due to the fact that, rather than determining whether the difference between group means of one variable in relation to the outcome is different depending on a level of the other variable, a regression analysis requires enough power to estimate the extent to which the slope representing the nature of the relations between one independent variable and the outcome variable changes as a function of every one unit of increase in the other independent variable. We also ran regressions analyses to examine the interaction and, as expected, interactions were not statistically significant, although the directionality of the associations was similar to those found using the ANOVA model.

whether autonomy support was low, $M = 3.14$, $SD = .42$, $t = 3.01$, $p < .05$, or high, $M = 3.02$, $SD = .51$; $t = 2.03$, $p < .05$, and were also significantly lower than scores when structure was low and autonomy support was high, $M = 3.06$, $SD = .57$; $t = 2.04$, $p < .05$.

Discussion

The goal of this study was to provide an in-depth examination of parental structure. Drawing from previous work on parenting and utilizing SDT, we identified six components of structure: clear and consistent guidelines, predictable consequences, opportunity to meet expectations, information feedback, rationales for rules and expectations, and parents acting as authority figures in the home. We first determined that structure in the home did not vary as a function of the grade level or sex of the children nor of the education level of the parents. We then examined these components in relation to one another, in relation to other existing measures of structure-related constructs, in relation to other parenting behaviors such as involvement and autonomy support, and in relation to key child outcomes.

As hypothesized, the six components of structure were moderately correlated, lending support to the conceptualization of structure as a multi-faceted construct. The component of information feedback evidenced the most independence—ratings of this component were not consistent across domains of homework and grades and feedback around homework was not significantly related to other components of structure. Importantly, the mean ratings for information feedback were lower than those for the other ratings. It is possible that parents don't regularly use this form of structure, at least within the academic domain. Most parents reported that when their children did not follow rules they reminded the children of the rule, rather than giving them specific feedback about how they could do better. In addition, this component could not be rated for children who had never violated expectations regarding homework or grades. It will be important to see whether this is a relevant component of structure in other domains.

Previous questionnaire measures designed to assess structure only addressed some of the components of structure included in our conceptualization, and we expected correlations between these questionnaires and our structure ratings to reflect this. We therefore anticipated that measures of structure-related constructs in the literature would relate to the components of structure most directly addressed by the measures, supporting the construct validity of the interview ratings. This was the case. While the structure composite related to the PCQ and the PCSQ parent and child reports, with regard to the specific components, structure on the PCQ was associated with

ratings of predictability and opportunity and marginally significantly associated with clear and consistent guidelines and authority. The PSCQ child report was related to clear and consistent guidelines, predictability, authority, and information feedback on grades. It was marginally associated with opportunity and rationales. The PSCQ parent report was associated with clear and consistent guidelines and rationales and marginally significantly associated with predictability. Children's perceptions of their parents' knowledge of their whereabouts and activities were related to authority and predictability. Of the structure components, clear and consistent rules/expectations and predictability were most associated with previous measures of structure. Thus, it is likely that previous measures of structure pick up most on these components. Though key components of structure, these are only two aspects. Thus, there is a need for questionnaire measures that assess multiple components.

Interestingly, there were no significant relations between structure components or the structure composite and the CRPBI firm control scale. We speculate that this is due to the items on the CRPBI being a mix of structure and autonomy support versus control. Notably, firm control was not significantly correlated with other questionnaire measures of structure either. However, it was correlated with PCQ autonomy support to control, $r = .25$, and with CRPBI psychological control, $r = .21$. Thus, there is some concern about using this measure as an independent indicator of the third parenting dimension.

It was hypothesized that structure would be independent of parental autonomy support versus control. This was mostly supported. Children's reports of maternal control versus autonomy support assessed via the PCQ, the PSCQ—child report, and the CRPBI (psychological control) scale were not significantly related to any structure components. The PSCQ parent report of autonomy support was related to information feedback regarding grades and provision of rationales. The relation with rationales is interesting since there is controversy over whether providing reasons for demands is an aspect of autonomy support or structure. For example, Assor et al. (2002) argue that children feel more autonomous when they understand the relevance of the behavior which they are asked to enact to their personal goals. This may be provided by rationales. In our conceptualization, rationales is a structure component since the rationale provides information to enhance competence but may or may not link to personal goals (which would determine whether it is autonomy supportive or controlling). However, given our findings, it would be important to revisit this issue in future studies.

Moderate relations were anticipated between parental involvement and structure components as some level of involvement is necessary for parents to provide structure.

In fact, the PCQ involvement scale and the CRPBI acceptance versus rejection scale were moderately related to components of structure, including clear and consistent guidelines, information feedback, opportunity, and authority. Interestingly, parents' reports of their warmth on the PSCQ were significantly related only to provision of information feedback. Given that this is the structure component that is least related to the others, it may be that information feedback should be considered more an index of involvement than structure.

In accordance with SDT, structure was hypothesized to be related to children's feelings of competence and control as well as task engagement and school performance. Different structure components related to different outcomes in children. Provision of clear and consistent guidelines were associated with children's perceptions of control, perceived cognitive competence, classroom engagement, and grades. Predictability was related to perceived cognitive competence and grades. Opportunity to succeed related to children's perceived control over academic success, perceived cognitive competence, engagement in academic behaviors, and grades, while unlike the other dimensions, this component was also related to children's self-worth. Provision of rationales and information feedback regarding grades were associated with reports of effort as an effective strategy for academic success. Authority in the home was associated with children being more engaged in class. It appears that overall parents who provide children with structure in the academic domain have children who feel better about and more competent in their school-related actions and are more effective and successful in school.

Regression analyses were utilized to determine the extent to which structure predicted child outcomes after controlling for other parenting dimensions. Provision of structure significantly related to perceived control, cognitive perceived competence, engagement, and grades above and beyond autonomy support versus control and involvement. Thus, though there is overlapping variance among parenting dimensions—particularly between structure and involvement—structure adds unique variance in predicting key child outcomes.

Of note, one interaction was found in relation to children's engagement in academic endeavors. This interaction, supported SDT-based hypotheses, indicated that children's engagement was lowest when structure and autonomy support were low. This finding is similar to that of Jang et al. (in press) with teachers whereby students' engagement was lowest when both teacher structure and autonomy support were low. When structure or autonomy support was high children were significantly more engaged in academic pursuits. It is interesting that this interaction was only in evidence for children's scholastic engagement. We speculate that structure, in whatever context, might

facilitate feelings of competence but perhaps when it comes to ultimately facilitating engagement in successful school behaviors children respond to having basic needs satisfied and both feeling competent and autonomous promotes engagement in the related behaviors and processes. We note that this interaction was not significant when the parenting dimensions were entered as continuous variables in a regression analysis. This is likely due to our relatively small sample size. Nonetheless, this interaction should be interpreted cautiously and further investigation of interactions between autonomy support and structure are indicated.

This work represents a preliminary exploration of the structure components using an interview methodology. When components were considered as a composite, relations between structure and key child outcomes were uncovered. However, there were also meaningful differences in the ways in which the different structure components related to these important variables. While it appears that the components do represent a common underlying construct, it is recommended that future work continue to consider them independently as well as together to facilitate our understanding of this dimension as well as to provide specific recommendations about implementing structure to caretakers.

A number of limitations of this study should be noted. First, the number of participants limited the power necessary to use statistical strategies such as factor analysis and to fully explore how multiple parenting dimensions interact. A follow-up study with a larger number of participants may provide further insight about the model and the interplay among parenting dimensions.

Second, the design also did not allow for conclusions about the directionality of the relations between parenting behaviors and child functioning. Parents' provision of structure may impact children's feelings of competence, motivation, and success, however, children's beliefs, motives, and levels of success may influence the extent to which parents provide structure. If the latter is true, the direction of the relations found in this study would suggest that parents may respond to children's maladaptive beliefs about themselves and school and low school performance by providing low levels of structure. There is some evidence that parents do, over time, react to misbehavior with less monitoring of their adolescents (Kerr and Stattin 2000). Perhaps parents feel less competent in their roles and therefore assert less authority when their children are struggling. In addition, as with other studies of parenting that do not use genetic designs, relations between parent behaviors and child outcomes may be attributed to shared genes between parents and children. It would thus be important to test this conceptualization in other contexts, such as classrooms, where genes and environments are not

confounded. Clearly, this suggests many avenues for future research.

In terms of our measurement of structure, though the six components of structure do overlap with and extend other conceptualizations of structure, it did not pick up all of the components that have been suggested. For example, measures of structure might also include how parents monitor or coach children's performance on meeting rules and expectations. The six component conceptualization might be considered a working model rather than an exhaustive list. Similarly, while the measure of structure was domain specific (i.e., academics) and measured by interview method, measures of autonomy support and involvement were global, and measured by questionnaire. In future work it will be important to examine other parenting behaviors within a domain and method to allow for a better understanding of their inter-relations.

Additional considerations include the fact that the participants in this study were recruited from schools largely attended by children of families living in urban neighborhoods and of limited economic means. Further, despite the diversity of family cultures represented in the participant sample, group differences were not examined due to insufficient numbers of families from each of the several ethnic/racial groups. In future research it will be important to address how families of different backgrounds think about and enact structure in their homes. Finally, we did not include fathers in this study. Clearly, fathers have significant roles in child socialization and should be included in future work.

In conclusion, this study supported the multi-component nature of structure, its independence from autonomy support versus control, and its predictive significance. Given this encouraging preliminary evidence, it is hoped that further studies using different methodologies will add to the literature on this little understood construct. Hopefully such research will ultimately help parents provide conditions that facilitate children experiencing and displaying competence in their worlds.

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