



Published in final edited form as:

J Educ Psychol. 2009 February 1; 101(1): 190–206. doi:10.1037/a0013153.

Continuity and Change in Early School Engagement: Predictive of Children's Achievement Trajectories from First to Eighth Grade?

Gary W. Ladd and

School of Social and Family Dynamics and Department of Psychology, Arizona State University

Lisa M. Dinella

Department of Psychology, Monmouth University

Abstract

Premises about the effects of early engagement on achievement were investigated with 383 children who were followed from ages 5.5 to 13.5. Change and continuity in behavioral (cooperative-resistant classroom participation) and emotional (school liking-avoidance) engagement were assessed during Grades 1–3 and examined within variable- and person-oriented analyses as antecedents of scholastic progress from Grades 1–8. Findings corroborated the premises that change as well as continuity in early school engagement is predictive of children's long-term scholastic growth. Compared to children who participated cooperatively in classrooms, those who became increasingly resistant across the primary grades displayed lesser scholastic growth. Among children who manifested enduring engagement patterns, those who exhibited a combination of higher behavioral *and* emotional engagement across the primary grades made greater academic progress than those who displayed lower levels of these two forms of engagement. Overall, the results of this investigation were consistent with the school engagement hypothesis, and extend what is known about the predictive contributions of early school engagement to children's achievement.

The construct of school engagement has received increasing research attention as educators contemplate solutions for problems such as declining academic motivation and achievement, increasing student alienation, and elevated school drop-out rates (Finn, 1989; Fredricks, Blumenfeld, & Paris, 2004). School engagement has been seen as a potential answer to these problems because it encompasses processes that, theoretically, serve to promote learning and achievement and, practically, can be fostered in students.

A key hypothesis in research on school engagement is that, for children to profit from schooling, they must do more than simply attend school or be present in classrooms—rather, they must “engage” the classroom environment in ways that promote learning. In research on this “school engagement hypothesis”, three forms of engagement—behavioral, emotional, and cognitive—have been identified as potential determinants of learning and achievement (Fredricks, Blumenfeld, & Paris, 2004). Behavioral engagement refers to

Correspondence concerning this article should be addressed to Gary Ladd at P.O. Box 852502, Arizona State University, Tempe, AZ, USA 85287-2502, gary.ladd@asu.edu; ldinella@monmouth.edu.

Publisher's Disclaimer: The following manuscript is the final accepted manuscript. It has not been subjected to the final copyediting, fact-checking, and proofreading required for formal publication. It is not the definitive, publisher-authenticated version. The American Psychological Association and its Council of Editors disclaim any responsibility or liabilities for errors or omissions of this manuscript version, any version derived from this manuscript by NIH, or other third parties. The published version is available at <http://www.apa.org/journals/edu/>

participation in the learning environment and, although defined in different ways (e.g., positive conduct, Finn, 1993; effort, attention, & persistence, Skinner & Belmont, 1993; initiative, Finn, 1989), has often been operationalized in terms of how constructively or cooperatively children engage in classroom tasks and activities (e.g., Birch & Ladd, 1997; Buhs & Ladd, 2001). Emotional engagement has been defined as student's sentiments toward school, and has been operationalized as children's feelings about peers, teachers, schoolwork, or their affective reactions to the classroom or the larger school context (e.g., see Ladd, Buhs, & Seid, 2000; Skinner & Belmont, 1993; Skinner, Wellborn, & Connell, 1990; Stipek, 2002). Another, less common construal of emotional engagement has been termed "identification with school", which has been defined as the extent to which children feel that they value and belong in school (Finn, 1989). Cognitive engagement generally refers to the level of processing or intellectual effort that students devote to mastering learning tasks, and has been variously conceptualized as psychological investment in learning and skill mastery (Newmann, Wehlage, & Lamborn, 1992; Wehlage et al., 1989), intentional task-specific thinking (Helme & Clarke, 2001), use of cognitive or learning strategies (e.g., Lee & Anderson, 1993; Meece, Blumenfeld, & Hoyle, 1988), and preference for challenge, flexible problem solving, and positive coping in the face of failure (Connell & Wellborn, 1991).

In recent years, each of these forms of engagement has been investigated as a potential precursor of grade-school children's achievement and, in large part, the evidence produced by these studies has been consistent with the school engagement hypothesis (for a review, see Fredricks et al., 2004). At present, however, more is known about the links between behavioral and cognitive engagement and children's achievement. To illustrate, it has been established that indicators of behavioral engagement correlate positively with concurrent measures of achievement (e.g., Connell, Spencer, & Aber, 1994; Skinner et al., 1990), and also predict subsequent educational progress (e.g., Alexander, Entwisle, & Dauber, 1993). Likewise, a number of indicators of cognitive engagement have been linked with higher levels of achievement (e.g., Nystrand & Gamoran, 1991; see Boekarts, Pintrich, & Zeidner, 2000). In contrast, emotional engagement has been less well investigated, in part because indicators of this construct have often been combined with measures of behavioral or cognitive engagement (e.g., see Connell et al., 1994), making it difficult for investigators to isolate its predictive contributions to achievement. Available evidence, however, suggests that measures of school identification correlate positively with achievement (e.g., Voelkl, 1997). Moreover, studies conducted with young school children (i.e., kindergartners) have shown that positive school attitudes and sentiments (e.g., liking school) correlate positively with early indicators of behavioral engagement (e.g., cooperative classroom participation) and achievement (e.g., school readiness; Ladd et al., 2000).

Extant knowledge is also limited in that investigators have tended to study single rather than multiple forms of engagement, and examine concurrent rather than predictive associations between engagement and achievement. As Fredricks et al. (2004) have noted, most research on school engagement has been conducted with cross-sectional designs, and there is a need for longitudinal studies in which multiple forms of engagement are examined as antecedents of children's achievement. Moreover, there has been little attempt to conceptualize engagement, its forms and functions, and its relations with achievement within the context of developmental models or meta-theory. As a consequence, little has been learned about how multiple forms of engagement develop, influence each other over time, and differentially predict children's achievement.

In view of these limitations, the purpose of this study was to examine two forms of early school engagement—children's cooperative-resistant classroom participation and school liking-avoidance—and determine the extent to which these forms of engagement: (a) exhibit

continuity and change across the primary grades, (b) co-vary, or develop as separate versus interdependent entities during this time period, and (c) make unique (i.e., additive) versus redundant predictive contributions to growth in children's achievement.

The first of these two forms of engagement—cooperative-resistant classroom participation—is a behavioral construct that refers to the nature of children's involvement in classroom activities. Although participation can be defined in multiple ways (see Buhs & Ladd, 2001; Finn, 1993), it has been proposed that, as children begin school and progress through the primary grades, their propensity to adopt the "student role" and act in ways that are in accordance with classroom social rules and expectations is an essential prerequisite for early scholastic success and continued learning and achievement (see Finn, 1989; 1993; Ford, 1985; Ladd, Buhs, & Seid, 2000; Wentzel, 1991). For definitional purposes, some researchers have labeled this construct "cooperative participation" (see Birch & Ladd, 1997; Buhs & Ladd, 2001; Ladd et al., 2000;), and have defined it as the extent to which children cooperatively engage versus actively resist classroom tasks, rules, and activities.

The second construct that was targeted for investigation—children's school liking-avoidance—can be conceptualized as an emotional or psychological form of school engagement. Although emotional engagement has been defined in multiple ways and may be expressed differently as children mature (see Finn, 1989; 1993; Fredricks et al., 2004; Ramey, Lanzi, Phillips, & Ramey, 1998; Stipek, 2002), its earliest manifestations can be conceptualized as the degree to which children exhibit a receptiveness toward school—that is, a mindset that favors rather than rejects school, and behaviors that appear to be driven by a desire to approach rather than avoid school (see Ladd et al., 2000).

Both of these forms of school engagement warrant further investigation because it is possible that the patterns children develop during the primary school years set the stage for short- as well as long-term scholastic progress (see Buhs & Ladd, 2001; Ladd, Birch, & Buhs, 1999; Ladd et al., 2000). Ladd et al. (2000), for example, found that children who liked school as they entered kindergarten tended to participate more cooperatively and independently in classroom activities. Independent participation was defined as children's propensity to take initiative, or seek out and pursue classroom activities (i.e., self-directed involvement), and cooperative participation was defined as children's adoption of the "student role" and compliance with classroom social rules and expectations. Results showed that that liking school, and cooperative participation more than independent participation, predicted gains in children's achievement across a school year. Similarly, Ladd et al. (1999) reported that kindergartners who scored higher on an aggregated participation measure (i.e., a combination of cooperative and independent participation) during the early weeks of kindergarten tended to have higher achievement scores by the end of the school year. Less is known, however, about whether early engagement patterns forecast long-term growth in achievement.

Current findings, therefore, are promising but subject to certain limitations. Chief among these is the fact that little has been learned about continuity and change in these two facets of school engagement during the early school years. Although it is clear that individual differences exist in both forms of engagement, particularly at school entry (see Ladd, et al., 2000), no investigator has yet examined the extent to which initial differences in cooperative-resistant participation and school liking-avoidance remain stable or change across the primary grades. Although no theories presently exist to guide expectations about how these two forms of engagement develop across the primary grades, it seems reasonable to expect that some children will exhibit greater continuity in these attributes across the primary grades than others. From child by environment models of school adjustment (Eccles & Midgley, 1989; Eccles et al., 1993; Ladd, 1989; 2003), for example, it could be inferred

that the extent to which children manifest stability or change in school engagement depends on characteristics of the child (i.e., behavioral dispositions, temperament; see Alexander et al., 1993; Ladd & Burgess, 2001), features of the school context and learning environments (e.g., classroom climates, curriculum, teaching styles, relations with classmates and teachers; see Cook et al., 1999; Guthrie, McGough, Bennett, & Rice, 1996; Ladd et al., 1999; Skinner & Belmont, 1993), or the interplay between these factors (e.g., conjoint effects; Connell, 1990; Ladd, 2003). Thus, whereas some children's initial patterns of engagement may stabilize or evolve into distinct engagement orientations that persist across the primary grades, others' early engagement patterns may change across time or exhibit greater temporal variability across grades.

Clearly, the causes of continuity and change in early school engagement have not been fully explicated, and require further investigation. However, before pursuing this objective, it is important to determine the extent to which there is continuity and change in children's engagement patterns during the primary grades, and the extent to which stability and change in engagement are predictive of children's achievement during this period of schooling and thereafter. The formation of stable engagement patterns may have important and lasting consequences for children's achievement. Children who develop stable patterns of engagement during the primary grades, or characteristic and enduring ways of relating to school and the activities that occur in classrooms, are likely to traverse substantially different achievement trajectories as they progress through school. The school engagement hypothesis implies that children who develop engagement orientations that consistently promote rather than deter productive forms of involvement with school and learning activities will attain higher levels of achievement (see Finn, 1989; 1993; Fredricks et al., 2004). Likewise, certain patterns of discontinuity in early engagement patterns may also have important and lasting consequences for children's achievement. In particular, the school engagement hypothesis suggests that children who become less as opposed to more engaged as they progress through the primary grades will exhibit lower growth in achievement. Thus, additional research is necessary not only to examine continuity and change in early forms of school engagement, but also to describe the types of engagement patterns that develop during the primary grades, and determine how differences in these patterns are related to children's achievement.

Another limitation is that insufficient information has been gathered about the predictive significance of early engagement patterns in relation to other "known" predictors of achievement. Consequently, there is a need to evaluate the degree to which early indicators of children's school engagement are linked with achievement in ways that are distinct from (or at least partially independent of) other potential precursors or predictors of children's scholastic success, such as their family backgrounds (e.g., SES), ethnicity, gender, and cognitive maturity. To the extent that such relations exist and can be documented, they have the potential to elucidate the extent to which children's early engagement in schooling and classrooms plays a role in their scholastic success or failure, in addition to their preexisting characteristics, preparation, and backgrounds. Additionally, most of what has been learned about early school engagement as a predictor of children's achievement is limited to brief intervals of schooling, such as a single school year or across a few grade levels (e.g., Buhs & Ladd, 2001; Izzo et al., 1999; Ladd et al., 1999; 2000). Thus, it remains to be seen whether the engagement patterns that develop and are manifested across the primary grades are predictive of long-term educational outcomes.

Finally, because relations among different forms of engagement remain relatively unexplored, particularly across the primary grades, there is also a need to examine how different forms of engagement are predictively linked across this time period. On the one hand, different forms engagement may develop relatively independently of each other or, on

the other hand, some forms of engagement may be precursors of others. Unfortunately, few models exist that identify specific pathways of influence. To address this limitation and build relevant theory, it will be important to determine whether the targeted forms of early school engagement—school liking-avoidance and cooperative-resistant participation—develop as separate versus interdependent entities during the primary school years.

Accordingly, we designed this investigation to address three specific aims. Our first objective was to measure each of the targeted forms of early school engagement, and assess the stability of these variables across the primary grades. To address this aim, children's school liking-avoidance and cooperative-resistant participation were measured yearly from first through third grades. Continuity and change in each form of engagement was examined by correlating the scores obtained for each measure across assessment waves.

For measurement purposes, cooperative versus resistant participation was defined as behaviors that children exhibit in classrooms that are indicative of adopting versus resisting (not complying with) the “student” role. Children who have adopted the student role act in ways that are consistent with classroom rules and behavioral norms—that is, respond in a “socially responsible” (Wentzel, 1991) manner toward classroom tasks, teachers, and materials. Although aspects of this concept overlap with other behavioral constructs that have been researched with preschool and kindergarten children (e.g., learning-related skills, Cooper & Farran, 1988; McClelland & Morrison, 2003; mastery behaviors, Bronson, 1994), it is differentiated by the fact that it represents a continuum of behaviors that range from constructive forms of classroom engagement on the one hand (cooperative participation) to active forms of disengagement on the other hand (resistant participation). Thus, behaviors indicative of cooperative participation include earnestly engaging in classroom tasks, responding promptly to teacher requests, and using classroom materials responsibly. Actions signifying resistant participation include refusing to engage in classroom tasks, resisting teacher's requests, disparaging learning activities and classroom materials, or otherwise failing to accept responsibility for learning activities and materials. School liking-avoidance was defined as the extent to which children held a positive view of school versus disliked and actively sought to avoid the classroom and school environment (see Ladd et al., 2000). Higher levels of school liking-avoidance are signified by positive emotions or sentiments about school (e.g., looking forward to attending school or thinking that school is fun), and lower levels are denoted by negative emotions or actions indicative of avoiding school (e.g., asking to stay home from school; feigning illness to avoid school).

Our second objective was to examine how the targeted forms of early school engagement—cooperative-resistant participation and school liking-avoidance—are predictively linked across the primary school years. Past evidence (e.g., Ladd et al, 2000) led us to expect that early school liking-avoidance (i.e., an indicator of emotional engagement) would be a significant predictor of changes in children's cooperative-resistant participation (i.e., an indicator of behavioral engagement). Ladd et al. (2000) found that children who liked school as they began kindergarten tended to participate cooperatively in classroom activities as the school year progressed. The design of this investigation afforded an opportunity to determine whether school liking-avoidance continues to be an important predictor of cooperative-resistant participation during the primary school years. The question of whether cooperative-resistant participation predicts changes in school liking-avoidance during the primary grades has not been previously examined and so it was investigated here as an empirical question. To address this aim, full-panel stability models (see Figure 1) were utilized to estimate the extent to which: (a) school liking-avoidance predicted children's cooperative-resistant participation from one school year to the next (i.e., across two, one-year predictive lags--G1 to G2 & G2 to G3); and (b) cooperative-resistant participation

predicted children's school liking-avoidance from one school year to the next (i.e., across the same two predictive lags).

Our third objective was to examine the relative predictive contributions of both forms of early engagement in relation to other "known" predictors of achievement (i.e., entry variables), and determine whether patterns of continuity and change in the investigated forms of engagement during the primary grades were predictive of long-term growth in achievement. Part of this objective, therefore, was to determine whether the contributions of early school engagement to children's achievement are more or less independent of those made by school entry variables. Although both entry variables and early engagement patterns have been postulated to be determinants of children's achievement, it is not known whether their contributions are distinct versus redundant. The entry variables examined in this study included a constellation of child attributes (e.g., gender, ethnicity, cognitive maturity) and a general index of family socioeconomic status (i.e., family *SEI*), all of which previously have been linked with early achievement (Bradley & Corwyn, 2002; Ladd et al., 2000; Luster & McAdoo, 1996; McLloyd, 1998; Pungello, Kupersmidt, Burchinal, & Patterson, 1996; Reynolds & Bezruczko, 1993; Stevenson, Chen, & Uttal, 1990; Taylor & Machida, 1996).

The second aspect of this objective was to determine whether continuities or changes in engagement were predictive of children's scholastic growth from first through eighth grade. This goal was addressed by: (a) creating continuous measures of both change and continuity in engagement across the primary grades (from first to third grades) for all of the children in our sample, and then estimating the predictive contributions of each type of index to their achievement trajectories (variable-oriented analyses), and (b) identifying subtypes or groups of children within the sample who exemplified distinct patterns of change or continuity in engagement from first to third grade and comparing their achievement trajectories (person-oriented analyses).

Thus, to determine whether changes in engagement during the primary years were predictive of long-term scholastic growth, we first estimated path models in which changes in cooperative-resistant participation and changes in school liking-avoidance from first to third grade were evaluated along with entry variables as predictors of achievement trajectories from first to eighth grade. If changes in one or both forms of engagement were significant predictors of scholastic growth (e.g., changes in cooperative-resistant participation predicted changes in achievement), we identified groups of children who exhibited the largest changes (increments, decrements, relative to peers) on one or both these variables and then compared the groups' achievement trajectories. Consistent with the school engagement hypothesis, we anticipated that children who became more as opposed to less engaged as they progressed through the primary grades would exhibit greater growth in achievement.

Likewise, to determine whether continuity in engagement was predictive of scholastic growth, we first estimated path models in which children's average levels of cooperative-resistant participation and school liking-avoidance (during Grades 1 – 3) were evaluated along with entry variables as predictors of achievement trajectories from first to eighth grade. If the averaged engagement scores were found to be significant predictors of scholastic growth, we identified groups of children who exhibited relatively extreme scores on one or both of these variables and then compared the groups' achievement trajectories. Consistent with the school engagement hypothesis, we anticipated that children who developed engagement orientations that were characterized by higher levels of cooperative participation and/or higher levels of school-liking across the primary grades would manifest greater scholastic growth than those whose engagement orientations during this period were typified by lower levels of engagement on one or both of these variables.

In all of these analyses, the predictive contributions of cooperative-resistant participation and school liking-avoidance to children's achievement were evaluated not only in conjunction with entry variables but also in relation to each other. This was done as a means of elucidating the relative importance of early school liking-avoidance versus cooperative-resistant participation as predictors of children's achievement during the primary grades and beyond. Given that indicators of emotional engagement have been less well investigated, and often confounded with indicators of behavioral engagement, it was of particular interest to determine: (a) whether the predictive contributions of early school liking-avoidance to achievement were distinct from those of cooperative-resistant participation, and (b) whether continuity or change in this form of engagement was a better predictor of changes in children's achievement. Based on Finn's (1989) assertion that behavioral engagement is an important precursor of achievement during the primary years, we hypothesized that cooperative-resistant participation would account for much of the same variation in achievement that was predicted by school liking-avoidance and, comparatively, would be the more pivotal predictor of children's academic growth.

METHOD

Participants

Participants were 383 children (189 boys, 194 girls) who were recruited as they entered kindergarten (average age= 5.52) and followed prospectively until they completed eighth grade (average age= 13.51 years). Children and their parents were recruited at kindergarten pre-registration meetings that were held in school systems within multiple urban, suburban, and rural U.S. locations. Written informed parental consent was obtained prior to children's participation, and 95% of the recruited families agreed to participate. The sample contained children from different ethnic groups (77.4% European American, 17.2% African American, 5.3% Latina/Hispanic, mixed race, or other) and family socioeconomic backgrounds (36.8% lower to middle income, range= \$0 - 20,000; 30.6% middle income, range= \$21,000 - \$40,000; and 32.6% upper-middle to high income; range= \$41,000 and higher). At the time of the eighth grade assessment, 90.6% of the children were still active participants in the longitudinal study ($n= 347$). Data were also collected from children's teachers.

Over the course of this investigation, children became increasingly dispersed across classrooms and school districts. When children moved or changed schools, permission was sought from administrators, teachers, and parents to extend the project into their schools. After these consents were obtained, children were interviewed in their new schools and their teachers were contacted and asked to complete and return project measures. The number of teachers who participated in this study per assessment period ranged from 32 in kindergarten to 98 in third grade.

Design

The data for this prospective longitudinal study were collected on a schedule that was consistent with our investigative aims. Entry variables were assessed before or during children's first year of formal schooling (kindergarten), measures of school engagement were obtained during each of the primary grades (Grades 1 – 3), and achievement data were gathered yearly during Grades 1 through 8. To the extent possible, data were gathered from multiple informants to reduce problems associated with shared method variance. Information about entry variables was obtained from parents and children, measures of school engagement were obtained from teachers and parents, and achievement scores were derived from individually-administered standardized tests.

Measures

Entry variables—Information about each participant’s gender, ethnicity, and his/her family socioeconomic status was obtained from a standard demographic questionnaire that was completed by parents. Gender was scored as “1” (boys) or “2” (girls) and, because the number of ethnic groups included in the sample was limited, ethnicity was scored as “0” (White, non-minority students) or “1” (minority students). Each participant’s family socioeconomic status was indexed from his/her parents’ responses to the *SEI* (i.e., Socioeconomic Index; Entwisle & Astone, 1994), which was incorporated into the demographic questionnaire. *Parents completed the *SEI* by listing their primary occupations and by writing descriptions of their jobs and the duties entailed (these data were gathered by phone or in person if parents could not provide a written response). Trained undergraduates coded parents’ occupations/job descriptions into distinct occupational status categories, and assigned a corresponding *SEI* score to each of the participant’s parents. The participant’s *SEI* score was the highest of those assigned to his or her family. Twenty percent of these data were coded by independent coders, and Kappa between pairs of coders on categories (agreement vs. disagreement) met or exceeded .78. Scores ranged from 0 to 97.16 with a median of 49.14 (scores around 50 are assigned to occupations such as electronic sales personnel, administrative support positions, and so on).

Measures of participants’ cognitive-linguistic maturity were obtained during kindergarten by having them complete the *Peabody Picture Vocabulary Test-Revised* (PPVT-R; Dunn & Dunn, 1981). The PPVT-R estimates children’s cognitive-linguistic maturity from the breadth of their receptive vocabularies. This measure was individually administered during the fall of kindergarten, and participants’ responses were converted to stanines. Psychometric studies of the PPVT-R have shown that its scores are reliable and valid. Evaluations of the PPVT-R’s scores indicate moderate to high internal consistency (split-half reliability results range from .67 to .88 for children) and test-retest reliability ($r = .52$ to $.90$ over 9–31 days; Dunn & Dunn, 1981).

School liking- avoidance—This construct was measured with teacher- and parent-report measures of children’s school liking and avoidance. Teacher reports were obtained with the Teacher Report of School Liking and Avoidance Questionnaire (T-SLAQ; Buhs, Ladd, & Herald, 2006; Ladd et al., 2000). Teachers rated participants on 13 indicators of children’s school liking and avoidance (e.g., “Likes being in school”; “Enjoys most classroom activities”; “Complains about school”; “Makes up reasons to go home from school”; each of which was accompanied by a 3-point scale (1 = Doesn’t Apply; 2 = Applies Sometimes; 3 = Certainly Applies). A CFA and subsequent specification search conducted on data from the initial time of assessment (Grade 1) indicated that 10 of the 13 items formed a single scale, $\chi^2(22) = 33.58, p < .05, CFI = .99, RMSEA = .04, SRMR = .04$, that collectively indexed children’s propensity to like versus avoid school. To determine whether the factor structure of this scale was invariant over time, a separate CFA was conducted to examine the fit of a model that contained three latent liking-avoidance variables—one per grade level—each of which was constructed from the same 10 indicators that had been administered at each time of assessment. This model fit the data adequately, $\chi^2(357) = 505.69, p < .01, CFI = .97, RMSEA = .03, SRMR = .06$, supporting the assumption that these items formed a single factor that was invariant across the three times of assessment. Scores for this measure were created by averaging teacher’s ratings across the 10 items. Alphas calculated across administration occasions (Grades 1–3) ranged from .82 to .87.

Parent reports were acquired with the Parent Report of School Liking and Avoidance Questionnaire (P-SLAQ; Ladd et al., 2000). Each parent rated his/her child on ten indicators of school liking and avoidance (e.g., “Looks forward to going to school”; “Enjoys school

activities or events”; “Complains about going to school”; “Makes up reasons to stay home from school”), each of which was accompanied by a 3-point scale (1 = Doesn’t Apply; 2 = Applies Sometimes; 3 = Certainly Applies). A CFA and subsequent specification search conducted on data from the first time of assessment indicated that all of the 10 items formed a single scale, $\chi^2(22) = 26.77, p < .22, CFI = .99; RMSEA = .03; SRMR = .03$, that, collectively, indexed children’s propensity to like versus avoid school. Here again, a second CFA was performed to examine the factorial invariance of this scale across Grades 1–3, and results showed that this three latent variable model fit the data well $\chi^2(342) = 553.75, p < .01, CFI = .95, RMSEA = .04; SRMR = .06$. Scores for this measure were created by averaging parent’s ratings across the 10 items. Alphas calculated across administration occasions (Grades 1 – 3) ranged from .82 to .95.

Additional analyses were conducted to determine whether it was feasible and advantageous to combine the parent- and teacher-report measures of school liking into a single, multi-informant composite. Correlational analyses revealed that, although scores from the parent and teacher measures were only modestly concordant at each time of assessment (r ’s averaged .30), they correlated similarly with contemporaneous measures children’s achievement (e.g., .24, and .30 in Grade 1, respectively). Moreover, regression analyses showed that a combined measure of school liking, created by averaging the scores obtained from parents and teachers, accounted for significantly more variation ($p < .002$) in children’s concurrent achievement than did either one of the two single-informant measures. These findings suggest that the parent and teacher measures provided related as well as distinct information about this aspect of early school engagement, and that the combined measure better captured aspects of school liking-avoidance that were associated with children’s achievement. For these reasons, parents’ and teachers’ scores were averaged within assessment occasions to form a multi-informant composite of children’s school liking/avoidance. Thus, participants received three scores on this composite, one per grade level (i.e., for Grades 1, 2, and 3).

Cooperative-resistant classroom participation—Teachers were chosen as the data source for this construct because they regularly observe children’s classroom behavior and can reliably differentiate among children on the basis of their classroom participation (Ladd et al., 1999; 2000). Teachers rated participants on five items from the Teacher Rating Scale of School Adjustment (TRSSA; e.g., “Responds promptly to teacher requests”; “Uses classroom materials responsibly”; see Ladd, Birch, & Buhs, 1999) and five items from the *Devereux Elementary School Behavior Rating Scale* (DESB; e.g., “Breaks classroom rules”; “Acts defiant”; Spivack & Swift, 1967), each of which described classroom behaviors that were indicative of adopting or rejecting the student role. All items were rated on a 3-point scale (1 = Doesn’t Apply; 2 = Applies Sometimes; 3 = Certainly Applies). A CFA conducted on the data from the first time of assessment (Grade 1) revealed that all 10 items loaded on a single factor and that this model fit the data well, $\chi^2(20) = 39.75, p < .01, CFI = .99; RMSEA = .05; SRMR = .04$. A second CFA was conducted to examine this scale’s factorial invariance across Grades 1 – 3, and results showed that model containing a single latent variable for each time of assessment fit the data well, $\chi^2(343) = 646.66, p < .01, CFI = .95, RMSEA = .05; SRMR = .06$. The internal consistency of the subscale items was adequate (α ’s ranged from .86 to .89). Accordingly, ratings on these items were summed within grade level to create three scores for each participant, one per grade level.

Scholastic achievement—An index of this construct was obtained by individually administering the reading and math subtests of the Wide Range Achievement Test (*WRAT*; Wilkinson, 1993) to all participants during the spring of Grades 1 through 8. The *WRAT* possesses adequate psychometric properties, and has been normed and validated on national samples (α ’s ranged from .69 to .97; validity estimates are acceptable for children and

adults; Hughs, 1987). The scores for the reading and math subtests correlated positively within and across assessment occasions (r ranged from .35 to .60, $M = .49$, from first to eighth grade). Accordingly, at each grade level, a composite achievement score was calculated for each participant level by averaging the scores he/she received on the WRAT reading and math subscales. This achievement composite scores exhibited moderate stability over time (r ranged from .62 to .83; $M = .74$; from first to eighth grade).

Procedure

Parents received a standard demographic questionnaire during the fall of participants' kindergarten year and returned their completed forms by mail. The *PPVT-R* was individually administered by trained examiners in participants' schools during the fall of kindergarten. During the spring of Grades 1, 2, and 3, parents and teachers rated children's school liking-avoidance, and teachers rated children's cooperative-resistive participation. The *WRAT* was individually administered to participants by trained personnel during the spring of Grades 1 through 8.

Results

Overview

Preliminary analyses were undertaken to examine variable distributions and missing data, and to determine whether these and other properties of the data set conformed to the assumptions underlying parametric statistics and data augmentation procedures (i.e., variables normally distributed, values missing at random). Because it was possible to satisfy these prerequisites, multiple imputation was used to replace missing values with estimated scores. Correlational analyses were used to assess multicollinearity among predictors, the stability of the criterion, and relations among the school engagement and entry variables. Hypotheses about the roles of entry variables versus early school engagement as predictors of children's achievement were evaluated via path analyses, and hypotheses about the achievement trajectories of children who exhibited specific patterns of early school engagement (e.g., change over time; stable orientations) were examined with growth-curve analyses.

Estimation of Missing Data via Multiple Imputation

Attrition was minimal, with 347 (90.6%) of the original 383 participants remaining in the sample from kindergarten (K) to Grade 8 (G8). Attrition and constraints on data collection (e.g., absences, moves, dropouts) caused 1.56% of the data points within the entire longitudinal data set to be missing. The percentage of missing data by measure across all times of administration averaged 1.52% (range = 0.00% – 9.74%).

Missing data were estimated via NORM (Schafer, 1999), a multiple imputation program in which missing multivariate data are simulated $m > 1$ times. Three imputations were generated ($n = 3$) because, for data sets containing 10% or fewer missing data points, it has been established that $n = 3$ imputations yield sufficient estimation efficiency (i.e., 97%; Rubin, 1987; Schafer, 1999). Mplus software (Muthén & Muthén, 1998–2004) was used to estimate each of the hypothesized models from the multiple imputed data sets, and to average parameter estimates and obtain combined standard errors.

Properties of and Relations among the School Entry, Early School Engagement, and Achievement Measures

Descriptive statistics for the study variables are presented in Table 1. A series of ANOVAs were conducted to determine whether the scores obtained for the school entry and

engagement scores differed significantly by gender or grade. A one-factor (Gender: Males, Females) ANOVA was performed on each of the cognitive maturity and SEI scores and both analyses produced non-significant results. Separate 2 (Gender) by 3 (Grade: G1, G2, G3) ANOVAs were calculated for the school liking-avoidance, cooperative-resistant participation, and achievement scores. A significant gender effect, $F(1,381) = 41.72, p < .001$, was found for cooperative-resistant participation, with girls having significantly higher average scores than boys at all times of measurement. None of the remaining effects were significant.

The scores obtained for all of the study variables were correlated by time of measurement, and results are presented in Table 2. Relations among the predictors (i.e., gender, ethnicity, cognitive maturity, *SEI*, school liking-avoidance and cooperative-resistive participation) were not indicative of multicollinearity, but rather were low to moderate in magnitude (r 's ranged from .01 to .52). Examination of these relations revealed that the two facets of early school engagement were positively related at each time of measurement, and that both of these constructs correlated positively, although to modest degrees of magnitude, with all of the entry variables (i.e., gender, ethnicity, *SEI*, and cognitive maturity). The strongest of these relations indicated that: (a) girls, children of non-minority status and from higher *SEI* families, and those with greater cognitive maturity were more likely to engage in cooperative rather than resistant forms of classroom participation during the primary grades, and (b) children from higher *SEI* families tended to like school more and avoid it less during the primary grades. Family *SEI* correlated positively with children's cognitive maturity and non-minority status, and non-minority status correlated positively with children's cognitive maturity.

Examination of the relations between predictors and criteria revealed a pattern in which school liking-avoidance and cooperative-resistant participation at each grade level correlated moderately and positively with children's concurrent (same-grade) and prospective (subsequent grades) achievement. Results for Grades 4–7, although not tabled (to conserve space), were highly similar those presented in Table 2. Although all four entry variables correlated positively with children's achievement in first and eighth grades, family *SEI* and children's cognitive maturity did so more strongly and consistently than did gender or ethnicity.

Stability of Children's School Liking-Avoidance, Cooperative-Resistant Participation, and Achievement

The stabilities of school liking-avoidance and cooperative-resistant participation were estimated by correlating children's scores on the corresponding measures across grade levels. Results are shown for the sample and by gender in Table 3. The obtained coefficients ranged from .41 to .63 across 1- and 2-year intervals, indicating that both forms of early school engagement were moderately stable for the sample and for boys and girls across the primary grades.

Considerable stability was evident in children's achievement from first- to eighth grade. Across this 8-year period, achievement scores correlated .67 (see Table 2).

Does Early Cooperative-Resistant Participation Predict Changes in School-Liking Avoidance or Vice Versa?

Stability models were analyzed via path analyses to address the hypothesis that emotional engagement (i.e., school liking-avoidance) predicts behavioral engagement (i.e., cooperative-resistant participation) during the primary grades and vice versa. The panel models used for these analyses (see Figures 1a & b) included six variables—the cooperative-

resistant participation and school liking-avoidance measures, each of which was measured in first, second, and third grades.

Estimated in the first analysis (see Figure 1a) were paths for the prospective lags from school liking-avoidance to cooperative-resistant participation (i.e., G1 → G2; G2 → G3) and the stabilities of each engagement variable. In the second analysis, paths were estimated from the prospective lags for cooperative-resistant participation to school liking-avoidance, along with the stabilities of each engagement variable. The first model fit the data adequately, $\chi^2(4) = 7.47, p < .11; CFI = .99, RMSEA = .05; SRMR = .05$, and yielded the path coefficients shown in Figure 1a. As can be seen, the paths for both of the estimated cross-lags were significant, suggesting that earlier school liking-avoidance consistently predicted subsequent cooperative participation during the primary grades.

The second analysis was used to evaluate the less-investigated hypothesis that behavioral engagement (i.e., cooperative-resistant participation) antecedes certain forms of emotional engagement (i.e., school liking-avoidance). This model also fit the data adequately, $\chi^2(4) = 7.32, p < .11; CFI = .99, RMSEA = .05; SRMR = .03$, and yielded the path coefficients shown in Figure 1b. As can be seen, the paths for the estimated cross-lags were significant, suggesting that earlier school liking-avoidance consistently predicted changes in cooperative-resistant participation during the early school years. Moreover, a chi-square difference test indicated that this model fit the data as well as did the prior model, $\Delta \chi^2(1) = .15, n.s.$

Thus, the results of these analyses were not entirely consistent with the hypothesis that emotional engagement antecedes changes in behavioral engagement. Rather, the results suggested that each of the investigated forms of engagement predicted changes in the other, and did so with similar albeit modest predictive power.

Are Changes in School Engagement during the Primary Grades Predictive of Children's Achievement?

This question was addressed with variable- as well as person-oriented analytic strategies. First, the model shown in Figure 2 was estimated using path analyses. In this model, changes in school liking-avoidance and cooperative-resistant participation from Grades 1 – 3 (third- with first-grade scores partialled) were evaluated as predictors of children's initial levels of achievement (achievement intercepts) and growth in achievement from first through eighth grade (achievement slopes). The four entry variables were also included as predictors of achievement intercepts and slopes so that it was possible to evaluate the distinct predictive contributions of each school engagement measure relative to all other predictors in the model.

This model fit the data adequately, $\chi^2(86) = 183.42, p < .01; CFI = .97, RMSEA = .05; SRMR = .11$, and yielded the path coefficients shown in Figure 2 (coefficients for non-significant predictors deleted). Of all the predictors included in this model, only the cooperative-resistant participation variable made a significant ($p < .01$), distinct predictive contribution to changes in achievement. Thus, when the two forms of engagement were estimated conjointly, it was changes in cooperative-resistant participation that emerged as the stronger predictor of long-term gains in achievement.

The results also indicated that two of the four entry variables—child ethnicity and family *SEI*—were significantly associated with children's initial achievement levels. Relative to peers, non-minority children and children from higher *SEI* families tended to have higher levels of achievement in first grade.

Second, because changes in cooperative participation were more closely associated with relative gains in achievement, this link was further examined using a person-oriented approach to data analyses. This aim was addressed by identifying groups of children who evidenced substantial increments versus decrements relative to peers in their cooperative participation scores from first to third grade, and comparing the groups' first- to eighth-grade achievement trajectories. To identify participants who fit these profiles, a change-in-cooperative-resistant participation measure was again created by partialling the scores children received on this measure in first grade from those they received in third grade. Using the following criteria, the resulting residual scores were used to assign children to one of two mutually-exclusive groups: (1) Increasingly Cooperative Participators (i.e., children whose residual scores were positive, and in the upper tertile (> 66th percentile) of the distribution), (2) Decreasingly Cooperative Participators (children whose residual scores were negative, and in the lower tertile (< 33rd percentile) of the distribution).

Growth curve analyses (Mplus; Muthén & Muthén, 1998–2004) were used to compare the two groups' achievement trajectories across grades one through eight. Before evaluating the association between children's group membership and their achievement trajectories, an unconditional growth model (Level 1) was calculated to estimate the mean achievement trajectory for all children in the sample, and to determine whether variation in individuals' trajectories (i.e., intercepts and linear slopes) relative to the mean trajectory on the targeted participation variable was sufficiently large to warrant the computation of conditional models. The results from this analysis, including estimates of the sample's mean initial status and mean change rate, and manifest variability in these parameters, are shown in Table 4 (upper panel). As can be seen, there was considerable variability in participant's initial status and change over time in achievement, and the magnitude of this variability was large enough (statistically significant) to permit the estimation of conditional models, or linear growth curves by groups.

Next, a conditional growth model (Level 2) was calculated to assess intercept (initial status) and linear slope differences for the change-in-participation groups on the repeated achievement scores (i.e., those obtained yearly from Grades 1 through 8). This approach constituted a person-oriented analysis because subtypes of children were identified in the sample, and then trajectories for each subtype were estimated by effects coding the categorical "groups" variable (Curran, Bauer, & Willoughby, 2004). Between group differences in initial status and linear growth were evaluated using Increasingly Cooperative Participators as the reference group, and contrasts among intercepts (i.e., groups' adjusted average scores; see Singer & Willett, 2003) at subsequent grade levels (i.e., Grade 8) were made by altering the time point at which intercept differences were calculated (see Curran et al., 2004; Singer & Willett, 2003).

All four entry variables were included in this conditional analysis so that the predictive contributions of children's engagement groups were evaluated after controlling for these potential precursors of children's scholastic growth. Although cognitive maturity and family SEI were associated with differences in initial status ($\beta = .50, t = 3.24, p < .01$; $\beta = .03, t = 2.90, p < .01$; respectively), none of these entry variables predicted scholastic growth. Results for initial status (see lower panel of Table 4 and Figure 3) showed that the average achievement scores of Decreasingly Cooperative Participators did not differ significantly from those of Increasingly Cooperative Participators in first grade. Results for slope parameters indicated that the achievement trajectory (slope) for Increasingly Cooperative Participators was positive, significant, and indicative of substantial scholastic growth (see lower panel of Table 4 and Figure 3). Decreasingly Cooperative Participators, however, deviated from this growth pattern; compared to Increasingly Cooperative Participators, their achievement trajectory was significantly less accelerated over time (see lower panel of Table

4 and Figure 3). Further, intercept comparisons showed that, by Grade 8, Increasingly Cooperative Participants had attained an average level of achievement that was significantly higher than that of Decreasingly Cooperative Participants ($\beta = -1.55$, $t = -2.58$, $p < .01$).

Is Continuity in School Engagement during the Primary Grades Predictive of Children's Achievement?

Here again, both variable- and person-oriented analytic strategies were utilized to address this question. First, children's school liking and cooperative participation scores were averaged over Grades 1 – 3, and these scores were examined, along with all four entry variables, as predictors of changes in achievement within a series of path analyses. Because both school engagement measures evidenced moderate stability across the primary grades, average scores provided an estimate of the stability of children's school liking and cooperative participation across this time period. For example, on either measure, children who consistently received the highest or lowest scores across all three grades had averages that fell near the upper and lower extremes of the measure's distribution, respectively, and those whose scores were more variable across grades had averages that fell between these extremes.

The path model used for these analyses is shown in Figure 4. As before, the two indicators of school engagement were included in the model, as were all four entry variables, so that it was possible to evaluate each variable's distinct predictive contribution (relative to the other variables in the model) to children's initial levels of achievement (intercepts) and achievement growth from first to eighth grade (slopes).

This model fit the data adequately, $\chi^2(61) = 131.61$, $p < .01$; $CFI = .98$, $RMSEA = .06$; $SRMR = .09$, and yielded the path coefficients shown in Figure 4. In this case, both forms of school engagement made significant, distinct predictive contributions to changes in achievement. That is, children's gains in achievement across Grades 1 through 8 were predicted not only by higher average cooperative participation scores but also higher average school liking scores during the primary grades. The predictive significance of child ethnicity and family SEI within this variable context was identical to that reported above; relative to peers, non-minority children and children from higher SEI families tended to have higher initial levels of achievement.

In this model, as in the one estimated for changes in engagement, the path weights estimated for cooperative-resistant participation versus school liking-avoidance differed in that the former value was substantially larger. Thus, these findings revealed that average levels of cooperative-resistant participation and average levels of school liking-avoidance during the primary grades predicted growth in achievement, but that the former type of engagement was the stronger of the two predictors.

Second, because continuity in both early school liking-avoidance and cooperative-resistant participation were found to be distinct predictors of changes in achievement, both forms of engagement were further examined in person-oriented data analyses. In this case, participants who exhibited distinct but stable engagement orientations during the primary grades were identified and assigned to groups, and growth curve analyses (Mplus; Muthén & Muthén, 1998–2004) were used to compare the groups' achievement trajectories across grades one through eight. Participants were classified into groups using the school liking-avoidance and cooperative-resistant participation scores that were obtained during each of the three primary grades. To begin, children who met the following criteria in first grade were assigned to one of four mutually-exclusive engagement groups: (1) Cooperative Approachers (scored above the 66th percentile on both school engagement measures); (2)

Resistant Avoiders (scored below the 33rd percentile on both measures); (3) Cooperative Avoiders (scored above the 66th percentile on cooperative-resistant participation and below the 33rd percentile on liking-avoidance), and (4) Resistant Approachers (scored below the 33rd percentile on cooperative-resistant participation and above the 66th percentile on school liking-avoidance). Next, this same classification procedure was repeated using Grade 2 and then Grade 3 data so that, in total, participants who fit these criteria were assigned to one of four mutually-exclusive engagement groups at each of three separate points in time. These multiple classification data were used to identify groups of children whose engagement orientations were relatively stable during the primary grades. This was accomplished by retaining only those participants who had been assigned to same engagement group for two of three *consecutive* school years (across Grades 1–3). Of the 129 children who met this criterion, 64 were Cooperative Approachers, 14 were Cooperative Avoiders, 3 were Resistant Approachers, and 48 were Resistant Avoiders. None of the children assigned to these groups had been included in the previously identified change-in-participation groups.

As previously reported (see Table 4, upper panel), there was sufficient variability in participants' initial statuses and change over time in achievement to permit the estimation of conditional models, or linear growth curves by groups. Accordingly, a conditional growth model (Level 2) was calculated to assess intercept (initial status) and linear slope differences for the engagement orientation groups on the repeated achievement scores (i.e., those obtained yearly from Grades 1 through 8). Because an insufficient number of Resistant Approachers ($n = 3$) were identified using the stipulated classification criteria, the analysis was conducted with the remaining three engagement groups.

The four entry variables were again included in this analysis so that the associations between children's engagement orientations and achievement trajectories were evaluated after controlling for these potential precursors of scholastic growth. Children's cognitive maturity, ethnicity, and family *SEI* were associated with differences in achievement at Grade 1 ($\beta = .35, t = 3.00, p < .01$; $\beta = 1.14, t = 2.50, p < .01$; $\beta = .02, t = 2.93, p < .01$; respectively), but none of these entry variables predicted scholastic growth. Beyond this, results for initial status (see Table 5 and Figure 5) showed that the average achievement scores of Resistant Avoiders were significantly lower than those of Cooperative Approachers in first grade. Results for slope parameters indicated that the achievement trajectory for Cooperative Approachers was positive, significant, and indicative of substantial scholastic growth (see Table 5 and Figure 5). A similar trajectory was evidenced for Cooperative Avoiders; as can be seen in Table 4, the slope parameters describing this group's achievement trajectory did not deviate significantly from the growth rate found for Cooperative Approachers. Resistant Avoiders, however, did deviate from this growth pattern; compared to Cooperative Approachers, their achievement trajectory was significantly flatter, or less accelerated over time ($\beta = -.25, t = -2.17, p < .01$). Further, intercept comparisons showed that, by Grade 8, Cooperative Approachers had attained an average level of achievement that was significantly higher than that of Cooperative Avoiders ($\beta = -2.15, t = -2.17, p < .05$) and Resistant Avoiders ($\beta = -5.03, t = -7.21, p < .001$).

Discussion

Overall, the results of this investigation were consistent with the school engagement hypothesis, and extend what is known about the predictive contributions of early school engagement to children's achievement in several specific ways. First, because indicators of behavioral and emotional engagement were prospectively investigated across the primary grades, the findings add to what is known about stability and change in these two forms of engagement during the early school years. Moderate rather than high stability across the primary grades was found for each of the investigated forms of behavioral and emotional

engagement—that is, school liking-avoidance and cooperative-resistant participation, respectively. This level of temporal stability, and the fact that it was possible to identify children whose engagement patterns differed across grades (for person-oriented analyses), indicates that there was variability in the consistency with which children liked-avoided school and participated cooperatively-resistively in classrooms, with some individuals exhibiting greater continuity in these attributes across the primary grades than others.

Relative to peers, it would appear that some children begin the primary years with higher or lower levels of engagement (behavioral or emotional) and maintain their respective positions as they progress through the grades. Evidence of continuity in early engagement is consistent with the premise that, for some children, early-emerging patterns stabilize or evolve into distinct engagement orientations—that is, characteristic ways of relating to school and the activities that occur in classrooms. Other children, in contrast, exhibited greater temporal variability in their engagement patterns and, as was evident here, some become more or less engaged across the primary grades relative to peers. Thus, it would appear that emergent engagement patterns do not always stabilize—instead, some children’s engagement patterns fluctuate over time, or are characterized by distinct patterns of discontinuity, such as progressively increasing or decreasing engagement.

Given these observed differences in children’s engagement patterns, it will be important for investigators to further elucidate the determinants of continuity and change in early school liking-avoidance and cooperative-resistant participation during the primary school years. Unfortunately, little was learned about the source of these differences in this study because we did not investigate the antecedents of continuity and change in early engagement. Although some progress has been made in demarcating the antecedents of these and other, related forms of engagement (e.g., see Buhs, Ladd, & Herald, 2006; Fredricks et al., 2004; Ladd et al., 2006; Perry & Weinstein, 1998), much remains to be learned about this important research objective.

Second, the results of this investigation extend knowledge about the relations that transpire between particular forms of behavioral and emotional engagement across the primary school years. The estimation of path models in which each form of early engagement was examined as a predictor of changes in the other did yield findings that were consistent with the premise that emotional engagement functions as a precursor of behavioral participation (see Ladd et al., 2000). However, we also found that early cooperative-resistant participation consistently predicted changes in school liking-avoidance during the primary school years. In both of the estimated models, the variance accounted for in one form of engagement by the other was quite similar, suggesting that neither early behavioral nor emotional engagement should be regarded as the stronger potential determinant. So, instead of supporting a unidirectional model in which only one form of engagement propagates the other (i.e., early behavioral engagement creates growth in emotional engagement), our findings were consistent with a bi-directional, or transactional perspective in which each of the two forms of engagement functions as a facilitator of the other. Such a model would imply that not only does children’s behavioral participation in classrooms influence their emotions toward school, but also the emotions they feel toward school influences their behavior in this context. Thus, our findings imply that, as children progress through the primary grades: (a) those who like rather than avoid school (manifest emotional engagement) tend to develop more cooperative as opposed to resistant participatory behaviors, and (b) those who participate cooperatively in classrooms (manifest behavioral engagement) tend to develop more favorable sentiments toward school.

Although these findings help to clarify how multiple forms of engagement are related and may influence each other across the early school years, it should be noted that the strength of

these predictive relations—that is, the power of early liking-avoidance to predict changes in cooperative-resistant participation and vice versa—was modest. Most likely, factors other than those studied here are instrumental in the growth of each of the investigated forms of engagement, and may also affect the extent to which different aspects of engagement covary or influence each other over time. It will be important for investigators to further examine how different forms of engagement develop and affect each other during this period of schooling.

Third, evidence from this investigation increases our understanding of the extent to which continuity and change in two forms of school engagement during the primary grades predicts long-term growth in children's achievement. These findings reflect on the principal tenet of the school engagement hypothesis—that is, the premise that engagement is an important prerequisite for learning and achievement. What these data have to say about this premise is unique relative to what has been learned previously in several respects.

One of these advances was attained by gathering prospective longitudinal data on separate indicators of behavioral and emotional engagement, and examining temporal (first to third grade) *changes* in each form of engagement as predictors of long-term growth in achievement. The relation found between changes in early school engagement and children's scholastic growth was consistent with the underlying logic of the school engagement hypothesis. It can be inferred from the school engagement hypothesis that, if children become more rather than less engaged (relative to peers) as they progress through the primary grades, then they should progress rather than fall behind in achievement. Support for this interpretation of the school engagement hypothesis was obtained because our results showed that gains in both forms of engagement correlated positively with early and later achievement.

The present findings also extended what is known about this relation because we also investigated, as a supplementary aim, whether one of the two change-in-engagement variables had priority over the other as a predictor of scholastic growth. What was learned here, based on analyses that permitted an evaluation of the relative predictive contributions of the two forms of engagement, was that it was principally gains in cooperative participation that predicted children's scholastic growth. Even though emotional engagement was implicated here (and in other studies; see Ladd et al., 2000) as a determinant of children's achievement, it was the changes that occurred in behavioral engagement—that is, children's movement toward versus against the learning context across the primary grades—that emerged as the stronger predictor of their long-term achievement trajectories. To some extent, learning depends on children's willingness to perform classroom tasks and, in this study, children who *grew* in this type of participation—by increasingly embracing the student role, responding to teacher's requests, and cooperatively undertaking school-related tasks—were among those who showed the greatest long-term academic gains. On the contrary, those who moved toward more resistant styles of participation evidenced somewhat less-accelerated achievement trajectories. Behaviorally, children who progress toward resistant forms of disengagement can be seen as increasingly working at cross-purposes with school personnel and the intended functions of their learning environments. It seems likely that the primary objective of children who progressively resist teacher's requests, disparage classroom tasks, and reject instructional demands is to restrict or remove themselves from classroom learning challenges and opportunities. Perhaps not surprisingly, our findings suggest that this form of behavioral disengagement limits rather than enhances children's scholastic growth.

This finding is provocative because it raises questions about why some children become more or less cooperatively engaged in classrooms across the primary grades. The finding

that movement through the primary grades was, for some children, associated with gains in cooperative participation may be attributable to context-dependent or child-related effects, or both. On the one hand, schools invest in practices that are designed to promote various forms of behavioral engagement, including cooperative classroom participation. Cooperative participation, as measured here, reflected the extent to which students behaviorally embraced rather than resisted features of the classroom learning environment (e.g., adopt student role, productively involve themselves in learning activities). Indeed, encouraging children to embrace rather than resist the student role has been a longstanding objective in American schools (see Wentzel, 1991), particularly during the early grades (Blumenfeld, Hamilton, Bossert, Wessels, & Meece, 1983). Further, this objective has been advocated as a way of maximizing the extent to which children profit from schooling, and as a way of reducing educational inequities (e.g., Finn, 1993). Thus, perhaps it should not be surprising that, as children spend more time in school, some of them accommodate behaviorally to the demands of this setting.

On the other hand, however, not all children follow this pattern and, in fact, our findings suggest that some appear to become less cooperatively or more resistantly engaged as they progress through the primary grades. This kind of trend, may, in part, stem from child-related factors, including differences in how responsive or tractable children are to the demands of schooling and classrooms, how willing they are to participate in teacher-initiated tasks, and so on. Most likely, a complex array of factors underlie developmental changes in early school engagement (for a review, see Fredricks et al., 2004), including children's characteristics (i.e., behavioral dispositions, temperament), their family backgrounds and socialization histories (e.g., prior school experience; social and academic preparation for school; see Ladd, 1996; Ladd et al., 2006; Perry & Weinstein, 1998), features of the school context and learning environments (e.g., classroom climates, curriculum, teaching styles, relations with classmates and teachers; see Cook et al., 1999; Guthrie, McGough, Bennett, & Rice, 1996; Ladd et al., 1999; Skinner & Belmont, 1993), and the interplay among these factors (e.g., conjoint effects; Connell, 1990; Ladd, 2003). Because it is likely that the antecedents of early engagement trends are diverse, considerable investigative effort will be needed to explicate the factors responsible for increasing versus decreasing behavioral engagement during the early school years.

Insight into early school engagement's contributions to children's achievement was also advanced by examining the extent to which *continuity* in two forms of school engagement during the primary grades predicted long-term growth in children's achievement. Here again, the links that emerged between continuity in early school engagement and children's scholastic growth were congruent with the school engagement hypothesis. The logic of the school engagement hypothesis suggests that, if some children begin the primary years with higher or lower levels of engagement (behavioral or emotional) and *maintain* their relative positions as they progress through the grades, then those whose engagement patterns remain high rather than low will evidence greater academic progress. Consistent with this expectation, our results suggested that continuity in both of the investigated forms of early school engagement were predictive of children's achievement trajectories. To be specific, the results of the variable-oriented analyses indicated that the predictive contributions of these two forms of engagement were additive. This finding implies that when concurrently operative, the investigated forms of engagement act as separate contributors (complements) to scholastic growth. The fact that the data conformed to an additive model is significant because, theoretically, these findings strengthen the view that continuity in emotional engagement contributes to children's achievement, and does so in a way that is partially independent of continuity in behavioral engagement.

This discovery was further corroborated by findings from the person-oriented analyses in which we: (a) examined the conjoint distributions of children's scores on the two forms of early school engagement, (b) identified children that fit distinct but *stable* engagement profiles during the primary grades, and (c) examined the scholastic trajectories of children who fit these engagement *orientations* from first through eighth grade. Results of these analyses supported the hypothesis that continuity in behavioral and emotional engagement is a pivotal determinant of children's scholastic growth. As predicted, the scholastic growth trajectories of Cooperative Approachers (children who were consistently high on both forms of engagement) were significantly more accelerated from first to eighth grade than those of Resistant Avoiders (children who were consistently low on both forms of engagement). Participants with "mixed" engagement profiles (i.e., Cooperative Resisters)—followed trajectories that fell between these extremes and culminated in significantly lower levels of achievement (relative to that of Cooperative Approachers in eighth grade).

Collectively, these results implied that, when children had relatively enduring engagement patterns, those with styles that were characterized by higher rather than lower levels of behavioral *and* emotional engagement tended to make greater long-term academic gains. One implication of these findings is that long-term growth in achievement is anteceded by early continuity in more than one form of school engagement. It may be the case that, in addition to embracing the student role, children's long-term achievement depends on the degree to which they develop a mindset that favors rather than rejects school, and a behavioral stance that mirrors this orientation (a propensity to approach rather than avoid school). To be specific, our data corroborate the tenet that "bonds" develop between persons and settings, and that the formation of a consistent, positive "attachment" to school enhances children's learning and achievement (Finn, 1993; Ladd et al., 2000).

That continuity in cooperative-resistant participation was found to be a stronger predictor of scholastic growth than was continuity in school liking-avoidance during the primary grades mirrored the findings that were obtained for changes in these two forms of school engagement. Taken together, these findings suggest that children *learn* more across many years of schooling if they: (a) increasingly develop cooperative patterns of participation as they move through the primary grades, or (b) begin school with cooperative patterns of participation and maintain this stance as they progress through the primary grades. These inferences are consistent with Wentzel's (1991) view of the concept of social responsibility, and its hypothesized effects on children's educational progress. Moreover, it agrees with Finn's (1993) assertion that children's willingness to acquiesce to classroom demands facilitates achievement.

Finally, the findings also contribute to extant knowledge by clarifying the extent to which the predictive contributions of the investigated forms of engagement were distinct from those attributable to other known predictors of achievement. As anticipated, the investigated entry variables correlated in expected directions with children's achievement. In particular, family *SEI* scores, and the indices of children's ethnicity and cognitive maturity were among the strongest correlates of initial achievement scores. However, when the entry variables were examined in conjunction with early engagement as predictors of *changes* in achievement, none made a contribution that was significant, or distinct from that attributable to the investigated forms of early school engagement. Thus, in large part, it would appear that the predictive information (for long-term scholastic growth) that was contained within the majority of the entry variables was redundant with that attributable to individual differences in the investigated forms of school engagement.

In sum, several key premises that were consistent with the logic of the school engagement hypothesis were supported by the results of this investigation. First, the findings

corroborated the tenet that both change and continuity in early school engagement are associated with children's long-term scholastic growth. *Changes* in both forms of engagement during the primary grades, but particularly increases or decreases relative to peers in children's cooperative-resistant classroom participation, anteceded differential growth in achievement. These results imply that, compared to children who cooperate with the demands of school, those who develop increasingly resistant forms of behavioral engagement during the primary grades are at risk for moderately altered achievement trajectories, particularly lowered or delayed academic progress. Likewise, *continuity* in school engagement during the primary grades preceded disparities in scholastic growth. Of the children who had relatively enduring engagement patterns, those who exhibited a combination of higher behavioral and emotional engagement across the primary grades made greater academic progress than those who displayed lower levels of these two forms of engagement. Here again, however, it was children's behavioral engagement (i.e., the level of cooperative participation that they maintained relative to peers) that best predicted their long-term scholastic growth.

Finally, although the findings of this investigation do not establish that children's long-term scholastic growth is *caused* by their early school engagement, its results are nonetheless consistent with this inference. If we assume that this inference holds some truth, then it may be worthwhile to entertain the possibility that this study's findings have important implications for educational practice. The fact that both forms of school engagement predicted children's scholastic growth, and did so above and beyond the contributions of all but one of the "known" correlates of achievement, offers some justification for emphasizing these forms of engagement in early educational programs and interventions. Moreover, each of the investigated forms of early school engagement—that is, the extent to which children cooperate with versus resist the student role, and their feelings of liking versus avoidance toward school—appear to be more malleable characteristics (i.e., attributes likely to be responsive to educational interventions) than their family's socioeconomic status, their ethnicity, or their cognitive maturity. One could more easily imagine designing interventions that would improve children's feelings toward school or their cooperative participation in classrooms than programs aimed at changing their ethnicity, intelligence, or socioeconomic backgrounds.

Acknowledgments

This investigation was conducted as part of the Pathways Project, a larger longitudinal investigation of children's social/psychological/scholastic adjustment in school contexts that is supported by the National Institutes of Health (1 RO1MH-49223, 2-RO1MH-49223, R01HD-045906 to Gary W. Ladd). While working on this study, Dr. Dinella participated in the Postdoctoral Education Research Training Program (PERT) and was supported by a fellowship from the American Psychological Association and the Institute for Education Sciences. Special appreciation is expressed to all the children and parents who made this study possible, and to members of the Pathways Project for assistance with data collection.

References

- Alexander K, Entwisle DR, Dauber SL. First grade classroom behavior: Its short- and long-term consequences for school performance. *Child Development*. 1993; 64:801–814. [PubMed: 8339696]
- Birch SH, Ladd GW. The teacher-child relationship and children's early school adjustment. *Journal of School Psychology*. 1997; 35:61–79.
- Blumenfeld, PC.; Hamilton, VL.; Bossert, ST.; Wessels, K.; Meece, J. Teacher talk and student thought: Socialization into the student role. In: Levine, JM.; Wang, MC., editors. *Teacher and student perceptions: Implications for learning*. Hillsdale, NJ: Lawrence Erlbaum; 1983. p. 143-192.
- Boekarts, M.; Pintrich, PR.; Zeidner, M. *Handbook of self-regulation: Theory, research, and applications*. San Diego, CA: Academic Press; 2000.

- Bradley RH, Corwyn RF. Socioeconomic status and child development. *Annual Review of Psychology*. 2002; 53:371–399.
- Buhs ES, Ladd GW. Peer rejection in kindergarten as an antecedent of young children's school adjustment: An examination of mediating processes. *Developmental Psychology*. 2001; 37:550–560. [PubMed: 11444490]
- Buhs ES, Ladd GW, Herald S. Peer exclusion and victimization: Processes that mediate the relation between peer group rejection and children's classroom engagement and achievement? *Journal of Educational Psychology*. 2006; 98:1–13.
- Connell, JP. Context, self, and action: A motivational analysis of self-system processes across the life span. In: Cicchetti, D., editor. *The self in transition: Infancy to childhood*. Chicago: University of Chicago Press; 1990. p. 61-97.
- Connell JP, Spencer MB, Aber JL. Educational risk and resilience in African-American youth: Context, self, action, and outcomes in school. *Child Development*. 1994; 65:493–506. [PubMed: 8013236]
- Connell, JP.; Wellborn, JG. Competence, autonomy, and relatedness: A motivational analysis of self-system processes. In: Gunnar, MR.; Sroufe, LA., et al., editors. *Self processes and development. The Minnesota symposia on child psychology*. Vol. 23. Hillsdale, NJ: Lawrence Erlbaum; 1991. p. 43-77.
- Cook TD, Habib FN, Phillips M, Settersten RA, Shangle S, Degirmencioglu SR. Comer's School Development Program in Prince George's County, Maryland: A theory-based evaluation. *American Educational Research Journal*. 1999; 36:543–597.
- Cooper DH, Farran DC. Behavioral risk factors in kindergarten. *Early Childhood Research Quarterly*. 1988; 3:1–19.
- Cryan JR, Sheehan R, Weichel J, Brandy-Hedden IG. Success outcomes of full-day kindergarten: More positive behavior and increased achievement in the years after. *Early Childhood Research Quarterly*. 1992; 7:187–203.
- Curran PJ, Bauer DJ, Willoughby MT. Testing main effects and interactions in latent curve analysis. *Psychological Methods*. 2004; 9:220–237. [PubMed: 15137890]
- Dunn, LM.; Dunn, LM. *Peabody Picture Vocabulary Test-Revised*. Circle Pines, MN: American Guidance Service; 1981.
- Eccles JS, Midgley C, Wigfield A, Buchanan CM, Reuman D, Flanagan C, et al. Development during adolescence: The impact of stage-environment fit on young adolescent's experience in school and families. *American Psychologist*. 1993; 48:90–101. [PubMed: 8442578]
- Eccles, JS.; Midgley, C. Stage/environment fit: Developmentally appropriate classrooms for early adolescents. In: Ames, R.; Ames, C., editors. *Research on motivation in education*. Vol. 3. New York: Academic Press; 1989. p. 139-181.
- Entwisle DR, Astone NM. Some practical guidelines for measuring youth's race/ethnicity and sociometric status. *Child Development*. 1994; 65:1521–1540.
- Finn JD. Withdrawing from school. *Review of Educational Research*. 1989; 59:117–142.
- Finn, JD. *School engagement and students at risk*. Washington D. C: Department of Education, National Center for Educational Statistics; 1993. (ERIC Document Reproduction Service No. ED 362 322)
- Fredricks JA, Blumenfeld PC, Paris AH. School engagement: Potential of the concept, state of the evidence. *Review of Educational Research*. 2004; 74:59–109.
- Ford, ME. The concept of competence: Themes and variations. In: Marlowe, HA., Jr; Weinberg, RB., editors. *Competence development*. New York: Academic Press; 1985. p. 3-49.
- Guthrie, JT.; McGough, K.; Bennett, L.; Rice, ME. Concept-oriented reading instruction: An integrated curriculum to develop motivation and strategies for reading. In: Baker, L.; Afflerbach, P.; Reinking, D., editors. *Developing engaged readers in school and home communities*. Mahwah, NJ: Lawrence Erlbaum; 1996. p. 165-190.
- Helme S, Clarke D. Identifying cognitive engagement in the mathematics classroom. *Mathematics Education Research Journal*. 2001; 13:133–153.

- Izzo CV, Weissberg RP, Kasprow WJ, Fendrich M. A longitudinal assessment of teacher perceptions of parent involvement in children's education and school performance. *American Journal of Community Psychology*. 1999; 27:817–839. [PubMed: 10723536]
- Ladd, GW. Children's social competence and social supports: Precursors of early school adjustment?. In: Schneider, B.; Attili, G.; Nadel, J.; Weissberg, R., editors. *Social competence in developmental perspective*. Amsterdam: Kluwer Academic Publishers; 1989. p. 277-292.
- Ladd, GW. Shifting ecologies during the 5–7 year period: Predicting children's adjustment to grade school. In: Sameroff, A.; Haith, M., editors. *The five to seven year shift*. Chicago, IL: University of Chicago Press; 1996. p. 363-386.
- Ladd, GW. Probing the adaptive significance of children's behavior and relationships in the school context: A child by environment perspective. In: Kail, R., editor. *Advances in child behavior and development*. New York: Wiley; 2003. p. 43-104.p. 31
- Ladd, GW. Children's peer relationships and social competence: A century of progress. New Haven: CT: Yale University Press; 2005.
- Ladd GW, Birch SH, Buhs ES. Children's social and scholastic lives in kindergarten: Related spheres of influence? *Child Development*. 1999; 70:1373–1400. [PubMed: 10621962]
- Ladd GW, Buhs ES, Seid M. Children's initial sentiments about kindergarten: Is school liking an antecedent of early classroom participation and achievement? *Merrill-Palmer Quarterly*. 2000; 46:255–279.
- Ladd GW, Burgess KB. Do relational risks and protective factors moderate the linkages between childhood aggression and early psychological and school adjustment? *Child Development*. 2001; 72:1579–1601. [PubMed: 11699688]
- Ladd GW, Herald SL, Kochel KP. School readiness: Are there social prerequisites? *Early Education and Development*. 2006; 17:115–150.
- Lee O, Anderson CW. Task engagement and conceptual change in middle school science classrooms. *American Educational Research Journal*. 1993; 30:585–610.
- Luster T, McAdoo H. Family and child influences on educational attainment: A secondary analysis of the High/Scope Perry preschool data. *Developmental Psychology*. 1996; 32:26–39.
- McClelland M, Morrison F. The emergence of learning-related social skills in preschool children. *Early Childhood Research Quarterly*. 2003; 18:206–224.
- McClelland M, Morrison F, Holmes D. Children at risk for early academic problems: The role of learning-related social skills. *Early Childhood Research Quarterly*. 2000; 15:307–329.
- McLloyd VC. Socioeconomic disadvantage and child development. *American Psychologist*. 1998; 53:185–204. [PubMed: 9491747]
- Meece J, Blumenfeld PC, Hoyle RH. Students' goal orientations and cognitive engagement in classroom activities. *Journal of Educational Psychology*. 1988; 80:514–523.
- Muthén, LK.; Muthén, BO. *Mplus user's guide*. 3. Los Angeles, CA: Muthén & Muthén; 1998–2004.
- Newmann, F.; Wehlage, GG.; Lamborn, SD. The significance and sources of student engagement. In: Newmann, F., editor. *Student engagement and achievement in American secondary schools*. New York: Teachers College Press; 1992. p. 11-39.
- Nystrand M, Gamoran A. Instructional discourse, student engagement, and literature achievement. *Research in the Teaching of English*. 1991; 25:261–290.
- Perry KE, Weinstein RS. The social context of early schooling and children's school adjustment. *Educational Psychologist*. 1998; 33:177–194.
- Pungello EP, Kupersmidt JB, Burchinal MR, Patterson CJ. Environmental risk factors and children's achievement from middle childhood to early adolescence. *Developmental Psychology*. 1996; 32:755–767.
- Ramey SL, Lanzi RG, Phillips MM, Ramey CT. Perspectives of former head start children and their parents on school and the transition to school. *The Elementary School Journal*. 1998; 98:311–327.
- Reynolds AJ, Bezruczko N. Early schooling of children at risk through fourth grade. *Merrill- Palmer Quarterly*. 1993; 39:457–480.
- Rubin, DB. *Multiple imputation for nonresponse in surveys*. New York: Wiley; 1987.

- Schafer, JL. NORM: Multiple imputation of incomplete multivariate data under a normal model, version 2. Software for Windows 95/98/NT. 1999. available from <http://www.stat.psu.edu/~jls/misoftwa.html>
- Singer, Willett. Applied longitudinal data analysis: Modeling change and event occurrence. London: Oxford University Press; 2003.
- Skinner EA, Belmont MJ. Motivation in the classroom: Reciprocal effect of teacher behavior and student engagement across the school year. *Journal of Educational Psychology*. 1993; 85:571–581.
- Skinner EA, Wellborn JG, Connell JP. What it takes to do well in school and whether I've got it: The role of perceived control in children's engagement and school achievement. *Journal of Educational Psychology*. 1990; 82:22–32.
- Spivack, G.; Swift, M. Devereux elementary school behavior rating scale. Devon, PA: Devereux Foundation; 1967.
- Stevenson HW, Chen C, Uttal DH. Beliefs and achievement: A study of Black, White, and Hispanic children. *Child Development*. 1990; 61:508–523. [PubMed: 2344786]
- Stipek, D. Good instruction is motivating. In: Wigfield, A.; Eccles, J., editors. Development of achievement motivation. San Diego, CA: Academic Press; 2002. p. 310-334.
- Taylor, AR.; Machida, S. Student-teacher relationships of Head Start children: Effects of child entry attributes and relationships to preschool adjustment. In: Birch, SH., editor. Children's relationships with teachers; Symposium at the annual meeting of the American Education Research Association; New York, NY. 1996 Apr.
- Voelkl KE. Identification with school. *American Journal of Education*. 1997; 105:204–319.
- Wehlage, GG.; Rutter, RA.; Smith, GA.; Lesko, N.; Fernandez, RR. Reducing the risk: Schools as communities of support. Philadelphia: Farmer Press; 1989.
- Wentzel KR. Social competence at school: Relation between social responsibility and academic achievement. *Review of Educational Research*. 1991; 61:1–24.
- Wilkinson, GS. The Wide Range Achievement Test. Wilmington DE: Jastak Associates; 1993.

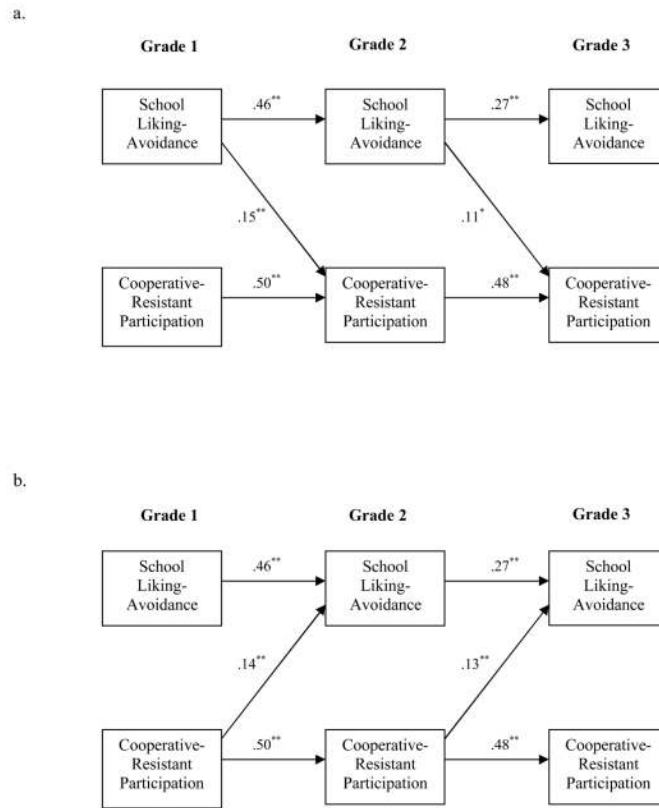


Figure 1. Path diagram and estimated path weights for: (a) a model in which changes in school liking-avoidance (from Grade 1 to Grade 3) are predicted from Grade 1 cooperative-resistant participation scores, and (b) a model in which changes in cooperative-resistant participation (from Grade 1 to Grade 3) are predicted from Grade 1 school liking-avoidance scores.

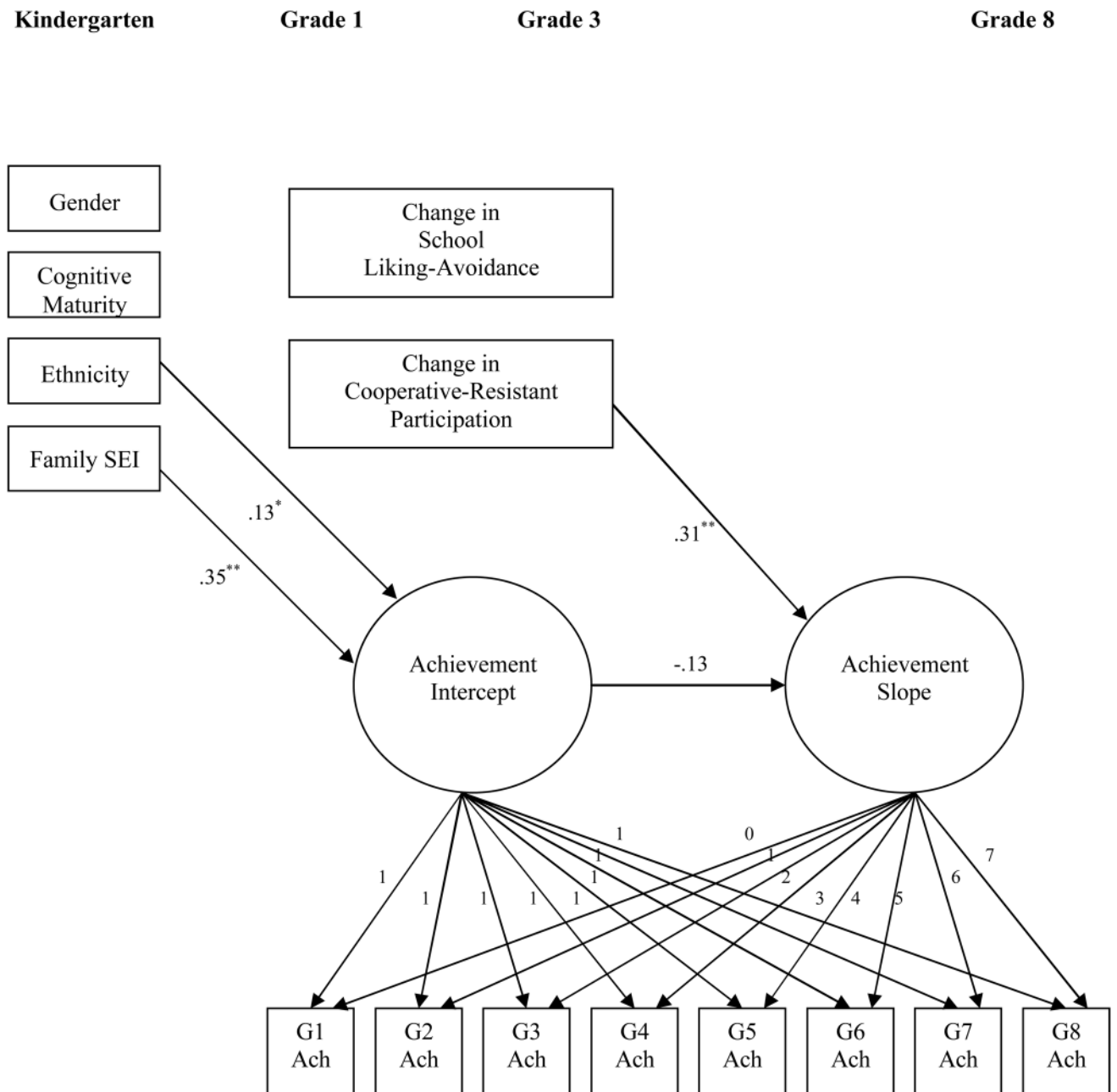


Figure 2. Path diagram and estimated path weights for model in which changes in achievement are predicted from entry factors and changes (from Grade 1 to Grade 3) in school liking-avoidance and cooperative-resistant participation scores.

Achievement Trajectories for Participants who Evidenced Substantial Increments versus Decrements Relative to Peers in their Cooperative-Resistant Participation Scores from First to Third grade (Entry Variables Controlled)

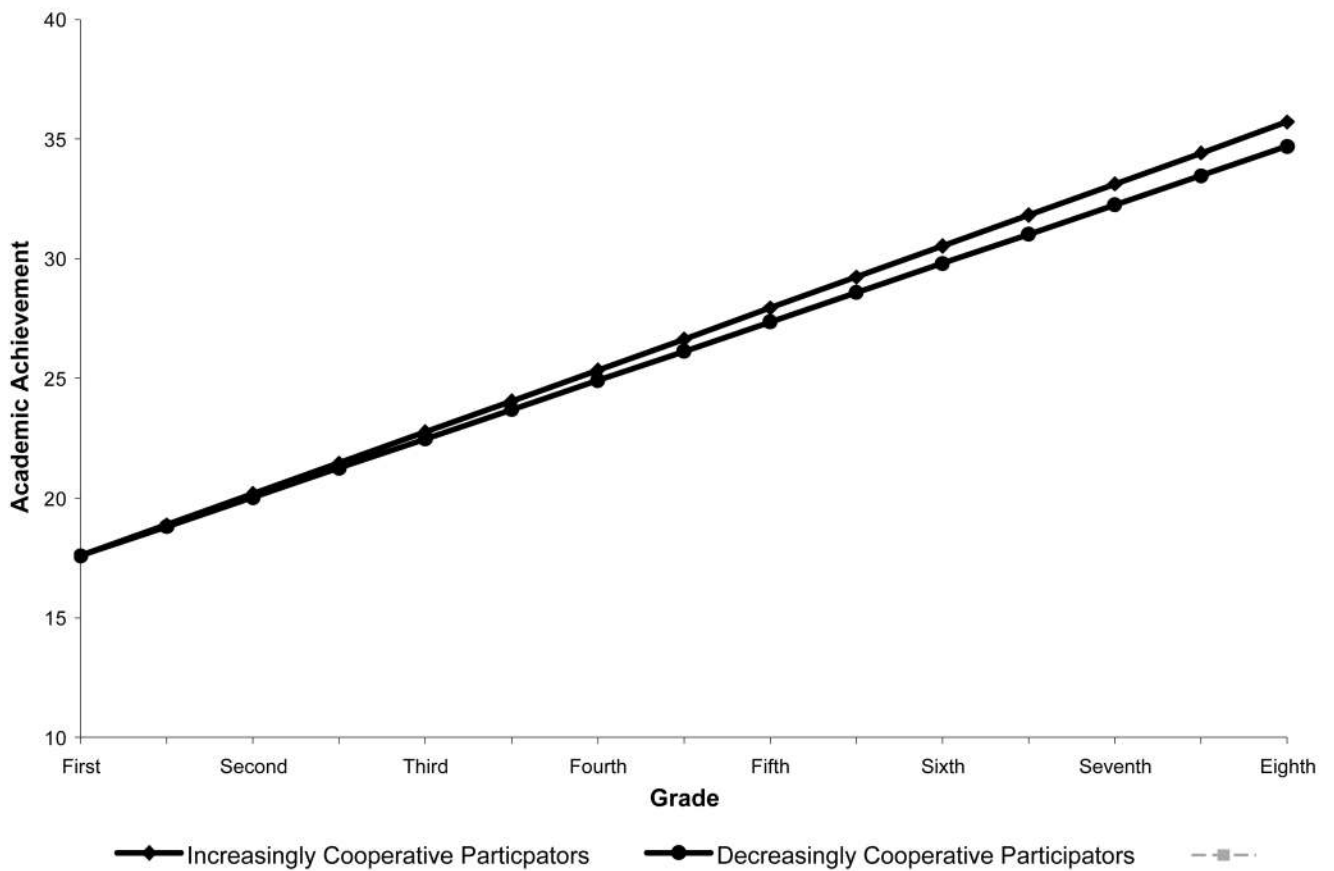


Figure 3. Achievement trajectories for participants belonging to each of two change-in-cooperative participation groups (entry variables controlled).

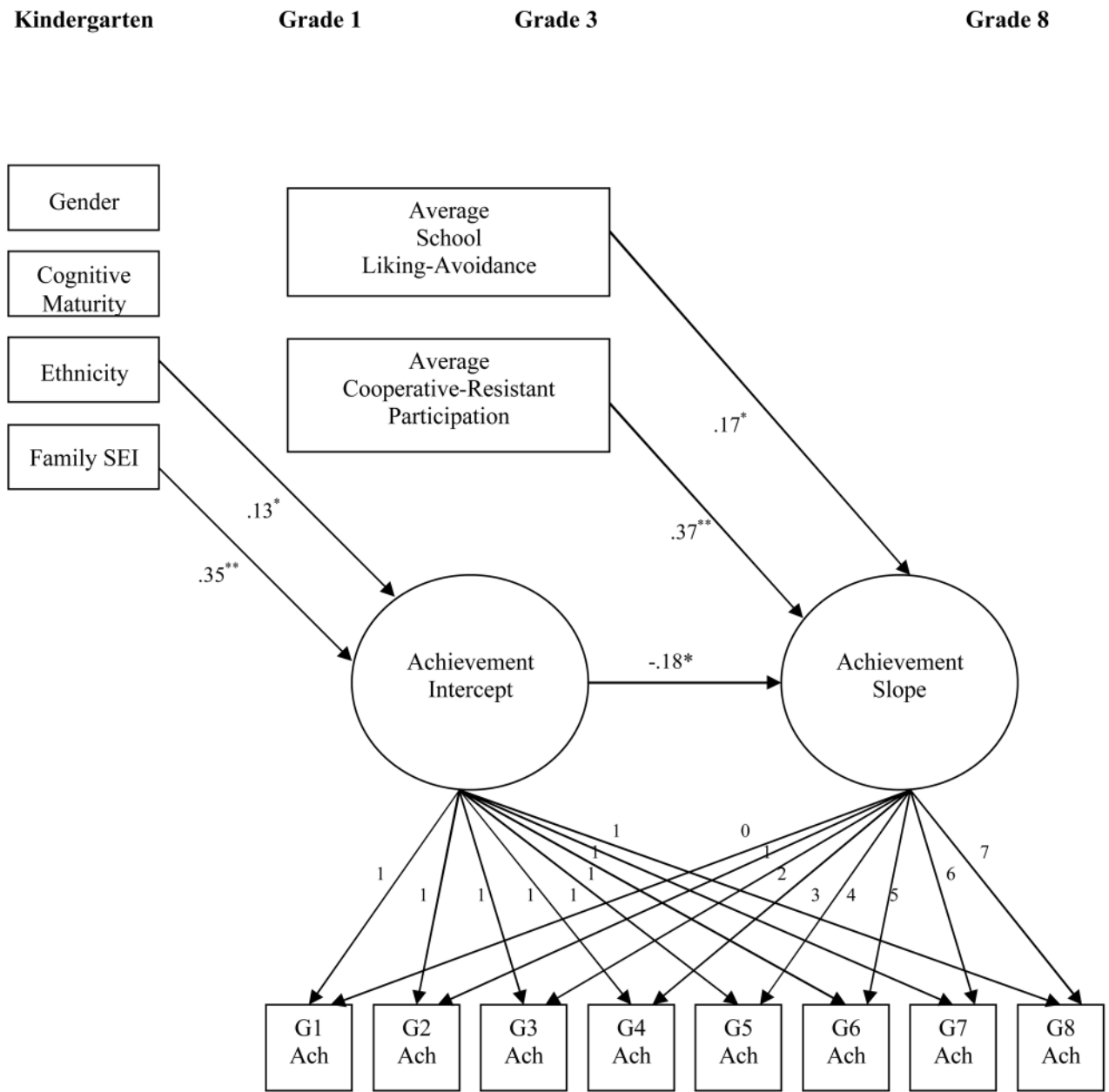


Figure 4. Path diagram and estimated path weights for model in which changes in achievement are predicted from entry factors and averaged (across Grades 1 – 3) school liking-avoidance scores and cooperative-resistant participation scores.

Achievement Trajectories for Participants Belonging to Each of Three Stable Engagement Orientation Groups (Entry Variables Controlled)

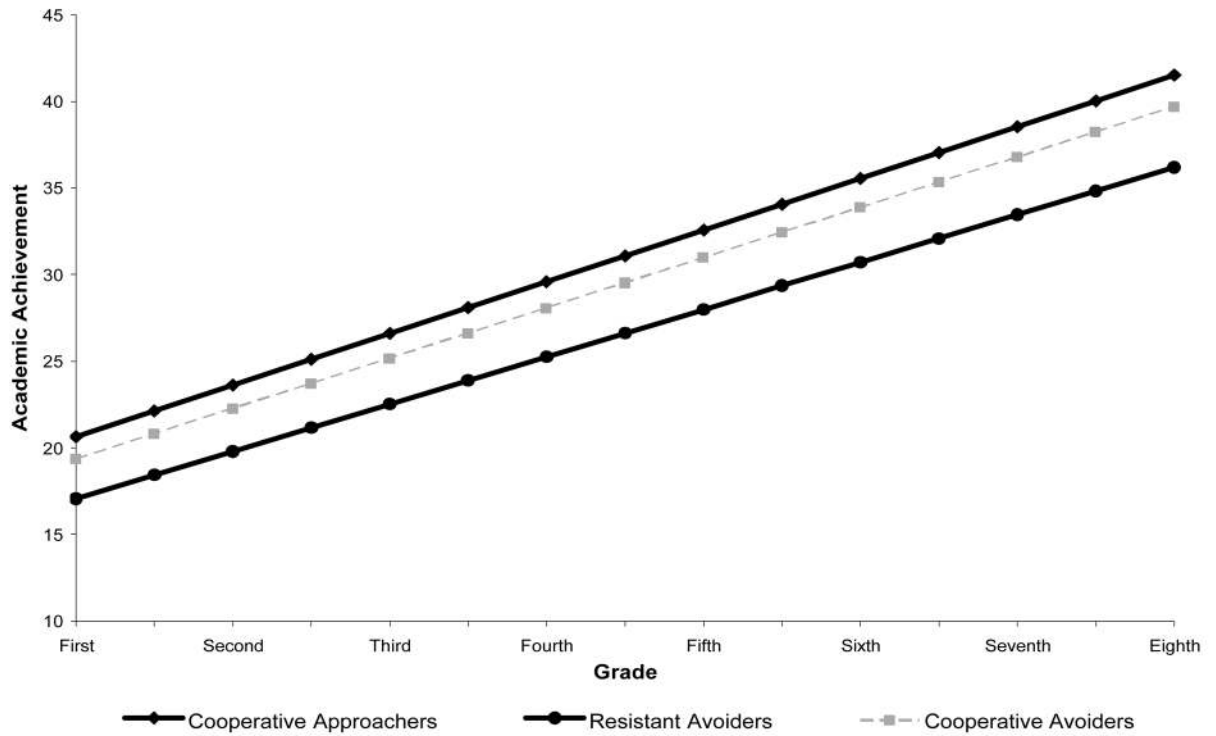


Figure 5. Achievement trajectories for participants belonging to each of three stable engagement orientation groups (entry variables controlled).

Table 1

Means and Standard Deviations for the Study Measures

Study Variables	Boys		Girls		Sample	
	Mean	SD	Mean	SD	Mean	SD
Cognitive Maturity	5.54	1.74	5.55	1.80	5.56	1.74
Family SEI	45.53	26.77	51.47	26.09	49.26	25.87
School Liking-Avoidance—Primary Grades						
First Grade	2.29	.28	2.25	.27	2.27	.27
Second Grade	2.26	.29	2.24	.29	2.25	.29
Third Grade	2.28	.27	2.24	.28	2.26	.28
Cooperative/Resistant Participation—Primary Grades						
First Grade	2.55	.40	2.74	.33	2.65	.37
Second Grade	2.60	.41	2.76	.30	2.69	.37
Third Grade	2.55	.44	2.78	.30	2.67	.39
Academic Achievement Composite						
First Grade	20.43	4.08	21.69	3.44	21.23	3.80
Second Grade	25.23	4.11	26.00	3.15	25.81	3.68
Third Grade	29.31	4.28	29.89	3.46	29.77	3.89
Fourth Grade	32.00	4.13	32.93	3.86	32.67	3.95
Fifth Grade	34.99	4.64	35.88	4.14	35.64	4.27
Sixth Grade	36.42	5.04	37.80	4.27	37.18	4.61
Seventh Grade	39.14	5.40	40.07	4.84	39.70	5.02
Eighth Grade	40.75	5.38	41.19	4.59	41.14	4.99

Note. The values reported for the academic achievement composites are for the combined (averaged) WRAT reading and math subtest scores.

Table 2

Correlations among the Study Variables

	G	E	SEI	CM	LA			CR			Achievement						
					G1	G2	G3	G1	G2	G3	G1	G2	G3	G8			
Gender (G)																	
Ethnicity (E)	.18																
Family SEI (SEI)	.11	.35															
Cog. Maturity (CM)	.01	.30	.45														
Liking-Avoidance (LA)																	
Grade 1	.06	.05	.14	.06													
Grade 2	.05	.05	.16	.07	.52												
Grade 3	.07	.13	.18	.08	.48	.51											
Cooperative-Resistant (CR)																	
Grade 1	.22	.26	.28	.25	.44	.28	.29										
Grade 2	.24	.19	.22	.16	.28	.50	.35										
Grade 3	.30	.29	.31	.23	.29	.39	.50										
Achievement																	
Grade 1	.15	.16	.39	.30	.32	.32	.23	.37	.33	.34	.80	.76	.67				
Grade 2	.10	.14	.33	.34	.31	.35	.24	.28	.33	.34	.81	.70	.72				
Grade 3	.04	.12	.32	.31	.32	.35	.25	.29	.32	.33	.43	.38	.43				
Grade 8	.05	.16	.36	.31	.35	.37	.30	.39	.38	.43							

Note: All correlations greater or lesser than .15 are significant at $p < .05$.

Table 3

Stability of the Early School Engagement Measures: Correlations across Grades

	Sample	Males	Females
School Liking-Avoidance			
Grade 1-2	.52	.58	.46
Grade 2-3	.50	.59	.43
Grade 1-3	.48	.41	.55
Cooperative-Resistive Participation			
Grade 1-2	.50	.47	.48
Grade 2-3	.61	.58	.63
Grade 1-3	.52	.49	.51

** All reported correlations were significant at $p < .01$

Table 4

Analysis of the Achievement Trajectories for Change-in-Cooperative Participation Groups: Results for Unconditional and Conditional Growth Models

Unconditional Model	Coefficient	SE	t
Model for initial status			
Mean initial status	23.50	.20	117.27***
Model for linear change			
Mean change rate	2.74	.03	79.87***
Level 1 Variances			
Initial status	10.51	.93	11.36***
Change rate	.15	.02	6.65***
Conditional Growth Model	Coefficient	SE	t
Model for initial status			
Increasingly Cooperative Participants	17.58	1.59	11.03***
Difference for Decreasingly Cooperative Participants	-.53	.45	-1.20
Model for linear change			
Increasingly Cooperative Participants	2.59	.27	9.76***
Difference for Decreasingly Cooperative Participants	-.15	.07	-1.98*

Note:

* $p < .05$;

** $p < .01$;

*** $p < .001$

Table 5

Analysis of the Achievement Trajectories for Children with Differing Early Engagement Orientations: Results for Conditional Growth Models

Conditional Growth Model	Coefficient	SE	<i>t</i>
Model for initial status			
Cooperative Approachers	20.65	1.24	16.66***
Difference for Cooperative Avoiders	-1.27	.84	-1.51
Difference for Resistant Avoiders	-3.58	.58	-6.14***
Model for linear change			
Cooperative Approachers	2.98	.22	13.46***
Difference for Cooperative Avoiders	-.08	.17	-.47
Difference for Resistant Avoiders	-.25	.12	-2.17**

Note:

* $p < .05$.

** $p < .01$.

*** $p < .001$