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Academic Functioning and Mental Health in Adolescence: Patterns, Progressions, and Routes From Childhood

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The current study examines patterns of academic functioning and mental health in 184 middle school children and the relation of such patterns to their prior and subsequent functioning. Data were collected from children during their second, third, fourth, eighth, and ninth grade school years. Cluster analyses were used to delineate patterns of academic functioning and mental health during eighth grade. The authors examined the relation of these patterns to academic functioning and mental health 1 year later the transition to high school, and then examined the long-term developmental roots of the eighth grade patterns using data collected during elementary school years. Results indicated variegated patterns of academic and emotional functioning at eighth grade and stability in these patterns across the high school transition. Some long-term continuity was found among children showing uniformly positive or negative functioning at eighth grade. Studying child functioning across multiple domains and time periods is discussed.

Understanding different developmental pathways through childhood and adolescence has become an increasingly prominent topic among educationalists, developmentalists, and child clinicians (Cicchetti & Toth, 1996; Eccles & Midgley, 1989; Entwistle & Alexander, 1993; Sameroff & Chandler, 1975).

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From a developmental psychopathology perspective, investigations of life paths require a focus on patterns of functioning across multiple domains (e.g., school, peers, mental health), on continuity and change in patterns of adjustment over time, and on an integration of findings from both normative and atypical populations of children (Cicchetti, 1984; Sroufe & Rutter, 1984).

In the current article, using data from a 10-year longitudinal study of a normative sample of children who were followed from elementary to high school, we address the following three questions: (a) What are the discernible patterns of academic and emotional functioning among children in middle school? (b) How are such patterns related to children's subsequent adjustment across the high school transition, a time known for increased academic and psychological difficulties? and (c) Are the developmental routes leading to these different patterns of academic and emotional functioning in middle school discernible from children's prior academic functioning and general self-esteem during the elementary school years?¹

Beginnings in the Middle School Years

We begin this report in the later years of a 10-year longitudinal study by focusing on a cohort of middle school children whom we had followed over time. We begin in the middle school years because both the fruits of adolescents' earlier adaptive strivings as well as the seeds of their future success or maladaptation in the academic and emotional domains become particularly prominent during this period.

Studies have documented, for example, that a substantial number of children show declines in their academic motivation and achievement, and increases in behavioral problems and emotional distress during the middle school years (see Eccles, Lord, & Roeser, 1996, for discussion). These negative trends are particularly apparent among those youth who experienced academic or behavioral problems earlier in elementary school years (e.g., Cairns, Cairns, & Neckerman, 1989; Dishion, Patterson, Stoolmiller, & Skinner, 1991; Parker & Asher, 1987), and among those children who have trouble adjusting to the many concurrent biological, psychological, and social changes of early adolescence (Eccles, Midgley, et al., 1993; Simmons & Blyth, 1987). Difficulties in the middle school period can foreshadow subsequent problems such as school withdrawal, substance abuse, delinquent activity, and teenage pregnancy (Dryfoos, 1990; Eccles, Lord, Roeser, Barber, & Josefowicz-Hernandez, 1997; Roderick, 1993).

At the same time, research has revealed that for many youth, the middle school years are marked by continuing patterns of academic success and

social-emotional well-being (Carnegie Council on Adolescent Development, 1989, 1995). Many youth see this period as a time of challenge with many opportunities for growth. The presence of positive academic and social-emotional adjustment during these years often foreshadows subsequent educational attainments and personal well-being (Eccles et al., 1997).

Linking the Study of Academic and Emotional Functioning

Though research on adolescence has increased considerably in the past two decades, relatively few studies have examined children's academic functioning and mental health simultaneously during the middle school years. Such research is necessary to address the functioning of the whole child given that these two domains of functioning, the academic and the emotional, are somewhat interdependent (Roeser, Eccles, & Strobel, 1998). For instance, positive school motivation, achievement, and mental health often go together, though not always; and academic problems often co-occur with social and emotional problems, though sometimes not (Luthar, 1995; Roeser, Eccles, & Sameroff, 1998; Wentzel & Asher, 1995).

Some research has begun to examine children's functioning across different domains. Masten and her colleagues (1995), for instance, explored the cross-time relations of children's academic, social, and behavioral functioning from childhood (ages 8 to 12) into adolescence (ages 17 to 23) using causal modeling techniques. During childhood, these authors found moderate to strong positive relations between children's academic achievement, peer social success, and conduct in school and at home. In adolescence, they found that peer social success in self-selected peer groups was "virtually unrelated" to academic competence or conduct, though conduct difficulties were found to be "increasingly incompatible with academic attainment in adolescence" (p. 1,654). The following question was asked: Why would the patterns of relations between these indicators of competence change over time in this way? The authors speculated that during later adolescence, youth may self-select themselves into affiliations with peers of similar values. In particular, antisocial youth will affiliate with (and be accepted by) similarly alienated peers who do poorly in school, whereas school-engaged youth will affiliate with (and be accepted by) peers who do well in school. In effect, these two patterns would result in a small correlation of social acceptance and academic competence at the sample level because some adolescents would be accepted by peers and would be doing poorly in school, whereas others would be accepted by peers and would be doing well in school. Such hypotheses were not examined empirically in this particular study, however, because the authors concentrated on variable-based relations and analyses

(e.g., causal modeling) and not on person-centered patterns of functioning and analyses (e.g., cluster analysis). The use of person-centered techniques such as cluster analysis is necessary to delineate subgroups of individuals who show similar patterns of adjustment across a series of measures, patterns that might be masked by aggregate, sample level variable-centered analyses. Whereas correlational analyses give the average trend of relation between indicators of functioning at the full sample level, cluster analyses delineate specific subgroups of individuals who show unique patterns of functioning across a series of indicators (Magnusson & Bergmann, 1988).

In another recent study, Luthar (1995) examined indicators of behavioral competence (e.g., achievement, peer reputation) and emotional adjustment (e.g., internalized and externalized distress) in a sample of poor, inner city, ninth grade children. Luthar (1995) found what initially appeared to be a set of counterintuitive relations among some of the behavioral and emotional indicators in her study. For instance, she found that a peer reputation for friendliness was negatively associated with academic achievement and classroom conduct, and that anxiety among females was positively associated with academic performance over time. Though plausible theoretical explanations exist for such associations, and these were offered in the article, the larger conceptual point to be gained from Luthar's study for our purposes here is that attention must be given to the patterning of indicators of academic, emotional, and behavioral functioning within rather than across individuals in research on competence and maladjustment during adolescence. For instance, was it the case that a particular subgroup of children, those who were very popular and did poorly in school, accounted for what appeared as a counterintuitive negative correlation between peer competence and academic achievement? Again, cluster analyses are needed to clearly address such hypotheses empirically.

In our own research, we recently explored the relation between early adolescents' academic functioning and mental health in a large, primarily African-American sample from the East Coast. We were specifically interested in adolescents' academic motivation, achievement, and mental health (Roeser et al., 1998). Both longitudinal, correlational relations among these indicators across the full sample (e.g., variable-centered analyses), as well as cluster-analytic based patterns of functioning within subgroups of individuals (person-centered analyses), were examined. The variable-centered analyses revealed moderate, positive correlations among adolescents' academic competence beliefs, academic values, school grades, and mental health (absence of symptoms of internalized and externalized distress) at the beginning of seventh and the end of eighth grade. Correlations among these indica-

tors ranged from .17 to .45. More interesting, person-centered cluster techniques revealed four distinct patterns of academic functioning and mental health among adolescents during the middle school years. These patterns included a well-adjusted group that showed positive functioning in both domains (i.e., school and mental health), a poor motivation group that showed low valuing of school but positive mental health, a poor mental health group that showed symptoms of distress but also reported positive school engagement, and a multiple problems group that showed relatively poorer functioning in both domains. These patterns were reliably different from one another on a series of other adjustment indicators (self-esteem, parent ratings of school adjustment, academic failure) and were relatively stable over a 2-year period. Thus, the results of the person-centered analyses clarified the modest level of correlation we found among the adjustment measures: for some adolescents, school functioning was positively associated with their mental health; for others, these two aspects of functioning were negatively correlated or unrelated.

Patterns of Academic and Emotional Functioning

In the current study, we again look at children's academic motivation and mental health as a way of describing different patterns of adjustment during adolescence—this time in a sample of primarily White children from the Midwest. We believe that a focus on underlying motivational and emotional processes is one useful strategy, among others, for understanding different manifest patterns of behavior during the adolescent period (see Donovan & Jessor, 1985, for an alternative). Therefore, using self-report indicators of academic motivation and mental health, we delineate groups of children who show different patterns of academic and emotional functioning. We then compare these subgroups on a series of behavioral indicators (e.g., grades, problem behavior involvement). We expect to replicate the findings of the study just described (Roeser et al., 1998) and find four patterns of functioning (well-adjusted, poor motivation only, poor mental health only, and multiple problems). We expect to replicate these previous findings because (a) we are sampling the same age of children (e.g., middle school aged), and (b) we are using virtually identical motivational and emotional adjustment indicators. We also expect to find four groups for substantive reasons and reiterate our reasoning for looking for a four-cluster solution here.

First, research suggests that many children traverse the early adolescent years with few problems (Carnegie Council on Adolescent Development, 1989). Thus, we expect to find a group of youth who evidence positive beliefs

about their academic competence and the value of school, positive mental health, and good grades (i.e., a well-adjusted group).

Second, given that research has documented negative changes in many children's academic motivation during the middle school years, we expect to find a group of youth who report relatively low motivation for school, but who still look like they are on track for positive development later in adolescence in terms of their actual academic achievement and mental health (i.e., a poor motivation group). Poor school motivation does not necessarily have to indicate broad-band adjustment difficulties, though sometimes it does. Rather, for some children, poor school motivation may indicate boredom, apathy, unimaginative schooling, or other factors that do not necessarily undermine developmental competence more generally (Roeser et al., 1998).

Third, we expect to find a subgroup of children who remain motivated for school and achieve adequate grades, but who nonetheless experience relatively frequent feelings of sadness, hopelessness, or anger (Durlak, 1985). There is little information on whether children who show increased psychological difficulties are necessarily the same youth who begin to disengage from school (Knitzer, Steinberg, & Fleisch, 1991). It seems plausible that some youth, perhaps especially females, will continue to function well in school despite poor mental health during the middle adolescent period (i.e., a poor mental health group).

Lastly, we expect to find a group of children with multiple signs of difficulty. In her review, Dryfoos (1994) estimated that, by age 15, approximately one child in four engages in a high-risk lifestyle characterized by poor school motivation and academic failure, truancy, drug use, depressed mood, and engagement in other risky behaviors. We expect that some children in this sample would show signs of such a high-risk lifestyle (i.e., a multiple problems group).

In summary, we expect to find children who manifest one of four distinct patterns of academic functioning and mental health during the later years of middle school. We expect to find groups who show consistently positive or consistently negative functioning across both domains and groups who show relative difficulties in one area (school or mental health) but not the other. In our previous research (Roeser et al., 1998; Strobel & Roeser, 1998), we used children's self-reported self-esteem as a means of validating the cluster solution because of its usefulness as a summary measure of overall functioning. We include self-esteem as a validation measure in this study along with several other indicators of overall competence, including children's academic grades, involvement in problem behaviors in and outside of school, and affiliations with non-school-oriented peers (Masten et al., 1995).

The Transition to High School

A second issue we explore in this study concerns how children's academic functioning and mental health change across the high school transition, depending on their pattern of academic and emotional adjustment prior to the transition. In other words, we examine whether different groups of children change in different ways across this important normative life transition.

Similar to the transition to junior high school, children making the transition to high school must deal with organizational and role changes: the school they move into is often larger, more bureaucratic, and perhaps less personal; peer networks can be disrupted by the size and educational stratification of these institutions; and they can lose status as they go from being the oldest in the middle school to the youngest in the high school setting. For some, these changes can overtax their capacity to cope, thereby compromising academic and emotional functioning (e.g., Eccles et al., 1997; Simmons & Blyth, 1987). For others, the transition to high school may herald a time of new possibilities—a time to excel academically, social-emotionally, and in extra-curricular activities (Blyth, Simmons, & Carlton-Ford, 1983).

Although the research in this area remains somewhat underdeveloped, studies done to date indicate normative declines in teacher-rated grades and school attendance among children as they transition into high school (Felner et al., 1993; Reyes, Gillock, & Kobus, 1994; Seidman, Aber, Allen, & French, 1996). There is some indication that academic motivation may decline across this transition, but little research has been done in this area (see Eccles, Wigfield, & Schiefele, 1998). Finally, in several replications of a school-based transition program, Felner and his colleagues (1993) describe increases in depressive symptoms, substance use, and delinquency following the transition into traditional high school environments.

Like much of the work on school transitions in general, we believe that the primary focus of high school transition studies on normative patterns of change masks our understanding of important individual differences in response to this school transition. Few studies to date have addressed how different types of children (e.g., those with different adjustment profiles) fare across the transition to high school. For example, there is some evidence that children who show declining grades, attendance, and self-esteem during the middle school years are particularly vulnerable to the stress associated with the high school transition (Blyth et al., 1983; Reyes & Hedeker, 1993; Roderick, 1993).

In the current study, we examine normative patterns of change in functioning among all the children in our sample during this transition, as well as how different groups of children characterized by different patterns of school

functioning and mental health change across the transition. By focusing on patterns of adjustment and transition-related changes simultaneously, we provide insight into differential responses to the high school transition. Based on prior evidence, we expect to find normative declines in academic grades and mental health, and increases in children's involvement in school and community problem behaviors (skipping school, vandalism, alcohol use) from before to after the high school transition. More specific to our focus on children who are characterized by different patterns of adjustment, we hypothesize that children who are already showing signs of poor academic motivation, poor mental health, or both during the late middle school years will fare particularly poorly across this transition. In contrast, we expect youth who show positive motivation and mental health prior to the transition will fare the best (Blyth et al., 1983; Hirsch, Dubois, & Brownell, 1993; Robinson, Garber, Hilsman, 1995). These intrapsychic resources can serve as a buffer against the stress that is often associated with a school transition (e.g., Lord, Eccles, & McCarthy, 1994).

Middle Childhood Routes to Adjustment Patterns in Adolescence

A third issue we explore in this study concerns whether youth's earlier academic motivational beliefs, grades, and self-esteem during elementary school are related to their profile of academic functioning and mental health at eighth grade. There are good reasons to think that patterns of academic functioning and mental health in middle school have long-term roots in the elementary school years. For instance, during elementary school, children must develop a sense of competence with school matters and the technological ethos of the age, as well as the capacity to interact cooperatively with others (Erikson, 1959). Children's mastery of such developmental tasks provides a sense of mastery and esteem that in turn forms the foundation for successful academic, social, and emotional functioning later during adolescence (Erikson, 1959; Masten & Braswell, 1991). Long-term continuity in children's self-perceptions of competence and interest in academic and non-academic domains, and in their school grades, has been noted across the elementary and secondary years (Butler, Marsh, Sheppard, & Sheppard, 1985; Eccles et al., 1989; Entwistle & Alexander, 1993; Wigfield et al., 1997). Additionally, research has also shown long-term continuity from childhood to adolescence in peer competence and behavioral conduct (Masten et al., 1995).

In the current study, we collected longitudinal indicators of children's achievement motivation, academic grades, and self-esteem. The studies reviewed above lead us to expect that patterns of school functioning and men-

tal health during the late middle school years will be predictably forecast by children's earlier school motivation, grades, and self-esteem. This is likely to be especially true for those youth showing coherent positive or coherent negative patterns of academic and emotional functioning during adolescence. Such coherence may indicate long-term patterns of underlying competence or maladaptation, respectively.

Alternatively, prior research also leads us to expect some discontinuities in academic motivation, grades, and self-esteem from childhood to adolescence. For instance, we know that certain youth fare particularly poorly in the face of the biological, psychological, and social transitions characteristic of early and middle adolescence. Difficulty with such transitions is associated with marked changes in academic and emotional functioning. Eccles and her colleagues (1997), for example, have found that some children experience steep declines in their self-esteem after the junior high transition, declines that appear to mark rather long-term negative trajectories of academic and emotional functioning through the high school years (see also Hirsch et al., 1993). Similarly, Roderick (1993) finds marked declines in some children's academic grades during the junior high school transition, declines that mark trajectories toward later school withdrawal. Finally, Simmons and Blyth (1987) report that children who experience a buildup of simultaneous life changes around the transition to secondary school show diminished performance in these years that can mark a long-term trajectory of difficulties through the later years of adolescence.

Unfortunately, few studies have documented longitudinal patterns of children's school functioning and esteem continuously from middle childhood through adolescence. Thus, we still do not have data on the timing of changes that eventuate in different patterns of adjustment during adolescence. Unlike the research we cited earlier that suggests continuity in functioning from childhood to adolescence, the research just mentioned raises the possibility that negative patterns of academic and emotional functioning in the late middle school years may have proximal roots in the early adolescent period and not distal roots in the middle childhood (elementary school) years. That is, some difficulties arise in adolescence and are not continuous from childhood. In this case, we would not expect patterns of adjustment in eighth grade to be linked to adolescents' earlier academic motivation, grades, and self-esteem. We suspect this pattern of discontinuity is most likely for children who (a) show motivational difficulties that are not accompanied by emotional distress (poor motivation group) or (b) emotional difficulties that are not accompanied by academic problems (poor mental health group). Problems in one or the other of these areas may reflect difficulties dealing with the specific bio-

logical, school, or social related changes characteristic of the middle school years, rather than coherent patterns of competence or maladaptation.

In summary, using a follow-back design, we examine whether patterns of adjustment during eighth grade are associated with youth's earlier academic motivational beliefs, grades, and self-esteem in elementary school. We predict long-term continuity of academic motivation and esteem among children who show consistently positive or consistently negative school functioning and mental health in middle school. That is, we expect that such patterns of adjustment will have discernible roots in the elementary school years. We also predict to find discontinuities in the long-term trajectories of academic motivation and esteem among those youth showing only single vulnerabilities (e.g., poor motivation or poor mental health only) in middle school. That is, we expect that these patterns of adjustment will not show discernible roots in the elementary school years.

METHOD

Description of Larger Study

The present work is part of what was originally a 4-year longitudinal study aimed at understanding the development and socialization of children's self-perceptions, task values, and activity choices. A cross-sequential, longitudinal design in which three cohorts of different-aged children were followed longitudinally was used. During Year 1 of the study (1987), when the three cohorts of children were in kindergarten, first grade, and third grade, the children's parents and teachers provided basic information on the children.² During Years 2 to 4 (1988 to 1990), data were collected from the children, their teachers, their parents, and school records. In 1994, after a 4-year hiatus in funding, a new longitudinal follow-up study of these children was initiated. Data were collected in what we call Year 5 (1994) from children and in Year 6 (1995) from children and their families. Children in the three cohorts were in Grades 7, 8, and 10 in 1994 and Grades 8, 9, and 11 in 1995, respectively.

General Sample

The original sample consisted of 875 elementary school-aged children, their parents, and their teachers. Children, parents, and teachers were asked to participate through their school district. Seventy-nine percent of the children obtained parental permission to participate. A 71% retention rate of the original sample was obtained for the first 4 years of the study ($N = 615$). Attri-

tion was due mainly to children moving out of the area. In general, the families of the children in the study were mainly two-parent intact (93%), middle class, and White (95%). The family income for the sample in 1987 ranged from \$10,000 to over \$80,000, with a mean of \$40,000 to \$50,000. On the average, mothers worked for pay 25.93 ($SD = 15.30$) hours per week whereas fathers worked for pay 44.45 ($SD = 13.30$) hours per week. Fathers' mean education was between an associate arts degree and a 4-year undergraduate degree, whereas mothers' mean education was slightly less than an associate arts degree.

In 1994, attempts were made to recontact all 875 children and their families. A total of 719 children were found and participated in the study, resulting in a 82% retention rate based on the original sample. At this time, children in the three cohorts were in 7th, 8th, and 10th grades. In 1995, children were again contacted to participate and were sent questionnaires through the mail. A total of 491 children returned their questionnaires, resulting in a 56% retention rate from the original sample. At this time, the children were in Grades 8, 9, and 11.

Study Sample

In this study, we examine a subset of children, time points, and constructs included in the full study. Specifically, we use data from years 2 to 6, at which times children completed questionnaires assessing their academic functioning, emotional well-being, and activity choices. In addition, we focus here on only the middle cohort of children in the study who had progressed from second to ninth grade across Years 2 to 6. We chose the middle cohort because we were interested in examining patterns of adaptation in middle adolescence across the transition to high school (eighth to ninth grade). Research results for the full sample (including all three cohorts) have been described in numerous other reports (see Eccles, Wigfield, Harold, & Blumenfeld, 1993; Wigfield et al., 1997).

Data from child self-report instruments, elementary teacher ratings of the child, and school records are included in this study. The attrition rates for children in the middle cohort are comparable to those for the sample as a whole. The continuous middle cohort from Years 2 to 4 consisted of 210 children who progressed from second to fourth grades (51% female; mean age at second grade = 7.32 years, $SD = 0.38$). In 1994, the middle cohort included 184 children in eighth grade (54% female; mean age = 14.2 years, $SD = 0.45$). In 1995, the middle cohort included 124 children in ninth grade (59% female; mean age = 15.2 years, $SD = 0.42$). The retention rate for the sample from the elementary school grades to eighth grade (Years 2 to 4 to Year 5) was 87%.

The retention rate for the sample from the elementary school years to ninth grade (Years 2 to 4 to Year 6) was 59%.

Procedures

Children filled out a series of questionnaires in the spring of each school year during Years 2 to 6 of the study. Special procedures were used to insure that the younger children below fourth grade could understand and complete the instruments, especially during the first administration period. Items assessing children's academic competence and value beliefs were pilot tested on 100 children and the answer scales (ranging from 1 to 7 in Likert format) were illustrated to foster children's understanding of how to use them (see Eccles, Wigfield, et al., 1993, for more detailed discussion). Beginning in third grade (Year 3), children were also administered Harter's (1982) general self-worth scale that has been proven reliable with children of this age and older.

During Year 1, children were administered a measure of cognitive ability in their school settings. During Years 2 to 4, trained research assistants administered self-report questionnaires in the children's elementary school classrooms. The questionnaires were read aloud each year to children to insure that they comprehended them and to reduce difficulties among children with lower reading abilities. During Year 5, when the children were in Grade 8, they completed the self-report questionnaires at their own pace during school hours. During Year 6, questionnaires were mailed to all child participants and were filled out at children's own pace in the home. Efforts were made to contact the children and secure the return of all questionnaires.

Elementary school teachers also filled out individual assessments of each child who participated in the study during Years 2 to 4. Teachers assessed each child's achievement motivation, abilities in different areas (e.g., academic, making friends), and in-school behavior. Data from school records were collected in 1990 retrospectively for the children's first through fourth grade elementary school years. This information included marks for achievement and effort in different subject areas, attendance, conduct marks, and indications that the child was participating in a special school program (e.g., special education, gifted and talented program).

Measures

Youth Self-Reported Achievement Motivation

Two scales were used to assess children's achievement motivation: self-perceptions of academic competence and academic values. These measures

were derived from Eccles's (1983) expectancy-value theory of achievement motivation and were adapted from earlier work with adolescents. The scales have good demonstrated psychometric properties among both children and adolescents that have been described elsewhere (see Eccles, 1983; Eccles et al., 1989; Eccles, Wigfield, et al., 1993; Parsons, Adler, & Kaczala, 1982; Wigfield et al., 1997). Based on this previous empirical and theoretical work, scales reflecting two dimensions, self-perceptions of competence and task value, were constructed for this study (see previous references). Items in each scale were measured on 7-point Likert scales. For purposes of this study, we combined items relating to children's self-perceptions of competence and task values in the domains of math and English into single, higher order scales of academic competence and academic value, respectively.

The Academic Competence scale assessed children's self-perceptions of how good they felt they were at math or reading, how good they felt they were in each of these areas compared to other subject matters, how their abilities in these domains compared to those of their peers, how well they expected to do in math or reading during the school year, and how good they would be at learning something new in math or reading. During the adolescent period (Year 5), the reading items were reworded to reflect self-perceived competence in English. Due to space limitations, the English items were dropped from the questionnaires during Year 6, so full Academic Competence scales were calculated only for Years 2 to 5. Scales were computed by averaging together the 14 items assessing perceived competence. These scales were statistically reliable at each measurement time (Years 2 to 5: = .79, .73, .76, and .86, respectively).

The Academic Value scales tap children's interest, liking, perceived importance, and perceived use of math and reading (English). Items assessed how much children reported liking math and reading activities, how interesting they found working on math and reading assignments, how useful they found what they learned in math and reading, and how important it was to them to be good at math or reading. Scales were computed by taking the mean of the 14 items that tapped these value beliefs. These scales were statistically reliable at each measurement time (Years 2 to 5: = .72, .75, .80, and .79, respectively).

Youth Self-Reported Mental Health

Two different sets of mental health indicators were collected from children. First, beginning when the children were in third grade (Year 3), all children were administered Harter's (1982) general self-worth scale from Years 3 to 6. This scale consists of seven forced-choice items that range from 1 to 4.

Items assess children's general self-evaluations of the way they do things, feel about themselves, act, and whether they feel like a good person. The scale has demonstrated psychometric properties that are described by Harter (1982). For this study, self-esteem scales were created for each of the time points by averaging the seven items together. Higher scores reflected higher self-esteem. These scales proved statistically reliable at each measurement time in this sample (Years 3 to 6: = .68, .75, .78, and .77, respectively).

Additional self-report measures of symptoms of psychological distress were added during Years 5 and 6. These items were drawn originally from the Symptoms Checklist-90 (SCL-90-R) (Derogatis, Rickels, & Rock, 1976) and asked adolescents about how frequently in the past month they had experienced symptoms such as anger, loneliness, sadness, hopelessness, suicidal ideation, and lack of impulse control.³ The items were measured on Likert scales that ranged from 1 (*almost never*) to 7 (*almost always*). In our other research with a large, normative sample of adolescents, these scales have proven reliable, have shown concurrent relations with other indicators of academic and psychological adjustment, and have been shown to form a single higher order factor that accounts for 71% of the variance in the items (see Roeser et al., 1998). Thus, a 9-item mean scale was computed at Years 5 and 6. These scales were reversed to indicate an absence of symptoms of distress, and were labeled Mental Health scales. They were statistically reliable at both measurement times (Years 5 to 6: = .90, .89).

Cluster Validation Measures

A series of constructs that were not used to define patterns of adjustment (clusters) were also included as a way of (a) validating the clusters (Aldenderfer & Blashfield, 1984) and (b) assessing broader patterns of functioning across the high school transition. These constructs were collected during Years 5 to 6 and included children's self-reported school truancy, affiliations with non-school-oriented peers, and frequency of involvement in problem behaviors outside of school in the community.

School truancy was a single item that asked children how often they skipped a day of school. The metric ranged from 1 (*never*), 2 (*once*), 3 (*2 to 3 times*), through 8 (*31 or more times*). Peer characteristics were assessed based on child self-reports. A set of items asked children about the characteristics of their friends. For this study, we examined a subset of items related to school and friends. Factor analysis with oblimin rotation yielded two dimensions: school-oriented peers and non-school-oriented peers that accounted for 52% of the variance in the items. We focus here only on the non-school-oriented peers measure. Children were asked to describe how many of their friends

teased them if they spent a lot of time on homework, got in trouble at school, skipped school a lot, or had been suspended from school. The items ranged from 1 (*none*) to 7 (*all of them*). Items were averaged together and formed reliable scales at both years (Years 5 to 6: = .71, .74).

Children's self-reported involvement in problem behaviors outside of school were also assessed using a series of items that were developed for two large scale projects on adolescent development by Eccles and her colleagues (see Eccles et al., 1996, 1997). Children were asked about how frequently in the past 6 months they had engaged in the following seven problem behaviors: did something dangerous just for the thrill of it, had contact with the police, damaged public property, gotten drunk, did something risky because it was a real kick, got into a fist fight with another kid, and drank alcohol. The metric ranged from 1 (*never*), 2 (*once*), 3 (*2 to 3 times*), through 8 (*31 or more times*). These items were averaged together and formed reliable scales (Years 5 to 6: = .87 and .88, respectively).

Elementary Teachers' Reports of Child's Academic and Social Competence

During Years 2 to 4 when the children were in elementary school, their teachers rated them on a variety of adjustment measures, including their academic and social competence. Teachers' ratings of children's academic competence consisted of four items, including teacher's perceptions of a child's innate ability or talent in math and reading, and expected future success in math and reading. These scales were statistically reliable (Years 2 to 4: = .90, .91, and .90, respectively). Similarly, the items that assessed teachers' perceptions of the child's social competence asked them to rate the child's ability or talent at making friends, expectation for a child's future success at making friends, and also the amount of effort a child devoted to positive social interactions with peers. The social competence scale had alpha coefficients of .91, .87, and .89 for Years 2 to 4, respectively.

Academic Achievement and Cognitive Ability

Academic grades were assessed in two different ways. During the elementary school years, data were collected from the children's school records. Achievement scores were created each year from children's December and June grades in the core areas of reading, mathematics, and science/health. In one district, children received grades for both overall achievement in the subject and for specific subject-related competencies (problem solving, computation, decoding, spelling, etc.), and these were all averaged together. In other

school districts, children received only overall grades for the subject area and these were used as indicators of subject matter achievement. Finally, comparable achievement measures for children attending different schools had to be constructed due to the fact that different districts used different evaluation systems. Across each of the four school districts, academic marks were collapsed into a common 13-point metric ranging from 1 (*F*) to 13 (*A+*). To provide some comparability with later self-reported grades in adolescence (described below), these indices were further collapsed into the traditional 0 (*F*) to 4 (*A*) grade point averages (GPA).

During Years 5 to 6, when the children were in eighth and ninth grades, self-reported grades were used. Other research has shown that youth's self-reports of their grades are highly correlated ($r = .70$ to $.80$) with their actual school records (e.g., Steinberg, 1996). Children were asked to report on how many A's, B's, C's, D's, and F's they received on their last semester report card during 1994 to 1995. These items were computed into a 0 (*F*) to 4 (*A*) GPA. Because the earlier grades were based on school records and teacher-rated marks in math, reading, and science whereas the later grade measures were based on self-reports that took no account of whether non-academic classes were included in the child's report, we use the longitudinal analyses of grades in a descriptive fashion and are careful to draw only tentative conclusions from these analyses. We are in the process of collecting school record data that will allow for future analyses of what are likely to be more comparable indicators of academic achievement during the elementary, middle, and high school years.

A measure of cognitive ability, the Slosson Intelligence Test (SIT) (Slosson, 1963), was administered to children by trained research assistants during Year 1 of the study. The SIT is best viewed as an objective indicator of young children's general cognitive functioning (Crofoot & Bennett, 1980; Stewart & Jones, 1976). The measure is primarily useful for making broad generalizations rather than fine discriminations concerning children's cognitive abilities. We use this measure to assess any differences in children's general cognitive competence at the outset of the study that were related to later patterns of adjustment identified in adolescence.

Analytic Strategies

The analyses presented in this report are divided into three sections. First, we use person-centered cluster analytic techniques to differentiate patterns of school functioning and mental health when the children were in eighth grade (Year 5). Analysis of variance (ANOVA) and Newman-Keuls post hoc

comparisons are then used to describe differences among the groups on the original clustering measures.

Second, a follow-up design is used to assess how the academic and emotional functioning of the sample as a whole, and of the specific subgroups of children, changes across the high school transition. Measures of functioning collected before and after the high school transition include indicators of self-esteem, GPA, frequency of skipping school, negative peer affiliations, and involvement in community problem behaviors. Using ANOVA and paired sample *t* test comparisons, we assess how the different groups of children differed on these indicators at each grade (eighth and ninth grade) and over time (eighth to ninth grade). Because these constructs (e.g., esteem, GPA, frequency of skipping school, etc.) were not used to form the clusters, these analyses also serve the functions of validating the clusters during eighth grade and assessing their predictive validity for functioning 1 year later after the high school transition (Aldenderfer & Blashfield, 1984).

Third, we use follow-back procedures to assess the relation of eighth grade patterns of adjustment to the long-term course of children's self-reported academic competence beliefs, academic values, self-esteem, and grades during elementary school. We also compare patterns of adjustment at eighth grade on children's second, third, and fourth grade teachers' ratings of their academic and social competence. Multivariate analysis of variance techniques (MANOVAs), using time as the within subjects factor and eighth grade adjustment pattern as the between subjects factor, were employed toward this end. Post hoc comparisons were then used to identify the specific between-group and cross-time differences in these indicators during the elementary school years.

RESULTS

Cluster Analysis

Based on the emergent structure of our data, on our initial hypotheses concerning plausible patterns of academic and psychological adjustment, on our previous research (Roeser et al., 1998; Strobel & Roeser, 1998), and on considerations of parsimony, a four-cluster solution was extracted using Ward's method and squared Euclidean distance as the measure of similarity among eighth graders' academic competence beliefs, school values, and psychological distress.⁴ These groups included a well-adjusted group ($n = 47$, 62% female), a poor motivation only group ($n = 48$, 40% female), a poor mental health only

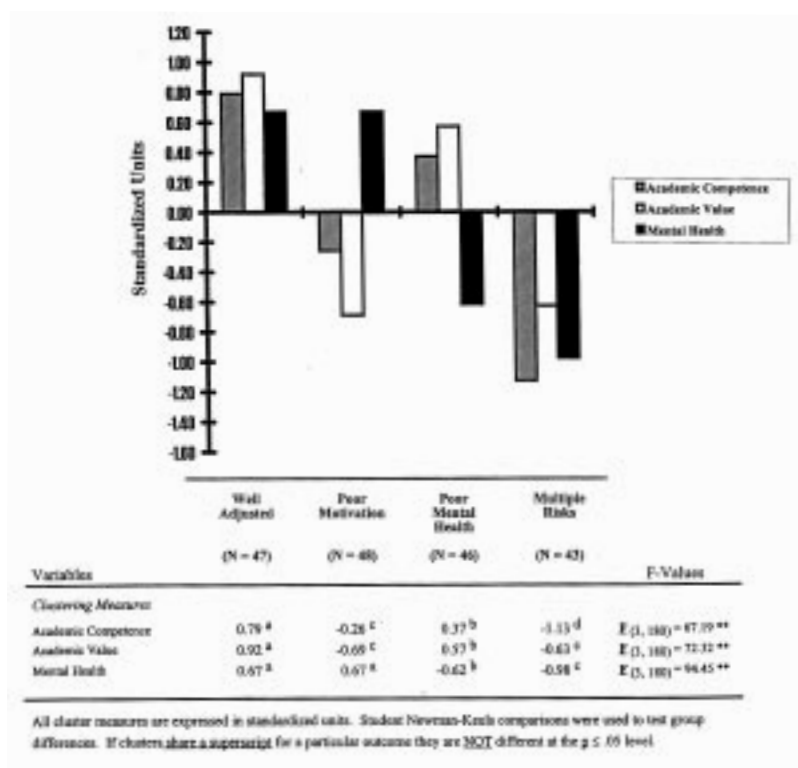


Figure 1. Eighth grade clusters and one-way comparisons on clustering variables.

NOTE: All cluster measures are expressed in standardized units. Student Newman-Keuls comparisons were used to test group differences. If clusters share a superscript for a particular outcome, they are not different at the $p \leq .05$ level.

* $p \leq .05$; ** $p \leq .01$.

group ($n = 46$, 59% female), and a multiple problems group ($n = 43$, 56% female). The effect for gender by group membership was not significant, $\chi^2(3, 184) = 5.60$, $p = .13$, though females were slightly overrepresented in the well-adjusted group and slightly underrepresented in the poor motivation group.

Figure 1 depicts the group means on the clustering variables (academic competence, academic values, and mental health). These measures have all been converted to z scores (e.g., standardized). Post hoc Newman-Keuls comparisons were used to test between-group differences and results are dis-

played at the bottom in the table portion of Figure 1. In terms of school functioning, the well-adjusted group had the most positive academic competence beliefs and academic values of any other group. As expected, youth in the poor mental health group reported the next highest levels of school motivation, followed by those in the poor motivation and multiple problems groups. It is interesting to note that during eighth grade, youth in the poor motivation and multiple problems groups both showed similar levels of devaluing school. In terms of mental health, those in the well-adjusted and poor motivation groups showed the most positive mental health (measured as an absence of symptoms of distress) and were not significantly different from one another. The poor mental health youth were in the middle and the multiple problems youth showed the least positive mental health.

Concurrent and Predictive Validity for the Cluster Solution

The next series of analyses examined group differences among various other indicators of psychological and academic functioning at eighth grade and at ninth grade after the transition to high school. These comparisons were made only on the sample of children who had complete data for both eighth and ninth grade.⁵ Comparisons between groups both before and after the high school transition provide concurrent (eighth grade) and predictive (ninth grade) validity for the four cluster solution that was retained.

Table 1 presents between cluster differences found for children's self-esteem, mental health, and suicidal ideation during eighth and ninth grade. It is important to note that the mental health scale at eighth grade was used to form the clusters (but not at ninth grade) and that the suicidal ideation item in reversed form is part of the mental health scale at each grade. We pulled this item out to examine this rather serious symptom across groups.

Self-esteem. In terms of concurrent validity, significant differences were found between groups for self-esteem. The well-adjusted youth showed the highest esteem, the poor mental health group was in the middle, and the multiple problems group showed the lowest esteem. Youth in the poor motivation group were similar to those in both the well-adjusted and poor mental health groups. In terms of predictive validity, youth in the well-adjusted group showed significantly higher self-esteem than those in each of the other groups during ninth grade.

Mental health. Information on the predictive validity of the cluster groups is also provided by group differences on mental health at ninth grade. Children in the well-adjusted and poor motivation groups continued to show more

TABLE 1: Between-Group and Cross-Time Mean Differences in Emotional Functioning: Eighth to Ninth Grade

Measure	Full Sample	Cluster Patterns of Adjustment				Univariate Group F Value
		Well-Adjusted	Poor Motivation	Poor Mental Health	Multiple Problems	
Self-esteem						
Eighth grade	3.06	3.37 ^a	3.05 ^{ab}	3.05 ^b	2.60 ^c	7.92 ^{***}
Ninth grade	2.96	3.26 ^a	2.91 ^b	2.89 ^b	2.66 ^b	5.43 ^{***}
Cross-time <i>t</i> value	<i>t</i> (104) = 2.33	^{**} <i>t</i> (29) = 1.41	<i>t</i> (27) = 1.47	<i>t</i> (28) = 1.93 [*]	<i>t</i> (17) = -0.60	
<i>N</i> = 101						
Mental health						
Eighth grade	5.26	6.11 ^a	6.12 ^a	4.45 ^b	3.68 ^c	69.25 ^{***}
Ninth grade	5.31	6.06 ^a	5.66 ^a	4.54 ^b	4.73 ^b	14.09 ^{***}
Cross-time <i>t</i> value	<i>t</i> (112) = -0.46	<i>t</i> (30) = 0.34	<i>t</i> (32) = 2.63 ^{***}	<i>t</i> (29) = -0.42	<i>t</i> (18) = -2.68 ^{**}	
<i>N</i> = 109						
Suicidal ideation						
Eighth grade	1.77	1.10 ^c	1.21 ^c	1.94 ^b	3.58 ^a	23.65 ^{***}
Ninth grade	1.61	1.16 ^b	1.48 ^{ba}	1.97 ^a	1.95 ^{ab}	3.04 ^{**}
Cross-time <i>t</i> value	<i>t</i> (114) = 1.11	<i>t</i> (30) = -0.63	<i>t</i> (32) = -1.60	<i>t</i> (31) = -0.09	<i>t</i> (18) = 3.65 ^{***}	
<i>N</i> = 111						

NOTE: *df* = 3. All comparisons are run for a sample that was present in both eighth and ninth grades. Well-adjusted, *n* = 31; poor motivation, *n* = 33; poor mental health, *n* = 33; and multiple problems, *n* = 19. Student Newman-Keuls comparisons were used to test between cluster differences. If clusters share a superscript for a particular outcome, they are not different at the $p \leq .05$ level. These comparisons are read horizontally across clusters in the table. Pairwise *t* tests were conducted for each outcome over time (eighth to ninth grade) within each cluster, and these comparisons are read vertically across grade in the table. The mental health scale from eighth grade was used to create the clusters. The suicidal ideation item (reversed) is a part of the mental health scale at each grade.

* $p \leq .10$. ** $p \leq .05$. *** $p \leq .01$.

positive emotional adjustment than children in the poor mental health and multiple problems groups. Of particular note is the finding for the suicidal ideation item that formed part of the mental health scale. During eighth grade, youth in the multiple problems and poor mental health groups showed elevated scores on this item; for the multiple problems group, the mean was about 4 (*sometimes*) on a 7-point scale. By ninth grade, only children in the poor mental health group continued to show higher ratings on this item than the well-adjusted youth, though these children's level of endorsement of the "thoughts of ending my life" item was relatively low; the mean was about 2, between 1 (*almost never*) and 4 (*sometimes*) on a 7-point scale.

Self-reported grades. Table 2 presents between-group differences on behavioral indicators of adjustment at eighth and ninth grade. Each of these constructs provides some concurrent and predictive validity for the cluster solution as well. First, for academic GPA, the pattern of differences was the same across groups at both eighth and ninth grades: Well-adjusted youth received higher grades than those in the poor motivation and poor mental health groups, who in turn received better marks than youth in the multiple problems group.

Self-reports of problem behavior and peer relations. Table 2 also presents group comparisons for the school truancy and peer affiliation measures. No group differences were found for skipping school at eighth grade, and at ninth grade only one significant group difference emerged: The multiple problems youth reported a higher incidence of skipping a day of school compared to any of the other groups (about 2 to 3 times in the past 6 months). Group comparisons on the affiliations with non-school-oriented peers measure showed that the multiple problems youth said more of their friends had an antischool orientation at eighth and ninth grade compared to youth in the other groups. Those in the poor motivation and poor mental health groups said less of their friends showed such an orientation, and those in the well-adjusted group reported the fewest number of friends having such an orientation. Finally, youth in the multiple problems groups reported the most frequent engagement in community problem behaviors compared to those in the other groups, especially during ninth grade after the high school transition.

Summary. In sum, the well-adjusted youth showed positive school motivation, self-esteem, mental health, school achievement, and conduct in comparison to youth in the other groups, whereas the multiple problems youth showed the most negative pattern of functioning across the school, mental health, and behavioral domains of any of the children. The poor motivation

TABLE 2: Between-Group and Cross-Time Mean Differences in Behavioral Functioning Measures: Eighth to Ninth Grade

Measure	Full Sample	Cluster Patterns of Adjustment				Univariate Group F Value
		Well-Adjusted	Poor Motivation	Poor Mental Health	Multiple Problems	
Academic GPA						
Eighth grade	3.43	3.76 ^a	3.44 ^b	3.44 ^b	2.83 ^c	15.58 ^{***}
Ninth grade	3.23	3.69 ^a	3.19 ^b	3.16 ^b	2.59 ^c	13.69 ^{***}
Cross-time <i>t</i> value	<i>t</i> (103) =	4.24 ^{***}	<i>t</i> (29) = 1.49	<i>t</i> (29) = 3.58 ^{***}	<i>t</i> (26) = 2.09 ^{**}	<i>t</i> (16) = 1.66
<i>N</i> = 100						
Skipping school						
Eighth grade	1.34	1.13 ^b	1.39 ^b	1.39 ^b	1.47 ^a	1.05 ^{***}
Ninth grade	1.65	1.26 ^b	1.55 ^b	1.58 ^b	2.58 ^a	6.10 ^{***}
Cross-time <i>t</i> value	<i>t</i> (115) =	-2.67 ^{***}	<i>t</i> (30) = -0.75	<i>t</i> (32) = -0.96	<i>t</i> (32) = -0.80	<i>t</i> (18) = -2.69 ^{**}
<i>N</i> = 112						
Negative peer affiliations						
Eighth grade	2.44	1.80 ^c	2.53 ^b	2.47 ^b	3.28 ^a	8.17 ^{***}
Ninth grade	2.24	1.72 ^c	2.24 ^{cb}	2.24 ^b	3.07 ^a	7.73 ^{***}
Cross-time <i>t</i> value	<i>t</i> (115) = 2.33	<i>t</i> (30) = 0.63 ^{**}	<i>t</i> (32) = 1.30	<i>t</i> (32) = 1.78 [*]	<i>t</i> (18) = 0.93	
<i>N</i> = 112						
Community problem behaviors						
Eighth grade	1.65	1.28 ^b	1.68 ^a	1.72 ^{ba}	2.07 ^a	4.39 ^{***}
Ninth grade	1.76	1.34 ^b	1.75 ^b	1.65 ^b	2.68 ^a	10.40 ^{***}
Cross-time <i>t</i> value	<i>t</i> (115) =	-1.72 [*]	<i>t</i> (30) = -1.00	<i>t</i> (32) = -0.57	<i>t</i> (32) = 0.57	<i>t</i> (18) = -3.14 ^{***}
<i>N</i> = 112						

NOTE: GPA = grade point average. *df* = 3. All comparisons are run for a sample that was present in both eighth and ninth grades. Well-adjusted, *n* = 31; poor motivation, *n* = 33; poor mental health, *n* = 33; and multiple problems, *n* = 19. Student Newman-Keuls comparisons were used to test between cluster differences. If clusters share a superscript for a particular outcome, they are not different at the $p \leq .05$ level. These comparisons are read horizontally across clusters in the table. Pairwise *t* tests were conducted for each outcome over time (eighth to ninth grade) within each cluster, and these comparisons are read vertically across grade in the table.

* $p \leq .10$. ** $p \leq .05$. *** $p \leq .01$.

and poor mental health youth showed average self-esteem and achievement and some affiliations with non-school-oriented peers. The poor motivation youth also devalued school and felt relatively incompetent despite feeling little emotional distress, whereas the poor mental health youth also felt relatively sad, angry, and hopeless despite a continued pattern of motivation for school.

Change in Adjustment Across the High School Transition

Full sample changes. In this section, we describe changes in the emotional and behavioral functioning of the whole sample across the high school transition. These results can be found in Tables 1 and 2. First, we discuss briefly the general sample trends noted across this transition. Paired *t* test results for the whole cohort suggest that in this sample, self-esteem, academic GPA, and affiliations with non-school-oriented peers decline across the transition, whereas skipping school and community problem behavior involvement ($p \leq .10$) show slight increases. No significant changes in mental health among the full sample were found (see Tables 1 and 2). Next, we examined specific groups by time changes in the psychological and behavioral adjustment constructs. These paired *t* test results within each group are also presented in Tables 1 and 2.

Subgroup changes in emotional functioning. Three effects in Table 1 are worth noting. First, the multiple problem youths' mental health improved significantly across the transition. This improvement included a decrease in the frequency with which these adolescents reporting having thoughts of suicide. The relatively high symptomatology expressed during eighth grade among this group declined. We checked to see if this decline was due to the high attrition rate of this group. It was not. The 19 adolescents in this group for whom we had data at both grades actually showed poorer mental health during eighth grade than those who eventually dropped out of the study during ninth grade (3.68 vs. 4.25, $t(40) = 2.20$, $p \leq .05$). Thus, the youth in this group who remained in the study from eighth to ninth grades reported less distress after the transition than before.

Subgroup changes in behavioral functioning. Table 2 also contains several noteworthy findings. First, the general decline in academic GPA noted for the sample as a whole appears to be accounted for primarily by a decline in grades among the youth characterized by poor motivation and poor mental health. Although children in all groups showed some decline in their GPA,

those in the well-adjusted group continued to get relatively high marks (about A-) and the multiple problems youth continued to achieve relatively poorer marks (about B-). Finally, the significant rise in school truancy and the trend toward increasing youth involvement in community problem behaviors after the transition to high school found in the sample as a whole appeared to be accounted for primarily by those in the multiple problems group. It was only among these children that statistically significant increases in engaging in such problems after the transition to high school were found.

Developmental Routes to Eighth Grade Adjustment Patterns

A final set of follow-back analyses examined the long-term differences in youth's academic competence beliefs, academic values, and general self-esteem in middle childhood in relation to their patterns of adjustment during middle school. MANOVAs were used to test main effects of time and group, as well as the time by group interaction, on three measures from the youth's elementary school years: their academic competence beliefs, academic values, and self-esteem.⁶ After examining the results of the omnibus MANOVAs, we used one-way ANOVAs and Student Newman-Keuls post hoc comparisons to test between-group differences at each grade level. In addition, paired *t* tests were employed to examine the precise timing of changes in these indicators within each group across grades.

Subgroup Differences in Earlier Academic Competence Beliefs

Table 3 and Figure 2 present the results for children's academic competence beliefs during second, third, fourth, and eighth grades. Looking first at trends for the full sample, the time effect was significant, $F(3, 402) = 38.04$, $p \leq .01$. *t* tests showed that children's academic competence beliefs declined from third to fourth and from fourth to eighth grades. These statistics are presented in the middle portion of Table 3.

The group effect for the MANOVA was also significant, $F(3, 134) = 19.34$, $p \leq .01$. Collapsing across measurement times, one-way Newman-Keuls comparisons revealed that the well-adjusted youth had the highest academic competence beliefs, youth in the poor motivation and poor mental health groups were in the middle, and the multiple problems youth showed the poorest self-perceptions of academic competence (see Figure 2). Next, one-way comparisons were run to discern between-group differences at each grade level (these statistics appear in the right-most column of Table 3). The only significant difference that emerged prior to eighth grade (when compe-

TABLE 3: Between-Group and Cross-Time Mean Differences in Academic Competence Beliefs: Second to Third to Fourth to Eighth Grades

Measure	Full Sample	Cluster Patterns of Adjustment				Univariate Group F Value
		Well-Adjusted	Poor Motivation	Poor Mental Health	Multiple Problems	
Means						
Second grade	5.60	5.84	5.53	5.50	5.49	1.47
Third grade	5.52	5.83 ^a	5.59 ^a	5.53 ^a	5.07 ^b	5.48 ^{***}
Fourth grade	5.30	5.69 ^a	5.32 ^a	5.33 ^a	4.81 ^b	7.75 ^{***}
Eighth grade	4.84	5.58 ^a	4.66 ^c	5.18 ^b	3.92 ^d	49.16 ^{***}
<i>N</i> = 134, <i>df</i> = 3						
<i>t</i> Values						
Paired <i>t</i> Tests	<i>df</i> (137)	<i>df</i> (35)	<i>df</i> (39)	<i>df</i> (29)	<i>df</i> (31)	
Second to third grade	0.96	0.08	−0.42	−0.19	2.27 ^{**}	
Third to fourth grade	2.96 ^{***}	0.90	2.44 ^{**}	1.33	1.40	
Fourth to eighth grade	6.06 ^{***}	0.96	5.26 ^{***}	1.03	4.86 ^{***}	
Multivariate <i>F</i> Values	<i>df</i>	<i>N</i>	<i>F</i> Values	Partial Eta-Squared		
Time effect	3	402	38.04 ^{***}	.221		
Group effect	3	134	19.34 ^{***}	.302		
Group × time effect	9	402	5.61 ^{***}	.112		

NOTE: All comparisons are run for a sample that was present from second to eighth grades. Student Newman-Keuls comparisons were used to test between cluster differences. If clusters share a superscript for a particular outcome, they are not different at the $p \leq .05$ level. These comparisons are read horizontally across clusters in the table. Pairwise *t*-tests were conducted for each contiguous time point for the full sample and within each cluster group.

^{**} $p \leq .05$. ^{***} $p \leq .01$.

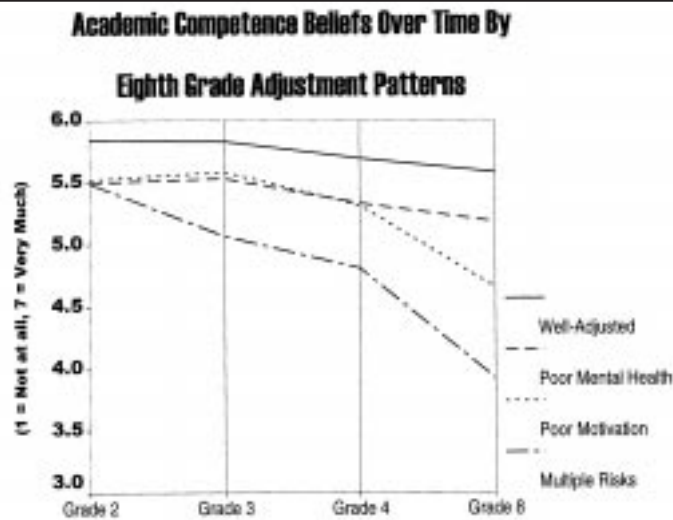


Figure 2. Long-term developmental trends in academic competence beliefs.

tence measures were used to form the clusters) involved the multiple problems youth: By third and fourth grade, these children were already showing low perceived academic competence relative to their peers in each of the other groups.

The group by time interaction for youth's earlier competence beliefs was also significant, $F(9, 402) = 5.61, p \leq .01$, indicating different patterns of change within groups over time. This interaction was largely a function of declines in academic competence beliefs among those children in the poor motivation and multiple problems groups. That these declines were only noted in two of the four groups clarifies the nature of the declines noted for the full sample. From second to third grade, the multiple problems youth showed a statistically significant decline in their academic competence beliefs; from third to fourth grade, the poor motivation group showed a statistically significant decline in their competence beliefs; and from fourth to eighth grade, it was those children in these two groups that accounted for the decline in academic competence beliefs noted for the full sample (see Table 3 and Figure 2).

Subgroup Differences in Earlier Academic Values

Long-term trends in academic values by adjustment group are presented in Table 4 and Figure 3. A significant time effect for the whole sample,

TABLE 4: Between-Group and Cross-Time Mean Differences in Academic Values: Second to Third to Fourth to Eighth Grades

Academic Values	Full Sample	Cluster Patterns of Adjustment				Univariate F Values
		Well-Adjusted	Poor Motivation	Poor Mental Health	Multiple Risks	
Means						
Second grade	5.41	5.54	5.15	5.73	5.29	1.70
Third grade	5.13	5.42 ^a	5.00 ^{ab}	5.31 ^{ab}	4.78 ^b	3.32 ^{**}
Fourth grade	4.98	5.22	4.83	5.04	4.83	2.31
Eighth grade	4.44	5.21 ^a	3.87 ^b	4.91 ^a	3.83 ^b	50.94 ^{***}
<i>N</i> = 134, <i>df</i> = 3						
<i>t</i> Values						
Paired <i>t</i> Tests	<i>df</i> (137)	<i>df</i> (35)	<i>df</i> (39)	<i>df</i> (29)	<i>df</i> (31)	
Second to third grade	2.65 ^{***}	0.78	0.65	2.45 ^{**}	1.93	
Third to fourth grade	1.81	1.08	1.35	1.72	−0.25	
Fourth to eighth grade	6.74 ^{***}	0.03	8.65 ^{***}	0.87	6.15 ^{***}	
Multivariate <i>F</i> Values	<i>df</i>	<i>N</i>	<i>F</i> Values	Partial Eta-Squared		
Time effect	3	405	37.74 ^{***}	.218		
Group effect	3	135	13.26 ^{***}	.228		
Group × time effect	9	405	3.98 ^{***}	.081		

NOTE: All comparisons are run for a sample that was present from second to eighth grades. Student Newman-Keuls comparisons were used to test between cluster differences. If clusters share a superscript for a particular outcome, they are not different at the $p \leq .05$ level. These comparisons are read horizontally across clusters in the table. Pairwise *t*-tests were conducted for each contiguous time point for the full sample and within each cluster group.

** $p \leq .05$. *** $p \leq .01$.

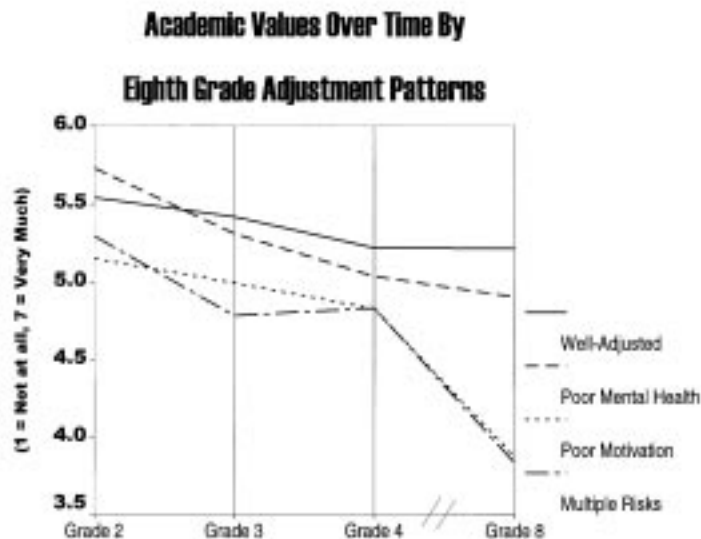


Figure 3. Long-term developmental trends in academic values.

$F(3, 405) = 37.74, p \leq .01$, was primarily a function of normative declines in academic values among children between Grades 2 and 3 and Grades 4 and 8. These statistics are presented in the middle portion of Table 4.

The overall group effect was also significant, $F(3, 135) = 13.26, p \leq .01$. Collapsing across measurement points, one-way contrasts showed that youth in the well-adjusted and poor mental health groups showed more positive academic valuing than those youth in the poor motivation and multiple problems groups. One-way contrasts comparing groups at each grade are presented in Table 4. The well-adjusted youth showed significantly more positive valuing of school than the multiple problems youth during third grade. At eighth grade, the more general trend noted above for academic values was found (well-adjusted and poor mental health > poor motivation and multiple problems).

The time by group interaction effect for academic values was also significant, $F(9, 405) = 3.98, p \leq .01$. As with declines in academic competence beliefs from fourth to eighth grade, the decline in academic values between fourth and eighth grades noted for the full sample was due primarily to the sharply declining values among the poor motivation and multiple problems youth. These trends are displayed in Figure 3.

Subgroup Differences in Earlier Self-Esteem

Consistent with the findings of Harter's (1982) own cross-sectional studies of self-esteem, we found little long-term change in self-esteem from elementary to high school in this sample. MANOVAs of children's third, fourth, and eighth grade self-esteem revealed no significant time or time by group effects. The overall group effect was significant, however, $F(3, 94) = 7.36$, $p \leq .05$, partial Eta-squared = .190. Collapsing across measurement times, a Newman-Keuls comparison showed youth in the multiple problems group reported lower self-esteem than youth in each of the other groups. Given that no significant group differences emerged at Grades 3 or 4, it appears that the group effect for esteem in this analysis is totally accounted for by group differences in self-esteem at eighth grade when the groups themselves were created.

Subgroup Differences in Earlier Academic Grades

Figure 4 presents the long-term trends in academic grades. Because the metrics, sources of the grade data, and the composite of classes used to calculate GPAs were different across the years, we make no inferences about changes in grades over time. Rather, we simply illustrate these patterns in Figure 4 and discuss only between-group differences across all time points here. The group effect collapsing across measurement times was highly significant, $F(3, 69) = 11.54$, $p \leq .001$, partial Eta-squared = .334. Newman-Keuls comparisons showed that youth in the multiple problems group received overall lower grades than youth in each of the other three groups; youth in the poor motivation and poor mental health groups were in the middle and were not different from one another on achievement; and youth in the well-adjusted group received higher grades than each of the other groups.

Teacher Ratings and Children's Earlier Cognitive Ability

One-way comparisons were run on the Slosson IQ measure, a test of general cognitive ability administered to children when they were in first grade. No significant group differences emerged. MANOVAs were run on children's second, third, and fourth grade teachers' ratings of their academic abilities. A significant group effect emerged, $F(3, 81) = 10.98$, $p \leq .05$, partial Eta-squared = .110. Collapsing across measurement times, Newman-Keuls comparisons showed that teachers rated the well-adjusted youth as more aca-

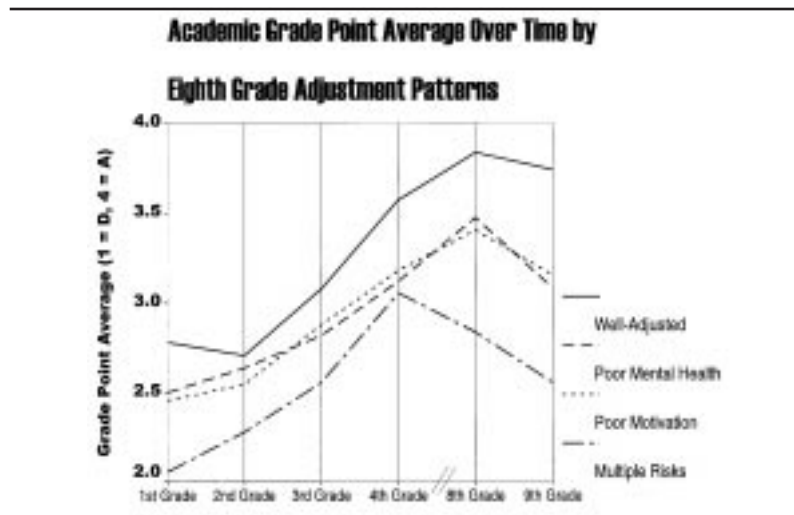


Figure 4. Long-term developmental trends in academic grades.

demically competent than the multiple problems youth. No differences were found between youth in the poor motivation or poor mental health groups on teachers' ratings of academic competence. MANOVAs were also conducted on teachers' ratings of the child's ability to make friends and be sociable. No significant group, time, or group by time effects on teachers' ratings of the children's social competence were found.

DISCUSSION

The patterns of adjustment among middle school children that emerged in this study are very similar, though not identical, to those found in our previous work with samples of middle school children from Maryland and California (Roeser et al., 1998; Strobel & Roeser, 1997). Specifically, we found that some children were doing consistently well or consistently poorly across the academic and emotional domains of functioning (e.g., well-adjusted and multiple problems groups, respectively), and that these patterns seemed to be indicative of long-term patterns of positive or negative adaptation from childhood into adolescence. We also found other children who could be characterized as having mild difficulties in only one or the other of these domains of functioning during eighth grade (e.g., the poor motivation and poor mental

health groups). Whereas it appears that those children in the poor motivation group experienced a sharp decline in motivation somewhere between fourth and eighth grade, no long-term roots of functioning for children in the poor mental health group during childhood were found.

These results highlight two important methodological points. First, the results highlight the notion that although variable-centered (correlational) analyses are instructive in understanding general relations among indicators of adjustment during adolescence, they also mask important individual patterns of adjustment among subgroups of children—patterns of functioning that are related to both prior and subsequent adjustment (e.g., Magnusson & Bergmann, 1988). Second, understanding the long-term routes to different patterns of adjustment in middle school requires a longitudinal perspective on child development, with attention given to the specific developmental periods in which the roots of such patterns are found. Some patterns of adjustment that are found in the middle school years, such as the multiple problems pattern, have long roots in the childhood years (e.g., Erikson, 1959), whereas others, such as the poor motivation pattern, seem linked more closely to the quality of the adolescents' adjustment during the early adolescent years (e.g., Eccles et al., 1997). Although speculative, still other patterns of adjustment in middle school, such as the poor mental health pattern, may not be related to adjustment during specific developmental periods *per se*, but rather to specific life events (e.g., Bandura, 1982). We describe these patterns in more depth below.

Specific Patterns of Adjustment

Well-Adjusted Group

The presence of a well-adjusted group suggests that not all children experience negative changes in their motivational beliefs and psychological adjustment as they enter the adolescent years (Carnegie Council on Adolescent Development, 1989). Children who manifested the well-adjusted pattern started out with positive motivation, achievement, and self-esteem in childhood and did not show any negative changes in these aspects of their functioning during the period from elementary to middle to high school. These findings suggest that many children and adolescents cope with, adjust to, and grow during the experience of normative life transitions (Eccles et al., 1997; Hirsch et al., 1993). These findings also reinforce the idea that adolescence is not necessarily a uniform time of storm and stress or, in more contemporary terms, alienation and distress.

Multiple Problems Group

Children in the multiple problems group showed long-term continuity in terms of their poor academic motivation, low grades, and low self-esteem during the years between elementary and high school. Other researchers have discussed the long-term effects of early academic and behavioral problems on children's subsequent adjustment during adolescence, so the presence of this group in our sample is not surprising (e.g., Cairns et al., 1989; Entwistle & Alexander, 1993; Hinshaw, 1992). One thing that our results add to our understanding of such children is that an important mediator of such continuity in problems is the child's internalization of negative self-perceptions of academic competence, negative feelings of self-worth, and a sense of school as uninteresting and unimportant. That poor achievement and feedback from parents and teachers are major contributors to the internalization of such negative beliefs is very likely (Eccles, 1983; Entwistle & Alexander, 1993; Wigfield et al., in press). It is interesting to note that children in the multiple problems group did not necessarily show any cognitive deficits compared to children in the other groups during first grade. Thus, these findings suggest that it was not simply low intelligence that accounts for such long-term difficulties. More likely, it was inappropriate skills and behavior rather than general cognitive incompetence that set in motion this maladaptive trajectory of development. Poor skills could lead to failure, frustration, poor conduct, teacher disapproval, and so on (see Eccles & Roeser, in press, for discussion). Such a possibility is consistent with other research on school achievement (Entwistle & Alexander, 1993) and the childhood origins of later involvement with antisocial peers, school failure, and engagement in problem behaviors in and outside of school (Dishion et al., 1991).

Perhaps one of the most interesting findings for the youth in the multiple problems group was that their mental health actually improved across the transition to high school and they evidenced no declines in self-esteem or achievement during this transition. This suggests several possibilities. First, as a means of protecting their self-esteem and emotional well-being, such adolescents may have turned more to their support from (similarly alienated) peers and their engagement in antisocial activity rather than to school staff and prosocial activity in school in forming a view of their worth and self-esteem during these years. The high school environment, with its increased academic tracking, may contribute to academic alienation among low-achieving youth (Oakes, Gamoran, & Page, 1992) and may well afford such children an opportunity to self-select peers who are similarly alienated. Thus, such children would be more likely to find acceptance and self-esteem in

negative peer affiliations and activities rather than in positive school-oriented peer affiliations and activities (Eccles & Roeser, in press; Masten et al., 1995).

Second, among the multiple problems youth, it appears that declines in achievement and achievement motivation were more pronounced during the late elementary to late middle school grades (fourth to eighth grade) rather than across the high school transition. Roderick (1993) has shown that declines in achievement during the transition into middle or junior high school predict dropping out above and beyond any decline in grades during the later transition to high school. This raises the possibility that these youth are already on a pathway toward negative outcomes in later adolescence, such as dropping out well before the transition to high school (Dryfoos, 1990; Eccles et al., 1997). That is, it is during the early adolescent years and not later that some adolescents' life paths turn in the direction of school disengagement, antisocial activity, and engagement in other serious risk behaviors, such as drug use and abuse (Carnegie Council on Adolescent Development, 1989; Dryfoos, 1990; Eccles et al., 1997). Such a finding would have important implications for the targeting and timing of prevention programs for school dropout, and this issue requires further examination among those interested in schooling, development, and psychopathology.

Poor Motivation Group

The group of adolescents who showed poor school motivation without accompanying psychological distress during eighth grade was also interesting. These adolescents showed declining perceptions of their academic competence during the middle elementary school grades (e.g., third to fourth grade) and rather large declines in their perceptions of academic competence and the value of school between elementary school and the later grades of middle school. Such a pattern is consistent with the normative declines in students' academic motivation from childhood to adolescence that has been found in other research (see Eccles, Midgley, & Adler, 1984). Given that declines in these children's self-perceptions of competence occurred before declines in their academic values, it may well be that children who increasingly experience difficulty in school over time start to devalue school as a way of protecting their self-esteem. That is, it may be psychologically uncomfortable to continue to value academics in the presence of an increasing sense (whether true or not) of perceived incompetence in school (Eccles, 1983; Steele, 1988).

Across the transition to high school, youth in the poor motivation group showed declines in their academic performance and mental health. Although we cannot know because we did not collect data during precise times in early adolescence between these children's fourth and eighth grade school years, it seems plausible to suggest that these children had difficulty dealing with the developmental tasks of early adolescence, and this predisposed them to be less effective in dealing with the transition to high school (e.g., Blyth et al., 1983; Eccles et al., 1997). Studies that examine adjustment across concurrent school transitions in adolescence would enhance our understanding of such issues, and could inform the timing and targeting of specific prevention efforts.

It is also interesting to note that the relatively average academic performance among these children may make their motivational difficulties in school rather invisible to teachers. Middle and high school teachers often have to serve many students during the day, and adolescents who are struggling to feel competent and find value in school, but who are not acting out or failing academically, may go unnoticed (see Eccles et al., 1996).

Poor Mental Health Group

The final group of children that emerged in this study consisted of those who showed relatively greater feelings of psychological distress than their peers but who, at the same time, showed continued motivation to learn in school. No long-term trends in these children's academic motivation or self-esteem during the elementary school years were found to indicate continuity of problems over time. In terms of the high school transition, the level of emotional distress in this group of adolescents was stable over time. Thus, we gained few insights into the developmental roots of such problems, and only can say that whenever they began, such problems remain unchanged—not getting any better or any worse—across the high school transition. It is possible that these adolescents' difficulties arose in the early adolescent period, during which time we did not collect data. In the future, we plan to examine the life experiences of these youth to try to understand more about this rather interesting pattern of functioning in which emotional distress is present, but it does not seem to undermine the adolescent's school functioning or behavioral conduct. What we can say is that these adolescents seem to represent another group of struggling adolescents who, because of their continued positive academic performance and behavior, are likely to go unnoticed in their emotional difficulties. Identifying and assisting such children is an important area of concern for educators and mental health professionals alike

and should receive increased attention in future research and intervention efforts.

Limitations, Implications, and Conclusions

Several limitations with the present study are important to note. First, we relied heavily on children's self-report measures. Our results would be strengthened by the inclusion of other parent, teacher, and peer-rated constructs. Second, we did not assess any indicators of mental health other than self-esteem in childhood. This is a rather global indicator of mental health, and more detailed measures of emotional distress would have given us a better understanding of the long-term developmental trajectories of children's mental health, especially those characterized by poor mental health in middle school. Finally, we did not attempt to separate forms of internalizing and externalizing distress in our analyses. Understanding distinct pathways associated with each of these forms of distress warrants closer scrutiny in the future.

The results of this study have implications for prevention and intervention efforts both inside and outside the schools. We know that a distressingly large number of children evidence academic, emotional, and behavioral problems during childhood and adolescence and that the services to address such problems are inadequate (Knitzer et al., 1991; Weist, 1997). Research that begins to focus on subgroups of individuals who show different patterns of adjustment, on the specific time periods when certain problems develop, and on the co-occurrence of difficulties across domains could do much to assist in the design, coordination, and targeting of services to address problems among youth (see Roeser, Eccles, & Strobel, 1998). Our results suggest that some children may need school-based interventions and reforms that enhance motivation by creating a more motivation-enhancing learning environment in schools (i.e., poor motivation group), some may need mental health service referrals and interventions (i.e., poor mental health group), and some would benefit from both types of interventions (i.e., multiple problems group). We believe that middle and high school reform efforts that included a focus on mental health issues would do much toward improving and enhancing the academic and emotional functioning of all children (Adelman & Taylor, 1998; Dryfoos, 1994; Felner et al., 1993). Person-centered research on patterns, progressions, and developmental roots of academic and emotional functioning from childhood to adolescence can make an important contribution to the design of the next generation of such integrated preventative and intervention services in the schools.

NOTES

1. Although the participants in this study progressed from being "children" to being "adolescents," we will use the term children and youth throughout to refer to them for sake of consistency and economy.

2. We analyze only data beginning at Year 2 when children filled out self-report instruments. The first cohort progressed from 1st to 3rd grade across Years 2 to 4, and from 7th to 8th grade Years 5 to 6. The second cohort progressed from 2nd to 4th grade across Years 2 to 4, and from 7th to 8th grade Years 5 to 6. The third cohort progressed from 4th to 6th grade Years 2 to 4, and from 10th to 11th grade Years 5 to 6.

3. Procedures were put in place to follow up with children who responded with a high frequency of suicidal ideation. A licensed, practicing clinical psychologist who was part of the research team followed up with all children who reported frequent thoughts of ending their life, and assessed their situation and their available support systems. All of the children who were thus contacted, though few in number, reported that they were receiving clinical services at the time.

4. These measures were significantly, positively correlated. Mental health was moderately, positively correlated with the academic competence scale, $r(184) = .24, p \leq .001$, and the academic value scale, $r(184) = .15, p \leq .05$; the academic competence and value scales were strongly, positively correlated, $r(184) = .59, p \leq .001$.

5. The attrition between Year 5 to Year 6 was considerable and a significant difference in attrition by cluster membership during eighth grade was found, $\chi^2(3, 184) = 8.90, p = .03$. Not surprisingly, children in the multiple risks group were more likely to have dropped out of the study during Year 6 than children in the other groups. The number of children retained in each cluster is noted in the tables.

6. Because academic competence and value beliefs were not assessed in exactly the same way in ninth grade, these analyses only span Grades 2, 3, 4, and 8. Because the full self-esteem measure was designed for third graders and older, we had full scale values from Grades 3, 4, 8, and 9. The results for eighth to ninth grade change are presented in Table 2. Here we examine only Grades 3, 4, and 8.

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