Linking the Study of Schooling and Mental Health: Selected Issues and Empirical Illustrations at the Level of the Individual

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In this article, we explore (a) why it is important to study educational and mental health issues simultaneously, (b) why academic problems and particular manifestations of emotional distress co-occur in some children, and (c) how the context of school may influence both academic and emotional outcomes in children. We conclude with recommendations for future research on schooling and mental health issues.

At various times throughout this century, theorists have been interested in the connections between children's academic motivation, learning, and mental health.[1] Theorists interested primarily in education have focused on how emotions and motives are related to children's learning, achievement, and experience of schooling (see Bruner, 1966; Deci & Ryan, 1985; Dewey, 1902/1990; Eccles, Wigfield, & Schiefele, 1998; Weiner, 1990). Theorists interested primarily in personality development have explored how schooling, learning, and achievement are related to children's emotional development and mental health (Blos, 1941; Erikson, 1959; Freud, 1960; McClelland, 1987). In recent years, educationalists and developmentalists have once again shown interest in understanding how children's functioning in school, including their academic motivation, achievement, and conduct, is associated with the quality of their mental health (see Achenbach, Howell, Quay, & Connors, 1991; Adelman, 1989; Boekaerts, 1993; Comer, 1988; Connell & Wellborn, 1991; Covington, 1992; Cowen, 1991; Deci, Vallerand, Pelletier, & Ryan; 1991; Durlak, 1995; Dweck & Wortman, 1982; Eccles, Lord, & Roeser, 1996; Hinshaw, 1992; Knitzer, Steinberg, & Fleisch, 1991; Maughan, 1988; Rae-Grant, Thomas, Offord, & Boyle, 1989; Rutter, 1980; Weiner, 1990).

In this article, drawing on contemporary sources in developmental, educational, and child clinical psychology, we discuss several issues related to the study of schooling and mental health. In the first section, we discuss why it is important to study children's functioning and experience in school in relation to their broader mental health. In the second section, we adopt an individual-level perspective and explore one question of interest to both educationalists and developmentalists; namely, why particular academic problems (e.g., poor achievement, low effort, acting out in school) and particular manifestations of emotional distress (e.g., internalized vs. externalized) co-occur in some children.[2] A brief summary of

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[1]We use the term *children* rather than *children and adolescents* throughout the article for purposes of economy and clarity. This article focuses primarily on early adolescents aged 10 to 14 who are not really labeled as children in U.S. society anymore.

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[2]We draw on Kazdin's (1993) definition of mental health in this article. He suggested that mental health is comprised of two broad domains. The first is the absence of dysfunction in psychological, emotional, behavioral, and social spheres in which *dysfunction* refers to impairment in everyday life. The second domain is the presence of optimal functioning or well-being in the psychological and social domains in which *well-being* refers to the presence of strengths that promote optimal functioning. We focus in this article on emotions of distress such as sadness, anxiety, and anger that are, in extreme forms, related to (but not synonymous with) dysfunctions and clearly preclude optimal functioning.

evidence is presented on the relation between academic difficulties and internalized and externalized distress. This is followed by an in-depth discussion of four different hypotheses regarding why certain children show academic problems and internalized or externalized distress simultaneously. We propose that academic motivational processes play an important role at the individual level in explaining specific patterns of co-occurring problems. In the third section, we provide a preliminary discussion of how aspects of the school context may contribute to both academic and emotional difficulties in certain children. We conclude with several recommendations for future research on schooling and mental health.

Before turning to our discussion of why it is important to study schooling and mental health, one comment is necessary. In the second section, in which we discuss the various hypotheses about why certain academic and emotional difficulties co-occur, we use empirical data from our own studies to illustrate the processes being discussed. Our intention in presenting these data is descriptive and illustrative. We are not presenting the data to argue for any one particular causal hypothesis concerning the relation of academic and emotional difficulties. Rather, we use our data to illustrate how several different processes (associated with the different hypotheses) may operate at the level of the individual to produce co-occurring problems. For instance, we use data gathered from adolescents in California to illustrate the specific way that academic difficulties could lead a child to become angry and act out in class. We do not believe that this is the only explanation for co-occurring academic and conduct difficulties. Rather, we believe the process we describe is one way among many that accounts for why academic and conduct problems co-occur in some children (e.g., Richters, 1998).

SOME REASONS FOR STUDYING SCHOOLING AND MENTAL HEALTH TOGETHER

There are both practical and theoretical reasons for studying the relation of educational and mental health issues. Perhaps most important, the conjoint study of schooling and mental health is needed because many children experience academic difficulties, emotional difficulties, or both (Dryfoos, 1994; Weist, 1997). In terms of academic difficulties, approximately 25% of all 10- to 17-year-olds in the United States are behind their grade level in school (Dryfoos, 1990), up to 20% of all students are retained at least once in their academic careers (see Durlak, 1995), and many students show declining academic motivation and school engagement as they progress through school (Eccles, Midgley, & Adler, 1984). In terms of emotional difficulties, recent epidemiological estimates show that between 12% and 30% of school-aged children in the United States experience moderate to serious social, emotional, and behavioral problems that can interfere with their daily functioning in and out of school (Institute of Medicine, 1994; Kazdin, 1993; Verhulst & Koot, 1992; Weist, 1997).

Many children with social, emotional, or behavioral difficulties never receive the services necessary to address these difficulties either within or outside schools (Knitzer et al., 1991; Tuma, 1989; Weist, 1997).

We believe that academic and emotional difficulties are reciprocally related to each other over the course of a child's development. For instance, early academic problems such as grade retention, declining academic performance, and poor motivation are predictors of a variety of subsequent emotional or behavioral difficulties that emerge in later adolescence, including drug use and abuse, delinquency, teenage pregnancy, and failure to complete high school (Cairns, Cairns, & Neckerman, 1989; Dryfoos, 1990; Eccles, Lord, Roeser, Barber, & Jozefowicz, 1997; Roderick, 1993). Similarly, emotional difficulties can compromise children's ability to learn, especially if children and their families have limited access to needed services (e.g., Adelman & Taylor, 1998). Kessler, Foster, Saunders, and Stang (1995), for example, estimated that early-onset psychiatric disorders (especially conduct disorders in boys and anxiety disorders in girls) lead to truncated educational attainments in about 7.2 million Americans. It is very likely that these two domains of functioning, the academic and the emotional, influence each other in a reciprocal fashion over time. This reciprocal interaction between problems eventuates in widespread comorbidity of academic and emotional difficulties among high-risk children as they move through the school system.

Need to Assess Co-Occurrence of Problems

Despite the rather extensive literatures on children with academic or emotional difficulties, there exists relatively little interdisciplinary research on the co-occurrence of academic and emotional problems in children. Thus, we actually know very little about how the academic difficulties addressed in the education and special education literatures are related to findings on emotional and behavioral difficulties addressed in the mental health literature (e.g., Eccles et al., 1996; Knitzer et al., 1991). Lack of attention to these issues arises in part from a more general lack of interdisciplinary efforts to document children's functioning across multiple domains, including the academic, the social–emotional, and the behavioral (see Masten et al., 1995).

Understanding the co-occurrence of emotional and behavioral and academic problems would serve at least two related practical purposes. First, this knowledge could aid in the assessment of the specific "barriers to learning" (Adelman & Taylor, 1998) that exist among children in different community and school settings (urban, suburban, rural; geographic region; poor, middle class, wealthy). Such assessments, in turn, could lead to insights into how to coordinate currently existing programs that are narrowly aimed at either academic or mental health problems. Such coordination may in turn

eventuate in fiscal and practical efficiency in our efforts to remove the barriers that keep many children from learning (Adelman & Taylor, 1998).

Need for a Process Approach to Problems

Although cataloging the co-occurrence of academic, emotional, and behavioral difficulties can serve useful purposes, such information will provide little insight into why problems in the academic and emotional domains of functioning may or may not co-occur. We need to understand the individual-level psychological processes involved in the translation of academic problems (e.g., poor achievement, poor motivation to learn) into emotional and behavioral problems and the translation of particular emotional and behavioral problems (e.g., anxiety, depression, conduct disorders) into academic problems. For example, how does failure to master academic skills and knowledge influence the emotional functioning of a child (e.g., Dweck & Wortman, 1982)? How do persistent feelings of anxiety, sadness, or anger influence a child's capacity to focus, participate, reflect, and ultimately learn in a classroom setting (e.g., Girgus, & Seligman, 1986; Hinshaw, 1992; Nolen-Hoeksema, Girgus, & Seligman, 1986)? Finally, how is it that some children who experience high levels of emotional distress nonetheless stay engaged in school and get good grades (Roeser, Eccles, & Sameroff, 1998; Strobel & Roeser, 1998)?

Research on these issues requires a focus on the patterns of attentional, cognitive, emotional, and self-regulatory resources that are associated with more and less successful patterns of academic and social behavior across development (Deci & Ryan, 1985; Lazarus, 1991a, 1991b; Masten et al., 1995; Pintrich, 1989; Waters & Sroufe, 1983; Weiner, 1986). If we understood more about the patterns of psychological processes that connect children's academic and social–emotional functioning, interventions could be targeted toward both these underlying patterns and the manifest symptoms associated with them. Fortunately, many of the constructs currently being studied in relation to children's motivation, learning, and mental health are similar (e.g., attributions, competence beliefs, self-regulatory processes related to cognition and emotion, attentional and cognitive biases, etc). If researchers of education and mental health drew on each others' work more frequently we could make significant progress in our understanding of particular patterns of attentional, cognitive, emotional, and self-regulatory processes that underlie more and less adaptive patterns of academic and social–emotional functioning.[3]

Need for a Contextual Approach to Problems

More attention to the co-occurrence of academic and emotional problems and the individual-level processes that connect them will still not provide a complete picture of how schooling and mental health are related in children. We need to consider how the context of schooling can influence both academic and mental health outcomes in children within and over time (see Astor, 1998; Midgley & Edelin, 1998; Perry & Weinstein, 1998; see also Eccles et al., 1998). For it is only through institutional reforms (and not individual-level services) that we will be able to address the many educational and mental health needs of children in the United States today.

We need to better understand the kinds of school-level organizational practices that have implications for the emotional and behavioral functioning of students (e.g., Connell & Wellborn, 1991; Deci et al., 1991; Maehr & Midgley, 1991; Rutter, 1980). We need to understand the kinds of classroom instructional practices teachers use to help all children to learn, while at the same time giving needed support to those children who come to school each day with substantial skill deficits, motivational difficulties, and emotional problems that interfere with their ability to learn (e.g., Adelman & Taylor, 1998; Brophy, 1998; Speece & Keogh, 1996). Finally, we need more research on how teachers perceive the mental health of their students and how such perceptions influence their own pedagogical strategies and decisions in the classroom (e.g., Roeser & Midgley, 1997).

If we knew more about how the context of schooling is related to aspects of children's mental health, we would be in a better position to help teachers, administrators, and mental health professionals. New insights into how school practices relate to both academic and emotional outcomes could: (a) link mental health concerns with broader school reforms aimed at educational outcomes (Adelman & Taylor, 1998; Midgley & Edelin, 1998; Perry & Weinstein, 1998), and (b) inform the design of learning environments so that they could support students' learning and mental health simultaneously (see Ames, 1992; Astor, 1998; Covington, 1992; Felner et al., 1993; Maehr & Midgley, 1991; Midgley & Edelin, 1998; Perry & Weinstein, 1998; Speece & Keogh, 1996).

Summary

The conjoint study of schooling and mental health issues would inform the design of interventions at both the individual and contextual levels of analysis; interventions aimed at

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[3]References related to children's motivation and learning that have implications for the study of mental health include the following: Boekaerts (1993), Brackney and Karabenick (1995), Connell and Wellborn (1991), Covington (1992), Deci and Ryan (1985), Dweck (1986), Dweck and Leggett (1988), Dweck and Wortman (1982), Eccles (1983), Eccles and Midgley (1989), Goodenow (1992), Graham (1997), Pintrich and De Groot (1990), Roeser and Midgley (1997), Roeser et al. (1998), Weiner (1986), and Weinstein (1989). References related to children's mental health that have implications for the study of motivation and learning include the following: Blechman et al. (1986), Cairns, Cairns, and Neckerman (1989), Cole (1991), Hinshaw (1992), Kellam, Rebok, Wilson, and Mayer (1994), Lefkowitz and Tesiny (1985), Nolen-Hoeksema et al. (1986), and Tesiny, Lefkowitz, and Gordon (1980).

redressing both academic and mental health problems simultaneously. The conjoint study of educational and mental health issues would also yield theoretic insights into: (a) the specific patterns of attentional, cognitive, emotional, and self-regulatory processes that underlie more and less adaptive patterns of academic and social–emotional functioning; and (b) the role that the social context of school plays in shaping both academic and mental health outcomes in children across development. The conjoint study of educational and mental health issues can evolve in many ways and can incorporate diverse topics and areas of inquiry (see Roeser & Eccles, in press). For the remainder of this article, we focus on why academic problems and specific forms of emotional distress co-occur in some children.

CONNECTIONS BETWEEN ACHIEVEMENT BEHAVIOR AND FORMS OF EMOTIONAL DISTRESS

In this section, we briefly summarize studies on the association of children's achievement behavior and two forms of emotional distress: distress that is internalized and distress that is externalized (Kazdin, 1993).[4] We then turn to a discussion of several hypotheses concerning the processes that cause academic problems and emotional distress to co-occur in certain children. Data from our own research among adolescents in California and Maryland illustrate the processes described in these hypotheses.

Internalized distress consists of negative emotions such as sadness, anxiety, shame, and guilt that are directed toward the self (e.g., internalized). In general, children who report frequent feelings of such self-directed emotions show diminished academic functioning. Symptoms of depression (sadness, hopelessness, loneliness), for example, are associated with lower achievement on standardized tests, lower teacher-rated grades, challenge avoidance in the classroom, and poorer peer relations (Blechman, McEnroe, Carella, & Audette, 1986; Kovacs, 1989, 1992; Nolen-Hoeksema et al., 1986; Puig-Antich et al., 1985; Roeser & Eccles, 1998; Tesiny, Lefkowitz, & Gordon, 1980). Symptoms of test anxiety are associated with lower achievement on standardized tests and lower grades on classroom exams (see Pintrich & De Groot, 1990; Wigfield & Eccles, 1989).

Externalized distress consists of negative emotions such as anger, frustration, and fear that are directed against others (e.g., externalized). Externalized distress is associated with school difficulties, including learning delays, poor achieve-

ment, social rejection, and aggressive behavior and misconduct in the classroom (Hinshaw, 1992; Ollendick, Weist, Borden, & Greene, 1992; Parker & Asher, 1987; Roeser & Eccles, 1998). Externalized distress is also related to dropping out of school (Cairns, Cairns, & Neckerman, 1989; Parker & Asher, 1987).

Empirical Illustrations: Sample Descriptions

We are examining the associations between different forms of emotional distress and different achievement-related behaviors in our studies of early adolescents (Grades 6–8) in California and Maryland. Brief descriptions of each of these samples, the principal investigators of these projects, and citations for particular research reports based on these data sources can be found in Table 1.

The California data come from a small study of the relation between academic motivation and mental health in middle school students. The sample includes 97 sixth, seventh, and eighth graders from two middle schools in the San Francisco Bay area. These schools are located in primarily middle-class and upper-class communities and students were mainly White (80%) or Asian American (12%). Surveys were administered to students in their classrooms at the end of the 1996–1997 school year. The Maryland data come from a larger ongoing longitudinal study of adolescent development in multiple social contexts. The sample is large ($N = 1,071$), 60% African American, and includes adolescents from a broad range of socioeconomic backgrounds. Adolescents were interviewed and surveyed in their homes at the beginning of their seventh-grade school year (1991) and again after they had completed eighth grade 2 years later (1993). Information from school records (e.g., grades) was collected at the end of adolescents' seventh- and eighth-grade school years.

Relations between emotional distress and classroom behavior. Using data from adolescents in the California sample, we examined how particular kinds of emotional distress are related to different maladaptive patterns of behavior in the classroom, including poor classroom participation, failure to complete assignments, and overt hostility toward the teacher. Similar to the idea that specific emotions are associated with specific patterns of action (action tendencies or scripts, see Lazarus, 1991b), we investigated how negative emotions like test anxiety, sadness, and anger are associated with specific forms of maladaptive behavior in middle school science or social studies classroom settings.

Three self-report indicators of maladaptive classroom behaviors were created and used in the California study. These scales are summarized in the Appendix. We assessed adolescents' self-reports of withdrawal behavior in their classroom (e.g., trying not to be called on by the teacher, staying out of whole class discussions), resistance to classroom participa-

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TABLE 1
Brief Summary of Samples and Empirical Studies

California Sample	N = 97 adolescents
	Grades 6–8
	85% White, 12% Asian American, 2% African American, 1% Hispanic
	Mean educational level of head of household: Bachelor's/master's degree
	Cross-sectional data
	Principal investigator: R.W. Roeser (see Roeser & Quihuis, 1998; Strobel & Roeser, 1998, for details)
Maryland Sample	N = 1041 adolescents/families
	Grades 7–8
	66% African American, 33% White
	Mean educational level of head of household: Some high school
	Longitudinal data
	Principal investigators: J. S. Eccles & A. J. Sameroff (see Roeser & Eccles, 1998; Roeser et al., 1998, for details)

tion and work (e.g., refusing to do homework or classroom assignments, purposefully not studying for class tests, or skipping the class), and aggressive behavior directed at the teacher (e.g., being disrespectful to the teacher, talking back to or yelling at the teacher). Items factored into these three scales (withdrawal, resistance, aggression) and each scale had acceptable statistical properties (see Roeser & Quihuis, 1998).

To assess the relation of different maladaptive classroom behaviors with particular forms of emotional distress, we correlated the classroom behavior scales with adolescents' self-reported test anxiety (Pintrich & De Groot, 1990), feelings of sadness (Children's Depression Inventory–Short Form; Kovacs, 1992), and anger (see Roeser & Eccles, 1998). In addition, because we used self-report measures to assess both maladaptive classroom behavior and emotional distress, we thought it was important to control for socially desirable patterns of response to these measures (see Shedler, Mayman, & Manis, 1993). Therefore, we included the Children's Social Desirability Scale (CSD), an established measure with good psychometric properties that can be used with adolescents (see Crandall, Crandall, & Katkovsky, 1965) in each of our analyses of the California data. Correlations between maladaptive classroom behaviors and different forms of distress, controlling for social desirability, are presented in Table 2.[5]

In general, specific indicators of distress were associated with particular patterns of maladaptive behavior in the classroom after controlling for social desirability: Test anxiety was most strongly associated with classroom withdrawal behavior (e.g., not participating in class discussions), partial $r(91)$ = .31, $p < .01$; depressive symptoms were most strongly associated with classroom resistance behavior (e.g., failing to complete assignments, missing class), partial $r(91)$ = .25, $p <$

.05; and anger was most strongly associated with aggressive behaviors in class (e.g., yelling at the teacher), partial $r(91)$ = .24, $p < .05$. Anger was also negatively related to classroom withdrawal behavior, partial $r(91)$ = –.24, $p < .05$.

These observations are consistent with the hypothesis that specific emotions are associated with specific patterns of behavior, in this case, behavior in the classroom. The small magnitude of these associations however, reminds us, among other things, that these emotion–behavior links are not fixed and may be subject to self-regulation and alternative behavioral coping responses (Deci, 1996; Lazarus, 1991b). That is, not all anxious adolescents withdraw, not all angry adolescents show aggression in the classroom, and so on. Rather than simply saying distress interferes with learning, we need to elucidate how specific emotions of distress can generate specific kinds of maladaptive achievement-related behaviors in the classroom in specific children. Moving beyond aggregate analyses to more person-centered approaches (e.g., cluster analyses) may be particularly well suited to identifying empirically groups of children who show particular patterns of emotional distress and maladaptive behavior in classroom settings.

Emotional distress, academic performance, and skipping school. In our Maryland sample, we examined how adolescents' self-reported emotional distress was associated with their academic grades and self-reports of skipping school. Emotional distress was indexed by measures of sadness and anger (see Appendix). Academic performance was assessed using year-end teacher-rated grades (grade point average; GPA) in the core subjects (math, English, science, social studies) and school conduct was assessed with adolescents' self-reports on how frequently they had skipped classes or school during the school year.

Across the full sample, indicators of distress shared small but statistically significant ($p < .01$) correlations with these school behaviors. Early adolescents who reported higher levels of sadness in the prior 2 weeks had slightly lower year-end GPAs, seventh grade $r(729)$ = –.12; eighth grade $r(690)$ =

[5]The correlations among these scales when social desirability was not controlled were similar and were as follows: test anxiety and classroom withdrawal, $r(97)$ = .34, $p < .01$; depressive symptoms with classroom resistance behavior, $r(94)$ = .33, $p < .01$; and anger and aggressive behaviors in class, $r(96)$ = .32, $p < .01$.

TABLE 2
Partial Correlations Between Maladaptive Classroom Behaviors and Emotions of Distress
Controlling for Social Desirability

Classroom Behaviors	Emotions of Distress		
	Test Anxiety	Sadness	Anger
Withdrawal	.31**	.11	−.24*
Resistance	−.05	.25*	.10
Aggressive	−.16	.00	.24*

Note. Social desirability has been partialed out of these relations. $N = 91$.
*$p < .05$. **$p < .01$.

−.21, and were slightly more likely to skip classes, eighth grade $r(729) = .18$. Similarly, adolescents who reported frequent symptoms of anger in the previous month were also more likely to have lower GPAs, seventh grade $r(729) = -.20$; eighth grade $r(690)$ −.40, and to skip classes or school, seventh grade $r(729) = .18$; eighth grade $r(690) = .16$. Note that, similar to the correlations reported in Table 2, the correlations between distress and school behaviors are fairly small at the aggregate sample level.

Beyond correlations to patterns of functioning.

The fact that emotional distress shares only small to moderate relations with achievement-related behaviors in our studies may be due to a myriad of factors, including the nature of the sample, the nature of the measures, the developmental period in which these relations were studied, and so on. Here, we focus on two related reasons that partially account for these low correlations. First, aggregate, sample-level correlations mask important subgroup differences in the relation between emotional distress and achievement behavior. When such subgroup differences are ignored (subgroups who show different patterns of correlation between distress and academic problems), correlations at the aggregate level between distress and achievement behavior are reduced. Second, academic motivation appears to differentiate subgroups of adolescents with relatively high levels of emotional distress who do and do not show poor academic performance and misconduct in school. In particular, interest, academic values, and academic confidence seem to be important intrapsychic resources that can "protect" some adolescents from the potentially disruptive effects that their frequent feelings of sadness, anxiety, or anger can have on their functioning in school (discussed later). Thus, emotionally distressed children may or may not show academic problems, depending on their academic motivational orientation.

To illustrate these points, we present results from our efforts to document how different patterns of academic motivation and emotional distress among adolescents are associated with different patterns of academic performance, academic failure, and engagement in problem behaviors in school. Recall that emotional distress was only marginally related to ac-

ademic grades and school problem behavior in the Maryland sample of adolescents at the aggregate level. A different result emerges when we examine subgroups of adolescents in this sample. Person-centered, q-type cluster analytic techniques were used to identify subgroups of seventh-grade adolescents who manifested different patterns of academic motivation and emotional distress (Roeser et al., 1998). Q-type cluster analysis is a technique that considers the interdependence among variables within persons and classifies persons into relatively homogenous groups based on their similarity across a series of measures (Magnusson & Bergmann, 1988). In this case, we were interested in grouping together adolescents who showed a similar pattern of response in terms of their level of emotional distress in the prior 2 to 4 weeks, their self-perceptions of academic competence, and their valuing of school. We then compared these groups on measures of academic performance, academic failure, and school problem behaviors.

A four-group solution was retained for analysis (see Roeser et al., 1998, for details) and is depicted in Figure 1. Group means for the clustering variables at seventh grade are presented in the graph portion of the figure (academic competence beliefs, academic values, mental health), whereas group means and between-group differences in the achievement behavior outcomes are presented in the table portion of Figure 1 at the bottom. Note that emotional distress has been reversed and depicted as "Mental Health" in the graph. Thus, higher mental health is associated with an absence of symptoms of distress (anger and sadness), whereas lower mental health denotes the presence of symptoms of distress.

The four groups were labeled, from left to right, as positive adjustment ($N = 418$, 40%), poor school value ($N = 147$, 14%), poor mental health ($N = 152$, 15%), and multiple risks ($N = 324$, 31%). Statistical differences between groups on the clustering measures and on demographic characteristics are presented in a footnote and in Roeser et al. (1998).[6] The cluster analyses yielded several different profiles of academic motivation and emotional distress. For our discussion here, we focus attention on the last two groups because they represent our hypothesis that some adolescents can be characterized as having positive academic motivation and poor mental health (e.g., poor mental health group), whereas others show

relatively poor academic motivation and poor mental health (e.g., multiple risks group).

In the table portion of Figure 1, notice the statistically significant differences in academic achievement, rates of academic failure, and engagement in school problem behaviors that exist between these two groups. It is only among the adolescents characterized by multiple risks—those who feel academically incompetent, devalue school, and experience relatively high levels of emotional distress—that maladaptive school behaviors such as low grades, high rates of academic failure, and involvement in problem behaviors in school are evident. In contrast, these negative behaviors are not evident among adolescents who continue to feel academically competent and value school despite their relatively strong feelings of emotional distress (e.g., poor mental health group). We found a very similar cluster pattern in the California sample (Strobel & Roeser, 1998). Again, although we do not pursue this point further here, our results suggest that feelings of interest, academic valuing, and the self-regulated forms of learning associated with interest and value (e.g., Pintrich & De Groot, 1990) can protect some children from the debilitating effects of sadness and anger on their ability to learn. When children continue to value learning despite their emotional distress, they continue to get good grades and do

not misbehave in school. However, when children feel incompetent academically, and devalue learning, and feel emotionally distressed, then they also show poor academic grades and behavior problems in school.

In sum, this empirical illustration is meant to highlight the importance of: (a) considering subgroup differences when examining how academic problems and emotional distress are related, and (b) considering the role that academic motivational processes play in the relation of academic problems and emotional distress. Moving beyond aggregate correlational analyses to a focus on different patterns of school and emotional functioning seems like a fruitful approach to studying co-occurring academic and emotional difficulties. In the next section, we look more closely at some of the psychological processes that underlie the co-occurrence of academic problems and particular manifestations of emotional distress.

HYPOTHESES CONCERNING CONNECTIONS BETWEEN ACHIEVEMENT BEHAVIOR AND FORMS OF EMOTIONAL DISTRESS

Given the connection between academic problems and emotional distress in what is likely a small but socially significant proportion of children and adolescents (Carnegie Council on Adolescent Development, 1995; Dryfoos, 1990, 1994; Eccles et al., 1996; Roeser et al., 1998), we next turn our attention to addressing some of the intrapsychic processes that might explain the covariation between academic problems and particular forms of emotional distress in such children. Four general hypotheses have been offered in the literature (see Coie & Krehbiel, 1984; Hinshaw, 1992; Schonfeld, Shaffer, O'Connor, & Portnoy, 1988). For purposes of discussion, we term these different hypotheses *the academic difficulties hypothesis, the emotional difficulties hypothesis, the reciprocal influence hypothesis,* and *the third variable hypothesis.* These hypotheses posit different causal relations and different processes responsible for the co-occurrence of academic and emotional problems among some children. The first hypothesis is that academic problems lead to emotional problems; the second hypothesis is that emotional problems lead to academic problems; the third hypothesis is that each type of problem leads to the other in reciprocal fashion; and the fourth hypothesis is that some other third variable accounts for the association of academic and emotional difficulties in some children.

Although we discuss these different causal hypotheses separately here as a way of illustrating their utility for understanding co-occurring problems, we believe that each hypothesis offers a useful way of understanding the co-occurrence of academic difficulties and particular forms of emotional distress. That is, rather than viewing and discussing these four hypotheses as competing perspectives, we

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[6]Student Newman–Keuls contrasts were used to assess between-group differences on the clustering variables. Statistically significant differences that emerged from these comparisons were as follows: Adolescents characterized by positive adjustment or poor mental health showed higher self-ratings of academic competence and values compared to youth characterized by poor school value, who in turn reported higher levels of academic competence and valuing of school than youth characterized by multiple risks. In addition, adolescents in the multiple risk group reported the most frequent feelings of emotional distress in seventh grade (i.e., the poorest mental health), followed by adolescents in the poor mental health, poor school value, and positive adjustment groups, respectively. Demographic differences between the groups were also examined. Chi-square analyses showed no significant differences among the groups in terms of gender composition, $\chi^2(3, N = 1,041) = 5.76, p = .12$, and a significant effect of group membership by race, $\chi^2(3, N = 976) = 17.76, p < .01$. Although not a statistically significant result, girls were slightly more likely to be in the poor mental health group, whereas boys were slightly more likely to be represented in the poor school value group. White adolescents were overrepresented in the poor school value and the multiple risks groups, whereas African Americans were overrepresented in the poor mental health group. Significant three-way interactions by gender, race, and cluster membership clarified these main effects. White boys were overrepresented in the poor school value group, whereas White girls and African American boys were overrepresented in the poor mental health group. A nonsignificant trend concerning marital status and group membership was also found, $\chi^2(3, N = 1,041) = 6.44, p = .09$, indicating that adolescents who lived in two-caregiver households were slightly more likely to be characterized by positive adjustment, whereas those in single-caregiver households were slightly overrepresented in the multiple risks group. Two final differences emerged based on Student Newman–Keuls mean comparisons: Youth in the poor school value group came from families characterized by the highest levels of income and primary caregivers with the highest levels of educational attainments compared to the other groups, whereas youth in the poor mental health group had parents characterized by the lowest relative level of occupational status.

Standardized Units
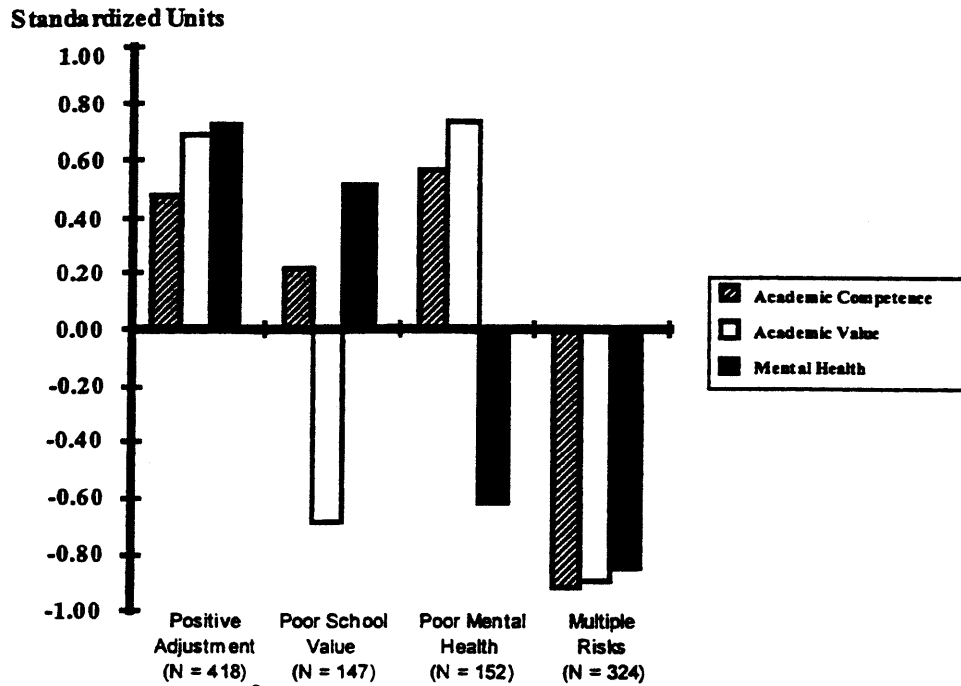
Achievement Behaviors					F-Values
Seventh Grade GPA	0.21 [a]	0.21 [a]	0.10 [a]	-0.39 [b]	$F_{(3, 994)} = 26.15^{**}$
Percent Failing a Class	13% [a]	20% [a]	20% [a]	39% [b]	$\chi^2_{(3, 907)} = 60.93^{**}$
School Problem Behaviors	-0.19 [a]	-0.09 [a]	0.03 [a]	0.29 [b]	$F_{(3, 950)} = 13.61^{**}$

FIGURE 1   Emergent patterns of school and emotional functioning in seventh graders: Maryland sample. Student Newman–Keuls comparisons were used to test between-group differences on the GPA and school problem behaviors measures (which are presented in standardized units). Chi-square analyses were used to test differences in the percentage of youth in each group who failed or did poorly in a class in the last 2 years. $^*p \leq .05$; $^{**}p \leq .01$. Different subscripts indicate groups differ significantly; family-wise error rate = .05.

view and discuss them as complementary perspectives on why academic and emotional problems often go together in high-risk children.

Academic Difficulties Hypothesis

The hypothesis that academic difficulties lead to emotional difficulties is anchored in cognitive theory: It emphasizes the role that children's cognitive skills and abilities, their behavioral performance in school, and their cognitive appraisals of their performance in school play in generating negative emotions. Synthesizing across several discussions of this hypothesis (Blechman et al., 1986; Brackney & Karabenick, 1995; Hinshaw, 1992; Schonfeld et al., 1988), the line of reasoning goes something like this: Children who do poorly in school are thought to have skill deficits that undermine their capacity

to be academically successful (Blechman et al., 1986). Deficits in cognitive and metacognitive skills can lead to diminished school performance (e.g., Hinshaw, 1992; Pintrich & De Groot, 1990). Poor school performance, in turn, can generate attributions about why failure occurred. Depending on the nature of these attributions, different forms of negative emotions associated with failure such as anger or shame can arise (Weiner, 1986). Depending on the nature of children's attributions and emotions following failure, longer term negative beliefs about their capacity to learn (e.g., academic competence beliefs) and the value of learning (e.g., academic values), and longer term feelings of unworthiness can emerge. Both immediate and longer term emotional and cognitive consequences of academic problems are generated through a variety of cognitive and social-cognitive processes, including social comparison, self-perceptual, self-reflective, and other appraisal processes (Bandura, 1993; Cole, 1991;

Covington, 1984; Eccles, 1983; Harter, 1986; Lazarus, 1991a, 1991b; Weiner, 1986).

In sum, the academic difficulties hypothesis is that chronic, negative academic outcomes are appraised by students and, increasingly, these events and their appraisals generate feelings of frustration, anger, anxiety, incompetence, disinterest, and unworthiness in the child. Erikson (1959) described this phenomenon as a gathering sense of inferiority. For decades, researchers interested in motivation in educational settings have been studying the psychological processes by which academic difficulties become translated into negative emotions and beliefs related to self and schooling (Weiner, 1986, 1990). These cognitive-motivational processes include attributional processes in which children derive self-relevant information from their performance in achievement situations (Dweck & Wortman, 1982; Graham, 1997; Weiner, 1986), coping processes in which children deal with inevitable academic setbacks (Connell & Wellborn, 1991), social comparison processes in which some students perceive themselves as unworthy (Covington, 1984), and the self- (e.g., perceptions of competence) and task-related (e.g., perceptions of task value) beliefs that are developed through academic feedback and experience (Cole, 1991; Eccles, 1983). Following, we discuss at length several of these cognitive-motivational processes in relation to internalized and externalized distress.

Attributions. The first cognitive-motivational process that can translate academic difficulties into negative self-related emotions and beliefs is the attributional process, the manner in which students assign cause to poor academic performance. Attribution research explains how academic difficulties could be translated into either internalized or externalized distress over time (Dweck & Wortman, 1982; Weiner, 1986).

Research has shown that some children ascribe the cause of academic failures to a personal lack of academic ability. Dweck and colleagues noted that when children ascribe failure to their own lack of ability and believe that their (in)ability will never change, they evidence behaviors such as challenge avoidance, lack of persistence on difficult tasks, ineffective approaches to problem solving, and diminished performance in achievement situations (Dweck & Leggett, 1988; Dweck & Wortman, 1982). Dweck and colleagues labeled this constellation of cognitions and behaviors the *academic helpless pattern of achievement behavior*. It is this pattern that is associated most closely with internalized feelings of distress in the child, including a sense of self-blame, shame, self-doubt, sadness, and low esteem (Covington, 1984; Dweck & Wortman, 1982; Weiner, 1986). In essence, some children internalize the cause of academic failure and, in so blaming themselves, generate negative emotion-laden beliefs about their competence as learners (Cole, 1991), the value of schooling (Steele, 1988), and their self-worth (Covington, 1992).

Attribution theory also suggests the processes by which academic failure could lead to externalized distress in the form of anger and aggression (see Graham, 1997; Weiner, 1986). Some children who have skills deficits and do poorly in school ascribe their academic problems to the influence of powerful, and perhaps hostile, others rather than to their own lack of ability (Connell & Wellborn, 1991). Such attributions can lead to feelings of anger and frustration, which, in turn, can lead to acting out and aggression against peers or teachers if the children feel these individuals are responsible for their difficulties. In this instance, the child does not internalize the cause of failure and the negative emotions and self-beliefs that arise from such an ascription. Instead, the child externalizes both the cause of failure and the negative emotions associated with this ascription. This pattern helps explain why some children with conduct problems and academic difficulties overestimate their competence: They may not perceive negative outcomes as providing self-relevant information because they attribute the cause of these outcomes to others (see Coie & Jacobs, 1993).

Coping processes. A closely related set of cognitive-motivational processes that could translate academic difficulties into emotional difficulties concerns the manner in which children deal with the inevitable setbacks that occur in learning situations. Connell and his colleagues examined the different ways in which adolescents cope with academic difficulties in the classroom (Connell & Wellborn, 1991; Tero & Connell, 1983). They asked students a series of questions concerning how they would cope with "not doing well on a test" or "not being able to answer an important question in class." Four different methods of coping with these hypothesized academic setbacks emerged in their work: (a) *anxiety amplification,* or blaming oneself for the difficulties; (b) *projection,* or blaming powerful and perhaps hostile others for the difficulties; (c) *denial,* or not dealing with difficulties; and (d) *positive coping,* or approaching and seeking information so that difficult situations can be mastered in the future.

In one set of analyses, Connell and Wellborn (1991) described two different patterns of coping among students rated by their teachers as manifesting different patterns of emotional and behavioral disaffection in the classroom. They found that anxiety amplification was associated most closely with disaffected students who displayed a lack of enthusiasm for learning and withdrawal from classroom activities. Projective coping, in contrast, was associated with disaffected students who were angry, rebellious, and disruptive in class. In short, these authors found that specific ways of coping with academic difficulties were associated with specific forms of internalizing (e.g., unenthusiastic, withdrawn) and externalizing (angry, rebellious) forms of emotional and behavioral disaffection in the classroom.

Considering attributions and coping together. The similarity of findings from this admittedly selective review of research on attributions and coping in academic settings results from the fact that attributions are a specialized form of appraisal, and appraisal is an integral aspect of the coping process. Lazarus (1991b) differentiated between primary appraisals of events (e.g., "Is this event self-relevant?") and secondary appraisals (i.e., those that involve blame or credit and whether blame or credit for an event is directed at oneself or others). It is this secondary process, one in which "hot appraisals of blame or credit" (Lazarus, 1991b, p. 827) are made, that determines emotional experience and initiates either reactive action tendencies or more intentional forms of psychological and behavioral coping responses (Boekaerts, 1993; Lazarus, 1991b).

The academically helpless pattern described by Dweck and Wortman (1982) arises from attributions concerning events deemed personally meaningful (i.e., academic failure) in which blame is attributed to the self for the failure (Connell & Wellborn, 1991; Weiner, 1986). In particular, internal, uncontrollable factors such as lack of ability are seen as the source of academic difficulty. Such internalization or self-blame, in turn, generates emotions of internalized distress, negative self-perceptions, and perhaps behavioral responses of withdrawal. In a sense, the academically helpless pattern represents a coherent system of attributions, emotions, cognitions, and behavior. It is important to note that at a certain point in time, some children who show this pattern will come to view academic failure as irrelevant, thus relieving the negative affect and assaults to self-esteem that are associated with failure on a personally meaningful and valued task. Or, framed in the language of the academic motivational theorists, at some point in time repeated failures will lead some children to extreme disaffection with learning (Connell & Wellborn, 1991), boredom (Larsen & Richards, 1991), academic disinterest and devaluing (Eccles, 1983), disidentification with school (Steele, 1988), helplessness (Dweck, 1986), and perhaps, the endorsement of work-avoidance goals in the classroom (Urdan, 1997).

The attributional pattern that leads to anger in the face of difficulties that has been described by the attribution theorists (Graham, 1997; Weiner, 1986) clearly has, as its source, an assignment of blame toward others and not the self in the appraisal of academic difficulties (Connell & Wellborn, 1991; Crick & Dodge, 1994). In particular, children who manifest an externalizing academic pattern are more likely to attribute their academic difficulties to the (hostile) intentions of others rather than to themselves. This, in turn, can generate anger and aggressive action tendencies on the part of the child toward others because others are perceived as responsible for the child's difficulties.

It is useful to reiterate that children who manifest a habitually externalizing pattern of response to academic difficulties may present an anomaly to researchers of motivation. It could be that such children believe they are competent at learning despite significant evidence to the contrary because the self-relevant information embodied in negative academic events does not influence their perceptions of themselves as learners. Academic failures may simply generate negative perceptions of others who are perceived as responsible for the difficulties. In some sense, we could see this projective process as a form of denial, but it is important to realize that transactional processes between aggressive children and their peers and teachers may actually reinforce this projective pattern. Negative interactions with aggressive children may lead peers and teachers to withdraw their social and intellectual support from these children. This may implicitly contribute to aggressive children's academic problems and thus reinforce their beliefs that others are the cause of their difficulties.

Although it is likely that only a small percentage of children actually manifest these two maladaptive patterns in the extreme, it is precisely these children about whom we are most concerned; namely, those with emotional and behavioral difficulties that interfere with learning. Thus, these patterns may prove useful in designing interventions for identifying and treating children who show these different patterns of maladaptation in the classroom (see Eccles et al., 1998). In fact, we think it may be useful to label these two patterns, respectively, the *academic internalizing* and the *academic externalizing* patterns of functioning. This aligns research on motivational processes in educational settings (Dweck & Wortman, 1982; Graham, 1997; Weiner, 1986) with mental health research on internalizing and externalizing emotional and behavioral problems (and their educational correlates) more generally (Achenbach et al., 1991; Coie & Dodge, 1998; Nolen-Hoeksema et al., 1986; Seligman et al., 1984). Such an integration leads to a concise, process-oriented view of the academic functioning of children experiencing high levels of internalizing distress, externalizing distress, or both. Such a process-oriented view may apply equally well to normative and clinical populations, a considerable theoretical virtue (Cicchetti, 1984; Sroufe & Rutter, 1984).

Empirical illustration. In this section, we use data from the California sample to illustrate what we call the academically internalizing and academically externalizing patterns of functioning. Each pattern is comprised of specific ways of appraising academic difficulties, specific emotions, and specific behavioral responses in relation to difficulties. To illustrate these patterns and their associated processes, we assume that the specific way a child appraises academic difficulties (probabilistically) generates a specific emotion, and specific emotions in turn (probabilistically) generate specific patterns of behavior in the classroom (see Lazarus, 1991b; Weiner, 1986; see Deci, 1996, for critique).

**Beginning,
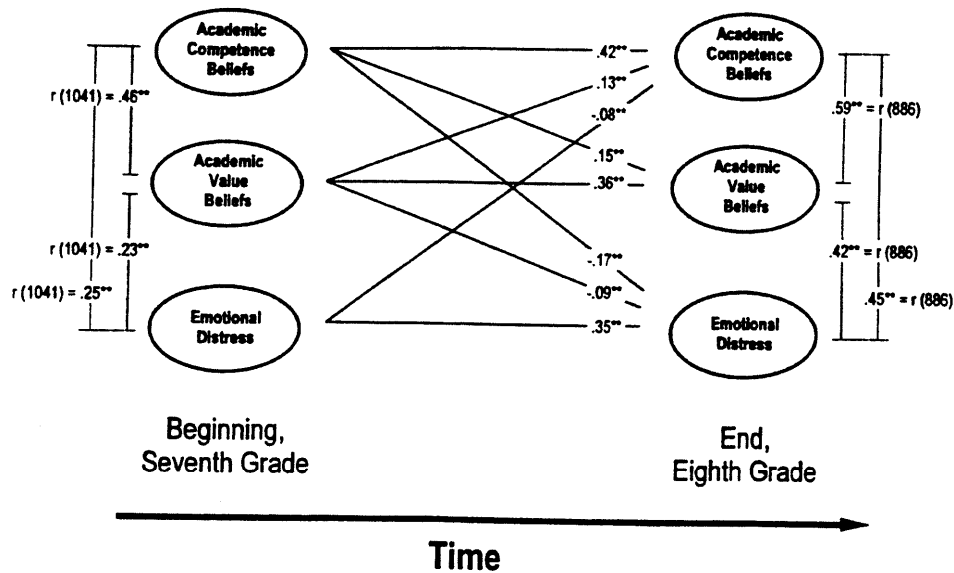Seventh Grade**

**End,
Eighth Grade**

Time

FIGURE 4   Concurrent and cross-time relations between academic motivational beliefs and emotional distress: Maryland sample. Correlations are presented on the far right and far left sides of the diagram. Standardized regression coefficients in the prediction of academic competence beliefs, academic values, and emotional distress at eighth grade are presented in the center of the figure. These regression coefficients are adjusted for the adolescents' gender, race, and prior achievement, their pretax family income in 1991, and the head of household's educational and occupational status in 1991. Coefficients for these sociodemographic characteristics are omitted from the figure for purposes of clarity. $*p \leq .05$; $**p \leq .01$.

yses are presented in the center portion of Figure 4.[9] Correlational results within each grade showed that adolescents who felt academically competent and valued school also reported less frequent symptoms of sadness and anger concurrently (see correlations in Figure 4). Reversing this, we could say that adolescents who felt academically incompetent and who devalued school also were more likely to feel sad and angry at each time point. A similar pattern of associations was found over time from seventh to eighth grade: Adolescents who felt more competent and valued school more during seventh grade reported less frequent feelings of anger and sadness 2 years later. These longitudinal associations were significant even after accounting for adolescents' previous levels of distress and a comprehensive set of demographic characteristics in the prediction equations (see footnote 9). These results may reflect the fact that for some children, motivational beliefs play a protective role against distress (Cole,

1991; Eccles et al., 1996; Roeser et al., 1998; Strobel & Roeser, 1998).

Summary.   The academic difficulties hypothesis states that academic problems cause emotional difficulties. Our review suggests that various cognitive-motivational processes related to learning, including attributions, coping processes, self-perceptions of competence, and academic values, plausibly translate academic problems into emotional distress. We now turn to the next hypothesis: the emotional difficulties hypothesis.

Emotional Difficulties Hypothesis

A second hypothesis concerning the co-occurrence of academic and emotional problems is that emotional difficulties cause academic difficulties. Cognitively oriented researchers of mental health have described two specific ways that negative emotions affect cognition, and consequently, children's learning and performance in school. These include (a) the activation of memory biases, and (b) the activation of attentional biases. As we discuss in the following, these two sets of biases are closely interrelated.

Memory and attentional biases.   The first way that negative, persistent emotions (whatever their cause) can influence cognition is through their influence on memory. As

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[9]Demographic factors that are linked to academic and emotional adjustment, including adolescents' race, gender, prior achievement as measured by their third- and fifth-grade scores on the California Achievement Test, family income, head of household's occupational status, and head of household's educational level were controlled for in the regression analyses used to predict competence, value, and distress from seventh grade to the end of eighth grade (see McLoyd, 1998). These coefficients are not presented here for reasons of clarity but are found in Roeser et al. (1998).

Segal and Cloitre (1993) remarked, "Negative emotion seems to elicit negative memory, and conversely, the consolidation of negative memories seems to maintain or enhance negative affect" (p. 37). Once aroused, negative emotion may influence children's academic functioning through its impact on the kinds of achievement-related beliefs that are activated in memory when the child is in a learning situation. For example, a student experiencing high levels of sadness (for whatever reason) will have similarly affectively valenced self-perceptions activated in memory when learning. That is, sadness will bias children's recall toward memories of other sad events. This might include memories of past academic difficulties or failures, misgivings about those failures, perceptions of personal incompetence, and so on. In effect, a pervading mood of sadness could spill over into a child's classroom experience in the form of feelings and beliefs associated with academic incompetence. As noted earlier, this sense of incompetence may cause students to divert energies into self-protective strategies such as effort withdrawal, challenge avoidance, or lack of persistence on academic tasks rather than into efforts to learn (Boekaerts, 1993; Covington, 1992; Dweck, 1986). In sum, negative mood, through its activation of negative beliefs concerning academic competence in particular, could drain off resources available for learning by activating scripts for avoidance behavior and self-protection. This in turn could precipitate academic difficulties (Brackney & Karabenick, 1995).[10]

Empirical illustration. Returning to our analysis of the Maryland data presented in Figure 4, we can see the link between emotional distress and motivational beliefs. Emotional distress during the beginning of seventh grade has a small but significant negative relation with students' self-perceptions of academic competence across a 2-year period. Recall that demographic factors and prior academic competence beliefs are controlled in these analyses. These results may reflect a rather long-term interactive relation between negative mood and negative self-perceptions. These results may also reflect the fact that for some children, emotional distress undermines motivation to learn, at least in terms of self-perceptions of competence (e.g., Brackney & Karabenick, 1995; Cole, 1991; Roeser et al., 1998).

It is interesting to note in Figure 4 that emotional distress is unrelated to adolescents' academic values over time, whereas academic values at seventh grade are associated with dimin-

ished emotional distress later in eighth grade. Just as predominating feelings of sadness or anxiety can lead to the activation of negative self-perceptions, so too can strong feelings of interest activate positive memories and relevant prior knowledge. Thus, interest may afford a protected psychological space that supplants, at least temporarily, negative mood and its biasing effects on memory and attention. In fact, it seems that interest and valuing of school are both important factors in explaining why some children who feel emotionally distressed nonetheless continue to regulate their cognition and attention during learning, get good grades, and act appropriately in school (Roeser et al., 1998; Strobel & Roeser, 1998).

Attentional biases. A second way that emotions can influence cognition is through their effect on attention. Emotions can compel us to attend to particular aspects of the outer world, mainly those that are consistent with the emotions themselves. This biasing of attention was described by Segal and Cloitre (1993) who wrote, "Emotions can facilitate attentional processing of features of the environment consistent with the emotion but also produce a loss of information about other aspects of the situation" (p. 31). Anxiety seems to have a particular biasing effect on attention (see Gotlib & MacLeod, 1997). In a learning setting, attentional biases resulting from high levels of anxiety can cause children to focus too much on potential sources of future failure and too little on the requirements of the task at hand. This splitting of attentional resources can lead to poor achievement, which in turn reinforces children's negative self-perceptions and anxieties about their academic capabilities. In addition, an attentional bias in which a child becomes too focused on potential sources or scenarios of future failure may cause other positive experiences to go unnoticed. Dweck and Wortman (1982) wrote about this process among children who display learned helplessness in achievement settings. Such children, who are characterized by elevated levels of internalized distress,

> appear to process both positive and negative outcomes in a way that tends to confirm self-denigrating cognitions. Not only are failures taken as evidence of incompetence, but the threshold for perceiving failure appears lower. Not only are successes likely to be discounted as reflections of ability, but the threshold for perceiving themselves as successful is higher among these individuals even if evidence of competence were abundant, its impact might be minimized. (Dweck & Wortman, 1982, p. 115)

It is interesting to note that this kind of attentional bias, perhaps induced by predominating feelings of internalized distress, is in part what we mean when we say distress drains off resources for learning. In essence, distress can divert attentional resources away from features of the instructional task toward personal attributes and environmental stimuli

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[10]Anxiety can have a similarly debilitating effect on students' memory and attention, and thereby their motivational beliefs and academic performance. Anxiety, rather than leading to a perseveration on past failures, seems to activate thoughts and fears associated with imagined future failures. These thoughts and fears can activate other similarly valenced memories, drown out memories associated with competence and success, and divert attentional resources toward perceived sources of threat rather than toward the task. These processes in turn can lead to diminished achievement.

For each pattern, path analyses were used to illustrate the hypothesized causal flow of appraisals to emotions to behavior. Based on prior research, we expected that anxiety amplification, which reflects a tendency toward attributing blame to the self for academic difficulties, would be uniquely related to forms of internalized distress, which would consequently be uniquely related to withdrawal and resistance behavior in the classroom (Dweck & Wortman, 1982; Roeser & Quihuis, 1998). We also predicted that projection coping, which reflects a tendency toward attributing blame to others for difficulties, would be uniquely associated with anger and consequent aggressive behavior in the classroom (Graham, 1997). Again, we label these two patterns of appraisal, emotion, and maladaptive classroom behavior in the face of difficulties as the academic internalizing and academic externalizing patterns, respectively.

For these illustrations, we use Tero and Connell's (1983) anxiety amplification and projection coping scales. In addition, we use the indicators of test anxiety, depressive symptoms, anger, and maladaptive classroom behaviors (withdrawal, resistance, and aggression) described earlier (see Appendix). Path analyses were used to illustrate how (a) appraisals of difficulties could lead to emotion, and (b) how both appraisals and emotions could lead to specific classroom behaviors. Gender was included in the analyses to account for possible differences in different manifestations of distress among boys and girls (see Kazdin, 1993); a measure of social desirability (Crandall et al., 1965) was included to control for defensive responding on the part of adolescents in their self-reports of mental health and maladaptive classroom behaviors.[7]

Figure 2 presents the path analyses for the internalizing pattern. As expected, anxiety amplification was significantly and positively associated only with test anxiety and depressive symptoms. Anger was thus excluded from further analyses and Figure 2. The second series of regressions predicted classroom behavior using anxiety amplification, gender, social desirability, test anxiety, and depressive symptoms as independent variables. No direct relations between anxiety amplification and the classroom behaviors were found in these second regression analyses. However, we did find that test anxiety was associated with the tendency to withdraw from classroom activities and depressive symptoms were associated with a tendency to resist academic work and participation. No associations of these emotions and aggressive behavior were found in the multivariate analyses. These data illustrate how self-blame in the face of difficulties can lead to feelings of internalized dis-

tress and, consequently, withdrawal and resistance to work in the classroom (Dweck & Wortman, 1982).

Figure 3 presents results for the externalizing pattern. Adolescents who blamed others for academic problems (projection) were more likely to report feelings of anger. As predicted, projection was unrelated to test anxiety and sadness; thus, these scales were excluded from further analysis and Figure 3. In the prediction of classroom behavior, we found a direct link between projection and adolescents' resistant and aggressive behaviors in the classroom. This link was not mediated through anger. No effect of projection or anger on classroom withdrawal behavior was found in the multivariate analyses.

Although this pattern of relations is consistent with our conceptualization of an externalizing pattern of coping, emotion, and behavior in the classroom, we hoped to illustrate that anger mediated the relation between projection and these negative classroom behaviors. That we could not do this with this particular set of measures most likely reflects the similarity of item content among the scales we used, especially the projection and classroom aggressive behavior scales. Future work on developing scales that clearly differentiate between appraisals of intentionality (e.g., blame) for poor academic outcomes, the emotional experience of anger, and subsequent aggressive behavior will be necessary to document the existence of the pattern we have termed academic externalizing.[8]

Academic competence beliefs and values. Two final motivational variables that can "translate" academic difficulties into emotional difficulties are students' relatively enduring sense of academic competence and their valuing of school. Unlike attributional or coping processes that occur on relatively short time scales in relation to specific events, academic competence and value beliefs exist on longer time scales and are developed through many such events and their appraisals (Eccles, 1983; Kendall & Dobson, 193). Academic competence and value beliefs contribute to children's overall affective experience of themselves (e.g., their self-worth; Covington, 1984; Harter, 1986).

Through successful academic experiences and related appraisal and feedback processes, children can develop positive expectations for success and positive self-perceptions of their academic competence over time (see Eccles, 1983), or what Erikson (1959) referred to as a *sense of industry.* Self-perceived competence provides a psychological resource that protects against distress and promotes self-esteem (Cole, 1991; Erikson, 1968; Harter, 1986). In contrast, through negative academic experiences and related appraisal and feedback processes, children likely develop low expecta-

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[7] The social desirability scale was correlated with the various indicators of emotional distress. The correlations of social desirability with test anxiety, $r(96) = -.18$, $p = .07$, depressive symptoms, $r(94) = -.32$, $p < .01$, and anger, $r(96) = -.36$, $p < .01$, were all large enough to justify including this measure in the analyses to control, in a statistical sense, socially desirable patterns of response. The use of this measure in fact clarified the multivariate relations among the variables in the academic internalizing and academic externalizing patterns.

[8] For instance, items in the projection scale included things such as "I would get angry at my teacher if bad things happened to me in the classroom." Items in the classroom aggression scale included things such as "I yell at my teacher."

Negative Classroom Event	Emotion	Behavior

Anxiety Amplification — .43** — Test Anxiety — .28* — Withdrawal Behavior

.26**

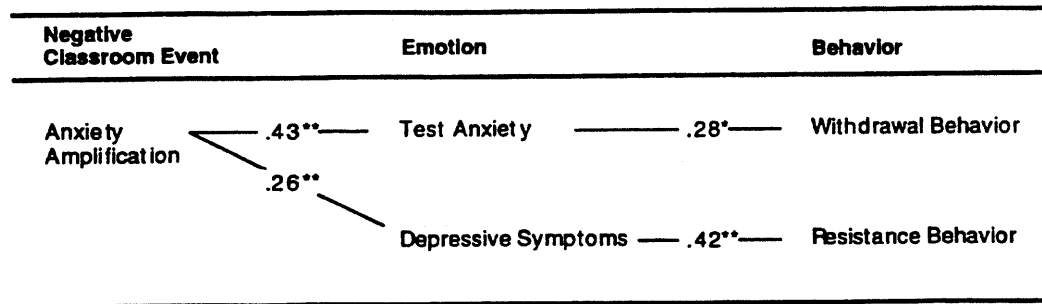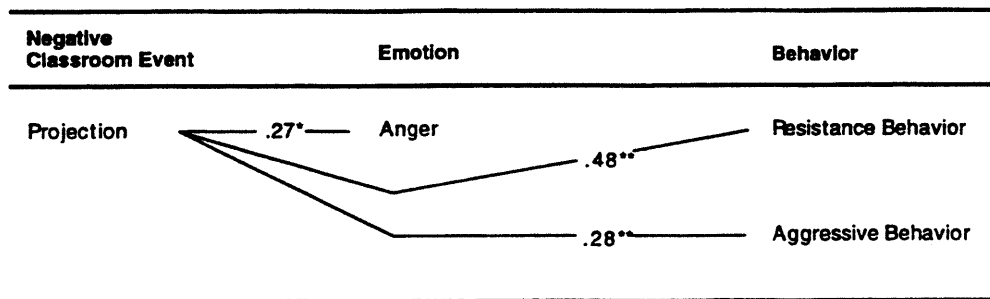Depressive Symptoms — .42** — Resistance Behavior

FIGURE 2   Path analyses illustrating the academic internalizing pattern: California sample; standardized regression coefficients. Coefficients presented are adjusted for gender and social desirability. These coefficients are omitted from the figure for simplicity of presentation. $N = 97$; $*p \le .05$; $**p \le .01$.

Negative Classroom Event	Emotion	Behavior

Projection — .27* — Anger

.48**   Resistance Behavior

.28**   Aggressive Behavior

FIGURE 3   Path analyses illustrating the academic externalizing pattern: California sample; standardized regression coefficients. Coefficients presented are adjusted for gender and social desirability. The coefficients are omitted from the figure for purposes of clarity. $N = 97$; $*p \le .05$; $**p \le .01$.

tions concerning future success and a lack of confidence in their academic ability (Cole, 1991; Eccles, 1983; Weiner, 1986). These beliefs can contribute to a broader sense of inferiority and low self-worth (Cole, 1991; Dweck & Wortman, 1982; Roeser & Eccles, 1998).

Children's academic values should also relate to their mental health (Roeser et al., 1998). For instance, children's belief that school is interesting, important, and instrumental for attaining future goals is indicative of a strong connection between their personal identities and the socially sanctioned pathways to future opportunity in the United States. Such an integration can provide youth with a sense of hope, purpose, and direction that manifests itself in positive behavioral choices, a sense of well-being, and a positive outlook on the future (Eccles, 1983; Erikson, 1968; Finn, 1989). To the extent that schooling is not seen as valuable, a sense of hopelessness or alienation from self and the sanctioned ways of being successful might ensue, causing emotions of dismay and distress. Alternatively, as suggested earlier, one way children may cope with academic difficulties and resultant feelings of incompetence is to devalue schooling (Eccles, 1984; Eccles et al., 1998). Such devaluing serves to maintain self-esteem in the face of negative competence-related feedback (Steele, 1988), but can also lead to a sense of alienation and the adop-

tion of antisocial or self-defeating beliefs and values (Erikson, 1968).

Empirical illustration.   Using data gathered from adolescents in Maryland, we recently examined how early adolescents' academic competence and value beliefs related to their feelings of emotional distress at the beginning of seventh grade, at the end of eighth grade, and over time (Roeser & Eccles, 1998; Roeser et al., 1998). The academic competence scale assessed how good students believe they are at learning math and other subjects and how able they feel in meeting the educational demands of teachers and parents. The academic value scale assessed students' sense that education is interesting, important, and instrumental in the attainment of other life goals (e.g., getting a good job later). An indicator of emotional distress assessed how frequently in the prior 2 to 4 weeks adolescents felt sad or angry. These measures are presented in the Appendix.

Zero-order correlations among the motivation and distress indicators were calculated at each grade and are presented on the far left and far right sides of Figure 4. Regression analyses were used to assess the cross-time relations of these indicators. Multivariate (standardized) coefficients from these anal-

that are consistent with the negative emotion. This serves to maintain or amplify the initial, negative, emotional state.

Similar attentional biases have been noted in children who are angry and display conduct difficulties (Crick & Dodge, 1994; Graham, 1997). Children with high levels of anger habitually impute hostile intentions and see provocations as coming from others. This may reflect an information processing bias or an emotionally primed, attentional sensitivity to cues associated with hostility (Astor, 1998; Graham, 1997). Some angry children look for and perceive provocations and respond aggressively automatically. Children who manifest impulsive and aggressive behavior, motivated by their vigilance to perceived provocations, are more likely to be rejected by peers and disliked by teachers (Coie & Dodge, 1998; Wentzel & Asher, 1995). Peers or teachers may become relatively unavailable or unwilling to assist such children because interactions with them are aversive or difficult. This enhances the likelihood that angry children, primed to see themselves as potential victims, eventually become victims of isolation and failure in the classroom setting (Coie & Jacobs, 1993).

Summary. The emotional difficulties hypothesis takes as a starting point relatively enduring negative emotional states (e.g., anxiety, depression, anger) in children that bias their cognition in certain ways. Negative emotion, through its effects on cognition, drains off attentional and motivational resources by (a) reinforcing maladaptive appraisals of negative events (e.g., self or other blame), (b) activating negative self-perceptions of competence in memory during learning that then lead to maladaptive achievement-related behaviors, and (c) drawing children's attention to task-irrelevant factors during learning, thus diminishing the quality of their learning and achievement. In essence, the emotional difficulties hypothesis takes the inner emotional state of the child as the point of departure in understanding how academic problems could ensue from such a state, whereas the academic difficulties hypothesis takes academic failures as the point of departure and then traces the emotional consequences of such events for the child.

Reciprocal Influence Hypothesis

It is interesting to note that, at this point in our discussion, we have come full circle in discussing how academic problems can be translated into negative emotional effects through a variety of cognitive-motivational processes (e.g., attributions) and also how negative emotions can produce academic difficulties through their biasing of memory and attention. When academic failures are perceived as an occasion to assign blame either to oneself or others, negative emotions and behaviors are likely to ensue. When negative moods predominate in children, they may experience a prevailing sense of incompetence, disinterest, or distrust in learning situations that leads to problems. Additionally, negative moods may

cause children to have a heightened sensitivity to certain nontask-relevant stimuli (e.g., fears of failure, concerns about victimization). This biasing of attention can divert resources away from the learning process toward other self-protective measures (e.g., Boekaerts, 1993). Thus, academic failures can lead to negative emotions and negative emotions can lead to academic failures.

Whether academic difficulties fuel emotional difficulties or vice versa does not really matter after the initiation of problems. As Lazarus (1991a) said of the causal connection between cognition and emotion, "How we view the direction depends on where in the psychological process one chooses to stop the action to identify the variables that precede or follow each other" (p. 353). We believe this is particularly true when one casts the associations between achievement behavior and emotional experience into a developmental framework. If we think about the relations between cognitive, emotional, and behavioral performance over time, it is clear that reciprocal effects between cognition, emotion, and behavior are the norm and occur synergistically.

We have elaborated on each of the two causal hypotheses here (i.e., academic and emotional difficulties hypotheses) because they each highlight different sets of processes that explain the link between academic difficulties and different manifestations of emotional distress. We believe that all of these processes are valid mechanisms and that they can all occur simultaneously within the same individual. Finally, we believe that successful interventions for students with multiple difficulties must take into consideration the reciprocal nature of the psychological and behavioral processes that underlie co-occurring problems. It is probably not enough to provide behavioral interventions without helping a troubled child to reframe her maladaptive appraisals of academic difficulties. It is probably not enough to retrain children's attributions concerning academic events without also cultivating interest through the delivery of meaningful tasks. Finally, none of these interventions are likely to be effective unless they are delivered in the context of a caring relationship and a supportive academic setting. We have not yet addressed the complex interactions between the psychological processes we have been discussing and the rich interpersonal, instructional, and organizational landscapes in school within which the child is functioning. We discuss this next level of complexity briefly in relation to the third variable hypothesis.

Third Variable Hypothesis

A final important question is what other factors (e.g., third variables) might account for the co-occurrence of academic problems and emotional distress in certain children? Third variables are often discussed in terms of a spurious relation between two variables that is totally accounted for by the effect of a third, often unmeasured, variable on both of the primary variables. For instance, IQ could be considered a third

variable that totally accounts for the relation between test scores and academic grades. We want to focus on another conceptualization of the third variable here; namely, one in which the third variable influences both the independent and dependent variables but not totally and not in a way that makes the relation between the independent and dependent variables spurious or unimportant. In addition, we are also interested in third variables that may affect the nature and the magnitude of the relation between the independent and dependent variables, here, academic and emotional difficulties. In the next section, we describe how features of the school context might function as third variables affecting both achievement behavior, mental health outcomes, and the relation between the two.

SCHOOLING AND MENTAL HEALTH: SOCIAL-CONTEXTUAL PROCESSES

There is ample empirical evidence that cognitive-motivational processes are the vehicle by which school environments influence students' learning and achievement-related behaviors (see Eccles et al., 1998, for review). In this final section, we draw on motivational perspectives on schooling and achievement behavior to explain how several aspects of the school social context can influence children's feelings of internalized and externalized distress directly by their mismatch with basic psychological needs and indirectly through their influence on cognitive-motivational processes (which are in turn related to achievement and emotions).

Motivational Perspectives on Schooling

Paralleling advances in ecological approaches to human development in general (Sameroff, 1983), several social-cognitive theories of achievement motivation emerged beginning in the 1970s (see Eccles et al., 1998, for a full review). These theories explicated the causal role of cognitive processes and their social-contextual determinants in shaping different patterns of achievement behavior in children.

An important contribution of contemporary motivational theories has been the careful analysis of how children's perceptions of specific organizational (e.g., recognition practices), instructional (e.g., grouping practices), and interpersonal (e.g., teacher expectancies) features of school environments relate to the specific cognitive-motivational processes we have been discussing in this article. These individual-level cognitive-motivational processes include attributions (Ames & Archer, 1988), coping processes (Connell & Wellborn, 1991; Covington, 1984), and self- and task beliefs related to school (Deci et al., 1991; Eccles, 1983; Eccles et al., 1993; Maehr & Midgley, 1991).

As noted earlier, rather than viewing children as passive recipients of educational treatments, motivational theories assume children are active makers of meaning within social settings. Thus, children's perceptions of school environments are seen as central determinants of achievement-related beliefs, emotion, and behavior (Ames, 1992; Maehr, 1991; Ryan & Grolnick, 1986; Weinstein, 1989). More specifically, the meanings children derive from their experiences in school are instrumental in shaping their beliefs about themselves as learners, about the content being learned, and about the goals of the learning process itself (see Eccles et al., 1998). Children's self- and task beliefs related to school, in turn, are important precursors to their decisions about how to invest (or not invest) their energies in learning situations (see Ames, 1992; Dweck, 1986; Eccles, 1983). In sum, contemporary motivational approaches posit a model of school influence that flows from environmental characteristics to children's appraisals of the environment, from appraisals to children's cognitions about self and learning, and from achievement-related cognitions to achievement behavior.

A Phenomenological Approach to Schooling

A fundamental question addressed by motivational researchers concerns the specific ways that children make sense or construct meaning out of their experiences in school. One group of theorists have suggested that children appraise (make meaning of) their experiences in school in terms of how well the environment supports or undermines the fulfillment of basic psychological needs (Connell & Wellborn, 1991; Deci & Ryan, 1985; Deci et al., 1991; Eccles & Midgley, 1989; Eccles et al., 1993; Skinner & Wellborn, 1994). Psychological needs that influence how children appraise their school experiences include the need for competence (White, 1959), the need for autonomy (Deci & Ryan, 1985), and the need for quality social relationships (Ryan & Powelson, 1991).

In one approach, Eccles and Midgley (1989) hypothesized that at any given point in development, the fit or mismatch between children's psychological needs and affordances in the school context is a central determinant of the quality of their academic motivation, achievement, and mental health (see also Connell & Wellborn, 1991; Deci & Ryan, 1985; Deci et al., 1991; Eccles et al., 1993). The argument is rather straightforward: To the extent that school settings provide developmentally appropriate affordances for children to actualize their competencies, exercise autonomy, and participate in caring and respectful relationships, children will feel academically competent, value school, feel good about themselves, achieve, and act in prosocial ways. On the other hand, to the extent the school environments undermine the fulfillment of these needs, students may feel academically incompetent, devalue school, feel bad about themselves in general,

do poorly academically, and act out (see Deci et al., 1991; Eccles et al., 1993).

Eccles et al. (1993) offered two different conceptualizations of how to assess the quality of fit between children's needs and aspects of their school environment, including an objective, age-appropriate set of prescribed affordances and a more individually construed, subjective appraisal of affordances and needs (see Eccles et al., 1993; Masten & Braswell, 1991; Sroufe & Rutter, 1984). For instance, early adolescence is thought to be, in general, a time of heightened self-consciousness (Elkind, 1967). Thus, Eccles and Midgley (1989) suggested that competitive and socially comparative motivational practices in schools are developmentally inappropriate because early adolescents have a need to develop their competencies in a safe, nonjudgmental setting. Such practices, in general, are thought to undermine academic motivation and achievement at this age (Eccles & Midgley, 1989; Midgley, 1993; Roeser, Midgley, & Urdan, 1996). At the same time, we also know that it is true that for some early adolescents, a subjective focus on competition and social comparison in learning settings is not necessarily academically debilitating (Dweck, 1986; Urdan, 1997). Competition may have its most adverse effects on those adolescents who are anxious or who are frustrated that they are not doing well academically. These types of students may react to competition by feeling disaffected and withdrawing or by getting angry and acting out (Deci et al., 1991; Dweck & Wortman, 1982). The same is true for autonomy provisions: Most adolescents want more decision-making power as they move into the early adolescent years, but not all young people desire this (Eccles et al., 1993). Some may feel anxious if they are given too much autonomy and some adolescents may feel angry if they are given too little autonomy. The general point here is that an assessment of how well an environment fits the psychological needs of children and adolescents depends on both generalized prescriptions for developmentally appropriate affordances and individual differences in the appraisal of those affordances.

Schooling and Mental Health

The phenomenological orientation of current motivational perspectives on schooling is central to understanding how schooling can influence children's emotional lives. Such an approach, especially one that sees children as actively appraising their school experiences in relation to their psychological needs (e.g., Eccles & Midgley, 1989), accords nicely with phenomenological approaches to the study of emotion (e.g., Lazarus, 1991a).

In one line of research on emotion and coping, Lazarus (1991a, 1991b) argued that phenomenological appraisals of events that are "significant for personal-well-being" (Lazarus, 1991a, p. 353) are central in the generation of emotional experience. Skinner and Wellborn (1994) went further to de-

fine the kinds of events that are likely to be seen as significant for personal well-being and that therefore generate the strongest emotional experiences. These events revolve around the fulfillment of the basic psychological needs for competence, autonomy, and quality relationships. In their own research on emotion and coping, Skinner and Wellborn (1994) suggested that emotional distress can arise from environments that are appraised by individuals as posing a challenge or a threat to the fulfillment of basic psychological needs. Note the similarity of this perspective and the notion of poor stage–environment fit articulated by Eccles and Midgley (1989).

By integrating insights from the phenomenological study of schooling and emotion, we can define some of the different ways in which school environments can potentiate emotional distress in students. First, features of school environments that are implicitly or explicitly appraised (see Lazarus, 1991a) as undermining basic psychological needs will generate negative emotional reactions, negative motivational beliefs, and negative behaviors (Deci et al., 1991; Eccles & Midgley, 1989). For example, certain teachers may use subtle controlling practices to get children to behave in the classroom. Some children could appraise these practices as controlling and at odds with their need for autonomous functioning. This may lead them to feel angry and for some, to act out in class (Deci et al., 1991). Such an academic externalizing pattern is most likely to emerge among children who are angry prior to entering a controlling classroom and who therefore are already primed to see and respond to issues of control and provocation.

Environments are not only appraised by children, but environments also socialize children in particular ways of making meaning of their worlds (Seligman et al., 1984; Skinner & Wellborn, 1994). Thus, a second way in which schooling can affect children's emotional life is through an implicit or explicit emphasis on different ways of appraising the self and the purpose of school (Ames, 1992; Maehr & Midgley, 1991). For instance, certain environments can predispose children to think of their academic abilities as relatively fixed, and thereby, that academic difficulty is indicative of a personal deficit that will not change. Such environments have been called *ability-focused* by researchers of academic motivation (Ames, 1992; Maehr & Midgley, 1991; Midgley & Edelin, 1998) and could serve to activate the academic internalizing pattern in some children (Ames & Archer, 1988; Covington, 1984; Dweck & Leggett, 1988). An academic internalizing pattern is most likely to emerge among children who are already anxious on entering an ability-focused classroom environment and are therefore already primed to think negatively about themselves in the event of failure (Dweck & Wortman, 1982).

As alluded to in each of these examples, it is important to emphasize that children's appraisals of their school environments, although generative of emotional effects, are themselves affected by children's emotional states. That is, emotion is both an outcome and a predictor of the appraisal

process (Lazarus, 1991a; Segal & Cloitre, 1993). Any study of how school perceptions are linked to emotional outcomes in children must account for how characteristics of children (especially their emotions) influence their experience of schooling. At a slightly different level of analysis, any study of how schooling is related to emotional outcomes in children will ultimately have to include an understanding of how characteristics of the child and characteristics of teachers and the instructional context reciprocally influence one another over time (e.g., Perry & Weinstein, 1998). In short, a phenomenological, transactional, systems view of schooling and mental health is needed (e.g., Roeser & Eccles, in press; Skinner & Belmont, 1993).

Because of space limitations, we do not pursue how the context of school relates to children's academic and emotional difficulties any further at this point. We have elaborated on these ideas in other places (Eccles et al., 1993; Eccles & Roeser, in press; Roeser & Eccles, 1998, in press; Roeser et al., 1998) and each of the other articles in this special issue deals with this topic in some manner. The reader is directed to these other sources for further reading on how the context of schooling relates to aspects of children's mental health.

In summary, aspects of school environments can affect the emotional experiences of children directly through their fit or mismatch with basic psychological needs and indirectly through their impact on children's academic behavior and motivational beliefs. Because of the reciprocal nature of the psychological-level processes described earlier in this article, it is important to keep in mind that the impact of school factors on academic outcomes in children can have emotional consequences, and that the impact of school factors on emotional outcomes in children can have academic consequences. Again, there are many pathways by which aspects of schooling can impact children's mental health.

Future Directions for Research

The conjoint study of schooling and mental health must ultimately include individual-level and contextual-level studies of normative and atypical populations. Individual-level studies of normative and atypical populations must focus on (a) systems of intrapsychic processes (attention, cognition, emotion, self-regulation) that eventuate in co-occurring academic and emotional problems, (b) protective processes that allow some children to excel in school despite significant emotional and behavioral difficulties, and (c) systems of intrapsychic processes that eventuate in co-occurring academic and emotional well-being. For instance, whereas we focused on systems of psychological processes associated with academic and emotional problems, there is a significant body of work on systems of psychological processes associated with positive academic and emotional outcomes (e.g., Ames, 1992; Dweck & Leggett, 1988). If we are really interested in the relation of schooling to mental health, we need insights into not only the processes that cause academic difficulties to

co-occur with emotional distress, but also those processes that cause a love of learning, positive achievement, and positive mental health to co-occur. As Cowen (1991) put it, and we paraphrase, we do not want to focus exclusively on fighting co-occurring problems in children; we also want to learn how to build broad networks of strengths within and among them. Studying different subgroups of children and adolescents, rather than examining aggregate patterns of relations, will be necessary to understand different positive and negative patterns of academic and emotional functioning and how to promote or alter the processes underlying such patterns, respectively.

Contextual-level studies of schooling and mental health with normative and atypical populations need to focus on (a) the conditions in normative school settings that impact academic and emotional outcomes (e.g., Good & Weinstein, 1986), and (b) the conditions in special education settings that impact on academic and emotional outcomes (e.g., Speece & Keogh, 1996). The main issue here is the need to develop sophisticated theories of academic contexts that can be applied to the study of mental health in diverse school settings. Motivational theories developed over the last 30 years are particularly well suited to the task of conceptualizing school environments and their effects on positive and negative emotions in students (see Ames, 1992; Connell & Wellborn, 1991; Deci & Ryan, 1985; Eccles et al., 1993; Eccles et al., 1998; Maehr & Midgley, 1991; Urdan, 1997). However, we believe that motivational psychologists need to be more inclusive of emotions in their studies of schooling and achievement if they are to broaden their theories to address mental health issues (see Eccles et al., 1998; Weiner, 1990). As discussed earlier, we also believe that a phenomenological, transactional, systems perspective on child development in the context of schools is needed to accurately and adequately assess the influence of school on academic and emotional outcomes (Eccles & Midgley, 1989; Sameroff, 1983). Perhaps the most basic research to be done in this area is on how teachers interact with, support, and struggle with students who come to school with significant difficulties each day. Such work could have rather immediate practical applications. A second important line of work on context concerns the cataloging of features of academic environments that impact either positively or negatively on both academic and emotional outcomes simultaneously. Such a catalog could then be used to frame action research aimed at the creation and study of environments that simultaneously enhance positive educational and emotional outcomes in students.

CONCLUSIONS

Both the study of education and the study of mental health in children have long histories in psychology. Today, one important reason for the conjoint study of educational and mental health issues is the number of children experiencing problems

in both the academic and emotional domains. The integrated study of education and mental health is urgently needed to understand these problems and the psychological and contextual processes that can be harnessed to redress them.

The second important reason for studying education and mental health issues together now is to begin devising new strategies for building health and promoting wellness among schoolchildren (Cowen, 1991). We believe that schools are one of the most important institutions through which we can redress developmental difficulties in some children and promote the intellectual and emotional growth of all children. Creating the conditions in which successful learning can occur is, in some sense, the best way to ensure the long-term health and well-being of children and adolescents (Carnegie Council on Adolescent Development, 1995; Dewey, 1902/1990). The integration of our current understandings of children's education and mental health may ultimately lead to new thoughts about how to reinvent the institution of schooling so that it serves both the intellectual and emotional interests of the child, the adolescent, and the adults that serve them in schools.

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California Sample

Mental health measures

Depressive symptoms (10 items, $\alpha = .89$; Children's Depression–Short Form)

Children's Depression Inventory Short Form (see Kovacs, 1992)

Anger (4 items, $\alpha = .88$)

(see Roeser & Eccles, 1998)

During the past month, how often have you felt so angry you wanted to smash or break something?

During the past month, how often have you felt so upset you wanted to hit or hurt someone?

(1 = *almost never*, 5 = *almost always*)

Test anxiety (5 items, $\alpha = .86$)

(see Pintrich & De Groot, 1990; Motivated Strategies for Learning Questionnaire)

When I take tests in science (social studies) class, I think a lot about how poorly I am doing.

I have an uneasy, upset feeling when I take social studies (science) tests.

Maladaptive classroom behaviors

Withdrawal behavior (3 items, $\alpha = .83$)

(see Roeser & Quihuis, 1998)

I try not to be called on by the teacher in science (social studies) class.

I try to stay out of whole class discussions in science (social studies) class.

I make it a point to get involved in discussions in my science (social studies) class (reversed).

(1 = *not at all true of me*, 5 = *very true of me*)

Resistance behavior (4 items, $\alpha = .75$)

(see Roeser & Quihuis, 1998)

I choose not to study for tests in my science (social studies) class.

I skip my science (social studies) class on purpose.

I choose not to do my science (social studies) homework.

I refuse to do assignments the teacher gives us in science (social studies) class.

(1 = *not at all true of me*, 5 = *very true of me*)

Aggressive behavior (4 items, $\alpha = .88$)

(see Roeser & Quihuis, 1998)

I talk back to my science (social studies) teacher even if I know I'll get in trouble for it.

I let my science (social studies) teacher know that she or he doesn't control me.

I say what I want to in science (social studies) class even if it is disrespectful to the teacher.

I yell at my science (social studies) teacher if I don't like something even if I know I'll get in trouble for it.

Maryland Sample

Mental health measures

Depressive symptoms (Time 1, 6 items, $\alpha = .82$)

(see Roeser & Eccles, 1998)

During the past month, how often have you felt very sad?

During the past month, how often have you felt hopeless?

(1 = *almost never*, 5 = *almost always*)

Depressive symptoms (Time 2 = 26 items, $\alpha = .88$; Children's Depression Inventory)

(see Kovacs, 1992)

Anger (Time 1, 4 items, $\alpha = .81$) (Time 2, 4 items, $\alpha = .87$)

(see Roeser & Eccles, 1998)

During the past month, how often have you felt so angry you wanted to smash or break something?

During the past month, how often have you felt so upset you wanted to hit or hurt someone?

(1 = *almost never*, 5 = *almost always*)

(Continued)

Academic motivation measures

Academic competence (Time 1, 14 items) (Time 2, 14 items)

    (see Roeser et al., 1998)

        How good are you in school subjects other than math? (1 = *not at all good*, 7 = *very good*).

        Compared to other kids your age, how well do you do in other school subjects? (1 = *much worse*, 7 = *much better*)

        How well can you live up to what your teachers expect of you? (1 = *not at all well*, 5 = *very well*)

        How well can you learn math?

        How well can you work in groups?

        How well can you finish homework assignments by deadlines?

Academic values (Time 1, 10 items) (Time 2, 11 items)

    (see Roeser et al., 1998)

        Compared to other things, how important is math? (1 = *much less important*, 7 = *much more important*)

        I go to school because I enjoy my classes. (1 = *not an important reason*, 7 = *very important reason*)

        I go to school because I like what I am learning. (1 = *not an important reason*, 7 = *very important reason*)

        I have to do well in school if I want to be a success in life. (1 = *strongly disagree*, 5 = *strongly agree*)

        Suppose you do get a good education, how likely is it you will end up with the kind of job you want?

        (1 = *not very likely*, 5 = *very likely*)

        Getting a good education is the best way to get ahead in life for the kids in my neighborhood.

        (1 = *strongly disagree*, 5 = *strongly agree*)