Published in final edited form as:

Dev Psychol. 2005 January ; 41(1): 193–211.

The Relations of Problem Behavior Status to Children's Negative Emotionality, Effortful Control, and Impulsivity: Concurrent Relations and Prediction of Change

Nancy Eisenberg, Adrienne Sadovsky, Tracy L. Spinrad, Richard A. Fabes, Sandra H. Losoya, Carlos Valiente, Mark Reiser, Amanda Cumberland, and Stephanie A. Shepard
Arizona State University

Abstract

The relations of children's internalizing and externalizing problem behaviors to their concurrent regulation, impulsivity (reactive undercontrol), anger, sadness, and fearfulness and these aspects of functioning 2 years prior were examined. Parents and teachers completed measures of children's ($N = 185$; ages 6 through 9 years) adjustment, negative emotionality, regulation, and behavior control; behavioral measures of regulation also were obtained. In general, both internalizing and externalizing problems were associated with negative emotionality. Externalizers were low in effortful regulation and high in impulsivity, whereas internalizers, compared with nondisordered children, were low in impulsivity but not effortful control. Moreover, indices of negative emotionality, regulation, and impulsivity with the level of the same variables 2 years before controlled predicted stability versus change in problem behavior status.

In the past decade, investigators have become increasingly interested in the role of dispositional emotionality and regulation in adjustment (see Eisenberg, Fabes, Guthrie, & Reiser, 2000; Rothbart & Bates, 1998). Although there is mounting evidence that these dispositional characteristics are correlated with adjustment, only recently have investigators begun to delineate the precise nature of these relations. The purpose of this study was to examine the relations of individual differences in children's negative emotionality and regulation/control to their adjustment status and to change in this status over 2 years.

NEGATIVE EMOTIONALITY

It is intuitive that emotionality and adjustment are related. Indeed, extremes in negative emotionality are a defining feature of some types of psychopathology (American Psychiatric Association, 2000), and both internalizing and externalizing problems have been linked with global measures of negative emotionality (e.g., Clark, Watson, & Mineka, 1994; Lengua, West, & Sandler, 1998; Rothbart & Bates, 1998). However, numerous investigators (e.g., Keltner, Moffitt, & Stouthamer-Loeber, 1995; Rothbart & Bates, 1998) have suggested that specific types of negative emotions co-occur with various psychological problems. Most often,

Correspondence to: Nancy Eisenberg.

Correspondence concerning this article should be addressed to Nancy Eisenberg, Department of Psychology, Arizona State University, Tempe, AZ 85287-1104. E-mail: nancy.eisenberg@asu.edu.
Stephanie A. Shepard is now at E. P. Bradley Hospital, Brown University School of Medicine.

This research was supported by grants from the National Institute of Mental Health (NIMH) to Nancy Eisenberg and Richard A. Fabes and by a Research Scientist Award from the NIMH to Nancy Eisenberg.

We thank the many students who assisted in this study (especially Ivanna Guthrie), the parents and children involved, and the principals and teachers in the Tempe, Kyrene, Mesa, Scottsdale, Gilbert, and other Phoenix-area school districts. This study is part of a longitudinal study (see Eisenberg, Cumberland, et al., 2001).

investigators have argued that externalizing problems are associated with anger and irritability, whereas internalizing problems are linked with sadness/depression, anxiety, and fear (e.g., Eisenberg, Cumberland, et al., 2001; Rothbart & Bates, 1998).

There is now considerable support for the notion that anger, hostility, and irritability are associated with externalizing behavior problems (e.g., Casey & Schlosser, 1994; Colder & Stice, 1998; Gilliom, Shaw, Beck, Schonberg, & Lukon, 2002; Keltner et al., 1995; Lemery, Essex, & Smider, 2002; Rothbart, Ahadi, & Hershey, 1994; Zahn-Waxler et al., 1994). Often, anger, irritation, and frustration seem to motivate externalizing behaviors (e.g., reactive aggression); however, other people's negative responses to a child's externalizing behaviors (e.g., bullying, lying, defiance) may also elicit frustration and anger from the child.

In contrast, there is conflicting evidence regarding the relation of such emotions to internalizing problems. Some researchers have found little relation between anger or irritability and internalizing problems (including shyness; Eisenberg, Shepard, Fabes, Murphy, & Guthrie, 1998; Zahn-Waxler et al., 1994). However, others who have looked at either more serious levels of adjustment problems or older individuals have found positive relations between anger and internalizing problems such as children's psychosomatic disorders (but neither anxiety/depression nor social withdrawal; Keltner et al., 1995), depression (Blumberg & Izard, 1985), anxiety (Lemery et al., 2002), and a composite including social withdrawal, psychosomatic disorders, and anxiety/depression (Eisenberg, Cumberland, et al., 2001). Despite the mixed evidence, one would expect children with serious internalizing problems to be frustrated or angered by the social problems they encounter because of their withdrawn behavior and anxiety. For example, socially withdrawn behavior has been linked to peer rejection; moreover, children with internalizing problems may have difficulty speaking up in class or dealing with other demands that require social assertion (e.g., sports activities), and these experiences are likely to elicit frustration and anger. One might further expect the relation between internalizing problems and anger to become stronger with age in the school years because of both increased negative social experiences for socially fearful and withdrawn children (Rubin, Bukowski, & Parker, 1998) and increased expectations and demands for older children to engage in social interaction. In addition, increasing demands on children (e.g., in school, in sports) as they mature may engender higher levels of frustration and anger in children with age, especially if they feel unable to meet those demands.

Given the role of anxiety and depression in most definitions of internalizing problems, it is not surprising that children with internalizing problems (including shyness and social withdrawal) sometimes score relatively high on emotions such as sadness, anxiety, depressive affect, and fear (Blumberg & Izard, 1985; Eisenberg, Cumberland, et al., 2001; Eisenberg et al., 1998; Izard, Libero, Putnam, & Haynes, 1993). Socially withdrawn, sad, or anxious children are likely to increasingly encounter problems in social interactions and nonsocial tasks as they mature, which may undermine their self-esteem and increase or exacerbate initial levels of anxiety or repression. However, not all investigators have found relations between internalizing problems and emotions such as sadness and anxiety, especially when either different reporters provided information or facial expressions were used to assess emotion (Blumberg & Izard, 1985; Keltner et al., 1995; Zahn-Waxler et al., 1994). Of course, children may not always express felt sadness; moreover, adults tend to differ considerably in their reports of children's negative emotions (especially emotions such as sadness and fear) across settings (Eisenberg et al., 2004; Goldsmith, Rieser-Danner, & Briggs, 1991).

The relation of externalizing problems to emotions such as sadness and fear is less clear than the analogous relation for internalizing problems. It has been hypothesized that children with externalizing problems often experience sadness and anxiety because they tend to be rejected by peers and are lonely (Asher, Parkhurst, Hymel, & Williams, 1990; Rubin, LeMare, & Lollis,

1990). In addition, children who display relatively high levels of externalizing behaviors are likely to encounter negative social responses from family members and adults, which could heighten anxiety, depression, and fearfulness. In general, children with externalizing problems will have difficulty in social interactions and, thus, in dealing successfully with many everyday activities and tasks (e.g., academic tasks); these problems are likely to increase not only these children's anger and frustration but also their anxiety and even depression. In addition, children prone to anxiety and sadness may sometimes display externalizing behaviors (e.g., hitting) because they have not developed more appropriate ways of meeting their needs (e.g., because of social withdrawal).

Despite conceptual reasons for expecting externalizing problems to be associated with sadness, fear, and depression, relevant empirical findings have been mixed. Externalizing problems were found to be (a) negatively related to fear when it was assessed with facial reactions (Keltner et al., 1995) or adults' reports of fear (Rothbart et al., 1994) and (b) unrelated to adult-reported anxiety and depression (for results combined across reporters; Wolfson, Fields, & Rose, 1987), as well as (c) positively related to sadness or fear (Eisenberg, Cumberland, et al., 2001; Lemery et al., 2002), especially when the same reporter provided information on externalizing problems and emotion (Deffenbacher & Swaim, 1999; Wolfson et al., 1987). Moreover, it is not clear whether the relations of externalizing problems with emotions such as sadness and fear change with age.

REGULATION/CONTROL PROCESSES

Regulatory/control processes would also be expected to relate to adjustment, and their effects on adjustment probably are partly distinct from those due to negative emotionality. Regulation, negative emotionality, and control-related characteristics such as impulsivity appear to be related, yet separate, aspects of temperament (e.g., Rothbart, Ahadi, Hershey, & Fisher, 2001). Effortful regulation was viewed by Rothbart and Bates (1998) as serving to modulate (i.e., heighten, lessen, or otherwise change) temperamental reactivity. For example, anger might be expected to promote externalizing problems, although children who are prone to anger but also well regulated might not exhibit highly unmodulated emotion and problem behaviors or, alternatively, might be viewed as adjusted despite somewhat frequent (but perhaps situationally appropriate) displays of negative emotion. Moreover, overly controlled, rigid children may be socially withdrawn and viewed as having internalizing problems, even if they do not express (or perhaps experience) high levels of negative emotion. Similarly, some children may display impulsive behaviors that are problematic even if they are not especially prone to anger or other negative emotions. In fact, regulation/control and negative emotionality have been found to have unique additive relations to adjustment (e.g., Eisenberg et al., 1996; Eisenberg, Guthrie, et al., 2000).

Investigators frequently have found associations between children's regulation or control and their externalizing and internalizing problem behaviors, although relations may vary with the measure of control or regulation. Eisenberg and Morris (2002) differentiated between effortful or voluntary control and reactive control (also see Derryberry & Rothbart, 1997), and there is evidence that these constructs, albeit often correlated, tend to load on different factors in analyses (Eisenberg et al., 2004; Kindlon, Mezzacappa, & Earls, 1995; Olson, Schilling, & Bates, 1999; Rothbart et al., 2001). Effortful control was defined by Rothbart and Bates (1998, p. 137) as "the ability to inhibit a dominant response to perform a subdominant response." It involves the effortful or voluntary control of both attentional processes and behavior and is used to modulate emotional experience and expression (Derryberry & Rothbart, 1997). Such abilities involve suppression (or perhaps activation) of motor or cognitive responses in the service of internal goals that are held in working memory and are mediated by top-down cortical

systems (Nigg, 2001). The abilities that comprise effortful control are viewed as part of self-regulation.

Effortful control involves a variety of related capacities, each of which may contribute to regulation and successful adaptation in different ways. For example, attention focusing—the ability to maintain attentional focus on task-related channels—probably contributes to the processing of information and learning, success on academic and other tasks, and the quality of social interactions. Attention shifting—the ability to shift attention as needed to deal with task demands—also is involved in learning and the capacity to move smoothly from one task or social interaction to another. For example, children who cannot shift activities when adults ask them to do so (e.g., put away pleasurable activities to do homework) are likely to encounter frustration or anger from adults. Inhibitory control—the capacity to plan and suppress inappropriate approach responses under instructions or in novel or uncertain situations—is essential for appropriate behavior and, consequently, is involved in success with social and nonsocial activities.

In contrast to effortful control, reactive control includes behavioral inhibition and approach tendencies that may be linked to motivational states and emotion (e.g., fear, sadness; Derryberry & Rothbart, 1997) but are less willful or voluntary than effortful control. Examples of reactive systems are impulsive approach behaviors and behavioral inhibition (e.g., constrained and rigid behavior in novel or perhaps stressful situations; see Derryberry & Rothbart, 1997; Eisenberg & Morris, 2002; behavioral inhibition is not the same as inhibitory control). Thus, children who are pulled in an unthinking, impulsive manner by desires and potential rewards and children who are very inhibited, rigid, and socially withdrawn because of their inhibition have problems with reactive undercontrol and overcontrol, respectively. However, with development, children's growing effortful control may increasingly modulate the overt expression of reactive tendencies (e.g., Valiente et al., 2003). Reactive control likely is tapped by measures of ego overcontrol (Block & Block, 1980; see Derryberry & Rothbart, 1997) as well as impulsivity (see Eisenberg et al., 2004) and probably includes what Kindlon et al. (1995) labeled *motivational impulsivity*—the insensitivity to reward or punishment.

LINKS OF SPECIFIC TYPES OF CONTROL WITH ADJUSTMENT

Eisenberg and Morris (2002) suggested that it is important to differentiate between effortful and reactive control when discussing and assessing the correlates of internalizing and externalizing problems. They hypothesized that children prone to externalizing problems are low in all types of effortful control (i.e., attentional and with regard to the voluntary inhibition or activation of behavior) and are reactively undercontrolled (i.e., impulsive). These deficits would account for externalizing children's lack of behavioral control and for the diminished attentional and sociocognitive capacities (e.g., information processing; Coie & Dodge, 1998) that seem to underlie or accompany much externalizing problem behavior. In contrast, children prone to internalizing problems were hypothesized to be low in effortful attentional control, low to moderate in effortful inhibitory control, and high in reactive over-control. The ability to shift attention when experiencing negative emotion and to focus on affectively neutral or positive thoughts and activities seems to be important in cutting off negative emotion (Eisenberg & Fabes, 1992; Rothbart, Ziaie, & O'Boyle, 1992). In addition, the inability to shift and refocus attention from negative thoughts and stimuli has been linked to anxiety and depression (Derryberry & Reed, 1994, 2002; Vasey, El-Hag, & Daleiden, 1996). Finally, well-adjusted children were hypothesized to be optimally regulated (i.e., high in effortful attentional and behavioral [e.g., inhibitory] control) and moderate in reactive control (i.e., not overcontrolled or overly impulsive). Because effortful control is willfully modulated and can be used as needed, high levels of effortful control generally are believed to be associated with better adjustment.

Although high effortful control and reactive undercontrol (e.g., impulsivity) would be expected to be negatively correlated, a child may display low reactive control in some situations (e.g., run into the street, have difficulty inhibiting inappropriate comments) yet still be relatively competent in terms of attentional control or inhibitory control in other contexts. Thus, effortful and reactive control, as well as negative emotionality, may have some unique effects on children's adjustment. Low effortful control, overly high or low reactive control, and high negative emotionality probably are all risk factors in regard to the development of adjustment, although high effortful control also may buffer or reduce some of the negative effects of extreme levels of reactive control and negative emotionality.

Preliminary evidence provides some support for the importance of effortful and reactive control in children's adjustment. Children's effortful control has been linked to high levels of social competence and conscience (Eisenberg, Fabes, et al., 2000; Kochanska, Murray, & Coy, 1997; Kochanska, Murray, & Harlan, 2000; Kochanska, Tjebkes, & Forman, 1998). In contrast, children with externalizing problems appear to be low in effortful control (Eisenberg, Gershoff, et al., 2001; Eisenberg, Guthrie, et al., 2000; Lemery et al., 2002; Lengua et al., 1998; Murray & Kochanska, 2002; Rothbart et al., 1994) as well as relatively high in impulsivity (Krueger, Caspi, Moffitt, White, & Stouthamer-Loeber, 1996; Lemery et al., 2002; Lengua et al., 1998; Lynam, 1997).

Findings in regard to the relation of internalizing problems to children's effortful control have been limited and mixed. Oosterlaan and Sergeant (1996) found that nondisordered and anxious children did not differ on a measure of inhibitory control. In contrast, Hart, Hofmann, Edelstein, and Keller (1997) found that children with an overcontrolled personality (e.g., who were shy and inhibited) scored high on attention problems. Consistent with the latter findings, shyness has been related to low levels of attentional control in adults (Eisenberg, Fabes, & Murphy, 1995), although the relations of attention shifting and focusing to children's shyness tended to be positive for parent-reported shyness and negative for teacher-reported shyness (Eisenberg et al., 1998). Murray and Kochanska (2002) found that young children high in effortful (primarily inhibitory) control were higher in internalizing problems than were children at moderate levels of effortful control; however, these authors' measures of effortful control may have tapped reactive control to some degree (i.e., some involved approach to rewards). Thus, findings regarding the relations of effortful control to internalizing problems vary, likely depending on the type of effortful control (attentional or inhibitory), the measure of internalizing problems, and perhaps the age of the children.

The relation between internalizing problems and reactive control has been examined relatively infrequently. Huey and Weisz (1997) found that teacher-reported ego overcontrol was associated with teachers', but neither parents' nor children's, reports of internalizing problems. Other investigators have found that children who are behaviorally inhibited (and, thus, high in reactive over-control) tend to develop internalizing problems as they age (e.g., Biederman et al., 1990). Moreover, in studies of personality types, children who were described as overcontrolled (broadly defined) were prone to internalizing problems (Robins, John, Caspi, Moffitt, & Stouthamer-Loeber, 1996). In contrast to the aforementioned findings, O'Brien and Frick (1996) found that anxious children did not differ from nondisordered children on a task likely to tap reward dominance or impulsivity (but they were lower than nonanxious clinical children; also see Krueger et al., 1996). Furthermore, Lengua et al. (1998) found a *positive* relation between impulsivity and depression when contaminated (i.e., overlapping) items were removed from the scales. Given that this positive relation generally did not hold prior to removal of those items, it is difficult to assess the effect of removing them on the construct.

Eisenberg, Cumberland, et al. (2001) explicitly tested the relations of effortful and reactive control, as well as negative emotionality, to children's externalizing and internalizing problems.

Mothers, fathers, and teachers provided information on problem behaviors; primary caregiving parents and teachers provided additional information on children's dispositional effortful control (i.e., attention focusing, attention shifting, inhibitory control), reactive undercontrol (impulsivity), and negative emotionality (i.e., anger/frustration, fear, sadness). In addition, behavioral measures of regulation (or sometimes possibly a mix of effortful and reactive control) were obtained. Children ranging in age from 4.5 years to just 8 years were categorized into one of four groups: those high on externalizing but not internalizing problems (EXTs), those high on internalizing but not externalizing problems (INTs), those comorbid or high on both externalizing and internalizing problems (COs), and those below borderline levels on both types of problem behavior (CONTs). Eisenberg, Cumberland, et al. found that EXTs and COs combined (EXTs/COs) were low on all types of effortful control, high on impulsivity, and high on anger/frustration and sadness. INTs were lower than CONTs (but higher than EXTs) in attentional effortful control but similar to CONTs (and higher than EXTs/COs) in inhibitory control. In addition, INTs were lower than the other groups in impulsivity and highest in sadness. INTs were lower than EXTs/COs, but somewhat higher than CONTs, in anger/frustration. In many cases, the relations held across reporters; findings comparing EXTs/COs to other groups were especially strong. Moreover, there was evidence that regulation or impulsivity and negative emotionality (anger or sadness) often provided some unique, additive prediction of problem-group designation (e.g., EXTs/COs and EXTs, compared with CONTs and INTs, were likely to be both high in anger and low in effortful regulation [or high in impulsivity]).

THE PRESENT STUDY: GOALS AND HYPOTHESES

The present study is a 2-year follow-up (henceforth labeled T2, for Time 2) of the children in the Eisenberg, Cumberland, et al. (2001) sample (labeled T1, for Time 1). Our first goal was to reexamine the relations between problem behaviors and specific types of effortful or reactive control and negative emotionality (assessed concurrently and 2 years prior). We hypothesized that many of the same relations predicted and found at T1 would hold at T2 in concurrent analyses. Specifically, children with externalizing problems (either by themselves or comorbid) were hypothesized to be low in effortful control and high in impulsivity, anger/frustration, and sadness. In contrast, INTs were expected to be relatively low in impulsivity and attentional (but not inhibitory) effortful control and high in sadness, fear, and anger. Nondisordered control children were expected to be relatively high in attentional and inhibitory effortful control, moderate in impulsivity (i.e., higher than INTs and lower than EXTs/COs), and relatively low in negative emotionality. We predicted that there would be unique contributions of both emotionality and regulation/impulsivity to T2 problem behavior status.

We were unsure if relations of adjustment with either negative emotionality or regulation would become more evident with age. Because individual differences in regulation, impulsivity, and negative emotionality tend to be moderately consistent across childhood (e.g., Murphy, Eisenberg, Fabes, Shepard, & Guthrie, 1999), we generally expected adjustment at T2 to be similarly predicted by T1 and T2 measures of negative emotionality, regulation, and impulsivity. However, because children with adjustment problems likely increasingly experience peer rejection and problems in social interactions with adults, it seemed possible that relations of adjustment with sadness and anger might become increasingly evident with age. Moreover, because expectations for regulated behavior likely increase with age, it also seemed plausible that relations of adjustment with regulation would become stronger with age, albeit perhaps not over only 2 years. Furthermore, because effortful regulation continues to develop in childhood (Murphy et al., 1999; Posner & Rothbart, 1998), it is possible that the factors that contribute to maladjustment, or at least adults' perceptions thereof, change with age. For example, if children with internalizing or externalizing problems become increasingly angry and sad because of negative social encounters, then differences in regulation or control

(rather than negative emotionality) might, with age, better differentiate between children with pure internalizing versus externalizing problems. Thus, an initial step in the analyses of this study was to examine whether the same general pattern of relations obtained at the first assessment would emerge at the follow-up (T2) and whether the pattern would be similar when T2 adjustment was predicted by T1 or T2 emotion and regulation.

Another major goal was to examine whether ratings of dispositional regulation/control or negative emotionality would predict whether children would be stable in their categorization as control or disordered children or would shift from one status to the other from T1 to T2. Although there is considerable research on the emotional and regulatory correlates of adjustment problems, relatively little is known about how change in temperamental or personality characteristics is related to change in adjustment status. Thus, we examined whether a measure of negative emotions, regulation, and impulsivity at T2 would predict change in internalizing or externalizing status when we controlled for prediction of adjustment from the same measure at T1. We hypothesized that children who were not designated at risk for internalizing problems at T1 but who moved to an internalizing problem status 2 years later would be, compared with children who retained their low-risk status, lower in attentional control and impulsivity and higher in fear and sadness (and perhaps anger) at T1. Children who had internalizing problems at T1 but moved to a nonrisk level of internalizing at T2 were predicted to show the opposite pattern of relations compared with children who remained high in internalizing problems at T2. Furthermore, children not designated as high in externalizing problems at T1 who were high in externalizing at T2 were expected to be (compared with children who remained low in externalizing or changed from an externalizing to a nondisordered status) higher at T2 in anger and impulsivity (and perhaps sadness) and lower in all types of effortful control, even when levels of these variables at T1 were controlled for. Children who were EXTs at T1 but were not at T2, compared with children who were EXTs at both assessments, were hypothesized to show the opposite pattern of associations. In brief, we hypothesized that T2 control/regulation and negative emotionality would uniquely predict, above and beyond their prediction at T1 (i.e., when initial levels of these characteristics were controlled), whether children changed or maintained their adjustment status over 2 years. Such a pattern of findings would suggest that relations between dispositional negative emotionality or regulation/impulsivity and adjustment status were not simply due to continuity over time but were due to either change in these characteristics or in their adaptive significance from T1.

The sample was chosen in a manner that minimized sex differences in problem behaviors. For this reason, and partly on the basis of our findings in the initial assessment of this sample, we did not expect marked gender differences in the emotional and regulatory/control correlates of internalizing or externalizing problems. Nonetheless, gender differences were examined in most analyses because there frequently are mean differences in levels of boys' and girls' regulation/control and negative emotionality (e.g., Eisenberg, Cumberland, et al., 2001) and because of different trajectories in some aspects of adjustment for girls and boys (e.g., Coie & Dodge, 1998; Hankin et al., 1998).

METHOD

Participants

Participants were involved in an ongoing longitudinal study (see Eisenberg, Cumberland, et al., 2001; Eisenberg et al., 2004). The initial assessment (T1) included 214 children (96 girls, 118 boys) and at least one of their parents (203 mothers and 11 fathers were the primary caregivers; a total of 120 fathers completed the measure of adjustment). Approximately 2 years later (T2), data were collected for 193 children from the original sample (105 boys, 88 girls; mean age in years = 7.66, $SD = 0.83$; age range = 72-120 months). Eight families with only primary-parent Child Behavior Checklist (CBCL) data at T2 (and no other information) were

dropped from the analyses. Of the 185 remaining families (100 boys, 85 girls), 175 children visited the laboratory and completed the observed measures of regulation. Mothers generally accompanied these children (163 mothers; 12 fathers). Parent-report data for the other 10 T2 children were obtained by mail. Mothers usually completed the primary caregiving parent questionnaires (178 mothers; 5 fathers; 2 grandmothers at T2). Including the 5 primary caregiving fathers, 120 fathers completed the CBCL. Teachers completed questionnaires for 180 children (179 separate teachers provided data for the T2 participants at T1).

T2 participants were predominantly non-Hispanic Caucasian (74%); 13% were Hispanic, 5% were American Indian, 3% were African American, 1% were Asian, and 4% were of other origins. Mean levels of parent education, rated on a 1 to 6 scale (1 = *less than a high school education*, 2 = *high school degree or equivalent*, 3 = *some degree of completed college*, 4 = *2-year college or trade school*, 5 = *college degree*, and 6 = *professional degree*), were 3.80 and 3.84 for mothers and fathers, respectively. Family income ranged from less than \$20,000 to above \$100,000 (*Mdn* = \$60,000).

The demographic composition of families who visited the laboratory for a 2nd session was largely commensurate with that of families who did not return (i.e., the 21 T1-only families). According to *t* tests, there were no significant differences in level of completed maternal education or family income. Moreover, a chi-square test indicated that there were no significant differences in ethnicity/race for the 185 participants and the attrited children. However, fathers in returning families completed more education ($M = 3.86$) than did T1-only fathers ($M = 3.08$), $t(204) = 2.67, p < .05$.

Based on chi-square analyses with attrited versus nonattrited children as the independent variable, there were no significant differences in T1 maternal, paternal, and teacher CBCL groupings. Further, according to a multivariate analysis of variance, there were no significant differences between attrited and nonattrited children in primary parents' and teachers' ratings of emotion, regulation, or impulsivity at T1 (although, according to the univariate analyses, parents rated returning children as having greater attention focusing [$M = 4.77$] than T1-only children [$M = 4.33$]), $F(1, 192) = 5.21, p < .02$. Finally, the multivariate analysis was marginally significant for T1 observed measures of regulation (persistence, movement), $F(4, 204) = 2.21, p < .07$. Children who returned at T2 persisted longer on a puzzle task than those who did not, $F(1, 207) = 6.66, p < .05$.

Procedure

An assistant met each child and parent when they arrived at the laboratory. After consents were completed, an experimenter who was the same sex as the child (one of 9 women or 7 men) put electrocardiograph electrodes on the child's ribs (these data will be reported elsewhere) and skin conductance electrodes on the child's right hand. The parent was then taken to another room to complete questionnaires, leaving the experimenter alone with the child. The child was then asked by the experimenter to keep his or her right hand with the skin conductance electrodes as still as possible while the experimenter went to find some videos. The child was left alone for 1 min; this period was used to obtain a measure of children's ability to remain still when explicitly requested to do so.

The experimenter returned after 1 min and played the videos for children (these data will be reported elsewhere). The 2nd task was identical to the puzzle task completed at T1 (see Eisenberg, Cumberland, et al., 2001). Briefly, the time that children persisted on the task, rather than either cheating or being off task, was measured (see below). After participating in some other tasks, the children and parents were thanked and paid, and the children were partially debriefed.

Measures

Parents and teachers completed a number of questionnaires on children's problem behaviors, emotionality, and regulation; fathers usually reported only on adjustment. Behavioral indices of children's regulatory capacities (i.e., their abilities to sit still and persist at the puzzle task) were collected at the laboratory. Alphas for T2 measures are presented in this article; alphas for T1 are presented in Eisenberg, Cumberland, et al. (2001) and Eisenberg et al. (2004).

Overlap Between Questionnaire Measures—Items that measured problem behaviors and emotion or temperamental regulation/impulsivity were examined for overlap in content. Thirty-two experts in the fields of child psychopathology and temperament (24 faculty; 8 graduate students) rated the CBCL (Achenbach, 1991) items reflecting internalizing or externalizing problems and the Child Behavior Questionnaire (CBQ; Rothbart et al., 1994, 2001) items assessing children's temperamental anger, fear, sadness, attention focusing and shifting, impulsivity, and inhibitory control using an evaluation method similar to that employed by Lemery et al. (2002). Experts indicated on a 5-point scale how much each item measured either problem behaviors or temperament (1 = *temperament more than problem behaviors*; 3 = *not a better measure of temperament or symptoms; substantial content for both*; 5 = *problem behaviors more than temperament*). Mean ratings for each item were calculated across experts. CBQ items that received ratings of 3 or higher were removed from the CBQ scales. Specific CBQ items that were dropped are discussed below. CBCL items that were rated as tapping CBQ constructs were not removed. It was necessary to retain these items in order to use Achenbach's software program for grouping children by problem behaviors.

Children's Problem Behaviors: CBCL Groupings—Mothers, fathers, and teachers rated children's internalizing and externalizing problem behaviors using either Achenbach's CBCL for parents or the Teacher's Report Form (TRF; Achenbach, 1991). Raters responded to statements using a 3-point scale (1 = *not true*; 3 = *very true*). The Internalizing index assesses social withdrawal, anxiety/depression, and somatic complaints. The Externalizing index includes items selected to tap aggression and delinquency.

T scores for internalizing and externalizing problems were generated from the parents' and teachers' CBCL and TRF ratings using Achenbach's (1991) program. As at T1, *T* scores of 60 or higher on the Internalizing and Externalizing scales (indicating borderline or clinical scores) were used to classify children into one of four groups. Children who scored 60 or higher solely on the Internalizing scale were grouped as internalizers (INT). Likewise, children who scored 60 or higher on only the Externalizing scale were labeled as externalizers (EXT). Children who scored 60 or above on both the Internalizing and Externalizing scales were classified as comorbid (COMRB). Finally, children who scored less than 60 on both Internalizing and Externalizing indices were placed in the control/nondisordered group (CONT). The numbers of boys and girls in each group are provided in Table 1.

Children's Dispositional Emotionality—Primary caregiving parents and teachers rated children's temperamental emotionality (1 = *extremely untrue*; 4 = *neither true nor false*; 7 = *extremely true*) on three subscales of the CBQ (Rothbart et al., 2001). The Anger/Frustration scale originally included 13 items for parents and 10 for teachers (e.g., “gets angry when told she has to go to bed.”). However, 2 items (i.e., “gets mad when even mildly criticized” and “has temper tantrums when she/he does not get what she/he wants”) were rated as assessing problem behavior and were dropped from scales. Hence, parent ratings of child anger were based on 11 items (α at T2 = .80), whereas the teacher-report Anger scale included 8 items (α = .89).

The Fear scale included 13 items (e.g., “is afraid of loud noises”). Teachers did not complete this scale because of lack of familiarity with the presented situations. One fear item (i.e., “is very frightened by nightmares”) was dropped from the parent scale because of rated overlap with the CBCL. The final scale included 12 items ($\alpha = .76$).

The Sadness scale initially included 13 and 11 items for parents and teachers, respectively (e.g., “tends to become sad if plans don't work out”). Three of these items were deleted on the basis of the experts' ratings of overlap (i.e., “seems to feel sorry for himself/herself when things are going badly,” “seems to feel depressed when unable to accomplish some task,” and “sometimes appears downcast for no reason”). Alphas for the parent- and teacher-report Sadness scales were .66 (10 items) and .72 (8 items), respectively.

Children's Adult-Reported Effortful Control and Impulsivity—Children's attentional control was assessed with the Attention Shifting (11 items; e.g., “can easily shift from one activity to another”) and Attention Focusing (9 items for parents, 8 for teachers; e.g., “when picking up toys or other jobs, usually keeps at the task until it is done”) subscales of the CBQ (Goldsmith & Rothbart, 1991) using the same 7-point response scale as was used for the CBQ emotion subscales. Two of the 11 items for both parents and teachers were deleted from the Attention Shifting subscale because of rated overlap with the CBCL (i.e., “sometimes has a dreamy quality when others talk to her/him, as if she/he were somewhere else” and “sometimes does not seem to hear me when I talk to her/him”). None of the attention focusing items was removed because of CBCL overlap. T2 alphas for attention shifting and attention focusing were .79 and .72 for parents and .88 and .82 for teachers, respectively.

Children's inhibitory control was measured with 13 items (e.g., “can wait before entering into new activities if he or she is asked to”) from the corresponding CBQ subscale. None of the inhibitory control items was dropped because of potential confounding with CBCL items. Parent and teacher T2 alphas were .81 and .90, respectively.

Children's impulsivity (i.e., reactive undercontrol) was also tapped with 13 CBQ items (e.g., “usually rushes into an activity without thinking”). One item (“when eager to go outside, sometimes rushes out without putting on the right clothes”) was dropped from teachers' reports because of a low response rate. Alphas for parents and teachers were .79 and .84, respectively.

Children's Observed Control—Recall that children were videotaped for 1 min after the experimenter left the room to retrieve the films. The experimenter reminded children to hold their right hands with the skin conductance electrodes very still before he or she left. Coders rated the degree to which children kept their hands and bodies still during this minute. The degree of right-hand movements was rated on a 5-point scale (1 = *no movement*; 5 = *two large movements or one movement that lasted for more than 40 s*). Global body movements were also rated on a 5-point scale (1 = *an absence of a global body movement*; 5 = *children consistently moved or made several large global body movements*). Interrater reliabilities (r_s) for hand and body movement ratings were each .77 at T2 (and .94 and .99 at T1). An overall rating of children's ability to sit still was generated by standardizing and averaging scores for right-hand and global body movements. Higher ratings indicated more movement.

A second measure of regulation/control, children's persistence while completing the puzzle task, was timed online by research assistants. A puzzle was placed in a 24 in. $\times$ 12 in. $\times$ 14 in. box that had Plexiglas on one side (so children's hands could be seen) and a black cloth with arm sleeves on the other side that hid the puzzle from the children's view. Children were required to access the puzzle by putting their arms through the arm sleeves in the black cloth. Hence, they could work on the puzzle but could not see it unless they cheated by either lifting the black cloth or looking through the arm sleeves or the Plexiglas on the other side of the box.

Children age 7 or younger worked on an easier puzzle than did older children. Children were given 4 min to work on the puzzle, and they were told they would receive points toward a desirable prize for succeeding at the task.

The Plexiglas side of the box faced a hidden camera. An assistant timed children's persistence on the task. In approximately half the cases, a 2nd assistant independently timed participants' persistence in order to calculate reliability. Children were considered to be persisting when they worked on the puzzle without cheating (i.e., did not lift the cloth with the arm sleeves to see the puzzle, look through the arm sleeves, or peer through the Plexiglas covering the back of the puzzle) and were not off-task. Interrater reliability for the timing was .98 (and .94 at T1). Proportion scores were computed for persistence on the puzzle task by dividing total time spent working on the puzzle by total task time (range = 0 to 1.0).

RESULTS

Descriptive Statistics

Sex Differences in the Major Variables—Chi-square analyses were conducted for each reporter (mother, father, and teacher) to examine whether there were sex differences at T2 across the four behavior problem group classifications; none was significant (see Eisenberg, Cumberland, et al., 2001, for T1 sex and age analyses). In addition, two separate multivariate analyses of variance (MANOVAs) were computed per reporter (i.e., for primary caregiving parents and teachers) to examine whether there were sex differences in (a) children's emotionality (anger, fear [primary caregiving parent only], and sadness), (b) effortful regulation (attention focusing, attention shifting, and inhibitory control) and impulsivity, and (c) the two observed indices of regulation. The multivariate tests were significant for parents' and teachers' reports of emotion, $F(3, 179 \text{ and } 2, 161) = 5.07 \text{ and } 5.48, ps \leq .01$ (see Table 2 for means by problem behavior group). Univariate follow-up tests indicated that parents rated girls ($M = 4.51$) as sadder than boys ($M = 4.13$), $F(1, 181) = 11.03, p < .01$, whereas teachers rated boys ($M = 3.89$) as angrier than girls ($M = 3.43$), $F(1, 162) = 5.18, p < .02$.

The multivariate F was also significant for teachers' (but not parents') ratings of children's regulation and impulsivity, $F(4, 173) = 5.12, p < .01$. Teachers rated girls as higher in attention focusing, attention shifting, and inhibitory control (M s = 5.12, 5.00, and 5.30, respectively) than boys (M s = 4.62, 4.44, and 4.56, respectively), F s(1, 176) = 9.57, 11.09, and 20.74, $ps < .01$. Conversely, teachers rated boys ($M = 4.29$) as more impulsive than girls ($M = 3.91$), $F(1, 176) = 5.95, p < .02$. The multivariate test for sex differences on the two observed measures of regulation was not significant.

Relations of the Major Variables With Age—There was only one significant correlation between age and the T2 primary caregiving parent- or teacher-rated measures of emotion, regulation, and impulsivity and the two observed measures of regulation. Parents' reports of children's anger were negatively correlated with children's age, $r(181) = -.19, p < .01$. Moreover, analyses of variance (ANOVAs) examining age differences in T2 mother-, father-, and teacher-rated CBCL groupings were not significant.

Relations of Adjustment Across Reporters and Time—In order to test the extent to which raters agreed on children's problem behaviors, correlations were calculated among the continuous measures from mothers', fathers', and teachers' ratings of children's internalizing and externalizing behaviors. Mothers' and fathers' ratings of both externalizing and internalizing problem behaviors were substantially correlated, r s(111) = .46 and .52, respectively, $ps < .01$, much more so than ratings from mothers or fathers with those from teachers. Like the corresponding correlations at T1 (Eisenberg, Cumberland, et al., 2001), mothers' and fathers' reports of children's externalizing behaviors were positively correlated

with teachers' externalizing reports, $r_s(177, 110) = .28$ and $.35$, $p_s < .01$, respectively. In contrast, mothers' and fathers' reports of children's internalizing behaviors were not significantly correlated with teachers' reports, $r_s(177, 110) = -.10$ and $.09$, respectively, ns .

Simple κ s for the strength of association between mothers' and fathers', mothers' and teachers', and fathers' and teachers' overall CBCL groupings (rather than continuous scores on externalizing and internalizing) were $.23$, $.10$, and $.13$, $p_s < .01$, $.03$, and $.03$, respectively. Regardless of the statistical significance, these κ s are weak. However, mothers' and fathers' ratings were still more closely aligned with each other than with those of teachers.

Relations of continuous measures of adjustment over time and within reporter (but for different teachers at T1 and T2) were also calculated. The correlations of mothers', fathers', and teachers' reports of externalizing from T1 to T2 were substantial, $r_s(177, 75, \text{ and } 162) = .70, .58, \text{ and } .45$, respectively, $p_s < .01$. Mothers' and fathers', but not teachers', reports of internalizing problems also were significantly related across time, $r_s(177, 75, \text{ and } 162) = .69, .64, \text{ and } .14$, $p_s < .01, .01, \text{ and } .07$, respectively (these values are slightly different than those in Eisenberg et al., 2004, because we did not drop potentially confounded CBCL items in these correlations because of the need to create problem behavior groups with Achenbach's, 1991, program).

Interrelations Among Measures of Regulation and Emotionality—Primary caregivers' and teachers' reports of children's emotionality were not significantly correlated. However, their reports of children's attention focusing, attention shifting, impulsivity, and inhibitory control were significantly correlated, $r_s(176, 177, 174, \text{ and } 178) = .29, .35, .49, \text{ and } .43$, respectively, $p_s < .01$. Reports of these variables tended to be stable over the 2 years' time within type of reporter (although teachers were not the same people at T1 and T2): r_s for teacher-reported anger, sadness, attention focusing, attention shifting, inhibitory control, and impulsivity across the 2 years were $.34, .23, .40, .37, .57, \text{ and } .58$ (d_f s ranged from 142-163; $p_s < .01$); analogous r_s for parent-reported variables were $.65, .56, .60, .70, .79, .77$, respectively (parent fear was $.60$; d_f s ranged from 177 to 179; $p_s < .01$).

Prediction of Problem Behavior Groups From Emotion and Regulation—Parallel to the T1 analyses (Eisenberg, Cumberland, et al., 2001), CBCL-based problem behavior Group $\times$ Sex multivariate analyses of covariance (MANCOVAs) were computed to determine whether there were significant differences in T1 or T2 emotionality and regulation/control among children in the four T2 problem behavior groups. To be conservative (and because of the range of ages), age was used as a covariate because it was correlated with an index of emotionality. As at T1, three planned comparisons were computed to reduce the number of analyses. These comparisons were selected on the basis of a priori expectations about intergroup differences in ratings of emotionality, regulation, and reactive undercontrol (as well as the findings at T1). Specifically, nondisordered children (CONTs) were compared with high externalizing and comorbid children combined (EXTs/COs). Nondisordered children (CONTs) were also compared with high internalizing children (INTs). Finally, high internalizing children (INTs) were compared with high externalizing (but not comorbid) children (EXTs). Interactions between the contrasts and sex were also assessed. Primary caregiving parent reports of regulation, impulsivity, or emotion were used in analyses with teacher- or mother-based adjustment groups (to maximize the sample size); mothers' reports of emotion or regulation/impulsivity were used in analyses with father-designated groups (to examine across-reporter relations), although sometimes the term "parent" is used to simplify reporting of the findings. Data patterns involving emotionality variables (primary parent and teacher ratings) are presented first, followed by findings on regulation and impulsivity. All findings that were at least almost significant are presented in the summary tables. However, not quite significant and isolated findings are not highlighted; rather, patterns of findings are emphasized.

Because of the considerable number of analyses, *F* ratios are not provided. However, approximate *ns* (the range) are listed in Tables 3 and 4, as are *p* values. More precise *ps* are provided only for almost significant findings.

Measures of Emotionality—EXTs/COs were expected to score higher on anger and sadness than were CONTs. INTs were expected to score higher than CONTs on sadness and perhaps anger. In addition, INTs were expected to receive higher ratings of fear and sadness than were EXTs, whereas EXTs were anticipated to score higher on anger than were INTs and CONTs.

Anger: *Controls versus combined externalizers and comorbid.* Mother-, father-, and teacher-designated EXTs/COs were all at least marginally higher on T2 parent-rated anger than were CONTs (see Table 3). Teacher-rated EXTs/COs were also significantly higher on teacher-rated anger than were CONTs. The same main effects were found when T1 anger was the predictor; in addition, teacher-designated EXTs/COs were significantly (rather than marginally) higher than CONTs in T1 parent-rated anger, and father-designated EXTs/COs were significantly higher than CONTs in T1 teacher-rated anger.

Controls versus internalizers. T2 parents' ratings of anger were higher for mother-rated INTs than CONTs. Similarly, T2 teacher-rated anger was higher for teacher-designated INTs than CONTs. T1 ratings of anger did not differ across T2 adjustment groups. Thus, there was modest support for the conclusion that T2 (but not T1) anger differentiated between INTs and CONTs.

Internalizers versus externalizers. T2 parents' and teachers' ratings of anger were marginally higher for teacher-designated EXTs than INTs ($ps < .06$). In addition, T2 teachers' ratings of anger were marginally higher for parent-designated EXTs than INTs ($p < .08$). Only the within-rater teacher finding remained (and was significant) when T1 anger was used in analysis. There also were mother-rated Group $\times$ Sex interactions for both T1 and T2 parent-rated anger. EXT boys (*Ms* for T1 and T2 = 5.11 and 5.22) were judged by primary parents to be angrier than INT boys (*Ms* for T1 and T2 = 4.45 and 4.51); this pattern did not hold for girls. Thus, EXTs tended to be rated as angrier than INTs, but the pattern was weak and held more for boys than girls in the home.

Fear: Ratings of fear were collected solely from primary parents. Relatively few findings emerged, although parent-rated fearful children tended to be either EXTs/COs or INTs.

Controls versus combined externalizers and comorbid. Mother-designated EXTs/COs were higher on parent-rated fear than were CONTs at both T1 and T2 (and a similar, though not quite significant, pattern held at T2 for father-designated groups of girls).

Controls versus internalizers. Mother-rated INTs were higher on parents' reports of fear than were CONTs at T1 and T2.

Internalizers versus externalizers. EXTs and INTs did not differ in adult-reported fear (only one marginal difference was found).

Sadness: *Controls versus combined externalizers/comorbid.* Mother-rated EXTs/COs were judged by parents as sadder at T2 than the CONTs. Similarly, teacher-rated EXTs/COs were rated as sadder than CONTs by teachers. In addition, father-based EXT/CO girls ($M = 5.13$) were rated by parents as being sadder at T2 than CONT girls ($M = 4.21$): $p < .03$ for the interaction, and $p < .08$ for the simple effect. T1 sadness did not predict EXT/CO status.

Controls versus internalizers. Mother-designated INTs were rated by parents as sadder at T2 than CONTs. Similarly, teachers rated teacher-designated INTs as sadder at T2 than CONTs. Similar findings emerged for mother- and teacher-designated groups when using T1 parent-rated sadness; the mother-based group finding was significant, and the teacher-rated group finding was marginal ($p < .09$). Moreover, children in both parents' and fathers' INT groups were rated by T1 teachers as sadder than the respective CONTs, with the parent-designated group finding being marginally supported ($p < .10$). Thus, there was modest evidence that INTs exhibited more sadness than CONTs.

Internalizers versus externalizers. Teachers rated teacher-designated INTs as sadder at T2 than EXTs. This same relation was found for parents' reports of sadness (predicting mothers' and teachers' CBCL groups) at T1. In addition, teachers rated father-classified INTs as sadder than EXTs at T1 ($p < .06$). Thus, differences between INTs and EXTs at T2 in sadness were weak.

Summary. EXTs/COs, compared with CONTs, were clearly higher in anger and tended to be rated as higher in both fearfulness and sadness. There was modest evidence that INTs were higher than CONTs in anger, fearfulness, and sadness, especially when emotionality was rated at T2. EXTs tended to be only marginally higher in anger than INTs. INTs and EXTs generally did not differ in fearfulness; the patterns of findings for anger and sadness were in the predicted direction but quite weak (and often not quite significant). Thus, the differences between INTs and EXTs may not be reliable. Given the low relations between parent- and teacher-rated negative emotionality, it is not surprising that significant relations tended to be within the home or school context.

Regulation/Control: Adult-Reported Effortful Regulation: EXTs/COs and EXTs were expected to be lower than CONTs or INTs on all forms of effortful regulation and highest on impulsivity. In contrast, INTs were anticipated to be lower on attentional regulation, but not inhibitory control, than CONTs and higher than EXTs on these aspects of regulation. In addition, INTs were expected to be lower than both CONTs and EXTs on impulsivity. Data patterns for regulation and inhibitory control are presented first, followed by those for impulsivity.

Controls versus combined externalizers and comorbid. As was found at T1 (Eisenberg, Cumberland, et al., 2001), EXTs/COs at T2 generally were lower on indices of T1 and T2 effortful regulation than were CONTs (see Table 2 for means and Table 4 for main effects and interactions). For attention focusing, four of six possible T2 contrasts between EXTs/COs and CONTs (favoring CONTs) were at least almost significant (three were significant), whereas five of the six were significant when T1 attention focusing was used in the analyses. Similarly, all of the six contrasts were at least marginally significant for T2 attention shifting, and all six were significant for T1 attention shifting. Likewise, EXTs/COs were lower than CONTs within and across reporters (in all six analyses) on T1 and T2 inhibitory control. In one T2-based analysis, there was a within-rater interaction with sex: Teachers' judgments of inhibitory control differed across groups for both boys (for EXTs/COs and CONTs, $M_s = 3.65$ and 5.40) and girls ($M_s = 4.19$ and 5.49), $p_s < .001$, but the difference was stronger for boys than girls, $F_s(1, 179) = 59.49$ and 51.68 , respectively. Thus, EXTs/COs were rather consistently lower than CONTs in attention shifting, attention focusing, and inhibitory control, both when reported by parents and teachers at T1 or T2.

Controls versus internalizers. In general, there was weak support for the hypothesis that INTs would be lower than CONTs in attentional control. Primary parents described mother-designated INTs as having fewer attention focusing skills at T2 than CONTs. This finding was qualified by a Group $\times$ Sex interaction for T1 attentional control. INT boys ($M = 4.60$) were described as having less attention focusing than CONT boys ($M = 5.10$), $p_s < .02$ for both the

interaction and simple effect; there were no differences for girls. Similarly, teachers viewed teacher-rated INTs as displaying less attention shifting than CONTs at T2 only. However, there was one marginal finding that was the opposite of what was predicted (for father-designated CONTs and teacher-rated attention shifting at T2). Moreover, there was a Group $\times$ Sex interaction for father-designated groups and T1 teacher ratings of attention focusing. Teachers described INT boys ($M = 5.88$) as higher on attention focusing than CONT boys ($M = 4.92$), whereas CONT girls ($M = 5.61$) were viewed as higher in attention focusing than INT girls ($M = 4.98$). Thus, contrary to findings at T1, INTs and CONTs did not differ much in effortful attentional control at T2. Further, as expected, adults' ratings of inhibitory control did not differ for INTs and CONTs.

Externalizers versus internalizers. As predicted, EXTs were rated as lower in effortful regulation than INTs, but less for attentional regulation than for inhibitory control. EXTs were lower than INTs in T2 parent-reported attention focusing for the parent- ($p < .10$) and teacher-designated groups; this relation remained significant for teacher-rated CBCL groups at T1. Moreover, teacher-designated EXTs were rated by teachers as lower in attention focusing than INTs at T2. The same pattern was marginal for parent- and father-designated groups and T1 attention focusing ($ps < .08$; albeit significant for the latter for boys).

In regard to attention shifting, mother-rated EXTs were described by parents as lower than INTs at T2. Similarly, parent- and father-rated EXTs were at least marginally lower ($p < .06$ for parents) than INTs in T2 teacher-rated attention shifting, whereas mother-, father-, and teacher-rated EXTs were at least marginally lower than INTs in teacher-rated attention shifting at T1 ($ps < .06$ and $.09$ for the first two and $p < .01$ for the third). Thus, 6 of 12 possible findings for T1 and T2 combined were at least nearly significant for both attention focusing and attention shifting. Therefore, there was a weak but relatively consistent tendency for EXTs to be viewed as lower than INTs in attentional control.

In addition, mother-, father-, and teacher-designated EXTs were consistently lower than INTs in parent- and teacher-rated inhibitory control at both T1 and T2. All six contrasts were at least nearly significant for T2 inhibitory control, whereas four were significant for T1 inhibitory control (most were highly significant). Thus, INTs were more skilled in attentional and inhibitory control (especially the latter) than were EXTs, and this was true regardless of whether these skills were assessed at T1 or T2.

Summary. Overall, INTs and CONTs were viewed as much more regulated than EXTs or EXTs/COs. However, adults did not discern consistent differences between T2 INTs' and CONTs' regulation.

Observed Measures of Regulation/Control: Parallel CBCL Grouping $\times$ Sex MANCOVAs were run to examine whether the CBCL groups differed with regard to the two observed variables.

Movement when sitting still. Few significant results emerged for the contrast-based MANCOVAs across parent-, father-, and teacher-designated groups when movement was assessed at T2. One nearly significant difference emerged for teacher-designated groups; EXTs moved more than INTs at T2 ($p < .06$). A parallel pattern emerged for T2 parent-rated groups when using the T1 variable ($p < .08$). In addition, T2 teacher-rated EXTs/COs moved more on the T1 sitting still task than did CONTs.

Puzzle persistence. At both T2 (for teachers' groups) and T1 (for fathers' groups), EXTs/COs were significantly lower (T2) or marginally lower (T1, $p < .06$) than CONTs on persistence. The former significant finding was qualified by an interaction with sex at T2. The simple effects

held only for boys: Teacher-rated EXT/CO boys ($M = .49$) persisted for a shorter time than CONT boys ($M = .77$; $p < .01$).

In addition, parent-rated INTs persisted longer on the T2 puzzle task than EXTs. Unexpectedly, parent- and father-rated INTs persisted at least marginally longer ($p < .10$ for parents) on the puzzle task at T2 than did CONTs.

Because of the limited number of findings for the behavioral measures (especially movement), we examined whether there were mean differences between T1 and T2 in movement and persistence. Paired t tests computed for the unstandardized measures of children's hand or body movements when they were asked to sit still (one cannot look at age changes in standardized measures) indicated that children moved their bodies (but not their hands) less at T2 than at T1, $t(173) = 3.84$, $p < .01$ (M s at T1 and T2 for global movement = 3.56 and 3.16). Moreover, children persisted on the puzzle task more at T2 than T1 (M s at T1 and T2 = 0.59 and 0.68), $t(171) = -3.76$, $p < .01$.

Adult-Reported Impulsivity: EXTs/COs were expected to be rated as more impulsive than CONTs. Moreover, EXTs and CONTs were hypothesized to be more impulsive than INTs.

Controls versus combined externalizers and comorbid. In five of six analyses comparing CONTs and EXTs/COs, the latter group was described by adults as significantly more impulsive at T2 than were CONTs. Four of the six were significant when using T1 impulsivity. Father-rated CBCL groups did not differ as a function of either T1 or T2 mother-rated impulsivity.

Controls versus internalizers. Mother- and father-rated INTs were described by primary parents as marginally less impulsive at T2 than were CONTs, and the former group was viewed as significantly less impulsive at T1. Similarly, mother- and teacher designated INTs were rated by teachers as at least marginally less impulsive at T2 than CONTs; only INTs in teacher-designated groups were reported as significantly less impulsive than CONTs at T1 as well as at T2. Thus, in general, INTs were less impulsive than CONTs (i.e., the findings were almost significant for 6 of 12 possible contrasts), but the findings were more consistent when using T2 than T1 ratings of impulsivity (4 of 6 findings were at least marginally significant at T2).

Externalizers versus internalizers. Both primary caregiving parents and teachers viewed both mother- and teacher-designated EXTs as more impulsive than INTs at both T1 and T2. Children designated as EXTs by their fathers were reported to be more impulsive than INTs by their teachers only at T2. Thus, EXTs were consistently viewed as more impulsive than INTs concurrently and 2 years earlier (in 9 of 12 contrasts), especially when problem behaviors were reported by mothers or teachers.

Summary. There was striking evidence that EXTs/COs were viewed as more impulsive than CONTs. Similarly, EXTs were clearly viewed as more impulsive than INTs. INTs tended to be less impulsive than CONTs, although the strength of this difference was modest.

Unique Effects of Emotion and Regulation—In another set of analyses, we examined the unique additive relations of negative emotionality (anger, sadness, and fear [for parents]) and regulation/impulsivity variables with adjustment group status. In these analyses, we combined (standardized and averaged) the three components of effortful control (attention shifting, attention focusing, and inhibitory control) into a single composite. These three variables tended to be moderately to substantially correlated, so the probability of assessing the unique predictive effect of effortful control relative to negative emotionality would be minimized if the three components of regulation were entered as separate variables.

To examine whether blocks of variables (i.e., either negative emotionality or effortful regulation/impulsivity) significantly discriminated group status, we calculated likelihood ratio tests. For each comparison, two sets of regressions (each including two models) were run. The first model included one of the two blocks of variables (either the emotion variables or regulation and impulsivity). The second, overall model included all variables from both blocks. The contributions of the blocks of variables were assessed with a likelihood ratio test (with a chi-square distribution).

Initially separate polytomous logistic regression models were computed for mother-, father-, and teacher-designated groups with parent- or teacher-reported predictor variables. In such an analysis, one group is compared with multiple other groups; thus, the CONTs were compared with both the INTs and the EXTs/COs. Consequently, the polytomous regression analyses provided information on whether blocks of variables distinguished CONTs from disordered children (i.e., either INTs or EXTs/COs). These analyses suggested that emotionality and regulation/control sometimes provided unique prediction of disordered versus control status.¹ However, with the polytomous analyses, it was not possible to differentiate the contribution of the regulation/control and emotion blocks for the two contrasts of CONTs versus INTs and CONTs versus EXTs/COs. Thus, the three contrasts between groups were examined with standard logistic models. To be conservative (and because we were not looking across analyses for a pattern), we discuss only findings that are significant at the $p < .01$ level.

CONTs Versus EXTs/COs: As is shown in Table 5, when the reporter of group status and of the predictor variables was the same (i.e., teacher or parent), both negative emotion and regulation/impulsivity uniquely predicted EXT/CO status. In three analyses when the reporters of adjustment and emotionality and regulation/control were not the same, regulation/impulsivity provided significant prediction, whereas negative emotionality did not.

CONTs Versus INTs: For parent-designated groups and parent-reported characteristics, only parent-reported emotion was a significant predictor of adjustment status. In contrast, for teacher-designated groups, both teacher-rated negative emotionality and regulation/control were unique and additive predictors. In the other contrasts, neither variable significantly and uniquely predicted CONT versus INT status.

EXTs Versus INTs: When teachers provided information on both adjustment status and the predictors, both emotionality and regulation/impulsivity provided unique prediction of EXT versus INT status (see Table 5). Parent-reported regulation/impulsivity, but not negative emotionality, provided unique prediction of parent-reported adjustment status.

Summary: In some cases (always within rater), both negative emotionality and regulation/impulsivity provided unique prediction of adjustment status. However, across reporters, regulation/impulsivity was more consistently a unique predictor of the distinction between CONTs and EXTs/COs (although it was not the stronger predictor when both adjustment and child characteristics were rated by the same person) and between EXT and INT status.

Prediction of Changes in Group Status—MANCOVAs were run to examine whether a change in negative emotionality or dispositional regulation/control predicted change in children's CONT, INT, and EXT group status. Separately for scores on internalizing and externalizing (ignoring comorbidity), children were classified into one of four categories based on their T1 and T2 CBCL groupings—those who remained in the control group at both T1 and T2 (C/C), those who were high in problem behaviors at both T1 and T2 (I/I or E/E), those who

¹In the polytomous models (comparing the CONTs with both INTs and EXTs/COs), the block including parent-rated anger, sadness, and fear predicted mother- and father-

moved from a nondisordered T1 group status to a disordered T2 status (C/I or C/E), and those who were disordered at T1 but nondisordered at T2 (I/C or E/C). Numbers of children in these four mother-rated groups were 78, 55, 14, and 32, respectively, for externalizing problems and 68, 62, 18, and 31, respectively, for internalizing problems. Only CONT- and EXT-grouped children were included in the MANCOVAs for teachers' ratings because there was little consistency across teachers from T1 to T2 in ratings of internalizing problems; *Ns* for the C/C, E/E, C/E, and E/C teacher-rated groups were 90, 27, 28, and 19, respectively.

Three contrasts (C/C vs. C/disordered [i.e., I or E, depending on the analysis]; C/disordered vs. disordered/C; and disordered/C vs. disordered/disordered) were included in each model. The dependent variables were the T2 measures of emotionality and regulation (effortful control)/ impulsivity; the level of the given variable at T1 was covaried in the analyses. Such an approach generally is deemed to be preferable to using difference scores in MANOVAs. When one covaries the T1 level of a T2 outcome variable in this manner, the relation between the change group and the T2 index of the given emotion or regulation/control variable is unique from the variance in group status accounted for by the T1 level of the variable. Recall that there was modest to moderate stability in teachers' ratings of emotion and regulation/control (.26 to .59), especially for the latter, and substantial stability for analogous mother-report measures (.56 to .79). As with previous MANCOVAs, T2 age was covaried, and sex was a between-subjects factor. No more significant across-rater findings (e.g., mother-rated change groups being predicted by teachers' ratings of emotion and regulation/impulsivity) were obtained than would be expected by chance; thus, they are not discussed. The *ns* for the groups in the MANOVAs, a summary of the findings, and the adjusted means are presented in Tables 6 and 7.

Negative Emotionality: As expected, change-relevant measures of negative emotionality predicted changes in internalizing and externalizing problems. In regard to internalizing problems (recall that only mother CBCL scores were used to examine change in INT status), anger and sadness (but not fear) at T2 uniquely predicted (when controlling for T1 levels of the corresponding emotion) adjustment status. Specifically, children who moved from an internalizer status to a control status (I/C) were lower than stable internalizers (I/I) in unique T2 anger and sadness and lower than children who became internalizers (C/I) at T2 in unique T2 anger. Moreover, children who became internalizers (C/I) were marginally higher in anger than children who remained controls (C/C), $p < .10$ (4 of 9 possible contrasts were at least nearly significant for the internalizing groups).

All of the externalizing versus control contrasts were significant for anger and sadness. Children who moved from an externalizing status to a control status (E/C), based on either mother or teacher CBCL scores, were significantly lower in unique T2 anger (especially boys; see Table 6) and sadness than were E/E children. Similarly, children who were classified by mothers or teachers as CONTs at both times (C/C) were lower in unique T2 sadness and anger than were C/E children. In addition, E/C children were lower than C/E children in unique T2 mother- and teacher-rated anger and sadness. Furthermore, C/E children (based on mother groupings) were higher in unique T2 mother-rated fear than both stable control (C/C) children and E/C children. Thus, change in negative emotionality was fairly consistently related to change in adjustment, especially for externalizing problems and for anger and sadness.

Dispositional and Observed Regulation and Impulsivity: Ratings of dispositional regulation and control also predicted changes in group status, but primarily for externalizing problems (recall that internalizing change groups were not examined for teachers' reports on the TRF) and more consistently for impulsivity (than for effortful control) and for teacher-report externalizing data. All findings in regard to internalizing groups were not quite significant and may have been due to chance.

Conversely, all possible contrasts for teacher-reported externalizing groups were at least nearly significant: C/C children were higher in all aspects of effortful control and lower in impulsivity than were C/E children, and E/C children were at least marginally higher in effortful control and lower in impulsivity than either C/E or E/E children. Fewer findings were obtained for externalizing groups for mother-report data, but all were consistent with expectations. E/C children were higher in unique T2 attention shifting than were E/E children; C/C boys (adjusted $M = 4.89$) were higher than C/E boys (adjusted $M = 4.45$) in inhibitory control, and C/C children were lower in impulsivity than C/E children.

There was only one significant main effect (for internalizing problems) in all 18 change-related analyses with the two observed measures of effortful control. This finding was likely due to chance.

DISCUSSION

The findings in this study provide information on correlates of children's risk for problem behaviors and predictors of change in adjustment group status. In regard to patterns of relations, the differences in externalizing, internalizing, and nondisordered children in regulation, impulsivity, and negative emotionality noted at T2 were largely consistent with patterns found 2 years earlier (at T1; Eisenberg, Cumberland, et al., 2001), especially for children with externalizing problems. Specifically, in regard to emotionality, children described as having either externalizing problems or both externalizing and internalizing problems (comorbid; these 2 groups were combined) were rated as higher in anger than were children with no behavioral problems (controls). Externalizers were viewed as only slightly higher than internalizers in anger at T2, whereas this difference had been clear at T1. Although the findings were not as strong as for anger, externalizing/comorbid children were also judged as higher in both T2 and T1 fear and in T2 sadness than were control children (findings for fear were somewhat weaker at T1). In addition, children who were classified as internalizers were described by adult raters in a given setting (i.e., especially within rater) as angrier, more fearful, and sadder than controls. They also were viewed as slightly sadder than children with externalizing problems and only marginally less angry than externalizers, although these findings sometimes were across settings. Thus, internalizers, like externalizers, exhibited considerable problems with negative emotionality, including anger.

Our data are relevant to the debate on the relation between anger and internalizing problem behaviors. The modest relation between internalizing problems and anger noted at T1 was replicated at T2, even though the grouping of internalizers did not include all of the same children at the two assessments. Primary caregiving parents and teachers described internalizers (like externalizers) as angrier than control children at T2. Moreover, as is discussed shortly, anger at T2 beyond that at T1 predicted change from a control status to an internalizing status. Because internalizing children are likely to encounter more problems in social relationships as they move through elementary school (e.g., Rubin et al., 1998), they may increasingly experience anger. It is also possible that internalizing children experience some self-directed anger because of feelings of inadequacy or related issues. Alternatively (or in addition), expressions of anger may be viewed as more indicative of problems with adjustment with age, although anger is not a typical internalizing symptom.

Indices of regulation also were predictors of adjustment. We had expected externalizing children to be low in all types of effortful regulation and for internalizing children to be low in attentional, but not inhibitory, types of regulation. Children with externalizing problems were generally lower than nondisordered children in attentional control, and this was especially evident when attentional control was rated 2 years earlier. Thus, attentional control, although still a strong predictor of externalizing problems at T2, may become a slightly weaker

concurrent predictor with age. In contrast, T2 externalizing/comorbid children were consistently rated at both T1 and T2 as lower in inhibitory control and higher in impulsivity than were nondisordered children. In addition, externalizing/comorbid children, especially boys, tended to be lower in persistence on a puzzle task than were control children. This pattern of findings is consistent with the conclusion that externalizing children have difficulty controlling not only the overt expression of emotion but also attentional processes that are important in managing negative emotions. This finding is also consistent with the role of attentional deficits in many hyperactive (e.g., attention-deficit/hyperactivity disorder) children (see Nigg, 2001). Thus, children with externalizing problems are likely both to experience and to express negative emotion in inappropriate ways.

As when adjustment was assessed at T1 (Eisenberg, Cumberland, et al., 2001), T2 internalizing children were rather consistently higher than externalizing children on measures of effortful control (especially inhibitory control) and lower in impulsivity. However, at T2, internalizers were not lower than control children in either effortful attentional control or inhibitory control, although control children were expected to excel at attentional control. In contrast, when adjustment was assessed at T1, primary parents, fathers, and teachers tended to rate T1 internalizers as lower in attentional regulation than control children (Eisenberg, Cumberland, et al., 2001). Even problems in attentional control at T1—which were related to internalizing status at T1—were not predictive of internalizing versus control status at T2. The difference in findings was not due to attrition at T2; most of the findings on differences in internalizers' and controls' attentional regulation were maintained when the analyses at T1 were rerun with only the children available at T2. It appears that children who were rated as internalizers at T2 were simply more similar to control children with regard to effortful regulation than was the case 2 years prior. This difference may be due to age-related changes in the ways that internalizing children express their emotions. Although internalizing children may experience more negative emotion with age, it may be less linked with their ability to control their attention. Although internalizing children are not very good at managing some of their emotions, it may be due to difficulties in shifting attention away from distressing stimuli and their tendency to ruminate (Derryberry & Reed, 2002), and adult raters may not know if children have difficulty shifting attention from upsetting thoughts to more neutral ones.

As expected and found at T1, nondisordered children were rated by adults as less impulsive than externalizing/comorbid children but more impulsive than internalizing children. This pattern of findings is consistent with the belief that nondisordered children exhibit moderate levels of reactive control. Internalizers, who were rated as less impulsive than controls, may often exhibit rigid and reserved behavior and find it difficult to rebound from stress (Eisenberg et al., 2004). This lack of spontaneity and resilience may result in others perceiving internalizers as dull and overly rigid, and in the child behaving in inappropriate ways when stressed. Such responses might contribute to the peer rejection experienced by these children and their problems in dealing with adults, which could, in turn, compound internalizers' anger and sadness. The difference in the pattern of findings for inhibitory control and impulsivity for internalizing children also supports the importance of the distinction between effortful and reactive control when examining adjustment.

The analyses of unique effects provide additional insights into the relative contribution of negative emotionality and regulation/impulsivity to the prediction of adjustment. Negative emotionality and regulation/impulsivity each predicted significant, unique variance in adjustment (for all comparisons) within the school setting and between control and externalizing/comorbid children when predicting parent-rated adjustment from parents' reports of emotion and regulation/impulsivity. The unique additive effects for emotion and regulation/impulsivity suggest that these factors, albeit related, contribute in somewhat different ways to adjustment problems. However, in a number of cases, regulation/control was a unique predictor

of adjustment, especially in comparisons involving children with externalizing problems, whereas negative emotionality was not. Thus, although both negative emotionality and regulation/impulsivity are related to adjustment status, regulation and impulsivity appear to account for more unique variance in adjustment status (except when parents or teachers provided information on both externalizing/comorbid vs. control status and child characteristics).

Of most interest, the analyses of change in risk group membership over time provided information regarding the predictors of stability versus change in children's adjustment. Prediction of change in adjustment was found despite significant and often substantial stability in adults' reports of children's negative emotions, regulation, and impulsivity. If a given predictor (e.g., impulsivity) was highly consistent over time, then it might relate highly to T1 and T2 adjustment but not predict change in adjustment. Nonetheless, consistent with the aforementioned tendency for anger to become a stronger predictor of internalizing status with age, T2 parental reports of children's anger and, to a lesser degree, sadness, were uniquely related to whether children were likely to become internalizers or maintain their internalizer status across the 2 years rather than shift from an internalizing status to control status at T2 (i.e., change in parent-rated adjustment related to T2 negative emotions even when variance due to T1 levels of these negative emotions was taken into account). In contrast, neither attentional control nor inhibitory control predicted change in internalizing status, and findings for impulsivity were not quite significant. Thus, negative emotionality, but neither effortful control nor impulsivity, was consistently associated with change in internalizing status. The fact that effortful control was not linked with change in internalizing status may be because internalizing and nondisordered children differed relatively little in effortful control at T2.

Change in status as an externalizer/comorbid (vs. control) was especially linked to apparent fluctuations in negative emotionality, effortful control, and impulsivity. In comparison to children who were nondisordered at both assessments or who moved from an externalizing status to control status, children who moved from a nondisordered status to an externalizing status over the 2 years appeared to have increased (or decreased less) in anger, fear, and sadness over the same time span. In addition, they tended to be lower in unique T2 attention shifting, focusing, and inhibitory control and higher in impulsivity, especially as reported by teachers. Furthermore, children who changed from an externalizing status to control status, in comparison to those who were externalizers at both assessments, showed the same pattern of differences (albeit in the reversed direction from those who became externalizers at T2).

Change in parent-designated status was more consistently associated with change in parent-reported negative emotionality (as reflected in unique T2 variance) than with change in effortful control or impulsivity. This may have partly been due to the higher degree of stability in parents' (and teachers') reports of inhibitory control and impulsivity than in their reports of negative emotionality. Individual differences in relative negative emotionality may change more dramatically for some children than do individual differences in regulation (and perhaps impulsivity) because of either neurological development or socialization (Belsky, Fish, & Isabella, 1991; Posner & Rothbart, 1998), which could account for the greater prediction from negative emotionality (especially anger). Moreover, because negative emotionality likely is closely linked to specific experiences in social settings, discontinuities in experiences with parents, peers, teachers, and other individuals might result in less stability in negative emotion than in aspects of regulation/control.

The fact that there were more findings for teacher-designated than parent-designated adjustment change groups is not surprising. Different teachers participated at T1 and T2, which resulted in somewhat less (albeit often considerable) consistency over time in teachers' than in parents' ratings of emotion, regulation, and impulsivity. Thus, T2 teacher ratings of children's

regulation or emotion were more likely to predict adjustment groups in a manner that was unique from T1 predictors. Nonetheless, it is impressive that prediction of change in adjustment status frequently was found (except for parents' ratings of attentional and inhibitory control) even when the considerable stability in many of the predictor variables was accounted for in the analyses.

Parallel with data patterns from T1, in general there were more within than across-rater findings. As previously suggested (Eisenberg, Cumberland, et al., 2001), it is likely that children's problem behaviors vary across context. Children may be more likely to display problem behaviors—especially internalizing problems such as social withdrawal—in one setting (e.g., school) than another (e.g., at home). Further, across-reporter findings (i.e., between parent CBCL groups and teachers' reports of emotion or regulation) were more often obtained when examining externalizing than internalizing status groups. Because children with externalizing problems, in comparison to those with internalizing problems, are lower in effortful regulation, higher in impulsivity, and perhaps slightly higher in anger, they likely have greater difficulty modulating their problem behaviors in any setting. As such, both parents and teachers may have observed more, and a wider array of, externalizers' than internalizers' problematic behaviors. The fact that parents and teachers agreed more on their ratings of externalizing than internalizing problems suggests that children are more consistent across settings in their externalizing problems. Moreover, the finding that there were fewer across-reporter associations of problem status with negative emotionality than with regulation/impulsivity is likely due to parents and teachers agreeing less on their ratings of children's negative emotionality than on ratings of effortful or reactive control (see Results section; also see Eisenberg, Valiente, et al., 2003; Goldsmith et al., 1991).

Although many findings were obtained primarily within context, it is important to realize that the teachers at T1 and T2 were not the same individuals and that parents' information was obtained 2 years apart in time. Thus, for example, relations between T1 teachers' reports of children's characteristics with T2 adjustment were examined using data from two different people. Moreover, whenever findings for fathers were obtained, they were across reporter. Further, recall that teachers' reports generally were significantly related over time despite the fact that different teachers supplied data at T1 and T2. Finally, a few findings consistent with predictions were obtained with the persistence behavioral measure. Thus, the overall pattern of findings was not due merely to the same reporter supplying all data at the same time.

Fewer findings were obtained for father-designated than either parent- or teacher-designated adjustment groups, probably in part because of the smaller sample size for fathers than for other reporters. However, it is also possible that fewer findings were obtained for father-designated adjustment groups because fathers usually did not report on negative emotionality or regulation/impulsivity. Thus, it would be premature to conclude that negative emotionality, regulation, and impulsivity are weaker predictors of father-rated adjustment than of mother- or teacher-rated adjustment.

Unlike at T1, observed movement during the sitting-still task provided little significant prediction of adjustment status. However, consistent with the situation at T1, movement was associated with teacher-designated externalizing/comorbid versus control status. Findings for the persistence measure were limited but were generally as expected. Children—especially boys—with teacher-reported externalizing problems (including comorbidities) were less likely to persist on the puzzle task, and parent-rated externalizers were lower in persistence than internalizers. It is likely that the behavioral measures were not as age-appropriate for assessing variability in our sample at T2 as at T1. In fact, children generally were more likely to sit still and to persist longer at T2 than at T1. Thus, in the future, researchers might either use different tasks or modify these tasks to ensure that they are more taxing. Nonetheless, the persistence

task was related to teachers' ratings of attentional and inhibitory control at T2 and to persistence at T1 (Eisenberg et al., 2004) and was also linked to T2 adjustment; thus, it appears to be at least somewhat useful with mid-elementary schoolchildren.

Although rank order consistency among children in continuous measures of internalizing and externalizing problems (except teacher-reported internalizing) was relatively stable, numerous children changed in their problem behavior grouping status. Some of this change within the school setting might have been due to different teachers providing information on children at the two assessments. However, this explanation does not apply to changes in parent-rated CBCL groupings. As suggested by the analyses on change in groupings, children prone to negative emotion may have been especially likely to deteriorate in their adjustment with age. In addition, the criteria that adults use to judge behavioral problems may shift somewhat with age. As children get older, adults, especially teachers, likely know less about their students' negative emotionality (unless they suffer from severe problems), and consequently, their reports regarding adjustment might be overly determined by observations of behaviors that reflect deficits in regulation and impulsivity.

To conclude, the present study corroborates T1 findings on the relations between problem behavior groups and negative emotionality, regulation, and inhibitory control. Moreover, the data provide information on developmental issues. First, attentional regulation did not predict internalizing problems nearly as clearly at T2 as at T1. Rather, reactive overcontrol (as reflected in low impulsivity) and, to a lesser degree, anger were not only linked to status as an internalizer but were also associated with change in status to an internalizing child. These findings suggest that interventions designed to promote effortful regulation may be less efficacious for internalizing than externalizing children. In addition, children with externalizing (and comorbid) problems seemed to be especially low in regulation and high in impulsivity, although both regulation/impulsivity and negative emotionality tended to be linked with externalizing problems. Thus, externalizing status seems to be linked to multiple deficits, and interventions that address both emotional and behavioral control seem warranted. Further, of developmental import, the results of the change analyses suggest that some associations between adjustment and both negative emotionality and regulation/impulsivity were not due merely to the consistency of these dispositional characteristics over 2 years; relations persisted even when T1 levels of negative emotionality, impulsivity, and/or regulation were controlled. Thus, the basis of problem behaviors seems to be emerging and changing in the elementary school years. Negative emotionality, although clearly linked to both internalizing and externalizing problems, probably not only heightens problems with adjustment but also is an outcome of the experiences that result from nonoptimal levels of effortful regulation and reactive control. In future work, it would be useful to identify the various factors, such as quality of peer relations and parenting and changes in stressors in the child's social or academic life, that contribute to changes in negative emotionality and regulation, and how these changes affect, and are affected by, problems in adjustment.

A limitation of this study is that the findings may not apply to children from very high-risk families and neighborhoods. The sample was not extremely high risk; in addition, the moderate attrition of minority children and children with low regulation indicates that one must be cautious in generalizing the findings to groups of children (especially minority children) with high levels of clinical problems. As such, it is important to replicate the association found in this study with high-risk children, as well as with samples that contain greater proportions of minority children.

References

- Achenbach, TM. Integrative guide for the 1991 CBCL/4-18, YSR, and TRF profiles. University of Vermont, Department of Psychiatry; Burlington: 1991.
- American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 4th. Author; Washington, DC: 2000.
- Asher, SR.; Parkhurst, JT.; Hymel, S.; Williams, GA. Peer rejection and loneliness in childhood. In: Asher, SR.; Coie, JD., editors. Peer rejection in childhood. Cambridge University Press; Cambridge, England: 1990. p. 253-273.
- Belsky J, Fish M, Isabella R. Continuity and discontinuity in infant negative and positive emotionality: Family antecedents and attachment consequences. *Developmental Psychology* 1991;27:421-431.
- Biederman J, Rosenbaum JF, Hirshfeld DR, Faraone SV, Bolduc EA, Gersten M, et al. Psychiatric correlates of behavioral inhibition in young children of parents with and without psychiatric disorders. *Archives of General Psychiatry* 1990;47:21-26. [PubMed: 2294852]
- Block, JH.; Block, J. The role of ego-control and ego-resiliency in the organization of behavior. In: Collins, W. Andrew, editor. Development of cognition, affect, and social relations: Minnesota Symposia on Child Psychology. Erlbaum; Hillsdale, NJ: 1980. p. 39-101.
- Blumberg SH, Izard C. Affective and cognitive characteristics of depression in 10- and 11-year-old children. *Journal of Personality and Social Psychology* 1985;49:194-202. [PubMed: 4020613]
- Casey RJ, Schlosser S. Emotional responses to peer praise in children with and without a diagnosed externalizing disorder. *Merrill-Palmer Quarterly* 1994;40:82-97.
- Clark LA, Watson D, Mineka S. Temperament, personality, and the mood and anxiety disorders. *Journal of Abnormal Psychology* 1994;103:103-116. [PubMed: 8040472]
- Coie, JD.; Dodge, KA. Aggression and antisocial behavior. In: Damon, W.; Eisenberg, N., editors. Handbook of child psychology. Vol. 3. Social, emotional, and personality development. Wiley; New York: 1998. p. 779-862.
- Colder CR, Stice E. A longitudinal study of the interactive effects of impulsivity and anger on adolescent problem behavior. *Journal of Youth and Adolescence* 1998;27:255-274.
- Deffenbacher JL, Swaim RC. Anger expression in Mexican American and white non-Hispanic adolescents. *Journal of Counseling Psychology* 1999;46:61-69.
- Derryberry D, Reed MA. Temperament and attention: Orienting toward and away from positive and negative signals. *Journal of Personality and Social Psychology* 1994;66:1128-1139. [PubMed: 8046580]
- Derryberry D, Reed MA. Anxiety-related attentional biases and their regulation by attentional control. *Journal of Abnormal Psychology* 2002;111:225-236. [PubMed: 12003445]
- Derryberry D, Rothbart MK. Reactive and effortful processes in the organization of temperament. *Development and Psychopathology* 1997;9:633-652. [PubMed: 9448999]
- Eisenberg N, Cumberland A, Spinrad TL, Fabes RA, Shepard SA, Reiser M, et al. The relations of regulation and emotionality to children's externalizing and internalizing problem behavior. *Child Development* 2001;72:1112-1134. [PubMed: 11480937]
- Eisenberg, N.; Fabes, RA. Emotion, regulation, and the development of social competence. In: Clark, MS., editor. Review of personality and social psychology: Vol. 14. Emotion and social behavior. Sage; Newbury Park, CA: 1992. p. 119-150.
- Eisenberg N, Fabes RA, Guthrie IK, Murphy BC, Maszk P, Holmgren R, Suh K. The relations of regulation and emotionality to problem behavior in elementary school children. *Development and Psychopathology* 1996;8:141-162.
- Eisenberg N, Fabes RA, Guthrie IK, Reiser M. Dispositional emotionality and regulation: Their role in predicting quality of social functioning. *Journal of Personality and Social Psychology* 2000;78:136-157. [PubMed: 10653511]
- Eisenberg N, Fabes RA, Murphy B. Relations of shyness and low sociability to regulation and emotionality. *Journal of Personality and Social Psychology* 1995;68:505-517. [PubMed: 7714727]
- Eisenberg N, Gershoff ET, Fabes RA, Shepard SA, Cumberland AJ, Losoya SH, et al. Mothers' emotional expressivity and children's behavior problems and social competence: Mediation through children's regulation. *Developmental Psychology* 2001;37:475-490. [PubMed: 11444484]

- Eisenberg N, Guthrie IK, Fabes RA, Shepard S, Losoya S, Murphy B, et al. Prediction of elementary school children's externalizing problem behaviors from attentional and behavioral regulation and negative emotionality. *Child Development* 2000;71:1367–1382. [PubMed: 11108101]
- Eisenberg, N.; Morris, AS. Children's emotion-related regulation. In: Kail, R., editor. *Advances in child development and behavior*. Academic Press; Amsterdam: 2002. p. 190-229.
- Eisenberg N, Shepard SA, Fabes RA, Murphy BC, Guthrie IK. Shyness and children's emotionality, regulation, and coping: Contemporaneous, longitudinal, and across-context relations. *Child Development* 1998;69:767–790. [PubMed: 9680684]
- Eisenberg N, Spinrad TL, Fabes RA, Reiser M, Cumberland A, Shepard SA, et al. The relations of effortful control and impulsivity to children's resiliency and adjustment. *Child Development* 2004;75:25–46. [PubMed: 15015673]
- Eisenberg N, Valiente C, Fabes RA, Smith CL, Reiser M, Shepard SA, et al. The relations of effortful control and ego control to children's resiliency and social functioning. *Developmental Psychology* 2003;39:761–776. [PubMed: 12859128]
- Gilliom M, Shaw DS, Beck JE, Schonberg MA, Lukon JL. Anger regulation in disadvantaged preschool boys: Strategies, antecedents, and the development of self-control. *Developmental Psychology* 2002;38:222–235. [PubMed: 11881758]
- Goldsmith HH, Rieser-Danner LA, Briggs S. Evaluating convergent and discriminate validity of temperament questionnaires for preschoolers, toddlers, and infants. *Developmental Psychology* 1991;27:566–580.
- Goldsmith, HH.; Rothbart, MK. Contemporary instruments for assessing early temperament by questionnaire and in the laboratory. In: Angleitner, A.; Strelau, J., editors. *Explorations in temperament*. Plenum Press; New York: 1991. p. 249-272.
- Hankin BL, Abramson LY, Moffitt TE, Silva PA, McGree R, Angell KE. Development of depression from preadolescence to young adulthood: Emerging gender differences in a 10-year-longitudinal study. *Journal of Abnormal Psychology* 1998;107:128–140. [PubMed: 9505045]
- Hart D, Hofmann V, Edelstein W, Keller M. The relation of childhood personality types to adolescent behavior and development: A longitudinal study of Icelandic children. *Developmental Psychology* 1997;33:195–205. [PubMed: 9147829]
- Huey SJ, Weisz JR. Ego control, ego resiliency, and the 5-factor model as predictors of behavioral and emotional problems in clinic-referred children and adolescents. *Journal of Abnormal Psychology* 1997;106:404–415. [PubMed: 9241942]
- Izard CE, Libero DZ, Putnam P, Haynes OM. Stability of emotion experiences and their relations to traits of personality. *Journal of Personality and Social Psychology* 1993;64:847–860. [PubMed: 8505713]
- Keltner D, Moffitt TE, Stouthamer-Loeber M. Facial expressions of emotion and psychopathology in adolescent boys. *Journal of Abnormal Psychology* 1995;104:644–652. [PubMed: 8530767]
- Kindlon D, Mezzacappa E, Earls F. Psychometric properties of impulsivity measures: Temporal stability, validity, and factor structure. *Journal of Child Psychology and Psychiatry and Allied Disciplines* 1995;36:645–661.
- Kochanska G, Murray K, Coy K. Inhibitory control as a contributor to conscience in childhood: From toddler to early school age. *Child Development* 1997;68:263–277. [PubMed: 9180001]
- Kochanska G, Murray K, Harlan E. Effortful control in early childhood: Continuity and change, antecedents, and implications for social development. *Developmental Psychology* 2000;36:220–232. [PubMed: 10749079]
- Kochanska G, Tjebkes TL, Forman DR. Children's emerging regulation of conduct: Restraint, compliance, and internalization from infancy to the 2nd year. *Child Development* 1998;69:1378–1389. [PubMed: 9839422]
- Krueger RF, Caspi A, Moffitt TE, White J, Stouthamer-Loeber M. Delay of gratification, psychopathology, and personality: Is low self-control specific to externalizing problems? *Journal of Personality* 1996;64:107–129. [PubMed: 8656312]
- Lemery KS, Essex MJ, Smider NA. Revealing the relation between temperament and behavior problem symptoms by eliminating measurement confounding: Expert ratings and factor analyses. *Child Development* 2002;73:867–882. [PubMed: 12038557]

- Lengua LJ, West SG, Sandler IN. Temperament as a predictor of symptomatology in children: Addressing contamination of measures. *Child Development* 1998;69:164–181. [PubMed: 9499565]
- Lynam DR. Pursuing the psychopath: Capturing the fledgling psychopath in a nomological net. *Journal of Abnormal Psychology* 1997;106:425–438. [PubMed: 9241944]
- Murphy BC, Eisenberg N, Fabes RA, Shepard S, Guthrie IK. Consistency and change in children's emotionality and regulation: A longitudinal study. *Merrill-Palmer Quarterly* 1999;46:413–444.
- Murray KT, Kochanska G. Effortful control: Factor structure and relation to externalizing and internalizing behaviors. *Journal of Abnormal Child Psychology* 2002;30:503–514. [PubMed: 12403153]
- Nigg JT. Is ADHD a disinhibitory disorder? *Psychological Bulletin* 2001;127:571–598. [PubMed: 11548968]
- O'Brien BS, Frick PJ. Reward dominance: Associations with anxiety, conduct problems, and psychopathy in children. *Journal of Abnormal Child Psychology* 1996;24:223–239. [PubMed: 8743246]
- Olson SL, Schilling EM, Bates JE. Measurement of impulsivity: Construct coherence, longitudinal stability, and relationship with externalizing problems in middle childhood and adolescence. *Journal of Abnormal Child Psychology* 1999;27:151–165. [PubMed: 10400061]
- Oosterlaan J, Sergeant JA. Inhibition in ADHD, aggressive, and anxious children: A biologically based model of child psychopathology. *Journal of Abnormal Child Psychology* 1996;24:19–36. [PubMed: 8833026]
- Posner MI, Rothbart MK. Attention, self-regulation, and consciousness. *Philosophical Transactions of the Royal Society of London B: Biological Sciences* 1998;353:1915–1927.
- Robins RW, John OP, Caspi A, Moffitt TE, Stouthamer-Loeber M. Resilient, overcontrolled, and undercontrolled boys: Three replicable personality types. *Journal of Personality and Social Psychology* 1996;70:157–171. [PubMed: 8558407]
- Rothbart MK, Ahadi SA, Hershey KL. Temperament and social behavior in childhood. *Merrill-Palmer Quarterly* 1994;40:21–39.
- Rothbart MK, Ahadi SA, Hershey KL, Fisher P. Investigations of temperament at 3 to 7 years: The Children's Behavior Questionnaire. *Child Development* 2001;72:1394–1408. [PubMed: 11699677]
- Rothbart, MK.; Bates, JE. Temperament. In: Damon, W.; Eisenberg, N., editors. *Handbook of child psychology*. Vol. 3. Social, emotional, and personality development. Wiley; New York: 1998. p. 105-176.
- Rothbart, MK.; Ziaie, H.; O'Boyle, CG. Self-regulation and emotion in infancy. In: Eisenberg, N.; Fabes, RA., editors. *Emotion and its regulation in early development*. Jossey-Bass; San Francisco: 1992. p. 7-23.
- Rubin, KH.; Bukowski, W.; Parker, JG. Peer interactions, relationships, and groups. In: Damon, W.; Eisenberg, N., editors. *Handbook of child psychology*: Vol. 3. Social, emotional, and personality development. 5th. Wiley; New York: 1998. p. 619-700.
- Rubin, KH.; LeMare, LJ.; Lollis, S. Social withdrawal in childhood: Developmental pathways to peer rejection. In: Asher, SR.; Coie, JD., editors. *Peer rejection in childhood*. Cambridge University Press; Cambridge, England: 1990. p. 217-249.
- Valiente C, Eisenberg N, Smith CL, Reiser M, Fabes RA, Losoya S, et al. The relations of effortful control and reactive control to children's externalizing problems: A longitudinal assessment. *Journal of Personality* 2003;71:1179–1205.
- Vasey MW, El-Hag N, Daleiden EL. Anxiety and the processing of emotionally threatening stimuli: Distinctive patterns of selective attention among high- and low-test-anxious children. *Child Development* 1996;67:1173–1185. [PubMed: 8706516]
- Wolfson J, Fields JH, Rose SA. Symptoms, temperament, resiliency, and control in anxiety-disordered preschool children. *Journal of the American Academy of Child and Adolescent Psychiatry* 1987;26:16–22. [PubMed: 3583994]
- Zahn-Waxler C, Cole PM, Richardson DT, Friedman RJ, Michel MK, Belouad F. Social problem solving in disruptive preschool children: Reactions to hypothetical situations of conflict and distress. *Merrill-Palmer Quarterly* 1994;40:98–119.

Table 1

Frequencies of T2 Problem Behavior Groups

CBCL/ TRF grouping	Control			Internalizing			Externalizing			Comorbid		
	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls
Parent report	81	46	35	34	18	16	21	10	11	49	26	23
Mother report	80	45	35	33	19	14	21	10	11	50	26	24
Father report	72	36	36	17	8	9	12	6	6	13	8	5
Teacher report	95	49	46	26	12	14	31	17	14	28	17	11

Note. T2 = Time 2; CBCL = Child Behavior Checklist; TRF = Teacher's Report Form.

Table 2
Means for Children's Emotionality and Regulation Scores by Problem-Behavior Group

Subscale	Mother/parent CBCL groups				Father CBCL groups				Teacher TRF groups			
	CONT	INT	EXT	CO	CONT	INT	EXT	CO	CONT	INT	EXT	CO
Emotionality												
Parent-rated												
Anger	4.13 (0.82)	4.56 (0.78)	5.00 (0.62)	5.14 (0.80)	4.50 (0.77)	4.38 (0.80)	4.79 (0.60)	5.58 (0.83)	4.46 (0.90)	4.54 (0.90)	4.97 (0.79)	4.46 (0.81)
Fear	3.43 (0.89)	3.83 (1.02)	3.67 (0.60)	4.05 (1.09)	3.64 (0.91)	4.00 (0.79)	3.79 (0.75)	3.84 (1.42)	3.74 (0.98)	3.75 (0.85)	3.47 (0.92)	3.74 (1.08)
Sadness	3.97 (0.69)	4.40 (0.76)	4.42 (0.86)	4.73 (0.80)	4.42 (0.75)	4.73 (0.90)	4.47 (0.60)	4.67 (1.07)	4.28 (0.83)	4.28 (0.77)	4.26 (0.83)	4.23 (0.70)
Teacher-rated												
Anger	3.68 (1.31)	3.34 (1.23)	4.06 (1.55)	3.74 (1.29)	3.54 (1.30)	3.02 (1.14)	3.81 (1.15)	3.75 (1.60)	2.88 (0.95)	3.82 (0.99)	4.32 (0.98)	5.31 (0.91)
Sadness	3.61 (1.01)	3.66 (0.89)	3.81 (1.13)	3.73 (0.99)	3.73 (1.02)	3.63 (1.09)	3.87 (0.95)	3.84 (1.20)	3.26 (0.86)	4.18 (0.81)	3.63 (0.82)	4.65 (0.83)
Regulation												
Parent-rated												
Attention focus	5.01 (0.73)	4.71 (0.93)	4.29 (0.79)	4.49 (0.87)	4.94 (0.78)	4.87 (0.86)	4.60 (0.70)	4.54 (1.10)	4.88 (0.84)	4.77 (0.94)	4.31 (0.88)	4.73 (0.61)
Attention shift	4.40 (0.85)	4.26 (0.86)	3.55 (0.67)	3.78 (0.90)	4.23 (0.80)	4.20 (1.05)	3.68 (0.90)	3.66 (1.00)	4.24 (0.86)	4.04 (0.99)	3.76 (0.86)	4.17 (0.93)
Inhibitory control	5.03 (0.71)	5.09 (0.85)	4.19 (0.71)	4.35 (0.98)	4.96 (0.78)	5.02 (0.99)	4.45 (0.46)	4.11 (1.08)	4.96 (0.84)	4.78 (0.92)	4.20 (0.85)	4.74 (0.70)
Impulsivity	4.34 (0.67)	4.00 (0.86)	5.14 (0.70)	4.54 (0.92)	4.32 (0.76)	3.92 (0.76)	4.36 (0.79)	4.88 (1.27)	4.28 (0.84)	4.14 (0.66)	4.82 (0.87)	4.55 (0.68)
Teacher-rated												
Attention focus	4.91 (1.25)	5.12 (1.00)	4.63 (1.34)	4.66 (0.91)	5.00 (1.03)	5.27 (0.86)	4.66 (1.36)	4.72 (1.05)	5.24 (0.96)	4.99 (0.98)	4.33 (1.18)	4.02 (1.18)
Attention shift	4.80 (1.10)	5.00 (1.20)	4.34 (1.53)	4.46 (1.04)	4.86 (0.95)	5.37 (1.29)	4.38 (1.58)	4.33 (1.34)	5.22 (0.98)	4.63 (1.07)	4.23 (0.94)	3.52 (0.98)
Inhibitory control	5.10 (1.09)	5.15 (1.23)	4.46 (1.31)	4.59 (1.12)	5.19 (1.00)	5.54 (0.99)	4.54 (1.42)	4.39 (1.46)	5.45 (0.87)	5.28 (0.99)	3.90 (0.85)	3.85 (1.13)
Impulsivity	4.02 (0.93)	3.70 (1.18)	4.59 (0.96)	4.38 (1.06)	3.97 (1.11)	3.62 (1.03)	4.43 (0.98)	4.77 (0.94)	3.90 (0.85)	3.26 (1.00)	5.05 (1.01)	4.57 (0.76)
Observed regulation												
Movement rating	.01 (0.85)	.02 (1.04)	.18 (0.87)	-.12 (0.89)	.00 (0.90)	.07 (0.87)	-.26 (0.94)	-.04 (1.11)	-.02 (0.85)	-.25 (0.86)	.20 (0.89)	.18 (1.06)
Puzzle persistence	.65 (0.30)	.74 (0.28)	.54 (0.29)	.77 (0.27)	.68 (0.28)	.84 (0.28)	.70 (0.20)	.61 (0.30)	.74 (0.27)	.70 (0.31)	.65 (0.32)	.59 (0.31)

Note. Standard deviations are in parentheses. The significance of differences between means is shown in Tables 3 and 4. CBCL = Child Behavior Checklist; TRF = Teacher's Report Form; CONT = control/nondisordered group; INT = internalizing group; EXT = externalizing group; CO = comorbid group (children with internalizing and externalizing symptoms).

Table 3

Summary of Multivariate Analyses of Covariance for T1 and T2 Negative Emotion Variables (With Age Controlled)

Emotion scale	T2 mother/parent CBCL groups	T2 father CBCL groups	T2 teacher TRF groups
Parent-rated Anger	(<i>n</i> = 180-182) CONT < EXT/CO/***** CONT < INT*** [INT < EXT*/* for boys*/*]	(<i>n</i> = 105-106) CONT < EXT/CO/***** [CONT < EXT/CO [†] for boys*] [CONT < EXT/CO [†] for girls***] [CONT < EXT/CO [†] for girls [†]]	(<i>n</i> = 176-178) CONT < EXT/CO/* [†] INT < EXT [†]
Fear	CONT < EXT/CO/***** CONT < INT/* EXT < INT [†]		
Sadness	CONT < EXT/CO*** CONT < INT/* EXT < INT*	[CONT < EXT/CO* for girls [†]]	CONT < INT [†] EXT < INT*
Teacher-rated Anger	(<i>n</i> = 156-170) INT < EXT [†]	(<i>n</i> = 96-107) CONT < EXT/CO**	(<i>n</i> = 153-170) CONT < EXT/CO/***** CONT < INT*** INT < EXT/* [†]
Sadness	CONT < INT [†]	CONT < INT* EXT < INT [†]	CONT < EXT/CO*** CONT < INT*** EXT < INT*

Note. Regular roman type indicates that the contrast held for both sets of analyses (the first *p* value corresponds to T1 [Time 1] measures of negative emotionality; the second *p* value, to T2 [Time 2] negative emotionality). Italic type indicates that the contrast was significant for the T2 emotion but not the T1 emotion. Boldface type indicates that the contrast was significant for the T1 emotion but not the T2 emotion. Thus, all findings that are not in boldface type pertain to T2, whereas all findings that are not in italics pertain to T1 (at least marginal significance was found at T1). If there is only one indicator of significance, it is for T1 if the type is in boldface and for T2 if the type is in italics. See the means for the groups in Table 2. Brackets indicate an interaction effect. CBCL = Child Behavior Checklist; TRF = Teacher's Report Form; CONT = control group; INT = internalizing group; EXT = externalizing group; EXT/CO = externalizing and comorbid groups combined.

[†]
p ≤ .10.

*
p ≤ .05.

**
p < .01.

p ≤ .001.

Table 4
Summary of Multivariate Analyses of Covariance for T1 or T2 Regulation/Impulsivity (With Age Controlled)

Regulation scale	Mother/parent CBCL groups	Father CBCL groups	Teacher TRF groups
Parent-rated	(<i>n</i> = 168-184)	(<i>n</i> = 105)	(<i>n</i> = 165-180)
Attention focusing	EXT/CO < CONT/***** <i>INT < CONT</i> * [INT < CONT * for boys*] <i>EXT < INT</i> †	<i>EXT/CO < CONT</i> †	EXT/CONT < CONT/**** EXT < INT/***
Attention shifting	EXT/CO < CONT/***** [EXT/CO < CONT † for boys**] <i>EXT < INT</i> **	EXT/CO < CONT/****	EXT/CO < CONT/*†
Inhibitory control	EXT/CO < CONT/***** EXT < INT/*****	EXT/CO < CONT/**** <i>EXT < INT</i> †	EXT/CO < CONT/**** EXT < INT/****
Impulsivity	CONT < EXT/CO/***** <i>INT < CONT</i> *† ***** <i>INT < EXT</i> /	<i>INT < CONT</i> †	CONT < EXT/CO/**** INT < EXT/****
Teacher-rated	(<i>n</i> = 155-180)	(<i>n</i> = 92-112)	(<i>n</i> = 154-180)
Attention focusing	EXT/CO < CONT * EXT < INT †	EXT/CO < CONT * [CONT < INT** for boys**] [INT < CONT** for girls†] EXT < INT † [EXT < INT† for boys**]	EXT/CO < CONT/**** [EXT/CO < CONT† for girls***] [EXT/CO < CONT† for boys***] <i>EXT < INT</i> *
Attention shifting	EXT/CO < CONT/** <i>EXT < INT</i> ††	EXT/CO < CONT/*† CONT < INT† EXT < INT/†*	EXT/CO < CONT/***** INT < CONT** EXT < INT*
Inhibitory control	EXT/CO < CONT/**** EXT < INT/*†	EXT/CO < CONT/**** EXT < INT*	EXT/CO < CONT/***** [EXT/CO < CONT* for boys***] [EXT/CO < CONT*** for girls***] EXT < INT/***** CONT < EXT/CO/***** INT < CONT/***** INT < EXT/*****
Impulsivity	CONT < EXT/CO/**** <i>INT < CONT</i> † ***** <i>INT < EXT</i> /	CONT < EXT/CO* <i>INT < EXT</i> *	(<i>n</i> = 168-180) CONT < EXT/CO * <i>INT < EXT</i> † EXT/CO < CONT** [EXT/CO < CONT* for boys**]
Observed regulation	(<i>n</i> = 173-185)	(<i>n</i> = 104-114)	
Movement rating	INT < EXT †		
Puzzle persistence	CONT < INT† EXT < INT**	EXT/CO < CONT † CONT < INT*	

Note. Regular roman type indicates that the contrast held for both sets of analyses (the first *p* value corresponds to T1 [Time 1] measures of regulation/impulsivity; the second *p* value to T2 [Time 2] regulation/impulsivity). Italic type indicates that the contrast was significant when predicting from T2 regulation/impulsivity, but not T1 regulation/impulsivity, variables. Boldface type indicates that the contrast was significant when predicting from T1 regulation/impulsivity, but not T2 regulation/impulsivity, variables. Thus, all findings that are not in boldface type pertain to T2, whereas all findings that are not in italics pertain to T1 (at least marginal significance was found at T1). If there is only one indicator of significance, it is for T1 if the type is in boldface and for T2 if the type is in italics. Brackets indicate an interaction effect. See the means for the groups in Table 2. CBCL = Child Behavior Checklist; TRF = Teacher's Report Form; CONT = control group; INT = internalizing group; EXT = externalizing group; EXT/CO = externalizing and comorbid groups combined.

†
p ≤ .10.

*
p ≤ .05.

**
p ≤ .01.

p ≤ .001.

Table 5
Chi-Square Tests for Blocks of Negative Emotions and Regulation/Impulsivity as Predictors of Adjustment Status

Group	CONT vs. EXT/CO emotion block	CONT vs. EXT/CO effortful regulation/ impulsivity block	CONT vs. INT emotion block	CONT vs. INT effortful regulation/ impulsivity block	INT vs. EXT emotion block	INT vs. EXT effortful regulation/ impulsivity block
Parent-rated emotion/ control						
Mother groups	33.68 (3) ***	9.99 (2) **	12.67 (3) **	5.05 (2) [†]	2.79 (3)	22.41 (2) ***
Father groups	6.44 (3) [†]	3.69 (2)	3.20 (3)	4.67 (2) [†]	2.91 (3)	4.04 (2)
Teacher groups	2.24 (3)	8.61 (2) **	2.90 (3)	4.03 (2)	4.98 (3)	6.59 (2) [*]
Teacher-rated emotion/ control						
Parent groups	3.56 (2)	10.09 (2) **	3.62 (2)	.05 (2)	1.43 (2)	2.59 (2)
Father groups	2.05 (2)	8.61 (2) **	1.36 (2)	.95 (2)	1.64 (2)	1.43 (2)
Teacher groups	32.33 (2) ***	14.96 (2) ***	22.29 (2) ***	13.04 (2) ***	10.46 (2) **	24.01 (2) ***

Note. Numbers in parentheses are degrees of freedom. CBCL = Child Behavior Checklist; CONT = control group; INT = internalizing group; EXT = externalizing group; EXT/CO = externalizing and comorbid groups combined.

[†]
 $p \leq .10$.

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

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

^{***}
 $p \leq .001$.

Table 6

Multivariate Analysis of Covariance Change Group Analyses With Respective Time 1 Variables Covaried From Analysis

Emotion or regulation scale	Mother CBCL	Teacher TRF
Emotionality	(<i>n</i> = 174-175)	(<i>n</i> = 143-154)
Anger	C/C < C/I [†] I/C < C/I [*] I/C < I/I ^{**} C/C < C/E [*] E/C < C/E [*] E/C < E/E ^{**} [E/C < E/E [*] for boys ^{***}]	C/C < C/E ^{***} C/C < C/E ^{***} E/C < C/E ^{***} E/C < E/E ^{***}
Fear	C/C < C/E [*] E/C < C/E [*]	n/a
Sadness	I/C < I/I ^{**} C/C < C/E [*] E/C < C/E ^{**} E/C < E/E ^{***}	C/C < C/E ^{**} E/C < C/E [*] E/C < E/E ^{**}
Regulation	(<i>n</i> = 174-176)	(<i>n</i> = 161-164)
Attention focusing	[C/I < C/C [†] for boys [*]]	C/E < C/C ^{***} C/E < E/C [†] E/E < E/C [*] C/E < C/C ^{***} C/E < E/C ^{**} E/E < E/C ^{***} C/E < C/C ^{***} C/E < E/C ^{***} E/E < E/C ^{***} C/C < C/E ^{***} C/C < C/E [*] E/C < E/E [*]
Attention shifting	E/E < E/C [*]	
Inhibitory control	[C/E < C/C [*] for boys [*]]	
Impulsivity	C/I < C/C [†] C/I < I/C [†] [C/I < C/C [†] for girls [†]] C/C < C/E [*]	
Observed regulation	(<i>n</i> = 167-168)	(<i>n</i> = 155)
Movement rating		
Puzzle persistence	I/C < I/I ^{**}	

Note. Brackets represent an interaction effect. CBCL = Child Behavior Checklist; TRF = Teacher's Report Form; C/C = controls at both Time 1 and Time 2; C/I = controls at Time 1, internalizers at Time 2; I/C = internalizers at Time 1, controls at Time 2; I/I = internalizers at both Time 1 and Time 2; C/E = controls at Time 1, externalizers at Time 2; E/C = externalizers at Time 1, controls at Time 2; E/E = externalizers at both Time 1 and Time 2; n/a = not applicable.

[†]
p ≤ .10.

^{*}
p ≤ .05.

^{**}
p ≤ .01.

^{***}
p ≤ .001.

Adjusted Means for Emotionality and Regulation by Change Groups (With Corresponding Time 1 Variables Covaried)

Table 7

Emotion or regulation scale	Primary parent-rated					Teacher-rated						
	Controls versus internalizers					Controls versus externalizers						
	C/C	C/I	I/C	I/I	C/C	C/E	E/C	E/E	C/C	C/E	E/C	E/E
Emotionality												
Anger	4.47 (0.88)	4.78 (0.74)	4.36 (0.86)	4.80 (0.82)	4.47 (0.84)	4.86 (0.61)	4.42 (0.81)	4.89 (0.77)	3.08 (1.01)	4.61 (0.96)	3.22 (1.04)	5.00 (1.14)
Fear	3.59 (0.88)	3.56 (1.03)	3.67 (0.75)	3.84 (1.07)	3.63 (0.97)	4.09 (0.61)	3.59 (0.91)	3.77 (1.03)				
Sadness	4.19 (0.77)	4.27 (0.73)	4.12 (0.71)	4.59 (0.79)	4.20 (0.74)	4.60 (0.78)	4.05 (0.74)	4.60 (0.84)	3.46 (0.93)	4.04 (0.89)	3.32 (0.97)	4.22 (1.00)
Regulation												
Attention focusing	4.82 (0.81)	4.56 (0.96)	4.70 (0.78)	4.79 (0.90)	4.80 (0.81)	4.55 (0.85)	4.68 (0.71)	4.60 (0.86)	5.05 (0.92)	4.33 (1.09)	4.83 (0.97)	4.11 (1.32)
Attention shifting	4.15 (0.83)	4.30 (0.77)	4.26 (1.00)	4.04 (0.90)	4.23 (0.81)	3.97 (0.65)	4.23 (0.88)	3.91 (0.85)	4.97 (1.00)	4.02 (0.97)	4.95 (1.06)	3.87 (1.09)
Inhibitory control	4.80 (0.78)	4.82 (1.01)	4.78 (0.83)	4.87 (0.95)	4.85 (0.76)	4.68 (0.72)	4.75 (0.58)	4.64 (0.90)	5.15 (0.82)	4.04 (0.98)	4.99 (0.96)	4.01 (1.00)
Impulsivity	4.41 (0.75)	4.14 (0.99)	4.42 (0.74)	4.43 (0.91)	4.37 (0.69)	4.67 (0.90)	4.45 (0.66)	4.58 (0.91)	3.99 (0.88)	4.71 (0.95)	4.18 (0.91)	4.67 (0.81)
Observed regulation												
Movement rating	.09 (0.85)	.19 (1.25)	-.01 (0.84)	-.14 (0.85)	.08 (0.86)	.26 (1.17)	-.13 (1.04)	-.11 (0.77)	-.04 (0.87)	.09 (0.96)	.25 (0.77)	.15 (0.92)
Puzzle persistence	.64 (0.30)	.60 (0.31)	.64 (0.30)	.80 (0.26)	.65 (0.30)	.68 (0.26)	.68 (0.27)	.71 (0.30)	.72 (0.26)	.70 (0.29)	.66 (0.34)	.58 (0.33)

Note. Standard deviations (unadjusted) are in parentheses. Standard errors for each contrast were used in the analyses. C/C = controls at both Time 1 and Time 2; C/I = controls at Time 1, internalizers at Time 2; I/C = internalizers at Time 1, controls at Time 2; I/I = internalizers at both Time 1 and Time 2; C/E = controls at Time 1, externalizers at Time 2; E/C = externalizers at Time 1, controls at Time 2; E/E = externalizers at both Time 1 and Time 2.