
Bad Days Don't End When the School Bell Rings: The Lingering Effects of Negative School Events on Children's Mood, Self-esteem, and Perceptions of Parent–Child Interaction

Barbara J. Lehman, *Western Washington University* and Rena L. Repetti, *University of California, Los Angeles*

Abstract

Each day for five days, 79 fifth-grade children reported on events that occurred at school and they and their parents described their interactions with each other each evening. Consistent with previous research, it was found that on days when children reported more academic or peer problems during the day at school, they later described more aversive interactions with their parents. As hypothesized, increases in anxiety and drops in children's state self-esteem partially mediated this link. However, parents did not report any differences in their interactions with the target child on days when the child experienced problems at school. This study suggests that negative events experienced by children while at school lead to short-term changes in mood and self-esteem, which influence their perceptions of subsequent interactions at home with parents.

Keywords: parent–child relations; emotional states; peers; school adjustment; self-esteem

Introduction

Children sometimes have bad days. On a day when a child performs poorly on a test or has an argument with a friend, the child's distress may persist past the school day and continue to influence the child's mood and behavior beyond the school grounds. This study examines two common childhood stressors, academic and social problems, and the short-term associations between those experiences and behavior later at home with parents. Repetti (1996) reported that when fourth- to sixth-grade children experienced academic or peer stressors at school, they were more likely to describe aversive interactions with their parents that evening. The current study was designed to replicate and extend those findings by examining emotional and behavioral mediators that may underlie a short-term association between school events and evening parent–child

Correspondence should be addressed to Barbara J. Lehman, Department of Psychology, Western Washington University, 516 High Street, Bellingham, WA 98225, USA. Email: barbara.lehman@wwwu.edu

interaction, and by contrasting children's daily descriptions of parent-child interactions with descriptions provided by their parents. For five consecutive days, at multiple points throughout the day, fifth- and sixth-grade children rated their mood and reported on their social and academic experiences while at school. They and their parents also described their interactions with each other each evening at home.

Negative School Events and the Parent-Child Relationship

Questions about how children's experiences in the family are linked to their experiences at school or with peers are almost always framed with the family as the source of influence on child adjustment outside the home. And there is abundant evidence that family social environments do shape a wide range of developmental outcomes with long-lasting effects (Repetti, Taylor, & Seeman, 2002). For example, children from unsupportive or uncommunicative family environments are more likely to have troubled relationships with peers (Franz & Gross, 2001) and with teachers (Ingoldsby, Shaw, & Garcia, 2001; Repinski & Shonk, 2002). Moreover, mothers' supportive communication predicts academic success (Repinski & Shonk, 2002), peer acceptance, social competence and coping skill (Eisenberg & Fabes, 1994).

This study takes a different approach. We are interested in whether and how children's daily experiences outside of the home might influence the parent-child relationship. Our approach focuses on a possible connection from stressful experiences at school to interactions with parents later that day. A short-term association is consistent with adult research on negative emotion spillover indicating that parents' stressful days at work are often followed by more aversive or more withdrawn parent-child interactions that evening (Repetti & Wood, 1997). A short-term school-to-home link would also be predicted on the basis of evidence that emotion contagion occurs in families (Larson & Almeida, 1999).

Children's Responses to Negative Events at School

Several possible mediators of a link between problems at school and more negative evening interactions with parents are tested here. Children's internal responses to salient events that occur at school may linger beyond the school day and influence both their social behavior in later settings as well as their perception of subsequent social interactions. We test two internal responses to school events as potential mediators: anxious mood and state self-esteem. We also test a behavioral mediator: increased bids for parental attention.

Academic difficulties (e.g., homework, exams, and grades) and problems with friends are stressful for school-age children (Greene, 1988; Ham & Larson, 1990; Siegel & Brown, 1988). Both cross-sectional and longitudinal studies indicate that the chronic experience of academic and peer problems leads to more distressed mood in children, including symptoms of anxiety and depression (Gazelle & Ladd, 2003; Grills & Ollendick, 2002; Hanish & Guerra, 2002; Juvonen, Nishina, & Graham, 2000; Ladd & Troop-Gordon, 2003; Measelle, Ablow, Cowan, & Cowan, 1998). An analogous short-term association was observed in the Repetti (1996) daily report study; peer and academic problems at school were associated with an increase in negative mood from morning to evening.

This study tests whether an increase in anxious mood mediates a link between stressful school events and more negative interactions with parents later that evening.

There are several ways that a residue of anxiety generated at school could influence parent–child interaction. An increase in child anxiety may cause changes in child and parent behavior. For example, anxiety may provoke impatience or irritability in the child, and parents may respond to signs of negative affect in their children with their own distress (Carson & Parke, 1996; Eisenberg, Fabes, Shepard, Guthrie, Murphy, & Reiser, 1999; Fabes, Leonard, Kupanoff, & Martin, 2001). Anxiety may also enhance children's vigilance for and sensitivity to any sign of harshness in their social interactions, which would negatively bias children's judgments of their own and their parents' behavior. Our reasoning about the role of anxious mood acting as a mediator is based on the idea that this negative mood state has specific effects on social behavior and social perceptions. In other words, the impact of a spillover of negative mood would not be equivalent to the effects of short-term changes in positive mood. This study, therefore, also tests daily positive mood as a mediator in order to evaluate whether negative mood uniquely acts as a mediator in our model.

Changes in self-esteem may also mediate an association between stressful school events and subsequent parent–child interactions. School-aged children's self-esteem suffers when they have problems at school (Aunola, Stattin, & Nurmi, 2000), with teachers (Reddy, Rhodes, & Mulhall, 2003) or in their peer relationships (Grills & Ollendick, 2002; Hawker & Boulton, 2000; Juvonen et al., 2000; Ladd & Troop-Gordon, 2003). These experiences may trigger negative self-views and feelings of helplessness (Dweck & Reppucci, 1973; Heyman, Dweck, & Cain, 1992). However, the mediation hypothesis under study here rests on the assumptions that a school-age child's self-esteem fluctuates in a measurable way over the course of a day and that daily events at school have a short-term effect on children's self-esteem. Developmental researchers have documented fluctuations in adolescent state self-esteem (Harter & Whitesell, 2003; Savin-Williams & Demo, 1983), but daily variability in self-esteem has not been examined in middle childhood. Nor have such variations been studied in response to specific situations or events, although researchers have observed reductions in adults' self-esteem immediately following failure experiences (Brown & Dutton, 1995; Heatherton & Polivy, 1991). A measure of state self-esteem was developed for this study in order to assess whether self-esteem fluctuates with the ebb and flow of positive and negative events at school. This measure is conceptually distinct from measures of global self-worth, which describe more stable feelings a child has about him or herself (Brown & Dutton, 1995; Savin-Williams & Demo, 1983). We test Repetti's (1996) suggestion that a drop in state self-esteem acts as an intermediary step linking negative school events and evening parent–child interaction. In particular, we hypothesize that lowered self-esteem shades social perception, so that children interpret their own behavior as more negative and their parents' behavior as more critical, disapproving or unsupportive than they would otherwise judge the same behaviors.

As with anxiety, a temporary decrease in child self-esteem may also prompt actual changes in child and parent behavior that ultimately result in more negative interactions. Repetti (1996) suggested that one of the ways this may happen is when children's bids for parental attention go awry. Children may attempt to cope with internal distress generated by social and academic problems at school by seeking parental attention and support. However, bids for attention can escalate into inappropriate and annoying behaviors (e.g., whining), and result in more aversive parent–child interactions, if parents do not recognize and respond to the child's efforts to engage them. This study evaluates whether an increase in a child's bids for parental attention functions as a

behavioral mediator of the link from problems at school to parent–child interaction at home.

Daily Report Approach

Much of the research literature relevant to this study is based on cross-sectional research designs, or on longitudinal studies in which responses are collected months or years after an initial assessment. We believe that investigations of children's internal and behavioral responses when they argue with friends, or when they feel they have disappointed a teacher at school, benefit from a more dynamic methodological approach—one that is able to capture short-term fluctuations in mood and behavior. Some researchers have recently used a daily report methodology to gain insight into such dynamic processes among children (e.g., Ducharme, Doyle, & Markiewicz, 2002; Larson & Lampman-Petratis, 1989; Nishina & Juvonen, 2005; Repetti, 1996; Valiente, Fabes, Eisenberg, & Spinrad, 2004). In daily-report studies, participants provide information about some aspect of their experience over a very limited period of time. These reports are then used to examine how events at one time relate to feelings or events that occur at a subsequent point, often within a single day. Larson and Almeida (1999) have argued that a research design that captures the short-term fluctuation of daily events, emotions, and family interactions is uniquely positioned to understand the mechanisms by which events experienced by one person spillover to influence other family members.

Utilizing daily reports of children's stressful events, and their responses to those events, has several distinct advantages over the more conventional retrospective approach (Tennen, Affleck, Armeli, & Carney, 2000). Firstly, because children are reporting events closer to the time when they actually occur, biases associated with retrospective recall of events are minimized. Secondly, a daily report approach is dynamic, allowing for the study of mediational mechanisms as they truly occur—over time. Thirdly, multiple events and moods experienced by a single child, as well as differences between children, can be examined. Recent advances in multi-level modeling allow for the simultaneous examination of daily events as they occur within a specific day (for example, the association between stressful events and evening interaction with parents). Using this technique, analysts are able to separate the variance in a response that is specific to a particular day for a particular child (level 1) from variance that is attributable to the child him or herself across all days (level 2). In other words, daily observations are nested within children. The approach thereby draws on, and statistically accounts for, the non-independence of multiple reports completed by an individual child or parent. Finally, multi-level modeling is able to make use of differing numbers of data points for different respondents, so that almost all participants—even those with missing data on some days—may be used in the analyses.

Current Study

A paucity of research addresses questions about how children's daily experiences outside of the home influence the parent–child relationship. The current investigation makes several important improvements upon the one study that has addressed this topic (Repetti, 1996). Firstly, as already discussed, we explore the mechanisms by which children's school problems influence evening interactions with parents by testing

children's internal (state self-esteem, anxious mood and positive mood) and behavioral (child's bids for parental attention) responses to school events as potential mediators. Secondly, because Repetti's (1996) earlier report that problems at school predicted more aversive interactions with parents was based only on children's descriptions of their interactions with parents, the parent's perspective was unknown. The child's actual behavior may or may not have changed from one day to the next. The current study included both parents' and children's descriptions of evening interactions to help clarify whether children's negative experiences influence their social behavior in a way that is evident to parents. Thirdly, we address whether the impact on subsequent parent-child interaction is unique to negative events experienced earlier in the day by examining the extent to which positive experiences at school also have a short-term impact on parent-child interaction. For example, do successes in the social and academic realms precede an improvement in the quality of children's interactions at home? Fourthly, children and parents provided data over five, rather than three, consecutive days.

Method

Procedure

On five consecutive weekdays during the school year, fifth- and sixth-grade children provided reports of mood, school events, and interactions with parents. Each day, children completed the reports at home in the morning, twice while at school, and in the evening. Parents described interactions with the target child each evening. In most cases, the daily data reported here were collected in the spring of the children's fifth-grade year. However, 12 families participated at the start of the sixth-grade school year.

Participants

The final sample consisted of 79 children (51 percent boys) and their parents. Four additional students participated, but their data did not include any same-day reports of both peer or academic problems during the day and evening reports of mood or parent-child interactions. Students were drawn from one parochial and two public elementary schools in a large metropolitan area in the western United States. When children were in the fourth grade, 248 families participated in the first wave of a three-year longitudinal study. When children were in the fifth grade, 112 families from this larger sample were eligible for the daily report study for which they were offered an honorarium of \$50 per parent and \$20 per child to participate. To be eligible for the daily report study, all members of the family (including both parents in two-parent families) had to have participated in the first year of the longitudinal study, and any parent living with the child had to be employed at least part-time. These criteria were established to address questions about the effects of parents' jobs that are not relevant to this article. Of the eligible families, 83 (74 percent) agreed to participate in the daily report study. Chi-square (χ^2) tests of independence did not indicate any demographic differences between the eligible families that did and did not participate in the daily report study.

The majority of participants lived in two-parent households (although 32 percent lived with a single mother and 3 percent lived with a single father) that included two

or more children. Most were middle class; 60 percent reported annual incomes greater than \$80,000, and 38 percent of mothers (52 percent of fathers) had completed coursework beyond a four-year college degree. The households were predominantly White (79 percent), and most of the parents who were not White (e.g., 10 percent were Latino, 4 percent were Asian-American) had a spouse of a different ethnicity (20 percent of the total parent sample). The demographic characteristics of the sample are representative of the student population at the schools, and the surrounding communities, from which the participants were drawn.

Multi-level modeling was conducted on available data for each child, regardless of whether the child completed diaries on all five days or on as few as two days. A total of 1302 child diaries were completed; an average of 16 per child over the week (an average of 3.2 per day, with most missing observations occurring on Friday). Because of missing data on a particular day (i.e., no reports of school events or no evening time spent with parents), the number of observations available for each child differs somewhat among analyses. Almost all mothers (98 percent in two-parent families, 93 percent in single-parent families) and fathers (92 percent) completed evening reports on at least one day. Mothers completed an average of 3.49 evening diaries, whereas fathers completed an average of 2.85 evening diaries over the course of the five days of data collection.

Measures

In the following sections, we first describe daily measures completed by children, and then daily measures completed by parents.

Responses to most of the daily report measures were skewed, such that many children reported positive experiences and moods, but few indicated negative experiences. All but one of the parent daily report scales included in this study were similarly skewed. To counteract the skew, all analyses reported in this article (with the exception of parent reports of children's positive bids for attention) were conducted on the measures after a natural logarithmic transformation had been computed. The distribution of the transformed variables more closely approximated normality. All scales were scored so that higher values indicated more of the construct of interest.

The range of each daily report measure's internal consistency (Cronbach's alpha) is presented in Table 1; reliability was calculated separately within each time period and each day of the week. This method avoids the potential overestimation of internal consistency due to multiple observations from a single individual, and also allows for an examination of whether reliability varied across times of the day or days of the week. Although scale means and standard deviations were also calculated separately by day of the week and time of day, the overall means and standard deviations in Table 1 reflect a grand average over the points on each day when children completed scales, across five days. Unless noted in the text, there were no significant differences in measures assessed on different days or at different times during the day.

Child Daily Report Scales

As described below, most of the child daily report measures were adapted or drawn from the Youth Everyday Social Interaction and Mood (YES I AM) scales (Repetti, 1996). A four-point response scale, ranging from 1 (definitely false) to 4 (definitely true) was used for all child daily-report scales. Children's daily report forms contained

Table 1. Descriptive Statistics for Child and Parent Daily Report Variables

	N	<i>M</i> ^a	<i>SD</i> ^a	Obtained Range ^b	Cronbach's Alpha Range ^c
<i>School events</i>					
Peer problems	350	1.40	.57	1.00–4.00	.75–.88
Academic problems	351	1.49	.55	1.00–3.40	.64–.82
Social success	350	3.12	.77	1.00–4.00	.71–.87
Academic success	351	3.06	.70	1.00–4.00	.49–.83
<i>Mood</i>					
Anxious mood	378	1.40	.51	1.00–3.80	.75–.91
Positive mood	378	3.18	.71	1.00–4.00	.81–.92
State self esteem	375	3.50	.48	1.60–4.00	.83–.85
<i>Parent–child interaction (child report)</i>					
Parent aversive behavior	282	1.15	.38	1.00–3.10	.78–.94
Child aversive behavior	284	1.23	.39	1.00–2.88	.37–.87
Positive parent involvement	284	3.40	.73	1.00–4.00	.94–.98
Child bids for attention	277	3.24	.78	1.00–4.00	.85–.93
<i>Parent–child interaction (parent report)</i>					
Parent and child aversive behavior	337	.18	.19	.00–.94	.73–.91
Positive parent involvement	336	.60	.24	.00–1.00	.87–.92
Child bids for attention	337	.64	.25	.00–1.00	.54–.84

Note: ^a Summary statistics for school events reflect an average of the two school reports, across the five days. Summary statistics for child mood reflect a grand average over the four points each day at which children completed mood scales, across five days. ^b Possible values for the child daily report measures range from 1 to 4, whereas possible values for parent measures range from 0 to 1. ^c Cronbach's alpha was calculated separately for different days of the week; the highest and lowest values are presented here.

three types of scales: measures of events that occurred at school, mood and parent–child interaction.

School Events. Twice daily, at lunch and before leaving school at the end of the day, children completed four measures of positive and negative academic and social events at school (Repetti, 1996). Analyses were conducted on the mean of the two school-based measurement times (lunchtime and afternoon).

Peer and academic problems. For the peer problems scale, children responded to five statements describing problems with peers, such as instances of rejection and relational aggression that occurred that morning or that afternoon at school. Sample items included 'Another kid teased me' and 'I felt that my friends didn't want to be around me' (Cronbach's alpha ranged from .75 to .88). The academic problems scale consisted of five statements describing difficulty with schoolwork and negative academic feedback. It included items such as 'My schoolwork was too hard' and 'I made a mistake in class' (Cronbach's alpha ranged from .64 to .82). Children's reports of

peer and academic problems were positively correlated on each day (Pearson's r ranged from .37 to .53, $p < .001$).

Peer and academic success. The social success scale consisted of five statements (e.g., 'I had a good time playing with my friends') describing positive experience with friends and peers at school. The scale had acceptable internal consistency (Cronbach's alpha ranged from .71 to .87). The academic success scale consisted of five items describing children's positive learning experiences and teacher approval (e.g., 'My teacher was pleased with my behavior' and 'I answered a question correctly in class'). The measure had acceptable internal reliability, especially during the later days of the week (Cronbach's alpha on Monday was .49 and .58; and ranged from .70 to .83 on the remaining days). Same-day measures of academic and peer success were correlated (r ranged from .50, ($p < .01$) to .76, ($p < .001$)). Although there were no significant differences in the ratings provided on different days, a non-significant linear trend indicated more reports of academic success experiences later in the week.

Child Mood. Measures of child anxious mood, positive mood and state self-esteem were completed in the morning, twice while at school, and once before bed. Ratings provided at two of the daily assessments, at home in the morning and at night, are used in the analyses presented here. The anxious mood scale (Repetti, 1996) consisted of six items (e.g., 'I was scared' and 'I felt tense'). Cronbach's alpha ranged from .75 to .91 across different time points. The positive mood scale (Repetti, 1996) consisted of seven items (e.g., 'I was happy' and 'I felt confident'). Cronbach's alpha for positive mood was similar across time periods, ranging from .81 to .92.

A 10-item measure of state self-esteem was developed for this study. Some of the items assessed general mood (e.g., 'I felt confident') and general beliefs about the self ('I wish I were different'). Other items were domain specific, concerning family ('My parents are proud of me'), scholastic competence ('I'm as smart as other kids') and social competence ('I'm worried about what other people think of me'). The original pool of 16 self-esteem items was reduced to 10 on the basis of a series of principal component analyses. Separate principal component analyses were conducted on responses to the items completed on each of the four child diaries. Each analysis suggested that a single factor solution captured most of the variability among the items (eigenvalues ranged from 4.81 to 5.31). With one exception, all loadings on the 10 items included in the final measure were greater than .50 at each time point. Although small sample size prohibited reliable analyses within a single weekday diary (i.e., separate analyses for Monday morning responses, Tuesday morning responses, and so on), scree plots of single-day analyses did indicate that a single factor was always most appropriate. The 10-item measure also had acceptable internal consistency, ranging from .83 to .85.

As part of an effort to establish the validity of the new state self-esteem scale, correlations among the mood measures were examined. Correlations were examined separately for each time period within each day. Because the overall pattern of results was consistent, the 15 correlation coefficients calculated for each pair of scales (three time periods by five days) are summarized by describing only the highest and lowest correlation. Overall, the mood measures co-varied as expected. Positive mood and state self-esteem assessed at the same reading were positively correlated (r ranged from .67, $p < .001$, to .80, $p < .001$). The state self-esteem was also negatively associated with anxious mood (r ranged from $-.37$, $p < .01$, to $-.68$, $p < .001$). At 11 out of the 15 time

points, positive mood had a significant negative association with anxious mood (r ranged from $-.15, p > .05$, to $-.57, p < .001$); however, the association was negative at all times.

Daily Parent–Child Interaction. Before bed each evening, children responded to a set of statements describing their interactions with a parent that evening. Children who lived with both parents were randomly assigned to describe their interactions with either their mother or their father. Four scales represent the child's perceptions of the nature and quality of parent–child interaction each evening.

Ten statements described parent aversive behavior, such as the use of discipline and criticism, and a negative emotional tone. Seven items from the original YES I AM scale (Repetti, 1996) were supplemented with three additional items designed to correspond to the item content of the parent report scale. Sample items include 'My mother (father) treated me unfairly' and 'My mother (father) didn't like the way I acted'. Cronbach's alpha was strong on the first four days of data collection (all were over .90), and was .78 on Friday. The YES I AM child aversive behavior scale (Repetti, 1996) consists of eight items describing the child's own misbehavior and hyperactivity with parents (e.g., 'I misbehaved when I was around my mother (father)', and 'I was loud and noisy when I was around my mother (father)'). Inter-item reliability was strong for responses from Monday through Thursday (alpha's ranged from .78 to .87); a low value for Friday (.37) was based on ratings from only 37 youngsters who completed the final report of the study. The YES I AM measure of positive parent involvement (Repetti, 1996) includes 19 statements describing parental affection (praise, warmth, and togetherness) and involvement (including talking, and playing games). Sample items are 'My mother (father) spent time with me' and 'My mother (father) understood how I saw things'. Cronbach's alpha for this measure ranged from .94 to .98. The child desire for parental attention scale consists of nine statements describing children's wish for engagement and positive contact with their parents. Items include 'I tried to make my mother (father) laugh' and 'I really tried hard to please my mother (father)'. Alpha ranged from .85 to .93.

Child reports of interactions with parents were intercorrelated as expected. Child reports of parent aversive behavior and child aversive behavior were strongly associated on each day of the week (r ranged from .49 to .80, $p < .001$). Parent aversive behavior and positive parent involvement were also significantly correlated on all days of the week (strongest association $r = -.62, p < .001$) except Friday. The child aversive behavior was associated with the positive parent involvement on only one day of the week (when $r = -.48, p < .001$). Child desire for parental attention scores were not associated with either parent or child aversive behavior, but were positively associated with positive parent involvement on each day (r ranged from .32, $p < .01$ to .53, $p < .001$).

Parent Daily Report Scales

Each evening, parents rated a series of statements describing interactions with the target child that occurred that day after school. Measures were adapted from scales used in previous daily report studies of parent–child interaction (Repetti & Wood, 1997). Some of the items were rated on a true–false response scale; for other items, parents indicated whether the behavior occurred 'more' or 'less' on that evening compared with a typical evening. Each of the three parent measures included some

items in each of these two formats. The parent and child aversive behavior scale included 14 items that assessed parent's perceptions of aversive interactions with the target child that day after school. Six statements described parent anger or disapproval (e.g., 'I punished my child'), and eight described child disobedience or non-responsiveness that evening (e.g., 'My child was out of control'). Cronbach's alpha ranged from .73 to .91 when examined separately by day for mothers and for fathers. Parent reports of affection and the positive involvement with the target child were assessed each evening through 17 items. Sample items included 'We had a lot of fun together' and 'I was affectionate with my child'. Cronbach's alpha ranged from .87 to .92. The parents also completed the child positive bids for attention scale each evening. The nine items on this scale described positive behaviors that might engage a parent, such as seeking help, trying to be funny or entertaining, suggesting activities to engage in together, expressing appreciation and affection, and attempting to be helpful or considerate. Cronbach's alphas ranged from .73 to .84 for fathers and from .54 to .77 for mothers.

The three parent measures of parent-child interaction were interrelated on most days of the week. Parent and child aversive behavior correlated significantly with positive parent involvement on all but one day of the week (r ranged from $-.21, p > .10$ to $-.45, p < .001$) and had modest associations with child positive bids for attention (r ranged from $-.09, p > .10$ to $-.28, p < .05$). Positive parent involvement and parents' reports of child positive bids for attention were strongly correlated on every day of the week (r ranged from $.57$ to $.72, p < .001$).

In general, parent and child reports of their evening interactions were not strongly associated. On only one of the five days, parent's reports of parent and child aversive behavior correlated significantly with child reports of child aversive behavior ($r = .28, p < .05$), and with child reports of parent aversive behavior ($r = .28, p < .05$). Similarly, parent reports and child descriptions of positive parent involvement were significantly correlated on only one day of the week (when $r = .33, p < .01$). Child and parent reports of children's desire and bids for attention were not significantly associated. Although some of the other parent and child measures were significantly correlated on one day, there was not a strong and consistent pattern of parent-child agreement on the measures of their interactions each evening.¹ This issue is discussed later.

Data Analysis

To account for the nested structure of the daily data, all major analyses were conducted using hierarchical linear modeling (HLM). We were interested in level 1, within-day effects (e.g., whether school events on a particular day were associated with parent-child interaction later that day), but also examined whether the child or parent sex (level 2 characteristics) might moderate within-day (level 1) effects. Robust standard errors are reported. Pairwise deletion was used for all analyses.

Hypotheses were tested in four steps. The first three tested the hypothesized level-1 associations between daily school events and (1) the proposed mediators in our model, (2) children's reports of evening interactions with parents and (3) parents' descriptions of evening parent-child interaction. In the fourth step, a series of level-1 analyses tested possible mediators of the association between school events and later parent-child interaction. For each level-1 analysis, a model tested the fixed effects of school events, with peer and academic problems entered simultaneously, on evening measures

of mood and parent–child interaction. Peer and academic successes were examined separately from school problems. The deviance (-2LL) associated with each model was subtracted from a comparable intercept-only model, yielding a χ^2 statistic that indicated whether daily school events accounted for a significant portion of the within-subject variance in the outcome measure.² Models with significant effects were repeated after morning mood was included in the model, to test whether the effects of school events remained. Finally, the sex of the child and the target parent were examined separately as potential moderators of the level-1 effects investigated in steps one through three; a total of 38 analyses were run. Unless otherwise noted, no differences due to the child sex or the parent sex were identified.

Results

Associations Between School Events and Possible Mediators

Negative School Events. Six HLM models tested associations between negative school events and four possible mediators: children's anxious mood, positive mood, state self-esteem, and child desire and bids for attention, all assessed at home at bedtime. Both child self-reports and parent reports of bids for parental attention were tested. As shown in Table 2, the addition of peer and academic problems improved on an intercept-only model of anxious evening mood, ($\chi^2 = 62.68, p < .001$), and the β associated with each predictor remained significant ($\beta = .18, p < .001$; $\beta = .29, p < .001$, respectively) when morning anxious mood ($\beta = .38, p < .001$) was included in the model.³ A marginally significant effect of academic ($\beta = -.13, p < .10$) but not peer ($\beta = .01, p > .10$) problems on children's positive evening mood was retained after the significant effect of morning positive mood ($\beta = .29, p < .001$) was added to the equation. Although the model that included negative school events was an improvement over an intercept-only model of positive mood ($\chi^2 = 4.85, p < .05$), positive mood was not examined as a potential mediator in subsequent analyses because the association between academic problems and positive mood was only marginally significant. Finally, a model that included the two negative school events improved on an intercept-only model of evening state self-esteem ($\chi^2 = 21.78, p < .001$). After controlling for morning state self-esteem ($\beta = .38, p < .001$), academic ($\beta = -.14, p < .01$), but not peer ($\beta = -.05, p > .10$) problems contributed to children's evening state self-esteem. In summary, negative school events predicted increases in evening anxious mood and reductions in state self-esteem, but not significant changes in positive mood.

Neither parents nor children indicated that children attempted to elicit more parental attention on days when the children experienced daytime problems. Children's reports of peer ($\beta = .04, p > .10$) and academic problems ($\beta = -.04, p > .10$) were not significantly associated with their reports of a desire to gain their parent's attention, and a model including negative events did not differ significantly from an intercept-only model ($\chi^2 = 1.92, p > .10$). Likewise, neither the mothers' nor the fathers' (respectively; $\chi^2 = 1.46, p > .10$; $\chi^2 = 2.18, p > .10$) reports of children's positive bids for attention were associated with children's peer or academic problems. Parent and child reports of bids for attention were therefore excluded from subsequent tests of mediation.

Positive School Events. The effects of peer and academic successes on state self-esteem, positive mood and anxious mood were tested in a series of three models.

Table 2. Day-Level Estimates of the Association Between Negative School Events and Child Evening Moods and Parent-Child Interaction, Controlling for Morning Mood.

	N ^a	Intercept ^b	Morning Mood ^{b,c}	School Events ^{b,c}		χ^2 Change, School Events Only ^d	χ^2 Change with Addition of Morning Mood ^e
				Peer Problems	Academic Problems		
<i>Dependent measure</i>							
Anxious mood	79, 352	.27*** (.01)	.38*** (.06)	.18*** (.05)	.29*** (.05)	62.68***	47.14***
Positive mood	79, 390	4.48*** (.04)	.29*** (.07)	.01 ^{NS} (.06)	-13 [†] (.07)	4.85*	31.34***
State self-esteem	79, 350	2.64*** (.03)	.38*** (.06)	-.05 ^{NS} (.04)	-.14** (.04)	21.78***	58.18***
Bids for attention	79, 277	3.88*** (.03)	n/a	.04 ^{NS} (.03)	-.04 ^{NS} (.04)	1.92 ^{NS}	n/a
<i>Child reports of parent-child interaction</i>							
Child aversive behavior	79, 390	.17*** (.02)	-.00 ^{NS} (.05)	.15** (.05)	.12*** (.03)	28.62***	0.04 ^{NS}
Parent aversive behavior	79, 390	.11*** (.02)	.04 ^{NS} (.06)	.10 [†] (.05)	.08* (.03)	14.84***	1.03 ^{NS}
Positive parent involvement	79, 389	3.81*** (.03)	.06 [†] (.04)	-.06 [†] (.03)	.01 ^{NS} (.04)	3.77 [†]	5.50*

Note: ^a Sample size is indicated by the number of children (L2 units) for each analysis, followed by the number of individual daily observations (L1 units). ^b Values in the columns indicate the β associated with each measure. Numbers in parentheses indicate standard error of each β . The β -values reported are for tests of fixed effects, and robust unstandardized standard errors are shown. ^c Child's morning mood was included as a control variable in the equations predicting the corresponding evening mood. For the analyses of child reports of parent-child interactions, morning anxious mood was included in the model. ^d Chi-square values indicate the difference between an intercept-only model, and a model that includes only peer and academic problems. ^e Chi-square values indicate the difference between the model with morning mood as a control variable and a model that includes only daytime school events without controlling for morning mood.

NS = not significant.

* $p < .05$, ** $p < .01$, *** $p < .001$, [†] $p < .10$.

Positive events did not contribute significantly to the prediction of evening anxious mood ($\chi^2 = 3.42, p > .10$). The addition of positive events to an intercept-only model of evening positive mood resulted in a significant improvement in fit ($\chi^2 = 39.11, p < .001$), with both academic ($\beta = .15, p < .07$) and peer success ($\beta = .28, p < .01$) having significant unique effects. Finally, positive school events improved model fit over an intercept-only model of state self-esteem ($\chi^2 = 21.88, p < .001$), with peer ($\beta = .10, p < .05$), but not academic successes ($\beta = .05, p > .10$) retaining a significant effect after morning state self-esteem ($\beta = .34, p < .001$) was included. In summary, the academic and peer successes predicted increases in state self-esteem and positive mood, but not decreases in anxious mood.

Associations Between School Events and Evening Parent–Child Interaction

School Events and Child Reports of Interactions with Parents. Children's negative school events were examined in relation to their reports of evening child aversive behavior, parent aversive behavior and positive parent involvement. Because child descriptions of school events and evening interactions with parents might be influenced by the child's negative mood on a particular day, the possible confounding effect of morning anxious mood was co-varied in models of daily school events and parent–child interaction.

Negative school events. As summarized in the bottom half of Table 2, three sets of analyses tested same-day associations between children's peer and academic problems and child reports of child aversive behavior, parent aversive behavior, and positive parent involvement. Peer and academic problems contributed to a model predicting children's evening reports of their own aversive behavior ($\chi^2 = 28.62, p < .001$). The β -values associated with both peer ($\beta = .15, p < .01$) and academic problems ($\beta = .12, p < .001$) remained significant after morning anxious mood was included in the analysis. Both types of school events were also linked to children's daily reports of parent aversive behavior ($\chi^2 = 14.84, p < .001$). When the non-significant effects of morning anxious mood were included in the model, academic problems ($\beta = .08, p < .05$) continued to predict parent aversive behavior, whereas peer problems ($\beta = .10, p < .10$) slipped below statistical significance. Finally, the addition of negative events was a marginal improvement over an intercept-only model of positive parent involvement ($\chi^2 = 3.77, p < .10$); peer problems were marginally related ($\beta = -.06, p < .10$); whereas academic problems ($\beta = .01, p > .10$) were unrelated to positive parent involvement after controlling for the marginally significant effects of anxious morning mood ($\beta = .06, p < .10$).

In summary, after statistically accounting for morning anxious mood, children's reports of problems with peers at school predicted increases in their descriptions of their own aversive behavior with a target parent later at home. There was a marginally significant association between peer problems and same-day decreases in children's scores on the positive parent involvement scale. Children's reports of academic problems were significantly associated with an increase in their subsequent reports of child and of parent aversive behavior. Finally, children's morning anxious mood was not significantly associated with children's same-day descriptions of parent–child interactions. Therefore, it was not considered in subsequent analyses of children's reports of child aversive and parent aversive behavior.

Positive school events. Three parallel analyses tested children's peer and academic successes as predictors of their reports of interactions with parents each evening. Children's daytime reports of peer and academic successes were not associated with their evening reports of child aversive behavior, parent aversive behavior or positive parent involvement.

School Events and Parent Reports of Interactions with Child. Recall that each evening parents reported on child and parent aversive behavior and on positive parent involvement. Two analyses tested the association between children's reports of school problems and mothers' ratings on the two parent-child scales. The same two models were tested using fathers' reports as outcome variables. Four parallel analyses were used to test associations between children's reports of peer and academic successes and mothers' and fathers' responses to the two parent scales.

Negative school events. Analyses of mother and fathers' daily reports of parent-child interaction did not indicate that parents observed differences in their children's behavior on days when the children reported more negative school events. Children's reports of peer and academic problems did not predict mothers' ($\chi^2 = 1.12, p > .10$) or fathers' ($\chi^2 = .34, p > .10$) reports of parent and child aversive behavior.⁴ Likewise, for neither mothers nor fathers (respectively), were peer or academic problems associated with their scores on the positive parent involvement scale ($\chi^2 = 1.85, p > .10$; $\chi^2 = 2.71, p > .10$).⁵

Positive school events. Children's reports of academic and peer successes were not associated with mothers' or fathers' reports of parent and child aversive behavior or with their reports of positive parent involvement.

Tests of Mediation

In the analyses reported above, negative school events predicted child reports of child aversive behavior and parent aversive behavior. Child daily scores on the positive parent involvement scale and the parent reports on the parent-child interaction scales were not associated with negative school events reported by children earlier in the day. In addition, four possible mediators of the association between children's negative school events and evening interaction with parents were assessed. However, only state self-esteem and anxious mood, as assessed at bedtime each evening, were found to be associated with daily school event predictor variables. Therefore, the analyses presented next tested the role of these two variables in mediating the association between peer and academic problems and child reports of parent aversive behavior and child aversive behavior. Peer and academic problems were tested as predictors in separate analyses.

The steps suggested by Baron and Kenny⁶ (1986), together with a calculation of the percent of mediation (Kenny, Korchmaros, & Bolger, 2003),⁷ are reported in Figures 1 and 2. Results supported the hypotheses that evening anxious mood (Figure 1) and state self-esteem (Figure 2) each partially mediated the within-day association between negative school events and children's reports of evening interactions with parents. Each figure presents the results of four sets of analyses testing the association between the two predictor variables (academic and peer problems) and two outcome variables (child aversive behavior and parent aversive behavior).

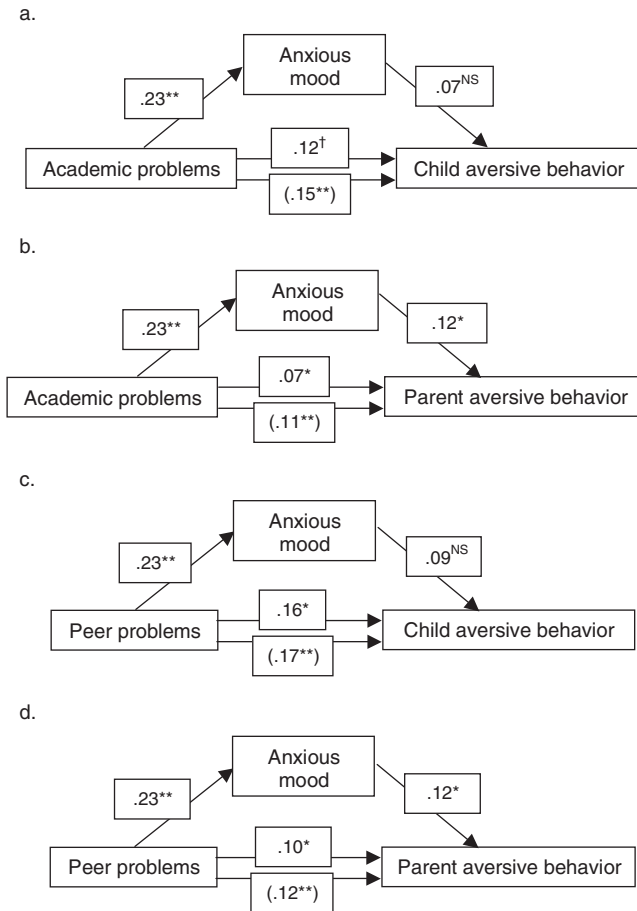


Figure 1. Tests of Anxious Mood as a Mediator of the Association Between Negative Daytime Events and Evening Interaction with Parents. 1a. 16.91 Percent Mediation. 1b. 37.97 Percent Mediation. 1c. 6.44 Percent Mediation. 1d. 17.91 Percent Mediation. NS, not significant.

Note: All values indicate the unstandardized β -values associated with the paths shown. The numbers in parentheses are the unstandardized β for the direct association between daytime events and aversive behavior, without self-esteem.

* $p < .05$, ** $p < .01$, $^\dagger p < .10$.

Anxious Mood. Children's evening reports of anxious mood were not significantly associated with their reports of child aversive behavior. However, the β associated with the link between academic problems and child aversive behavior dropped by 17 percent when children's evening anxious mood was included (Figure 1a). This indicates that 17 percent of the association between child reports of academic problems and descriptions of evening child aversive behavior was explained by the child's evening report of anxious mood. As shown in Figure 1b, the unstandardized β -value associated with the link between academic problems and parent aversive behavior dropped by 38 percent when anxious mood was added to the equation. All links retained statistical significance ($p < .05$). In contrast, it does not appear that anxious mood has an important

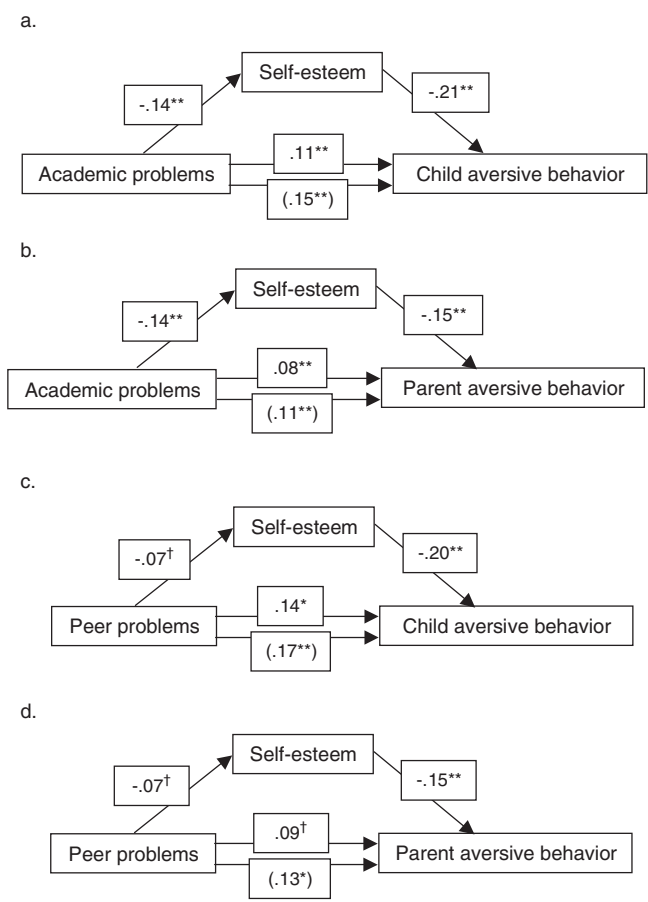


Figure 2. Tests of State Self-Esteem as a Mediator of the Association Between Negative School Events and Evening Interaction with Parents. 2a. 23.82 Percent Mediation. 2b. 25.88 Percent Mediation. 2c. 15.15 Percent Mediation. 2d. 19.80 Percent Mediation.

Note: All values indicate the unstandardized β -values associated with the paths shown. The numbers in parentheses are the unstandardized β for the direct association between daytime events and aversive behavior, without self-esteem.

* $p < .05$, ** $p < .01$, $^{\dagger} p < .10$.

function in mediating the association between children's reports of peer problems at school and their appraisals of their own behavior in the evening (Figure 1c). Finally, the association between peer problems and child reports of parent aversive behavior dropped by 18 percent when anxious mood was included (see Figure 1d). In summary, evidence for the role of anxious mood in mediating the daily association between negative events at school and children's reports of their parents' aversive behavior was stronger than the evidence for models in which children's reports of their own behavior was the outcome.

State Self-esteem. As shown in Figure 2a, the unstandardized β -value for the association between academic problems and child aversive behavior dropped by 24 percent

when child's evening state self-esteem was included in the analysis; 24 percent of the variance in child aversive behavior predicted from same-day academic problems can be explained by variations in state self-esteem. Although all links in the model remained highly significant ($p < .01$), the inclusion of state self-esteem resulted in a substantial reduction in the magnitude of the effect. Similarly, all of the links in the model of state self-esteem as a mediator of the association between academic problems and parent aversive behavior were highly significant ($p < .001$; Figure 2b), and self-esteem explained 26 percent of the association between school problems and child aversive behavior.

Although the results testing state self-esteem as a mediator of the link between peer problems and parent and child aversive behavior were not as strong, the same pattern remained. As shown in Figure 2c, when state self-esteem was included in the equation with peer problems predicting child aversive behavior, the β -value for the effect of peer problems was reduced by 15 percent. Similarly, the association between peer problems and parent aversive behavior was reduced by 20 percent when state self-esteem was included (see Figure 2d). Overall, the results suggest that fluctuations in state self-esteem partially explained the link between same-day associations between peer and academic problems at home and child reports of parent and child aversive behavior at home.

Discussion

Children's perceptions of their evening social interactions are colored by the events they experience during the school day. Although most developmental research focuses on how children's family environments shape their experiences outside of the home, our data suggest that children's experiences at school have important implications for their experience of family life. On days when children report academic or peer problems at school, they describe increases in anxious mood and reductions in state self-esteem that persist into the evening. Replicating Repetti's (1996) results, we found that following a problematic school day, children described more aversive evening interactions with their parents. Because this study included both child and parent reports of daily interactions, we could examine whether school experiences influenced children's social behavior later in the day, and whether parent-child difficulties described by the child were also observed by the parent.

Mediators of School-to-home Spillover

We did not find clear evidence that the negative events children experienced at school influenced parent perceptions of their social behavior at home. Although children reported increased aversive behavior at home in the evening following difficult days at school, those reports were not corroborated by parent responses. Instead, our results suggest that children's internal responses to negative school events, specifically their anxious mood and state self-esteem, partially mediated the effects of school events on the child's perceptions of the quality of evening parent-child interaction. Our data indicate that a child's distress following an argument with a friend, or after receiving a poor grade, persists after returning home. A spillover of negative emotion and low self-evaluation from school to home may negatively bias children's perceptions of their own and their parents' behavior. This bias in children's experience of their home

environment is one explanation for the low levels of agreement between parents' and children's reports of their interactions each evening.

Alternatively, parents may simply not have recognized subtle changes in their children's behavior from day-to-day. However, we did not find any evidence in either informant's reports that children attempted to cope with internal distress generated at school by increasing their efforts to gain parental attention. We had hypothesized that children's bids for attention could go awry, escalating into inappropriate and annoying behaviors, with the unfolding parent-child interaction becoming more aversive. However, in this study, neither children nor their parents indicated that children increased their attempts to elicit parental attention on days when they experienced more problems at school. Furthermore, children did not report increased aversiveness with parents on days when they said that they desired more parental attention.

There are several possible explanations for this pattern of results. Children may not desire additional parental attention to cope with the kinds of minor daily events assessed in our study. In addition, the children may have attempted to gain support from friends during the school day or through phone calls in the evening. As parents are still the primary source of social support for children of this age (Furman & Buhrmester, 1992), we did not measure children's seeking of peer support. However, future research might ask children to describe efforts to seek peer support in the face of social difficulties. Alternatively, a child who is distressed by problems at school may not be able to garner the social skills needed to mount a successful effort to gain parental attention. For example, the children may have attempted to attract parental attention immediately after a bad day at school, but they may have forgotten those early wishes and attempts by bedtime, when they completed the measure of desire for parental attention. Likewise, children may have made inappropriate attempts to gain parental attention soon after the parent-child reunion, possibly through clinging, whining, or overly solicitous behavior. However, if this behavior did not last throughout the evening it might not have been captured in the parent's nighttime descriptions of aversive interactions. The items in our scales may only have captured children's positive attempts to engage their parents. Indeed, for both the child and the parent reports, bids for parental attention were more strongly associated with descriptions of positive parent involvement than with descriptions of aversive parent-child interaction.

Recall that children's descriptions of parent-child interaction and their reports of their own anxious mood and state-self esteem were both collected before bedtime each evening. Because this study is based on a correlational research design, it is possible that an alternative causal pathway could be operating. The children's peer and academic failures during the day at school could have influenced their evening interactions with parents (either directly or through a mediator not considered in this study) and parent-child difficulties could then have led to an increase in anxiety and a reduction in state-self-esteem. However, because the difficulties in parent-child interactions that were described by children were not identified by parents, it seems improbable that parent-child interactions alone would be sufficient to cause the mood and self-esteem shifts we observed. Instead, it seems more plausible that the children's mood and state self-esteem would shift in response to negative school events and would then go on to influence evening interactions with parents.

Importantly, as part of our effort to examine internal mediators of the school-to-home link, our research identified systematic associations between children's state self-esteem at home in the evening and events that occurred while at school. In accord with research demonstrating links between children's self-esteem and school failure

experiences (e.g., Heyman et al., 1992), short-term changes in children's state self-esteem corresponded to academic problems that occurred at school. Specifically, our data showed a decline in fifth-graders' state self-esteem from morning to evening when they experienced an academic problem at school. The correspondence between daytime events and evening state self-esteem, after considering morning self-esteem, indicates that the state self-esteem measure was able to capture meaningful changes in self-esteem over the course of a day. We believe that the reliable assessment of daily fluctuations in self-esteem in this age group represents an important first step. A recent meta-analysis indicates that self-esteem is least stable during middle childhood and adolescence (Trzeniewski, Donnellan, & Robins, 2003). Developmentalists should continue to explore the triggers of short-term changes in state self-esteem among school-age children, and determine whether negative events represent a particular challenge to the state self-esteem of some children.

The Events that Matter Most to Children

Negative school events, especially academic problems, seem unique in their ability to influence children's perceptions of their evening interactions with parents. In contrast to negative school experiences, children's social and academic successes predicted short-term increases in positive mood and state self-esteem, but did not lead to decreases in anxious mood. There was also no association between positive experiences at school and children's perceptions of evening interactions with parents. Our findings are consistent with studies that indicate that negative events produce stronger affective responses than positive ones (Ham & Larson, 1990; Rudolph, Lambert, Clark, & Kurlakowsky, 2001; Swearingen & Cohen, 1985). Just as positive events seem less likely to influence children's perceptions of parent-child interactions, fluctuations in positive mood did not mediate the link between children's experiences at school and evening parent-child interactions. On days when a child experienced difficulties at school, they were more likely to report increases in anxious mood or reductions in state self-esteem, but their reports of positive mood remained unaffected.

Consistent with the previous work of Repetti (1996), we found that children were especially likely to be affected by academic problems that occurred at school. On days when children experienced difficulty with school work, they also reported increases in anxious mood, decreases in state self-esteem and increased aversiveness in their interactions with their parents at home that evening. In contrast, associations between problems with peers and nighttime mood and parent-child interaction were not as strong. Children's negative social experiences at school did not predict drops in state self-esteem that were still evident at bedtime and were only weakly associated with their reports of parent aversive behavior. As suggested by Repetti (1996), children may also be particularly likely to carry academic failures home with them because these experiences involved disappointment or conflict with authority figures—teachers. If a child is concerned with having disappointed a teacher, that worry may magnify the child's perceptions of his or her own misbehavior and lead to fear of disappointing his or her parents. Likewise, if a parent learns about the child's difficulty at school, the likelihood of parental disapproval may be much greater for academic than for peer problems. As noted by Repetti (1996), anxiety related to parental disapproval may color the child's perceptions and reports of evening parent-child interactions.

Conclusions, Limitations, and Future Directions

A major strength of this study lies in its effort to identify the antecedents of short-term fluctuations in children's moods and perceptions of parent-child interactions. The inclusion of child reports from both the school and home environments allowed us to examine how school events may influence children's moods and continue to shape their behavior with parents in the evening. With data collected over five days, we compared child mood and social perceptions following difficult days at school to mood and perceptions following days that were less stressful. Our results replicated the work of Repetti (1996) and extended it by creating new measures of state self-esteem and by including parent reports of parent-child interaction. Further, the study identified anxious mood and state self-esteem as two mechanisms that help explain how children carry school problems home with them.

Our conclusions are limited to some extent by the size and characteristics of the sample. This research drew on the responses of a relatively homogenous group of 79 fifth- to sixth-grade children. A larger sample of children would have allowed us to test individual differences that might influence the likelihood that a child would experience lasting effects of school problems in the home environment. Group differences would also be easier to document with a larger sample. For example, we did not find evidence that child and parent sex differences moderated the spillover of children's daily experiences. However, the effect size for sex differences may be too small to have been detected with our sample. A larger sample would allow more reliable tests of how child and family characteristics may shape the spillover of events at school. However, the extent to which the associations reported here would generalize to children and families with other characteristics, such as different ethnic or economic groups, remains to be addressed. Similarly, the processes that we outlined based on a sample of fifth- and sixth-grade children may work differently among children outside of middle childhood.

The data we collected over five days captured a fuzzy snapshot of the children's daily experiences. Additional measurement occasions for each child would increase the variability of both positive and negative events and enhance our understanding of the specific consequences of different kinds of school events. For example, do academic problems involving teacher-child interactions have a more lasting effect on the child's emotions than do other types of academic problems? Future research would also benefit from a closer look at the sequence of events that occur when a child returns home from school in the evening. For example, observational data could be used to determine whether children do indeed attempt to make positive or negative bids for parental attention early in the evening on days when they had experienced problems at school. Such a study would also help to determine whether the disruptions children report in parent-child interaction would be evident to an external observer. Despite these limitations, the findings reported here are quite promising. In contrast to the framing in most of the developmental literature, this research emphasizes the mechanisms by which children's experiences outside of the home may influence their experiences in the home environment.

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Acknowledgments

The study described here was funded by R29-4853 from NIMH awarded to Rena L. Repetti. Barbara Lehman's work on the preparation of this manuscript was supported by NIMH Training Grant 15750. She is now at Western Washington University. We are very grateful to the families who participated in the study and shared a week in their lives with us and to Paula Vincent, Manissa Pedroza, Jeff Wood and the many research assistants who helped to collect and manage the data reported here. We are appreciative of Claire B. Kopp's feedback and the comments of two anonymous reviewers on previous drafts of this manuscript.

Notes

1. On most days, associations between parent reports of parent and child aversive behavior and child reports of bids for attention were close to 0; however, these two variables were positively associated ($r = .34, p < .05$) on one day of the week. Parent's reports of child positive bids for attention were significantly associated with children's descriptions of positive parent involvement on two days (r ranged from $-.18, p > .10$ to $.39, p < .01$). Other parent and child measures were not significantly associated.

2. Model fit statistics (deviance; $-2LL$) based on full maximum likelihood estimates were used to compare the relative success of different models. Analyses using restricted maximum likelihood estimates were nearly identical to those obtained through full maximum likelihood estimates. In addition to the

analyses described above, for each fixed effects model showing a significant association between school events and a dependent measure, a random effects model was examined to determine whether the association differed between children (i.e., the β for each predictor was allowed to vary randomly across level 2 units). In practice, the random effects models were problematic because they had difficulty converging on a solution, and yielded unreliable estimates, likely because only five (or fewer) observations per child were available. Because of this difficulty, the coefficients reported in this article are for tests of fixed effects. However, child sex and parent sex were included to explore whether level 1 effects varied by sex.

3. Supplementary level-2 analyses of child sex indicated that, regardless of school events, girls scored higher on the anxious mood scale.

4. Although no sex differences were identified in the slope of associations between children's positive or negative school events and mother or father reports of parent-child interaction, one intercept difference was found. Mothers, but not fathers, who described interactions with a son were more likely to report aversive parent-child behavior when compared with mothers who described interactions with a daughter ($\beta = .10, p < .05$).

5. A supplementary χ^2 analysis was used to test parental awareness of children's school problems. In contrast to days when a child had not experienced a problem with peers or academics, parents were no more likely to report awareness that their child had experienced a problem at school on days when the child actually reported a problem.

6. The following steps were used to test for mediation. The basic level-1 HLM association between each predictor variable (e.g., academic problems) and each outcome variable (e.g., child aversive behavior) was first tested. Second, each predictor variable was regressed on the mediator (e.g., state self-esteem). Third, both the mediator and the predictor variable were regressed on the outcome measure.

7. The percent of mediation was calculated as the percent by which the β associated with the link between school events and parent-child interaction was reduced after the mediator was included in the analysis.