J Abnorm Child Psychol (2011) 39:425–436
DOI 10.1007/s10802-010-9469-z

Parental Negative Control Moderates the Shyness–Emotion Regulation Pathway to School-Age Internalizing Symptoms

Xin Feng · Daniel S. Shaw · Kristin L. Moilanen

Published online: 24 November 2010

Abstract Models of developmental psychopathology emphasize both mediation and moderation processes among child and caregiving attributes; however, little research has examined both these processes simultaneously on the development of internalizing problems. This study tested a moderated mediation model that related early childhood shyness, emotion regulation and maternal negative control to school-age internalizing problems among 257 boys from low-income families. Shyness and maternal negative control was assessed at ages 1.5–2, emotion regulation was observed at age 3.5, and internalizing symptoms were assessed by mothers and teachers at age 6 or 7. Results indicated that 1) the active distraction regulation strategy mediated the relations between early shyness and maternal report of internalizing symptoms; 2) the passive/dependent regulation strategy mediated the relations between shyness and teacher report of internalizing symptoms; and 3) both mediation processes were moderated by maternal negative control. The results are discussed in relation to implications for early prevention and intervention.

Keywords Temperament · Emotion regulation · Internalizing symptoms · Parenting · Moderated mediation

X. Feng (✉)
Department of Human Development and Family Science, College of Education and Human Ecology, The Ohio State University, 171B Campbell Hall, 1787 Neil Avenue, Columbus, OH 43210-1220, USA
e-mail: xfeng@ehe.osu.edu

D. S. Shaw
Department of Psychology, University of Pittsburgh, 210 S. Bouquet Street, 4101 Sennott Square, Pittsburgh, PA 15260-0001, USA
e-mail: casey@pitt.edu

K. L. Moilanen
Department of Technology, Learning & Culture, West Virginia University, 506B Allen Hall, P.O. Box 6122, Morgantown, WV 26506-6122, USA
e-mail: KLMoilanen@mail.wvu.edu

Internalizing problems, consisting of symptoms of anxiety, depression and social withdrawal (Ollendick et al. 2008; Zahn-Waxler et al. 2000), represent one of the broad classes of child adjustment problems. Dimensions of children's temperament, including shyness and negative emotionality, have been regarded as the primary early markers of childhood internalizing problems (Hane et al. 2008; Janson and Mathiesen 2008). Parenting, most notably parental intrusiveness and negative control, also have been found to play a salient role, particularly in early childhood (Bayer et al. 2006; Rapee 1997). It has long been established that temperament and the caregiving environment jointly and interactively contribute to children's developmental outcomes (Thomas and Chess 1977; Sameroff and Mackenzie 2003). However, less is known about the mechanisms through which early temperament and parenting shape later internalizing problems.

In the past two decades, several researchers have proposed that learning to regulate emotional responses in adaptive ways may underlie positive outcomes and decrease vulnerability for emotional and behavioral problems (Eisenberg et al. 2002; Kopp 1982), and thus may mediate the relations between a variety of risk factors, including temperamental vulnerabilities, and adjustment problems (Eisenberg et al. 2003; Morris et al. 2007). Few studies have empirically tested such a mediation model. As the development of regulation and adaptation evolves within the caregiving context, we further propose a moderated mediation view in which the mediational pathways from

temperament to emotion regulation to internalizing problems are moderated by specific patterns of parenting. To our knowledge such a model has not been tested; however, the components of the model are consistent with existing conceptual and empirical work.

Shyness and Internalizing Symptoms

Shy/inhibited temperament, characterized by unusual fear, cautiousness, and withdrawn behavior in unfamiliar situations (Kagan et al. 1989), has been theoretically and empirically linked to internalizing problems (Biederman et al. 2001; Oldehinkel et al. 2004). Several theoretical models have been put forth to explain this link. The spectrum/common cause model posits that both fall on the same continuum and share etiological determinants, with shy temperament representing a subclinical level of internalizing symptoms (Nigg 2006). Many of the characteristics of shy temperament (e.g., fear and distress in response to unfamiliar situations, withdrawal) parallel internalizing symptoms, particularly anxiety symptoms. Consistent with the substantive similarities, genetically informed studies have found that correlations between shyness and internalizing problems are higher for monozygotic than for dizygotic twins among preschool-age children (Schmitz et al. 1999) and school-age girls (Rhee et al. 2007), suggesting a genetic link between shyness and internalizing behavior.

However, the longitudinal association between shy/inhibited temperament and internalizing problems tends to be modest (Degnan and Fox 2007; Nigg 2006). There could be at least two possibilities for this discontinuity. The first is that the development of adaptive regulation strategies may mediate the link between shyness and internalizing problems by reducing levels of fear, distress and withdrawn behavior in stressful situations (e.g., Eisenberg et al. 2003). Another possibility, not mutually exclusive from the first alternative, is that environmental factors may moderate the effect of shyness on internalizing problems. In such a model the association between shyness and later internalizing problems would be amplified in the presence of other risk factors, such as intrusive or highly controlling parenting (Degnan et al. 2008; Hane et al. 2008).

The Mediating Role of Emotion Regulation in the Development of Internalizing Problems

From the functionalist perspective, emotion regulation refers to the ability to modulate emotional arousal in ways that facilitate the accomplishment of personal goals and adaptation to the social environment (Thompson 1994). The capacity of regulating emotions develops rapidly during early childhood; at the end of this period most children have acquired basic regulatory skills (Kopp 1982). Several researchers have proposed models in which children's regulatory capacities mediate the relation between dimensions of temperament and adjustment outcomes (Eisenberg et al. 1998, 2003; Yap et al. 2007). For example, Yap et al. (2007) posited that self-regulation of emotional experience and expression mediates the relations between negative emotionality and depression in adolescence.

By definition, shyness involves an inhibited and withdrawn style in unfamiliar social situations (Kagan et al. 1989), and shy children are expected to show avoidant or passive behavior in stressful situations (Eisenberg et al. 1998; Fox 1994). Because of their propensity for high reactivity, shy children are likely to become over-aroused easily and may experience difficulty in planning and executing complex and socially constructive behavior and only have a narrow range of regulation strategies at their disposal (Eisenberg et al. 1998; Fox 1994). Consistent with these expectations, inhibited toddlers have demonstrated high frequencies of self-soothing and proximity seeking with their mothers in response to a stranger or unfamiliar objects (Mangelsdorf et al. 1995), and shy preschoolers have shown more passive regulation behaviors as observed by teachers and observers (Blair et al. 2004; Feng et al. 2008a).

Deficits in emotion regulation skills also have been related to child adjustment problems and psychopathology, including internalizing symptoms, at school age and beyond (Buckner et al. 2003; Chaplin et al. 2005). For young children, one set of strategies that appears to be effective in regulating negative emotions includes attention shifting from a distressing stimulus toward a non-distressing stimulus (Grolnick et al. 1996). Observational studies have shown that the use of behavioral strategies that involve engaging in activities that provide distraction or emotional relief is associated with decreased distress and better psychosocial adjustment (Buss and Goldsmith 1998; Calkins and Johnson 1998). Children who are unable to actively regulate their attention in a frustrating situation may engage in passive regulation, including passive waiting (i.e., doing nothing) and comfort behavior such as self-soothing and physical comfort seeking (Gilliom et al. 2002; Grolnick et al. 1996). While passive regulation does temporarily reduce fear, it also reinforces the associated physiological responses and behaviors, and has been linked to continued social wariness and future internalizing problems (Fox et al. 2005). In one recent study, the joint use of passive waiting and comfort seeking strategies predicted elevated levels of anxiety across early and middle childhood (Feng et al. 2008b).

In sum, given that shy/inhibited temperament is associated with passive and avoidant types of regulatory

strategies or deficits in active regulation, which in turn is linked with the emergence of internalizing problems, there is reason to expect that emotion regulation strategies serve as a mediator between early shyness and later internalizing problems. However, only a few studies have explicitly tested the mediating effects of emotion regulation, and true longitudinal data are even more sparse. Findlay et al. (2009) tested the mediation of children's coping strategies in the relations between shyness and socio-emotional adjustment among 4th and 5th graders. Specifically, "internalizing coping" strategies, characterized as passive, avoidant, and worrying, were found to mediate the relations between shyness and social anxiety. However, this study was based on cross-sectional data of only children's self-report.

The Moderating Role of Parenting

For young children the most proximal environmental influence is parental caregiving. Parental negative control, consisting of intrusive behavior, excessive regulation of children's activities, and a minimal level of granting of age-appropriate autonomy, has been consistently associated with children's internalizing symptoms, particularly anxiety (Bayer et al. 2006; Hudson and Rapee 2002). Maternal negative control has also been linked with children's less adaptive emotion regulation strategies. Negatively controlling behavior on the part of parents may inhibit the development of children's active attempt to self-regulate emotions when parents are unavailable (Calkins et al. 1998) and deprive children of mastery experiences over the environment. Low levels of mastery would then further reinforce children's feelings of anxiety and tendency to withdrawal (Chorpita and Barlow 1998).

The vulnerability/resilience model of the link between temperament and psychopathology posits that certain temperamental characteristics predispose individuals for specific types of psychopathology in some contexts but not others (Nigg 2006). This model suggests that parental negative control, as an environmental risk factor, may moderate the effect of shyness on internalizing problems. Multiple research teams have reported that inhibited children whose mothers are over-solicitous (i.e., warm but intrusive and overly controlling) tend to maintain their inhibited tendencies (Degnan et al. 2008; Rubin et al. 2002), whereas inhibited children whose mothers set firm limits and have developmentally appropriate expectations tend to become less inhibited over time (Arcus 2001). Data on the interaction effect of shyness and maternal behavior on emotion regulation strategies, however, are limited. One study reported that inhibited preschoolers whose mothers had a history of depression and also showed low levels of positivity, utilized low levels of active regulation strategies (i.e., active distraction) and high levels of passive strategies (i.e., passive waiting) during a disappointment task (Feng et al. 2008a).

Previous findings seem to suggest that parental negative control interacts with shy temperament to contribute to problems in both emotion regulation and internalizing symptoms. Building on the existing literature, we propose that parental negative control moderates the mediational path from shyness to emotion regulation to internalizing problems. In the present study, we attempted to further advance our understanding of the processes and mechanisms underlying the development of internalizing problems in early childhood by integrating both mediation and moderation processes and testing these models simultaneously.

Gender Differences

This study focused on boys from ethnically diverse, low-income families. Research examining internalizing problems in boys and girls suggests that in general, gender differences emerge during early adolescence (e.g., Cicchetti and Toth 1995; Zahn-Waxler et al. 2000). However, recent longitudinal studies indicate that the impact of temperamental covariates on the growth trajectories of internalizing problems differ for boys and girls (Colder et al. 2002), and latent trajectory classes vary in initial values, rate of change, and their associations with maternal risk factors across gender (Sterba et al. 2007). Research also suggests that the gender difference may be due to socialization processes, such that girls' early problem behavior is more often channeled into internalizing problems (Keenan and Shaw 1997). There is also some evidence to suggest that boys are more vulnerable than girls to the effects of sub-optimal caregiving environments, particularly in early childhood (Shaw et al. 1998). Thus, the evidence, although limited and inconclusive, seems to suggest divergent mechanisms for developing internalizing problems in boys and girls, which warrants gender-segregated studies of such mechanisms.

The Present Study

This study tested a moderated mediation model in which emotion regulation served as a mediator between early childhood shyness and school-age internalizing symptoms and maternal negative control moderated the mediational processes. With the increasing attention to transactional processes in developmental science (Sameroff and Mackenzie 2003), so too is the methodological demand for examining complexity of developmental models. Mediation and

moderation models alone may not be sufficient to explain the complex nature of developmental processes and mechanisms underlying child internalizing problems. Moderated mediation is one of the analytic approaches to integrate the mediation and moderation processes (Muller et al. 2005; Preacher et al. 2007). Moderated mediation occurs when the mediating process between the independent and the dependent variables depends on the value of the moderator variable. A moderated mediation model fits well with our goal of examining whether the developmental pathway of shyness to emotion regulation to internalizing problems varies across different caregiving contexts. Based on previous research, we hypothesized that 1) shyness would be negatively associated with regulation strategies of active distraction, which in turn would be negatively associated with internalizing symptoms; 2) shyness would be positively associated with passive/dependent regulatory behaviors, which in turn would be positively associated with internalizing symptoms; and 3) the indirect relations between shyness and internalizing problems (as mediated by emotion regulation strategies) would be moderated by maternal negative control. We included parent and teacher reports as outcomes to provide assessments of children's internalizing problems from multiple sources.

Method

Participants

Participants were 257 boys and their mothers originally recruited into an ongoing longitudinal study of vulnerability and resilience of boys in low-income families through Women, Infants, and Children (WIC) Nutritional Supplement Programs in the Pittsburgh metropolitan area. Participants were recruited when target children were between 6 and 17 months old. At the time of the first assessment (of the larger study) when boys were 1½ years old, 310 (out of the 421 approached) families participated. This initial sample consisted of 53% European American, 36% African American, 6% Hispanic American, and 5% biracial families. Mothers' ages ranged 17–43, with a mean of 25; 65% of mothers were married or living with partners, 28% were never married, and 7% were separated, divorced, or widowed. Mean yearly income was approximately $12,500 (range=$2,460–$48,000), and the mean socioeconomic status (SES) score was 24.8, indicative of working class status (Hollingshead 1975). Across the study period, 11.7–18.8% boys had externalizing T scores above the borderline clinical cutoff (T>63) and 6.4–12.9% had internalizing T scores above the borderline clinical range. Note that in the normative sample, the borderline clinical cutoff for both internalizing and externalizing problems are at approximately the 90th percentile (Achenbach 1991). Participants who remained in the study and who dropped out did not differ in racial composition (both boys' and mothers'), maternal age, family income, SES, or other study variables. Among the 257 participants, 217 had teacher assessment data available. More information on patterns of missing data is provided in the description of the data analysis strategy.

Procedures and Measures

Boys and their mothers were seen in the laboratory when the boys were 1.5, 2, 3.5, and 6 years old. Teacher data were collected by mail when the boys were 6 or 7 years old. At ages 1.5 and 2, observations of parent-child interactions were videotaped and later coded for maternal negative control. At age 3.5, an emotion eliciting task was videotaped and boys' regulatory strategies were later coded. Demographic information was collected at the age 1.5 interview.

Child Internalizing Symptoms Internalizing symptoms were assessed by mothers and teachers. At the age 6 assessment, mothers rated their boys' internalizing symptoms using the broad-band internalizing scale of the Child Behavior Checklist (CBCL; Achenbach 1991), consisting of Anxious/Depressed, Withdrawn, and Somatic Complaints subscales. The internal consistency for maternal ratings was 0.78. At ages 6 and 7, classroom teachers completed the Teacher Report Form (TRF; Achenbach 1991), using the broad-band internalizing scale, which consists of the same subscales as CBCL. Alphas were 0.88 and 0.89 at ages 6 and 7, respectively. To maximize the sample size, for boys whose age 6 teacher assessments were not available, age 7 assessments were used. Boys whose age 7 assessments (n=21) and age 6 assessments were used (n=196) did not differ in internalizing symptoms, $t(216)=0.90$, *ns*.

Child Shyness Boys' shy temperament was assessed using the shyness scale of the Toddler Behavior Checklist (TBC; Larzelere et al. 1989), which mothers completed at the 1.5 year assessment. The 4-point shyness scale contains seven items that measure toddlers' shyness and fearfulness. As the original 7-item scale had relatively low reliability (α=0.56), three of the items were selected (acts shy or timid; acts afraid around strangers; and resists being left with other caretakers) to more narrowly focus the scale on shyness. Similar items are also included in shyness scales of temperament questionnaires (e.g., Buss and Plomin 1984). The internal consistency for the revised shyness scale was 0.60.

Child Emotion Regulation At age 3.5, boys were administered a delay of gratification task, the cookie task (Marvin

1977), during which they were required to wait for a cookie in a laboratory room that was cleared out of all toys while their mothers completed questionnaires. Mothers were given a transparent bag containing the children's preferred kind of cookie, and were instructed to keep the cookie within the boys' view but out of their reach for three minutes. Boys' emotion regulatory behavior was coded into five mutually exclusive strategies, *active distraction*, *passive waiting, physical comfort seeking*, *focus on delay object*, and *information gathering*, and the display of anger based on a coding system adapted from the work of Grolnick et al. (1996) by Gilliom and colleagues (Gilliom et al. 2002). The presence and absence of the regulation behaviors and anger were coded on 10-second intervals. Inter-coder reliability (kappa) ranged from 0.64 to 0.79. To reduce the number of variables, a principal component analysis was performed on the five behavior variables and the duration of anger. Two factors emerged: one included high scores on passive waiting and physical comfort seeking and low scores on active distraction. The second factor included high scores on both focus on delay and anger (information gathering did not load on either factor). As sustained focus on delay objects coupled with anger tends to be associated with externalizing problems (e.g., Gilliom et al. 2002), this factor was not included in the present study. Additionally, although active distraction loaded on the same factor (negatively) as passive waiting and physical comfort seeking, it was examined separately from the other two. This is consistent with previous findings that active distraction is an effective regulation strategy (e.g., Grolnick et al. 1996), while passive waiting and comfort seeking are associated with elevated internalizing symptoms (Feng et al. 2008b). Thus, two emotion regulation variables were included in the analyses: 1) active distraction (purposefully shifting focus of attention away from the delay object to engage in other activities), and 2) passive/dependent, a composite of passive waiting (standing or sitting quietly without looking at the cookie or engaging in any activities) and physical comfort seeking (seeking physical contact with the mother such as touching or requesting to be held).

Maternal Negative Control At ages 1.5 and 2, boys and their mothers were observed in the laboratory during a clean-up task. Mothers were instructed to ask their boys to put the toys in a basket and mother-boy dyads were allowed 5 min to complete the task. The videotaped clean-up tasks for mother-child dyads were coded using the *Early Parenting Coding System* (EPCS; Winslow and Shaw 1995). Following Calkins et al. (1998), a composite of maternal negative control reflecting the level of parents' physical and verbal control and negative expression was generated based on two microscopic codes and a global code. The microscopic codes included: *negative physical contact* (physical control; forcing or restricting the child's movement) and *critical statement* (verbal statement prohibiting the child from doing something or criticizing the child's behavior, state of being, or character). The microscopic codes were ratio of occurrence (i.e., frequencies of the coded behavior divided by the amount of time taken by the mother-boy dyads to complete the task). The global code of *intrusiveness* (unnecessary commands, physical manipulation or restriction of the child, or completing the task for the child) was coded on a 4-point scale (1 = not at all intrusive; 4 = intrusive) and rated after coders viewed the entire clean-up task. Inter-coder reliability (kappa) ranged 0.67–0.75 for these codes. The scores for the same behavioral codes were first averaged across ages 1.5 and 2 (correlations of scores between two age points were 0.33 to 0.47) and then standardized within each code. The final measure of maternal negative control was the sum of the *z* scores of all codes. This measure demonstrated adequate internal consistency (α=0.70) and has previously been associated with elevated trajectories of internalizing symptoms (Feng et al. 2008b).

Data Analysis Strategy

Structural equation modeling (SEM), specifically path analysis, was used to test each of the moderated meditation models (Figs. 1 and 2). While both or either path of the mediational chain can be moderated (Preacher et al. 2007), we only considered maternal negative control moderating the path between shyness and emotion regulation based on the time of assessment. Parent and teacher ratings of internalizing symptoms (dependent variables) were not correlated (r=0.11, *ns*), and were therefore estimated as individual manifest variables in separate models. The SEM models were estimated using Mplus 5.0 (Muthén and Muthén 2007). The moderated mediation was tested in two steps. First, we identified which indirect paths (i.e., the path through active distraction and/or passive/dependent) were significant. For the mediation analysis, the strength and significance of indirect effects were estimated nonparametrically using a bootstrap sampling method (Shrout and Bolger 2002). The bootstrap method involves generating a series of data sets that resemble the observed data by randomly sampling with replacement from the original sample and creating a large number of datasets of the same size. The indirect effect is estimated from each of the bootstrapped samples and the confidence interval is determined by the distribution of the indirect effects based on all bootstrap samples. One advantage of the bootstrap method is that it does not assume a normally distributed parameter estimate, and thus provides a more powerful test in detecting indirect effects than

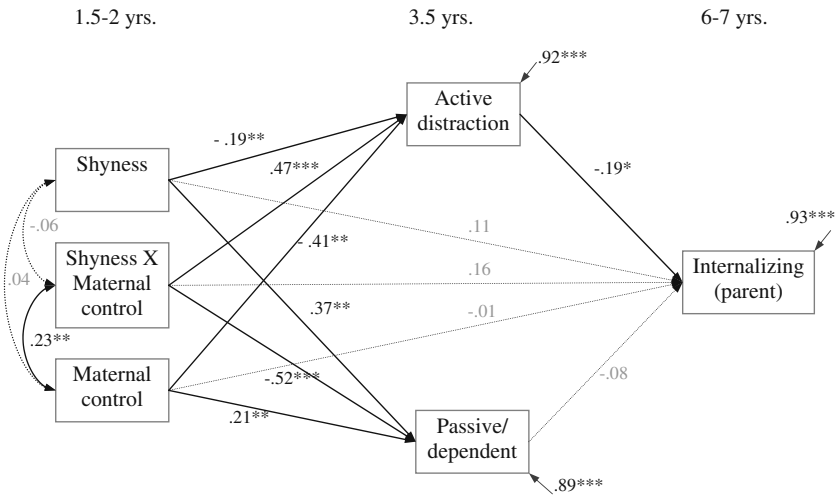

Fig. 1 Path diagram of the SEM model with parent ratings of internalizing problems as the outcome

calculations based on formulas with a normality assumption, as the distribution of the indirect effects tend to be positively skewed (Mackinnon et al. 2002; Shrout and Bolger 2002). The second step involved estimating conditional indirect effects at values (i.e. +1*SD* and −1*SD*) of the moderator variable (Preacher et al. 2007; Tein et al. 2004). That is, the original SEM model was fitted two additional times, one with maternal negative control centered at +1*SD* and one with maternal negative control centered at −1*SD*, and indirect effects between shyness and internalizing symptoms were re-estimated.

In fitting the SEM models, the maximum likelihood (ML) algorithm with the multiple-group approach (Muthén et al. 1987) was employed for missing data imputation. Among the 257 participants included in the analysis, 2.7% had missing data on shyness, 1.9% on maternal negative control, and 14.8% on emotion regulation variables, and 15.6% on teacher ratings of internalizing problems. Missingness on these variables was not associated with the values of other study variables or each other, and Little's MCAR test yielded a nonsignificant chi-square statistic (χ^2[43]=42.76, *ns*), which suggests that these data were missing at random. However, missing status on emotion regulation variables was associated with SES, such that participants with missing data were higher on SES than those who completed the assessments, $t(66.7)=3.73$, $p<0.001$. In the preliminary analyses, SES was included in the models as a covariate to account for potential bias in the parameter estimation. Results of preliminary analysis indicated that SES was not associated with the mediators or dependent variables nor did it change parameter estimates, and thus SES was removed from the final analysis.

Results

Descriptive statistics and bivariate correlations of study variables are presented in Table 1. As shown, child shyness and maternal negative control were positively associated with later maternal reports of internalizing symptoms, and child active distraction was negatively correlated with later

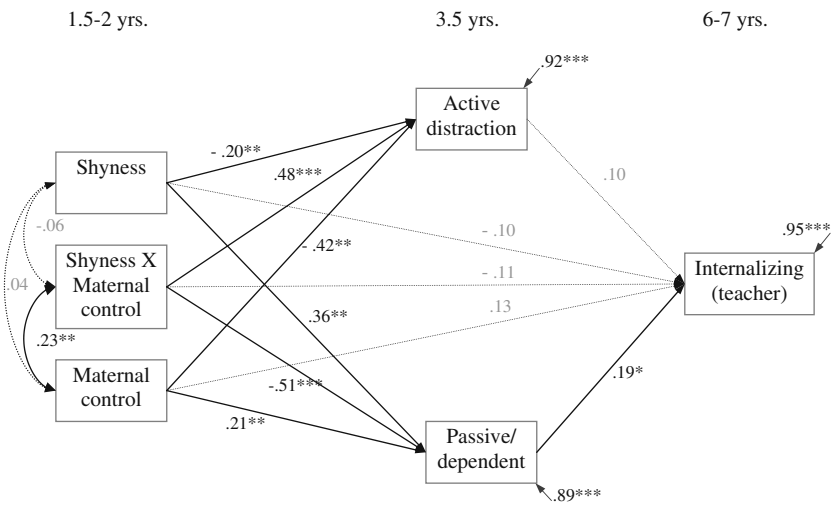

Fig. 2 Path diagram of the SEM model with teacher ratings of internalizing problems as the outcome

Table 1 Descriptive statistics and correlations of study variables

	M	*SD*	Correlation				
			1	2	3	4	5
1. Shyness	4.21	2.19	–				
2. Active distraction	10.52	5.15	−0.20**	–			
3. Passive/dependent	2.18	1.56	0.21**	−0.48***	–		
4. Maternal negative control	0.12	1.80	0.04	0.03	−0.10	–	
5. Internalizing symptoms (mother)	5.33	4.55	0.12*	−0.16*	0.02	0.16*	–
6. Internalizing symptoms (teacher)	6.09	6.77	−0.07	0.02	0.12	0.13	0.11

*$p<0.05$. **$p<0.01$. *** $p<0.001$

maternal report of internalizing problems. All correlations were uniformly modest in size, ranging from −0.16 to 0.16. In contrast, none of the early childhood variables were related to later teacher ratings of internalizing symptoms. Shyness was positively associated with passive/dependent regulatory strategy and negatively associated with active distraction. The two emotion regulation strategies were moderately negatively correlated.

Moderated Mediation Model Using Maternal Report of Internalizing Symptoms

A series of SEM models was estimated with shyness, maternal negative control and the shyness X maternal negative control interaction as independent variables, emotion regulation strategies as mediating variables, and maternal report of internalizing symptoms as the dependent variable (Fig. 1). The interaction term was computed with centered variables. The disturbances of emotion regulation variables were allowed to correlate to account for shared method variance. The SEM models were saturated (i.e., all possible relationships between variables were estimated) and all model fit indices were perfect; thus, model fit indices are not reported. The purpose of using SEM analyses was to allow the estimation of moderated mediation with missing data. As expected, high levels of shyness at age 1.5 predicted low levels of active distraction ($B=-0.47$, $SE=0.17$, $\beta=-0.19$, $p<0.01$, 95% CI [−0.80, −0.14]) and high levels of passive/dependent regulatory strategies ($B=0.75$, $SE=0.23$, $\beta=0.21$, $p=0.001$, 95% CI [0.30, 1.20]) at age 3.5. The shyness by maternal negative control interaction was predictive of both active distraction ($B=0.27$, $SE=0.08$, $\beta=0.48$, $p<0.001$, 95% CI [0.12, 0.41]) and passive/dependent strategies ($B=-0.42$, $SE=0.13$, $\beta=-0.50$, $p=0.001$, 95% CI [−0.67, −0.17]). The active distraction strategy, in turn, was negatively predictive of age 6 maternal report of internalizing symptoms ($B=-0.16$, $SE=0.07$, $\beta=-0.19$, $p<0.05$, 95% CI [−0.29, −0.03]). The analysis also yielded a significant total indirect effect between the shyness X maternal negative control interaction and internalizing symptoms (through active distraction) based on 1000 bootstrap samples ($B=-0.09$, $SE=0.04$, $p<0.05$, 95% CI [−0.17, −0.01]), as well as a marginal indirect relation between shyness and internalizing symptoms ($B=0.04$, $SE=0.02$, $p=0.06$, 95% CI [−0.001, 0.073]). As maternal negative control was centered at the mean, the results suggest a trend for an indirect relation between early childhood shyness and school-age internalizing symptoms at the average level of maternal negative control.

As passive/dependent regulatory behavior was not related to internalizing symptoms, only the indirect path of shyness to active distraction to internalizing problems was further tested for moderation. The mediating effect of active distraction was further tested at high (+1*SD*) and low (−1*SD*) levels of maternal negative control, respectively. At low levels of maternal negative control, there was an indirect relation between early childhood shyness and school-age internalizing symptoms ($B=0.07$, $SE=0.03$, $p<0.05$, 95% CI [0.01, 0.14]); however, at high levels of maternal negative control the indirect relation was not significant. The results indicated that the mediation effect of active distraction was moderated by maternal negative control, such that the relation between shyness and later internalizing symptoms was mediated by the active distraction strategies in the context of low levels of maternal negative control.[1]

Moderated Mediation Model Using Teacher Report of Internalizing Symptoms

The identical models were fitted again using teacher report of internalizing symptoms as the outcome variable (Fig. 2). With maternal negative control centered at the mean,

[1] To account for potential inflation in the path coefficients, we also fitted the same series of SEM models with age-2 maternal rating of internalizing symptoms as a control variable (with its associations with the mediators and the dependent variable estimated). Results were similar to those reported above when age-2 internalizing problems was not in the model. The only difference was that at low levels of maternal negative control, the total indirect effect (the mediation effect) was just statistically significant, with .00 at the lower bound of the 95% confidence interval ($B=0.06$, $SE=0.03$, $p=0.05$, 95% CI [0.00, 0.13]).

similar to the model using maternal report as the outcome, high levels of shyness were prospectively associated with low levels of active distraction (B=−0.48, SE=0.17, β=−0.20, p<0.01, 95% CI [−0.81, −0.15]) and high levels of passive/dependent regulatory strategies (B=0.16, SE=0.05, β=0.21, p=0.001, 95% CI [0.06, 0.25]) observed two years later. The shyness by maternal negative control interaction was associated with both active distraction (B=0.27, SE=0.08, β=0.48, p<0.001, 95% CI [0.12, 0.42]) and passive/dependent behavior (B=−0.08, SE=0.02, β=−0.51, p<0.001; 95% CI [−0.13, −0.04]). Only the passive/dependent regulation strategy (but not active distraction) was predictive of age 6–7 teacher report of child internalizing symptoms (B=0.83, SE=0.35, β=0.19, p<0.05, 95% CI [0.15, 1.51]). The analysis also revealed two significant total indirect effects mediated through passive/dependent regulation: 1) between the shyness X maternal negative control interaction and internalizing symptoms (B=−0.10, SE=0.05, p<0.05, 95% CI [−0.188, −0.002]), and 2) between shyness and internalizing symptoms (B=0.04, SE=0.02, p<0.05, 95% CI [0.002, 0.008]). Again, as maternal negative control was centered at the mean, the results suggested a significant indirect relation between early childhood shyness and school-age internalizing symptoms at average levels of maternal negative control.

The moderated mediation was then tested with maternal negative control set at high (+1SD) and low (−1SD) levels, respectively. The analyses revealed 1) a significant total indirect effect between shyness and internalizing symptoms at low levels of maternal negative control (B=0.08, SE=0.03, p<0.05, 95% CI: 0.01, 0.15), which suggested that the relation between shyness and later teacher report of internalizing symptoms was mediated by passive/dependent emotion regulation strategies in the context of low maternal negative control; and 2) this indirect relation was not significant at high levels of maternal negative control.[2] Thus, moderated mediation between early childhood shyness and teacher report of internalizing problems was supported.

Discussion

This study examined potential mechanisms by which early childhood temperament is related to school-age internalizing symptoms. As expected, pathways from early shyness to later internalizing difficulties were mediated by children's emotion regulation strategies, and the mediation effects were further moderated by levels of maternal negative control in early childhood. Furthermore, we tested such a moderated mediation model with both maternal and teacher assessments of child internalizing symptoms as outcomes. At a broad level, our findings suggest that the development of problem behavior reflects an ongoing interaction between child characteristics and the quality of the caregiving context.

Findings of this study support the developmental associations among early childhood shy temperament, active and passive emotion regulation strategies, and school-age internalizing symptoms. Our findings that shy toddlers tend to use less active distraction but more passive/dependent strategies is consistent with previous research (e.g., Blair et al. 2004; Feng et al. 2008a) and the hypothesis that links shy temperament to a limited repertoire of effective and active regulatory strategies (Eisenberg et al. 1998; Fox 1994). The present findings also strengthen the previously supported relations between emotion regulation and internalizing problems (e.g., Buckner et al. 2003). Specifically, the results suggest that preschool-age boys who cannot actively orient their attention away from frustration, or can only rely on strategies that are passive and dependent upon caregivers may be at heightened risk for future internalizing problems. Not surprisingly, we did not find a direct relation between shyness and internalizing symptoms, which is consistent with previous research suggesting that the direct relation between these two constructs is at best modest (Degnan and Fox 2007; Nigg 2006).

The core findings of this study concern different mechanisms leading to children's internalizing problems. The results support the hypothesis that emotion regulation mediates the link between temperamental vulnerability and adjustment problems or psychopathology (e.g., Eisenberg et al. 2003; Yap et al. 2007). We found that higher levels of shyness were predictive of more passive and fewer active regulation strategies, which in turn led to greater internalizing symptoms. Our findings further strengthen the limited research (e.g., Eisenberg et al. 2003; Findlay et al. 2009) that supports this mediational hypothesis. An important contribution of the current study is that such meditation effects were tested and supported using a multi-method, multi-informant longitudinal design, with shyness, emotion regulation, and internalizing problems all assessed at different ages.

Most notably, mediated pathways were found to be further moderated by maternal parenting behavior, such that emotion regulation strategies only mediated the link between shyness and internalizing problems in the context of low to average levels of maternal negative control. When maternal negative control was high, however, the mediation effects disappeared. It is possible that in the context of high parental negative control, children who are initially shy are

[2] We were unable to control for earlier teacher assessment of internalizing problems, as age 6 was the youngest age when teacher assessment of internalizing problems was available.

less likely to develop active regulation strategies and more likely to maintain passive strategies or rely on others to regulate their emotions, as indicated by previous research (e.g., Arcus 2001; Degnan et al. 2008; Rubin et al. 2002). Furthermore, under high levels of parental negative control, these suboptimal patterns of emotion regulation may become rigid patterns at an early age with relatively little room to change.

The moderated mediation finding using teacher reports is less intuitive. One would expect that the pathway from shyness to passive/dependent regulation to internalizing problems would be strengthened in the context of high maternal negative control. One possibility is that there are other factors in school settings that further moderate the relation between emotion regulation and internalizing symptoms that were not tested in the present study. For example, positive relationships with peers and teachers may serve as a buffer against the development of internalizing problems for children who tend to be passive and withdrawn. The present study begins to unpack the mechanisms and pathways of developing internalizing problems and demonstrates how different processes involved operate together; it highlights the advantage of using complex developmental models that incorporate mediation and moderation processes.

Interestingly, while the general mechanisms of moderated mediation held true in models with parent and teacher assessments of internalizing symptoms, the emotion regulation strategies that served as mediators were different. While active distraction mediated the relation between shyness and parent report of internalizing symptoms, passive/dependent strategies mediated the relation between shyness and teacher report of internalizing problems. Our findings of differential mechanisms leading to parent versus teacher assessment of child internalizing problems may suggest that parents and teachers rely on the appraisal of different behavioral patterns, including the styles of regulating negative emotions, in assessing children's internalizing problems. It is also plausible that the behavioral manifestation of internalizing problems varies across context—while children with internalizing problems tend to display sustained focus and heightened distress in response to frustration at home, they are likely to remain more passive and withdrawn in school settings. Although small in size, the magnitude of cross-informant association on internalizing symptoms is consistent with previous studies (Hinshaw et al. 1992; Stanger and Lewis 1993), which reported that parent and teacher measures of internalizing problems were uncorrelated.

Unlike some previous studies (e.g., Bayer et al. 2006; Rapee 1997), we did not find an association between maternal negative control and later internalizing problems after accounting for shyness and its interaction with maternal negative control. Parental negative control has also been associated with externalizing problems. Specifically, for boys who have high levels of fearful or irritable distress, parental control has been related to teacher reports of externalizing problems (Morris et al. 2007). This may explain the lack of association between maternal negative control and boys' internalizing problems in the current study. Together these findings point to the possibility that the direct effect of maternal negative control on internalizing symptoms may be stronger in girls than in boys.

Limitations

A few limitations should be considered when interpreting the findings of this study. First, the original study from which participants were drawn was designed to investigate the precursors of childhood externalizing problems, and thus recruited only boys from low-income families living in an urban setting. Our findings begin to uncover the developmental mechanisms of internalizing problems in boys; however, these mechanisms need to be explored in girls and among boys and girls from rural and suburban communities. Relatedly, boys in our sample were selected for risk of externalizing problems, but based on the percentages above the CBCL borderline clinical range, they did not appear to be at high risk for internalizing problems. Thus, findings may not generalize to children at risk for internalizing problems or populations at lower risk for child psychopathology (e.g., middle class). Furthermore, the sample characteristics may contribute, in part, to the null finding of the direct relation between shyness and later internalizing problems. One behavioral genetics study (Rhee et al. 2007) reported shared genetic influence between shyness and internalizing problems only among school-age girls but not boys. Future research is needed using genetically-informed designs that focus on boys and girls from diverse socioeconomic strata and communities to corroborate and extend the current findings.

Second, the measure of shyness included only three items. Although the scale was intentionally reduced in size to ensure that it was specifically tapping children's shyness, the scale's internal consistency was only marginally adequate. Our assessment of child shyness could have been supplemented with observations and/or reports by an alternative caregiver. Third, emotion regulation was observed in a brief task, which only accessed emotion regulation strategies in response to frustration. Although similar delay of gratification tasks have demonstrated predictive validity to later indices of social functioning and adjustment outcome (e.g., Eigsti et al. 2006), emotion regulation is context specific and strategies regulating different emotions may vary. Emotion regulation strategies assessed in multiple emotion-eliciting tasks and using

multiple methods and informants may have further enhanced the generalizability of the findings. Fourth, future studies should benefit from the inclusion of earlier repeated assessments of endogenous variables in the analysis to account for potential inflation in the parameter estimate. As noted earlier, in the model using parent report of internalizing as the outcome, after accounting for age 2 assessments of internalizing problems, the magnitude of the total indirect relation appeared to decline somewhat.

Lastly, the present study did not test the potential influence of child temperament on maternal negative control. Given the evidence in the literature for the effects of temperament on maternal behavior (e.g., Fox et al. 2007; Hane et al. 2006), it is plausible that maternal negative control could serve as a mediator between child shyness and emotion regulation. Future studies should consider testing such competing models to further elucidate the role of temperament, emotion regulation and parenting in the development of internalizing problems.

Conclusion and Implications

This study enhances our understanding of the potential mechanisms for the development of boys' internalizing problems from infancy to the early school-age period. The results and approach of the current study have implications for translational research on the prevention and intervention of internalizing difficulties. First, our findings support early intervention programs that teach adaptive emotion regulation strategies during early childhood. Children with temperamental bias towards fearful and withdrawn tendencies in response to challenging situations may especially benefit if intervention programs target changing passive and dependent regulatory behavior and promoting active self-distracting strategies. Early intervention programs that address children's management of emotions have shown positive results. For example, an emotion-based prevention program implemented in Head Start centers has been found to increase children's emotion regulation capacities and reduce anxious/depressed behavior and negative peer relations (Izard et al. 2008). The present findings, consistent with those of Trentacosta and Shaw (2009), further suggest that future intervention research should examine increased emotion regulation skill (e.g., active distraction) as a mechanism of intervention effects.

Additionally, our findings suggest that mechanisms leading to effective intervention may be moderated by the quality of caregiving, particularly levels of parental negative control. Learning adaptive emotion regulation strategies may be one mechanism that leads to the reduction of future internalizing problem. However, as the effectiveness of such an intervention mechanism may be tempered by parenting quality, intervention programs that also address parental negative control may further enhance the effectiveness of such preventative efforts.

Acknowledgment The research reported in this paper was supported by grants to Daniel Shaw from the National Institute of Mental Health, grants MH 50907 and MH 01666. We are grateful to the work of the staff of the Pitt Mother and Child Project for their years of service, and to the families who participated in the study for making the research possible.

References

Achenbach, T. M. (1991). *Manual for the child behavior checklist/4–18 and 1991 profile*. Burlington: University of Vermont Department of Psychiatry.

Arcus, D. (2001). Inhibited and uninhibited children: Biology in the social context. In: T. D. Wachs, & G. A. Kohnstamm (Eds.), *Temperament in context* (pp. 43–60).

Bayer, J. K., Sanson, A. V., & Hemphill, S. A. (2006). Parent influences on early childhood internalizing difficulties. *Journal of Applied Developmental Psychology, 27*(6), 542–559.

Biederman, J., Hirshfeld-Becker, D. R., Rosenbaum, J. F., Friedman, D., Snidman, N., Kagan, J., et al. (2001). Further evidence of association between behavioral inhibition and social anxiety in children. *The American Journal of Psychiatry, 158*, 1673–1679.

Blair, K. A., Denham, S. A., Kochanoff, A., & Whipple, B. (2004). Playing it cool: temperament, emotion regulation, and social behavior in preschoolers. *Journal of School Psychology, 42*(6), 419–443.

Buckner, J. C., Mezzacappa, E., & Beardslee, W. R. (2003). Characteristics of resilient youths living in poverty: the role of self-regulatory processes. *Development and Psychopathology, 15*(1), 139–162.

Buss, A. H., & Plomin, R. (1984). *Temperament: Early developing personalitytraits*. Hillsdale: Erlbaum.

Buss, K. A., & Goldsmith, H. H. (1998). Fear and anger regulation in infancy: effects on the temporal dynamics of affective expression. *Child Development, 69*(2), 359–374.

Calkins, S. D., & Johnson, M. C. (1998). Toddler regulation of distress to frustrating events: temperamental and maternal correlates. *Infant Behavior & Development, 21*(3), 379–395.

Calkins, S. D., Smith, C. L., Gill, K. L., & Johnson, M. C. (1998). Maternal interactive style across contexts: relations to emotional, behavioral, and physiological regulation during toddlerhood. *Social Development, 7*(3), 350–369.

Chaplin, T. M., Cole, P. M., & Zahn-Waxler, C. (2005). Parental socialization of emotion expression: gender differences and relations to child adjustment. *Emotion, 5*, 80–88.

Chorpita, B. F., & Barlow, D. H. (1998). The development of anxiety: the role of control in the early environment. *Psychological Bulletin, 124*(1), 3–21.

Cicchetti, D., & Toth, S. L. (1995). Developmental psychopathology and disorders of affect. In: D. Cicchetti, & D. J. Cohen (Eds.), *Developmental psychopathology, Vol. 2: Risk, disorder, and adaptation.* (pp. 369–420).

Colder, C. R., Mott, J. A., & Berman, A. S. (2002). The interactive effects of infant activity level and fear on growth trajectories of early childhood behavior problems. *Development and Psychopathology, 14*(1), 1–23.

Degnan, K. A., & Fox, N. A. (2007). Behavioral inhibition and anxiety disorders: multiple levels of a resilience process. *Development and Psychopathology, 19*(3), 729–746.

Degnan, K. A., Henderson, H. A., Fox, N. A., & Rubin, K. H. (2008). Predicting social wariness in middle childhood: the moderating

roles of childcare history, maternal personality and maternal behavior. *Social Development, 17*(3), 471–487.

Eisenberg, N., Shepard, S. A., Fabes, R. A., Murphy, B. C., & Guthrie, I. K. (1998). Shyness and children's emotionality, regulation, and coping: contemporaneous, longitudinal, and across-context relations. *Child Development, 69*(3), 767–790.

Eisenberg, N., Fabes, R. A., Guthrie, I. K., & Reiser, M. (2002). The role of emotionality and regulation in children's social competence and adjustment. In: L. Pulkkinen, & A. Caspi (Eds.), *Paths to successful development: Personality in the life course* (pp. 46–70).

Eisenberg, N., Valiente, C., Morris, A. S., Fabes, R. A., Cumberland, A., et al. (2003). Longitudinal relations among parental emotional expressivity, children's regulation, and quality of socioemotional functioning. *Developmental Psychology, 39*, 3–19.

Eigsti, I. M., Zayas, V., Mischel, W., Shoda, Y., Ayduk, O., Dadlani, M. B., et al. (2006). Predicting cognitive control from preschool to late adolescence and young adulthood. *Psychological Science, 17*, 478–484.

Feng, X., Shaw, D. S., Kovacs, M., Lane, T., O'Rourke, F. E., & Alarcon, J. H. (2008a). Emotion regulation in preschoolers: the roles of behavioral inhibition, maternal affective behavior, and maternal depression. *Journal of Child Psychology and Psychiatry, 49*(2), 132–141.

Feng, X., Shaw, D. S., & Silk, J. S. (2008b). Developmental trajectories of anxiety symptoms among boys across early and middle childhood. *Journal of Abnormal Psychology, 117*(1), 32–47.

Findlay, L. C., Coplan, R. J., & Bowker, A. (2009). Keeping it all inside: shyness, internalizing coping strategies and socio-emotional adjustment in middle childhood. *International Journal of Behavioral Development, 33*(1), 47–54.

Fox, N. A. (1994). Dynamic cerebral processes underlying emotion regulation. *Monographs of the Society for Research in Child Development*, *59*(2–3), 152–166, 250–283.

Fox, N. A., Henderson, H. A., Marshall, P. J., Nichols, K. E., & Ghera, M. M. (2005). Behavioral inhibition: linking biology and behavior within a developmental framework. *Annual Review of Psychology, 56*, 235–262.

Fox, N. A., Hane, A. A., & Pine, D. S. (2007). Plasticity for affective neurocircuitry: how the environment affects gene expression. *Current Directions in Psychological Science, 16*(1), 1–5.

Gilliom, M., Shaw, D. S., Beck, J. E., Schonberg, M. A., & Lukon, J. L. (2002). Anger regulation in disadvantaged preschool boys: strategies, antecedents, and the development of self-control. *Developmental Psychology, 38*, 222–235.

Grolnick, W. S., Bridges, L. J., & Connell, J. P. (1996). Emotion regulation in two-year-olds: strategies and emotional expression in four contexts. *Child Development, 67*, 928–941.

Hane, A. A., Fox, N. A., Polak-Toste, C., Ghera, M. M., & Guner, B. M. (2006). Contextual basis of maternal perceptions of infant temperament. *Developmental Psychology, 42*(6), 1077–1088.

Hane, A. A., Fox, N. A., Henderson, H. A., & Marshall, P. J. (2008). Behavioral reactivity and approach-withdrawal bias in infancy. *Developmental Psychology, 44*(5), 1491–1496.

Hinshaw, S. P., Han, S. S., Erhardt, D., & Huber, A. (1992). Internalizing and externalizing behavior problems in preschool children: correspondence among parent and teacher ratings and behavior observations. *Journal of Clinical Child Psychology, 21*(2), 143–150.

Hollingshead, A. B. (1975). *Four factor index of social status*. Unpublished manuscript. New Haven, CT.

Hudson, J. L., & Rapee, R. M. (2002). Parent-child interactions in clinically anxious children and their siblings. *Journal of Clinical Child and Adolescent Psychology, 31*(4), 548–555.

Izard, C. E., King, K. A., Trentacosta, C. J., Morgan, J. K., Laurenceau, J. P., Krauthamer-Ewing, E. S., et al. (2008). Accelerating the development of emotion competence in Head Start children: effects on adaptive and maladaptive behavior. *Development and Psychopathology, 20*, 369–390.

Janson, H., & Mathiesen, K. S. (2008). Temperament profiles from infancy to middle childhood: development and associations with behavior problems. *Developmental Psychology, 44*(5), 1314–1328.

Kagan, J., Reznick, J. S., & Gibbons, J. (1989). Inhibited and uninhibited types of children. *Child Development, 60*(4), 838–845.

Keenan, K., & Shaw, D. S. (1997). Developmental and social influences on young girls early problem behavior. *Psychological Bulletin, 121*, 95–113.

Kopp, C. B. (1982). Antecedents of self-regulation: a developmental perspective. *Developmental Psychology, 18*(2), 199–214.

Larzelere, R. E., Martin, J. A., & Amberson, T. G. (1989). The toddler behavior checklist: a parent-completed assessment of social-emotional characteristics of young preschoolers. *Family Relations, 38*, 418–425.

MacKinnon, D. P., Lockwood, C. M., Hoffman, J. M., West, S. G., & Sheets, V. (2002). A comparison of methods to test mediation and other intervening variable effects. *Psychological Methods, 7*(1), 83–104.

Mangelsdorf, S. C., Shapiro, J. R., & Marzolf, D. (1995). Developmental and temperamental differences in emotion regulation in infancy. *Child Development, 66*, 1817–1828.

Marvin, R. S. (1977). An ethological-cognitive model for the attenuation of mother-infant attachment behavior. In T. M. Alloway, L. Krames, & P. Pliner (Eds.), *Advances in the study of communication and affect: Vol. 3. The development of social attachments* (pp. 25–60). New York: Plenum.

Morris, A. S., Silk, J. S., Steinberg, L., Myers, S. S., & Robinson, L. R. (2007). The role of the family context in the development of emotion regulation. *Social Development, 16*(2), 361–388.

Muller, D., Judd, C. M., & Yzerbyt, V. Y. (2005). When moderation is mediated and mediation is moderated. *Journal of Personality and Social Psychology, 89*(6), 852–863.

Muthén, L. K., & Muthén, B. O. (2007). *Mplus user's guide* (5th ed.). Los Angeles: Muthén & Muthén.

Muthén, B., Kaplan, D., & Hollis, M. (1987). On structural equation modeling with data that are not missing completely at random. *Psychometrika, 52*(3), 431–462.

Nigg, J. T. (2006). Temperament and developmental psychopathology. *Journal of Child Psychology and Psychiatry, 47*(3–4), 395–422.

Oldehinkel, A. J., Hartman, C. A., De Winter, A. F., Veenstra, R., & Ormel, J. (2004). Temperament profiles associated with internalizing and externalizing problems in preadolescence. *Development and Psychopathology, 16*(2), 421–440.

Ollendick, T. H., Shortt, A. L., & Sander, J. B. (2008). Internalizing disorders in children and adolescents. In: J. E. Maddux, & B. A. Winstead (Eds.), *Psychopathology: Foundations for a contemporary understanding, 2nd edn* (pp. 375–399).

Preacher, K. J., Rucker, D. D., & Hayes, A. F. (2007). Addressing moderated mediation hypotheses: theory, methods, and prescriptions. *Multivariate Behavioral Research, 42*(1), 185–227.

Rapee, R. M. (1997). Potential role of childrearing practices in the development of anxiety and depression. *Clinical Psychology Review, 17*(1), 47–67.

Rhee, S. H., Cosgrove, V. E., Schmitz, S., Haberstick, B. C., Corley, R. C., & Hewitt, J. K. (2007). Early childhood temperament and the covariation between internalizing and externalizing behavior in school-aged children. *Twin Research and Human Genetics, 10*(1), 33–44.

Rubin, K. H., Burgess, K. B., & Hastings, P. D. (2002). Stability and social-behavioral consequences of toddlers' inhibited temperament and parenting behaviors. *Child Development, 73*(2), 483–495.

Sameroff, A. J., & Mackenzie, M. J. (2003). Research strategies for capturing transactional models of development: the limits of the possible. *Development and Psychopathology, 15*, 613–640.

Schmitz, S., Fulker, D. W., Plomin, R., Zahn-Waxler, C., Emde, R. N., & DeFries, J. C. (1999). Temperament and problem behavior during early childhood. *International Journal of Behavioral Development, 23*(2), 333–355.

Shaw, D. S., Keenan, K., & Vondra, J. I. (1994). Developmental precursors of externalizing behavior: ages 1 to 3. *Developmental Psychology, 30*, 355–364.

Shaw, D. S., Winslow, E. B., Owens, E. B., Vondra, J. I., Cohn, J. F., & Bell, R. Q. (1998). The development of early externalizing problems among children from low-income families: a transformational perspective. *Journal of Abnormal Child Psychology, 26*, 95–107.

Shrout, P. E., & Bolger, N. (2002). Mediation in experimental and nonexperimental studies: new procedures and recommendations. *Psychological Methods, 7*(4), 422–445.

Stanger, C., & Lewis, M. (1993). Agreement among parents, teachers, and children on internalizing and externalizing behavior problems. *Journal of Clinical Child Psychology, 22*(1), 107–115.

Sterba, S. K., Prinstein, M. J., & Cox, M. J. (2007). Trajectories of internalizing problems across childhood: heterogeneity, external validity, and gender differences. *Development and Psychopathology, 19*(2), 345–366.

Tein, J.-Y., Sandler, I. N., MacKinnon, D. P., & Wolchik, S. A. (2004). How did it work? Who did it work for? Mediation in the context of a moderated prevention effect for children of divorce. *Journal of Consulting and Clinical Psychology, 72*(4), 617–624.

Thomas, A., & Chess, S. (1977). Evolution of behavior disorders into adolescence. *Annual Progress in Child Psychiatry & Child Development*, 489–497.

Thompson, R. A. (1994). Emotion regulation: A theme in search of definition. In N. A. Fox (Ed.), *The development of emotion regulation: Biological and behavioral considerations. Monographs of the Society for Research in Child Development, 59, (2–3, Serial No. 240)* (pp. 25–52). Chicago: University of Chicago Press.

Trentacosta, C. J., & Shaw, D. S. (2009). Emotion self-regulation, peer rejection, and antisocial behavior: Developmental associations from early childhood to early adolescence. *Journal of Applied Developmental Psychology, 30*, 356–635.

Winslow, E. B., & Shaw, D. S. (1995). *Early parenting coding system (EPCS)*. Unpublished manuscript.

Yap, M. B. H., Allen, N. B., & Sheeber, L. (2007). Using an emotion regulation framework to understand the role of temperament and family processes in risk for adolescent depressive disorders. *Clinical Child and Family Psychology Review, 10*(2), 180–196.

Zahn-Waxler, C., Klimes-Dougan, B., & Slattery, M. J. (2000). Internalizing problems of childhood and adolescence: prospects, pitfalls, and progress in understanding the development of anxiety and depression. *Development and Psychopathology, 12*, 443–466.