

The Moderating Effects of Parenting Styles in the Association Between Behavioral Inhibition and Parent-Reported Guilt and Empathy in Preschool Children

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This study investigated interactions between children's temperament and parenting styles in their association with measures of guilt and empathy. Participants were 87 predominantly Caucasian, middle-class mothers and their children between the ages of 3 and 5 ($M = 4.39$, $SD = .51$). Children nominated by their preschool teachers as being behaviorally inhibited showed higher levels of parent-rated guilt and empathy than uninhibited children, irrespective of the type and quality of parenting they experienced. However, for uninhibited children, greater inconsistent discipline was associated with lower levels of guilt and lower levels of empathy, whereas higher levels of authoritarian parenting were associated with higher levels of guilt. These results support the presence of important interactions between temperament and parenting in explaining two critical dimensions of callous-unemotional traits.

Two critical concepts in developmental psychopathology have been applied to the study of severe conduct problems and antisocial behavior in youth. First, the concept of equifinality suggests that the same developmental outcome (e.g., antisocial behavior) can come about through many different causal processes (Cicchetti & Rogosch, 1996). Second, it is important to tie these causal processes to research on normal development to understand when and how normal development processes can be disrupted and lead to maladaptive outcomes (Frick & Morris, 2004). To illustrate both of these important concepts, research has uncovered a distinct subgroup of antisocial youth in community (Frick, Cornell, et al., 2003), clinic-referred (Christian, Frick, Hill, Tyler, & Frazer, 1997), and adjudicated (Caputo, Frick, & Brodsky, 1999) samples who show high levels of callous and unemotional (CU) traits marked by low levels of guilt and empathy. This group of antisocial youth seem to show a more severe (Christian et al., 1997), aggressive (Frick, Cornell, Barry, Bodin, &

Dane, 2003), and chronic (Frick, Stickle, Dandreaux, Farrell, & Kimonis, 2005) pattern of antisocial behavior than other antisocial youth (see Frick & Dickens, 2006, for a review).

Further, this group with high levels of CU traits shows a number of characteristics that seem to implicate distinct developmental processes underlying their antisocial behavior (see Dadds & Salmon, 2003; Frick & Marsee, 2006; Viding, 2004, for reviews). As opposed to other antisocial youth, those with high levels of CU traits tend to be more thrill and adventure seeking (Frick, Lilienfeld, Ellis, Loney, & Silverthorn, 1999), are less sensitive to cues of punishment when a reward-oriented response set is primed (Fisher & Blair, 1998; O'Brien & Frick, 1996), and are less reactive to threatening and emotionally distressing stimuli (Blair, 1999; Kimonis, Frick, Fazekas, & Loney, 2006; Loney, Frick, Clements, Ellis, & Kerlin, 2003). Also, their conduct problems seem less strongly related to typical parental socialization practices (Oxford, Cavell, & Hughes, 2003; Wootton, Frick, Shelton, & Silverthorn, 1997). Finally, youth with conduct problems and high levels of CU traits, in addition to their CU interpersonal style, show a number of other characteristics suggesting deficits in conscience development, such as being less distressed by the effects of their behavior on others (Frick et al., 1999; Pardini, Lochman, & Frick, 2003), showing impairments in their moral reasoning (Blair, 1999), and having difficulty recognizing expressions of fear and

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sadness in others (Blair, Colledge, Murray, & Mitchell, 2001; Stevens, Charman, & Blair, 2001).

These characteristics of children with high levels of CU traits suggest that this group of children may have a unique temperamental style, characterized by low levels of fear and lack of sensitivity to punishment, as one factor that may make them difficult to socialize. This transaction between their temperamental style and their socializing environment could be critical for explaining the deficits in their conscience development, specifically in their development of guilt and empathy. These possibilities are consistent with several lines of research on normal conscience development.

Several studies have shown that relatively fearless children show lower scores on measures of conscience development than other children (Asendorpf & Nunner-Winkler, 1992; Kochanska, DeVet, Goldman, Murray, & Putnam, 1994; Kochanska, Gross, Lin, & Nichols, 2002). This association is found when fearfulness is measured using behavioral measures (e.g., avoidance of novel, strange, or threatening stimuli; Kochanska et al., 2002) and when it is measured using psychophysiological indices of reactivity to threatening stimuli (Fowles & Kochanska, 2000). Further, this link has also been documented in prospective studies, with a measure of fearfulness in infancy predicting parent ratings of guilt and shame at ages 6 and 7 (Rothbart, Ahadi, & Hershey, 1994). There have been a number of theories as to how low fearfulness, or the related temperament category of low behavioral inhibition (Kagan & Snidman, 1991), may be related to conscience development. For example, Kochanska (1993) and Blair (1999) both proposed that a behaviorally uninhibited temperament could place a child at risk for missing some of the early precursors to empathic concern that involve emotional arousal evoked by the misfortune or distress of others. Such a temperament could also lead a child to be relatively insensitive to the prohibitions and sanctions of parents and other socializing agents and thus may fail to internalize rules and norms (Dadds & Salmon, 2003; Frick & Morris, 2004; Kochanska, 1993, 1995; Pardini, 2006).

Despite these empirical and conceptual links between temperament and conscience development, it is unlikely that temperament alone is sufficient to explain variations in the development of conscience. In fact, many developmental theories emphasize the role of parenting in the development of guilt, empathy, and other components of conscience (Grusec & Goodnow, 1994; Hoffman, 1994). Unfortunately, few developmental theories have attempted to integrate the roles of temperament and parenting in explaining conscience

development. One notable exception is the work by Kochanska (1991, 1993, 1995), who has proposed a model specifying several ways in which the child's temperament may interact with the parenting he or she experiences to either enhance or impair conscience development. Kochanska (1993, 1995) suggested that behaviorally inhibited (i.e., fearful) children internalize parental norms more easily. For such children, maternal gentle discipline is presumed to elicit an optimal level of anxious arousal or discomfort, which in turn fosters internal attributions and effective processing of parental socialization messages (Kochanska, 1995). In contrast, relatively fearless children may not exhibit comparable distress to parental socialization attempts. In support of this possibility, relatively fearless children did not respond optimally to the gentle, nonpower assertive parental socialization that led to the development of conscience in more fearful children (Kochanska, 1991).

This research would be consistent with research on children with CU traits who showed a relatively fearless and uninhibited temperament (Frick et al., 1999) and whose conduct problems were less strongly linked to deficits in parental socialization practices (Oxford et al., 2003; Wootton et al., 1997). However, this finding does not address whether alternative parenting behaviors or styles might enhance conscience development in children with a fearless and uninhibited temperament. For example, it is assumed that fearless children do not experience an optimal level of arousal in situations that involve potential punishment and thus do not successfully internalize parental norms (Dadds & Salmon, 2003; Pardini, 2006). Therefore, it is possible that children low in behavioral inhibition may require parents to utilize strong and firm parenting practices that would potentially lead to more arousal (Bates & McFadyen-Ketchum, 2000). Consistent with this possibility, Bates, Pettit, Dodge, and Ridge (1998) reported that children temperamentally resistant to control were more likely to develop externalizing behavior problems when their mothers were low rather than high in control of the child. As a result, when compared to other children, behaviorally uninhibited children may require the utilization of a stronger set of rules by their parents.

However, it is still possible that certain parenting practices can lead to too much arousal from even fearless children and negatively affect internalization (Kochanska, 1993). As a result, it has been proposed that a parent-child mutually responsive orientation that encompasses shared dyadic positive affect and the parent and child's cooperation with or responsiveness to one another

may be the critical socialization component for uninhibited children (Kochanska, 1997; Kochanska & Murray, 2000). This aspect of parenting does not rely on punishment-related arousal for internalization and instead focuses on the positive qualities of the parent-child relationship (Kochanska & Murray, 2000). In support of this proposal, attachment security has been predictive of conscience development in temperamentally fearless children (Kochanska, 1995, 1997).

Based on this research, it is possible that children temperamentally at risk for problems in conscience development due to a behaviorally uninhibited temperament can have this risk moderated by certain parenting practices. This research could be critical for preventing the development of conduct problems, especially for those youth with CU traits, by providing important targets of intervention designed to enhance the parenting skills of those with temperamentally difficult children. However, this research has a number of limitations. First, as previously noted, there has been minimal research testing the interaction between temperament and parenting practices in the development of guilt and empathy. Further, the work that has been done has largely focused on the parenting that may be most effective for behaviorally inhibited children and not the other extreme of this temperamental dimension, the child with a behaviorally uninhibited temperament. It is this latter temperament that seems to be more closely related to problems in the development of guilt and empathy exhibited by older children and adolescents with CU traits. Second, when the interaction between behavioral inhibition and parenting has been explored, it has typically used a continuous measure of behavioral inhibition. This methodology could be problematic, because there is some evidence that the extremes along this dimension may be qualitatively distinct temperaments rather than two poles of a continuous dimension (Kagan & Snidman, 1991). Further, it is likely that children with CU traits would be at the extreme end of the uninhibited dimension and the most relevant question for guiding prevention programs would be to determine the parenting practices that might enhance conscience development in the most uninhibited children.

Third, and perhaps most important, the descriptions of the parenting practices that may enhance conscience development in uninhibited children have been broad and could include several distinct dimensions that might be differentially related to conscience development (Baumrind, 1971; Darling & Steinberg, 1993). Specifically, a strong and firm approach to parenting could encompass consistency in applying consequences,

a rule and obedience attitude toward parenting (i.e., an authoritarian approach) or strong consequences to enforce parental rules (e.g., corporal punishment). Similarly, the parent-child mutually responsive orientation encompasses parental responsiveness to the child's needs and an emphasis on the use of positive reinforcement to encourage appropriate behavior. If this research is to guide prevention efforts, it would be important to be specific as to the aspects of parenting that are most critical for enhancing conscience development in children temperamentally at risk.

To begin to address these limitations, our study tested the interaction between children's temperament and the parenting they experience in predicting scores on a measure of guilt and empathy. The study used an extreme group design to focus on potential moderators of risk in children at the extremes of the behaviorally inhibited and uninhibited temperament. Based on past research, it was predicted that children with a behaviorally inhibited temperament would score higher on measures of guilt and empathy. Further, it was tested whether strong and firm parenting (i.e., consistent discipline, authoritarian attitudes) or a mutually responsive parenting style (i.e., use of reward oriented parenting; authoritative attitudes) would moderate the risk for problems in conscience development in children with an uninhibited or fearless temperament. These questions were addressed in a sample of preschool children between 3 and 5 years of age. This age group was studied because it is an age at which stable individual differences in conscience development can be detected (Hoffman, 1990; Zahn-Waxler & Radke-Yarrow, 1990; Zahn-Waxler, Radke-Yarrow, Wagner, & Chapman, 1992), yet it is still early enough that interventions could be effective in enhancing conscience development in temperamentally vulnerable children (Kam, Greenberg, & Walls, 2003).

Method

Participants

Eighty-seven children between 3 and 5 years of age ($M = 4.39$, $SD = .51$) were recruited for this research from preschools, both secular ($n = 33$) and religious based ($n = 54$), in a suburban area outside of a large metropolitan city in the southeastern United States. The method of recruitment was designed to include relatively equal numbers of boys ($n = 41$) and girls ($n = 46$), and, among each sex, approximately equal numbers of behaviorally uninhibited (boys, $n = 21$; girls, $n = 23$)

and behaviorally inhibited (boys, $n = 20$; girls, $n = 23$) children. The majority of the children (59%) were 4 years of age, 40% were 5 years of age, and only 1 child was 3 years of age. This 3-year-old child was included because he had been placed in a 4-year-old preschool classroom. The sample was predominantly Caucasian (95%) and came from two-parent families (85%) with incomes over \$50,000 (85%) with the biological mother as the primary caregiver (98%). This demographic composition is representative of the suburban region in which the preschools were located.

Procedure

The University of New Orleans's Institutional Review Board approved all of the study procedures. To select two groups of children that were at the extremes of the behaviorally inhibited and uninhibited dimensions, teachers from the five preschools were given prototypical profiles of a behaviorally uninhibited and a behaviorally inhibited child (see the Appendix). The teachers were asked to nominate the two boys and two girls considered most behaviorally uninhibited and the two boys and two girls considered most behaviorally inhibited in their class. The class sizes ranged from 13 to 16 students. Teachers were informed not to force students into the categories if they did not feel a student in their class fit the descriptions.

Before children's names were released to the researcher, the teacher was asked to send a letter to parents of the nominated children detailing the procedures and purpose of the study (i.e., to participate in study of how parenting affects children with different temperaments). The letter also stated that only children who had never been tested for or considered developmentally delayed could participate and that the child and his or her primary female caretaker would participate in the project. Parents were informed of the incentive provided for participation. Specifically, each parent's name was included in a drawing for five \$30 gift certificates to a video rental store and each child was given the choice from a prize box for participating. The letter directed the parent either to call the experimenter or to check a box on the letter indicating their interest in receiving further information regarding the study and return the form to the classroom.

Of those students nominated, parents of 8 girls (5 behaviorally inhibited) and 16 boys (9 behaviorally inhibited) either failed to return the form or declined receiving further information. Of those parents who were willing to hear further information about the study and actually spoke with

the examiner, only 3 declined or withdrew participation. These children were 2 boys and 1 girl, all of whom had been nominated by their teachers as behaviorally uninhibited. However, rather than having teachers nominate other children in their class that might fit the descriptions provided, additional schools ($n = 5$) were recruited until at least 20 boys and 20 girls were included in each temperament category. As a result, all participants were nominated as one of the top 2 boys or girls in their class who fit closest with the descriptions of a behaviorally inhibited or uninhibited child.

Measures

Behavioral inhibition scale (Frick, 2001b). This scale was constructed using items adapted from several scales assessing behavioral inhibition or fearlessness. These included items from the Thrill and Adventure Seeking subscale of the Sensation Seeking Scale for Children (Russo et al., 1993), items from the Fearfulness subscale of Rothbart's Child Behavior Questionnaire (Rothbart et al., 1994) and items assessing behaviors tapped by the observational paradigm used in past research to assess behavioral inhibition (i.e., Kagan & Snidman, 1991; Kagan, Snidman, & Arcus, 1993). The wording of the items was modified so that they applied to preschoolers, and redundant items were eliminated. On the questionnaire, the parent chose between a pair of statements to indicate which is more true for their child. One statement (e.g., "Your child likes to jump out of a swing while it is high off of the ground") describes a preference for uninhibited behaviors, whereas the other statement describes a preference for inhibited behaviors (e.g., "Your child likes to wait until a swing slows down or stops before getting off"). The scale also asks parents to rate their child on how well the chosen behavior describes them by selecting either "sort of describes my child" or "describes my child well." This format results in a 4-point scale for each item. The coefficient alpha was .83 for all 20 items.

This 20-item measure formed the descriptions included in the prototype used for teacher nominations (see Appendix). The parent questionnaire was used to validate the teacher nominations into the behaviorally uninhibited and behaviorally inhibited groups. A 2×2 analysis of variance (Teacher Nominated Temperament \times Sex of the Child) with parent's ratings of temperament as the dependent variable resulted in a strong main effect for temperament ($F = 29.48$, $p < .001$, $\eta^2 = .26$). This indicates strong convergence between teacher nominations and parent ratings of behavioral inhibition. The Temperament \times Sex

interaction approached significance ($F = 3.52$, $p = .06$, $\eta^2 = .04$). This interaction was due to the fact that parents and teachers were somewhat more in agreement on the child's temperament category for boys than for girls.

My child (Kochanska et al., 1994). The My Child is a parent report measure of conscience containing 100 items on which parents rate their children on 10 scales. The response format is a Likert-type scale, ranging from 1 (*extremely untrue, not at all characteristic*) to 7 (*extremely true, very characteristic*) of the child. Because of their importance as two core features of CU traits and their relevance to most theories of conscience, only the individual Guilt and Empathy subscales were used in analyses. The Guilt scale includes 18 items involving guilt, remorse, and other emotional reactions after transgression, mishap, and wrongdoing. The Empathy scale includes 13 items concerning the child's empathic and prosocial response to another's distress. Both of these scales were found to be internally consistent (Guilt $\alpha = .78$, Empathy $\alpha = .76$), showed adequate 5-month stability (both $r = .55$, $p < .01$; Kochanska et al., 1994), were associated with observations of children's behavior in a previous study of preschool children (Kochanska et al., 1994), and predicted conduct problems later in development (Kochanska et al., 2002). In the sample presented here, these scales also showed acceptable levels of internal consistency (Guilt $\alpha = .78$, Empathy $\alpha = .82$).

Alabama parenting questionnaire (APQ; Shelton, Frick, & Wootton, 1996). The APQ was designed to assess the dimensions of parenting most consistently linked to conduct problem behavior (Frick, 1994) and has been shown to be related to conduct problems in a number of past studies (e.g., Prevatt, 2003; Shelton et al., 1996) including in samples as young as age 4 (Dadds, Maujean, & Fraser, 2003). Only those items that assess parental consistency in applying discipline (6 items; e.g., "You threaten to punish your child and then do not actually punish him/her"), use of positive reinforcement (6 items; e.g., "You reward or give something extra to your child for obeying you or behaving well"), and use of corporal punishment (3 items; "You spank your child with your hand when he/she has done something wrong") were used in our study. Items assessing other discipline practices (i.e., time-out, taking away privileges) were interspersed with the items assessing corporal

punishment, so that a range of both positive and negative discipline practices was assessed. Items were rated by the parent on a 5-point frequency scale from 1 (*never*) to 5 (*always*). All but the Corporal Punishment subscale were found to have acceptable internal consistency in our sample: Positive Reinforcement = .72, Inconsistent Discipline = .72, and Corporal Punishment = .44. The low reliability of the Corporal Punishment scale is consistent with past studies (Dadds et al., 2003; Shelton et al., 1996) and is likely because of the small number of items ($n = 3$) or the fact that the use of one form of harsh discipline does not necessarily increase the likelihood of using other forms of corporal punishment. Despite its low level of reliability, however, the Corporal Punishment scale has been associated with conduct problems in past studies (e.g., Shelton et al., 1996).

Ideas about parenting scale (IAP; Heming, Cowan, & Cowan, 1990). The Ideas About Parenting Scale consists of 73 items scored on a 9-point scale from 1 (*very much agree*) to 9 (*very much disagree*). Hinshaw, Zupan, Simmel, Nigg, and Melnick (1997) found through principle components analysis that the items on this measure divide into three dimensions that are closely related to the parenting constructs outlined by Baumrind (1971). Items from this scale are divided into the Authoritarian subscale (e.g., "In general parents today reason too much with their children"), the Authoritative subscale (e.g., "I like to see a child have opinions and express them even to adults"), and the Permissive subscale (e.g., "I care less than most parents I know about having my child(ren) obey me"). The Authoritarian scale consisted of 17 items and was used as a measure of a rule-oriented approach to parenting that emphasizes obedience, which can be separated from the method of enforcing the rules that are assessed by the APQ Inconsistent Discipline and Corporal Punishment scales. The Authoritative scale consisted of 16 items and was used as a measure of a warm responsive approach to parenting, which is separate from the use of rewards to change behavior that is measured by the APQ Positive Reinforcement scale. This scale has been shown to be inversely correlated with conduct problems in previous studies (Hinshaw et al., 1997). In our sample, the original scales were not internally consistent and the scales were modified based on low item-total correlations of some items. Four items were deleted to create a scale with a coefficient alpha of .67. The authoritative scale was modified by deleting two items to yield a coefficient alpha of .55.

Results

Preliminary Analyses

In an exploration of the data for outliers, two outliers (greater than three standard deviations from the sample mean) were identified for the parent report of children’s guilt, and one was identified for the parent report of authoritative parenting. All correlations among the main study variables were run with the outliers removed. This resulted in a negligible difference from the correlations with the outliers remaining; therefore, the outliers were retained in all subsequent analyses. The range, means, and standard deviations for all variables included in analyses are provided in Table 1.

Overall, there were few consistent associations between the main study variables and demographic variables. Income level of the parents was not associated with any of the main study variables. Sex of the child was associated with parent-reported empathy ($r = .23, p < .05$), with girls receiving higher empathy scores than boys. Race of the child was negatively correlated with teacher-nominated temperament categories ($r = -.22, p < .05$), indicating that minority children tended to be rated lower on behavioral inhibition. Age of the child was negatively correlated with parent-reported corporal punishment ($r = -.23, p < .05$).

The zero order correlations among temperament, parenting, guilt, and empathy are provided in Table 1. Among parenting variables, use of positive reinforcement was significantly correlated with authoritative parenting ($r = -.24, p < .05$). Corporal punishment was positively correlated with authoritarian parenting ($r = .29, p < .01$) and negatively correlated with authoritative parenting ($r = -.22, p < .05$), all of which are consistent with past research and theory on these parenting constructs (Baumrind, 1971; Heming et al., 1990). It is important to note, and contrary to

predictions, that temperament was only associated with parent-reported guilt ($r = .21, p < .05$). Also, the one parenting correlation to reach significance was the negative correlation between an authoritarian style of parenting and empathy ($r = -.21, p < .05$), although the correlation between corporal punishment and empathy approached significance ($r = -.20$).

Main Study Analyses

Interactions between temperament and parenting, between temperament and sex of the child, and between temperament, parenting, and sex of the child for predicting the conscience measures of guilt and empathy were tested in a series of three-step hierarchical multiple regression analyses. In the first step, the main effects of temperament, parenting, and sex were entered. This was followed in the second step by the addition of the two-way interactions and in the third step by the three-way interactions. Each regression was conducted separately with the five different parenting variables as predictors (positive reinforcement, inconsistent discipline, corporal punishment, authoritarian parenting, and authoritative parenting) and with the two different conscience measures as dependent variables (empathy and guilt reported by parents). Sex and temperament of the child were dummy coded as a 0 or a 1 (boys and girls, behaviorally uninhibited and behaviorally inhibited, respectively), and all parenting variables were centered using the sample mean prior to creating interaction terms and entering them into the regression equations. The increase in the amount of variance explained (R^2) in Step 2 and Step 3 were tested for significance using the procedure recommended by Jaccard, Turrisi, and Wan (1990). As none of the three-way interactions led to a significant increase in

Table 1. *Distribution of and Intercorrelations Among Main Study Variables*

| | M | SD | Range | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|----------------------------|--------|-------|--------|-----|-----|------|-------|-------|------|--------|
| 1. Temperament nominations | | | | .08 | .03 | .04 | -.18 | .05 | .21* | .00 |
| 2. Positive reinforcement | 25.81 | 2.29 | 19–29 | | .16 | -.16 | -.14 | .24* | .08 | .15 |
| 3. Inconsistent discipline | 13.20 | 2.96 | 7–24 | | | -.04 | -.16 | -.17 | -.11 | -.12 |
| 4. Corporal punishment | 4.87 | 1.38 | 3–9 | | | | .29** | -.22* | -.12 | -.20 |
| 5. Authoritarian style | 79.54 | 11.41 | 55–104 | | | | | -.21 | .11 | -.21* |
| 6. Authoritative style | 101.82 | 8.28 | 74–118 | | | | | | .14 | .08 |
| 7. Parent-reported guilt | 88.54 | 12.40 | 52–113 | | | | | | | .47*** |
| 8. Parent-reported empathy | 72.41 | 7.73 | 52–87 | | | | | | | |

Note: Temperament nomination was coded as 0 for behaviorally uninhibited and 1 for behaviorally inhibited; correlations in the body of the table are zero-order correlations.

* $p < .05$; ** $p < .01$; *** $p < .001$.

Table 2. Hierarchical Regression Analyses Predicting Parent Report of Guilt and Empathy

| | Parent Report—Guilt | | | Parent Report—Empathy | | |
|-------------------------------|---------------------|-------|--------------|-----------------------|-------|--------------|
| | β | R^2 | ΔR^2 | β | R^2 | ΔR^2 |
| Positive reinforcement (PR) | | | | | | |
| Temp | .20 | | | -.01 | | |
| PR | .06 | | | .16 | | |
| Sex | .07 | .05 | | .24* | .07 | |
| Temp | .34* | | | .04 | | |
| PR | -.02 | | | .03 | | |
| Sex | .19 | | | .28 | | |
| Temp \times PR | .12 | | | .18 | | |
| Temp \times Sex | -.22 | .08 | .02 | -.09 | .10 | .02 |
| Inconsistent discipline (INC) | | | | | | |
| Temper | .21* | | | .00 | | |
| INC | -.12 | | | -.14 | | |
| Sex | .08 | .06 | | .25* | .07 | |
| Temp | .37** | | | .08 | | |
| INC | -.34** | | | -.34** | | |
| Sex | .24 | | | .33** | | |
| Temp \times INC | .31* | | | .30* | | |
| Temp \times Sex | -.27 | .14* | .07* | -.12 | .13* | .05* |
| Corporal punishment (CP) | | | | | | |
| Temp | .21* | | | .01 | | |
| CP | -.13 | | | -.21* | | |
| Sex | .08 | .07 | | .25* | .09* | |
| Temp | .35* | | | .06 | | |
| CP | | -.15 | | | -.18 | |
| Sex | .20 | | | .29* | | |
| Temp \times CP | .02 | | | -.05 | | |
| Temp \times Sex | -.23 | .08 | .02 | -.09 | .10 | .00 |
| Authoritarian parenting (ANP) | | | | | | |
| Temp | .24* | | | -.04 | | |
| ANP | .15 | | | -.23* | | |
| Sex | .06 | .07 | | .24* | .10* | |
| Temp | .34* | | | .03 | | |
| ANP | .37** | | | -.12 | | |
| Sex | .14 | | | .29* | | |
| Temp \times ANP | | -.32* | | | -.17 | |
| Temp \times Sex | -.18 | .13* | .06 | -.12 | .12* | .02 |
| Authoritative parenting (AVP) | | | | | | |
| Temper | .20 | | | -.01 | | |
| AVP | .14 | | | .10 | | |
| Sex | .08 | .07 | | .24* | .07 | |
| Temp | .39** | | | .08 | | |
| AVP | .25 | | | .32 | | |
| Sex | .28 | | | .24* | | |
| Temp \times AVP | | -.09 | | | -.01 | |
| Temp \times Sex | -.32 | .10 | .03 | -.14 | .07 | .01 |

Note: Temperament (temp) nomination was coded as 0 for behaviorally uninhibited and 1 for behaviorally inhibited; sex was coded as 0 for boys and 1 for girls; all predictors were centered using the sample mean prior to entering them into the regression analyses.

* $p < .05$. ** $p < .01$. *** $p < .001$.

variance (R^2 changes = .00–.02), the results in this step are not reported.

The results of the regression analyses predicting guilt and empathy are reported in Table 2. In these analyses, a main effect for temperament was related to parent-reported guilt in three of the five

analyses. That is, behavioral inhibition was associated with higher scores on the measure of guilt. However, this effect was moderated by two of the parenting variables. In predicting guilt, there was a significant interaction between temperament and inconsistent discipline and a significant

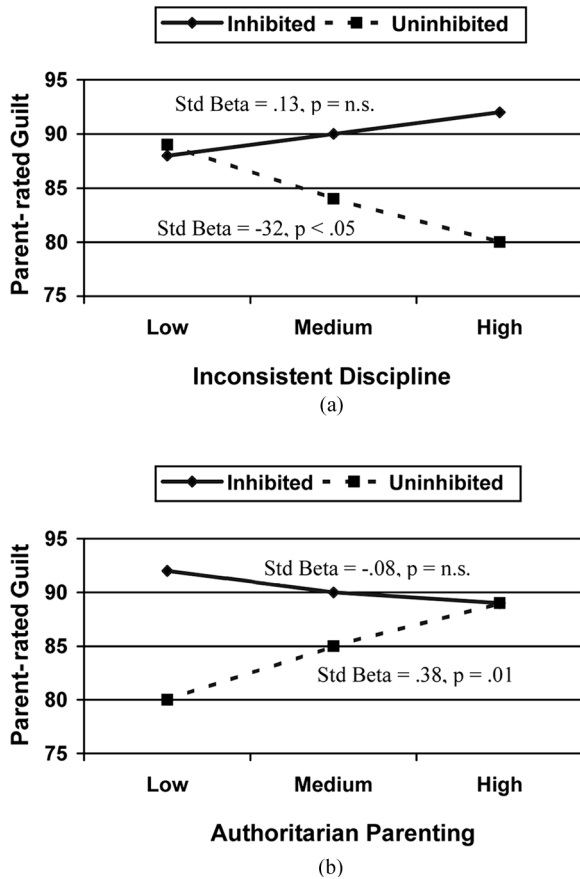


Figure 1. (a) Interaction between temperament and inconsistent discipline in the prediction of parent-reported guilt. (b) Interaction between temperament and authoritarian parenting in the prediction of parent-reported guilt.

interaction between temperament and authoritarian parenting. The forms of these interactions are presented in Figures 1a and 1b and were explored using the procedure recommended by Holmbeck (2002). That is, the regression equation, including both the main effects and interaction terms and using centered unstandardized beta weights, was used to plot predicted values on the measure of guilt at varying levels of the predictors. Also, the slope of the different regression lines were calculated and tested for significance. In both interactions, the level of guilt in behaviorally inhibited children was generally unrelated to scores on the parenting measures. However, for behaviorally uninhibited children, greater levels of inconsistent discipline led to lower parent ratings of guilt ($\beta = -.32, p < .05$), whereas higher levels of authoritarian parenting led to higher parent ratings of guilt ($\beta = .38, p < .01$).

For parent-rated empathy, there was a significant main effect for sex of the child in each of the regression analyses; however, there were no Temperament \times Sex interactions. Thus, girls were

rated by parents as more empathic than boys irrespective of temperament. Corporal punishment ($\beta = -.21, p < .05$) and authoritarian parenting ($\beta = -.23, p < .05$) were both related to lower parent ratings of empathy. For these parenting variables, there was no interaction with either temperament or sex. This suggests that corporal punishment and authoritarian parenting were related to lower empathy for boys and girls and for behaviorally inhibited and behaviorally uninhibited children. However, there was a significant interaction between temperament and inconsistent discipline in the prediction of empathy. This interaction was very similar in form to the one reported for the guilt measure (see Figure 1a). That is, for behaviorally inhibited children, children's level of empathy was not related to their parent's consistency in their discipline ($\beta = .11, p = ns$). However, for behaviorally uninhibited children, greater inconsistency in parental discipline was negatively related to empathy ($\beta = -.33, p < .05$).

Discussion

Research has implicated deficits in conscience development as being important in the development of antisocial and aggressive behavior for some youth, specifically those who show CU traits characterized by a lack of guilt and empathy (Frick & Dickens, 2006; Frick & Marsee, 2006). Further, these youth show a distinct temperamental style characterized by low fearfulness, insensitivity to punishment, and low emotional reactivity that could play a role in their impaired conscience development (Dadds & Salmon, 2003; Frick & Morris, 2004). Therefore, understanding what factors might moderate the impact of this temperamental style on the development of guilt and empathy could be critical for designing better prevention programs for a group of youth at risk for serious behavioral problems (Frick & Dickens, 2006). Unfortunately, most research on the development of conscience has examined either the role of temperament (e.g., Asendorpf & Nunner-Winkler, 1992; Rothbart et al., 1994) or the role of parenting (e.g., Grusec & Goodnow, 1994) but have not considered the potential interaction of these variables in predicting scores on measures of conscience (see Kochanska, 1991, 1993, 1995, for notable exceptions).

The results presented here illustrate the importance of studying both temperament and parenting for understanding the development of guilt and empathy. Overall, neither temperament nor parenting alone showed strong or consistent relationships to measures of guilt and empathy. There was,

however, some indication that a behaviorally inhibited temperament was positively related to guilt, whereas the use of an authoritarian parenting style and the use of corporal punishment were inversely related to empathy. These findings suggest that temperament may be more important in the development of guilt in children, which would be consistent with the emphasis placed on emotional arousal to potential punishment in many models of how children learn to internalize parental norms (e.g., Blair, Colledge, Murray, & Mitchell, 2001; Dadds & Salmon, 2003; Kagan, 1998; Kochanska, 1993, 1995; Zahn-Waxler, Kochanska, Krupnick, & McKnew, 1990). In contrast, parenting practices may be more important for the empathetic concern aspect of conscience (Zahn-Waxler et al., 1992), and this would be consistent with the contention that use of warm, responsive, and low power-assertive parenting may enhance children's ability to be attuned to the emotions of others (Kochanska, 1993, 1995).

However, all conclusions about the role of temperament and parenting need to be made in the context of several interactions that emerged. Specifically, there was an interaction between inconsistent parenting and temperament for predicting both empathy and guilt and between authoritarian parenting and temperament for predicting scores on the measure of guilt. Across these interactions (see Figures 1a and 1b), behaviorally inhibited children tended to demonstrate high levels of guilt and empathy that was unrelated to the type and quality of parenting practices they experienced. This finding suggests that a behaviorally inhibited temperament may serve as a protective factor in children, whereby greater inhibition renders children more impervious to the potentially detrimental effects of less than optimal parenting (Asendorpf & Nunner-Winkler, 1992; Fowles & Kochanska, 2000; Kochanska et al., 1994; Kochanska et al., 2002; Rothbart et al., 1994), although such a temperament may place a child at risk for other types of problems, such as higher levels of anxiety (Kagan et al., 1993). In contrast, parenting appeared to have a much more substantial association with the measures of guilt and empathy for children characterized by a fearless or behaviorally uninhibited temperament. In particular, behaviorally uninhibited children who experienced more consistent discipline were rated as showing high levels of both guilt and empathy, and those that experienced a more authoritarian style of parenting were rated by their parents as possessing higher levels of guilt.

The importance of consistent parenting in the development of prosocial behavior has been well documented in past research (Dadds et al., 2003;

Frick, 1994; Shelton et al., 1996), and the current findings suggest that it may be especially critical for enhancing the conscience development of behaviorally uninhibited children. Further, the findings also suggest some beneficial effects of experiencing an authoritarian approach to parenting, one that emphasizes a rule-oriented approach and a demand for obedience for children with a behaviorally uninhibited temperament. This parenting style has largely been viewed as detrimental to child development (see Baumrind, 1971; Hoffman, 1970a, 1970b, 1982; Eisenberg, 1988). However, past research has not typically considered whether the temperament of the child might moderate its association with child adjustment. In support of these findings, previous research has suggested that children with difficult temperaments were more likely to develop externalizing behavior problems when their mothers were low rather than high in authoritarian control (Bates et al., 1998; Bates & McFadyen-Ketchum, 2000). These results are also consistent with the theoretical proposition that underarousal exhibited by children low in behavioral inhibition may require parents to incorporate methods of socialization that bring arousal levels into an optimal range for the child to internalize the message (Kochanska et al., 1994). And finally, these findings are also consistent with a recent study suggesting that children with conduct problems who also exhibit CU traits are less responsive to typical parenting interventions for conduct problems, and this seems to be at least partially related to these youth being less emotionally aroused to the time-out procedures used as discipline in many of these interventions (Hawes & Dadds, 2005). Thus, for behaviorally uninhibited children to effectively internalize parental norms, an increase in the level of arousal elicited by a strong set of rules may be advantageous.

An essential caveat to this contention is that corporal punishment, often associated with authoritarian parenting and correlated with our measure of this parenting style (see Table 1), was negatively related to the measure of empathy in several analyses. It is important to note that this association with corporal punishment was not moderated by the child's temperament. Thus, it appeared that corporal punishment was negatively related to empathy for all children. This detrimental effect of corporal punishment on the development of prosocial behavior in general (Gershoff, 2002), and with conscience development specifically (Hoffman, 1982), has been documented consistently in past research. Thus, taken together, these findings suggest that children with a behaviorally uninhibited temperament, who are at risk for impairments in the development of

guilt and empathy, may need a consistent and firm approach to parenting but one that also avoids the use of corporal punishment.

The proposed hypothesis regarding the potential importance of both the emotional responsiveness and reward-oriented aspects of a mother-child mutually responsive orientation for children with a behaviorally uninhibited temperament was largely unsupported. That is, contrary to past research, these aspects of parenting were not more strongly related to the development of guilt and empathy in children with a behaviorally uninhibited temperament (Kochanska, 1997; Kochanska & Murray, 2000). As noted previously, past research that supported the use of a mother-child mutually responsive orientation used continuous measures of behavioral inhibition, whereas our study employed an extreme group design. It may be that children with extreme levels of fearlessness require different parenting strategies than those with less extreme levels.

All interpretations of these results need to be made in the context of the correlational design of the study. As suggested by a goodness-of-fit model (Thomas & Chess, 1977) or by Bell's (1968) control systems theory, children lacking in guilt and empathy may evoke an inconsistent or authoritarian style of parenting, leading to the correlations found in our study. For example, a child who seems to be unresponsive to the effects of his or her behavior on others may lead a parent to attempt stronger methods of control. This transactional process could ultimately result in failure on the child's part to develop strategies that regulate their own activity and could later lead to aggressive behavior (Fox & Calkins, 1993). It may also be that children with lower levels of guilt and empathy have parents with similar deficiencies in conscience who may use more inconsistent discipline and do not invest enough in their parenting to set down firm rules and require obedience (Frick & Jackson, 1993). For all of these reasons, firm causal conclusions cannot be made from these correlation data.

Another limitation is that our sample was somewhat modest in size, which may have prevented us from detecting some interactions. Further, the generalizability of the findings is open to question due to the use of a homogenous sample with respect to socioeconomic status and ethnicity. Future studies need to determine if these same interactions would emerge in a more diverse sample of families. Also, our study did not include observational measures of either parenting or temperament. Although assessment of behavioral inhibition has been based primarily on behavioral observations (i.e., Kagan & Snidman, 1991), there is evidence to suggest that

it can also be assessed validly through parent and teacher reports (see Rothbart & Bates, 1998). For example, Bishop, Spence, and McDonald (2003) found that during a simulated stranger interaction task, children who were rated as behaviorally inhibited by mothers and teachers took longer to initiate contact with a stranger, spoke less often and for shorter periods of time, and required more prompting to elicit speech compared with children who were rated low on behavioral inhibition. Also, corporal punishment cannot be ethically observed, and parenting attitudes, which focus on parents' beliefs rather than behaviors, may be best assessed by self-report. However, validating measures of temperament and other parenting constructs (e.g., consistent parenting, parental warmth) with observational data would have strengthened our results. In addition, the internal consistency of some of the parenting measures was rather low, and this could also have limited our ability to find significant associations with parenting.

One further limitation of the study is the uncertainty as to whether or individual differences in measures of guilt and empathy indicate a stable trait or a developmentally transient state. Specifically, the rationale for studying early correlates to guilt and empathy was based on research indicating that a subgroup of children with severe conduct problems shows CU traits that are, in part, defined by deficits in guilt and empathy (Dadds & Salmon, 2003; Frick & Dickens, 2006; Frick & Marsee, 2006; Viding, 2004). However, it is not clear from the study presented here how many of these preschool children with lower scores on measures of guilt and empathy are likely to have extreme scores on measures of CU traits or conduct problems later in childhood and adolescence. CU traits do appear to be quite stable in later childhood and adolescence (Frick, Kimonis, Dandreaux, & Farrell, 2003). However, longitudinal studies starting at an earlier age are clearly needed to determine when these traits become stable.

Within the context of these limitations, our findings strongly support the need for further study of the interaction between temperament and parenting in the development of guilt and empathy, especially longitudinal studies that can test predictive associations. Based on past research, children who seem to lack adequate conscience development may be at risk for serious aggressive and antisocial behavior. Therefore, understanding the processes involved in conscience development could be critical for understanding and preventing serious conduct problems in a group of youth that operates at a high cost to society. Further, these findings support the contention that parenting is

a multifaceted construct (Darling & Steinberg, 1993) and the most critical dimensions of parenting for optimal child adjustment may depend on the child's temperament (Kochanska, 1993, 1995, 1997). Refining our understanding of how parenting and temperament interact to promote child development could have important clinical implications. One of the most effective treatments for conduct problems focuses on improving the parenting that the child experiences (see Frick, 1998; Frick, 2001b, for reviews). However, research on which dimensions of parenting are most important in enhancing conscience development for children with different temperaments could be critical for designing more individualized parenting programs that complement the child's temperamental style to enhance moral development and prevent conduct problems in children at temperamental risk for such problems (see Hawes & Dadds, 2005). Further, because the effectiveness of treatments for behavioral problems such as Conduct Disorder appears to decrease with age (i.e., Frick, 1998, 2001b), interventions focusing on early developmental processes that precede conduct problems are critical to prevent later serious antisocial and aggressive behaviors from emerging.

References

- Asendorpf, J. B. & Nunner-Winkler, G. (1992). Children's moral motive strength and temperamental inhibition reduce their egoistic behavior in real moral conflicts. *Child Development, 63*, 1223-1235.
- Bates, J. E. & McFadyen-Ketchum, S. (2000). Temperament and parent-child relations as interacting factors in children's behavioral adjustment. In V. J. Molfese & D. L. Molfese (Eds.), *Temperament and personality development across the life span* (pp. 141-176). Mahwah, NJ: Lawrence Erlbaum Associates.
- Bates, J. E., Pettit, G. S., Dodge, K. A., & Ridge, B. (1998). Interaction of temperamental resistance to control and restrictive parenting in the development of externalizing behavior. *Developmental Psychology, 34*, 982-995.
- Baumrind, D. (1971). Current patterns of parental authority. *Developmental Psychology Monograph, 4*, 1-103.
- Bell, R. Q. (1968). A reinterpretation of the direction of effects in studies of socialization. *Psychological Review, 75*, 81-95.
- Bishop, G., Spence, S. H., & McDonald, C. (2003). Can parents and teachers provide a reliable and valid report of behavioral inhibition? *Child Development, 74*, 1899-1917.
- Blair, R. J. R. (1999). Responsiveness to distress cues in the child with psychopathic tendencies. *Personality and Individual Differences, 27*, 135-145.
- Blair, R. J. R., Colledge, E., Murray, L., & Mitchell, D. G. V. (2001). A selective impairment in the processing of sad and fearful expressions in children with psychopathic tendencies. *Journal of Abnormal Child Psychology, 29*, 491-498.
- Caputo, A. A., Frick, P. J., & Brodsky, S. L. (1999). Family violence and juvenile sex offending: Potential mediating roles of psychopathic traits and negative attitudes toward women. *Criminal Justice and Behavior, 26*, 338-356.
- Christian, R. E., Frick, P. J., Hill, N. L., Tyler, L., & Frazer, D. R. (1997). Psychopathy and conduct problems in children: II. Implications for subtyping children with conduct problems. *Journal of the American Academy of Child and Adolescent Psychiatry, 36*, 233-241.
- Cicchetti, D. & Rogosch, F. (1996). Equifinality and multifinality in developmental psychopathology. *Development and Psychopathology, 4*, 597-600.
- Dadds, M. R., Maujean, A., & Fraser, J. A. (2003). Parenting and conduct problems in children: Australian data and psychometric properties of the Alabama parenting questionnaire. *Australian Psychologist, 38*, 238-241.
- Dadds, M. R., & Salmon, K. (2003). Punishment insensitivity and parenting: Temperament and learning as interacting risk for antisocial behavior. *Clinical Child and Family Psychology Review, 6*, 69-86.
- Darling, N. & Steinberg, L. (1993). Parenting style as context, an integrative model. *Psychological Bulletin, 113*, 487-496.
- Eisenberg, N. (1988). The development of prosocial and aggressive behavior. In M. H. Bornstein & M. E. Lamb (Eds.), *Developmental psychology: An advanced textbook* (pp. 461-495). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Fisher, L. & Blair, R. J. R. (1998). Cognitive impairment and its relationship to psychopathic tendencies in children with emotional and behavioral difficulties. *Journal of Abnormal Child Psychology, 26*, 511-519.
- Fowles, D. C. & Kochanska, G. (2000). Temperament as a moderator of pathways to conscience in children: The contribution of electrodermal activity. *Psychophysiology, 37*, 788-795.
- Fox, N. & Calkins, S. D. (1993). Pathways to aggression and social withdrawal: Interactions among temperament, attachment, and regulation. In K. H. Rubin & J. Asendorpf (Eds.), *Social withdrawal, inhibition, and shyness in childhood* (pp. 81-100). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Frick, P. J. (1994). Family dysfunction and the disruptive behavior disorders: A review of recent empirical findings. In T. H. Ollendick & R. J. Prinz (Eds.), *Advances in clinical child psychology* (Vol. 16, pp. 203-226). New York: Plenum.
- Frick, P. J. (1998). *Conduct disorders and severe antisocial behavior*. New York: Plenum.
- Frick, P. J. (2001a). [Unpublished rating scale.] New Orleans, Louisiana.
- Frick, P. J. (2001b). Effective interventions for children and adolescents with conduct disorder. *The Canadian Journal of Psychiatry, 46*, 26-37.
- Frick, P. J., Cornell, A. H., Barry, C. T., Bodin, S. D., & Dane, H. A. (2003). Callous-unemotional traits and conduct problem in the prediction of conduct problem severity, aggression, and self report of delinquency. *Journal of Abnormal Psychology, 31*, 457-470.
- Frick, P. J., Cornell, A. H., Bodin, S. D., Dane, H. A., Barry, C. T., & Loney, B. R. (2003). Callous-unemotional traits and developmental pathways to severe conduct problems. *Developmental Psychology, 39*, 246-260.
- Frick, P. J. & Dickens, C. (2006). Current perspectives on conduct disorder. *Current Psychiatry Reports, 8*, 59-72.
- Frick, P. J., Kimonis, E. R., Dandreaux, D. M., & Farrell, J. M. (2003). The four-year stability of psychopathic traits in non-referred youth. *Behavioral Sciences and the Law, 21*, 713-736.
- Frick, P. J. & Jackson, Y. K. (1993). Family functioning and childhood antisocial behavior: Yet another reinterpretation. *Journal of Clinical Child Psychology, 22*, 410-419.

- Frick, P. J., Lilienfeld, S. O., Ellis, M. L., Loney, B. R., & Silverthorn, P. (1999). The association between anxiety and psychopathy dimensions in children. *Journal of Abnormal Child Psychology*, 27, 381–390.
- Frick, P. J. & Marsee, M. A. (2006). Psychopathy and developmental pathways to antisocial behavior in youth. In C. J. Patrick (Ed.), *Handbook of psychopathy* (pp. 355–374). New York: Guilford.
- Frick, P. J. & Morris, A. S. (2004). Temperament and developmental pathways to conduct problems. *Journal of Clinical Child and Adolescent Psychology*, 33, 54–68.
- Frick, P. J., Stickle, T. R., Dandreaux, D. M., Farrell, J. M., & Kimonis, E. R. (2005). Callous-unemotional traits in predicting the severity and stability of conduct problems and delinquency. *Journal of Abnormal Child Psychology*, 33, 471–489.
- Gershoff, E. T. (2002). Corporal punishment by parents and associated child behaviors and experiences: A meta-analytic and theoretical review. *Psychological Bulletin*, 128, 539–579.
- Grusec, J. E. & Goodnow, J. J. (1994). The impact of parental discipline methods on the child's internalization of values: A reconceptualization of current points of view. *Developmental Psychology*, 30, 4–19.
- Hawes, D. J. & Dadds, M. R. (2005). The treatment of conduct problems in children with callous-unemotional traits. *Journal of Consulting and Clinical Psychology*, 73, 737–741.
- Heming, G., Cowan, P. C., & Cowan, C. P. (1990). Ideas about parenting. In J. Touliatos, P. F. Perlmutter, & M. A. Straus (Eds.), *Handbook of family measurement techniques* (pp. 362–363). Thousand Oaks, CA: Sage.
- Hinshaw, S. P., Zupan, B. A., Simmel, C., Nigg, J. T., & Melnick, S. (1997). Peer status in boys with and without Attention-Deficit Hyperactivity Disorder: Prediction from overt and covert antisocial behavior, social isolation, and authoritative parenting beliefs. *Child Development*, 68, 880–896.
- Hoffman, M. L. (1970a). Conscience, personality, and socialization techniques. *Human Development*, 13, 90–126.
- Hoffman, M. L. (1970b). Moral development. In M. M. Haith & J. J. Campos (Eds.) & P. H. Mussen (Series Ed.), *Handbook of child psychology: Vol. 2. Infancy and developmental psychobiology* (pp. 261–354). New York: Wiley.
- Hoffman, M. L. (1982). Development of prosocial motivation: Empathy and guilt. In N. Eisenberg (Ed.), *The development of prosocial behavior*, (pp. 281–313). New York: Academic Press.
- Hoffman, M. L. (1990). Empathy and justice motivation. *Motivation and Emotion*, 14, 151–172.
- Hoffman, M. L. (1994). Discipline and internalization. *Developmental Psychology*, 30, 26–28.
- Holmbeck, G. N. (2002). Post-hoc probing of significant moderational and mediational effects in studies of pediatric populations. *Journal of Pediatric Psychology*, 27, 87–96.
- Jaccard, J., Turrisi, R., & Wan, C. K. (1990). *Interaction effects in multiple regression series: Quantitative applications in the social sciences*. Thousand Oaks, CA: Sage.
- Kagan, J. (1998). Biology and the child. In N. Eisenberg (Ed.), *Handbook of child psychology. Vol. 3. Social, emotional, personality development* (pp. 105–176). New York: Wiley.
- Kagan, J. & Snidman, N. (1991). Temperamental factors in human development. *American Psychologist*, 46, 856–862.
- Kagan, J., Snidman, N., & Arcus, D. (1993). On the temperamental categories of inhibited and uninhibited children. In K. H. Rubin & J. B. Asendorpf (Eds.), *Social withdrawal, inhibition, and shyness in childhood* (pp. 19–28). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Kam, C. M., Greenberg, M. T., & Walls, C. T. (2003). Examining the role of implementation quality in school-based prevention using the PATHS curriculum. *Prevention Science*, 4, 55–63.
- Kimonis, E. R., Frick, P. J., Fazekas, H., & Loney, B. R. (2006). Psychopathy, aggression, and the processing of emotional stimuli in non-referred girls and boys. *Behavioral Sciences and the Law*, 24, 21–37.
- Kochanska, G. (1991). Socialization and temperament in the development of guilt and conscience. *Child Development*, 62, 1379–1392.
- Kochanska, G. (1993). Toward a synthesis of parental socialization and child temperament in early development of conscience. *Child Development*, 64, 325–347.
- Kochanska, G. (1995). Children's temperament, mothers' discipline, and security of attachment: Multiple pathways to emerging internalization. *Child Development*, 66, 597–615.
- Kochanska, G. (1997). Multiple pathways to conscience for children with different temperaments: From toddlerhood to age five. *Developmental Psychology*, 33, 228–240.
- Kochanska, G., DeVet, K., Goldman, M., Murray, K., & Putnam, S.P. (1994). Maternal reports of conscience development and temperament in young children. *Child Development*, 65, 852–868.
- Kochanska, G., Gross, J. N., Lin, M. H., & Nichols, K. E. (2002). Guilt in young children: Development, determinants, and relations with a broader system of standards. *Child Development*, 73, 461–482.
- Kochanska, G. & Murray, K. T. (2000). Mother-child mutually responsive orientation and conscience development: From toddler to early school age. *Child Development*, 71, 417–431.
- Loney, B. R., Frick, P. J., Clements, C. B., Ellis, M. L., & Kerlin, K. (2003). Callous-unemotional traits, impulsivity, and emotional processing in antisocial adolescents. *Journal of Clinical Child and Adolescent Psychology*, 32, 139–152.
- O'Brien, B. S. & Frick, P. J. (1996). Reward dominance: Associations with anxiety, conduct problems, and psychopathy in children. *Journal of Abnormal Child Psychology*, 24, 223–240.
- Oxford, M., Cavell, T. A., & Hughes, J. N. (2003). Callous-unemotional traits moderate the relation between ineffective parenting and child externalizing problems: A partial replication and extension. *Journal of Clinical Child and Adolescent Psychology*, 32, 577–585.
- Pardini, D. A. (2006). The callousness pathway to severe violent delinquency. *Aggressive Behavior*, 32, 590–598.
- Pardini, D. A., Lochman, J. E., & Frick, P. J. (2003). Callous-unemotional traits and social cognitive processes in adjudicated youth: Exploring the schema of youth with psychopathic traits. *Journal of the American Academy of Child and Adolescent Psychiatry*, 42, 364–371.
- Prevatt, F. F. (2003). The contribution of parenting practices in a risk and resiliency model of children's adjustment. *British Journal of Developmental Psychology*, 21, 469–480.
- Rothbart, M. K., Ahadi, S., & Hershey, K. L. (1994). Temperament and social behavior in children. *Merrill-Palmer Quarterly*, 40, 21–39.
- Rothbart, M. K. & Bates, J. E. (1998). Temperament. In N. Eisenberg (Ed.), *Handbook of child psychology. Vol. 3. Social, emotional, personality development* (pp. 105–176). New York: Wiley.
- Russo, M. F., Stikes, G. S., Lahey, B. B., Christ, M. G., McBurnett, K., Loeber, R., et al. (1993). A sensation seeking scale for children: Further refinement and psychometric development. *Journal of Psychopathology and Behavioral Assessment*, 15, 69–86.
- Shelton, K. K., Frick, P. J., & Wootton, J. M. (1996). The assessment of parenting practices in families of elementary

school-aged children. *Journal of Clinical Child Psychology*, 25, 317–329.

Stevens, D., Charman, T., & Blair, R. J. R. (2001). Recognition of emotion in facial expressions and vocal tones in children with psychopathic tendencies. *Journal of Genetic Psychology*, 16, 201–211.

Thomas, A. & Chess, S. (1977). *Temperament and development*. New York: Bruner/Mazel.

Viding, E. (2004). Annotation: Understanding the development of psychopathy. *Journal of Child Psychology and Psychiatry*, 45, 1329–1337.

Wootton, J. M., Frick, P. J., Shelton, K. K., & Silverthorn, P. (1997). Ineffective parenting and childhood conduct problems: The moderating role of callous-unemotional traits. *Journal of Consulting and Clinical Psychology*, 65, 301–308.

Zahn-Waxler, C., Kochanska, G., Krupnick, J. & McKnew, D. (1990). Patterns of guilt in children of depressed and well mothers. *Developmental Psychology*, 26, 51–59.

Zahn-Waxler, C., & Radke-Yarrow, M. (1990). The origins of empathic concern. *Motivation and Emotion*, 14, 107–130.

Zahn-Waxler, C., Radke-Yarrow, M., Wagner, E., & Chapman, M. (1992). Development of concern for others. *Developmental Psychology*, 28, 126–136.

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Appendix

Teacher Nominations of Personality

Please read the following descriptions of two different personalities that children may have. After reading both, please choose the two boys and two girls in your class who seem to best match each description. It is *not* necessary that they show every characteristic. Please write the names of the nominated children in the spaces provided. Do not reveal to the project coordinator these names or the category that you have assigned them to; this is important for the way that the study is to be conducted.

A. Personality BUI

This child:

- likes to climb on high things like tops of swing sets or high into trees; likes to ride higher on swings than most children or likes to jump out of a swing while it is high off of the ground
- likes to volunteer to speak in front of the class, even if he/she is unsure of the right answer
- likes performing in front of people
- likes to try things considered dangerous, where he/she may get hurt; never seems scared of anything
- likes to see people dressed up in costumes, like clowns or animals
- likes to try new toys
- enjoys being a part of a large group of children to play games
- likes to play with new children
- likes new/substitute teachers
- easily approaches strange adults
- likes to touch bugs and snakes
- enjoys fireworks or other things that cause loud noise

The children in my class most like this are:

Boys: 1. _____ Girls: 1. _____
 2. _____ 2. _____

B. Personality BI

This child:

- likes to climb on things that are safe and low to the ground; likes to ride on swings at a safe height and waits until a swing slows down or stops before getting off
- does not like to volunteer to speak in front of the class, even if he/she knows the right answer
- does not like to be the center of attention
- likes to do things that are safe; seems scared of a lot of things
- is scared of people dressed up in costumes, like clowns or animals

- does not like to try new toys
- likes to play alone, or in small groups of children who he/she knows well
- gets upset when left with new/substitute teachers
- is shy around strange adults
- does not like to touch bugs and snakes
- is scared of fireworks or other things that cause loud noise

The children in my class most like this are:

Boys: 1. _____
2. _____

Girls: 1. _____
2. _____