Stress and Anger as Contextual Factors and Preexisting Cognitive Schemas: Predicting Parental Child Maltreatment Risk

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Abstract:
Progress in the child maltreatment field depends on refinements in leading models. This study examines aspects of social information processing theory (Milner, 2000) in predicting physical maltreatment risk in a community sample. Consistent with this theory, selected preexisting schema (external locus-of-control orientation, inappropriate developmental expectations, low empathic perspective-taking ability, and low perceived attachment relationship to child) were expected to predict child abuse risk beyond contextual factors (parenting stress and anger expression). Based on 115 parents' self-report, results from this study support cognitive factors that predict abuse risk (with locus of control, perceived attachment, or empathy predicting different abuse risk measures, but not developmental expectations), although the broad contextual factors involving negative affectivity and stress were consistent predictors across abuse risk markers. Findings are discussed with regard to implications for future model evaluations, with indications the model may apply to other forms of maltreatment, such as psychological maltreatment or neglect.
Keywords: aggressive behavior; child abuse potential; child maltreatment; dysfunctional parenting style; social information processing theory

Article:

Child maltreatment is widely acknowledged to be multiply determined by a broad range of factors (e.g., Black, Heyman, & Slep, 2001; Milner & Dopke, 1997). The complexity of models proposed to understand physical child abuse continues to evolve, with more sophisticated conceptualizations essential to advance the field (Azar, Povilaitis, Lauretti, & Pouquette, 1998). One promising framework derives from human information processing theory, wherein parental cognitive processes are theorized to mediate aggression toward children (Milner, 1993, 2000).

Consistent with cognitive-behavioral models of physical child abuse (e.g., Twentyman, Rohrbeck, & Amish, 1984), the social information processing (SIP) theory proposes cognitive processes within parents potentiate their risk to abuse (Milner, 2000). Cognitive-behavioral models generally postulate that parental cognitions mediate their emotions and actions toward their children (Azar, 1997, 1998; Milner, 2000). Indeed, abusive and at-risk parents report maladaptive schemas about their children, negative cognitions pertaining to parent–child interactions, and negative attributions about their children's behavior (Azar, 1997, 1998). Uncovering the nature of such cognitive processes can inform interventions designed to modify at-risk parents' cognitions (Runyon, Deblinger, Ryan, & Thakkar-Kolar, 2004).

SIP theory consolidates research findings on an array of cognitive markers previously identified as predictive of physically abusive parenting, structuring these factors into a series of stages (Milner, 1993, 2000). According to SIP theory, parents maintain a collection of parenting-related preexisting cognitive schemas (e.g., beliefs about discipline, about their child, about the nature of their parenting and parent–child interactions) that theoretically precede cognitions prompted by processing social information arising from new parent–child interactions. Such preexisting schemas then influence cognitive processing at the subsequent stages, when a parent must engage in cognitions as a consequence of considering a course of action when faced with a discipline decision. The first stage of processing involves the parent's perceptions of a new event, wherein

inaccurate perceptions of a parent–child situation are associated with abuse risk. In Stage 2, parents' expectations, interpretations, and evaluations of the child in the situation affect their likelihood to abuse. In the third stage of processing, parents must integrate all available information from the situation and consider their alternative response options. Finally, in the fourth stage, parents must implement their selected discipline response and monitor their own behavior, wherein abusive parents experience difficulty monitoring the escalating severity of their physical discipline.

A number of significant points to consider regarding the SIP model are worth noting here. Although the extant literature provides evidence for elements of the model, the research cannot definitively disentangle which part of the model the findings may support (Milner, 2000). This issue partly reflects the reality that most research was not conducted with the clear intent of empirically evaluating components of the SIP model. As an example of this lack of distinction, parents may hold general developmental expectations regarding children that could be construed as a preexisting schema; alternatively, such expectations may reflect Stage 2 processing, which can lead to a parent's inappropriate expectations of a child when faced with a new situation. Indeed, developmental expectations may reflect both, in that general expectations regarding children's abilities may influence a parent's expectations and evaluations in any given situation. Thus, distinctions of how prior research provides evidence for different elements of the SIP processes can be challenging, if not impossible.

Furthermore, Milner (2000) underscored the need to evaluate the connection of contextual factors to the cognitive components of the model. Cognitive processes in the theorized SIP model revolve around schema pertaining to parenting, although such cognitions occur within the broader context of other factors in the parent's life. Factors external to the parent–child relation (personal qualities such as parents' negative affectivity, hostility, and stress) can operate outside the cognitive sphere of processing parenting schema, characterizing parents in contexts outside the parent–child domain. Yet the cognitive components are typically considered independently from contextual factors. Theoretically, such contextual factors may influence preexisting schemas and processes in the stages. On the other hand, some of these contextual factors are potentially more critical in increasing risk relative to cognitive processes, as has been implicated in findings that cognitive differences were not evident between high- and low-abuse risk parents upon controlling for depression and anxiety (Nayak & Milner, 1998).

In addition, the SIP model needs continued investigation with nonabusive and at-risk parents to evaluate whether the proposed cognitive processes are evident prior to abuse (Milner, 2000). Research relying exclusively on documented abuse samples is confounded for a number of reasons. First, the substantiation process typically yields high false-negative rates (see DeGarmo, Reid, & Knutson, 2006, for discussion). Estimates of severe physical assault suggest that the true prevalence of abuse is possibly 5 to 11 times higher than reported cases (Straus, Hamby, Finkelhor, Moore, & Runyan, 1998). Second, parents identified through substantiation represent a selective, and potentially atypical, fraction of parents engaging in abuse. Finally, identification of parents as abusive itself may alter those parents' cognitions (Milner, 2000).

Physical abuse also often occurs when parents inadvertently intensify their administration of physical discipline (Herrenkohl, Herrenkohl, & Egolf, 1983; Whipple & Richey, 1997), and abusive parents typically administer excessive, harsh discipline (Veltkamp & Miller, 1994) . Consequently, many researchers strongly advocate that all forms of parent–child aggression be conceptualized on a physical discipline–child abuse continuum (e.g., Graziano, 1994; Greenwald, Bank, Reid, & Knutson, 1997; Whipple & Richey, 1997). Beliefs and behaviors predictive of a parent's risk to physically maltreat a child have been collectively termed *child abuse potential* (Milner, 1994), parental characteristics that estimate the likelihood a parent will approach or cross into the abusive end of such a continuum. Child abuse potential is further associated with a dysfunctional disciplinary parenting style (Haskett, Scott, & Fann, 1995) as well as with greater support for the use of corporal punishment (Crouch & Behl, 2001). Consequently, the current study investigated maltreatment risk broadly, including reported parent–child aggression (including corporal punishment), child abuse potential, and overreactive discipline style. Overreactive discipline style may reflect the lower end of the continuum, with abuse potential and actual parent–child aggression as suggestive of maltreatment risk at the higher end.

The ability of preexisting schema to predict maltreatment risk beyond important contextual factors was studied in a community sample of parents. Contextual factors, such as parent stress and anger, have been implicated in abuse risk and are incorporated in the current study. Developmental expectations, locus of control orientation, empathy, and perceived attachment to the child were considered as preexisting schemas.

Contextual Factors

One contextual factor that has gained considerable attention in abuse risk is the level of stress parents experience (e.g., Barton & Baglio, 1993; Chan, 1994; Rodriguez & Green, 1997). Stress has been specifically implicated as a contextual factor that can influence the SIP model (Milner, 1993, 2000), and the literature indeed documents a strong connection to physical child abuse risk. Construed as a broad construct that encompasses several sources of stress (e.g., marital conflict, depression), some measures (e.g., the Parenting Stress Index; Abidin, 1990) tap a range of stressors that circumvent concerns regarding unrealistically considering individual stressors in isolation. Parenting stress can discriminate between groups of abusive and nonabusive parents (Chan, 1994), and parents experiencing greater stress display more controlling, abusive, and punitive parenting behaviors (Webster-Stratton, 1988). Consequently, inclusion of a broad measure of stress as a contextual factor in the current study was considered critical.

Furthermore, parental anger and hostility have been proposed as markers of negative affect that can influence components of the SIP model (Milner, 1993, 2000). An inability to manage anger has been implicated in abuse risk (Acton & During, 1992). Problems with anger control are recognized as commonplace among physically abusive parents (Ammerman, 1990), and anger expression is a powerful predictor of child abuse potential (Rodriguez & Green, 1997) . The extent of physical punishment a parent delivers is also associated with the degree to which a parent felt angered by the child (Ateah & Durrant, 2005). Thus, anger expression is an important variable to include in predicting child maltreatment.

Preexisting Cognitive Schema

Parents may enter the parenting role with a locus of control orientation, which has been considered a preexisting schema, although also considered an attributional style that may reflect Stage 2 processing (Milner, 2000) . A parent who believes a child to be in control in parent–child situations may evaluate the child's behavior as willful, indicative of an external locus of control (Wiener, 1985), consequently becoming angry with the child. Abusive parents are more likely to adopt an external control orientation in negative caregiving outcomes (Bugental, Blue, & Cruzcosa, 1989; Wiehe, 1986). Similar external locus of control orientations have been associated with elevated child abuse potential in high- and low-risk parents (Stringer & La Greca, 1985) and nonparents (Milner, 2000). Thus, this particular locus-of-control orientation may predispose parents to abusive behavior.

Parents' understanding of developmentally appropriate norms is also considered a preexisting schema, or alternatively Stage 2 processing (see discussion above). Parents who have unrealistic expectations about their children's abilities are more likely to be abusive. Some models postulate that such parents have excessively high expectations (Azar & Twentyman, 1986; Twentyman et al., 1984), although abusive parents can maintain high or low child-developmental expectations, which are both inappropriate (Milner, 2000). Some recent research has failed to confirm differences between abusive and comparison parents on general inappropriate expectations of children (Haskett, Scott, Willoughby, Ahern, & Nears, 2006). Thus, research examining potential differences in high and low expectations seems warranted.

Preexisting positive-affect states are also considered important for effective parenting, including parental empathy (Milner, 2000). In particular, empathic perspective taking involves the ability to adopt another's perspective (Davis, 1983a, 1983b) . Such empathic ability can exist within a parent long before a parent may draw on such abilities when encountering a particular new discipline situation with a child (Milner, 2000), although empathy may also affect a parent's ability to integrate information that may mitigate a child's perceived responsibility in a transgression further on in Stage 3. The literature suggests that an abusive parent encounters difficulties placing himself or herself in the child's position. Low empathy typically increases

aggressive behavior (Milner & Dopke, 1997; Richardson, Hammock, Smith, Gardner, & Signo, 1994), in which the experience of empathy facilitates providing comfort to children and inhibiting parental aggression (Letourneau, 1981). The ability to assume a child's perspective may reduce misinterpretations of child behavior (Miller & Eisenberg, 1988), with reported differences in empathy detected between abusive and nonabusive mothers (Wiehe, 1986). Some research has not confirmed such empathy differences (e.g., Milner, Halsey, & Fultz, 1995; Rosenstein, 1995), suggesting that empathic perspective taking needs further investigation.

Another preexisting positive affect state that may reflect a child-specific schema involves parental positive attachment to the child. Abusive parents are believed to have negative beliefs regarding characteristics of their children (Milner, 2000). A parent's perceived affective attachment to a child may be preexisting or potentially a Stage 1 perception. Problematic maternal attachment has been associated with increased risk of physical child abuse (Moncher, 1996) . Negative maternal patterns of attachment during pregnancy are also associated with greater risk of harm to a child (Pollok & Percy, 1999). Parents may hold cognitive perceptions regarding their own abusive parents, which affects the attachment process of their children, contributing to abuse risk and potentially perpetuating a cycle of abuse (Main, 1984). Thus, parents' low perceived attachment to their child may be a further preexisting schema associated with abuse risk.

Purpose of Study
The current study examined whether selected preexisting cognitive schema uniquely predict parents' risk of maltreatment beyond important contextual factors in a sample of parents recruited from the community. The contextual variables of interest involved increased parental stress, utilizing a measure that integrates depressed affect, as well as the additional negative affective component of anger. Preexisting cognitive schema were studied, including high and low developmental expectations, external locus-of-control orientation for negative caregiving situations, low empathic perspective-taking ability, and low perceived parental affective attachment to the child. Physical maltreatment risk in this community sample was assessed employing three different measures reflecting points along the discipline–abuse continuum: child abuse potential, reported physically aggressive acts, and overreactive dysfunctional disciplinary style. Research has not yet adequately resolved whether the cognitive factors predict abuse risk beyond contextual factors, with some research suggesting cognitive factors are more powerful predictors of abuse risk than affective factors (Haskett, Scott, Grant, Ward, & Robinson, 2003), whereas some suggest no significant improvement in prediction after contextual factors are controlled (Nayak & Milner, 1998) . In the current study, the preexisting cognitive schemas were anticipated to predict additional variance beyond that accounted for by the contextual variables.

METHOD
Participants
A community sample of 115 parents ($n = 86$ mothers, $n = 29$ fathers) of children ages 4 to 12 ($M = 7.44$ years) were recruited from a preschool and elementary school in a moderately sized city in the Mountain West. The mean age of parents was 37.62 years ($SD = 7.91$ years). The majority of parents (85.2%) reported that they were living with a partner, raising an average of three children. Ninety-two percent of the participants identified themselves as White, 6.1% of Hispanic origin, approximately 1% of Native American origin, and approximately 1% selected Other. The mean annual family income was US$50,067, with a median of $45,000 that likely better reflects the sample due to some outliers. Nearly all participants reported graduating from high school, with 28.7% indicating a college degree, 11.3% reporting graduate school, and 46.1% reporting they attended vocational school or some college.

Measures of Dependent Variables
The Child Abuse Potential Inventory (CAPI; Milner, 1986) presents 160 forced-choice statements on which the parent must either agree or disagree. The CAPI was designed to screen for physical child abuse risk, assessing rigidity and intrapersonal and interpersonal factors characteristic of identified physically abusive individuals. Only 77 items contribute to the Abuse Scale and its underlying six factors, with the remaining statements serving as distracters and/or fillers or as measures of distortion biases. Higher scores on the Abuse Scale are considered reflective of greater abuse potential. High internal consistency is reported for the Abuse Scale

(Milner, 1986), with split-half reliability ranging from .96 (for control groups) to .98 (for abuse samples), and Kuder-Richardson reliability coefficients ranging from .92 (for control samples) to .95 (for abuse groups). Stability estimates suggest reasonable consistency after one week (.90) and one month (.83; Milner, 1986). With regard to predictive validity, studies suggest a correct classification of 89.2% of confirmed child abusers and 99% of controls (Milner, 1994).

The Parent–Child Conflict Tactics Scale (CTS-PC; Straus et al., 1998) is a revision of the widely used epidemiological survey of family violence, the Conflict Tactics Scale (Straus, 1979). Using 22 behaviorally specific items, a parent estimates the frequency with which he or she has implemented a behavior during parent–child conflicts in the past year. Scores are generated based on the frequency range selected by the parent (e.g., ranging from 0 for *never* to 25 for selections in the *20+ range*; see Straus et al., 1998). Of the 22 items, 13 directly address varying degrees of physical aggression toward children, constituting the Physical Assault subscale (with subcategories of minor assault/corporal punishment, severe assault/physical maltreatment, and very severe assault/severe physical maltreatment). Given the subcategories, behaviors included in the Physical Assault subscale range from spanking, slapping, or pinching to beating or burning. In addition, four items contribute to a Non-Violent Discipline subscale (including such actions as removal of privileges and "time-out"). Five items make up the Psychological Aggression subscale (involving such behaviors as verbal threats and yelling). A supplemental scale of five items for neglect (e.g., items assessing supervisory care neglect and failure to provide necessities) was also administered, classified as supplemental because the behaviors are not conflict tactics. Straus and colleagues (1998) reported moderate internal consistency at .55 for the Physical Assault subscale, which likely reflects the diverse behaviors tapped by the measure as well as the very low reported frequency of many of the items (Straus et al., 1998). The authors provided supportive evidence of construct and discriminant validity (Straus et al., 1998). Although the primary scale of interest for the current investigation involves the Physical Assault subscale, given its emphasis on physical aggression, some interesting findings regarding psychological aggression and neglect are briefly presented as well.

The Parenting Scale (Arnold, O'Leary, Wolff, & Acker, 1993) was administered to identify parents' dysfunctional disciplinary style. Thirty items describe typical parent–child conflict situations. Parents indicate their customary responses to these situations utilizing a 7-point scale, with two opposing hypothetical parent reactions at endpoints of each scale. The Parenting Scale provides a Total score representing overall dysfunctional disciplinary style. Based on the original factor analysis (Arnold et al., 1993), overall dysfunctional disciplinary style includes three separate response styles: Overreactivity (10 items representing a harsh, angry discipline style), Laxness (reflecting a permissive approach to parenting), and Verbosity (in which parents rely on verbal persuasion even when ineffective). However, based on a subsequent sample with 785 parents (Collett, Gimpel, Greenson, & Gunderson, 2001), factor analysis did not support a separate verbosity factor. For the current study, the Overreactivity subscale was conceptually the most appropriate component of interest, although Total disciplinary style scores are briefly considered. Scores are calculated by averaging across items for the respective scales, with higher scores indicative of a parent's more frequent use of dysfunctional approaches. Internal consistency reported for the Total score is moderately high at .84, with Overreactivity at .82 (Arnold et al., 1993), comparable to coefficients reported in the more recent normative study (Collett et al., 2001). Over a 2-week period, test–retest reliability was relatively high for the Total and Overreactivity scores, at .84 and .82, respectively (Arnold et al., 1993) . In addition, scores were significantly related to clinical observations of parent–child situations (Arnold et al., 1993).

Measures of Contextual Variables
The State-Trait Anger Expression Inventory (STAXI; Spielberger, 1988) is a frequently used measure of anger, presenting 44 items on a 4-point Likert-type scale. Because the subscale labeled Anger Expression most closely assesses the behavioral expression of anger, scores from this component of the STAXI were of primary interest in the current study. The Anger Expression score includes 20 items, combining Anger-In, the degree to which anger is suppressed, plus Anger-Out, the degree to which anger is manifest outwardly, with an adjustment for the ability to control that anger, Anger-Control (Spielberger, Krasner, & Solomon, 1988). Raw scores on the Anger Expression subscale are converted to *T*-scores that adjust for anticipated gender and age differences

(Spielberger, 1988), with high scores indicative of a greater tendency to display anger. The Anger Expression subscale has a relatively low internal consistency (.58), compared to the three constituent subscales that have coefficient alphas ranging from .75 to .82 (Fuqua et al., 1991), which may reflect that the Anger Expression score derives from three distinct components. The test–retest reliability of the STAXI scales over 8- and 10-week intervals reportedly ranges from .58 to .75 (Spielberger, 1988).

The Parenting Stress Index (PSI; Abidin, 1990) is a widely used measure of general parenting stress, including 101 items judged on a 5-point Likert-type scale. The PSI is based on the assumption that parenting stressors can arise from either the parent or child domain, generating stress in a cumulative manner. The PSI thus provides scores for a Parent Domain and Child Domain score, with the Parent Domain including scales regarding depressed affect and social isolation, which include additional negative affect that may be relevant for the current study. The Total score was targeted for the current study as the most global measure of potential stressors. Normative data for the PSI is based on a sample of 2,633 parents of children ranging in age from 1 month to 12 years, with high scores indicative of greater stress. The PSI Total score reportedly has high levels of internal consistency at .95, with reasonable stability ranging from .55 and .96, and convergent validity with a number of measures (Abidin, 1990).

Measures of Preexisting Schema
The Interpersonal Reactivity Index (IRI; Davis, 1983a, 1983b) is a 28-item measure of empathy. The Perspective-Taking Scale (the capacity to assume the psychological perspective of others) was the focal scale for the current study. Parents were asked to indicate the extent to which seven items are characteristic of their behavior on a 5-point Likert-type scale. Higher scores on this scale are suggestive of greater empathic perspective-taking ability. The author reported moderately high internal consistency (.71 to .77) and test–retest reliability (Davis, 1983a).

The Parent Attribution Test (PAT; Bugental, 1998) was designed to assess perceived causes of success and failure in adult–child interactions. Participants are presented two hypothetical caregiving situations, one in which an interaction is depicted as successful and one in which the interaction is construed as a failure. Parents are asked to indicate on a 7-point scale to what they ascribe the proposed success or failure of the child interaction. Given the emphasis in prior research on unsuccessful negative interactions (Bugental et al., 1989), the current study focused on the section regarding perceived Adult Control Failure and Child Control Failure (with six items on each sub-scale). High scores on the Adult Control Failure are indicative of a more internalizing (parent in control) locus-of-control orientation whereas high scores on the Child Control Failure are indicative of an externalizing (child in control) orientation. A summary score can be computed for Perceived Control Failure, which subtracts the Child Control Failure from the Adult Control Failure scores (Martorell & Bugental, 2006). This combined score was utilized in the current analysis, with lower scores on Perceived Control Failure indicative of an externalizing locus of control orientation. Test–retest reliability estimates for the PAT suggest adequate stability, ranging from .61 to .63 (Bugental, 1998).

The Child Development Questionnaire (CDQ; Mash, 1980) presents 40 developmental abilities on which the parent is required to indicate the expected age category when a behavior can be accomplished. Nine possible age categories are provided for items, which include children's motor, communication, self-help, and miscellaneous skills. Respondents receive scores regarding their accuracy gauging appropriate developmental norms across these skills; responses are tallied for the number of instances where parents are above or below the norms. The number of items across categories above the age norms (Exceeds Norms) and below the age norms (Below Norms) can be generated (Azar, Robinson, Hekimian, & Twentyman, 1984).

The Parental Attachment Level (PAL; Rodriguez, Dandreaux, & Vaidyanathan, 2007) was designed to briefly measure a parent's affective attachment to a child. The PAL includes 11 items rated on a 5-point Likert-type scale that contribute to a Total score, which includes two factors: Child Enjoyment and Acceptability of Parent Demands. Parents are instructed to report their perceived attachment to an identified child. A sample item on the PAL includes, "The good times with my child make the hard times worthwhile." High scores on the PAL

Total score are indicative of a parent feeling more positively toward the child. Internal consistency of the PAL Total score is acceptable at .82, with stability for a one-month interval at .80, and evidence of convergent validity with measures of parent–child satisfaction and with an attachment subscale in a widely used parenting stress measure (Rodriguez et al., 2007).

Procedures

Parents were recruited from their child's school from consent forms sent home about a study on parenting and discipline. Interested parents returned the consent forms with contact information, with about one third of distributed forms returned for follow-up scheduling. A session was scheduled in their home for them to complete the study. All instructions and items were delivered to participants in a computerized format using a laptop computer. Consequently, participants entered their responses to the study anonymously to minimize social desirability responding. Their individual responses do not appear on the computer screen as they are entered to further facilitate their privacy. Parents were instructed to consider the child they are most concerned about for all questions. Parents received $10 as compensation.

RESULTS

Descriptive Analyses

All statistical analyses were conducted using SPSS for Windows (Version 14.0) . Mean scores and standard deviations for each measure appear in Table 1. Some normative information is available for several of the measures. Higher CAPI Abuse Scale scores are predictive of greater abuse potential, and the obtained mean CAPI score for the current sample, which has been administered extensively to nonclinical samples, is comparable to the published normative mean of 91.0 (Milner, 1986), with 14.5% obtaining scores above the clinical cut-off. Although no clinical cut-off scores are available on the Parenting Scale measure of dysfunctional disciplinary style, obtained mean scores are comparable to those previously reported in the literature for community samples (e.g., Collett et al., 2001). The obtained mean PSI Total scores for stress were in the 55th percentile (Abidin, 1990), and the mean STAXI T-scores for anger expression were also within normal limits.

Demographic Comparisons

Preliminary correlational analyses indicated that the age of the parent, the number of children in the family, and parent's number of years of education were largely unrelated to either the predictors or dependent variables. One notable exception was that the age of the parent was significantly negatively correlated with the CTS Psychological Aggression scores ($r = -.25$, $p < .01$), such that younger parents reported using more psychological aggression tactics in parent–child conflict situations. Because annual family income was not normally distributed (skewed and leptokurtic), Spearman correlations were performed, demonstrating no significant associations between income and any of the predictors or dependent variables. T-test comparisons for sex differences indicated no substantive differences between groups with the exception that fathers were significantly more likely to exceed developmental norms on the CDQ ($t = 3.52$, $p < .01$). T-tests identified no differences between parents who reported living with a partner versus those who did not (all $p > .05$).

Correlational Analyses Among Measures

Given the number of correlational analyses, the significance levels were reduced to an alpha of .01. Initial examination of correlations among the predictors and dependent measures reveals several interesting associations (see Table 1). Summarizing some of these patterns, parent's knowledge of developmental norms was largely unrelated to the dependent variables or other predictors. The proposed contextual variables of parenting stress and anger expression were associated with a considerable number of predictors and dependent variables, and external locus of control orientation and empathic perspective-taking ability also demonstrated associations with several predictors and dependent variables. Specifically with respect to the dependent variables, CAPI Abuse Scale scores for abuse potential were significantly associated with stress, anger, empathy, locus-of-control orientation, and attachment measures.

TABLE 1: Means, Standard Deviations, and Correlations Among Measures

	M (SD)	1	2	3	4	5	6	7	8	9	10	11	12	13
1. IRI Perspective Taking	18.58 (4.21)													
2. PAL Attachment	47.30 (4.52)	.29*												
3. CDQ Exceed Norms	9.01 (4.22)	.15	-.11											
4. CDQ Below Norms	20.39 (3.83)	-.12	-.01	-.78**										
5. PAT Perceived Control Over Failure	.33 (.84)	-.31**	-.30**	.04	.00									
6. PSI Total Score	224.23 (46.01)	-.28*	-.57**	.08	-.01	-.39**								
7. STAXI Anger Expression	51.82 (11.56)	-.54**	-.30**	-.01	-.02	-.49**	.39**							
8. CAPI Abuse Scale[b]	94.74 (83.38)	-.25*	-.30**	.07	.00	-.50**	.70**	.49**						
9. Parenting Scale Total Score[b]	2.98 (.57)	-.43**	-.42**	.05	.01	-.24a	.59**	.38**	.38**					
10. Parenting Scale Overreactivity[b]	2.86 (.89)	-.41**	-.37**	-.07	.02	-.41*	.57**	.53**	.51**	.77**				
11. CTS-PC Physical Assault[b]	7.48 (11.23)	-.20a	-.13	-.11	.06	-.23*	.24*	.27*	.32**	.26*	.43**			
12. CTS-PC Psychological	18.56 (16.96)	-.28*	-.17	-.22a	.15	-.23*	.34**	.40**	.33**	.45**	.58***	.58**		
13. CTS-PC Non-Violent Discipline	4.63 (2.33)	-.09	-.15	-.06	-.05	-.05	.19a	.02	.08	.09	.10	.34**	.21a	
14. CTS-PC Neglect	3.17 (5.68)	-.16	-.35**	.01	.04	-.10	.30**	.19a	.21a	.22a	.14	-.06	.17	.11

NOTE: IRI = Interpersonal Reactivity Index; PAL = Parental Attachment Level; CDQ = Child Development Questionnaire; PAT = Parent Attribution Test; PSI = Parenting Stress Index; STAXI = State-Trait Anger Expression Inventory; CAPI = Child Abuse Potential Inventory; CTS-PC = Parent-Child Conflict Tactics Scale.
a. Because the significance level was reduced to $p \leq .01$, this association is marginal at $p \leq .05$.
b. Data in these areas represent three primary dependent measures: Child Abuse Potential Inventory; Parenting Scale; Parent-Child Conflict Tactics Scale (Physical Assault subscale)
*$p \leq .01$; **$p \leq .001$

Similarly, with regard to the dysfunctional parenting practices measure, the Parenting Scale Overreactivity Scale scores also demonstrated significant associations with stress, anger, empathy, locus-of-control orientation, and attachment measures, comparable to those for the Parenting Scale Total scores. Associations for the CTS-PC Physical Assault subscale were more modest, potentially reflecting the relatively low base rate of many of the parent–child aggression behaviors and parents' probable reluctance to admit to engaging in such actions. It is interesting to note that although the CTS-PC Psychological Aggression subscale was not the primary focus of the current study, the subscale demonstrated moderate to strong effects with several of the predictors; in addition, the CTS-PC Psychological Aggression subscale scores were significantly associated with abuse potential on the CAPI Abuse Scale and with overreactive discipline on the Parenting Scale. Finally, the CTS-PC Neglect scale, although based on only five items, demonstrated a significant association with parental attachment and parenting stress.

Multiple Regression Analyses

Three primary multiple regression analyses were performed to independently predict Child Abuse Potential Inventory, Parenting Scale Overreactivity, and CTS-PC Physical Assault scores. (Additional final regression results are noted as comparison or for interest). Hierarchical multiple regression techniques were applied to the data to assess the ability of the preexisting schema to predict the dependent variables beyond variance accounted for by the contextual factors. Contextual factors (PSI Total and STAXI T-scores) were entered in the first block, followed by the preexisting schema in the second block (IRI Perspective-Taking, PAL Attachment, CDQ Exceed and Below Norms, and PAT Perceived Control Over Failure). The final regression results for the three dependent variables are summarized in Table 2.

TABLE 2: Final Hierarchical Multiple Regression Predicting Child Abuse Potential Abuse Scale, Parenting Scale Overreactivity, and CTS-PC Physical Assault Scores[a]

	b	β	t	sr^2
CAPI Abuse Scale Results				
Block 1				.54
STAXI Anger Expression *T*-scores	1.35	.19	2.62**	
PSI Total	1.20	.66	8.51***	
Block 2				.06
PAT Perceived Control Over Failure	−21.33	.20	2.76**	
PAL Attachment	3.79	−.21	−3.01**	
Intercept = −416.13				
			$R = .77, F(4, 110) = 41.43***$	
			$R^2 = .60$ (Adjusted $R^2 = .59$)	
Parenting Scale Overreactivity Results				
Block 1				.41
STAXI Anger Expression *T*-scores	.01	.29	3.74**	
PSI Total	.009	.51	6.80***	
Block 2				.03
IRI Perspective Taking	−.04	−.18	−2.27*	
Intercept = .82				
			$R = .66, F(3, 111) = 28.91***$	
			$R^2 = .43$ (Adjusted $R^2 = .42$)	
CTS-PC Physical Assault Results				
STAXI Anger Expression *T*-scores	.10	.18	1.98*	
PSI Total	.05	.24	2.65***	
Intercept = −10.04				
			$R = .29, F(2, 112) = 5.11**$	
			$R^2 = .08$ (Adjusted $R^2 = .07$)	

NOTE: CAPI = Child Abuse Potential Inventory; STAXI = State-Trait Anger Expression Inventory; PSI = Parenting Stress Index; PAT = Parent Attribution Test; PAL = Parental Attachment Level; IRI = Interpersonal Reactivity Index; CTS-PC = Parent–Child Conflict Tactics Scale.
a. Unstandardized regression coefficients (b) and intercept, standardized regression coefficients (*beta* weights), semipartial correlation coefficients or incremental r^2 (sr^2), multiple correlation coefficient (R), squared multiple correlation coefficient (R^2), and adjusted squared multiple correlation (adjusted R^2).
*$p \le .05$. **$p \le .01$. ***$p \le .001$.

Initially predicting CAPI Abuse Scale scores, with variables entered at each step as described above, $R^2 = .61$, $F(7, 107) = 23.75$, $p \leq .001$. However, examination of those variables contributing significant unique variance in abuse potential ultimately retained the contextual variables in the first step and the external locus-of-control orientation and attachment scores in the second step (developmental expectations and perspective taking did not contribute significant unique variance). Thus, the final, most parsimonious regression predicting CAPI Abuse Scale scores resulted in an $R^2 = .60$, $F(4, 110) = 41.43$, $p \leq .001$ (see Table 2).

In predicting the Parenting Scale Overreactivity scores, with variables entered as described above, the initial $R^2 = .46$, $F(7, 107) = 13.13$, $p \leq .001$. However, utilizing only variables reliably improving prediction, only the contextual variables and IRI Perspective-Taking scores were retained in the final equation, with a resultant $R^2 = .43$, $F(3, 111) = 28.91$, $p \leq .001$ (see Table 2). In comparison, predicting the Parenting Scale Total scores, reflective of general dysfunctional disciplinary style, resulted in comparable final results, retaining IRI Perspective-Taking only in the second step, leading to a final $R^2 = .42$ $F(3, 111) = 26.79$, $p \leq .001$.

With regard to the prediction of CTS Physical Assault subscale scores, the initial regression equation resulted in an $R^2 = .12$, $F(7, 107) = 2.03$, $p \leq .05$. Ultimately, the most parsimonious equation predicting the parent–child aggression included only the contextual variables, not the preexisting schema variables. This final equation resulted in an $R^2 = .08$, $F(2, 112) = 5.11$, $p < .01$ (see Table 2). As a point of interest, prediction of the CTS Psychological Aggression subscale scores was examined. In contrast to the steps described above, age of the parent needed to be entered in the first step as a control variable. The final equation predicting CTS Psychological Aggression retained the age of the parent, the contextual variables, and the CDQ Exceeds Norms scores, with a final $R^2 = .28$, $F(4, 110) = 10.46$, $p < .001$ (with the contextual variables explaining 17% of the variance and Exceed Norms explaining an additional 4%).

DISCUSSION

The SIP model proposes that preexisting cognitive schema predispose parents to engage in physically abusive behavior toward children, although the role of contextual factors had not been adequately investigated (Milner, 2000). The current study examined the ability of preexisting schema to explain variance in physical maltreatment risk beyond that accounted for by contextual variables, in a community sample of parents. Parents' stress and anger expression were evaluated as contextual variables, with empathic perspective-taking ability, locus of control, developmental expectations, and perceived attachment representing preexisting cognitive schema that could predict physical child abuse potential, parent–child aggression, and overreactive discipline. Overall, the findings lend partial support to the hypothesis that preexisting schemas augment risk beyond contextual variables.

The SIP model focuses largely on cognitive processes that may lead a parent to engage in abusive behavior toward children, although the role of stress and negative affectivity has been questioned regarding its contribution alongside the cognitive factors (Milner, 2000). The current findings suggest that parents' stress and anger indeed play a critical role across the three measures of parent–child aggression risk investigated. Anger expression and parental stress were predictive of child abuse potential, overreactive discipline, and physical aggression toward children. These findings parallel research demonstrating the importance of both factors in abuse risk (Rodriguez & Green, 1997), with prior research underscoring the role of stress (e.g., Chan, 1994) and anger (e.g., Acton & During, 1992; Ateah & Durrant, 2005).

Differences in prediction emerged across the three dependent variables. The contextual variables were the only factors predictive of CTS-PC Physical Assault scores, perhaps, in part, because of the reduced likelihood of parents' engaging in these behaviors and the likelihood that parents would avoid admitting implementing such tactics. Child abuse potential scores were predicted not only by the contextual variables but also by the parents' external locus-of-control orientation and their reported perceived attachment to the child. In contrast, overreactive discipline approaches were predicted by stress and anger expression as well as empathic perspective-taking ability. It is interesting to note that anger and stress also predicted CTS-PC psychological aggression, behaviors that parents may be more willing to admit. Collectively, these findings emphasize the

relative commonality of parenting stress and anger, with some potential contribution of selected cognitive factors in discipline approaches and abuse potential.

With respect to the cognitive schemas, the current findings generally provide support for the role of external locus-of-control orientations, consistent with prior research (Bugental et al., 1989). This attributional orientation was significantly associated with abuse potential, overreactive disciplinary style, and physical aggression toward children. However, likely because of the significant association between locus of control and stress and anger expression, scores from the locus-of-control measure contributed significant additional unique variance only to child abuse potential scores when stress and anger had been entered.

Positive affective states were considered preexisting schemas, including empathy and perceived positive attachment to the child. Empathy and parental attachment were expected to predict abuse risk. However, empathic perspective-taking ability was retained only in the prediction of overreactive discipline, and perceived attachment was retained only in predicting child abuse potential. Similar to locus of control, empathic perspective-taking ability was strongly associated with anger expression, and perceived attachment was strongly associated with parenting stress. Thus, the variance for empathy or attachment was likely tapped by the contextual factors, which is comparable to prior findings that suggested cognitive factors may not contribute significant unique variance beyond negative affect (Nayak & Milner, 1998).

In contrast, developmental expectations were largely not significantly associated with the dependent variables or predictors. Although previous literature has hypothesized that parents have excessively high expectations (Azar & Twentyman, 1986; Twentyman et al., 1984) or inappropriate expectations (Milner, 2000), the literature support has been mixed (e.g., Haskett et al., 2006). The current findings cannot support the role of developmental expectations, specifically with regard to whether parents have either low or high expectations regarding developmental norms. Although low expectations (Exceeds Norms) was somewhat predictive of CTS-PC Psychological Aggression (approximately 4% of the variance), overall the results do not support that a grasp of developmental norms is important in predicting parent–child aggression, overreactive discipline, or child abuse potential.

Limitations and Future Directions
A number of potential study limitations should be addressed that may guide future research. The current study is limited by the nature of the parents who participated. Respondents were predominantly White and involved with a partner, and future research should consider involving more single parents, with greater ethnic and racial diversity. Furthermore, participants represent a community sample of volunteers and, despite monetary incentives, may still reflect an atypical sample of motivated parents. The current study targeted a community sample to determine the nature of the contextual factors' association with preexisting cognitive schema that would not be confounded or limited to those who have been substantiated for physical abuse. However, continued research with at-risk samples, potentially compared to substantiated samples, would be an interesting direction for future research.

In addition, the correlational nature of the current research design cannot address causality. More creative designs are needed to not only address causality but also perhaps disentangle which stage or component of the SIP model a given variable truly represents (cf. earlier discussion of developmental expectations). Furthermore, the current study relied on parent self-report measures, a common limitation of the bulk of the research in this field. Although the study was structured to maintain participant anonymity, parents may still be reluctant to admit socially undesirable behaviors, such as on the CTS-PC. Alternative strategies need to be developed that can circumvent the field's reliance on self-report measures, although options for assessing cognitive processes are admittedly limited.

The current investigation concentrated on prediction of physical abuse risk. However, some intriguing findings regarding psychological aggression, and to some extent neglect, hint at the need for more intensive investigations in these areas. The data for neglect and psychological aggression in the current study were

limited, based on a few items. However, given the significant overlap in maltreatment types, and the likelihood that psychological maltreatment may underlie all forms of maltreatment (Hart, Brassard, Binggeli, & Davidson, 2002), an interesting avenue for future research could examine how factors in the SIP model apply to other forms of maltreatment.

Implications and Conclusions

A number of potential implications emerge from the current findings. The consistency of parenting stress and anger expression suggests that integrating strategies to minimize these factors in parents is critical in inter-vention and prevention programs. Alternatively, cognitive-behavioral approaches postulate that cognitive appraisals prompt emotional responses (Beck, 1995). Thus, efforts could concentrate on promoting empathic perspective-taking ability, encouraging more internal control attributions, and modifying attitudes toward the child. Based on cognitive-behavioral theory, such cognitive restructuring may be accompanied by decreased negative affectivity, such as anger expression and stress and depression.

On the other hand, given the inconsistent support for developmental expectations (e.g., Haskett et al., 2006) in predicting physical abuse risk alongside the current findings, interventions that emphasize providing parents developmental normative information are questionable. Although these latter strategies are commonplace in intervention programs (Repucci, Britner, & Woolard, 1997), continued research needs to confirm whether inappropriate developmental expectations indeed increase abuse risk.

In sum, research on such models as SIP theory need continued attention. Refinements in these complex conceptualizations herald promise for understanding the pathways to physical child maltreatment. Uncovering the relevant mechanisms can lead to more efficient and effective programs intended to decrease child maltreatment, enhancing family functioning and child welfare.

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