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Lucy H. Seabrook

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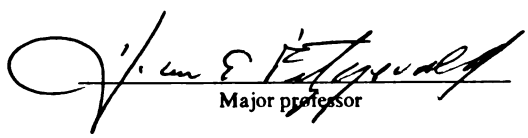

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EXAMINING PHYSICAL CHILD ABUSE POTENTIAL AS A FUNCTION OF RISK LOAD, MATERNAL AFFECTIVE RISK, AND SELF-RATED PARENTING SKILL

By

Lucy H. Seabrook

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ABSTRACT

EXAMINING PHYSICAL CHILD ABUSE POTENTIAL AS A FUNCTION OF RISK LOAD, MATERNAL AFFECTIVE RISK, AND SELF-RATED PARENTING SKILL

By

Lucy H. Seabrook

Despite recognition of well-established risk factors for child maltreatment, and evidence that more risk factors increases the likelihood of poor outcomes, the utility of risk load theory as a framework with which to investigate the structural relationships among such risk factors relative to child abuse potential remains unknown. This study examined the roles of family risk load, maternal affect variables (depression and parenting stress), and parenting skill in regard to increased potential to physically aggress against a child. Results indicate that higher risk load, increased maternal depression and increased parenting stress are cumulatively related to higher physical child abuse potential. Self-rated parenting skill, while negatively affected by parenting stress, did not account for significant variance in abuse potential. Environmental contexts of mothers who scored highest on child abuse potential are described. Future child maltreatment research utilizing risk load theory is encouraged.

This document is dedicated to Mr. Yellow Bunny, who continuously reminds me about the important things in life: shared warmth, unconditional love and t-u-n-a. Thanks also to my dear girlfriends, without whom my life would be much less meaningful and fun: you are the greatest and I love you dearly.

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INTRODUCTION

Across a range of theoretical positions and populations, research has consistently demonstrated that environmental characteristics affect parent-child interactions (Garbarino, 1976, 1977; Holden & Ritchie, 1989). In particular, negative life circumstances, such as poverty and social isolation, have been shown to have a detrimental impact on parenting and to be associated with increased parent-child interactive stress (Conger, McCarty, Yang, Lahey & Kropp, 1984; Mash & Johnston, 1990). Risk exposure is quite diverse, however, because "at risk" families may vary widely in personal, parental and family characteristics and resources (Coll et al., 1996). Researchers (e.g., Webster-Stratton, 1990) have pointed to the need to better understand the cumulative effects of various factors in combination, or the relative effects of different risk factors, on parenting behaviors.

The term "risk factor" refers to any influence that increases the probability of onset, digression to a more serious state, or the maintenance of a problem condition (Coie et al., 1993). Of the many variables that are considered risk factors for child maltreatment, the most salient are those that arise from parental characteristics and adverse environments (Ammerman, 1990; Mash & Johnston, 1990; Reid, Barbera-Stein & Bennett, 1986). As such, risk for abusive parenting can be viewed as being comprised of both parent-level variables and environmental variables that are external to the parent.

The family stress literature has described an association between the number of stressors experienced by families and level of family functioning (Egeland, Breitenbucher & Rosenberg, 1980). That is, as the number of concurrent risk factors increases, the likelihood for poor outcomes also increases (Sameroff, Bartko et al., 1998; Sameroff &

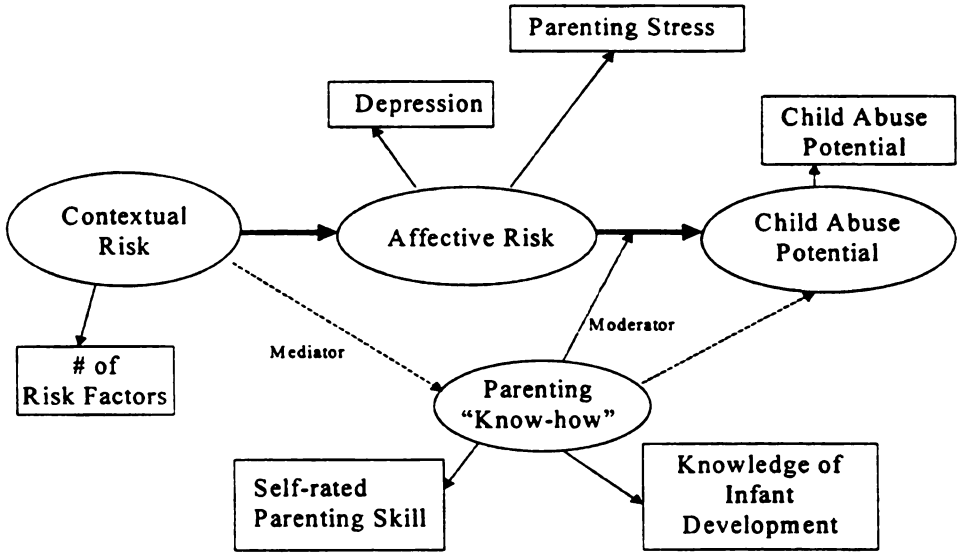
Seifer, 1983; Spicer & Franklin, 1994). This notion is related to models of risk cumulation, risk load and stress pile-up (Cicchetti & Toth, 1995; Liaw & Brooks-Gunn, 1994; McCubbin & McCubbin, 1993; Sameroff, 1975). Risk load theory posits that the effects of multiple, non-specific risk factors may be cumulative in that the presence of more risk factors is related to a higher certainty of negative outcome (Sameroff & Seifer, 1983; Seifer, Sameroff, Baldwin & Baldwin, 1992).

Questions remain regarding whether a family's risk load also serves as an important determinant of parenting practices, and if so, how heightened risk load translates into tendencies for particular parental behaviors. In particular, is there a link between a family's risk load and a mother's increased potential for physically abusive parenting? What are the conditions—over and above a set of generic risk factors for all family functioning problems—that "produce" abuse potential, and how do maternal characteristics interact with such conditions?

To give order to the growing body of research on risk, a conceptual framework that incorporates both individual and contextual conditions affecting the probability of a problem is needed (Fraser, 1997). In the current study, maternal affective variables of depression and parenting stress, self-rated parenting skill and knowledge of infant development were examined for their contribution to the proposed relationship between risk load and physical child abuse potential. Physical child abuse potential—related to a restricted range of options in disciplining, lack of flexibility in child rearing, and particular attitudes about parenting (Trickett & Kuczynski, 1986)—rather than abusive behaviors per se, is the outcome of interest. Other studies (Jackson, Thompson, Christiansen, Colman et al., 1999) have referred to this as "abuse proneness."

Conceptually, increased risk load is seen as the driving force toward physical child abuse potential, mediated by maternal depression and parenting stress. These relationships, however, are hypothetically affected by an interaction between two additional parent-level factors: knowledge of infant development and self-rated parenting skill. Depression and parenting stress may be understood as indicators of a mother's emotional well-being, likely to influence the way she relates to her children. There are other possible psychological mechanisms that might account for the association between risk load and maternal behavior. However, depression and parenting stress seem to have particular promise as links in the causal chain leading to abuse potential because of their ties to previous research and theory (Conger et al., 1984). In addition, knowledge of a child's normal developmental milestones and a perception of oneself as a skillful parent are also important variables in the probabilistic framework of maltreatment etiology.

Figure 1: Proposed Conceptual Model



Theoretical support for the proposed model (Figure 1) is gleaned from several sources, including an ecological model of etiology (Bronfenbrenner, 1979), which directs attention to a range of environmental and individual influences, and stress models, which postulate that life stress may accelerate child maltreatment, given the presence of predisposing factors (Hillson & Kuiper, 1994; Howze & Kotch, 1984; Kotch et al., 1995). While employing the concepts of stress and multiple systems of influence, however, the model does not fully invoke the typology of either the ecological or stress theories.

Risk Load

Sameroff, Seifer and colleagues (Sameroff & Chandler, 1975; Sameroff & Seifer, 1995; Sameroff, Seifer, Zax & Barocas, 1987) conducted several large studies (both longitudinal and cross-sectional) attending to the analysis of multiple risk factors in the family environment. Initially, these studies were focused on socioeconomic status (SES) as an overarching risk factor for families. With increasing evidence, however, SES was broken down into individual risk factors—"correlates but not equivalents" of socioeconomic status (p.238)—including social status, parental mental illness and perspectives, family stress and family size. It was discovered that high risk load predicted poorer child outcomes for both high and low socioeconomic status groups. In these studies, risk load generally ranged from 0 to 9 or 13 factors (Sameroff, Bartko, Baldwin, Baldwin & Seifer, 1998), while in other studies, Sameroff and colleagues divided risk load into levels of low (0 – 1 risk factors), medium (2 – 3 risk factors) and high risk (4+ risk factors). Findings consistently demonstrated that risk load scores were better predictors of child-related outcome (viz., IQ, competence and mental health, or

other indicators of social-emotional outcome) than were single risk factors. Other investigators found similar results.

Rutter (1979) found that psychiatric risk for 10-year-olds rose from 2% in families with zero or one risk factor to 20% in families with four or more risk factors. The six risk factors considered were marital distress, low SES, family size, paternal criminality, maternal mental health and child admission to foster care. However, it was the total number of risk factors and not the type of factor that affected the outcome. Moreover, experiencing more than four risk factors did not affect the predicted outcome. Two studies examining child behavior problems with a risk load index (Williams, Anderson, McGee & Silva, 1990, and Ackerman, Schoff, Levinson, Youngstrom, & Izard, 1999) found that poor outcome was far more likely as families experienced more than six risk factors.

Within each of these studies there were significant effects for single risk factors, yet no single variable was the determinant of outcome: only in families with multiple risk factors was poor outcome manifest. Sameroff and colleagues (1998) maintain that particular risk factors—such as SES and marital status—seem to make major contributions to outcome not in that they are overarching variables in themselves, but that they are strongly associated with combinations of other risk factors. These findings suggest the usefulness of representations that aggregate risk factors. The concept of effectively using a risk load index has also been demonstrated relative to parents' perceptions of family environment and attitudes about parenting (Peterson & Hawley, 1998) and family functioning (Dickstein et al., 1998). However, the usefulness of risk

load as a theoretical framework with which to examine physical child abuse potential has not been tested.

The maltreatment literature, however, *is* replete with individual risk factors that are clearly associated with abuse. For example, McCurdy (1995) described factors associated with parents who scored highest on abuse potential: an adult household member with mental illness or developmental delay, living in a shelter or temporary housing, having children in placement, and the experience of childhood abuse.[1] Other factors that were associated with high child abuse potential scores (although not the highest risk) were the presence of violence in the household, living in substandard housing, parental inability to solicit social support, and social isolation. Finally, factors that were related to above-average abuse potential were "adult functioning problems," such as lack of interest in the child, poor personal hygiene, neglect of routine household responsibilities, inability to manage anger, excessive need for the child to comply with parental demands, and low self-esteem (McCurdy, 1995). Such findings indicate that there are many factors that place a family at risk for dysfunctional parenting.

These many risk factors—each with its own significant literature base validating its potential negative impact on parenting—may be categorized into biological, economic, parental, family-structural and extra-familial domains. For example, child-oriented risk factors for maltreatment include low birth weight and nutritional deficit (Browne & Saqi, 1988; Herrenkohl & Herrenkohl, 1979; McGrath & Meyer, 1992), as well as language deficiency or developmental immaturity (Larsen & McCreary Juhasz, 1985; McCurdy, 1995; Steele & Pollock, 1974). Economic hardship and maltreatment

[1] Together, these factors accounted for 30% of the variance in abuse potential scores (McCurdy, 1995).

are linked via unemployment and low family income (Cantrell, Carrico, Franklin, & Grubb, 1990; Cicchetti & Lynch, 1993; Gelardo & Sanford, 1987; Gelles, 1973; Gil, 1970; Glachan, 1991; Herrenkohl, Herrenkohl, Rupert, Egolf, & Lutz, 1995; Kowal et al., 1989).

Parent-level risk factors include a wide range of variables, such as physical disability, history of abuse or neglect (Belsky, 1984, 1993; Caliso & Milner, 1992; Fennell & Fishel, 1998; Haynes, Cutler, Gray & Kempe, 1984); or chronic mental/emotional illness (Mash & Johnston, 1990; McCurdy, 1995). Also important relative to child maltreatment are a difficult temperament, history of delinquency, violence or incarceration (Browne & Saqi, 1988; Connelly & Straus, 1992; Kotch et al., 1995); substance abuse or addiction (Dore, Doris & Wright; 1995; McCurdy, 1995); teenage parenting (Conger et al., 1984; Connelly & Straus, 1992; Fulton, Murphy & Anderson, 1991; Jones & McCurdy, 1992); and low educational achievement (Brayden et al., 1992; Kotch et al., 1995; Straus, 1983).

Structural elements of the family also play a role in risk for poor outcomes. These may include single parenthood (Bird, 1997; Webster-Stratton, 1990; Zuravin, 1988), high family density (Bell, Johnson, McGillicuddy-Delisi & Sigel, 1980; Biller & Solomon, 1986; Bredehoft, 1990; Egeland & Brunnquell, 1979; Straus, Gelles & Steinmetz, 1980), and divorce (Hetherington, Cox & Cox, 1982; Webster-Stratton, 1990). There are also extra-familial factors that have a negative impact on parenting, including a lack of a stable residence (Garbarino & Sherman, 1980; Perry, Wells & Doran, 1983; Wolfe, 1987) and housing in a rural or segregated area (Garbarino & Sherman, 1980; Gil, 1975; Sharma, Singh & Sidhu, 1985).

While this list of individual risk factors is extensive, it is not inclusive of the many variables that may place a family at risk for poor parenting outcomes. In a multiple-risk factor approach, risk is conceptualized as an accumulated set of adverse experiences or conditions that affect families (Dickstein et al., 1998). Thus, risk load is operationalized as the sum of variables characterizing a family situation relative to family and environmental conditions that may increase the potential for abusive parenting. Any one specific risk factor does not define risk; rather it is the additive effect of a number of risk factors that is considered detrimental to parent functioning.

The risk factors listed above are often conceptualized as family stressors. The stress literature is traditionally classified into two theoretically separate approaches, related to either [1] chronic strains or conditions that exact a toll over time because of the persistence of difficult environmental factors or [2] new demands or important changes in people's life situations. Researchers have used a variety of labels to describe these two stress types: chronic vs. situational stressors (Linsky, Straus & Colby, 1985), everyday vs. event stressors (Crnic & Acevedo, 1995), and enduring vs. transitional stressors (Cicchetti & Rizley, 1981). Importantly, the majority of risk factors examined in the current study are considered chronic, rather than acute, stressors.

As argued by Quittner, Glueckauf and Jackson (1990), the effects of chronic stressors are likely to be more pervasive, leading to alterations in several life domains, including parental and work roles, expectations for the future, and relationships within the larger social milieu. Chronic stress in this context also implies its continuation into the future. Thus, in terms of both its scope and enduring impact, risk load as assessed in this study reflects chronic stress that may be differentiated from both major life events

and daily hassles (Quittner, Glueckauf & Jackson, 1990). Such chronically stressful conditions may affect the parent-child relationship through parents' psychological well being.

Indeed, besides their association with parenting attitudes and behavior, the risk factors described above have been shown to have a detrimental impact on parental psychological well-being in general (see Conger et al., 1984). That is, a family context characterized by multiple risk factors is also more likely to positively affect individual-level parent variables, such as depression and stress levels. Simons and Johnson (1996) maintain that the disruptive effect of stress on parenting is indirect through its impact on the parent's emotional state, a claim supported by several other studies (Conger, Elder, Lorenz, Simons & Whitbeck, 1992; Simons, Beaman, Conger & Chao, 1993; Simons, Whitbeck, Melby & Wu, 1994). This notion is based on a portion of Belsky's (1984) process model of parenting, which asserts that parental functioning is multiply determined and that sources of contextual stress can affect parenting directly or indirectly by first impacting individual psychological well-being.

Thus, while the importance of contextual risk is recognized, special emphasis is placed on parents' affective state as a primary determinant of how a family's risk load may influence parental behavior (Abidin, 1990, 1992; Mash & Johnston, 1990; Webster-Stratton, 1990). In sum, the importance of examining the contribution of parental affective variables is based on the assumption that high risk alone does not directly predict poor outcomes: the relationship between risk load and abuse potential may be mediated by factors that pertain to parental functioning and coping (Dukewich, Borkowski & Whitman, 1996; Mash & Johnston, 1990). This notion is in accord with

Belsky's (1984) assertion that the personal resources of the parent are more important than contextual variables in determining parenting behavior.

Affective Risk: The Distressed Mother

A large body of literature documents ineffective parenting among distressed parents (Cicchetti & Howes, 1991; Gaines, Sandgrund, Green & Power, 1978; Gelfand, et al., 1992; Haskett, Smith Scott, & Fann, 1995; Lahey, Conger, Atkeson & Treiber, 1984; Rodriguez & Green, 1997; Spicer & Franklin, 1994; Whissell, Lewko, Carriere & Radford, 1990). Parents who physically abuse their children have been found to report both higher stress and depression levels (Gelfand, Teti & Fox, 1992; Mash, Johnston, & Kovitz, 1983; Weissman Wind & Silvern, 1994; Whipple & Webster-Stratton, 1991; Wolfe, 1985) and stress-related symptoms (Wolfe, 1985).

In addition to affecting parenting behavior, depression and parenting stress also positively affect each other (Conger et al., 1984; Cummings & Davies, 1994; Pianta & Egeland, 1990; Reis, Barbera-Stein & Bennett, 1986). Gelfand et al. (1992) affirmed that the greater the severity of maternal depression, the more likely were mothers to experience stress related specifically to the parenting role. Both depression and parenting stress have been consistently linked with physical child abuse, as described in the following sections.

Depression

Depression is the most widely studied disturbance in parental psychological functioning as a well-known risk factor for child maltreatment (Belsky, 1984; Gelardo & Sanford, 1987; Gelfand et al., 1992; Kotch et al., 1995; Pianta & Egeland, 1990; Whipple & Wilson, 1994). Depressed mothers tend to make more negative statements about their

children, to use guilt- and anxiety-provoking methods of controlling their children, and to have unrealistic expectations regarding their children's ability to self-regulate (Ammerman, 1990; Cummings & Davies, 1994; Jameson et al., 1995; Lahey et al., 1984). Depressed parents also have a much lower tolerance threshold for child misbehavior and resort more quickly to high authoritarian, overcontrolling parenting (Dore, 1993; Evans, 1980; Gelfand, Teti & Fox, 1992; Herrenkohl & Herrenkohl, 1979; Kotch et al., 1995; Whipple & Webster-Stratton, 1991, 1994). Moreover, an examination of mothers who were able to break the cycle of intergenerational abuse revealed that depression significantly differentiated the abusers from the nonabusing mothers (Egeland et al., 1988). One reason behind this connection may be that depressed mothers have relatively little confidence in their caregiving abilities and low levels of parental self-efficacy, which, in turn, have been associated with parenting impairments (see Cummings & Davies, 1994; Frankel & Harmon, 1996).

Depression may be especially sensitive to a distinctive type of stress experience—namely, undesired experiences that are both enduring and resistant to efforts of change (Pearlin, Menaghan, Lieberman, & Mullan, 1981). Certainly, both these features characterize the individual risk factors that comprise risk load in this study.

Parenting Stress

Parenting stress is another variable that is clearly implicated in risk for physical child abuse (Abidin, 1990; Crnic & Greenberg, 1990; Rodriguez & Green, 1997; Webster-Stratton, 1988). Parenting stress has been associated with inconsistent parental discipline, coercive parent-child interactions, and child maltreatment (Pianta & Egeland, 1990; Rogers, 1998). In Crnic and Greenberg's (1990) research, high-stress mothers

interacted in a less positive manner with their infants than did low-stress mothers. Others (Egeland & Brunnquell, 1979; Justice & Duncan, 1976) have also found that abusing parents experience greater stress levels than non-abusing parents. While stress arising from many sources can burden mothers and affect both their perceptions of parenthood and their parenting behavior (Gelfand, Teti & Fox, 1992), DeLongis et al. (1988) have argued that ongoing stressors specifically related to being a parent (such as increased economic hardship or responsibility for child care) play a more central role in parenting than do major life events. Indeed, Gaudin and Pollane (1983) found that stress that was particular to the role of parent was the largest contributor to variance in the prediction of child abuse.

Whipple and Webster-Stratton (1991) found that abusive parents experienced stress significantly more often from low income, maternal depression and anxiety, negative life events, frequent child behavior problems and less marital support. Caring for an infant—a difficult task in itself—can be especially difficult for parents who have other pressing problems, as highly stressed parents lose their ability to care for their children in a warm, sensitive and competent manner (Crnic, Greenberg, Ragozin, Robinson & Basham, 1983; Gelfand, Teti & Fox, 1992). Indeed, at-risk parents report higher levels of total parenting stress than other types of parents (Holden, Willis & Foltz, 1989). However, some studies report rather modest relationships between parents' stress levels and authoritarian, power assertive discipline strategies (Deater-Deckard & Scarr, 1996).

Moreover, despite the strong links among parenting stress, depression and abusive parenting, not all emotionally distressed parents perpetuate abuse, suggesting that some

additional factors may exacerbate or pacify the pathways from these parental risk factors to physical child abuse. For example, impaired parenting skills and low levels of awareness and understanding of the difficulties and demands involved in parenting are also associated with abusive parenting (Dukewich, Borkowski & Whitman, 1996; Egeland, Deinard, Brunnquell, Phipps-Yonas & Chricton, 1979; Fennell & Fishel, 1998; Garbarino, 1976, 1977; Houck & King, 1989; Reis, Barbera-Stein & Bennett, 1986). How parenting skill- and knowledge-based factors function in the relationship between maternal affective risk and abuse potential, however, is unclear.

Knowledge of Infant Development

As a construct related to cognitive readiness to parent, knowledge of infant development pertains to factors that are directly related to the knowledge and skills needed to perform the functions of parental care for children. Parents must have a minimum knowledge of the normal range of child development in order to adequately meet their children's needs (Burke et al., 1998); it is well recognized that a lack of knowledge about children's development is a risk factor for poor parenting (see Spinetta & Rigler's 1972 review of the literature; Benasich & Brooks-Gunn, 1996; Haskett, Johnson & Miller, 1994). The opposite relationship holds as well: more knowledge about normal child development—including realistic expectations for behavior and development—is related to increased parenting skills,[2] quality of the home environment and positive child outcomes (Fulton, Murphy & Anderson, 1991; Reid, Barbera-Stein & Bennett, 1986). Stevens (1984) found that, after controlling for income and education, mothers who scored highest on measures of child development knowledge showed higher

[2] Stevens (1984) has estimated that knowledge of development accounts for 20% of the variance in parenting skill.

levels of parenting skill. Similarly, Benasich and Brooks-Gunn (1996) reported that maternal knowledge at 12 months was positively related to quality of home environment provided by the mother simultaneously and at 36 months.

Multiple studies have demonstrated that abusive parents have misperceptions about the capabilities of their child. Many of these provide evidence that the parent usually overestimates the child's abilities and shortens the time required to reach developmental milestones (Bavolek et al, 1990; Hefler, 1973; Justice & Justice, 1976; Larsen & McCready Juhasz, 1985; Steele & Pollack, 1974). However, more recent studies have found that inaccurate parental expectations operated in the opposite direction: abusive parents expected their children to develop certain skills at older ages than normal (Perry, Wells & Doran, 1983; Twentyman & Plotkin, 1982). Meta-analytic studies (Black, Heyman, & Smith Slep, in press) conclude that physically abusive mothers have higher than normal expectations of their children, as well as less understanding of appropriate developmental norms.

Such misperceptions of child development are related to maltreating parents' negative perceptions of their children and attributions of their children's misbehavior as deliberate efforts to challenge their authority (Azar, et al., 1984; Cicchetti & Howes, 1991; Cicchetti & Lynch, 1993; Dore, 1993; Egeland & Brunnquell, 1979; Trickett, Aber, Carlson, & Cicchetti, 1991; Creighton, 1985). For example, Whipple and Webster-Stratton (1991) found that abusive mothers were significantly more critical in their interactions with their children and reported more child behavior problems, despite the fact that independent observations did not concur with such reports. Moreover, families with unrealistic expectations and cognitive distortions regarding children's intentions at

entry are significantly less likely to improve over the course of a parenting intervention (Kowal et al., 1989).

Parents who have more accurate views of child development may be more likely to correctly perceive their child's behaviors, be better prepared to establish healthy relationships with their children, and be less likely to misplace their stress-related aggression onto the child via abusive parenting (Egeland & Brunnquell, 1979; Mercer & Ferketich, 1994; Shaner, Peterson & Roscoe, 1985). Thus, an important component of skillful parenting would appear to be the accumulation of a sound knowledge base about basic mechanisms underlying developmental processes as well as descriptive information about the course of development (Stevens, 1984). Indeed, many parent-education programs have been developed on the belief that knowledge of developmental norms will enable parents to raise their children more effectively and prevent child maltreatment (Fennell & Fishel, 1998; Olds, Kitzman, Cole & Robinson, 1997; Wasik & Roberts, 1994; US Dept. of Health & Human Services, 1990; Weiss, 1993).

Based on its link to parenting skill, knowledge of infant development may serve either as a buffering or reinforcing variable relative to a mother's affective risk and abuse potential. A mother's confidence in and perceptions of her own parenting skill may also serve to strengthen or weaken the link between affective risk and abuse potential.

Self-Rated Parenting Skill

Wolfe (1985) has argued for a "better understanding and assessment of psychological variables that exert an influence on parental competence, as opposed to psychopathology" (p.479). A sense of competence and effectiveness in the parenting role is essential to parental well-being and child adjustment (Esdaile & Greenwood, 1995;

Goodnow, 1988). In relation to parenting, a mother's appraisal of her ability to perform competently in a designated situation would be enhanced by positive earlier experiences in parenting or successfully caring for children. Conversely, parenting self-efficacy would be lowered if previous parenting experiences had been unrewarding or difficult (Bandura, 1982, 1986).

Similar to self-efficacy, self-perceived parenting skill is a parent's view of her ability to meet the situational demands of parenting. A mother's perception of her skill in the parenting role reflects her maternal confidence, which is a basic determinant of her capacity as a mother (Bullock & Pridham, 1988; Mercer & Ferketich, 1994). Self-evaluations of parental skill influence a range of weighty factors, including the way in which the parent processes and attends to information, the amount of effort she devotes to child-rearing, and her emotional reactions to child behavior and the parenting role (Esdaile & Greenwood, 1995; Goodnow, 1988).

Several studies have demonstrated that a parent's perception of her skills is highly related to parenting competence (McClennan & Harkless, 1998; Teti & Gelfand, 1991). Maternal confidence has also been related to mothers' self esteem, mental health, adaptation to parenting and perception of infant temperaments (see Conrad, Gross, Fogg & Ruchala, 1992; Holden & Banez, 1996; Teti & Gelfand, 1991). Conversely, a low sense of parenting competence is related to the use of coercive and intense disciplinary tactics in efforts to control child behavior (Bugenthal, Blue & Lewis, 1989; Bugenthal, Blue & Cruzcosa, 1989; Bugenthal & Cortez, 1988; Mash, Johnston & Kovitz, 1983).

However, this relationship is not as clear as it may seem. Some doubt the systematic relationship of self-perceived parenting skill (i.e., subjective maternal

experiences) into actual quality of parenting (i.e., mothering behaviors). While several studies have noted positive correlations between maternal confidence and quality of mother-child interactions (Bohlin & Hagekull, 1987; Gelfand & Teti, 1991), other researchers (Julian, 1983; Walker, Crain & Thompson, 1986; Williams et al., 1990; Zahr, 1991) have found nonsignificant relationships, and one investigator (Fuller, 1989) found an *inverse* relationship between maternal confidence and quality of mother-child interactions.[3] Such discrepant findings direct our attention to the complexity in how a mother perceives her parenting skills and how that subjective experience relates to actual behavior.

Maternal Variables as Links between Risk load and Child Abuse Potential

Relationships among depression, parenting stress, self-ratings of parenting skill and knowledge of infant development may present a complex pattern of parental strengths and limitations that affect a mother's potential to aggress against the child. Parenting stress, depression and behavior are related phenomena, and various structural relationships among them have been investigated (Rodgers, 1998). Results indicate that both stress and symptomology independently impact parenting behavior, but more strongly in a direct manner, rather than through the other. Thus, in the current study, depression and parenting stress were assessed as separate constructs that operate in a parallel fashion to impact child abuse potential. Additional variables associated with maternal parenting abilities—viz., knowledge of developmental milestones and a parent's perspective of her own skills—may strengthen or weaken existing relationships among depression, parenting stress and child abuse potential.

[3] With a sample of teenage mothers (Fuller, 1989).

To illustrate, it is conceivable that the mother who is depressed and highly stressed may be prone to abuse, but if she feels competent as a parent, and also has an understanding of her child's needs and limitations, her potential to abuse may be dampened. Conversely, a highly stressed and depressed parent who also rates her parental skills poorly and knows little about her child's development may be even more likely to aggress against her child.

Conrad and colleagues (1992) found that the interaction between maternal confidence and knowledge of early child development predicted quality of mother-child interactions, but that neither was predictive of mother-child interactions when considered alone: maternal confidence was related to quality of mother-child interaction only when knowledge of child development was taken into account. Mothers who were least knowledgeable about development but who maintained confidence about their parenting abilities demonstrated the least positive interactions. The researchers refer to these parents as "naively confident:" those who are unaware of the complexities of parenting. These mothers may be the same type as described by Sameroff and Feil (1985) as viewing development from a concrete and simplistic perspective with little reflection on their own parenting abilities or behaviors. Conrad et al. (1992) suggest that these mothers may be the ones who have traditionally been most difficult to retain in parenting intervention programs. It is important to note, however, that Conrad's sample was middle class and married. How self-rated parenting skill, knowledge and behavior play out in a sample of low SES, high risk mothers is not known.

Given these ambiguous findings, what is needed is a framework that considers the mutual influences of mother's perceptions of her parenting skill and her understanding of

child development in the context of risk load and maternal affect. Behavior is influenced by the combined effects of individuals' knowledge about a task *and* their confidence in their ability to perform that task successfully (Bandura, 1977, 1986, 1989); that is, both knowledge and confidence operate together to predict performance. Thus, maternal confidence is a necessary but not sufficient condition for successful task performance—mothers must also possess knowledge about child development and parenting (Conrad et al., 1992). One may find that mothers who are operating within a high risk, stressful environment need such maternal confidence and knowledge to safeguard them from heightened abuse inclinations. As such, the current study offered that these variables be considered both separately and jointly within the conceptual model (a) as a statistical interaction for which parents' standing on the two indicators created an interaction score and (b) as separate variables. In addition, both mediating and moderating roles were of interest.

In the case of a moderating role for self-rated parenting skill or knowledge of infant development, it may be possible to explain *when* depression and parenting stress lead to heightened abuse potential. To illustrate, it may be possible that some depressed and stressed mothers hold adequate feelings of self-efficacy and knowledge in the parenting role to reduce the potential to abuse. In contrast, a mediator specifies the *how* or *why* of causal effects (Baron & Kenny, 1986). Thus, a mediating role for either self-rated parenting skill or knowledge of infant development would indicate that the variable of interest was significantly associated with maternal affective variables (i.e., depression and parenting stress) and abuse potential, and that after removing the effects of the mediating variable on abuse potential, depression and parenting stress should no longer

relate to abuse potential. In this case, a mother's standing on skill and knowledge should play a central role in determining her physical child abuse potential, mediating any influences of depression and parenting stress.

Purpose & Goals

Considerable effort has been directed toward discovering the etiology of maltreatment, which is critical in screening for high risk groups so that appropriate treatments can be implemented to remediate associated deleterious effects (Ammerman, 1991; Dukewich, Borkowski & Whitman, 1996). Utilizing risk load as a theoretical framework may provide clarity to the concept of risk for maltreatment by addressing the cumulation of both contextual and individual elements of risk.

By focusing on the structural relationships among risk load, maternal affective variables, and parental knowledge and skill variables, the goal of the study was to elucidate the nature of maternal abuse potential in a high risk context. That is, is there a relationship between chronic contextual stress (as indicated by risk load) and maternal abuse potential, and if so, is there a set of maternal variables that is responsible for this relationship? Such knowledge may provide guidance on the design and delivery of social and health programs, in that they may better address the individual, family, and broader contextual conditions that are salient to a mother's heightened abuse potential.

Hypotheses

The conceptual model of interest in the current study is articulated in Figure 1. As discussed in the literature review, associations among parenting stress and depression and heightened risk for poor parenting outcomes are established. In addition, the concept of risk load leading to poorer child outcomes and family environment has its own

literature base. However, these combined relationships have not been examined in the context of child abuse potential. Moreover, the contribution of knowledge of infant development and self-rated parenting skill relative to risk load and maternal affective variables (i.e., depression and parenting stress) has not yet been fully examined.

Thus, preliminary hypotheses regarding the relationships among risk load and parenting stress and depression were examined (Hypothesis 1: Higher risk load is associated with greater depressive symptomology; Hypothesis 2: Higher risk load is associated with increased parenting stress). Links between parenting stress and child abuse potential and between depression and child abuse potential were also assessed (Hypothesis 3: Greater depressive symptomology is associated with higher abuse potential; Hypothesis 4: Increased parenting stress is associated with higher abuse potential).

Since the roles of self-rated parenting skill and knowledge of infant development are not clear in the literature, both moderating and mediating models were considered for an interaction variable and separately (Hypothesis 5: The relationship between depression and abuse potential will be moderated by the interaction between self-rated parenting skill and knowledge of infant development; Hypothesis 6: The relationship between parenting stress and abuse potential will be moderated by the interaction between self-rated parenting skill and knowledge of infant development; Hypothesis 7: The relationship between depression and abuse potential will be mediated by the interaction between self-rated parenting skill and knowledge of infant development; Hypothesis 8: The relationship between parenting stress and abuse potential will be mediated by the interaction between self-rated parenting skill and knowledge of infant development.

Hypothesis 9: The relationship between depression and abuse potential will be moderated by self-rated parenting skill; Hypothesis 10: The relationship between parenting stress and abuse potential will be moderated by knowledge of infant development; Hypothesis 11: The relationship between depression and abuse potential will be mediated by the self-rated parenting skill; Hypothesis 12: The relationship between parenting stress and abuse potential will be mediated by knowledge of infant development. Hypothesis 13: The relationship between parenting stress and abuse potential will be mediated by self-rated parenting skill; Hypothesis 14: The relationship between parenting stress and abuse potential will be moderated by self-rated parenting skill. Hypothesis 15: The relationship between depression and abuse potential will be mediated by knowledge of infant development; Hypothesis 16: The relationship between depression and abuse potential will be moderated by knowledge of infant development).

Methods

Participants and Description of the Sample

Participants in the current study were a subset of families participating in a larger study, an evaluation of a four-county Early Head Start (EHS) program located in Michigan. EHS is a child development program offered to pregnant women, infants and toddlers under age 3. This particular EHS program is a home-based program, with weekly visits to the home or day care and monthly group meetings for the parent(s) and child. By definition, most families who enroll for EHS services meet Federal guidelines for poverty.

Criteria for selection of the sample from the larger pool of EHS children included: a) in cases with siblings, the eldest child was retained; b) only cases where mother was

identified as the primary caregiver were retained;[4] and c) cases without complete data on child abuse potential were deleted. These selection criteria resulted in a sample of 95 cases, described below.

Thirty-seven percent of children had a sibling who was also enrolled in the program. Only a few children in the sample (4.3%) had enrolled prenatally. Mothers' mean age at time of childbirth was 23.4 years (sd = 5.6), ranging from 12.7 to 42 years. Children averaged 23 months in age at the time of data collection (sd = 8.0), ranging from 9 to 36 months. Slightly more than 62% of children in the sample were male. The majority (89.5%) of children was identified as white, with 4.2% each identified as black and Hispanic and 2.1% identified as Native American. Mothers' ethnicity was described as follows: 94.5% white, 3.3% Hispanic and 2.2% Native American. About 13% of children had a health condition requiring an emergency care plan. Several children were described as having delays in development (7.4%), hearing (2.1%), language (2.1%), sociability (2.1%) or emotional health (1.1%).

About 94% of children were Medicaid-eligible cases. Almost 89% of cases received WIC (Aid to Women with Dependent Infants and Children) and 48.9% of households received food stamps. Over half (52.7%) rented their home, although 23.1% owned their home and 11% resided in subsidized housing. In addition, 13.2% of cases described their living arrangement as "other"—usually indicating that they lived with their parents. Most families in the sample (43.3%) lived in a single family dwelling, followed by mobile homes (24.4%), multifamily homes of 5 or more families (18.9%)

[4] Data collection was aimed at mothers (regardless of coupled status), as she was typically the parent targeted by the program. Where fathers were considered primary caregivers, these cases were removed from the sample.

and multifamily homes of 2 – 4 families (12.2%) (1.1% were "other" housing type). Regarding transportation, most (79.8%) owned a car, followed by "other" transportation (15.7%) and "none" (4.5%). See Table 1 for the complete respondent demographic profile.

Recruitment

Parents were recruited for the Early Head Start program via a collaborative recruitment effort serving the four county area. This effort was controlled by the EHS program's host agency. Recruitment efforts included posters advertising free preschool with an "800" number for information and referrals through agencies working with the target population (e.g., Early On, WIC, the intermediate school district, physicians, domestic violence agencies, family day care homes, etc.). Applications were collected and registered based on income eligibility. Families that did not qualify for the EHS program (due to income ineligibility) were referred to other programs.

Data Collection

Data for this study were derived from two sources: (a) program enrollment documents and (b) surveys completed by parents/guardians as part of the evaluation project. The minimum child age for survey completion was 9 months. However, as families could enroll in the program at different child ages (from prenatal to just under 36 months), the surveys were collected across a range of child ages. EHS staff conducted data collection: a trained Home Visitor aided the parent in completing the survey in the parent's home, while an Intake Coordinator collected data regarding risk load at the program enrollment office. These positions require a minimum of an Associates Degree in early childhood education or child development.

Table 1: Demographic Data (N=95)					
	Valid %	M	sd	Min	Max
Yearly income		$9793.84	6175.91	$100.00	$27,526.00
Yearly rent + heat		$3739.94	2460.19	$.00	$10,700.00
Head of household					
Male	7.7				
Female	92.3				
Ethnicity					
White	94.5				
Hispanic	3.3				
Native Am.	2.2				
Maternal age		23.4	5.6	12.7	42
Marital status					
married	39.3				
divorced	10.1				
never married	43.8				
separated	5.6				
widowed	1.1				
Education		11.8 yrs	1.6	6 yrs	16 yrs
Employment status					
employed FT	17.9				
employed PT	17.9				
unemployed	34.7				
not seeking	21.1				
Household composition					
# people		3.7	1.3	1	7
Member w/disability	13.3				
Spouse present	38.2				
Living w/partner	18.2				
# children in home		2.2	1.04	0 prenatal	5
Member rec.					
unemployment	2.1				
social security	1.1				
pension	1.1				
SSI	7.4				
2 members earn $	25.3				
3 members earn $	22.1				
Rec TANF support	41.1				
Yrly TANF $		$4351.98	1647.13	$680.00	$6916.00
Rec child support	14.7				
Yrly support $		$2056.60	1747.09	$100.00	$4940.00

Measures

Risk Load. Risk load was operationalized as the total number of risk factors experienced by a family. A multiple risk index was constructed from individual items assessing risk in child, parent and family contexts (e.g., low birth weight, teenage parent, unstable residency/frequent moves). These individual items were scored dichotomously as either "Present" or "Absent," determined via interview with the parent.

The use of a single composite score of risk factors was based on the nonspecificity hypothesis: all risk factors were assumed to have equal potential with regard to total risk load. Thus, each risk factor was given the same weight and summed, with a higher risk load score indicating a greater number of risk factors experienced by the family. Alpha (KR-20) for this 24-item measure was .67.

Depression. Depression was assessed with the short form of the Beck Depression Inventory (BDI). The BDI (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) is a widely used phenomenological measure of depressive state that has received extensive validational study. The short form of the BDI is a 21-item self-report instrument that assesses cognitive, emotional, motivational, and physical manifestations of depression. It is a better measure of psychological depression than of the biological aspects, and is more sensitive to moderate levels of depression than more profound states.

Beck reports a split-half reliability of .93. Scores on the long and short forms of the BDI correlate between .89 and .97. A meta-analysis of 25 years of data on the BDI yielded an internal consistency mean coefficient alpha of .86 for psychiatric patients and .81 for non-psychiatric patients. For the current study, this measure had an alpha of .84 (with an equivalent standardized item alpha).

Due to changes in data collection protocol, the Center for Epidemiologic Studies Depression Scale, Revised (CES-D-R) was also used in a small number of cases (i.e., 11). CES-D items may be mapped onto the diagnostic criteria for major depression. When employing the CES-D-R as a scale, each item is coded from zero ("not at all or less than one day") to 3 ("five to seven days" or "nearly every day for two weeks"). While the national EHS evaluation project reports a Cronbach alpha of .89 for white mothers, the alpha for this sample was .40, with a standardized item alpha of .61.

While each instrument has particular strengths and limitations with different populations (e.g., in general, the BDI has greater specificity with clinical populations) both instruments discriminate individual differences in depressive severity. With nonclininal (college student and adolescent) populations, the CES-D may be more appropriate for assessing dysthymia or depressive severity, while the BDI is better for identifying cases of depression (Roberts, Lewinsohn, & Seeley, 1991; Wilcox, Field, Prodromidis, & Scafidi, 1998). Both the BDI and the CES-D have been shown to detect depressive symptoms fairly accurately in primary care settings, with sensitivities and specificities that vary depending on the cut-off score selected.[5] It is important to note, however, that for the current study neither instrument is utilized for diagnostic purposes; assessing the degree of depressive symptomology was the goal.

Parenting Stress. Parenting stress was measured with two subscales of the Parenting Stress Index (PSI) short form, focusing on parental distress and dysfunctional parent-child interactions. The original PSI (Abidin, 1983) is a 126-item questionnaire

[5] For example, when compared to the diagnosis of major depression in primary care patients, the BDI had a sensitivity of 100% and a specificity of 89% at a cut-off score of 16; the CES-D had a sensitivity of 89% and a specificity of 70% at a cut-off score of 27 (Zich, Attkisson, & Greenfield, 1990).

reflecting areas of potential stress in the parent-child relationship. The Parent Distress subscale measures parent's dejectedness in their parenting role, with items such as "I feel trapped by my responsibilities as a parent." The Parent-Child Dysfunctional Interaction subscale measures a parent's perceptions of the emotional quality of her relationship with the child, relative to her expectations about the parent-child relationship. A representative item is "When I do things for my child I get the feeling that my efforts are not appreciated very much." Each item is rated on a 5-point scale ranging from 1 (strongly agree) to 5 (strongly disagree) indicating increasing levels of perceived parenting stress by parents.

The PSI has been the subject of considerable empirical scrutiny and demonstrates good psychometric properties (see Abidin, 1983), with a 6 month test-retest reliability of .7 to .8 and Cronbach's alpha at .8 (Deater-Deckard & Scarr, 1996). Several studies on the temporal stability of the PSI report that test-retest reliabilities range between .55 and .96, depending on the specific population tested and the length of the inter-test interval (Abidin, 1990). In this study, this 23-item measure had an alpha of .87, with a standardized item alpha of .88.

Knowledge of Infant Development. Parent's knowledge about child development was measured with the short form of the Knowledge of Infant Development Inventory (KIDI) (Macphee, 1981), a subset of 14 questions from the original KIDI. This measure includes statements that reflect how babies behave, how they develop, and how to best care for them. The use of the KIDI short form in this project is supported by its prior use in the national Early Head Start evaluation (Benasich & Brooks-Gunn, 1996).

The long form of the KIDI, a 75-item questionnaire, samples from three areas of parental knowledge: child–rearing practices, developmental processes and infant developmental norms and milestones. The KIDI is written to reflect a sixth to seventh grade reading level. Each of the items is a statement about infant behavioral norms, such as "A one-year-old knows right from wrong." Items are dichotomized into Knowledge (i.e., combination of strongly agree and agree) and No knowledge (i.e., combination of strongly disagree, disagree and not sure). This scoring procedure resulted in a reliability of .54 (standardized item alpha = .56).

Self-rated Parenting Skill. Global perceived parenting skill was assessed with one item from the Parent Interview. This item asks: "Do you feel that you are: Not very good at being a parent (1), A person who has some trouble being a parent (2), An average parent (3), A better than average parent (4), or A very good parent (5)?" This item is included in a national longitudinal study on the impact of the EHS program on child development and family health.

Child Abuse Potential. Abuse potential was operationalized as a mother's score on a measure of potential to physically abuse her child. Child abuse potential was measured by the Child Abuse Potential Inventory (CAPI), a self-report questionnaire designed to aid in the screening of suspected physical child abusers (Milner, Gold, & Wimberley, 1986). The conceptualization of the scale is described in earlier studies (Milner & Wimberley, 1979, 1980) and in a technical manual (Milner, 1989a). The full questionnaire contains 160 items that are answered in a forced-choice, agree-disagree format. The CAPI contains a physical child abuse scale (77 items) comprised of six descriptive factor scales, including Distress, Rigidity, Unhappiness, Problems with Child

and Self, Problems with Family, and Problems from Others. Respondents are asked to agree/disagree with statements relating to each subscale, such as "Everything in a home should always be in its place" or "I have several close friends in my neighborhood." A total score is obtained by summing the items indicative of greater potential for physical abuse; individual items are weighted according to results from multiple validation studies. Elevated scores indicate that the examinee has characteristics similar to known, active physical child abusers (Milner, 1989c).

Data on the classification rates of the CAPI abuse scale are available (Milner, 1989, 1991; Milner, Gold, & Wimberley, 1986; Milner & Robertson, 1989). Collectively, the data indicate that overall abuse scale classification rates are in the mid-80% to low-90% range. However, in most studies using equal numbers of matched abusers and nonabusers, more false negative than false positive classifications have been reported.

The CAPI abuse scale reliabilities are adequate across a variety of groups (Milner, 1986). For example, internal consistency (KR-20) reliabilities for the abuse scale range from .92 to .96 for abusive (N = 152) and general population participants (N = 2,062). For the current study, the 77-item CAPI had an alpha of .93, with a standardized item alpha of .95. Alphas for the six subscales ranged from .91 to .44.[6]

Temporal stability estimates (test-retest) for 1-day, 1-week, 1-month, and 3-month intervals for the abuse scale are .91, .90, .83, and .75, respectively. Predictive validity data indicate a significant relationship between elevated abuse scores and later physical

[6] Reliability analyses resulted in the following alphas for the CAPI subscales (standardized item alpha values in parentheses): Distress .91 (.95), Rigidity .73 (.80), Unhappiness .59 (.72), Problems with Child and Self .44 (.57), Problems with Family .49 (.59), Problems from Others .60 (.69).

child abuse (Milner, Gould, Ayoub, & Jacewitz, 1984). Many other validity studies have been conducted (Ayoub, Jacewitz, Gold & Milner, 1983; Burrell, Thompson & Sexton, 1992; Milner, 1989; Milner & Ayoub, 1980; Milner & Robertson, 1983, 1985; Monroe & Schellenbach, 1989; Pruitt & Erickson, 1985; Robertson & Milner, 1985).

Given that associations among the variables of interest in the current study have been clearly described in the child maltreatment literature, one would expect correspondence among measures. Correlations among parenting stress, depression, and the subscales of the CAPI (presented in the Appendix, Table 2), reveal some degree of relationship while also indicating that these measures are not overlapping in content. While tapping similar constructs, the measures also assess unique variance (see Holden, Willis, & Foltz, 1989).

Results

Data Estimation

Missing data points and number of valid cases are presented in the Appendix (Table 2). For all scales except depression, missing data estimation was completed with SPSS using regular linear regression with several correlated and theoretically related predictor variables. If an item was missing, it was typically only for one or two items across each of the instruments.

While changing the measurement instrument for depressive symptomology during data collection was an unanticipated event, it is not likely that this had any meaningful effect on the results. Analytic techniques were used to ameliorate any complications. Most of mothers in the sample (88.4%) had complete BDI scores; 11.6% had completed the CES-D. For the 11 cases where BDI scores were missing (but CES-D scores were

available), these scores were estimated using percentile ranking. The Blom method of percentile ranking was used to approximate the normal distribution for the BDI and CES-D scores. Values were assigned to cases based upon parallel percentile ranks between the two instruments within the sample. This strategy maintains a continuous distribution and removes the need to use cut-off scores, which can vary widely by sample and purpose. Results of this method of missing data estimation were compared to the results based on estimating data with linear regression, with more acceptable results from the percentile ranking strategy.

Descriptive Analysis

Means and standard deviations were calculated for all scaled scores (Table 4). A higher score indicates a greater degree of the variable of interest, i.e., more knowledge of infant development, higher risk load, "better" self-rating of parenting skill, higher child abuse potential, greater degree of depressive symptomology, or higher degree of parenting stress.

Table 4: Descriptive Statistics of Scaled Scores							
	N	Min	Max	M	sd	Skewness (std error = .247)	Kurtosis (std error = .490)
Risk load	95	1	16	6.07	3.19	1.133	.816
Depression	95	0	35	11.94	8.30	.680	-.117
Stress	95	24	87	45.49	15.58	.752	-.191
Knowledge of Infant Devel.	95	6	14	10.89	1.94	-.673	-.089
Self-rated Parenting Skill	95	1	5	3.59	1.01	.070	-.844
Child Abuse Potential	95	2	422	152.88	113.71	.558	-.870

For this sample, a KIDI score was created as a sum of the items (reverse scoring where appropriate), resulting in a sample mean of 10.89 (sd = 1.94), with scores ranging from 6 to 14. Preliminary analyses revealed that knowledge of infant development did not contribute to the model in a meaningful way: this variable was not correlated with any other scaled variables, nor did partial multiple regression analyses indicate any significant relationship to other variables in the model. Knowledge of infant

development was significantly correlated with only one demographic variable, maternal education ($r = .23$, $p < .05$). In addition, examination of 3-D scatterplots revealed no relationship between knowledge of infant development and other variables. As an additional step, the KIDI was rescored using the scoring protocol of the national EHS evaluation (i.e., using a mean rather than a summed score. This strategy averages across missing data points). With this strategy, this sample's average knowledge score ($M = 4.06$, $sd = .46$) can be compared to the national EHS sample ($M = 3.05$, $sd = .41$). While this change in scoring protocol created a few new correlations among variables (i.e., knowledge of infant development became significantly correlated with a history of family problems [$r = .24$, $p < .05$] and issues with illiteracy [$r = -.27$, $p < .01$]), knowledge of infant development still did not correlate with any other predictor variables in the model. The variable was therefore dropped from further analyses. Therefore, group differences based on the interaction between self-rated parenting skill and knowledge of infant development were also not examined.

The remainder of variables was tested for normality with the Kolmogorov-Smirnov (Lilliefors) test. All distributions were normal. However, outliers were noted: six cases were high-scoring extremes on risk load and two cases were high-scoring extremes on depressive symptomology.

The average risk load score was 6.07 ($sd = 3.19$), indicating that families experienced an average of slightly more than six risk factors. Families' risk load ranged from 1 to 16 factors. The most common individual risk factors–those affecting over 20% of the sample—include low family income and unemployment; single- and teen-parenthood; school dropout and issues with illiteracy; rural housing; experiencing loss

related to death or divorce; physical, mental or emotional illness; history of diagnosed family problems; and difficult or violent temperament. The summary of individual risk factors is presented in Table 5.

Table 5: Summary of Individual Risk factors of the Risk load Index	Valid %
Low birth weight	16
Developmental immaturity	11. 7
Nutritional deficit	17
Language deficiency or immaturity	19.1
Physical and/or sexual abuse & neglect	16
Long term or chronic illness	9.6
Diagnosed disability	5.3
Difficult or violent temperament	20.2
Substance abuse or addiction	14.9
Issues with illiteracy	26.6
Single parent	53.2
Death/divorce	26.6
Teenage parent	40.4
Physical, mental, or emotional illness	25.5
Incarcerated parent	7.4
Low school achievement or drop out	45.7
History of delinquency	19.1
Unstable residence	9.6
Non-English or limited English speaking household	4.3
History of diagnosed family problems	22.3
High family density	13.8
Housing in rural or segregated area	30.9
Unemployment	58.5
Low family income	90.4

Mothers' average depression score was 11.94 (sd = 8.3), ranging from 0 to 35. If assigning a diagnosis, cut-off scores have been suggested.[7] In reference to published

[7] Mothers averaged 11.71 on the BDI, (sd = 8.11); ranging from 0 to 35. Beck has suggested multiple cut-offs: minimal (< 10), minimal to moderate (10 - 18), moderate to severe (19 - 29), and severe (over 29). Others have suggested using a cut-off score of 10 with nonclinical samples. For the 11 mothers who completed the CES-D: M = 13.64 (sd = 10.46), ranging from 1 to 31. This value can be compared with mothers participating in the national EHS evaluation (N=2242), where the average CES-D score was 13.4 (sd = 9.9). With the CES-D and clinical samples, the literature suggests a cut-off score of 16,

norms, mothers in this sample scored slightly higher than average nonclinical samples in depressive symptomology, but slightly lower than comparison groups (see footnote 6). However, as noted previously, a continuous distribution of depressive symptomology was the desired structure of the variable, and suggested cut-off scores are provided for comparison only. Moreover, other studies using intensity of depressive symptoms have found that nonspecific indicators of maternal psychopathology—rather than diagnostic category—are better predictors of family functioning (Dickstein et al., 1998).

On self-rated parenting skill, mothers' mean score was 3.59 (sd = 1.01), indicating that most mothers rated their parenting skill as above average. Scores on this variable ranged from 1 to 5.

Mothers averaged 45.49 (sd = 15.58) for Parenting Stress, with scores ranging from 24 – 87. While the national EHS sample's PSI scores are divided by subscale (that is, PSI distress M = 27.28, sd = 9.45; PSI dysfunctional interaction M = 17.54, sd = 5.90), a rough comparison value can be formed by adding the two subscale scores, resulting in a mean of 44.82, close to the sample in the current study.

Mothers' average CAPI score of 152.88 (sd = 113.71; range = 2 – 422) can also be compared to norms provided by the instrument's author. Milner offers score guidelines as a function of education, gender and ethnic background. For a female sample with 12 or fewer years of education, the average score is 120 (sd = 88), which drops to 80 (sd = 64) with 13+ years of education. For samples of white females *and* males, 12 or fewer years of education, the average score is 105 (sd = 83), which drops to

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whereas studies using nonclinical samples (teenagers) report that such a cut-off dramatically increases the number of "depressed" cases.

72 (sd = 58) with 13+ years of education. Cut-off scores are also suggested.[8] Since mothers' average years of education was 11.78 (sd = 1.64) and about 95% were identified as white, both of these normed samples serve some utility as references, and both indicate that this study's sample averaged higher on child abuse potential.

Mothers' scores on the CAPI subscales can also be compared to norms published by Milner (1989b). On five of the six subscales embedded in the CAPI (i.e., Distress, Unhappiness, Problems with Family, Problems with Others, Problems with Self and Child), this sample scored significantly higher than the norm (as determined with one-sample t-tests, using the normed indices as the specified constant)[9]. Rigidity is the only subscale for which no significant differences emerged between the sample and the normed index (Table 6). As a whole, this sample's mean scores were *not* above the suggested cut-off score for each CAPI subscale or the entire instrument. However, examining which abuse factor scores are elevated may provide suggestions about which dimensions in the scale are contributing to the total abuse score.

While only 3.2% of the sample scored above the cut-off value across all subscales, 36.8% of mothers scored above the cut-off for Problems with Family. Over 28% of mothers scored above the cut-off value for Unhappiness, and about 27.4% of the sample scored above the Distress cut-off score. About 19% scored above the cut-off

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[8] Cut-off scores are suggested if using the CAPI as a diagnostic tool (i.e., 215 with control groups, 166 with controls/abusers); however, this variable was left as a continuous variable in the current study.

[9] It is important to note the following demographic details about the comparison group (N=836). This group was comprised of parents from parent-teacher organizations, developmental evaluation centers, departments of social services, and other community organizations. The average age was 32.3 (sd = 8.1), the average education was 14 years (sd = 2.6), and 23% were males. Ethnicity included 13% black, 83% white and 4% other. Averaging 2 children (sd = 1), 8% of these parents were single, 76% were married, and 16% were divorced/separated/widowed.

values for both Problems with Child and Problems from Others, while only 8.4% scored above the Rigidity subscale cut-off value.

Table 6: Child Abuse Potential Inventory Factor subscale scores and Comparison Norms

* denotes significant difference between sample factor scores and means published in scoring manual ($p < .05$; ** $p < .01$; *** $p < .001$)

Factor	Comparison M (N=836)	Comparison sd	Suggested cut-off scores[10]	M (N=95)	sd	Range
Distress	58	56.8	152	94.44 ***	78.91	0 - 261
Rigidity	10.1	12.5	30	11.89	12.76	0 - 59
Unhappiness	8.1	9.2	23	17.54 ***	14.72	0 - 55
Problems with self & child	2.8	5.2	11	5.06 **	6.88	0 - 29
Problems with family	6	7	18	13.76 ***	14.108	0 - 38
Problems with others	6.4	8.6	20	10.19 ***	8.32	0 - 24

[10] From CAPI scoring manual: The factor scores should not be employed for classification or predictive purposes. Normal range and elevated factor scores should only be employed for descriptive purposes and for the formulation of tentative clinical hypotheses about the examinee.

Correlations

In order to examine relationships among variables, Pearson product-moment coefficients were calculated for all measures. For the most part, the variables' correlations supported the hypothesized relationships. Significant positive relationships were found among risk load, child abuse potential, depression and parenting stress. Self-rated parenting skill was significantly negatively related to abuse potential, depression and parenting stress. Correlations among scaled scores are listed in Table 7.

Significant biserial correlations among individual risk factors were also found. Both chronic illness and a history of abuse or neglect were related to a host of other individual risk factors. Chronic illness, found in 9.5% of families in the sample, was associated with language deficiency, developmental immaturity and nutritional deficit; handicap; difficult temperament, delinquency and substance abuse; and physical or mental illness. A history of abuse or neglect, notably high in this sample at 16%, was significantly associated with unstable residency, difficult temperament, substance abuse, school dropout, a history of delinquency and family problems, and a family member with a physical or mental illness.

Unstable residency and difficult temperament also emerge as key factors. Unstable residency, reported for 9.5% of families, was related to difficult temperament and substance abuse, language deficiency, school dropout and delinquency, family problems and death/divorce. Difficult temperament was associated with substance abuse, language deficiency, delinquency and family problems, single parent, and physical, mental, or emotional illness. Other correlations of interest, including those among demographic variables, are presented in the Appendix (Table 8).

Table 7: Correlations among Scaled Scores						
	Risk load	Knowledge of Infant Devel.	Self-rated Parenting Skill	Child Abuse Potential	Depression	Parenting Stress
Risk load	1					
Knowledge of Infant Devel.	-.073	1				
Self-rated Parenting Skill	-.017	.120	1			
Child Abuse Potential	.357***	-.088	-.235*	1		
Depression	.226*	-.093	-.330***	.740***	1	
Parenting Stress	.221*	-.148	-.352***	.662***	.565***	1

Analyses

The hypotheses that a) risk load, maternal affective variables and self-rated parenting skill are associated with physical child abuse potential; b) self-rated parenting skill mediated the relationships between parenting stress and child abuse potential, and between depression and child abuse potential; and c) self-rated parenting skill moderated the relationships between parenting stress and child abuse potential, and between depression and child abuse potential were tested by comparing several structural equation

models. This strategy allows objective evaluation of the adequacy of fit of the theoretical model to data, as indicated by the degree to which the matrix of interrelations among observed variables constructed by the model differs from its sample complement (Raykov, Tomer, & Nesselroade, 1991). As only observed variables were examined, these analyses were equivalent to path analysis.

Goodness-of-fit indices apply to both the overall model and individual specified paths. The goodness-of-fit indices used to determine adequacy in these analyses include GFI, CFI, RMSEA and Chi Square. Chi-square is a statistical test of lack of fit, with a desired value of a nonsignficant result. The Goodness-of-Fit Index (GFI) indicates the relative amount of observed variances and covariances accounted for by a model. The Comparative Fit Index (CFI) indexes the relative reduction in lack of fit as estimated by the noncentral Chi-square of a target model versus a baseline model. For both GFI and CFI, values of greater than .90 are desired. The Root Mean Square Error of Approximation (RMSEA) is a degree of parsimony fit index, with a desired value of <.05.

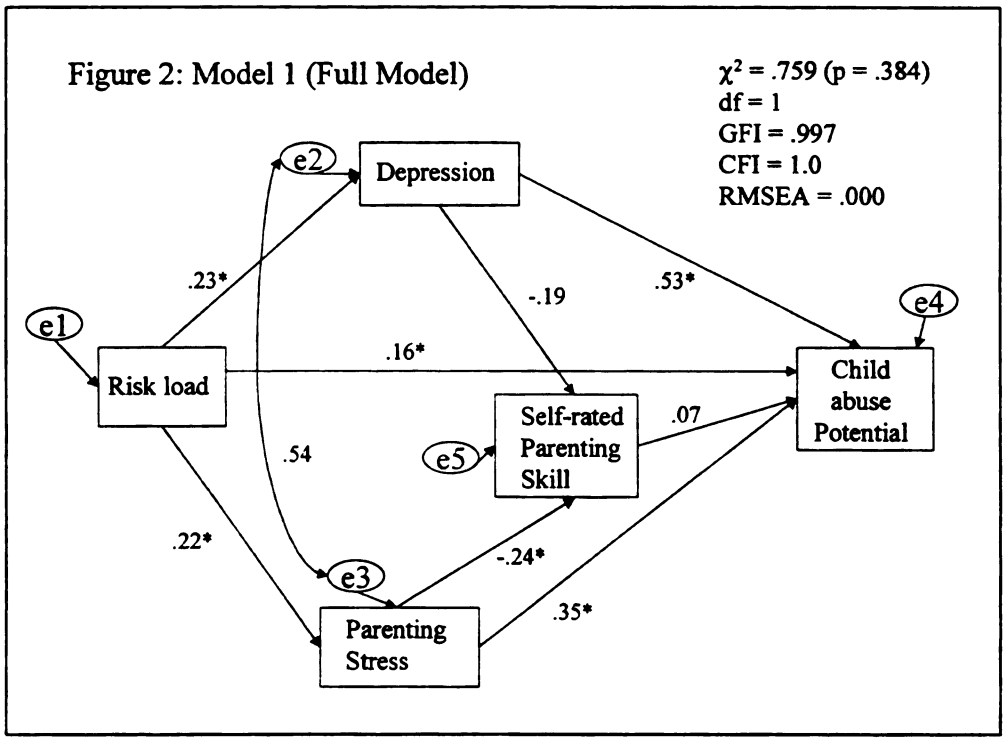
Amos 4 (Arbuckle & Wothke, 1999) was used to obtain generalized least squares estimates of the model coefficients. A generalized least squares estimator minimizes the sum of squared residuals, weighted by the inverse of the sample covariance matrix. Several structural models were examined and compared for goodness of fit to the data. As a first step, an overall inclusive model was run. This model included direct and indirect effects for the following paths 1) parenting stress to self-rated parenting skill to child abuse potential; 2) depression to self-rated parenting skill to child abuse potential;

3) parenting stress to child abuse potential; 4) depression to child abuse potential; and 5) self-rated parenting skill to child abuse potential.

Results of these initial analyses suggested two modification indices. The first modification index was to include a direct path from risk load to child abuse potential; the second was to allow the errors between depression and parenting stress to correlate. These suggested modifications make intuitive sense. Regarding the direct path from risk load to child abuse potential: this added path is reasonable despite not being included in the proposed hypotheses, given that it is a plausible derivative of risk load theory. The correlation between errors for parenting stress and depression is also an acceptable modification since the respondents and the assessment situation are the same, and the systematic variation between parenting stress and depression is not fully explained by risk load. Thus, these two suggested modifications were included in the remainder of the analyses.

Using these two modifications to respecify the model, another full model was run (Figure 2). This model is described as Model 1, in which both indirect and direct effects of parenting stress and depression onto child abuse potential were examined.

This model represents a good fit to the data based on multiple goodness-of-fit indices. The overall χ^2 is nonsignificant [χ^2 (df = 1, N = 95) = .759, p = .384], and the GFI and CFI are acceptable values (.997 and 1.0, respectively). RMSEA (.000) is well below cut-off range. The parsimony ratio (df/[.5k (k+1)]), which compares degrees of freedom to number of nonredundant elements of the analyzed moment matrix, is .067 (k = number of observed variables).

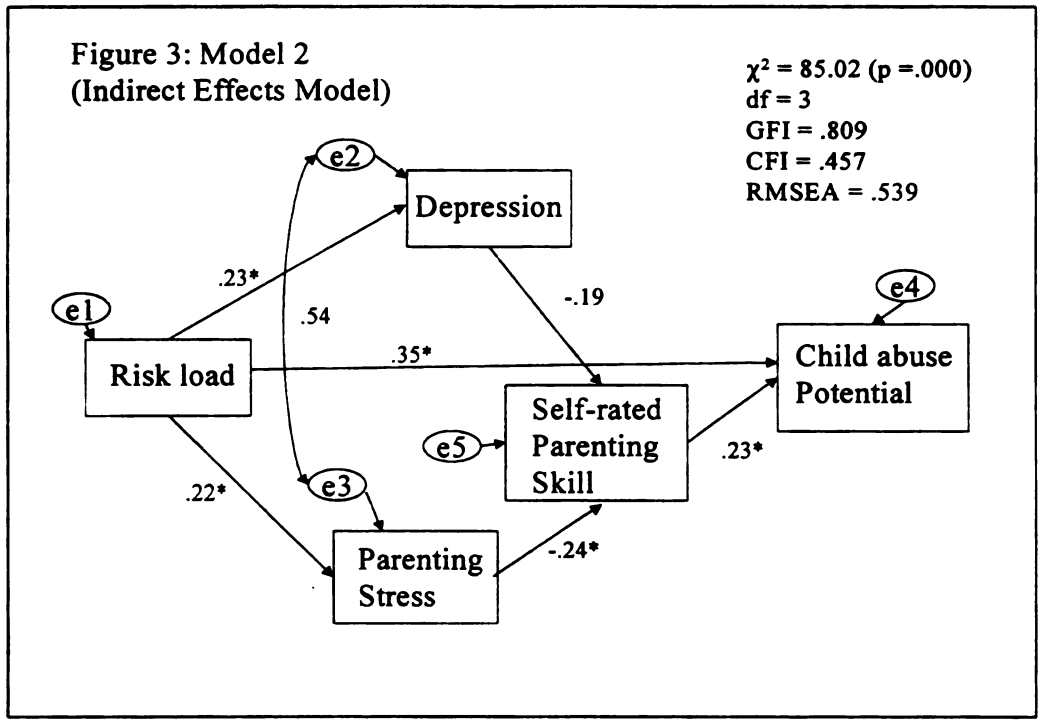


Relationships in the model are all in the expected direction, and six of eight standardized path coefficients were found significant (indicated with * in the figure). Risk load directly affected both depression (standardized path coefficient = .23) and parenting stress (standardized path coefficient = .22), as well as child abuse potential (standardized path coefficient = .16). In turn, parenting stress affected child abuse potential (standardized path coefficient = .35) and self-rated parenting skill (standardized path coefficient = -.24). Depression is also associated with child abuse potential (standardized path coefficient = .53). However, the paths from depression to self-rated parenting skill, and from self-rated parenting skill to child abuse potential were not significant.

These results indicate that both risk load and maternal affective variables of depression and parenting stress impact child abuse potential. In addition, parenting stress

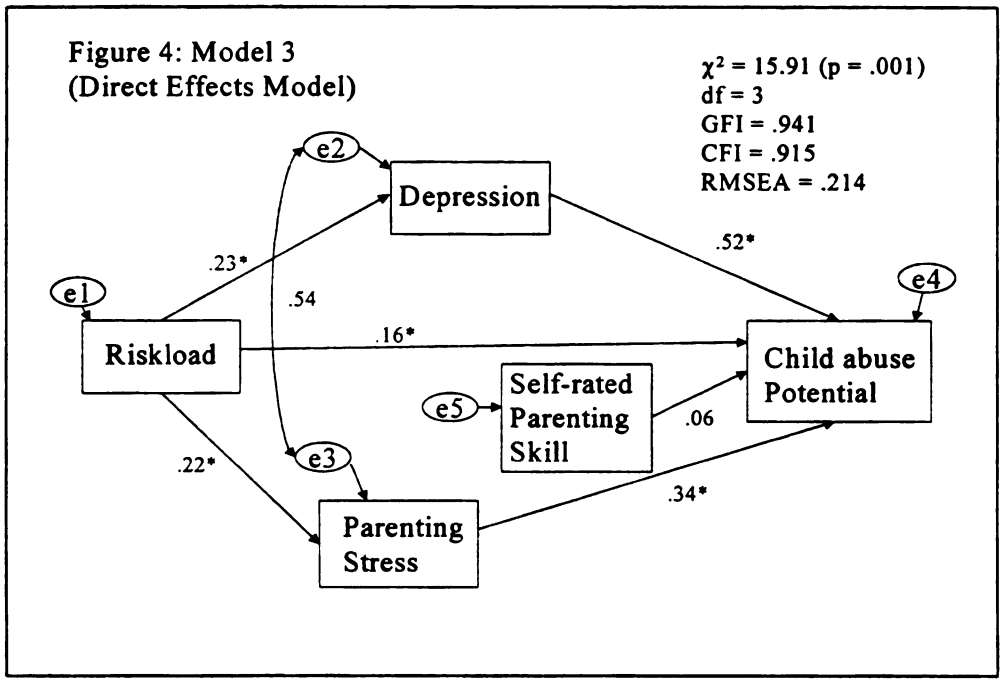
has a negative effect on mother's rating of her parenting skill. However, self-rated parenting skill does not serve as a mediator through which depression and parenting stress lead to increased child abuse potential, and self-rated parenting skill itself does not affect child abuse potential. Thus, once the variance between depression and abuse potential and between parenting stress and abuse potential is accounted for, self-rated parenting skill is not important as examined in this model.

To further examine the role of self-rated parenting skill, two additional models were tested. Model 2 was run to ascertain the nature of the indirect paths from depression and parenting stress to abuse potential via self-rated parenting skill. As can be seen in Figure 3, the main impact of removing the direct paths from depression to abuse potential and from parenting stress to abuse potential is a much larger standardized path coefficient from risk load to abuse potential (from .16 in Model 1 to .35 in Model 2) and a newly significant indirect relationship from the maternal affective variables to abuse potential via self-rated parenting skill. These results indicate that risk load significantly affects child abuse potential, as does self-rated parenting skill (standardized path coefficient = -.23). While depression does not affect abuse potential through self-rated parenting skill, parenting stress does (standardized path coefficient = -.24). The parsimony ratio for this model is 0.2. However, the goodness-of-fit indices fail to support the model. The overall χ^2 is significant [χ^2 (df = 3, N = 95) = 85.02, p = .000)], GFI (.809) is slightly low, CFI (.457) is very low, and RMSEA (.539) is far above the desired cut-off.



Thus, an additional comparison model, in which only direct paths to child abuse potential from risk load, depression, parenting stress, and self-rated parenting skill were included, was examined (Figure 4). In this model (Model 3), there were significant paths from risk load to abuse potential (standardized path coefficient = .16), from depression to abuse potential (standardized path coefficient = .52), and from parenting stress to abuse potential (standardized path coefficient = .34). However, the path from self-rated parenting skill to abuse potential was not significant. While both GFI and CFI were of respectable values (.941 and .915, respectively), Chi-square was significant [χ^2 (df = 3, N = 95) = 15.91, p = .001] and RMSEA value (.214) overshoots the desired cut-off. This model's parsimony ratio is 0.2. These results indicate that risk load, depression and parenting stress are significantly associated with child abuse potential, but that self-rated

parenting skill is not a useful element in understanding increased potential for abusive parenting.



In Model 1, self-rated parenting skill emerged as a significant variable in the model, despite not significantly affecting child abuse potential. In addition, the multiple goodness-of-fit indices collectively suggested that Model 1 fit the data well. For these reasons, Model 1 was selected as the best fitting model. Squared multiple correlations for the variables are as follows: riskload (.00), depression (.05), parenting stress (.05), self-rated parenting skill (.15), and child abuse potential (.67). All output pertaining to this model is included in the Appendix.

Additional analyses

By comparing differences among groups of mothers based on varying degrees of child abuse potential, one can answer the question: What are the conditions—over and above a set of generic risk factors for all family functioning problems—that characterize

a family context that is marked by high abuse potential? While maintaining family risk load as a conceptual framework, it is possible to determine which individual risk factors accounted for the most variance in this sample's child abuse potential scores. It is important to note that the set of individual risk factors accounting for the greatest proportion of the variance would be expected to vary across samples and contexts.

In order to make such comparisons, K-means cluster analyses were conducted. This procedure attempts to identify relatively homogeneous groups of cases based on selected characteristics and determines group membership indicating the Euclidean distance between each case and its classification center. Two series of K-means cluster analysis were run, created based on mothers' child abuse potential score.

In the first run, a three-cluster option was specified. This number of clusters was specified based on preliminary examination of the distribution of child abuse potential scores, in which three groups of score ranges appeared to emerge. However, after the maximum number of iterations (i.e., 10), a solution did not converge. In the next run, a four-cluster option was specified. After 5 iterations, a solution was reached. The final cluster centers were 381 (Cluster 1), 156 (Cluster 2), 287 (Cluster 3) and 46 (Cluster 4). Descriptive data on these clusters are listed in Table 9.

Table 9: Descriptive Data on Child Abuse Potential Clusters

	Overall sample CAPI	Cluster 1 (highest risk)	Cluster 2 (average risk)	Cluster 3 (heightened risk)	Cluster 4 (low risk)
N	95	6	28	21	40
M	152.88	380.50	155.89	287.14	46.15
sd	113.71	30.12	31.71	28.26	23.95
Min. value	2	345	107	235	2
Max. value	422	422	218	328	87

The highest-scoring group of mothers (Cluster 1) contains only six cases, with an average abuse potential score that places them close to two standard deviations above the mean for the entire sample. The next highest-scoring group of mothers (Cluster 3) falls roughly between one and two standard deviations above the sample mean. Cluster 2 holds 28 mothers essentially of "average risk" for abuse potential (relative to this sample). Finally, Cluster 4 is comprised of 40 mothers at the lowest risk for abuse. Using means published by Milner (1989a),[11] it is clear that even Cluster 2 mothers—those of "average risk" in this sample—score well above the means for these comparison samples. In contrast, the Cluster 4 mothers fall far below comparison groups' mean abuse potential scores.

Clusters were compared across a range of variables (see descriptive data in Table 9). One-way ANOVAs with Student-Newman-Keuls post hoc comparisons were conducted; only significant differences are described in the paragraphs that follow.

Clusters significantly differed relative to risk load ($p = .005$), depression ($p = .000$) and parenting stress ($p = .000$), as well as individual risk factors of nutritional deficit ($p = .006$), unstable residency ($p = .045$), single parenthood ($p = .007$) and teen parenthood ($p = .007$). In addition, a trend is noted for chronic illness ($p = .052$). Each of six CAPI subscales also emerged as significantly differentiating among clusters, each at $p = .000$.

Post hoc tests revealed the following differences. Clusters 2 and 4 experienced significantly lower risk loads than did Cluster 1 (Cluster 3 could fit in either subset). Each cluster demonstrated significant differences in terms of depression, with Cluster 1

[11] That is, a mean of 120 for females with less than 12 years education and 105 for white males and females with 12 or fewer years education.

rated highest and Cluster 4 lowest on depressive symptomology. In terms of parenting stress, three subsets emerge, with both Clusters 3 and 1 falling into a subset of high-stress parents.

While family risk load was clearly associated with child abuse potential scores, several individual risk factors were also useful in distinguishing among clusters. For example, Cluster 1 has a significantly higher report of nutritional deficit. Teenage parenthood also emerged as an important variable in terms of increased child abuse potential. Mothers in Cluster 1 were significantly more likely to be teen mothers, relative to mothers in Clusters 4 and 2 (Cluster 3 belonged in either subset). While the ANOVA analyses revealed significant differences for single parenthood and unstable residence, and a trend for chronic illness, post hoc comparisons did not identify subsets based on these individual risk factors.

In sum, several of the proposed hypotheses were supported, viz., hypotheses 1 and 2, that higher risk load is associated with greater depressive symptomology and increased parenting stress. Hypotheses 3 and 4 were also supported by the data: greater depressive symptomology and increased parenting stress were both associated with higher child abuse potential. Hypotheses 9 and 11, pertaining to moderating and mediating roles for self-rated parenting skill in the relationship between depression and abuse potential, were not supported. Self-rated parenting skill did not interact meaningfully with depression.

Hypotheses 13 and 14, pertaining to moderating and mediating roles for self-rated parenting skill in the relationship between parenting stress and child abuse potential, were partially supported. Self-rated parenting skill served as a mediator between parenting stress and child abuse potential, but only when direct effects of parenting stress onto

abuse potential were controlled. In the best-fitting model, higher parenting stress was associated with poorer self-rated parenting skill, but self-rated parenting skill does not then serve as a mediator between parenting stress and abuse potential. In addition, increased risk load was associated with higher child abuse potential, a finding not originally proposed. Hypotheses that included knowledge of infant development, singly or as part of an interaction variable, were not tested (i.e., Hypotheses 5, 6, 7, 8, 10, 12, 15 and 16).

A final analytic procedure was conducted to assess which individual risk factors comprising the risk load index were contributing most to mother's abuse potential scores. A series of one-way ANOVAs was conducted relating each risk factor to child abuse potential (Table 10). For these analyses, the sample was treated as a whole, without division into clusters based on child abuse potential scores. Only the significantly contributing risk factors are described, in order of importance. A significant effect was found for teen parent status [$F(1, 92) = 13.72$, $p = .000$], difficult temperament [$F(1, 92) = 7.06$, $p = .009$], single parent status [$F(1, 92) = 6.61$, $p = .012$], unstable residency [$F(1, 92) = 4.97$, $p = .028$], and history of physical/emotional abuse or neglect [$F(1, 92) = 3.80$, $p = .054$].

Table 10: One-way ANOVAs individual risk factors and child abuse potential scores									
Table 10a: Descriptives									
						95% confidence interval			
		N	M	sd	Std error	Lower bound	Upper bound	Min	Max
Abuse/ neglect	no	79	141.4	107.8	12.1	117.3	165.6	2	397
	yes	15	202.6	129.9	33.5	130.7	274.5	9	422
Unstable residence	no	85	142.9	108.2	11.7	119.6	166.2	2	422
	yes	9	229.4	134.4	44.8	126.1	332.8	9	399
Difficult temperament	no	75	136.1	107.3	12.4	111.4	160.7	2	422
	yes	19	210.8	118.7	27.2	153.7	268.0	24	399
Single parenthood	no	44	120.1	99.5	15.0	89.9	150.4	9	422
	yes	50	178.5	118.1	16.7	144.9	212.1	2	399
Teen parenthood	no	56	117.8	93.5	12.5	92.8	142.8	2	345
	yes	38	200.4	122.4	19.9	160.1	240.6	10	422

Table 10b: ANOVAs		Sum of Squares	df	Mean Square	F	Sig.
Abuse/ neglect	B/w Grps	47189.1	1	47189.1	3.801	.054
	W/in Grps	1142259.8	92	12415.9		
	Total	1189447.9	93			
Unstable residence	B/w Grps	60963.7	1	60963.7	4.970	.028*
	W/in Grps	1128484.3	92	12266.1		
	Total	1189447.9	93			
Difficult temperament	B/w Grps	84762.7	1	84762.7	7.059	.009*
	W/in Grps	1104685.2	92	12007.4		
	Total	1189447.9	93			
Single parenthood	B/w Grps	79722.2	1	79722.2	6.609	.012*
	W/in Grps	1109725.7	92	12062.2		
	Total	1189447.9	93			
Teen parenthood	B/w Grps	154324.2	1	154324.2	13.716	.000*
	W/in Grps	1035123.7	92	11251.3		
	Total	1189447.9	93			

When child abuse potential was regressed onto these five risk factors as a group, about 21% ($p = .001$) of the variance is accounted for. However, of all the variables in

the equation, only teenage parenting remained significant (beta = .291, p = .004) (Table 11).

Table 11: Model 1
Predictors = Abuse/neglect, Single parenthood, Teenage parent, Difficult temperament, Unstable residence.
Dependent Variable = Child abuse potential

	Sums of Squares	df	Mean Square	F	Sig.
Regression	248601.6	5	49720.3	4.650	.001
Residual	940846.3	88	10691.4		
Total	1189447.9	93			

	Unstandardized Coefficients		Standardized Coefficients		
Model	B	Std error	beta	t	Sig.
Constant	93.070	17.306		5.378	.000
Teen parenting	66.675	22.474	.291	2.967	.004*
Difficult temperament	36.404	30.427	.130	1.196	.235
Single parenthood	34.551	22.425	.153	1.541	.127
Unstable residence	38.564	48.522	.101	.795	.429
Abuse/ neglect	10.829	39.938	.035	.271	.787

Discussion

The goal of this study was to elucidate the nature of physical child abuse potential in a high risk context by focusing on the associations among risk load, maternal affective variables of depression and parenting stress, and self-rated parenting skill. Results revealed that there is a relationship between risk load and a mother's child abuse potential that is both direct and indirect by means of increased parenting stress and depression. In accord with Belsky's (1984) theory and findings by Simons and colleagues (Simons & Johnson, 1996; Simons et al., 1993; Simons et al., 1994), the impact of chronically stressful contextual conditions (i.e., risk load) is less consequential for parenting than is

mother's well-being. Thus, increased risk for physically abusive parenting can be viewed as being comprised of both parent-level variables and environmental variables that are external to the parent. These results harmonize with recent theories that view child maltreatment as a product of parent characteristics that exist within the context of a multi-problem family (Black, Heyman, & Smith Slep, in press).

When the direct effects of depression and parenting stress onto abuse potential are not considered, a mother's self-rated parenting skill—negatively impacted by her increased parenting stress—also influences her abuse potential. However, a clearer picture of relationships among these variables emerges when direct effects of these maternal affective variables onto abuse potential are accounted for. In the optimized model, standardized regression weights for the paths from risk load to depression, and from risk load to parenting stress, are essentially of equal value, suggesting that risk load accounts for the same portion of variance in each of these affective variables. In addition, depression and parenting stress are positively correlated. Higher risk load is associated with increased depression and increased parenting stress. These affective variables are then associated with increased potential to abuse. Thus, the impact of heightened risk load onto a mother's abuse potential depends in part on her psychological well being.

Maternal depression accounts for a large portion of the variance in child abuse potential, a relationship that has been well established in the child maltreatment literature. However, depression does *not* appear to affect a mother's rating of her own parenting skill, and as such, does not affect child abuse potential indirectly via self-rated skill. Parenting stress also maintains a direct relationship with child abuse potential: higher

parenting stress is associated with increased abuse potential. In addition, higher parenting stress is associated with lower ratings of parenting skill. This lowered sense of parenting skill, however, does not then affect mother's risk for child abuse, in contrast to evidence provided by other studies (McClennan & Harkless, 1998).

Overall, the model that best fit the data indicates that heightened risk load, depression and parenting stress operate in a cumulative fashion to influence abuse potential. A mother who experiences increased risk and heightened depression and parenting stress is at greater risk to abuse her child. Relationships among such variables depict a parenting environment that is characterized by heightened chronic stress, a connection described in the maltreatment literature (Egeland & Brunnquell, 1979; Gaudin & Pollane, 1983; Justice & Duncan, 1976).

A common feature of parents prone to abuse may be from *where* this increased stress originates. Whipple and Webster-Stratton (1991) found that abusive parents experienced stress more often from low income, maternal depression and anxiety, negative life events, frequent child behavior problems and less marital support. In the current study, many of the same sources of stress were found: higher parenting stress levels were significantly associated with higher risk load and depression, lower self-rated parenting skill and increased child abuse potential. Higher parenting stress was also significantly correlated with low family income, substantiating many studies' findings that the experience of stress is much greater in poor or lower-class families than for middle-class families. In addition, developmental immaturity and teen parenthood were significantly correlated with parenting stress. Unlike results from other studies (Deater-

Deckard & Scarr, 1996), child age was not a correlate of parenting stress for the mothers in this sample.

Comparable relationships among similar constructs were found by Conger et al. (1984), who noted that chronic environmental stress (as measured by financial strain, family structure, and maternal education and age) accounted for 54% of the variance in mothers' psychological characteristics (i.e., emotional distress, child-rearing values and perception of children). These characteristics then accounted for 15.1% of the variance in maternal affective responses to children. However, chronic environmental stress accounted for a larger portion of the variance in maternal behavior (36.6%) than did psychological characteristics. The most consistent demographic predictors of maternal behavior in that study were mothers' age and education. However, the Conger et al. study focused on maternal affective responses to children, not abuse potential per se.

While not using risk load as a theoretical framework, Brown and colleagues (1998) discovered that the prevalence of child abuse or neglect increased from 3% when no risk factors were present to 24% when four or more risk factors were present. Similarly, Hannan and Luster (1991) created a family risk index after determining which risk factors significantly affected the quality of the home environment. There was a clear relationship to the six-factor risk index (comprised of teen parenthood, lower intelligence scores, lower income, single parenthood, family density and difficult temperament), such that as a mother's score on the risk index increased, the probability that her family provided a lower quality home environment group also increased. In the current study, risk load correlated with several demographic variables: it was positively correlated with child age and receiving public assistance, while negatively associated with the number of

people in the household and having a live-in spouse. Thus, risk may be buffered if mother is experiencing increased support from a husband or additional household members.

A greater understanding of child abuse potential—and the variables most closely associated with it—may be found by examining relationships among individual risk factors and demographic characteristics in the current study, although it is recognized that demographic factors, which may be risk indicators, are not necessarily causal factors (Black, Heyman, & Smith Slep, in press). Many of the most prevalent individual risk factors were—unsurprisingly—related to social class. This finding is expected given the nature of the program from which families were selected, and the fact that the average yearly income was below $10,000. Some of these risk factors revealed notably high prevalence rates.

"Common" risk factors of low income and single parenthood notwithstanding, this sample had a high proportion of difficult or violent temperament and history of abuse or neglect. Although it is difficult to find adequate comparison values, the U.S. 1998 rate of maltreatment was 12.9 per 1,000 children[12] (DHHS, 1998). With 16% of mothers in the current sample reporting a history of some form of maltreatment, it is worth considering that victimization (especially by mothers) increases mothers' risk for perpetrating physical abuse (Black, Heyman, & Smith Slep, in press). Others (Haskett, Johnson, & Miller, 1994) have found that a history of maltreatment was related to self-reported problems with family members but not to mothers' overall risk of abuse. It is

[12] 53.5% of these are cases of neglect, 22.7% cases of physical abuse, 11.5% cases of sexual abuse, and 6% or fewer cases each of emotional abuse and medical neglect. In addition, 25.3% were reported to be victims of more than one type of maltreatment

thus noteworthy that 36.8% of mothers in this sample scored above the suggested cut-off value for a child abuse potential factor that indicates problems with family members.

The prevalence of difficult or violent temperament in this sample is also notable at over 20%. This variable played an important role in elevated child abuse potential, as did unstable residency, low educational attainment and issues with illiteracy. These variables were then associated with a host of other risk factors (e.g., history of abuse/neglect is associated with depression and substance abuse; difficult temperament and unstable residency are associated with delinquency and diagnosed family problems; unstable residency is also related to receipt of public assistance).

It is also informative to examine demographic variables that do *not* share an association to physical abuse potential. Of all the demographic variables examined in this study—maternal age and education, child age and sex, ethnicity, income and receipt of TANF and Medicaid, household density, and housing and transportation needs—only younger maternal age was significantly correlated with abuse potential, as previously noted. Despite the fact that the demographic variables examined here are among the most commonly studied potential risk factors for parent-to-child physical aggression, other studies (see Black, Heyman, & Smith Slep, in press) have found conflicting evidence regarding their role in child maltreatment etiology.

Depression is known to covary with other factors that adversely affect family functioning. In this sample, higher depression was significantly associated with several individual risk factors, including history of physical or emotional abuse/neglect, single parenthood and teen parenthood. Lower depression was associated with older child age.

(DHHS 1998: Reports from the States to the National Child Abuse and Neglect Data System).

Interestingly, increased depressive symptomology was *not* associated with low income or other related variables, such as low educational attainment and receiving public assistance. It appears that the individual factors associated with increased depression in this sample—such as single- and teenage-parenthood—operate through increased stress.

Indeed, both heightened child abuse potential and parenting stress were associated with maternal age variables (viz., teen parenthood status as well as age in years). Although mothers across the entire sample averaged slightly over 23 years old, about 23% of the sample were younger than 19 years old, with a mean age of 17.6 years (sd = 1.3). However, teen parenthood was indicated in 40% of cases, indicating that some proportion of mothers in this sample have other children born at an earlier time (i.e., when they were teenagers). These young mothers account for a greater proportion of high depression-high parenting stress cases. In addition, higher maternal age is related to higher education, income and rent, more people and children in the household, and having a live-in spouse. These findings mirror those of other studies that link early parenthood with attenuated educational achievement and related problems of underemployment and restricted life-time earnings (Fulton, Murphy & Anderson, 1991; Luster & Brophy-Herb, 2000; Miller, Miceli, Whitman, & Borkowski, 1996).[13]

Thus, for this sample of mothers, younger parenting age is part of a high risk context that may present a greater likelihood for physically abusing one's children. Indeed, a range of problematic parenting behaviors has been found in samples of adolescent mothers, including deficiencies in maternal sensitivity, contingent

[13] However, others report that early childbearing is associated with larger family size (see Luster & Brophy-Herb, in press). In the current sample, it is not know whether more people and children in the household refers to cases where mother lives with the family of origin.

responsivity, physical involvement, and verbal stimulation (Miller et al., 1996; Ragozin, Basham, Crnic, Greenberg & Robinson, 1982), and noteworthy similarities between characteristics of the abusive parent and those of the adolescent parent have been noted (see Fitzgerald, Strommen, & McKinney, 1982). Several other studies have demonstrated that teen mothers' lower quality child rearing environment is related in part to the accompanying stressors of lower education, income, and socio-emotional maturity, as well as reduced likelihood of paired parenting (Luster & Dubow, 1990; Luster & Rhoades, 1989; Miller et al., 1996). Others (Goerge & Lee, 1997; Haskett, Johnson, & Miller, 1994; Passino et al., 1993) have reported that younger teen mothers were at greater risk of abuse, advocated the use of physical punishment more strongly, and reported greater unhappiness and more parenting stress than older adolescents. However, Zuravin and DiBlasio (1996) found that teen mothers' low educational attainment was related to neglect, but not to abuse. It is also important to note that some researchers believe that the link between teen parents (and maternal age in general) and child maltreatment is tentative (see Black, Heyman, & Smith Slep, in press; Miller, 1984). Yet for this sample, teenage parenting emerged as the most notable contributor to the relationship between risk load and child abuse potential.

The importance of teenage parenting as a risk factor for child abuse is illustrated by comparisons of group membership based on child abuse potential. The mothers at highest risk for abuse presented a significantly higher risk load than did other mothers. Significantly more likely to be teen parents, these mothers were more depressed and experienced more parenting stress than other mothers. Children of mothers in the highest abuse potential group were more likely to have some sort of nutritional deficit. A

connection among teen mothers, maltreatment, and inadequate child nutrition has been noted (Miller, 1984). On the variables that comprise abuse potential—distress, rigidity, unhappiness, and problems with child, family and others—these high risk mothers outscored every other cluster of mothers.[14] These results build upon and expand other studies (McCurdy, 1995) that have described mothers with high potential for child abuse.

Families' average risk load of six risk factors seems parallel to the results of other studies that have used such an index to characterize the degree of risk in families. For example, Sameroff et al. (1998) utilized an index with 13 factors and found a mode of 5; other Sameroff studies defined high risk as 4+ risk factors. Rutter (1979) examined changes in risk for children's psychiatric illness with fewer than four factors. Williams et al. (1990) examined increased likelihood of child behavior problems for children with 8+ risk factors. However, Ackerman and colleagues (1999) found a mean of only 3.3 risk indicators (of an index of 11) per family based on a sample of Head Start participants. It is important to note that the measurement of risk load is particular to each study and cross-study comparison is difficult at best.

Relative to other studies, the current study's measurement of risk load seems more thorough and broad. Assignment of whether a particular risk factor was present in the family context could possibly incorporate both a mother's developmental history as well as her life choices. To illustrate, loss due to death/divorce could indicate that a mother's parents had divorced, or that she herself had been divorced. Similarly, low school achievement could refer to a mother, her husband, or both. However, the theoretical underpinnings remain the same across studies, and provide additional support

[14] For rigidity, Cluster 3 mothers converge with Cluster 4 mothers. For distress, unhappiness, and problems with child, family and others, Cluster 4 mothers are distinct

to Belsky's (1984) speculation that contextual sources of stress not only affect parenting behavior directly but also indirectly as well. Thus, the concept of risk load, previously used primarily with child-related outcomes such as IQ, competence and mental health, also serves as a useful framework for examining child abuse potential in high risk families. It is therefore possible to utilize a contextual risk index—rather than any individual risk factor—as in indicator of the child rearing context and maternal potential for physical child abuse. However, examination of the individual risk factors that comprise the risk load index reveals some of the multiple and varied aspects of environmental adversity that families in early intervention programs may experience.

For this particular sample, the more important individual risk factors relative to abuse potential were teen parenting, difficult temperament, single parenthood, unstable residency and history of abuse or neglect, with teen parenthood emerging as the most significant contributor. Relationships among these factors are described in the literature addressing some of the implications associated with teen parenting (see Luster & Brophy-Herb, 2000). This particular combination of risk factors contributed the most to maternal child abuse potential.

Several other findings are worth exploration. In the current study, depression and parenting stress were positively correlated . Both mothers' depression and parenting stress were directly and significantly associated with child abuse potential, albeit not through self-rated parenting skill, as predicted. In addition, a mother's feelings of depression did not significantly alter her perception of her parenting skill. This finding is in opposition to those found by Cummings and Davies (1994) and Frankel and Harmon (1996) that depressed mothers have relatively little confidence in their caregiving abilities

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from the other three groups of mothers.

and low levels of parental self-efficacy, which, in turn, have been associated with parenting impairments. Unlike depression, parenting stress *does* significantly affect a mother's rating of her parenting skills. However, self-rated parenting skill does not then affect child abuse potential.

The fact that the path from self-rating parenting skill to physical child abuse potential was not significant is interesting to note, especially as it is incongruous with findings from other studies documenting the relationship between a low sense of parenting efficacy and coercive discipline (Bugenthal, Blue, & Cruzcosa, 1989a; Bugenthal & Cortez, 1988; Mash et al., 1983). This finding seems to indicate a schism between a mother's subjective experience of self in the parenting role and her potential behavior. However, while self-rated parenting skill did not affect child abuse potential, it was significantly negatively correlated with abuse potential, similar to other studies linking maternal confidence and quality of mother-child interactions (Bohlin & Hagekull, 1987; Gelfand & Teti, 1991).

One explanation for these findings may relate to the position that self-rated parenting skill holds in the model. That is, some (Esdaile & Greenwood, 1995) have found that mothers' stress levels are predicted by their low self-concept as educators of their children. Perhaps switching the places of stress and self-rated parenting skill (i.e., with parenting stress as the mediator through which self-rated parenting skill impacts child abuse potential) in the conceptual model would provide a meaningful exploration of these variables regarding abuse etiology. It is also likely that the manner in which self-rated parenting skill was measured—as a single-item indicator—may explain the variable's lack of influence in the study. Given that the sample's mean score on this

variable indicated that most mothers rated their skill as above those of "the average parent," these mothers as a whole may have a heightened sense of parental well being, without sufficient variability to add meaningfully to the model.

Similarly, other studies (Benasich & Brooks-Gunn, 1996; Egeland & Brunnquell, 1979; Mercer & Ferketich, 1994; Shaner, Peterson & Roscoe, 1985; Stevens, 1984) have found knowledge of children's developmental milestones to be an important contributor to child abuse etiology, parental competence and quality of home environment, although this was not the case in the current study. Scores on this variable demonstrated notable relationships only with maternal education variables (including a significant positive correlation with years in school and significant negative correlations with school dropout and problems with literacy). The association between education variables and knowledge of child development is bolstered by studies linking adolescence, social-emotional maturity and knowledge of child development to attitudes toward parenting (Larsen & Juhasz, 1985), quality of home environment (Benasich & Brooks-Gunn, 1996; Hannan & Luster, 1991), and child abuse potential (Dukewich, Borkowski, & Whitman, 1997).[15] This variable did not contribute in any meaningful way to the model(s) examined in the current study. Given the role that knowledge of developmental milestones has shown in the literature, this lack of importance in the model is most likely explained by the instrument with which knowledge of infant development was measured (i.e., low reliability for this sample).

[15] Dukewich et al. (1997) found that preparation for parenting, a construct that included knowledge and attitudes about children's development, was the strongest predictor of abuse potential; however, its effects were partially mediated by the mother's psychological predisposition for aggressive coping.

In conclusion, results of this study help to explain a mother's potential to physically abuse based in part on presentations of contextual diversity and affective risk. Robust links among risk load, depression and parenting stress are related to mothers who are more likely to endorse attitudes and characteristics that past research has linked to physical child abuse. Therefore, assessing a family's risk load—as a broad construct incorporating multiple individual risk factors—as well as a mother's levels of depression and parenting stress, could significantly increase detection of abuse risk. Moreover, professionals may find interventions more effective if they incorporate the notion of parental sense of competence as it relates to these other important variables.

An important cautionary note when considering these findings is that child abuse potential does not translate directly into behavior. For example, Kolko and colleagues (1993) found that mothers scoring high on abuse potential reported greater child externalizing and depressive symptoms, child rejection, personal psychological dysfunction, stressful life events, and family problems, but that these mothers did not differ from moderate- and low-abuse potential mothers in terms of parent management practices or family violence. In study of parents at risk for problems in parenting, Milner, Gold, Ayoub and Jacewitz (1984) reported that although all abusive parents earned scores above the CAPI cutoff score for abuse, the majority of subjects earning elevated scores did not abuse their children.

As a construct, child abuse potential refers to a particular constellation of factors that is strongly correlated with physical child abuse (viz., intra- and interpersonal difficulties, inflexible views about children's behavior, and attitudes about child-rearing and discipline). These factors were assessed in the current study within the framework of

high family risk load and maternal distress and were not offered as a means with which to predict parental behavior. As noted by Wolfe (1987) and illustrated by findings from the current study, results from the CAPI may serve as an indicator of general functioning since the measure is so highly correlated with measures of emotional well-being.

In addition, previous research has demonstrated that labeling behaviors or people as "at risk" may have harmful effects on the individuals or families (Palmer, 1983), and using the results of this study to determine that a particular mother is likely to harm a child would not be constructive. When used to improve intervention and prevention programs by directing content after identifying participant needs, however, risk assessment tools can provide meaningful information (McCurdy, 1995). It is strongly encouraged that a multimethod approach to the assessment of risk be taken so that corroborating information may be gathered in the process of decision-making regarding risk (Haskett, Smith Scott, & Fann, 1995).

Relative to these findings and their association with child abuse etiology, what are the implications? Given the preponderance of evidence that positive child outcomes are associated with maternal sensitivity, attentiveness, stimulation, responsivity and nonrestrictiveness (Belsky, Lerner, & Spanier, 1984; Hannan & Luster, 1991), examining child abuse potential and its contributing variables has important implications for early intervention programs. Due to the variety of risk factors that comprise risk load, it would seem that a multifaceted and comprehensive approach is necessary (Christmas, Wodarski, & Smokowski, 1996). Interpersonal psychotherapy, cognitive/behavioral therapy, and cognitive therapy could be utilized for treatment of depression. Sex education is related to child maltreatment prevention through its impact on delayed pregnancy; and

employment training and referrals would help decrease the impact of low SES on child maltreatment. Parent-training services, including stress- and anger-management, would benefit parents as well. Reviews of intervention studies report that an individualized approach is most successful in promoting maternal adjustment and childrearing skills, especially with parents considered to be at greater risk of maltreatment (Wekerle & Wolfe, 1993). Identifying a parent's risk load, and which individual risk factors are most salient to a particular family, may aid in creating individualized treatment plans.

Given increasing social and scientific interest in early intervention programs like Early Head Start, research findings regarding the challenges faced by the families served by these programs are likely to receive much-warranted attention. This growing social and scientific interest in early intervention programs translates to a large degree into attention to child outcomes, such as physical and cognitive development. The findings from the current study emphasize the need to attend to a family's contextual and parental characteristics for their role in creating the child-rearing environment. These variables are highly likely to impact the child's experience and thus, child development outcomes. As such, it is essential that early intervention programs like EHS collect data beyond programmatic activities like treatment plans and program dosage. Knowing the implications of a family's risk load and the affective/emotional state of the mother on child development may be an imperative component of drawing conclusions about program effectiveness. Results of the current study are a first step in that direction.

Strengths and Limitations

One limitation of this study is that the timing of data collection varied for participants in two related manners: across child age and across program duration. For

collecting the majority of data (i.e., depression and parenting stress, child abuse potential, knowledge of child development and self-rated parenting skill), a minimum child age of nine months was established. However, the program served families with children between prenatal stages and 36 months of age. Thus, data were collected across ages where important differences in the variables of interest may have taken place. In addition, families were accepted into the program across various child ages and therefore may have received some amount of intervention (i.e., "program dosage") that differed depending on duration of treatment. It is possible that these differences in length of participation affected the variables of interest.

A second limitation relates to the generalizability of results. Since the participants were families that had been accepted into the Early Head Start program, they are by definition at increased risk for a range of negative outcomes. Therefore the results of this study may not be generalizable to the general population. In addition, the economic and ethnic backgrounds of the families in this sample is not representative of the general population, and thus hypotheses need to be tested within a more culturally and economically diverse sample. Moreover, the lack of fathers in this sample is unfortunate. Comparing the findings of the current study of mothers to fathers may provide meaningful information regarding potential gender differences and similarities, and many have begun to call for greater attention to the male in social/psychological research.

Research by Mash and Johnston (1990) on parenting efficacy has suggested that the relative influence of this parental cognition changes with the situation. In the current study, self-rated parenting skill was assessed as a global indicator and at only one time

point, not related to a given family context or situation. It may be helpful to assess context salience when examining the role of perceived parenting skill. In addition, this variable was assessed via a single item. There are obvious methodological weaknesses associated with single-item measures.

The variables of interest in this study are highly related. Past research has shown that child abuse, stress and depression can be closely linked phenomena. This holds true in the current study as well, as indicated by correlations among variables as well as the modification index suggested by analyses (i.e., to allow errors between parenting stress and depression to correlate). In particular, the measures for depressive symptomology and child abuse potential most likely share particular elements of assessment, in that the CAPI contains an "unhappiness" subscale. In addition, the PSI and CAPI share variance in that parenting stress is highly related to abuse potential. In some cases, a factor analytic procedure to determine degree of overlap may be an appropriate strategy. However, there are several reasons why a factor analysis was not completed in this case.

Most important, factor analytic results can be very sample specific, and good analyses require a large sample to get a stable correlation matrix. This sample of 95 cases is insufficient for this criterion (see MacCallum & Widaman, 1999, and Merenda, 1997). Secondly, the measures used in this study are validated scales with already-defined conceptual structures. As such, any alteration of the instrument would be vastly less defensible than keeping them intact and speculating about changes in validity due to removal of subscales.

While possibly assessing some common element of affect, the BDI, PSI and CAPI are not measuring the same things. Holden, Willis and Foltz (1989) compared the CAPI

and PSI with a sample of confirmed maltreating parents (abusive and neglectful parents) and found that the correlation between the measures was .34 ($p < .001$) to .59 ($p < .0001$) for the CAPI and 13 of PSI's 16 subscales. The results suggest that both measures may be more sensitive to abuse and high risk situations. Thus, it may be that this relationship is inflated in the current study due to restricted variability in important sample characteristics. Indeed, the correlation between parenting stress and abuse potential in this sample is higher than in other studies utilizing these instruments (Rodriguez & Green, 1997). Other studies (see Cummings & Davies, 1994) have also found pronounced interrelations among risk factors within high risk families.

These measures also share method variance, in that they are paper-and-pencil self-report. There is also the issue of reactivity: since the subjects completed these measures at the same time in the same way, the likelihood of a relationship is increased, regardless of the "true" relationship in the population. Related to this limitation is the possibility that intercorrelations may reflect response sets like social desirability. As such, data are as valid as the veracity of the informant. It is recommended that cross-validating studies utilize multiple methods of data collection.

In sum, despite relationships and shared variance across the variables assessed in the current study, each of the measures used is a valid indicator of the constructs it purports to measure. Overall, it seems appropriate to conclude that the measures tap similar constructs and have some overlap but are accounting for unique variance.

Another methodological limitation to note is related to the small sample size. An N of 95 may test the limits of structural equation modeling, due to the sensitivity of covariances, parameter estimates and χ^2 tests of fitness to sample size. Hoyle and Panter

(1995) warn against using post-hoc modifications, especially with small samples, citing evidence that such modifications are likely to replicate when sample size is at least 800. Obviously a sample this large is rare in social and behavioral research. It is recommended that the models examined in this study be cross-validated against a larger sample. For the purpose of this study, however, the plausibility of suggested post-hoc modifications was cautiously considered before respecifying the model.

Given that risk load served as an appropriate framework with which to assess heightened risk for child abuse, it is recommended that the risk load concept be tested with other family- and parent-related outcomes. Results of the current study also suggest further examining relations between combinations of specific stressors and increased child abuse potential, above and beyond examining the associations between child abuse potential and number of stressors. That is, a risk load index aggregates sets of variables that may be related to child abuse potential in different ways. Examples pertaining to child outcomes are available: Liaw and Brooks-Gunn (1994) found that different sets of risk factors were associated with children's IQ scores and behavior problem scores. Assessing risk within various sets may provide unique information about the relative strengths of risk factor clusters, and it will be important for future work to elucidate more fully differences among levels based on individual risk factors.

In addition, a multiple risk index that weights all factors equally does not distinguish between persistent and transitory variables (such as current unemployment or single parenthood), potentially privileging the transitory variables because chronic adversity tends to relate more strongly to poor outcomes (Ackerman et al., 1999).

Longitudinal assessment of risk—beyond the score of the current study—would be able to examine potential changes in families' risk load.

Besides incorporating a longitudinal design, future research would benefit from addressing child characteristics for their contributing role to abuse potential. Similarly, measures of parent-child interaction would add breadth to this study and perhaps provide information about the structural relationships among risk load, depression, parenting stress, and abuse potential.

In addition, variation in data collection would provide important information about these relationships. In this study, mother's self-report was utilized for all variables (based in part on the nature of the program's intake process). Having observational measures or alternative informants could strengthen, weaken, or change these results.

Future researchers need to pursue the direct and indirect mechanisms of a multitude of variables to more firmly ascertain the pathways toward physical child abuse. Utilizing different measures that assess knowledge of infant development and self-rated parenting skill are also called for in order to more effectively examine the potential role these variables play in mitigating the harmful psychological effects of chronic stress associated with risk load.

Despite these limitations, there are many strengths associated with the current study. One such strength is based on the nature of the sample. Examining risk load in a sample of economically disadvantaged families is informative. Using heterogeneous samples (relative to poverty) may be inopportune in this context because controlling for economic resources in these samples also tends to control for the cofactors and obscures the diversity among disadvantaged families (Ackerman et al., 1999; Coll et al., 1996).

More generally, children and families served by Early Head Start and other early intervention programs are gaining increasing attention by policy makers and social scientists alike; results from this study provide important information about this at risk population that may serve to provide feedback to program policy and practices. As described by Olds and colleagues (1997), the early intervention programs emphasize the development of the parent because the parent's behavior constitutes the most powerful and potentially alterable influence on the developing child (Brooks-Gunn, Klebanov, Liaw, & Spiker, 1993; Liaw et al., 1995).

Another strength is the study's focus on abuse potential, rather than abusive behaviors. Defining and quantifying child maltreatment are complex challenges, because maltreating behavior is not often reliably reported, and different forms of maltreatment frequently coexist within a family (Howes, Cicchetti, Toth, & Rogosch, 2000). Indicators of actual maltreatment (e.g., child abuse reports) are often unreliable (Wekerle & Wolfe, 1993), and mothers are likely to feel resistance to disclosing abusive parenting practices. In addition, to plan early intervention services, we need to rely on risk factors that exist before the outcome. While abuse potential does not necessarily indicate current or future abusive behavior, it may serve as an early warning for parents who are prone to abuse.

The model examined has the inclusive characteristic of incorporating both individual and contextual conditions affecting the probability of a problem. Such a framework, using multiple dimensions of risk, allows for complexity in the relationships among the variables of interest. Past studies have tended to investigate family variables in isolation. This does not allow for the examination of how risk factors may operate

together (e.g., additively or interactively) in placing a mother at heightened risk for abusive parenting. In addition, assessment of risk factors in this population would help determine whether specific factors influence program involvement and outcomes for these families (Ayoub et al., 1992).

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APPENDIX

Table 2: Correlations among depression, parenting stress & child abuse potential subscales								
	1	2	3	4	5	6	7	8
1. Depression	1.0							
2. Par Stress	.57***	1.0						
3. Distress	.74***	.65***	1.0					
4. Rigidity	.16	.40***	.41***	1.0				
5. Unhappiness	.57***	.46***	.66***	.13	1.0			
6. Probs w. Child	.30**	.41***	.35**	.43***	.28**	1.0		
7. Probs w. Family	.63***	.44***	.64***	.22*	.56***	.38***	1.0	
8. Probs from Others	.51***	.40***	.69***	.38***	.45***	.31**	.62***	1.0

Table 3: Missing Data/Valid Cases (N=95)				
Variable	Total # data points for scale (items x subjects)	% of missing individual items	% with missing scale scores	Complete cases/0 missing items
Risk load	25 x 95 = 2375	0%	1.05%	98.95%
Depression: BDI CES-D	 21 x 95 = 1995 20 x 95 = 1900	 .01% 0%	 11.6% 88.4%	 93.68% 11.6%
Parenting Stress: PSI	 23 x 95 = 2185	 .73%	 0	95.79%
Knowledge of Infant Development: KIDI	14 x 95 = 1330	.03%	0	95.79%
Parenting skill	1 x 95 = 95	5.26%	n/a	94.73%
Abuse Potential: CAPI	 77 x 95 = 7315	 .72%	 0	77.89%

Table 8: Correlation Matrix of Scales Scores and Demographics

Cnt	Var.	0	1	2	3	4	5	6	7	8	9	10	11	12
0	Mat educ													
1	Mat age	.45***												
2	Chld age	.12	-.11											
3	Child sex	-.17	-.10	-.21*										
4	Ethnicity	.19	.24*	-.18	.03									
5	1 v 2prnt	-.24	.27*	-.20	-.03	.23*								
6	TANF	-.23	-.08	.11	-.01	.02	-.06							
7	Medicaid	.18	-.02	-.20	.08	-.09	-.04	-.27*						
8	Income	.19	.51***	-.10	-.22*	.11	.46***	-.24*	.04					
9	# hsmem	.11	.53***	.04	-.26*	-.02	.43***	-.08	-.01	.61***				
10	# kidshse	.04	.58***	-.02	-.21*	.10	.38***	.03	-.00	.55***	.89***			
11	Live sps	.09	.42***	-.18	-.19	.12	.61***	-.09	.07	.60***	.53***	.41***		
12	Live in S.O.	-.10	-.15	.11	-.06	-.10	.19	-.04	-.13	-.04	.07	-.04	-.37 ***	
13	Rent	.11	.48***	-.11	-.24*	.04	.39***	-.08	-.01	.55***	.58***	.48***	.53***	-.06
14	County	-.03	-.07	-.08	.08	.26**	.21	-.19	-.11	.07	-.08	-.06	-.09	.21
15	Type hse	-.33**	-.25*	.17	.17	-.18	-.13	.25*	-.09	-.21*	-.10	-.12	-.11	-.09
16	Type trans	.06	-.23*	-.06	.20	.00	-.38 ***	.10	.12	-.46 ***	-.27**	-.22*	-.32**	.02
17	Riskload	-.20	-.13	.22*	-.11	.00	-.19	.29**	-.20	-.20	-.26*	-.13	-.28**	-.10
18	Dep	-.10	-.18	-.24*	-.02	-.04	-.18	.14	.14	-.15	-.12	-.03	-.20	.09
19	ParStress	-.00	-.16	-.09	-.20	-.04	-.14	-.01	.18	-.02	-.08	-.09	-.15	.043
20	Knowldg	.23*	.05	-.04	.18	-.01	-.07	-.03	.16	.15	.13	.10	.04	-.14
21	Skill	.07	.13	.07	-.14	.03	.02	-.18	-.06	.14	.09	.05	.17	-.11
22	AbsePot	-.15	-.28**	-.08	-.06	-.05	-.16	.10	-.01	-.14	-.13	-.13	-.18	-.05
23	Lo bthwt	-.11	-.10	.03	.14	-.00	-.01	-.12	-.11	-.09	-.11	-.10	-.13	-.03
24	DevImm	.08	.06	-.04	-.15	-.07	.19	-.11	.05	.26*	.07	-.03	.27**	-.18

25	Ab/nglct	-.20	-.00	-.07	-.10	.14	-.04	.09	.01	.07	-.14	-.01	-.05	-.04
26	Nutr def	.08	.11	.09	-.07	-.01	.09	.18	-.12	.09	.03	.01	.05	-.00
27	Chrnic ill	.10	.14	.00	-.18	.13	.06	.01	-.09	.12	-.02	-.02	.04	-.06
28	Handicp	.07	.04	.02	-.09	-.09	.09	-.04	-.07	.01	-.04	-.09	.01	.01
29	Instabres	-.08	-.01	.25*	-.11	-.05	-.12	.23*	-.09	.02	-.13	-.05	-.17	.08
30	Difftemp	.07	-.06	.30**	-.07	-.04	-.23*	.14	-.14	-.24*	-.17	-.13	-.22*	.07
31	Subabus	-.04	-.13	.16	-.02	.06	-.12	.12	-.11	-.13	-.25*	-.13	-.26*	-.10
32	Lang def	.26*	.17	.33***	-.11	.02	.00	.02	-.13	.13	.02	.01	.09	-.07
33	Ltd Engl	.02	.20	.08	-.17	.28**	.11	-.15	-.06	.31**	.13	.12	.16	-.10
34	Lo sch ach	-.61 ***	-.09	.03	.02	.05	.10	.36***	-.16	-.16	-.14	-.01	-.01	-.01
35	Delinqt	.06	-.02	.07	.06	.19	-.16	.21	-.13	-.21*	-.20	-.05	-.26**	-.07
36	Famprob	.09	.08	.17	-.00	.03	-.06	-.11	-.13	.01	-.12	-.01	-.20	-.05
37	Illiteracy	-.57 ***	-.06	-.10	.02	.12	.19	.25*	-.16	-.11	-.10	.02	-.06	-.01
38	Single parent	-.01	-.36 ***	.24*	.13	-.11	-.69 ***	.23*	-.02	-.54 ***	-.49 ***	-.41 ***	-.83 ***	.10
39	Unempl	-.19	.03	-.14	-.05	-.11	.15	.32**	-.14	-.06	.19	.22*	.17	.03
40	Low inc	-.07	.01	.25*	-.04	-.19	-.17	.18	-.23*	-.20	.12	.05	-.16	.05
41	Famdens	-.12	.07	-.03	.07	-.13	.03	-.02	.03	.15	.21*	.21*	.07	-.10
42	Death/ divorce	.06	-.07	.16	.02	-.02	-.38 ***	.05	.05	-.19	-.27**	-.17	-.34 ***	-.14
43	Teen parent	-.25*	-.59 ***	-.00	-.03	-.06	-.03	.06	.06	-.24*	-.16	-.20	-.16	.02
44	Phs/mnt ill	-.02	.12	-.04	-.21*	-.03	-.03	.05	-.06	-.02	-.07	-.05	.04	-.09
45	Incarc	-.13	-.16	.10	.03	.11	-.08	.16	-.07	-.17	-.20	-.13	-.21*	-.01
46	Rur hous	.18	-.04	.01	-.10	-.03	-.12	.05	.10	.02	-.07	.01	.03	-.11
Cnt	**Variable**		**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
14	County		.04											

15	Typhous		-.17	.08										
16	Typ trans		-.36***	-.08	.13									
17	Riskload		-.13	-.31**	-.09	.10								
18	Dep		-.08	-.10	-.04	.24*	.23*							
19	ParStress		.09	-.07	.01	.11	.22*	.57***						
20	Knowldg		.03	.01	-.02	.08	-.07	-.09	-.15					
21	Skill		.04	.10	.14	-.11	-.02	-.33***	-.35***	.12				
22	AbusPot		-.06	-.16	.01	.14	.36***	.74***	.66***	-.09	-.24*			
23	Lo bthwt		.05	.04	.01	.15	.20	-.14	-.03	.09	.01	-.10		
24	DevImm		.30**	-.18	-.03	-.11	.23*	-.03	.24*	.15	-.01	.16	.20*	
25	Ab/negl		-.07	-.14	-.19	.03	.56***	.21*	.16	-.08	-.08	.20	-.03	.02
26	Nutrdef		.15	-.15	.10	-.05	.38***	.16	.15	.12	.05	.11	-.04	.37***
27	Chrnic ill		.02	-.25*	-.18	-.07	.39***	.04	.05	-.05	.03	.09	-.14	.22*
28	Handicp		.05	-.06	.06	-.02	.10	-.06	.03	-.02	.24*	.04	-.10	.06
29	Unstbres		-.05	-.11	-.16	.08	.57***	.16	.17	-.12	-.15	.23*	-.04	.11
30	Diff temp		-.11	-.34***	-.14	-.01	.62***	.17	.07	-.04	-.11	.27**	-.00	-.02
31	Subabus		-.19	-.24*	-.22*	-.03	.66***	.10	.04	.01	-.01	.19	.14	.03
32	Langdef		.10	-.15	-.14	-.07	.33***	-.06	.04	.03	.09	.10	.01	.33***
33	Ltd Engl		.09	.13	-.11	-.10	-.07	.04	.07	-.16	.19	.02	-.09	-.08
34	Sch ach		-.07	-.03	-.01	-.07	.42***	.12	-.04	-.21*	.04	.09	.07	-.07
35	Delinqt		-.24*	-.13	-.21	.15	.58***	.11	-.02	-.03	.07	.12	.01	-.09
36	Famprob		.07	-.03	-.05	-.06	.51***	.01	.05	.18	.12	.12	.19	.12
37	Illiteracy		-.13	-.01	.11	-.05	.35***	.01	-.04	-.30**	.01	.04	.07	-.07
38	Single parent		-.48***	-.03	.12	.32**	.36***	.26*	.13	.06	-.11	.26*	.06	-.19
39	Unemply		.20	-.18	.06	.14	.10	.13	.03	-.01	.08	.16	.01	-.03
40	Lo inc		-.02	-.14	.24*	-.13	.15	-.10	-.21*	.08	.05	-.09	.04	-.11

41	Famdens		.06	-.11	-.04	-.13	.17	-.01	.09	.08	-.02	.13	.08	.05
42	Divorce		-.09	-.03	.14	.26*	.30**	.08	.16	-.04	-.09	.04	.13	.08
43	Teenprnt		-.26*	-.09	.09	.20	.34***	.22*	.25*	-.04	-.18	.36***	.06	.11
44	Phys/me nt illness		.05	-.12	-.03	-.03	.34***	.04	.09	-.15	.02	.05	-.12	.09
45	Incarc		-.17	-.08	.04	.18	.33***	.09	.12	.01	-.09	.09	.21*	-.10
46	Rural housing		-.06	-.15	-.34 ***	.07	.20	.08	.11	-.04	-.09	.07	-.10	.12
Cnt	**Variable**		**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**
26	Nutr def		.04											
27	Chrnic ill		.15	.24*										
28	Handicp		.03	.15	.25*									
29	Unst res		.65***	.14	.14	-.08								
30	Difftemp		.43***	.20	.29**	.12	.38***							
31	Subabus		.47***	.13	.27**	.03	.47***	.46***						
32	Lang def		.08	.43***	.21*	.13	.21*	.36***	.10					
33	Ltd Engl		.05	.05	.11	-.05	-.07	-.11	-.09	.17				
34	Sch ach		.30**	-.08	.06	-.12	.21*	.12	.22*	-.18	.02			
35	Delinqu		.38***	.07	.30**	.01	.30**	.43***	.71***	.11	-.10	.26*		
36	Famprob		.25*	.17	.17	-.01	.26**	.37***	.42***	.19	-.11	.12	.39***	
37	Illiteracy		.20	.11	.13	-.04	.05	.12	.09	-.11	.11	.56***	.20	.08
38	Singprnt		.06	-.03	-.06	-.06	.16	.21*	.27**	-.03	-.12	.05	.30**	.20
39	Unemply		.01	.04	-.17	.2	-.09	-.01	-.13	-.08	-.14	.12	-.03	-.17
40	Lo inc		-.06	.05	-.14	-.25*	.11	.16	.04	-.03	-.29**	.08	.07	.09
41	Famdens		.08	-.10	.08	-.10	.18	.03	.01	-.04	-.08	.00	-.04	.01
42	Divorce		.07	.18	.05	-.04	.21*	-.00	.09	.14	-.01	-.07	.01	.20
43	Teen parent		.12	.09	.03	-.00	.10	.18	.08	-.07	-.07	.11	-.07	-.03
44	Phys/ ment ill		.28**	.19	.22*	.19	.14	.37***	.17	.15	-.00	.10	.15	.27**

45	Incarc.		.10	.09	.05	-.07	.18	.16	.56***	.14	-.06	.15	.38***	.14	
46	Rural housing		.02	-.06	.17	-.06	.17	-.05	.04	.09	-.14	.03	.09	-.14	
Cnt	**Variable**		**37**	**38**	**39**	**40**	**41**	**42**	**43**	**44**	**45**				
38	Single parent		.03												
39	Unemply		.12	-.10											
40	Lo income		-.05	.20	.02										
41	Fam density		-.03	-.12	.03	.13									
42	Death/div		-.09	.37***	-.18	.11	-.10								
43	Teen parent		.14	.21*	.03	.05	.17	.14							
44	Phys/ment ill		.15	-.09	-.00	-.14	-.02	-.08	-.04						
45	Incarc		.10	.19	-.01	-.05	-.11	.10	.01	-.07					
46	Rural hous		-.19	.07	.00	.06	.33***	.02	.11	-.13	-.01				

* Significant at $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

Table 12: Oneway ANOVAs comparing Clusters formed by Child Abuse Potential Scores

Clusters were compared on the following variables: child age and sex, maternal age and education, marital status, 1- vs. 2-parent household, receiving TANF and Medicaid, number of people in household and number of children in household, yearly rent/heating bills, income, risk load, knowledge of infant development, self-rated parenting skill, depression, parenting stress, and all individual risk factors.

Only significant differences are displayed in Table 12.

Descriptives

		N	M (sd)	Std. error	95% Confidence Interval for M	Min	Max
Risk load	1	6	8.8 (2.9)	1.2	5.8 – 11.9	6	1
	2	28	6.0 (3.2)	.6	4.8 – 7.2	1	16
	3	21	7.4 (3.6)	.8	5.8 – 9.0	3	14
	4	40	5.0 (2.6)	.4	4.2 – 5.9	2	14
	Total	95	6.1 (3.2)	.3	5.4 – 6.7	1	16
Depression	1	6	25.0 (6.4)	2.6	18.3 – 31.7	20	35
	2	28	11.9 (5.9)	1.1	9.6 – 14.1	2	23
	3	21	19.5 (7.0)	1.5	16.3 – 22.7	5	35
	4	40	6.1 (4.3)	.7	4.7 – 7.4	0	17
	Total	95	11.9 (8.3)	.9	10.3 – 13.6	0	35
Parenting Stress	1	6	65.2 (14.9)	6.1	49.5 – 80.8	43	87
	2	28	45.2 (10.6)	2.0	41.1 – 49.3	26	70
	3	21	58.1 (14.8)	3.2	51.4 – 64.9	35	86
	4	40	36.1 (11.4)	1.8	32.5 – 39.8	24	79
	Total	95	45.5 (15.6)	1.6	42.3 – 48.7	24	87
Nutritional deficit	1	6	.67 (.52)	.21	.12 – 1.21	0	1
	2	28	.11 (.31)	e	e - .23	0	1
	3	20	.10 (.31)	e	e - .24	0	1
	4	40	.18 (.38)	e	e - .30	0	1
	Total	94	.17 (.38)	e	e - .25	0	1
Chronic illness	1	6	.17 (.41)	.17	.26 – .60	0	1
	2	28	.21 (.42)	e	e - .38	0	1
	3	20	e	e	e - .15	0	1
	4	40	e	e	e - e	0	1
	Total	94	e	e	e - .16	0	1
Unstable residence	1	6	.17 (.41)	.17	-.26 – .60	0	1
	2	28	e (.19)	e	e - .11	0	1
	3	20	.25 (.44)	e	e - .46	0	1
	4	40	e (.22)	e	e - .12	0	1
	Total	94	e (.30)	e	e - .16	0	1
Single parent	1	6	.67 (.52)	.21	.12 – 1.21	0	1
	2	28	.39 (.50)	e	.20 - .59	0	1

	3	20	.85 (.37)	e	.68 - 1.02	0	1
	4	40	.45 (.50)	e	.29 - .61	0	1
	Total	94	.53 (.50)	e	.43 - .63	0	1
Teen parent	1	6	.83 (.41)	.17	.40 - 1.26	0	1
	2	28	.39 (.50)	e	.20 - .59	0	1
	3	20	.60 (.50)	.11	.36 - .84	0	1
	4	40	.25 (.44)	e	.11 - .39	0	1
	Total	94	.40 (.49)	e	.30 - .51	0	1
Distress	1	6	240.83 (11.1)	4.53	229.18 - 252.49	219	249
(subscale of	2	28	99.89 (26.7)	5.05	89.54 - 110.25	53	158
CAPI)	3	21	187.43 (32.3)	7.04	172.74 - 202.12	123	261
	4	40	19.85 (16.9)	2.67	14.45 - 25.25	0	62
	Total	95	94.44 (78.9)	8.10	78.37 - 110.52	0	261
Rigidity	1	6	26.00 (23.02)	9.40	1.84 - 50.16	5	56
(subscale of	2	28	9.93 (8.68)	1.64	6.56 - 13.30	0	37
CAPI)	3	21	18.67 (15.41)	3.36	11.65 - 25.68	3	59
	4	40	7.60 (8.57)	1.36	4.86 - 10.34	0	28
	Total	95	11.89 (12.76)	1.31	9.30 - 14.49	0	59
Unhappiness	1	6	39.83 (10.26)	4.19	29.06 - 50.61	27	53
(subscale of	2	28	15.82 (10.25)	1.94	11.85 - 19.80	0	36
CAPI)	3	21	32.24 (13.95)	3.04	25.89 - 38.59	8	55
	4	40	7.68 (6.44)	1.02	5.61 - 9.74	0	27
	Total	95	17.54 (14.72)	1.51	14.54 - 20.54	0	55
Problems	1	6	16.00 (10.6)	4.33	4.87 - 27.13	0	29
with Child	2	28	4.82 (6.54)	1.24	2.28 - 7.36	0	27
(subscale of	3	21	6.48 (5.93)	1.29	3.78 - 9.18	0	21
CAPI)	4	40	2.85 (5.23)	.83	1.18 - 4.52	0	19
	Total	95	5.06 (6.88)	.71	3.66 - 6.46	0	29
Problems	1	6	35.0 (3.29)	1.34	31.55 - 38.45	32	38
with Family	2	28	13.93 (12.77)	2.41	8.98 - 18.88	0	38
(subscale of	3	21	25.81 (12.2)	2.66	20.26 - 31.36	1	38
CAPI)	4	40	4.13 (7.18)	1.14	1.83 - 6.42	0	32
	Total	95	13.76 (14.18)	1.46	10.87 - 16.65	0	38
Problems	1	6	22.83 (.75)	.31	22.04 - 23.62	22	24
with Others	2	28	11.50 (6.87)	1.30	8.84 - 14.16	0	24
(subscale of	3	21	16.52 (6.55)	1.43	13.54 - 19.51	1	24
CAPI)	4	40	4.05 (5.09)	.81	2.42 - 5.68	0	17
	Total	95	10.19 (8.32)	.85	8.49 - 11.88	0	24

Post Hoc Tests

Risk load

Student-Newman-Keuls[a,b]

QCL_2 Cluster Number of Case	N	Subset for alpha = .05	
		1	2
4	40	5.03	
2	28	6.00	
3	21	7.38	7.38
1	6		8.83
Sig.		.095	.198

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 14.545.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Depression

Student-Newman-Keuls[a,b]

QCL_2 Cluster Number of Case	N	Subset for alpha = .05			
		1	2	3	4
4	40	6.05			
2	28		11.86		
3	21			19.52	
1	6				25.00
Sig.		1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 14.545.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Parenting Stress

Student-Newman-Keuls[a,b]

QCL_2 Cluster Number of Case	N	Subset for alpha = .05		
		1	2	3
4	40	36.13		
2	28		45.18	
3	21			58.14
1	6			65.17
Sig.		1.000	1.000	.125

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 14.545.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

A_RISK4 Nutritional deficit

Student-Newman-Keuls[a,b]

QCL_2 Cluster Number of Case	N	Subset for alpha = .05	
		1	2
3	20	.10	
2	28	.11	
4	40	.18	
1	6		.67
Sig.		.841	1.000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 14.421.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

A_RISK5 Chronic illness (trend)

Student-Newman-Keuls[a,b]

QCL_2 Cluster Number of Case	N	Subset for alpha = .05
		1
4	40	2.50E-02
3	20	5.00E-02
1	6	.17
2	28	.21
Sig.		.297

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 14.421.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

A_RISK7 Unstable residence

Student-Newman-Keuls[a,b]

QCL_2 Cluster Number of Case	N	Subset for alpha = .05
		1
2	28	3.57E-02
4	40	5.00E-02
1	6	.17
3	20	.25
Sig.		.196

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 14.421.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

A_RISK16 Single parent

Student-Newman-Keuls[a,b]

QCL_2 Cluster Number of Case	N	Subset for alpha = .05
		1
2	28	.39
4	40	.45
1	6	.67
3	20	.85
Sig.		.056

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 14.421.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

A_RISK21 Teenage parent

Student-Newman-Keuls[a,b]

QCL_2 Cluster Number of Case	N	Subset for alpha = .05	
		1	2
4	40	.25	
2	28	.39	
3	20	.60	.60
1	6		.83
Sig.		.117	.185

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 14.421.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Distress (subscale of CAPI)

Student-Newman-Keuls[a,b]

QCL_2 Cluster Number of Case	N	Subset for alpha = .05			
		1	2	3	4
4	40	19.85			
2	28		99.89		
3	21			187.43	
1	6				240.83
Sig.		1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 14.545.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Rigidity (subscale of CAPI)

Student-Newman-Keuls[a,b]

QCL_2 Cluster Number of Case	N	Subset for alpha = .05	
		1	2
4	40	7.60	
2	28	9.93	
3	21		18.67
1	6		26.00
Sig.		.590	.092

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 14.545.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Unhappiness (subscale of CAPI)

Student-Newman-Keuls[a,b]

QCL_2 Cluster Number of Case	N	Subset for alpha = .05			
		1	2	3	4
4	40	7.68			
2	28		15.82		
3	21			32.24	
1	6				39.83
Sig.		1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 14.545.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Problems with Child (subscale of CAPI)

Student-Newman-Keuls[a,b]

QCL_2 Cluster Number of Case	N	Subset for alpha = .05	
		1	2
4	40	2.85	
2	28	4.82	
3	21	6.48	
1	6		16.00
Sig.		.260	1.000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 14.545.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Problems with Family (subscale of CAPI)

Student-Newman-Keuls[a,b]

QCL_2 Cluster Number of Case	N	Subset for alpha = .05			
		1	2	3	4
4	40	4.13			
2	28		13.93		
3	21			25.81	
1	6				35.00
Sig.		1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 14.545.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Problems with Others (subscale of CAPI)

Student-Newman-Keuls[a,b]

QCL_2 Cluster Number of Case	N	Subset for alpha = .05			
		1	2	3	4
4	40	4.05			
2	28		11.50		
3	21			16.52	
1	6				22.83
Sig.		1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 14.545.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Table 13: Output for Model 1

Amos Version 4 by James L. Arbuckle

Your model contains the following variables

RISKLOAD	observed	endogenous
STRESS	observed	endogenous
DEP	observed	endogenous
AB_POT	observed	endogenous
SKILL	observed	endogenous
e1	unobserved	exogenous
e3	unobserved	exogenous
e2	unobserved	exogenous
e4	unobserved	exogenous
e5	unobserved	exogenous

Number of variables in your model: 10
Number of observed variables: 5
Number of unobserved variables: 5
Number of exogenous variables: 5
Number of endogenous variables: 5

Summary of Parameters

	Weights	Covariances	Variances	Means	Intercepts	Total
Fixed:	5	0	0	0	0	5
Labeled:	0	0	0	0	0	0
Unlabeled:	8	1	5	0	0	14
Total:	13	1	5	0	0	19

NOTE: The model is recursive.

Sample size: 95

Model: Default model

Computation of degrees of freedom

Number of distinct sample moments: 15
Number of distinct parameters to be estimated: 14
Degrees of freedom: 1

0e 2 0.0e+000 -1.3461e-001 1.00e+004 1.45985277450e+002 0 1.00e+004
1e 0 8.1e+000 0.0000e+000 8.79e-001 1.55235648007e+001 18 8.83e-001
2e 0 1.1e+001 0.0000e+000 1.92e-001 4.36901631557e+000 3 0.00e+000
3e 0 1.6e+001 0.0000e+000 1.94e-001 8.69541143622e-001 1 1.01e+000
4e 0 1.9e+001 0.0000e+000 4.94e-002 7.59495792027e-001 1 1.04e+000
5e 0 1.9e+001 0.0000e+000 3.69e-003 7.59057894867e-001 1 1.00e+000
6e 0 1.9e+001 0.0000e+000 2.04e-005 7.59057882518e-001 1 1.00e+000

Minimum was achieved

Chi-square = 0.759
Degrees of freedom = 1
Probability level = 0.384

Maximum Likelihood Estimates

Regression Weights:	Estimate	S.E.	C.R.	Label
DEP <--- RISKLOAD	0.587	0.261	2.246	
STRESS <--- RISKLOAD	1.078	0.491	2.194	
SKILL <--- DEP	-0.023	0.014	-1.670	
SKILL <--- STRESS	-0.016	0.007	-2.106	
AB_POT <--- SKILL	7.397	7.317	1.011	
AB_POT <--- DEP	7.224	1.014	7.128	
AB_POT <--- STRESS	2.566	0.543	4.722	
AB_POT <--- RISKLOAD	5.744	2.199	2.613	

Standardized Regression Weights: Estimate

DEP <--- RISKLOAD	0.226
STRESS <--- RISKLOAD	0.221
SKILL <--- DEP	-0.193
SKILL <--- STRESS	-0.243
AB_POT <--- SKILL	0.065
AB_POT <--- DEP	0.528
AB_POT <--- STRESS	0.352
AB_POT <--- RISKLOAD	0.161

Covariances:

	Estimate	S.E.	C.R.	Label
e3 <--> e2	65.868	14.260	4.619	

Correlations:

	Estimate
e3 <--> e2	0.542

Variances:

	Estimate	S.E.	C.R.	Label
e1	10.068	1.469	6.856	
e3	228.603	33.345	6.856	
e2	64.632	9.428	6.856	
e5	0.851	0.124	6.856	
e4	4283.051	624.747	6.856	

Squared Multiple Correlations: Estimate

RISKLOAD	0.000
DEP	0.051
STRESS	0.049
SKILL	0.149
AB_POT	0.665

Total Effects

	RISKLOAD	DEP	STRESS	SKILL
DEP	0.587	0.000	0.000	0.000
STRESS	1.078	0.000	0.000	0.000
SKILL	-0.031	-0.023	-0.016	0.000
AB_POT	12.525	7.052	2.450	7.397

Standardized Total Effects

	RISKLOAD	DEP	STRESS	SKILL
DEP	0.226	0.000	0.000	0.000
STRESS	0.221	0.000	0.000	0.000
SKILL	-0.097	-0.193	-0.243	0.000
AB_POT	0.352	0.515	0.336	0.065

Direct Effects

	RISKLOAD	DEP	STRESS	SKILL
DEP	0.587	0.000	0.000	0.000
STRESS	1.078	0.000	0.000	0.000
SKILL	0.000	-0.023	-0.016	0.000
AB_POT	5.744	7.224	2.566	7.397

Standardized Direct Effects

	RISKLOAD	DEP	STRESS	SKILL
DEP	0.226	0.000	0.000	0.000
STRESS	0.221	0.000	0.000	0.000
SKILL	0.000	-0.193	-0.243	0.000
AB_POT	0.161	0.528	0.352	0.065

Indirect Effects

	RISKLOAD	DEP	STRESS	SKILL
DEP	0.000	0.000	0.000	0.000
STRESS	0.000	0.000	0.000	0.000
SKILL	-0.031	0.000	0.000	0.000
AB_POT	6.782	-0.173	-0.116	0.000

Standardized Indirect Effects

	RISKLOAD	DEP	STRESS	SKILL
DEP	0.0000	0.0000	0.0000	0.0000
STRESS	0.0000	0.0000	0.0000	0.0000
SKILL	-0.0971	0.0000	0.0000	0.0000
AB_POT	0.1904	-0.0126	-0.0159	0.0000

Modification Indices

Covariances:

	M.I.	Par Change

Variances:

	M.I.	Par Change

Regression Weights:

	M.I.	Par Change

Summary of models

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	14	0.759	1	0.384	0.759
Saturated model	15	0.000	0		
Independence model	5	161.057	10	0.000	16.106

Model	RMR	GFI	AGFI	PGFI
Default model	5.607	0.997	0.952	0.066
Saturated model	0.000	1.000		
Independence model	350.925	0.579	0.368	0.386

Model	DELTA1 NFI	RHO1 RFI	DELTA2 IFI	RHO2 TLI	CFI
Default model	0.995	0.953	1.002	1.016	1.000
Saturated model	1.000		1.000		1.000
Independence model	0.000	0.000	0.000	0.000	0.000

Model	PRATIO	PNFI	PCFI
Default model	0.100	0.100	0.100
Saturated model	0.000	0.000	0.000
Independence model	1.000	0.000	0.000

Model	NCP	LO 90	HI 90
Default model	0.000	0.000	6.313
Saturated model	0.000	0.000	0.000
Independence model	151.057	113.616	195.939

Model	FMIN	F0	LO 90	HI 90
Default model	0.008	0.000	0.000	0.067
Saturated model	0.000	0.000	0.000	0.000
Independence model	1.713	1.607	1.209	2.084

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	0.000	0.000	0.259	0.437
Independence model	0.401	0.348	0.457	0.000

Model	AIC	BCC	BIC	CAIC
Default model	28.759	30.668	87.045	78.513
Saturated model	30.000	32.045	92.450	83.308
Independence model	171.057	171.739	191.874	188.826

Model	ECVI	LO 90	HI 90	MECVI
Default model	0.306	0.309	0.376	0.326
Saturated model	0.319	0.319	0.319	0.341

Independence model	1.820	1.421	2.297	1.827

Model	HOELTER .05	HOELTER .01
Default model	476	822
Independence model	11	14

Execution time summary:

Minimization: 0.060
Miscellaneous: 0.650
Bootstrap: 0.000
Total: 0.710