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TOWARD THE PREVENTION OF CHILD MALTREATMENT THROUGH RISK
ASSESSMENT: EVALUATION OF AN ECOLOGICAL, PROSPECTIVE MODEL OF
RISK FOR CHILD ABUSE POTENTIAL

By

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ABSTRACT

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Secondary prevention, the predominant model of prevention of child abuse and

neglect, involves identification of individuals considered to be "at risk" for engaging in

child maltreatment. While theories of child maltreatment etiology recognize the complex

interplay of factors at numerous ecological levels, most risk assessment practices

primarily assess risk at the level of the mother-infant dyad. This strategy neglects the

influence of broader ecological forces on parental functioning, and has led to narrow and

incomplete conceptions of risk. New methodologies need to be created that apply an

ecologically based integrative understanding of the etiology of child maltreatment. The

current investigation tested a risk assessment strategy that was intended to improve upon

current methods by employing a theoretically-based ecological approach, and by

predicting risk across a twelve month span of time. Structural equation modeling

methods were applied to 12-month longitudinal data from 125 new parents labeled "at

risk" for inadequate parenting. Results indicate that person-level risk in the current

model, as measured by a traditional, unidimensional checklist approach to risk

assessment, was unrelated to parenting outcome as measured by parental attitudes, but

significantly predicted child development. Findings further reveal that community-level

factors had a significant direct and stress-mediated effect upon potentially abusive

parenting attitudes; notably, these are factors which tend to be overlooked by most current risk assessment practices. Despite the significant relationships between community-level risk, stress, and parenting outcome, this model of multiple influences of risk still only accounted for 10 percent of the variance in child abuse potential. Results are discussed in terms of their impact on the prevalent secondary prevention paradigm, and suggestions are made for developing more complete assessment strategies on which to base intervention decisions.

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INTRODUCTION

Risk assessment is essentially the practice of predicting future events. In the field

of child abuse prevention, this phenomenon has been overwhelmingly adopted by child

protective service (CPS) agencies as a way to make service delivery more effective. Risk

assessment refers to a decision-making process that determines the degree to which a

child is likely to be maltreated in the near future, and resources are allocated accordingly

(English & Pecora, 1994). In the practical realm, most clinicians use risk assessment

after substantiation of abuse or neglect to identify those children at greatest risk for

continued maltreatment, and to aid in case planning and intervention. This use of risk

assessment misses the mark of prevention, and more accurately addresses intervention

needs. However, in the field of prevention, practitioners and researchers alike have

recognized that the process of determining risk status is complicated by the absence of

clear-cut guidelines for identification procedures, a lack of understanding of risk

processes, and the relatively low incidence of child maltreatment in the general

population (Wolf, 1993). As a result, a lively debate has ensued among those concerned

with prevention. Some have argued for the abandonment of risk assessment in favor of

primary prevention, in which general indicators such as first-time parenthood, not risk

indicators, should serve as entry criteria into prevention programs (cf. Cohen, 1996;

Wolfe, 1993). Others, however, have argued for the development of more valid risk

assessment models (cf. Bavolek, 1989) that have the ability to identify individuals for

inclusion into secondary prevention programs. The current research is concerned with the

latter side of the debate and accordingly will focus on the development and use of

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predictive models of abuse to inform preventive interventions.

Despite numerous problems associated with risk assessment --many of which will be discussed-- it is a practice that is widely utilized in the public sector. As English and Pecora (1994) point out, risk models are presented as guidelines, but they nevertheless serve as decision-making models. This practice calls for renewed emphasis on improving the quality of research on risk prediction, because the lack of empirical guidance has not diminished the use of such models. The over-utilization of risk models in CPS practice can also be attributed to the fact that they improve communication among workers, make information more readily available to practitioners, and lead to more systematic collection of information (Cicchinelli & Keller, 1990).

Although risk models are integral parts of CPS casework practice, a study by the National Child Welfare Resource Center for Management and Administration (NCWRC) found that there is a general lack of agreement in the field about what factors are to be used when assessing risk, and that less than 50% of the risk factors employed by risk models have been empirically tested (English & Pecora, 1994). This lack of consistency epitomizes the piecemeal approach that is characteristic of current risk assessment practice. Another main problem associated with risk assessment concerns the criteria against which to measure predictive validity. If the only purpose of risk assessment is to predict who will re-enter the CPS system in the future, then pragmatic approaches that are limited to empirical correlations between risk factors and outcome, regardless of theoretical explanations of those relationships, are appropriate (English & Pecora, 1994). This avenue of investigation, however, can only address questions of recidivism.

Alternatively, if the purpose of risk assessment is to guide true prevention services – that is, working with families who have not yet entered the CPS system for intervention – then research on risk models must be theoretically-based. Such risk models have the potential to answer questions regarding future parental behavior and the effects of the child's environment, rather than simply restating a documented history of child maltreatment (Brissett-Chapman, 1997). This goal has not been realized due to the lack of an overall coherent framework for theory and practice in the field of risk assessment (DePanfilis, 1988). In an effort to address this lack of theoretical base, the current investigation was concerned with applying an ecological theoretical framework to the practice of risk assessment to determine if this strategy improves the efficacy of prediction. In addition, multiple stage screening was used in which risk was measured at birth, and at six months of age, to predict outcome at one year. The use of prospective methods was employed to determine whether predictive validity can be enhanced by increasing the assessment period beyond a single encounter.

The following analysis of risk assessment has three primary foci: theoretical issues, conceptual matters, and current practical strategies. The empirical scope of this investigation was to test the feasibility of a theoretically-based model of risk assessment. However, a discussion of some of the theoretical issues associated with risk assessment are presented to provide a context for the current research. Likewise, consideration of some of the conceptual issues that convolute the practice of assessing risk illuminate the inherent difficulties in conducting this type of research, and translating findings into practice. Finally, current risk assessment procedures are critiqued in an effort to identify

both the strengths and inadequacies in the practice of risk assessment. Lastly, in an effort to address some of the issues raised, the current model of risk assessment tests the ability of multiple ecological levels, including person and community level variables, to predict indicators of child maltreatment. The direct and mediating effects of parenting stress are also evaluated in the model. In addition, by assessing risk at birth and at six months of age, this method provides information about the temporal stability of risk factors.

OVERVIEW OF THEORETICAL ISSUES

The Risk-Driven Model of Prevention

The universal application of preventive services is not widespread in this country.

Universal prevention has been applied, for the most part, in the field of infectious

diseases. The most noted example of this prevention strategy is childhood

immunizations, which are administered to all children before they can attend public

schools as a means of preventing diseases of early childhood. As history will affirm, this

strategy has been overwhelmingly successful in wiping out diseases such as polio,

measles, and diphtheria, which significantly increased mortality rates among children

mere decades ago. Conversely, children continue to suffer from the effects of

maltreatment because successful prevention strategies have not yet been universally

applied to the social problem of child abuse and neglect. The prevention model that has

most often been applied to child maltreatment involves the identification of at-risk

individuals and consequent intervention with these individuals aimed at preventing future

harmful parenting practices. Because child maltreatment still occurs with alarming

frequency in our country, it is unclear whether the risk-driven model of prevention has

been poorly applied to the problem of child maltreatment, or whether it lacks fundamental

applicability when utilized in this capacity.

The Science of Prevention

Three Models of Prevention

There are three models of prevention that were coined by Caplan (1964) to

distinguish between different prevention goals, population foci, and timing of service

delivery: primary prevention, secondary prevention, and tertiary prevention. This terminology has become the standard for describing the different prevention paradigms. The first, primary prevention, refers to prevention in its truest sense. It involves intervening before the development of an unwanted outcome, and is directed at total populations to reduce overall incidence rates. An example would be putting fluoride in the water to prevent tooth decay. Secondary prevention involves the early identification of target individuals who are at risk for an unwanted outcome, and is aimed at reducing overall prevalence rates of the unwanted condition. An example of this type of prevention would be conducting sex education classes with 9th grade students who were thought to be sexually active. In this case, the goal would be to target individuals who were at increased risk of contracting a sexually transmitted disease or becoming pregnant unintentionally, and to teach them how to protect themselves effectively from these unwanted conditions. This differs from primary prevention in terms of the scope of the population it attempts to reach — it only targets individuals considered to be most at risk for the unwanted outcome. This model can also be thought of as a method of early intervention. Lastly, tertiary prevention is targeted at individuals who have already been diagnosed with a given condition, and is intended to reduce the adverse consequences associated with a disease state or disorder, or to prevent the individual from becoming incapacitated (Willis, Holden, & Rosenberg, 1992). An example of this type of prevention would be support groups for Alzheimers patients and their spouses that provide strategies for managing the disease at home in an effort to prevent or postpone institutionalization. Although more like rehabilitation, this type of prevention attempts to

reduce the negative sequelae of a given disorder and thus represents prevention in its narrowest form.

Utilization of the Different Prevention Models: Costs and Benefits

One of the benefits of the primary prevention model is that it does not adhere to a "person-blame" ideology. Community psychologists have long argued that traditional social service practices tend to place blame on troubled people for their own problems, without recognizing that broader levels of society such as families, neighborhoods, communities, and social and cultural institutions also shoulder some of the responsibility (Mitchell, Davidson, Chodakowski, & McVeigh, 1985). However, targeting entire populations for preventive services becomes a social leveling tool that meets with economic, social, and political resistence (Costin, Karger, & Stoesz, 1996). For instance, it is a widely accepted belief that primary prevention of child maltreatment is unwarranted because of the excessive financial cost involved, and that secondary prevention is a far more efficient strategy. However, Caldwell, Bogat and Davidson (1988) seriously challenged this assumption when they demonstrated that identifying "populations in need of preventive services currently yields very small increases in programming efficiency" (p. 620) due to the low base rate of child abuse and neglect in our society, and the lack of sensitivity and specificity of available measurement tools. Another benefit of the primary prevention model is that it does not involve the labeling of individuals as "at-risk," which may result in iatrogenic effects (Pillow, Sandler, Brave, Wolchik, & Gersten, 1991). Research suggests that labeling can have powerful, negative consequences (Broskowski & Baker, 1974), although the actual effects of inaccurately

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labeling someone as a potential child abuser have yet to be determined. Lastly, secondary prevention strategies are more socially acceptable because they are exclusive -- that is, risk notions of prevention exclude most people (Cowen, 1996). Alternatively, primary prevention is founded upon the premise that everyone in a given population could benefit from some form of the preventive intervention, and in the case of child maltreatment, these strategies implicitly suggest that all parents may be capable of inadequate parenting, if not some form of child maltreatment. Moreover, the intensity of the preventive services delivered depends on how the problem is defined, which makes it necessary to differentiate between levels of abuse, and to distinguish maltreatment from violence (Emery & Laumann-Billings, 1998). In contrast, programs that are aimed at individuals already predetermined to be at risk for perpetrating violence can be more homogeneous because they are based on the assumption that everyone entering the program has a similar "problem" warranting similar treatment. In any case, with such sensitive social and political issues, as well as practical considerations, weighing upon the utilization of the different prevention ideologies, it is not surprising that secondary prevention is the most commonly used model in the field of child abuse prevention. Cowen (1996) summarized this best when he stated that the "policy-shaping, fund-grabbing definition of prevention that has risen to the top is a notion based on risk-reduction as the gateway to disease prevention" (p. 244).

The Pervasive Model: Secondary Prevention of Child Maltreatment

The secondary prevention model involves identifying parents who are likely to maltreat their children; then, effective methods of preventive intervention must be

initiated in an effort to derail the process of maltreatment before it begins. Despite the

field's general lack of progress developing empirically-validated theories of child

maltreatment and empirically-derived identification of causal mechanisms, there has been

a burgeoning of work in the area of risk assessment and program development and

implementation. Although well-intentioned, the approach that characterizes the majority

of this work can be likened to building an expensive, modern new home atop an

unfinished foundation. For the most part, resources have been directed at developing

methods to identify and treat "at-risk" individuals and families without a definitive

understanding of the etiology of child maltreatment on which to base them. In the field of

child abuse prevention, methods of prediction (i.e., risk assessment) have come to be

treated as if they were the proverbial holy grail — researchers and practitioners have

overwhelmingly subscribed to a paradigm that has yet to prove its legitimacy. This

phenomenon of using unchallenged theories to guide practice is not an uncommon event.

As history has demonstrated, incomplete and even incorrect theories of disease etiology

can sometimes lead to successful prevention. Bloom (1965) eloquently illustrated this

phenomenon with the example of miasma theory to explain malaria. It was originally

believed that malaria was caused by vapors (or miasmas) emanating from rotting material

in swamps. Although this was completely wrong, the solution that was implemented was

to drain the swamps, therefore eliminating the breeding ground for the tse-tse fly which

was responsible for transmitting the disease. Hence, the intervention, based on an

incorrect understanding of the disease etiology, had the desired effect of reducing the

incidence of malaria. While this example demonstrates that false etiological theories can

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sometimes lead to effective treatments, the field of child maltreatment has yet to demonstrate a proven method of prevention. Etiological theories of child maltreatment have evolved over the past two decades but an equivocal theoretical explanation of this complicated process has yet to be asserted. Hence, risk assessment may be the "miasma theory" of the field of child maltreatment (i.e., it is a solution based on an incomplete understanding of the problem), but it has not yielded such positive results as those described by Bloom.

Temporal Decay of Prediction

One of the main problems with the prediction of future events, regardless of the field of investigation, is that accuracy decreases over time. For example, in meteorology, it is relatively easy to predict tomorrow's weather, but accuracy significantly decreases as the window of time increases to next week or next month. Despite the sophistication of current satellite and radar technology, the extant methods of prediction are still very limited in their capacity to predict future atmospheric events. For example, one Japanese meteorologic study reported that "by using 9 years of observational data in the middle and the west part of Japan to predict whether the weather of Tokyo 6 hours ahead would be rainy or not, an accuracy of [only] 87.2% was achieved" (Mohri & Tanaka, 1995). This example illustrates that prediction, even in a technologically advanced field such as meteorology, is inexact and suffers from decay of accuracy over time — even as short a time-span as six hours. In the social and behavioral sciences, researchers and practitioners don't need to predict **when** abuse will occur (alas, weather forecasters would be pretty accurate if all they had to do was to predict that it would rain in the future),

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rather they need to predict **who** will be most likely to abuse their children. Returning to the weather analogy, we know that rain (child abuse) will occur -- the question is whether we can predict with some accuracy where (who) it might be more likely to rain (abuse their children). Whereas weather forecasters can be reasonably accurate in predicting that it is much more likely to rain in the rainforest than the desert, social scientists and practitioners are still severely limited in their ability to predict which families are more like rainforests and which ones are more like deserts. Despite an inadequate arsenal of methodologies, most of the field of child abuse prevention hinges upon risk assessment procedures that make a practice of predicting future behavior, typically over an extensive time span. Some of the complexities of this practice will be discussed presently.

Relationship Between Risk and Outcome

Because prediction of future behavior is founded upon the identification of risk factors, it is essential to consider the relationship between risk factors and outcome. In the field of child abuse prevention there has been the tendency to assume that direct relationships exist between risk factors and abuse. The literature on prediction has focused on identifying characteristics that are commonly found among abusing parents, abused children, and the environments in which they live (Agathonos-Georgopoulou & Browne, 1997). Some of the parental "risk variables" described in this literature include young maternal age at birth (Connelly & Strauss, 1992), mothers' indifference to the child's needs (Baranowski, Schilmoeller, & Higgins, 1990), and a childhood history of abuse (Caliso & Milner, 1992; Milner, Robertson & Rogers, 1990). Child variables such as age and temperament have also been associated with abuse (Stratton & Swaffer, 1988).

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In addition, factors related to the adequacy of social support, situational stress, and parental coping strategies have been linked with abusive parenting practices (Cantos, Neale, O'Leary, & Gaines, 1997). Still others argue that social policies that fail to foster positive social interactions, and leave communities without adequate social, health, or educational infrastructures create environments ripe for abusive and violent behavior (Garborino & Sherman, 1980). The majority of these studies make assumptions about the relationship between risk and outcome that are linear, additive, and direct. These simple assumptions reflect traditional perpetrator-victim perspectives of abuse that retain an exclusive focus on the individual and individual concepts of risk. Although some researchers acknowledge the contribution of exosystemic and macrosystemic variables (c.f., Garborino & Sherman, 1980), it is most often the case that risk is assessed at the ecological level at which preventive services are delivered (Caldwell, Bogat, & Davidson, 1988).

Due to the individually-focused clinical tradition that dominates this field, most interventions are aimed at individuals and families. This maintains the status quo of viewing child maltreatment as a phenomena that is caused by factors within the individual. Even when community level risk is evaluated and services are delivered to entire communities, such interventions are low-intensity and thus lack effectiveness in treating individuals who will actually abuse their children. For example, a billboard advertisement that warns against the dangers of shaken baby syndrome will be generally informative to the community, but will not provide an intense enough intervention for individuals who are actually using violence (Carty & Ratcliffe, 1995; Showers, 1992).

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Therefore, the practice of exclusively assessing risk at the ecological level at which prevention services are delivered maintains a direct, simplistic relationship between risk and outcome, which does not account for the complex combination of ecological contexts that may lead to maltreatment.

Incongruence Between Etiological Theories of Child Maltreatment and Risk Assessment

Most current etiological models of child maltreatment have adopted a multifactorial, ecological, transactional approach in which abuse is the result of a process that involves the accumulation of risks at various ecological levels, combined with a deficiency in compensatory or protective mechanisms (Belsky, 1980; Bogenschneider, 1996; Bronfenbrenner, 1979; Cicchetti, 1993). From this perspective, parental behavior is seen as strongly influenced by character traits, but is also affected by, and has effects upon, familial, neighborhood, social, and cultural environments. In addition, the importance of protective processes that enhance coping and promote adaptation and competence in the face of adversity are recognized. Such protective processes can reside within the individual as well as the environment (Garmezy, 1983).

Given the advances in theorizing about the causes of child maltreatment, why are risk assessment models lagging so far behind? It is unlikely that the narrow, linear scope of most investigations into the prediction of risk is due to a general lack of sophistication among researchers in this field. In fact, it is the practice of most researchers to refer to issues of ecology and methodological inadequacy when explaining their findings (Hobfoll, 1998). Instead, what appears to be lacking in the field is the use of ecological theories to create new methodologies and avenues of exploration. It is unlikely that

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newer ecologically-valid models of risk are a panacea and will lead to the obliteration of child maltreatment. They may, however, provide the impetus for the creation of new methods of risk assessment that more closely reflect the processes that determine parental functioning, which in turn may lead to more efficacious preventive interventions. As Guterman (1997) keenly points out, "in the context of an ecologically based integrative understanding of the etiology of physical child abuse and neglect, the existing knowledge base sheds little light on the importance of broadening the target of intervention beyond the mother-infant dyad onto familial, meso-, exo-, and macrosystemic considerations"(p. 31).

CONCEPTUAL ISSUES RELATED TO THE ASSESSMENT OF RISK

The practice of risk assessment is severely hindered by a lack of conceptual clarity. A discussion of some of the conceptual shortcomings associated with assessment of risk for child maltreatment will be explored in the following section.

The Definitional Dilemma: What *Is* Child Maltreatment?

Differing Agendas for Definitions

The question of what constitutes child maltreatment seems at first glance to be a rather straightforward question. However, the way this phenomenon is operationalized depends entirely on the purpose for which it is being defined, whether it is to arrive at a statutory definition, implement investigation policies, or set criteria for data collection procedures. Not only is there disagreement between professions, but there is also a great deal of disagreement among experts within the same field concerning how broadly or how narrowly to define child abuse. This disagreement is exemplified by the discrepant findings among epidemiological studies concerned with reporting national incidence rates of child abuse and neglect. Such studies generate statistics on reported and confirmed cases of child maltreatment, and are illustrative of the dramatic differences in who and what gets counted as an instance of abuse. For example, the National Committee to Prevent Child Abuse (NCPCA)'s 50-state survey claims that approximately 3 million children were reported to Child Protective Services (CPS) in 1995, of which about one-third were substantiated as cases of child maltreatment. However, higher rates were reported by the National Incidence Studies of Child Abuse and Neglect (Sedlak & Broadhurst, 1996), estimating that between 1.8 and 2.8 million children were maltreated

in 1993, which translates into 23 to 42 per 1,000 children being abused and/or neglected

annually in the United States. Moreover, population surveys such as the Gallup poll

(Gallup et al., 1995), which surveys a random representative sample of 1,000 families

across the United States, reports even higher rates, estimating that 5% of American

children are physically abused and 2% are sexually abused. These substantial differences

in numbers are due in part to the lack of a consensual definition of child abuse among the

experts working in epidemiological research, as well as differing sources of data and

different methods used to identify cases (Marsh & Wolfe, 1991). Another example of

discrepant definitions comes from law; specifically, there is no universal definition of

child abuse that is applied in all states. Instead each state provides its own definition of

child abuse and neglect that establishes the grounds for state intervention in the protection

of children's well-being. Moreover, there is a great deal of variance between states, with

some states defining child abuse and neglect as a single concept while others provide

separate definitions for abuse, neglect, sexual abuse, and emotional abuse (National

Clearinghouse on Child Abuse and Neglect, 1998). The breadth of definitions varies

also, with most states defining abuse as involving serious physical injury such as

disfigurement, impairment of bodily functioning, or death, while others specify that any

injury, serious or not, is abuse. In states with broader definitions, it is usually left up to

the discretion of Child Protective Services to determine what constitutes abuse. Neglect

is more difficult to operationalize, but is frequently defined in terms of deprivation of

adequate food, shelter, clothing, or medical care, while taking into account the financial

ability of the family to provide these necessities. In addition to defining the acts or

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omissions that constitute maltreatment, states also vary in terms of their inclusion or exclusion of definitions of perpetrators of abuse, as well as exceptions of abuse based on religious beliefs and cultural practices. Still further, each state differentiates between civil statutory definitions and criminal statutes, which are punitive in nature and define acts that are criminally punishable. Thus, in each of the fifty states, there are different statutory definitions of child maltreatment that are based solely on the individual social and political climates of that particular state.

A final illustration of the definitional inadequacy plaguing the field of child maltreatment prevention comes from research. Two decades ago, Besharov (1981) pointed out that definitions of child abuse and neglect are the building blocks of research studies, and that existing definitions failed to meet research needs because they lacked comparability, reliability, and taxonomic delineation. Ten years later, Marsh and Wolfe (1991) explained that differing research agendas (i.e., social work, medical, legal, psychological, etc.) determined how child maltreatment is defined and measured, and these vary from study to study, leading to the inability to generalize findings beyond the specific scope of individual studies. In fact, the lack of consensus among researchers regarding how to define child maltreatment has led investigators to develop their own idiosyncratic measures and variables, which has resulted in as many definitions as there are research studies (Besharov, 1981). Besharov claimed that the only characteristic that all definitions share is their imprecision. For instance, definitions often contain such phrases as "a child who lacks proper parental care" or "a child whose environment is injurious to his welfare" (Besharov, 1981). In addition, popular definitions often refer to

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child maltreatment as if it were a single behavioral entity rather than a variety of different forms of parental conduct that are harmful to children (Besharov, 1981). As Zigler (1976) pointed out,

> "the nature of child abuse is in need of a more differentiated and conceptually-based classificatory system. Child abuse is a phenotypic event having a variety of expressions and causes, and we will make little headway so long as we insist on viewing every act of child abuse as the equivalent of every other" (p. 171).

This homogeneous view, according to which abuse is seen as a single behavioral entity, stems from the medical framework which has defined abuse as a syndrome with an identifiable cause and predictable outcome (Kempe et al., 1962), a view that has dominated the field since the inception of the term "battered child syndrome." This framework, although helpful in early medical research on child abuse, has been overly utilized by differing research agendas, and has perpetuated a definition that has outgrown its usefulness.

These examples from epidemiology, law, and research domains illustrate that child maltreatment is a multifaceted phenomenon that does not lend itself to simple description or operationalization. One reason for this problem is that conceptualizations of child abuse are inherently driven by social judgement and not by empirical science (Emery, 1989). However, as we have seen, the problem of defining abuse is not only a scientific issue, but is also political, social, and medical, and hence is not likely to be resolved because of the differing strategies and agendas employed by each profession.

Difficulties Related to Inclusive Definitions

Cicchetti and Barnett (1991) have advocated for the development of consensus definitions similar to those used in the DSM system (APA, 1994) to classify mental illnesses. Such definitions would provide a common language for different professionals to use in research and practice, and would allow for greater generalizability of empirical findings. However, definitions of abuse would be classifications whose utility depended on the specification of operational criteria for assigning cases to categories and the inclusion of non-overlapping categories (Giovannoni, 1989). This would require that child abuse and neglect be precisely categorized according to some pre-specified criteria and would necessarily preserve the conceptualization of child maltreatment as a discrete phenomenon (i.e., physically abused versus not physically abused). There is little evidence, however, that child abuse is a discrete phenomenon (Marsh & Wolfe, 1991). Instead, it is more likely that there are degrees of child abuse and in most cases there is no threshold that definitively determines at what point a parent is to be labeled abusive. Moreover, it is a judgement regarding a pattern of parenting that defines abuse rather than a specific action (Marsh & Wolfe, 1991). However, discrete instances of abuse and neglect certainly occur in the context of otherwise sound parenting, such as a parent who briefly leaves her child unattended in a car in hot weather while she runs into a store. Such exceptions to the rule further complicate our ability to arrive at precise definitions of abuse – whether it is a discrete phenomenon or a pattern of parenting that signifies abuse. Hence, a categorical system of classification is most likely a poor fit with the phenomenon of child maltreatment. More specifically, as Marsh and Wolfe (1991) point out, there are currently no agreed-on criteria that can reliably differentiate physical abuse

from other forms of maltreatment, differentiate combined forms of maltreatment from one another, or differentiate subtypes of physical abuse based on possible dimensions such as the type of act, its severity, chronicity, and age of onset. Moreover, the few studies that have attempted to categorize maltreating or abusive parents using empirically-derived approaches have tended to reveal constructs based on broad patterns of care-giving such as intrusiveness, physical abusiveness and hostility, psychological unavailability, marginal maltreatment, etc. (Oldshaw, Walters, & Shaw, 1989). On the other hand, extreme types of physical or sexual abuse that often form the basis for legal action are relatively easy to identify. It is not yet known, however, whether the primary risks to the child stem from actively hostile, cruel or punitive parenting, a lack of affectionate care, social and economic impoverishment, or some combination of all of these (Marsh & Wolfe, 1991). Hence, it may be a poor use of time and resources to endeavor to categorize subtypes of child maltreatment much the same way subtypes of mental illness are classified, a strategy that exclusively employs a medical model framework. It may be more productive to investigate abuse in relation to the overall quality of care that is received by the child (Marsh & Wolfe, 1991). Until the causal mechanisms and the full impact of abusive parenting processes are understood, a broader, more expansive definition of abuse may be most appropriate in child maltreatment research.

*The State of the Art: How **Can** Abuse be Defined and Measured as an Outcome?*

Given the previous argument that child maltreatment cannot be precisely defined, the question that arises is how any definition can be justified as an outcome measure in

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prevention research. To date, most of the research on risk assessment has dealt with identifying substantiated cases of child maltreatment. Substantiation is a finding based on the presence of observable physical evidence, although this is subject to bias in reporting, and is affected by policy, law, and practitioner workload (English & Pecora, 1994). In a meta-analytical study, MacMillan and colleagues (1993) found that there were numerous different outcomes reported across studies, making it difficult to select for analyses those outcomes considered to be most representative of child abuse and neglect. Included among the many outcomes described in their review were reports of child abuse and neglect, child health measures such as immunizations and developmental assessments, aspects of the parent-child relationship, parenting capacity, and parental competency. Their solution was to select three "proxy" measures that they considered most closely related to episodes of child physical abuse and neglect: 1) hospitalizations, 2) rates of visitation to the emergency room, and 3) injury or accident rates.

In addition to behavioral outcomes, attitudinal markers have also been employed in prevention research, the most notable being the construct of child abuse potential. One of the main advantages of using child abuse potential as an outcome measure is that it is not limited by definitions of what constitutes an actual act of child maltreatment. It is also consistent with conceptions of inadequate parenting as falling on a continuum, and does not restrict investigators by only allowing consideration of specific acts or behaviors. This construct is limited, however, because it was derived from a review of the literature of traits that distinguish abusers from non-abusers -- a body of research that is plagued with significant problems. In addition, the reliability and validity of this

construct have not yet been unequivocally established. Milner (1979, 1980, 1984, 1986, 1990) and his colleagues have developed a research program directed at validating the construct of child abuse potential.

Milner and Wimberley (1979) originally set out to "construct and analyze a test instrument that could provide a quick, client-administered screening device for assessing an individual's child abuse potential" (p. 95). They conducted a review of the literature on child abuse and neglect from which they developed the 160 items that make up the Child Abuse Potential Inventory (CAP). They then tested the instrument on 19 abusing, and 19 non-abusing parents matched on key demographic variables. They found that the factors of rigidity, problems, and control best discriminated abusers from non-abusers in their sample. In their next study (Milner & Wimberley, 1980), these researchers set out to replicate and extend their original findings. They administered the CAP to a matched sample of 130 abusing and non-abusing parents and found that 77 of the 160 items significantly discriminated between abusers and non-abusers, correctly classifying 96% of the participants. They further found that rigidity, distress, and unhappiness were the most significant factors in distinguishing the two groups. In a similar study, Milner and Ayoub (1980) tested the ability of the CAP to distinguish "at-risk" participants, rather than individuals known to have committed abuse. The CAP was given to 67 parents in a program for parents at risk for inadequate parenting and their scores were compared to a standardization group of non-abusing parents. They found that the at-risk parents scored significantly higher than the control group, with 92% scoring above the mean of the normative sample. In a further investigation to provide cross-validation data for the CAP,

Milner, Gold and Wimberley (1986) administered the instrument to 220 child abusers and matched control subjects. Using discriminant analysis, they found that the Abuse Scale correctly classified 85.4% of the subjects, with 82.7% of the abusers and 88.2% of the control subjects correctly identified. In later research, the CAP was found to be positively related to measures of family conflict and marital dissatisfaction (Mollerstrom, Patchner, & Milner, 1992), and childhood physical abuse (Caliso & Milner, 1992, 1994; Milner, Robertson, & Rogers, 1990).

Finally, the CAP has been used in several studies as an outcome measure (cf., Burrell et al., 1994; Kolko et al., 1993; Stringer & LaGreca, 1985). One such study by Dukewich, Borkowski, and Whitman (1996) examined psychological adjustment, child characteristics, social support, and parenting orientation in relation to child abuse potential among a sample of adolescent mothers. They found that parenting preparation and child temperament had a significant relationship with abuse potential, while, contrary to other risk studies, social support and maternal psychological adjustment were unrelated to abuse potential.

Overall, the choice of an outcome measure is an inherently ambiguous decision that ultimately rests on the shoulders of the individual researcher. Substantiated cases of abuse and neglect may represent the most clear-cut dependent variables. However, only about 40% of abuse allegations are substantiated (English & Pecora, 1994) due to the fact that substantiation is an institutional variable that differs according to site, policy, and law. Hence, many children may be abused according to some definitions without a legal finding of substantiation. Another problem associated with using substantiation as an

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outcome measure is that it is a poor fit with prevention research. By definition, substantiated cases of abuse warrant intervention services, not prevention services, because the abuse has already occurred. In prevention research, where the goal is for risk assessment to be used to identify individuals who are at-risk, but who have not yet crossed the behavioral threshold signifying abuse, the outcome measure must be indicative of potential to abuse. Taking these factors into consideration, the construct of child abuse potential, as measured by some combination of attitudinal and behavioral indicators, provides an adequate assessment of risk.

The Entanglement of Risk with Process

Similar to the lack of clarity defining what constitutes child abuse, there is also no clear-cut distinction between risk and outcome processes in this field of investigation. Risk variables have historically been conceptualized as factors (i.e., behaviors, attitudes, events) that temporally precede outcome (abuse). As will be discussed, this assumption, based on medical model conceptions of disease processes and outcomes, may not be well suited to the risk assessment paradigm.

Utilization of the Medical Model

Historically, the use of the medical model to define, identify, and treat child maltreatment has led to a limited view of the relationship between risk factors for abuse and outcome. Investigations have traditionally focused on the description and measurement of physical violence, injuries to the child, and health status outcomes, and these medical indices have been the metric by which abuse was gauged. Likening child maltreatment to a disease entity has afforded the luxury of viewing risk factors as

discernibly distinct from abuse outcomes. For instance, if hitting is considered child abuse, then authoritarian child-rearing attitudes (i.e., "spare the rod, spoil the child") would be a "risk factor" for that particular outcome. However, parents who adhere to authoritarian parenting practices may also engage in psychologically controlling behaviors such as intimidation, rejection, or degradation, practices that may be used in addition to corporal punishment. These practices, in and of themselves, are considered by many to be psychologically abusive (McGee & Wolfe, 1991). According to this example, the risk factor — authoritarian parenting — can also be seen as the abusive outcome. Hence, where the line is drawn distinguishing risk factors from outcome factors is an inherently arbitrary practice that is completely dependent upon how abuse is defined.

In theory, any parenting practices that have either physically injurious or psychopathogenic effects could be considered abuse. But such a broad conceptualization would render the distinction between risk factors and abusive practices virtually meaningless. Baumrind (1995) points out that most developmentally psychopathogenic acts of rejecting, degrading, mis-socializing, exploiting, or being emotionally unresponsive are manifestations of inadequate care-giving rather than legally actionable abuse. As such, these behaviors can generate psychopathology in the child, but such parenting practices are not clearly outside the norms of parental conduct, which would make the identification of risk factors for such behavior impossible. This argument brings back into question the validity of assessing risk for child abuse potential because it demonstrates that all parenting practices are merely points along a continuum, with arbitrary demarcations differentiating adequate parenting from inadequate parenting.

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The medical model framework my not be suited to risk assessment for CAN because parenting characteristics can be considered both risk variables and abuse outcomes, depending entirely upon where the line is drawn between adequate and inadequate parenting. Specifically, the medical model was originally applied to physical conditions in which there is usually a clear-cut and consistent pattern of symptoms and signs in the patient (Graham, Dingwall, & Wolkind, 1985). Even in most disease states, however, arbitrary criteria are used to define what does and does not constitute the presence of a specified disease. As Graham and colleagues point out,

> even in apparently well-defined conditions like cancer, the presence of
>
> precancerous states means that cut-off points are often difficult to apply. Further,
>
> in most "diseases," e.g., obesity and hypertension, the cut-off points that are
>
> applied are highly arbitrary because there is, in fact, no more than flimsy
>
> justification for any particular criterion (p. 1218).

The main disadvantage of applying this model to psychological and behavioral conditions, such as child maltreatment, is that "the condition becomes 'reified' or given the status of a disease, when in fact, there is little justification for this view to be taken" (Graham et al., 1985, p. 1218). Whereas disease processes imply some underlying change in physical structures or functioning, child maltreatment does not necessarily involve the presence of some reliable and valid behavioral criteria that establishes the presence or absence of the condition.

With disease states, there is often (but not always) a clear distinction between risk

variables for the disease and symptoms of that disease. Specifically, risk variables are those factors that bring about subclinical changes in physical structures or functioning, while symptoms represent the development of the changes to clinically significant levels. For example, high blood pressure, smoking, and obesity are risk factors for heart disease, whereas chest pain and shortness of breath are symptoms of the disease (Oliver, Ashley-Miller, & Wood, 1987). One would not say that chest pain is a risk factor for heart disease. Such distinctions between risk factors and symptoms cannot be easily made in the case of child maltreatment. For instance, a parent who regularly slaps her child may be at risk for engaging in more violent abuse such as punching or kicking her child (in this case, slapping is the "risky" behavior); however, another parent may only slap her child when she gets in a fight with her spouse (in this case, marital discord is the risk factor, and slapping is the symptom of abuse). This interchangeability of risk factors and abuse symptoms brings into serious question the reliability of risk assessment for child maltreatment because the criteria for "risk" can change with each individual case.

The Conundrum of Comorbidity

Differentiating risk and outcome factors is somewhat akin to the proverbial chicken or egg conundrum. In the medical sciences, the risk driven approach has contributed to the successful prevention of disease states. Epidemiologists have successfully decreased the number of cases of heart and lung disease by targeting risk factors that increase the risk for these diseases such as smoking, lack of exercise, and high fat diets (Maccoby & Altman, 1988). The essence of this risk-focused approach is that problems can be prevented by identifying the factors or processes that increase the risk of

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these processes and then eliminating them or mitigating their effects. Similarly, in the social sciences, risk processes have been defined as individual or environmental hazards that increase individual vulnerability to future negative outcomes (Bogenschneider, 1996). Inherent in this definition is the temporal requirement of the presence of risk before the occurrence of outcome. But in the case of child maltreatment, this is often not the case. For instance, alcohol abuse is considered to be a risk factor for child maltreatment; maltreating parents are 18 to 38% more likely to abuse alcohol than non-maltreating parents (Widom, 1992). It is unclear in this example of comorbidity whether alcohol abuse is a risk factor for child maltreatment, or whether it is part of the process of substandard parental care-giving. The association between alcohol abuse and child maltreatment is further complicated by the interplay of other variables such as personality style, the family composition, the degree of family conflict, etc. It is also unclear whether alcohol use disinhibits aggression, interacting with personality type to predict violence, or whether aggressive personality types act violently whether or not they have been drinking (Emery & Laumann-Billings, 1998).

The issue of comorbidity of other types of abuse with child maltreatment further blurs the boundary between risk factors and process factors. For example, marital violence has been found in 40 to 75% of cases of child abuse (Layzer, Goodson, & DeLange, 1986), and children living with a sexually abused mother are 12 to 14 times more likely to be sexually abused themselves (McCloskey, Figuerdo, & Koss, 1995). History of childhood abuse and domestic violence are considered to be risk factors for child abuse, but it is possible that child maltreatment is actually an extension of these

complicated behavioral processes. It seems more likely that comorbid conditions contribute to abusive outcomes through a cumulative effect, much like lead poisoning.

Overall, the risk-focused approach to prevention, when applied to child maltreatment, suffers from a serious blurring of the boundary between risk and process factors. The comorbidity of different forms of abuse make it difficult to determine the causes and consequences of violence in terms of what is a risk factor and what is a process factor. If risk factors cannot be reliably distinguished from process factors, the assessment of risk is rendered virtually meaningless. The issue of comorbidity exemplifies the complex relationship between risk factors and process factors, as well as highlights the importance of looking at other variables at different ecological levels that may contribute to violent outcomes. An ecological approach to understanding child maltreatment will be discussed subsequently.

The Application of Etiological Theories to Risk Assessment: Ecological Levels of

Analysis

Historically, a focus on treatment has taken precedence over the search for causes of child maltreatment, severely limiting the knowledge base from which model building could take place (Azar, 1991). Theory building has also been hampered by domination in this field by law and medical professionals whose efforts have been concentrated on aspects of injury, crime, and punishment, and whose primary methods have consisted of intensive case studies. Such a concentration on the extreme and bizarre cases has not generated an adequate empirical knowledge base from which to derive well-articulated and validated theories of child maltreatment (Azar, 1991). Fortunately, the field has

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recently benefitted from the attention of psychologists who come from strong empirical traditions and who have brought rich theoretical backgrounds to bear on the problem of family violence (Azar, 1991). This has led to an expansion of theoretical models, most significantly moving beyond single causal models to searches for causes at multiple levels of analysis, as well as broader conceptions of child maltreatment as a heterogeneous phenomenon.

Advances in etiological theories of child abuse and neglect, however, have outdistanced theorizing in the domain of risk assessment. While it is widely accepted that family violence is the product of various, interacting ecologically distinct processes, most risk assessment procedures continue to utilize unidimensional models that do not reflect the ecological approach. Ecological models are specifically concerned with identifying the effects of causal agents at multiple levels of environmental contexts. Such models assume multivariate causality and posit interactional effects between components at different levels of the same ecological context (Holden, Willis, & Corcoran, 1992). Bronfenbrenner's (1979) ecological model, which was developed to provide a framework for understanding child development, is most often used to describe the levels of analysis involved in human functioning. This model posits four primary ecological levels: the ontogenic level is concerned with individual characteristics such as psychological functioning and personality traits; the microsystemic level involves family system characteristics such as the marital relationship, parent-child interactions, as well as stress and social support; the exosystemic level deals with community variables such as poverty rates, proportion of female headed households, and transitory neighborhoods; and the

macrosystemic level is concerned with the overarching social context that includes cultural and religious values and belief systems. This framework has helped to integrate the research on child abuse leading to more complete etiological models that recognize the important balance of potentiating factors and compensatory mechanisms at multiple ecological levels (Belsky, 1993; Cicchetti & Lynch, 1993; Garborino, 1977).

The scope of the current investigation is to apply an ecological framework to the process of risk assessment because there are currently no risk assessment procedures that adequately incorporate etiological variables at all of the ecological levels (Caldwell et al., 1988). To this end, the ontogenic (individual), microsystemic (family), exosystemic (community), and macrosystemic (cultural) levels of analysis will be discussed, and the evidence linking these variables to child maltreatment etiology will be elucidated. This will provide a framework for a subsequent review of extant risk assessment procedures in terms of their dimensionality and their ecological focus.

The Ontogenic Level of Analysis

This level of analysis is concerned with characteristics of the individual, and refers to parent and child factors that contribute to maltreatment. Attempts have been made to identify a single personality type that fits all abusive parents, but this task has proven impossible and has led to the realization that people with very different personality characteristics exhibit abusive behavior towards their children (Frances, Hughes, & Hitz, 1992). The typology approach has met with greater success in describing abusive parents, although conclusions from this research support the idea that characteristics identified do not apply to all abusers, but rather to several different types

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of abusers (Sloan & Meier, 1983). Frances and colleagues (1992) conducted a typology study with 82 confirmed child abusers using psychometrically obtained personality data rather than clinical observations and demographic information, which has traditionally formed the basis for this type of research. They found that the physically abusive parents in their sample reliably fit into one of five psychological typologies: 1) abusive parents who tend to be shy and withdrawn, apprehensive, sober, restrained, and who have the least amount of education and the greatest number of children compared to other abusive parents; 2) abusive parents who present as being "normal" in terms of personality features, tend to have relatively high educational levels, and fewer children compared to other abusers; 3) abusive parents who are compulsive, bold, dominant, assertive, and who tend to be highly manipulative; 4) abusive parents who tend to be compulsive and who are relatively passive and submissive in their interpersonal relationships; and 5) abusive parents who are isolated and withdrawn, suspicious of others, tense and apprehensive, and who tend toward emotional instability. These typologies are strikingly dissimilar from one another and highlight the heterogeneity of features that characterize parents who maltreat their children. Not only do they fail to identify certain types of individuals prone to abuse, they are so broad that they don't rule anyone out either. Current approaches to risk assessment at this level of analysis often fail to take into account this diversity of personality characteristics, and this may be reflected in the high recidivism rates associated with current treatment approaches (Gabinet, 1983). In other words, intervention programs that are poorly suited to the personality characteristics of the individuals in treatment are surely destined to fail. And from Francis et al.'s study, it

seems that the range of personality characteristics of abusing parents spans the continuum from apparently "normal" to obviously "unstable," suggesting that targeting of individuals for intervention should be all inclusive.

Aside from the typology approach, many parental personality characteristics have been implicated in child maltreatment; a summary of this literature was provided by Pianta and colleagues (1989). These researchers reported that factors such as low self-esteem, poor impulse control, external locus of control, negative affectivity, and decreased ability to cope with stress were found to increase the likelihood that an individual will commit child abuse (Pianta, Egeland, & Erickson, 1989). Parental age has also been investigated as a contributing factor, with the common assumption that children of adolescent mothers are at greater risk for maltreatment due to their mother's immaturity. Buchholz and Korn-Busztyn (1993) conducted a meta-analysis in this domain and found that adolescent parents were not significantly different from their adult counterparts in terms of abusive practices. In this same vein, Olds (1982) conducted a child abuse prevention program for first time mothers who were either teenagers, unmarried, or of low socioeconomic status. Low SES, however, was the only variable that, when considered by itself, was consistently related to child abuse (Holden, Willis, & Corcoran, 1992). This illustrates that individual level variables such as age or marital status may only be indirectly related to maltreatment, and do not provide sufficient information about abuse potential.

In addition to parent characteristics, Belsky (1993) contends that children who are abused may have characteristics that contribute to their own victimization such as age,

sex, poor health, behavioral deviance, and difficult temperament. Herrenkohl, Herronkohl, and Egolf (1983) found that physical abuse, as opposed to emotional cruelty and neglect, was significantly associated with child behaviors, whereas the latter types of abuse were associated with adult conflict and insufficient knowledge of children's needs, respectively. These researchers suggest that the child's role in his or her own physical abuse is as a source of frustration that blocks the parent's efforts to achieve desired goals. For instance, in the case of physically or mentally handicapped children, the parent may feel unduly burdened by the time required to care for the child, and the resulting frustration can lead the parent to strike out at the child (Zirpoli, 1986).

Another important dimension of this level of analysis is the developmental history of the parent and the much debated process of intergenerational transmission of abusive parenting practices (Kaufman & Zigler, 1989; Widom, 1989). Research has consistently shown that there are differences in developmental history between adults who do and do not abuse their children. However, the rates of intergenerational continuity of abuse that are reported range from 7% (Gil, 1973) to 70% (Egeland, Jacobvitz, & Papatola, 1987). Some of the problems with this database leading to such discrepant findings are retrospective accounts of abuse, under- and over- reporting of abusive experiences, and inadequate control procedures. Belsky (1993) concluded from his review of this literature that about one-third of individuals who were abused or neglected during childhood will maltreat their own children. However, Kaufman and Zigler (1989) add that although "being maltreated puts one at risk for becoming abusive, the path between these points is far from direct or inevitable" (p. 190).

An important mediating factor that may affect whether or not abusive practices are passed on from one generation to the next is attachment, which provides a theoretical basis from which to view resilient and nonresilient outcomes. Attachment theory posits that the mother, or primary care-giver, provides a secure base for the infant who in turn feels that she is a stable, steady, dependable force in his or her life and is emotionally available. Bowlby (1969) claimed that the quality of attachment, not merely its presence, was central to healthy developmental outcomes. Bowlby further believed that the primary attachment relationship was a prototype for later social relationships. The importance of attachment to the intergenerational effects of abuse is that the way parents organize their own childhood experiences is a powerful predictor of how they will parent their own children. Several studies have shown that parental attachment history, as inferred from interviews, is related to the quality of attachment in the next generation (Main, Kaplan, & Cassidy, 1985; Morris, 1980; Ricks, 1985).

Attachment theory also provides a theoretical basis for the discontinuity of patterns of abuse across generations. For example, Egeland, Jacobvitz, and Sroufe (1988) followed the child care practices (for three years) of women who had been abused themselves as children. They found that a common denominator among those who did not abuse their own offspring was the presence of a warm, supportive relationship with either another adult during childhood, a therapeutic relationship at any point in life, or a partner relationship in adulthood — such relationships seemed to play an emotionally corrective role. These researchers interpreted their findings from an attachment perspective, claiming that positive relationships can ameliorate the effects of poor

attachment representations resulting from negative childhood experiences. This finding is consistent with Caliso and Milner's (1992) report that among mothers at risk for committing abuse due to an abusive developmental history, those who did not were involved in more satisfying interpersonal relationships than those who did perpetuate abuse (Belsky, 1993). Such relationships are postulated by attachment theory to modify internal working models and interpersonal expectations among individuals with seriously troubled parent-child relationships, and enable them to care for their own offspring in a way that is different from the way they themselves were raised (Belsky, 1993). In this same vein, Ettema and Caldwell (submitted) found that mothers with secure attachment styles showed the least degree of parenting problems and child problems, whereas mothers with dismissing styles (positive self, negative other) demonstrated the greatest parenting problems such as increased stress, attitudes that were indicative of child abuse potential, and perceived child behavior problems.

In summary, within the ontogenic level of analysis, there is a vast literature that describes many individual personality factors of the parent and child that are associated with child maltreatment, only a few of which have been outlined here. The characteristics at this level of analysis that are of the most interest to the current investigation are adult personality characteristics, psychological resources, developmental history, attachment style, and child characteristics, all of which are considered aspects of person-level risk in the current model of risk assessment. Individual characteristics are no doubt an important etiological component, but they must be viewed in relation to the other ecological levels, of which the family context will be discussed next.

The Microsystemic Level of Analysis

This level of analysis is mainly concerned with familial functioning as it relates to the perpetuation of abusive practices. Studies in this area have examined such factors as parent-child interactions, family structure and size, and characteristic styles of resolving conflicts (Emery & Laumann-Billings, 1998). Belsky's (1993) literature review of parent-child interactions as they relate to abuse found overall that abusive parents are less positive in their parenting and more punitive in their discipline. Vasta (1982) argues that what happens in the abusive event is that "an aggressive act of physical punishment that has a functional goal of influencing behavior gets out of control and turns into an irritably aggressive act that is more intense, severe, and repetitive than the perpetrator ever intended" (quoted in Belsky, 1993, p. 421). Belsky further recognizes that the interpersonal context of abuse is shaped by the interaction of individual characteristics of the parent-child dyad. He states that:

> abuse appears to emerge...when a parent with a predisposition toward anxiety, depression, and hostility becomes irritated with a child, attempts to physically and instrumentally control the child, but becomes so aroused as to lose control of him or herself and overdoes what was initially intended to be an act of discipline. It is not difficult to imagine how this process could be very much shaped by a childhood history of mistreatment and exacerbated by features and actions of the victimized child (p. 421).

An important dimension of the parent-child dyad that contributes to maltreatment involves the attitudes and parenting style of abusive parents. Cicchetti and Lynch (1993)

reviewed this literature and concluded that maltreating parents, compared to non-maltreating parents, were less satisfied with their children, perceived their child rearing as more difficult and less enjoyable, used more controlling disciplinary techniques, and generally did not encourage independence and autonomy in their children. Robataille and colleagues (1985), however, found that parental authoritarianism did not predict abuse potential, and was only predictive of rigid parenting practices. Other evidence suggests that maltreating parents are more likely to "parentify" their children, resulting in the child expressing more nurturing and sensitivity toward the parent than vice versa (Dean, Malik, Richards, & Stringer, 1986).

Marital disharmony is another variable at this level of analysis that has been described in the child abuse etiology literature (Herrenkohl et al., 1983). Herrenkohl and colleagues (1983) found that marital discord was significantly related to emotional cruelty, although not to physical abuse or neglect. They suggest that the anger and frustration associated with marital conflict is often displaced toward the child in the form of anger and hostility. A link between child maltreatment and marital violence has also been reported in the literature (Kempe et al., 1962; Layzer et al., 1986; Straus, Gelles, & Steinmetz, 1980). Overall, variables at this ecological level are entwined with those at the previous level because each person in the family system brings with them their own personal developmental experiences, physical and emotional health, tolerance for frustration, coping skills, and self-image, among numerous other factors. These in turn affect marital stability, familial interactions, parenting style, and social resources and supports. These two ecological tiers are further embedded in a community ecology which

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will be discussed next.

The Exosystemic Level of Analysis

This ecological tier has recently been recognized as playing a significant role in the etiology of child maltreatment. Researchers have found that violence in the family is related to qualities of the community in which the family is embedded such as poverty, absence of family services, social isolation, lack of community cohesion, high levels of unemployment, inadequate housing, and community violence (Emery & Laumann-Billings, 1998). Poverty has been most extensively studied in relation to child maltreatment, but primarily at the level of the individual and the family, with attention only recently being directed at the effects of poverty on neighborhood and community conditions that influence child care practices (cf. Coulton, Korbin, Su, & Chow, 1995; Garborino & Crouter, 1978; Garborino & Kostelny, 1992; Zuravin, 1989). Most families living in impoverished communities, however, do not abuse their children, which suggests that the relationship between community level factors and child maltreatment is not simple or direct. Causal relationships have also been disputed by researchers who disagree on whether community impoverishment leads to higher rates of maltreatment or whether maltreating families are drawn together in impoverished neighborhoods but would behave similarly no matter where they lived (Polansky, Gaudin, Ammons, & Davis, 1985).

In their seminal paper, Garborino and Sherman (1980a) used a mapping technique to screen neighborhoods for the proximal environmental factors of families that were associated with child maltreatment. In accord with their "social impoverishment"

hypothesis, they found that "high risk" families -- families who were most in need of resources -- were clustered together in settings where they had to struggle to meet those needs. They described "high risk" neighborhoods as areas made up of very needy families competing for scarce social resources. These families' problems were compounded by the community context of tenuous informal helping networks and pervasive estrangement and withdrawal from neighbors. They emphasize that community risk operated independently from conventional socioeconomic variables, and instead it was associated with aspects of family stresses and supports. Moreover, neighborhood risk scores were found to be significantly and negatively correlated with the overall rating of the neighborhood as a place to raise children made by parents living in that neighborhood, even after controlling for family income and structure (Garborino & Sherman, 1980). Hence, parents were found to be sensitive to the way neighborhood factors establish a particular climate for raising children that is unrelated to conventional socioeconomic and demographic indices. Overall, Garborino and Sherman (1980b) concluded that high-risk neighborhoods compound internal familial problems, increasing their potential for child abuse, whereas low-risk neighborhoods help support families by overcoming their internal weaknesses thereby decreasing the likelihood of child maltreatment.

The identification of high and low risk neighborhoods was accomplished by Garborino and Sherman through a process they developed called "ecological mapping" (Garborino & Sherman, 1980a, 1980b) First, these researchers plotted reported cases of child maltreatment on a map of neighborhoods within a city district. They then

superimposed on this map a map plotting facts about the local ecology to determine which social conditions were associated with reported cases of child maltreatment. The social conditions they included in their ecological map consisted of two economic variables and three variables selected to represent neighborhood social resources. The former category consisted of the percent of households with incomes less than $8,000 a year (in 1975 dollars), which was considered to be economically "struggling," and the percent of households with incomes over $15,000 a year, which was considered to be economically "comfortable." The latter category consisted of indicators of social resources of the neighborhood and included percent of female headed households, percent of married mothers with children under the age of eighteen in the labor force, and percent of residents who had resided in the neighborhood for less than one year. These variables were chosen to represent social resources because they believed that single parent families, working mothers of dependent children, and transients were all drains on the neighborhood because people in these situations tend to be concerned with meeting their own needs and unable to participate in natural helping networks. In matching these two maps, these researchers found that the five indicators of social conditions accounted for eighty percent of the variance in child maltreatment among the neighborhoods. They concluded from their data that a neighborhood's economic and social character provides a very accurate predictor of child maltreatment.

Since Garborino and Sherman's (1980) initial study of "social impoverishment" as it relates to child maltreatment, many researchers have embarked on their own explorations of the community context of child maltreatment. Deccio, Horner, and

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Wilson (1994) attempted to replicate Garborino and Sherman's findings by mapping child maltreatment reports according to census tracts, as well as conducting interviews with parents in high and low risk areas, while controlling for family income. These researchers found that neighborhood characteristics other than income differentiated two neighborhoods in terms of rate of reports to Child Protective Services. These differences were: a) families in the low risk neighborhood were more likely to have lived in the neighborhood for more than 5 years, b) families in the low risk neighborhood were more likely to have a telephone, and c) there were fewer vacant housing units in the low risk neighborhood. Contrary to Garborino and Sherman's findings, these researchers did not find that parents in the high and low risk neighborhoods differed in their perception of available social support. They did, however, find that the low risk neighborhood in their study was more socially integrated than its high risk counterpart, as demonstrated by its higher employment rate, more stable history of residence, and connectedness of individuals to friends, neighbors, and relatives by telephone. They attributed the differences in findings to the conceptual differences between the constructs of "social support" and "social integration." They argued that social integration connotes membership, participation, and belonging, while social support emphasizes the quantity and quality of interactions among individuals. Based on their findings, they suggest that "the quantity and quality of interpersonal contacts per se may be less important in preventing child abuse and neglect than the sense of having a stake and a role, however small, in the community" (p. 136).

In another study, Zuravin (1989) used the same "social impoverishment"

indicators as Garborino and Sherman (1980) (see above) to determine the relationship between community characteristics and maltreatment rates. However, this study looked at child abuse and child neglect as separate dependent variables to determine whether areas in which physical abuse predominated had different community characteristics than those areas in which child neglect was most prevalent. She found that higher rates of child neglect were significantly related to the community characteristics of extreme poverty (200% below the National poverty line), single family dwellings, vacant homes, and transiency. Contrary to Garborino and Sherman, she found that female headed households and working mothers with young children were actually associated with lower rates of child neglect and physical child abuse. Significant neighborhood predictors of physical child abuse were extreme poverty, vacant homes in the neighborhood, and single family dwellings. From these findings, this researcher concluded that several neighborhood characteristics were significant, independent predictors of each type of child maltreatment, which is consistent with the ecological hypothesis. However, she suggests that alternative explanations such as selection (neglecting families elect to live in a particular type of neighborhood) or aggregation (substantial stress directly influences a large proportion of neighborhood residents) cannot be ruled out.

Overall, a summary of the literature on neighborhood characteristics associated with child maltreatment reveals that twelve neighborhood characteristics (transience or population change, economic status, unemployment, neighborhood development, educational development of residents, stresses on mothers, housing status, residential density, population density, desirability of neighborhood, ethnic composition, and degree

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of urbanization), operationalized by twenty-seven different indicators, have been examined (Zuravin, 1989). Studies generally agree that reported incidence rates of child maltreatment vary as a function of community characteristics. However, due to the vastly different methodologies employed to calculate child abuse rates and operationally define community characteristics, child maltreatment, etc., this literature cannot be interpreted as definitively supporting the ecological hypothesis. However, this is a promising area for future research into the causes of child maltreatment, and warrants substantial consideration in our efforts to identify risk factors for child maltreatment. To this end, the community characteristics under scrutiny in the current investigation include neighborhood poverty rates, percentage of female headed households, percentage of working mothers, and transiency rates. These specific neighborhood characteristics were chosen because they have been the most extensively studied (see above), yet with equivocal results. Maintaining consistency across studies will allow easier comparison of findings. Furthermore, they have not been studied in relation to child abuse potential, but rather in relation to substantiated cases of abuse and neglect. They were also chosen because they are publicly available via U.S. census tract data.

The Macrosystemic Level of Analysis

Although this level of analysis is concerned with the broader social and cultural context in which child maltreatment occurs, the current investigation is primarily concerned with cultural differences in sanctions of violence as a contributor to child maltreatment. Physical punishment as a child-rearing technique is endorsed in American culture more so than in other cultures (Parke, 1982), which may account for the greater

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rates of child maltreatment in this country compared to rates in many Asian countries. A literature review of risk factors for child maltreatment associated with different cultures indicates that some risk factors may be present in families regardless of culture (English & Pecora, 1994). These include parent characteristics such as mental illness, substance abuse, and history of maltreatment (English et al., 1993). Cross-cultural differences, on the other hand, have been found in terms of family values, physical discipline, supervision, and provision of medical care (English & Pecora, 1994). English and Pecora (1994) point out that culture affects family's concepts regarding contextual interpretation of behavior, and their response to individuals outside of the family network. Brissett-Chapman (1993), in her work with African American adolescents, stated that understanding risk as it relates to this population must take into account "attitudes toward self, speech and language, interpersonal relations, sexuality, anxiety and patterns of defense, coping and adaptive behavior, family structure and roles, socioeconomic status and living arrangements, degree of integration-acculturation, social support system, communication patterns, help-seeking behaviors, social environment, peer relationships, and community assessment" (p. 55). This researcher argues for a synthesized approach to risk assessment that brings together multifaceted information in order to deliver more appropriate care-giving responses by the CPS system. The small body of research dealing with cultural differences in risk status highlights the need for additional research that controls for income and socioeconomic factors, as well as captures substantive and interactive factors. Overall, it appears that culture plays a dynamic role in risk for child maltreatment, but the intricacies of cultural factors have yet to be explored in this domain.

To this end, the ethno-cultural make-up of the neighborhoods in the current investigation will be explored in relation to risk status.

The Role of Stress as a Mediating Variable

Stress is a variable that is not easily classified in the ecological hierarchy. Stress operates at all of the ecological levels (i.e., job-elicited tension, marital disputes, disobedient children, housing shortages, etc.) with various stress factors having additive and interactive relationships with other contextual variables to produce their effects (Parke, 1982). Thus, stress mediates many of the relationships between ecological variables and abuse outcomes. For instance, Tietjen (1980) explains that poverty is a source of stress on individuals and families that in turn promotes child maltreatment. However, not all families who live in poverty maltreat their children, and abuse and neglect are by no means a lower-class phenomena (Egelend et al., 1980). Garborino's research program has demonstrated that community stressors, exacerbated by lack of social resources, is related to child maltreatment rates. The role of stress at the individual and interpersonal level in the expression of abuse is further illustrated by Egeland and colleagues (1981). These researchers found that number of stressful life events distinguished families who were reported for child maltreatment. However, the majority of highly stressed families in their study did not abuse their children. These researchers found that abusers were more aggressive, anxious, and defensive than their non-maltreating counterparts. In this study, individual characteristics interacted with stress, producing violent behavior in some cases. In a further study of the contribution of stress to child maltreatment, Justice and Calvert (1990) found that abusing and non-abusing

families who were matched on mean stress levels exhibited differences in perception of stress. Perception of stress was mediated by cohesion and independence, with abusing families reporting significantly less family cohesion as well as less independence of its members from one another. Taken together, these studies highlight the inappropriateness of viewing stress as simplistically and directly related to child maltreatment, as it often is viewed when it is used as a checklist item for risk of potential abuse (cf., Agathonos-Georgopoulou & Browne, 1997; Brayden, Altemeier, Deitrich, Tucker, Christensen et al., 1993). Moreover, they illustrate the necessity of viewing stress as a moderating variable that interacts with factors on all levels of the ecological hierarchy. Accordingly, in the current investigation, the person-level and community-level characteristics that are mediated by stress will be explored in relation to their effects on child abuse potential. Stress in this model will be operationalized using the Parenting Stress Index (Abidin, 1990) which measures the relative magnitude of stress in the parent-child system. The two major sources of stress in the parent-child relationship that are measured by the PSI are parent characteristics and child characteristics. Specific sources of stress within each of these domains include the degree of adaptability of the child, the child's reinforcing qualities, the demandingness of the child, the child's activity level, the child's mood, the parent's subjective experience of feeling trapped by the parenting role, the parent's social isolation, the parent's level of depression, the parent's feeling of competence, the parent's physical health complaints, parental attachment to the child, the spousal relationship, and parental social support (Lloyd & Abidin, 1985). This measure yields an aggregate score that was designed to identify parent-child systems that are under stress and are at-risk for

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the development of dysfunctional parenting behavior or behavior problems in the child (Abidin, 1983).

Finally, English and Pecora (1994) speculate that one reason there has been such inconsistent implementation of risk models concerns the lack of clarity regarding the effects of interactions among risk factors. Important questions they raise include how individual risk factors are weighted, how they interact with one another, and how they interact with strengths. The absence of empirical evidence to answer these questions represents a significant breach in our knowledge base regarding risk processes. Exploration of the mediating role of stress in the current model may help address some of these questions. As a mediator variable, stress in the current model is specified to be part of a causal chain that is affected by prior variables (person-level and community-level risk, measured at Time 0) and in turn affects a subsequent one (child abuse outcome, measured at Time 2).

Summary of Conceptual Issues Related to the Assessment of Risk for Child Maltreatment

The assessment of risk is an inexact science that suffers from several conceptual shortcomings. First, there are no agreed upon criteria that definitively define child abuse and neglect due to the connection of definitions to differing political agendas. Second, evidence suggests that child maltreatment is not a discrete phenomenon, but rather a pattern of parenting that shows great variation over time and across situations. This makes it difficult to distinguish risk factors from factors that are part of the process of parenting, and any distinction is arbitrarily determined based upon the specific definition of maltreatment being used. Third, recent etiological models of child abuse adhere to an

ecological framework that is dynamic in nature and recognizes that multiple pathways lead to abusive situations. However, risk assessment is conducted unidimensionally which does not accurately reflect our current understanding of causal mechanisms. These conceptual shortcomings do not necessitate the abandonment of risk assessment for child maltreatment. Rather, they emphasize the need for more fine-tuned, theoretically sound procedures. The assessment of risk is a practice that has been beneficial to medicine despite its imperfections. Hence, it may also have significant utility in the behavioral sciences if it is more accurately applied. The current investigation attempts to determine whether risk assessment, when theoretically applied, has value as a predictor of future parenting behavior. The remainder of this analysis will focus on the practical issues related to risk assessment. This analysis will pave the way for the construction of the model of risk assessment to be empirically tested in this investigation.

PRACTICAL ISSUES RELATED TO THE ASSESSMENT OF RISK

As previously mentioned, risk assessment procedures have two primary applications. The first is for practical purposes such as screening participants for inclusion into secondary prevention programs or identification by child protective services, and the second is for research purposes such as determining the reliability and validity of assessment procedures. Measurement systems vary in terms of the type, content, and scope of the information that is utilized, as well as differ in terms of the structure of the format, from subjective clinical interviews, to qualitative open-ended questions, to more discrete, objective, and empirically-derived scales or checklists (Murphy-Berman, 1994). It is questionable, however, the extent to which these assessment procedures are founded upon our current empirical knowledge base (c.f. Besharov, 1981). Keller, Ciccinelli, and Gardner (1988) argue that typical approaches to risk assessment are developed by consensus. This involves selecting risk factors by consensus from a group of factors associated with child maltreatment in the research literature. However, as already noted, child maltreatment research lacks definitional precision, delineation, and comparability across studies, making this approach similar to combining apples with oranges.

In a comprehensive review of the literature, Pecora (1991) found that there are four basic types of risk assessment systems used in CPS practice. The first system, the matrix approach, uses a table comprised of factors that are rated in terms of their severity of risk to the child. English and Pecora (1994) state that "although the factors in these matrices have some face "validity," there is little empirical validation of the predictive

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accuracy of various sets of items in any given matrix" (p. 454). The second system involves identifying a small set of risk factors most predictive of child maltreatment. With this approach, CPS workers are provided with risk factors that assist them in identifying the likelihood of substantiation (English & Pecora, 1994). This method uses risk indicators from substantiated cases of abuse — a method that is based on the more severe cases and may not be predictive of the full spectrum of risk. The third system involves the use of family assessment scales. This method uses behaviorally-anchored scales to assess the levels of parent, child, family, and household functioning in order to identify areas of abuse (English & Pecora, 1994). This approach to risk assessment is focused on child and family functioning more so than identification of risk factors. A major benefit of this method is that the family is rated at multiple points during the casework process, and family strengths and resources are assessed in addition to risk. There are no predictive validity studies to date on this system, although concurrent validity has been demonstrated (English & Pecora, 1994). The fourth and final system of risk evaluation is termed the Child at Risk Field (CARF). This system, organized around child, parent, and family characteristics, is the only method that uses an ecological approach to identify risk factors. This system does not have proven predictive validity, although preliminary studies of this method have indicated high inter-rater reliability and practice improvement (English & Pecora, 1994). Although these systems serve to structure the practice of risk assessment, predictive accuracy of these methods have yet to be empirically documented. In addition, only one system reviewed incorporated a multiple stage screening procedure, and none of the systems were theoretically-driven.

As previously noted, next to its practical application, risk assessment is also the focus of substantial empirical literature. Extant risk assessment research will be critiqued with a focus on study designs (retrospective vs. prospective), findings of predictive versus concurrent validity, measurement sensitivity and specificity, and ecological dimensionality of assessment instruments.

Retrospective versus Prospective Study Designs

In a comprehensive review of the literature, Rodwell and Chambers (1992) summarized the state of the art of risk assessment for child abuse and neglect. They began with 63 published works, and through a process of selection, they found that only nineteen studies met their qualitative criteria for inclusion in their review. Notably, the selected studies differed greatly in their choice of variables related to child abuse, with no two studies considering the same variables. Other overall methodological limitations they reported were the systematic exclusion of fathers from almost all studies, and the conducting of most studies in public hospital settings that reflect a lower socioeconomic strata than would be found in private hospitals or non-medical settings. Most studies also lacked control procedures such as the use of comparison groups. In addition, potential treatment effects undermined the results of many studies because data were gathered simultaneously with the provision of services to abusing families (Rodwell & Chambers, 1992).

These researchers report that of the nineteen studies reviewed, seventeen were retrospective, meaning that the samples consisted of individuals who had already been identified as engaging in abuse. One of the two prospective studies reviewed by these

investigators was conducted by Altemeier, O'Connor, Vietze, Sandler, and Sherrod (1984) who attempted to identify abuse risk prenatally among 1400 expectant mothers. Using a structured interview format during the mother's first prenatal appointment, these researchers predicted that 273 of the participants were high risk; subsequent abuse was substantiated for 6% of these, versus 1% of the remaining mothers. Although there was a high false positive rate (94%), the true incidence of maltreatment was almost certainly higher because only severe physical abuse was considered, while milder forms of maltreatment went unmeasured. Through the evaluation of child protection records annually for 3 years following the prenatal interview, they found that accuracy of prediction decreased over time with prediction only being valid for the first 24 months following the interview. Moreover, using regression analyses, these researchers identified several statistically significant (r > .44) predictors of abuse including subjective impressions of the interviewers, residency transience, untruthfulness in the interview, disturbed childhood nurturance, and unwanted pregnancy, most of which have been identified in the retrospective literature as risk factors for abuse. Conversely, several risk factors that have been identified in the retrospective literature (i.e., lack of social support, social isolation, alcohol and drug abuse, excessive expectations of child development) did not materialize in this investigation. Perhaps the open-ended format of their interview and their reliance on subjective impressions of the interviewers account for some of these differences. The researchers recognized the limitations of conducting structured interviews and reliance on subsequent subjective clinical impressions as predictors of abuse, stating that these are not practical strategies for predicting abuse. In an attempt to

extend the original study, several of these researchers conducted a second investigation to determine whether a preventive intervention with mothers deemed to be high risk would decrease the number of substantiated cases of child abuse and neglect (Brayden, Altemeier, Dietrich, Tucker, Christensen, McLaughlin, & Sherrod, 1993). They conducted a structured interview (Maternal History Interview -2) with 1154 women prenatally, of which 314 were considered to be high risk (this criteria was met if the woman scored in the high-risk percentile of any sub-scale of the measure). High risk women were then assigned to either an intervention group or a standard care comparison group and outcomes were measured when the children were two years of age. Substantive physical abuse reports were made on 5.1% of the families in the high risk group, a number that was lower than the predictive percentage attained in the original study. In terms of prevention, no effect was demonstrated for physical abuse by the intervention program, and in fact more reports were substantiated for mothers in the intervention group (9.2%) than the standard care comparison group (6.6%). The authors suggest that bringing high risk mothers together for support groups may be a poor choice for preventive intervention because it may have worsened parenting practices through unintended social facilitation of abnormal parenting. Such groups may have also made mothers more anxious by introducing new expectations of them that they felt they could not meet. These authors conclude that prevention of child abuse appears to require "a different, more intensive approach to psychosocial intervention than was offered...and leaves questions about whether secondary prevention is a practical approach to maltreatment prevention" (p. 516).

Other prospective investigations report diverse findings. Murphy, Orkow, and Nicola (1985) found that 52% of a group of mothers screened to be high risk prenatally were subsequently reported for abuse and/or neglect, compared to only 2% of the comparison group mothers. These researchers argue that their screening instrument, the Family Stress Checklist, was remarkably accurate (predicting 20 out of 25 of all families identified as abusive/ neglectful) and provides evidence that prenatal prediction can be employed to select individuals into prevention programs. However, these authors do not use any control procedures which may weaken the conclusions of their study. A further prospective study, conducted by Egeland, Breitenbucher, and Rosenberg (1980), attempted to differentiate between mothers who mistreated their children and those who provided adequate care. Mothers were interviewed in their third trimester of pregnancy and then at three month intervals for one year. Although they report a 15% false positive rate, they found highly significant differences between life event scores of mothers providing adequate care and those providing inadequate care, supporting their hypothesis that environmental stress was a strong predictor of child maltreatment. They further report that certain mother and infant characteristics differentiated high stress mothers who did, and did not, mistreat their children; these included anxiety, aggression, defendence, and succorance. Lastly, Milner, Gold, Ayoub, and Jacewitz (1984) conducted a prospective investigation into the predictive validity of the Child Abuse Potential Inventory. They administered this instrument to 200 parents who were at risk for problems in parenting, but who had not engaged in child abuse or neglect at the time of screening. Parents were then followed to determine if those with the most elevated abuse

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scores would be those most frequently reported and confirmed for abuse. They found a significant correlation of .34 between abuse scores and subsequent confirmed reports of abuse and neglect (N=42). One hundred percent of the confirmed abuse cases had scores on the CAP above the cutoff for abuse potential, however, there was an 89.3% false positive rate. A major weakness of this study, however, was the absence of control subjects, producing a truncated range of relatively high CAP scores.

Predictive versus Concurrent Validity

Predictive validity can only be established using a prospective methodology. As the previously reviewed prospective studies illustrated, predictive validity has established a poor track record, with reported ranges from 5% to 52%. As stated above, Rodwell and Chambers (1992) found that the majority of studies in their review assessed concurrent as opposed to predictive validity. These researchers report an overall predictive accuracy rate of 71% when all studies were combined. However, the average false positive rate was over 50%, demonstrating that "on average, the [predictors] used in these studies will falsely identify half of those it accuses of child abuse, misidentifying one child as abused for every child correctly predicted to be abused" (Rodwell & Chambers, 1992, p. 169). There was a substantial amount of variation among studies in terms of false positive rates, with the lowest being 20%, while the highest was 95%. In terms of missed cases, the studies reviewed had an overall false negative rate of 35%, which means that on average they failed to identify one in three children who were actually being abused. The lowest rate of missed cases was 16% while the highest rate was 63%. These researchers attempted to identify which methodologies were associated with the worst predictive

efficiency rates and found that the variations in predictive efficiency could not be explained by obvious features of the research designs such as sample size, method, population, and instrumentation. They stated that "there are high and low overall accuracy, false positives and missed cases rates among studies with large samples (N=1400) and small samples (N=39)...and among studies using matched controls...some version of random assignment...and prospective and retrospective designs" (p. 170). From these findings, these researchers concluded that, based on existing empirical data, there is no reason to believe that child abuse can be efficiently predicted, even concurrently, much less in advance, without an alarmingly large proportion of mislabeling of non-abusers or of missed cases (Rodwell & Chambers, 1992). They claim that efficient prediction is lacking for two primary reasons. First, technical and methodological shortcomings in the research, such as errors in instrumentation, research design, and sampling methods, have obscured our ability to accurately predict child maltreatment. Second, due to the relatively low base rate of child abuse, efficient predictions cannot be made without extraordinarily accurate instruments. Specifically, screening instruments for child abuse must be more than 99% accurate in order to be acceptable (Light & Nagi, 1977).

Measurement Sensitivity and Specificity

Sensitivity refers to a measurement instrument's ability to correctly identify potentially abusive families, while specificity refers to its ability to correctly identify non-abusing families (Caldwell et al., 1988). Caldwell and colleagues (1988) provide an illustration of these concepts based on Starr's (1979) hypothetical example that it would

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be possible to design a risk assessment measure with a sensitivity rate of 85% and a specificity rate of 82.5%. They explain that

> "in a sample of 100,000 with an actual abuse rate of 1%, this hypothetical instrument would identify 18,175 families at risk (850 valid positives and 17,325 false positives for a selection rate of approximately 18%)...If preventive services were delivered to people identified as high risk, over 95% of the families would be receiving services unnecessarily" (p. 618).

These authors further illustrate that program efficiency increases slowly even with dramatic increases in sensitivity and specificity (Caldwell et al., 1988). Program efficiency depends primarily on the specificity coefficient, but an assessment instrument with as high a sensitivity and specificity coefficient as .99 will still misclassify 50% of the population as high-risk.

The sensitivity and specificity rates of actual — as opposed to hypothetical — risk assessment instruments often go unreported. The ranges that have been reported in the literature vary significantly. Agathonas-Georgopoulou and Browne (1997) report that their checklist of risk factors achieved 93% sensitivity and 93.5% specificity. Murphy et al. (1985) report that the Family Stress Checklist used in their study reached 80% sensitivity and 89.4% specificity. Brayden et al. (1993) report that their measure, the Maternal History Interview-2, reached a sensitivity rate of 55.6%.

Ecological Dimensionality of Risk Assessment Strategies

In their review of the literature, Rodwell and Chambers (1992) found that investigators generally measure three conceptual categories of risk: attitudinal/personality

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factors, interactions between parent and child characteristics, and environmental variables. As discussed above, they found very poor overall predictive efficiency rates among the studies they reviewed. They further found that none of the predictor variables employed by the various studies stood out as more efficient predictors than any others. They reported that regardless of what instruments or predictor variables were used, overall accuracy rates, false positives, and missed cases varied substantially.

The most notable deficiency in the literature to date are investigations that measure different categories of risk simultaneously. A survey of this literature subsequent to the Rodwell and Chambers (1992) review, reveals that most unidimensional investigations look primarily at characteristics of the mother-infant dyad such as attachment (Morton & Browne, 1998), maternal psychosocial history (Brayden et al., 1993; Caliso & Milner, 1994), maternal stress (Agathonas-Georgopoulou & Browne, 1997), maternal coping strategies (Cantos, Neale, O'Leary, & Gaines, 1997), parental attitudes toward child care (Huxley & Warner, 1993), dissociative processes (Egeland & Susan-Stillman, 1996), maternal age (Buchholz & Korn-Bursztyn, 1993; Connelly & Straus, 1992), family environment (Justice & Calvert, 1990), and child antisocial behavior (Kolko, Kazdin, Thomas, & Day, 1993). When multiple levels are identified, they almost exclusively look at social support variables in addition to maternal and child characteristics (Burell, Thompson, & Sexton, 1994; Dukewich, Borkowski, & Whitman, 1996). Lastly, there is a growing body of literature that examines system level variables in relation to child maltreatment. For instance, Krishnan and Morrison (1995) found that population change (migration, fertility, and mortality), unemployment rate, and percent

Native Canadian residents positively predicted child maltreatment rates. Drake and Pandy (1996) found that neighborhood poverty was more strongly associated with child neglect than child physical or sexual abuse. Gillham, Tanner, Cheyne, Freeman, Rooney, and Lambie (1998) found that of the ecological variables examined in their study (child population, social worker ratio, unemployment rates, single parent density), male unemployment rates alone accounted for two-thirds of the variance in total abuse and neglect rates in their sample.

While all of these findings are intriguing, this body of literature is characterized by a piecemeal approach. The plethora of variables that have been studied in relation to child maltreatment have yet to be integrated into a comprehensive ecological assessment of risk. This strategy may hold promise for improved predictive efficiency.

Summary of Practical Issues Related to the Assessment of Risk for Child Maltreatment

The literature demonstrates that efficient prediction of who will mistreat their children is impossible for any practical professional purpose (Rodwell & Chambers, 1992). According to the literature reviewed here, instrumentation has not yet been perfected to the degree that child abuse can be predicted without simultaneously overlooking or incorrectly classifying a significant number of individuals. No set of variables, or combination of variables, does a good enough job at identifying those at risk to accurately target people for prevention programs. Hence, the state of the art of risk assessment is that all existing methods will intervene in many more homes than are necessary at best, and at worst run the risk of having unwanted iotragenic effects.

When in Rome...

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Given the aforementioned shortcomings of risk assessment, it can be argued that this practice has no merit and should be abandoned in favor of universal prevention. Alternatively, it can be argued that this practice has yet to be applied properly to the problem of child abuse and neglect. Although extant strategies have failed to empirically document their usefulness, the utility of theoretically-based, ecologically sound assessment tools have yet to be evaluated. The plethora of variables, at numerous ecological levels, that have been studied in relation to child maltreatment have yet to be integrated into a comprehensive ecological assessment tool. The purpose of the current investigation is to test whether such screening yields more accurate prediction than unidimensional means. This type of ecological screening may prove to be a promising advance in our efforts to predict accurately who is at risk for dysfunctional parenting practices. Whereas the risk assessment paradigm has been successfully used in the medical sciences, it has yet to be determined whether it is an appropriate model for prevention in the behavioral sciences. The current research attempts to work within the existing paradigm, but apply a more theoretically and ecologically sound approach to this practice.

CONSTRUCTION OF THE ECOLOGICAL PROSPECTIVE MODEL

OF RISK TO BE TESTED

The ecological levels to be tested in relation to child abuse potential include

person-level characteristics, and neighborhood-level descriptors. Each of these variables

were measured at the birth of the child (Time 0). Parenting stress was measured when the

child was six months of age (Time 1). Direct and mediated effects of the ecological risk

indicators and stress are tested in relation to two indicators of child maltreatment after the

child's first birthday (Time 2): child abuse potential, and child developmental delays.

Figure 1 illustrates this theoretical model, while Figure 2 provides the measurement

properties of this model.

Rationale for paths in model

The literature supporting the theoretical underpinnings of the current investigation

have been discussed in detail throughout this analysis. Here, it is important to summarize

this literature, thereby explicating the construction of the specific paths in this model.

Path 1: Person level risk ⇒ child abuse potential. There is a vast literature

documenting the connection between person-level risk factors and child abuse. As

discussed previously, this relationship has been empirically well established. In

summary, maternal characteristics including age (Connelly & Strauss, 1992), parenting

style (Baranowsky et al., 1990), history of abuse (Caliso & Milner, 1992), and personality

factors (self-esteem, locus of control, impulse control, coping style, and affect quality)

(Pianta et al., 1989) all play a role in abusive parenting practices.

Path 2: Person level risk → stress. According to the research program of Egelend

and colleagues (1981; 1987; 1988; 1996), stress at the intra- and inter-personal levels plays a significant role in the expression of abusive parenting practices. These researchers have demonstrated that individuals considered to be highly stressed (as measured by number of stressful life events) are more likely to abuse their children if their personality styles are characterized by aggressiveness, anxiety, and defensiveness. Subjective perception of stress, among individuals matched on mean levels of stress, has also been linked with child maltreatment (Justice & Calvert, 1990). Based on this literature, the current model assumes that person level risk factors will affect parenting stress.

Path 3: Stress → child abuse potential. Parenting stress has been described in the literature as contributing to dysfunctional parenting practices (cf., Abidin, 1983). Stress is conceptualized in this model as the magnitude of strain within the parent-child system. In a review of the literature, Cicchetti and Lynch (1993) found that maltreating parents are less satisfied with their children, perceive child rearing as difficult and unenjoyable, use controlling disciplinary techniques, and do not encourage autonomy in their children. Such qualities of the parent-child dyad are conceptualized in the current model as parenting stress and are assumed to be directly related to abuse potential.

Path 4: Community level risk → person level risk. Community risk factors, as described by Garbarino and Sherman (1980), are conceptualized as independent from conventional socioeconomic variables, and are associated with aspects of family stresses and supports. In their research, these authors found that high-risk neighborhoods compound internal familial problems, increasing their potential for child abuse, whereas

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low-risk neighborhoods help support individuals and families by overcoming their internal weaknesses thereby decreasing their likelihood of maltreatment. Hence, in the current model, it is posited that neighborhood or community level strain will affect person-level risk characteristics.

Path 5: Community level risk ⇒ child abuse potential. For the past two decades, Garbarino and Sherman (cf., 1980a & 1980b) have been developing a research program that elucidates the community variables that may contribute to child maltreatment. This link in the model represents a recent burgeoning of work in the field of risk assessment, as well as provides an exclusively ecological foci. Zuravin (1989) reviewed this literature and reports that there is general consensus among studies that incidence rates of child maltreatment vary as a function of community characteristics.

Path 6: Community level risk ⇒ stress. Community level risk, conceptualized as social strain on the neighborhood, is hypothesized to affect parenting stress in the current model. For instance, people living in socially strained conditions (e.g., below the poverty line, female-headed households, working mothers) tend to be concerned with meeting their own basic needs and are less able to participate in natural helping networks. Garbarino and Sherman (1980) have demonstrated that community stressors, exacerbated by a lack of social resources, are related to parenting stress and maltreatment rates.

Figure 1: Theoretical Model

Time 0

Time 1

Time 2

person-level
risk

stress

child abuse
potential

community level
risk
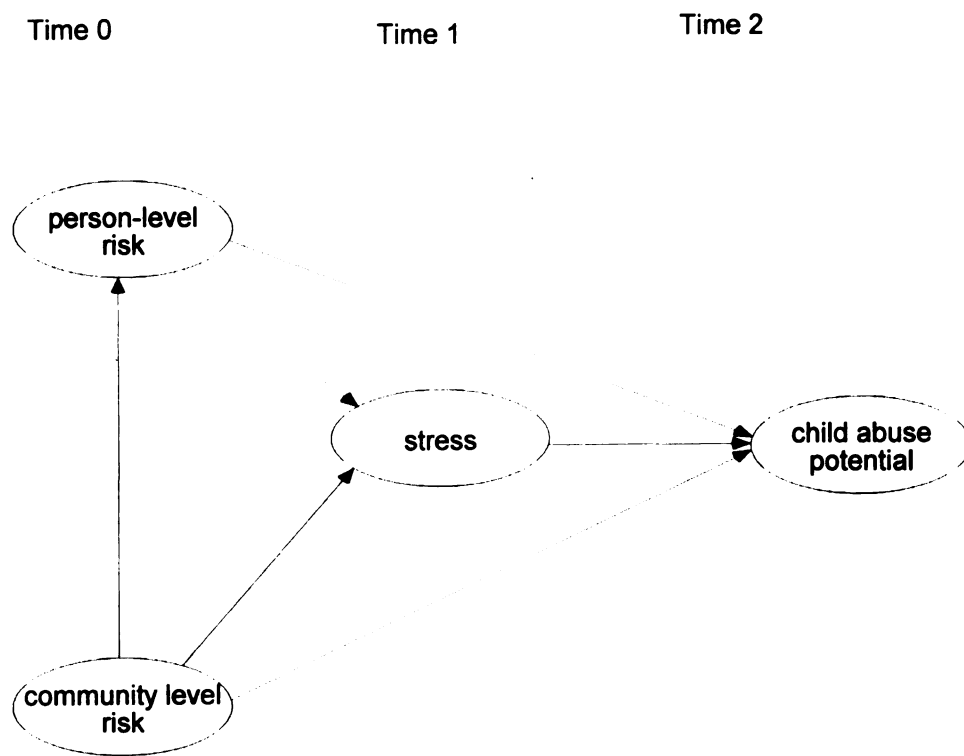
Figure 2: Measurement Model
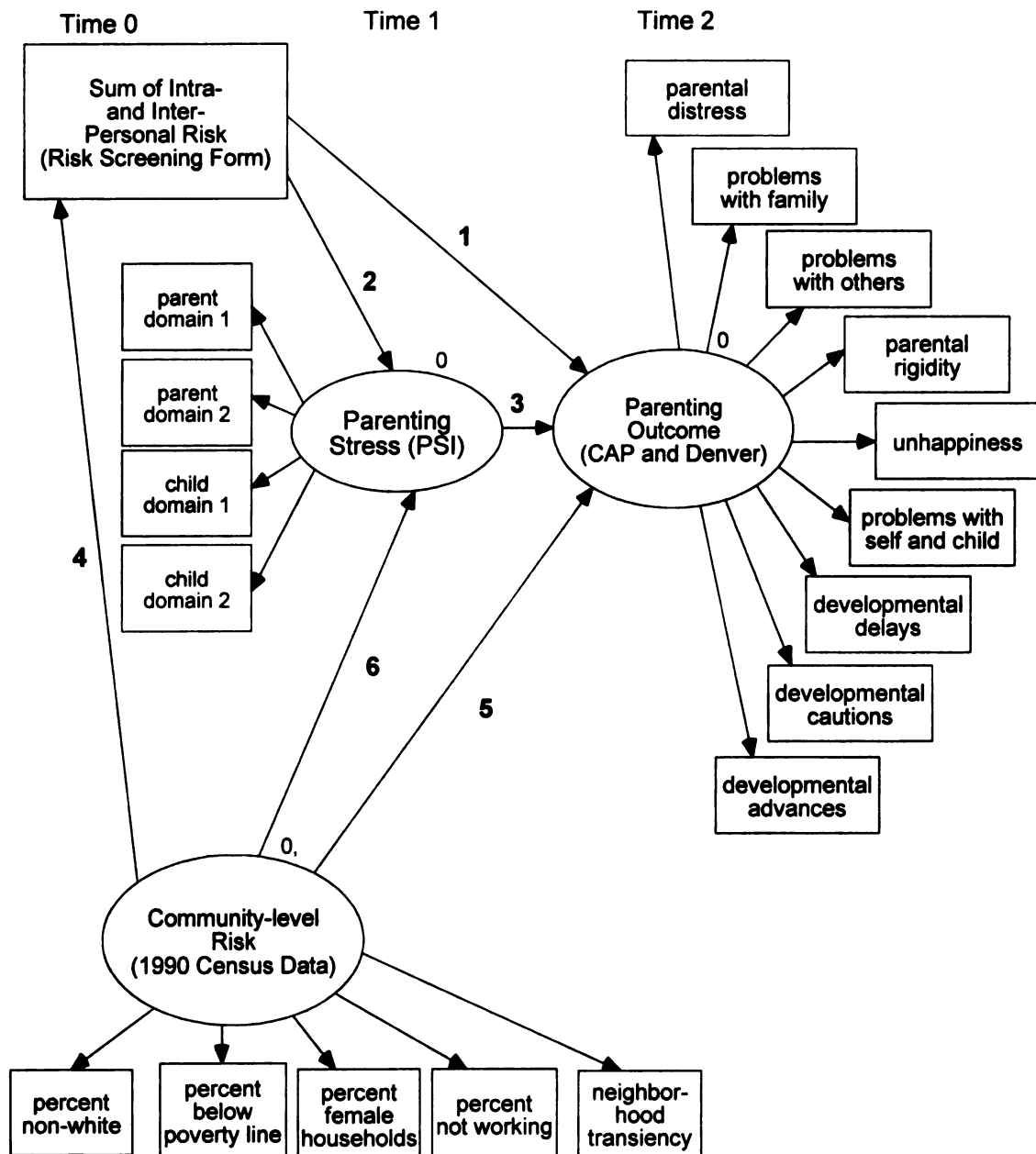
HYPOTHESES

The hypotheses of this study are stated as follows and specified by the numbered paths in the model presented in Figure 2.

1. Person-level variables (maternal age, maternal physical health, maternal mental illness, maternal history of abuse, maternal substance abuse, unwanted pregnancy, child physical health, child temperament, child accidents, family crisis, family violence, inadequate social support, 4 or more preschool children at home, mother-child separations), measured at Time 0, will have a direct effect on outcome (child abuse potential and developmental delays), measured at Time 2 (path 1).

2. Person-level variables, measured at Time 0, will be mediated by stress, measured at Time 1, in relation to outcome, measured at Time 2 (paths 2 and 3).

3. Community-level variables (neighborhood percentage of non-white residents, neighborhood income level, neighborhood percentage of female headed households, neighborhood percentage of working mothers) will have a direct effect on person-level variables, measured at Time 0 (path 4).

4. Community-level variables, measured at Time 0, will have a direct effect on outcome, measured at Time 2 (path 5).

5. Community-level variables, measured at Time 0, will be mediated by stress, measured at Time 1, in relation to outcome, measured at Time 2 (paths 6 and 3)

6. This model as a whole, will account for a significant proportion of the variance in outcome (indicators of potential child maltreatment). This model will provide empirical validation for the predictive accuracy of risk factors at multiple ecological levels. As

such, this model will contribute to our current knowledge base by: a) demonstrating predictive validity through the use of a prospective design, b) documenting empirical relationships between risk factors and potential to abuse, c) providing empirical evidence of the mediating role of stress in relation to child abuse potential, and d) providing empirical evidence of the interrelationships among ecological levels of risk in relation to outcome.

METHODS

Participants

Data collected for the Kent County Healthy Start Evaluation Project were used for this study. The participants include mothers and infants who were screened into the Home Visitor Component of the evaluation, and does not include mothers judged to be at very low or no risk. The mean number of risk factors for each participant at screening was 3, with a range of 0 to 9. Members from both the intervention and control groups are represented in the current analyses because no effects were found due to the intervention (See Appendix A for summary of intervention effects). No initial group differences were found on number and type of risk factors from the screening instrument. Data were collected at three time periods: Time 0 was collected at the birth of the baby (while mother and child were still in the hospital), Time 1 was collected during the child's first year (mean infant age = 4.3 months, range 1 to 15 months), and Time 2 was collected during the child's second year (mean infant age = 17.8 months, range 12 to 30 months). A subset of the total study sample of 277 were used in these analyses; namely, only those participants who had complete Time 0, Time 1 and Time 2 data were included (N=125). The loss of subjects (from 277 to 125) was not due to attrition, but to the lack of complete Time 0 data. Specifically, only 125 subjects from the entire sample (N=277) had available screening data. Although there were no significant differences between the current and the excluded subjects on Time 1 demographic variables, or Time 2 outcome measures (CAP scores and developmental measure), significant group differences existed on the Time 1 stress indicator (See Table 1), suggesting that excluded subjects had more

overall stress related to parenting than those subjects included in the analyses. The reason

for this difference stems from the way in which subjects were recruited for study

participation and will be discussed in detail as a procedural issue.

Table 1: Group differences between research sample (N=125) and excluded subjects
(N=152)

Variable	Group	
	Included in sample	Excluded from sample
T1 PSI Parent Domain		
mean (sd)	128.4 (26.0)	137.4 (26.1)
F	7.48*	
T1 PSI Total Score		
mean (sd)	231.6 (43.2)	246.7 (40.3)
F	8.15*	

* $p < .05$

The mean age of the mothers in this sample was 24 years old (s.d. = 5.7), with a

mean educational level of 11.3 years (s.d. = 2.2). The majority of the women in this study

were Caucasian (47%), while 18% were African-American, 12% were Hispanic, 3% were

either American Indian or Asian, 7% identified themselves as belonging to other ethnic

minority backgrounds, and 13% chose not to identify their racial background. The

majority of the mothers in this sample were single (56%), while 30% were married, 2%

were either divorced or separated, and 15% did not provide their marital status. Most of

the women were unemployed (53%), and received Medicaid (58%). Fifty percent lived

on an income under $15,000 per year (only 5% reported an annual income over $50,000),

and they had an average of 2 children (s.d. = 1.1) at Time 1.

<center>Measures</center>

<u>Independent Variables</u>

In an effort to provide a fuller picture of parental functioning based on ecological theory, the current model examines the relationship between risk at distinct ecological levels and child abuse potential. The ecological contexts being examined are person-level risk, community-level risk, and stress related to parenting. The variables at each of these levels came from three sources, the KCHS Risk Screening Instrument, the Parenting Stress Index (PSI), and 1990 U.S. Census Data.

The KCHS Risk Screening Instrument

This measure consists of a checklist of 46 "risk factors." This measure was used by KCHS screeners either at Butterworth Hospital in Grand Rapids, Michigan or by Kent County Health Department public health nurses in order to assign a risk status to participants. In the original study, this checklist was used as an aggregate measure — that is, participants were assigned a number of risk factors which then determined their group assignment, "at-risk" or "low-risk." Subjects who endorsed two or more risk factors were considered at-risk for the purposes of study group assignment, and were offered the home-visitor intervention. The aggregation of multiple concurrent risks can be conceptualized as an individual's risk load, which has been positively associated with poor outcomes (Sameroff & Seifer, 1990). However, this conceptualization of risk does not provide information about the differential contribution of risk at distinct ecological levels.

In keeping with ecological theory, an attempt was first made to divide this

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measure into intra-personal and interpersonal level risk factors so that the differential contribution of these levels of risk could be measured in relation to outcome. This was accomplished by obtaining inter-rater agreement from 20 independent raters who assigned each risk variable to an ecological tier. Raters, all of whom were advanced level graduate students in a Clinical Psychology Ph.D. program, were first asked to read brief descriptions of the ecological levels being examined in this study. They were then given the list of the 46 risk factors from the screening instrument and they were asked to assign each item to an ecological context (See Appendix B for the narrative description of each ecological context and the total list of risk factors). Percentages of agreement were then calculated for each risk factor. Of the 46 risk factors, 13 were discarded due to lack of agreement into which ecological context they "fit." The cutoff point that was chosen for exclusion was a rate of less than 75% agreement. Average inter-rater agreement for the items retained was 90%. The risk factors falling into the intra-personal and interpersonal categories were the only variables from this measure used in the current model. Variables from this measure that were judged to fall within the community and cultural contexts were discarded from the analyses because these ecological levels are being measured with U.S. Census tract data. In total, there were 15 risk indicators (33%) discarded from this measure. These items included lead poisoning, frequent atypical accidents, immunization concerns, unplanned pregnancy, mother was less than 18 years old with inadequate support, adolescent mother, single parent, no prenatal care, mother smokes, language barrier, no medical insurance, inadequate health care, financial need, unemployed, and homeless. An illustration of the frequency of all 46 risk factors endorsed by participants

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is provided in Table 2 in order to examine the risk trends of the sample upon screening

into the program, before risk items were discarded due to poor inter-rater agreement

and/or assignment to the community/cultural ecological tier.

Table 2: Frequency table of all risk factors from KCHS Risk Screen (discarded items marked with an asterisk)

Risk item	Percent endorsement
Frequent atypical accidents*	0%
Child bronchiopulmonary dysplasia	0%
Child excessive irritability	0%
Infant positive drug screen	0%
Intrauterine growth retardation	0%
Infant lead poisoning*	0%
Maternal immunization concerns*	0%
Severe perinatal complications	0%
Child asphyxia	1%
Maternal severe chronic physical illness	1%
Homelessness*	1%
Congenital abnormalities	1%
Child organic failure to thrive	1%
Infant small for gestational age	1%
Mother/child separations	1%
Other risk	1%
Severe prenatal complications	2%
Family violence	2%
Child chronic ear infections	2%
Child meconium aspiration	2%
Other concerns	3%

Acute family crisis	4%
Maternal language barrier*	5%
No prenatal care*	5%
Four or more preschoolers in the home	5%
Inadequate health care*	5%
Maternal poor nutrition	6%
Maternal medical or genetic problems	6%
Infant feeding problems	6%
Child jaundice	7%
Premature or low birth weight infant	7%
No medical insurance*	8%
Maternal substance abuse	8%
Isolation and lack of support	10%
Maternal mental illness/low cognitive functioning	12%
Maternal history of abuse or neglect	13%
Maternal history of reproductive problems	13%
Mother less than 18 with inadequate support*	13%
Maternal preexisting medical condition	13%
Parenting concerns	15%
Adolescent mother*	15%
Maternal overweight/underweight	25%
Maternal unemployment*	34%
Maternal smoking*	34%
Unplanned pregnancy*	43%
Poor/financial need*	53%
Single parent*	58%

The first ecological tier extracted from the KCHS Screening Instrument consists of maternal and infant variables. Maternal variables include physical health problems (history of medical or genetic problems, preexisting medical condition, over- or under-weight, prenatal complications, perinatal complications, poor nutrition, history of reproductive problems, severe chronic physical illness), mental illness, history of having been abused as a child, and substance abuse. Child variables include physical health problems (asphyxia, bronchopulmonary dysphagia, congenital anomalies, organic failure to thrive, feeding problems, intra-uterine growth retardation, jaundice, low birth weight or prematurity, meconium aspiration, frequent ear infections, positive drug screen at birth, and small size for gestational age), and temperament (excessive irritability).

The second ecological tier that was constructed from the KCHS Screening Instrument involves interpersonal and familial contextual variables. This level is concerned with characteristics of parent-child interactions, and the familial context. The variables that exist at this level of analysis include acute family crisis, family violence, the presence of four or more preschool children in the home, and mother-child separations.

Although this multidimensional conceptualization of risk is theoretically sound, it posed several methodological problems in the current model. First, there was virtually no variance in the distribution of scores for the intra-personal and inter-personal levels (see Table 3). Because most subjects endorsed so few risk factors, this measure did not lend itself to dimensionality when scored this way. In order to address this problem, a principle components factor analysis was conducted on this measure, yielding a four

factor solution.

Table 3: Frequency table of intra- and inter- personal level risk indicators

Number of intra-personal level variables endorsed	Frequency (Percentage)
0	42 (33%)
1	39 (31%)
2	25 (20%)
3	11 (9%)
4	6 (5%)
5	1 (1%)
6	1 (1%)
Number of interpersonal level variables endorsed	
0	111 (89%)
1	13 (10%)
2	1 (1%)

The resulting factors can be characterized as 1) poor, single adolescent mother, 2) isolated non-adolescent mother with parenting concerns, 3) parent with physical problems, and 4) mentally ill parent. Upon further analysis, however, it became apparent that this factor solution was inappropriate for this measure because the four factors were uncorrelated with one another and did not hang together as indicators of a single latent "risk" construct. In this case, the expectation that the contributors of risk would be inter-correlated was unjustified because this risk measure is not a scale made up of items assumed to measure a single underlying "risk" construct. Instead, the risk factors all

contribute to risk in the same way, for example, one's salary, yard sale profits, and birthday gifts might contribute to one's net financial worth, but are not necessarily indicative of it. Moreover, Chin (1998) explains that the indicators used to measure a latent variable must be reflective in nature, such that the correlations among indicators for the particular latent variable are caused by that latent variable. For example, potential reflective measures of metal inebriation (the latent variable) are blood alcohol, driving ability, MRI, and performance on mental calculations. If truly reflective, an improvement in the blood alcohol level measure would also imply an improvement in the MRI activity and other measures since they are all meant to tap into the same concept (Chin, 1998). Conversely, an example of formative measures of inebriation would be the amount of beer, wine and hard liquor consumed, where an increase in beer consumption does not imply similar increases in wine and hard liquor consumption (Chin, 1998). Thus, formative indicators are measures that form or cause a change in a latent variable, but need not be correlated nor have high internal consistency (Bollen & Lennox, 1991). In the case of the current risk measure, the individual risk items are formative indicators (i.e., a decrease in the mother's physical health score does not mean there will be a corresponding decrease in the child's physical health) and will be used as an observed variable in the model representing cumulative person-level risk. Only those risk factors that met criteria for inclusion in the ecological analysis were used (i.e., the 33 items left after inter-rater agreement was achieved) in order to maintain the theoretical assertion that these risk factors measure person-level risk, albeit intra- or inter- personal. Each person was given a score of 0 (no risk factors), 1 (only one risk factor present), or 2 (two or more

risk factors present) which resulted in a nearly equal distribution of scores (30%, 31%, and 39%, respectively). Women could receive a score of 0 risk factors, even though the original sample was deemed at-risk, because 33% of the original risk items were discarded due to poor inter-rater agreement and/or assignment to the community/cultural ecological level. Hence, the division of the risk screen into ecological tiers resulted in one-third of the sample losing their original risk status.

Parenting Stress Index - Long Form

The Parenting Stress Index (Abidin, 1990) assesses the amount of stress related to parenting as perceived by the respondent (See Appendix C). It consists of 101 items that make up two primary domains, overall perceptions of the child and overall perceptions of parenting. Each domain contains several subscales. The child domain subscales include: child distractability (Cronbach alpha =.50), child's reinforcement of parent (Cronbach alpha =.46), child mood (Cronbach alpha =.65), parent's acceptance of child (Cronbach alpha =.83), child's adaptability (Cronbach alpha =.65), and demandingness of child (Cronbach alpha =.52). The parent domain subscales include: parent attachment to child (Cronbach alpha =.44), restrictiveness of the parental role (Cronbach alpha =.80), depression related to parenting (Cronbach alpha =.75), parental feelings of competence (Cronbach alpha =.34), spousal relationship problems related to parenting (Cronbach alpha =.68), parental health problems (Cronbach alpha =.65), and parental social isolation (Cronbach alpha =.65). A major criticism of this instrument, however, is that it measures too broad a spectrum of "stressors" related to the parenting role. The numerous sub-scales represent such a diverse array of factors associated with parenting that are

construed by the author as "parenting stress," that the face validity of this measure is called into question.

Previous research on this measure has found a high degree of internal consistency, with alpha coefficients of .95 for the Total Stress Index, .93 and .89 for the Parent and Child domains, respectively, and subscale coefficients ranging from .55 to .80 (Lloyd & Abidin, 1985). Burke (1978) reported test-retest reliabilities for the Parent and Child domains of .71 and .82, respectively, after an interval of 3 weeks, while Hamilton (1980) found that after one year, test-retest reliabilities were .70 and .55. The current analysis employs the parent domain and child domain scale scores to measure stress related to parenting. However, for the purposes of the current structural equation modeling analyses, in which latent variables must have more than two indicators in order to be identified in the model, each scale was broken in half to provide four indicators: parent domain 1, parent domain 2, child domain 1, and child domain 2.

1990 U.S. Census Data

Garbarino and Sherman found that five indicators of community social conditions accounted for eighty percent of the variance in child maltreatment among the neighborhoods they studied. These five categories consisted of 1) the percent of households with incomes less than $8,000 a year (in 1975 dollars), which was considered to be economically "struggling," 2) the percent of households with incomes over $15,000 a year, which was considered to be economically "comfortable," 3) the percent of female headed households, 4) the percent of married mothers with children under the age of eighteen in the labor force, and 5) the percent of residents who have resided in their

neighborhood for less than one year. These variables were found to represent

neighborhood social resources because they all put drains on the neighborhood and

because people in these situations tend to be concerned with meeting their own needs and

unable to participate in natural helping networks. Similarly, neighborhood variables

representing community risk indicators are utilized in the current model. To this end,

each participant was assigned a census tract number according to where their Time 0

address was located on the 1990 U.S. census tract map. Because Time 0 data was

collected in 1994, 1990 census data was deemed most appropriate for these analyses.

Neighborhood characteristics were then supplied for each census tract in terms of the

community indices outlined by Garbarino and Sherman (1980). Participants were

assigned scores that reflect their neighborhood's income level (above or below the

poverty level in 1990 U.S. dollars), their neighborhood's percentage of female headed

households, their neighborhood's percentage of working mothers, and neighborhood

transiency rate as indicated by the percentage of households vacated within the past year.

An additional neighborhood characteristic that was evaluated was the percentage of non-

white persons residing in the neighborhood. This was done to assess the effects of

neighborhood ethno-cultural makeup on parental functioning.

Outcome Variables

Risk and outcome variables in the current model are conceptualized as points

along a continuum of parental functioning. Hence, the dependent variables in the current

model consist of indicators of parent and child functioning rather than substantiated cases

of child maltreatment. It has been argued throughout this analysis that the term "child

abuse" is a term that is arbitrarily defined. Hence, attitudinal and behavioral measures of

parenting quality are measured in relation to risk factors.

Child Abuse Potential Inventory (CAP)

Abusive practices are conceptualized in the current model within the overall

context of parenting which is measured by the Child Abuse Potential Inventory (Milner,

1986) (See Appendix D). Although an indirect indicator of maltreatment, this measure

taps elements of parenting behavior and attitudes empirically linked to maltreatment risk

(Milner, 1986). Administered at Time 2, this is a 160-item self-report measure that is

answered in an agree/disagree forced choice format. This measure contains a 77-item

physical child abuse scale (Cronbach alpha = .90) with six subscales: Distress (Cronbach

alpha = .90), Rigidity (Cronbach alpha = .80), Problems from Others (Cronbach alpha =

.55), Problems with Family (Cronbach alpha = .51), Unhappiness (Cronbach alpha = .50),

and Problems with Child and Self (Cronbach alpha = .32). The CAP also contains three

validity scales (lie scale, random response scale, and inconsistency scale) and two

subscales that measure ego strength and loneliness, which will not be used in the current

analyses. The current analyses use the six CAP subscales to measure potentially abusive

attitudes: parental distress (items include "I am often angry inside," "I often feel

rejected"), parental rigidity ("Little boys should never learn sissy games," "Children

should never disobey"), problems with family ("My family has many problems," "My

family fights a lot"), unhappiness ("I do not laugh very much," "I do not have any friends

in my neighborhood"), problems with child and self ("I have a child who is bad," "I have

a physical handicap"), and problems with others ("You cannot depend on others,"

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"People have caused me a lot of pain").

Milner (1986) reports reliability coefficients for internal consistency for the CAP that range from .75 to .94. This researcher also reports that test-retest reliabilities of .91, .90, .83, and .75 for the general population were found one day, one week, one month, and three months after initial administration, respectively. Additionally, in terms of predictive validity, Milner (1994) has found a significant relationship between CAP abuse scores and subsequent child maltreatment, as measured by substantiated child abuse reports among parents deemed at-risk by this measure.

Denver Developmental Screening Test II

The Denver II is a 1990 revision of the Denver Developmental Screening Test developed by Frankenburg and Dodds (1967). Age norms at which 25%, 50%, 75%, and 90% of the sample performed each item were updated from the 1967 norms of the original test. This behavioral observation measure, administered at Time 2, is a developmental screening test to measure delayed development in children between the ages of 2 weeks and 6.4 years. It assesses achievement in four functional areas of development: gross motor, fine motor, language and personal/social. Scoring is based on comparison of the child's performance against population norms for attainment of various developmental tasks. Based on age-specific developmental norms, scores are derived by determining whether the child is advanced (can perform skills that the majority of children that age cannot), cautioned (falls below the average performance for that age level), or delayed (cannot perform a specific behavior that the majority of children can perform at that age).

This measure has been shown to have adequate validity and reliability. Frankenburg, Camp, and Van Natta (1971) compared the performance of 236 children evaluated with the Denver to performance on several criterion tests (Stanford-Binet, Revised Yale Developmental Scale, Cattell Infant Intelligence Scale, and Revised Bayley Scale of Infant Tests) and found correlations ranging from .86 to .97. Scoring the Denver as advanced, cautioned, and delayed also corresponded highly with IQs or developmental quotients obtained from the criterion tests. In another study, these same researchers (1971) evaluated tester-other agreement and test-retest stability of this measure with 76 and 157 children, respectively. They report coefficients ranging from .66 to .93 with no age trends displayed.

This measure is scored as a continuous variable, with each subject receiving a score for the total number of advances, cautions, and delays achieved across the four developmental domains.

Procedure

KCHS participants entered the program either through screening at the maternity ward of Butterworth Hospital in Grand Rapids, Michigan or through referral by a Kent County Health Department public health nurse. Families who were deemed to have two or more risk factors present were offered admission into the home visitor program or the control group. Goals of the KCHS Home Visitor Program were to promote positive parent-child relationships, increase awareness of community resources, and foster child physical and mental health and school readiness. Random group assignment was attempted by alternating the days of the week that each group was screened for.

However, upon analysis of T1 data, it was discovered that the two groups differed significantly on several dimensions, which suggests that random group assignment was not achieved (See Appendix E for summary of intervention-control group differences at Time 1). Failure of random assignment was attributable to changes in the referral system that were introduced midway through the investigation by KCHS administrative staff. Originally, families could only enter KCHS through "front door referrals" which meant they had to give birth at Butterworth Hospital and be formally screened by a trained KCHS screener, who then randomly assigned the participants into the intervention and control groups. Over time, "side door referrals" occurred (referrals made by other agencies), and these referrals were made only into the intervention group. This resulted in unequal groups, with the intervention group exhibiting significantly more distress than the control group. This also contributed to the differences found between subjects included in these analyses and those excluded due to lack of screening data. Namely, only those subjects with "front door referrals" had available screening data because screening forms from later "side door referrals" were not made available to the researchers. For the purposes of the present investigation, initial group differences are considered statistically irrelevant because the groups are being combined and the intervention is being ignored because it had no significant effect on parenting outcomes. Moreover, these differences introduce greater initial variance into the total group which is a strategy that counteracts the restrictiveness of the sample (i.e., participants deemed to have no risk-indicators were excluded from the sample).

Women who participated in the home visitor program were assigned a trained

paraprofessional Family Support Worker (FSW) who collected data upon the family's entry into the program (T1) and at yearly intervals for three years. Intervention group families were paid $10 for their completion of each data packet after T1. Data from the control group was collected by a paid social worker who met with the family after the birth of the baby, and at yearly intervals for the length of the study period (three years). Each control group family was reimbursed $25 for each packet that they completed.

RESULTS

Analyses

The method of data analysis used in this study was structural equation modeling with latent and observed variables. The statistical program AMOS 4.0 (Arbuckle, 1999) was used to perform the structural modeling analyses. Structural Equation Modeling (SEM) is a confirmatory approach to data analysis (Byrne, 1994), which is highly appropriate in the present context. A primary advantage of using SEM is that it can test the measurement model and the path model simultaneously. Chi-square is the most common method of evaluating fit, however, this fit index is highly sensitive to sample size and the significance test can be misleading. Specifically, when evaluating the chi-square statistic, non-significance indicates that the actual observed covariance matrix is not considerably different from the estimated covariance matrix. Thus, a low chi-square value that is non-significant represents a good fit. In the current analyses, model fit was evaluated using several fit indices considered measures of practical goodness of fit, even when significant chi-square values are obtained (Bentley, 1989). First, the Comparative Fit Index (CFI) is a noncentrality parameter-based index that has an advantage over other fit indices in that it avoids the underestimation of fit in small samples (Bentler, 1990). A CFI value of over 0.90 is desirable and indicates an acceptable fit of the model to the data (Bentler, 1992). The Tucker-Lewis index (TLI), also known as the non-normed fit index (NNFI), compares a proposed model's fit to a null model, as well as measures parsimony by assessing the degrees of freedom from the proposed model to the degrees of freedom of the null model (Garver & Mentzer, 1999). The TLI is also resilient to variations in

sample size. An acceptable threshold for this index is .90 or greater. Another fit index, the Bentler-Bonett Normed Fit Index (NFI), measures the discrepancy between the independence model and the saturated model, with values over .90 considered acceptable. Bentler and Bonett (1980) assert that "since the scale of the fit indices is not necessarily easy to interpret (e.g., the indices are not squared multiple correlations), experience will be required to establish values of the indices that are associated with various degrees of meaningfulness of results. In our experience, models with overall fit indices of less than .90 can usually be improved substantially" (p. 600). Finally, the root mean square error of approximation (RMSEA) is an index that does not penalize for model complexity and will tend to favor models with many parameters. According to Browne and Cudeck (1993), a RMSEA value of .05 or less indicates a close fit of the model in relation to the degrees of freedom, while a model with an RMSEA greater than 0.1 should not be accepted.

In addition to fit indices, it is important to pay attention to the predictiveness of the model. According to Chin (1998), factor loadings should be at least .60 and ideally .70 or above to indicate that each measure is accounting for 50 percent or more of the variance in the underlying latent variable. Standardized paths should be at least .20 and ideally above .30 in order to be considered meaningful. A path weight of .10 only represents a 1% explanation of variance (Chin, 1998) which is hardly theoretically meaningful. As Meehl (1990) points out, paths and loadings must be of substantial strength to be considered theoretically interesting because "everything correlates to some extent with everything else...[due to] some complex unknown network of genetic and

environmental factors" (p. 209).

Model Building

Because structural equation modeling works best in a confirmatory mode, it is important to avoid slipping into an exploratory mode where the final results may be unwittingly influenced by the idiosyncracies of the data at hand. Chin (1998) warns that the process of changing and re-estimating the model until it fits the data often results in a final model that is mistakenly believed to be correct. In actuality, use of this exploratory mode, often resulting in strong goodness of fit, is merely indicative of the researchers skill at adding and deleting items during the exploratory phase. Ideally, Chin (1998) recommends that a set of a priori models, based on knowledge of the underlying theories, be followed in order to arrive at valid and reliable findings that are unlikely to be the result of capitalizing on chance. Further, for any given SEM model, there are often alternative models that are equivalent in terms of overall model fit, but are substantially different in terms of explaining the data. Breckler (1990) addressed this issue by surveying extant published SEM studies and found that all but one of the 72 studies he examined acknowledged the possibility of alternative models. As a result, it is of utmost importance to remain loyal to one's original theoretical assumptions when conducting SEM analyses and not fall victim to exploratory methods with the primary goal of attaining the greatest goodness of fit indices.

In the current analyses, in order to examine the relationships among risk levels, stress, and both behavioral and attitudinal parenting outcomes, two separate models were estimated. Specifically, because actual physical abuse was not measured, the CAP was

used to indicate an attitudinal measure of parenting and the Denver Developmental

Screening Test was used as a behavioral marker of parenting outcome. It was not

considered appropriate to group these measures together as indicators of a latent

"parenting" construct because they are formative, rather than reflective indicators.

Because SEM techniques attempt to account for all the covariances among its measures,

all items must be reflective to be consistent with the statistical algorithm that assumes

that the correlations among indicators of a particular latent variable are caused by that

latent variable (Chin, 1998). Alternatively, even though estimates from formative

indicators are invalid, they can still result in reasonable goodness of fit, leading to

questionable validity of findings and incorrect conclusions. Hence, each of these models

will be presented in turn.

Descriptive statistics for all of the variables used in the two models can be seen in

Table 4. The data set was chosen to minimize missing data, with only those subjects

having complete data at all three time periods included in the analyses (N=125). The data

was examined for distribution qualities. Kurtosis and skewness values for the entire

model ranged from -1.52 to +1.85, indicating that excessive kurtosis and skewness were

not present in the current data set. The data reflected a relatively normal distribution and

were appropriate for the analyses.

Table 4: Descriptive Statistics for Study Variables

Variable	N	Mean	SD	Minimum	Maximum
Sum of intra- and inter-personal level risk (scored 0, 1, 2+)	125	1.09	.83	.00	2.00
T1 PSI (child domain 1)	125	46.29	9.95	15.00	80.00
T1 PSI (child domain 2)	125	42.40	13.87	16.50	98.00
T1 PSI (parent domain 1)	125	52.91	12.99	19.00	83.00
T1 PSI (parent domain 2)	125	75.48	15.11	33.00	111.00
Percentage living below poverty line	125	.17	.13	.00	.58
Percentage female headed households	125	.17	.12	.02	.48
Percentage not working	125	.38	.10	.15	.77
Percentage non-white residents	125	.25	.29	.01	.95
Time 2 CAP Abuse score	125	132.75	100.18	6.00	412.00
T2CAP parental distress	125	79.40	72.82	0	255.1
T2CAP parental rigidity	125	14.77	15.42	0	60.0
T2CAP problems with family	125	11.23	13.17	0	38.0
T2CAP unhappiness	125	12.60	10.90	0	56.2
T2CAP problems with child and self	125	3.10	5.03	0	24.0
T2CAP problems with others	125	11.40	7.86	0	24.0
Time 2 Denver advances	125	1.53	1.81	0	13
Time 2 Denver cautions	125	.70	1.01	0	5
Time 2 Denver delays	125	.34	1.02	0	7

Model I: CAP Measuring Outcome

Before interpreting the structural paths, the measurement model was examined for cross-loading items (based on Modification Indices) and items that loaded weakly on their factor (nonsignificant parameter estimates, $p < .05$). Based on these criteria, one item was removed from the community-level risk factor (neighborhood transiency rate). Consequently, all indicators loaded significantly ($p < .05$) and substantially (standardized parameter estimates $> .30$), and modification indices suggested no cross-loading indicators. This model is presented in Figure 3 and the standardized maximum likelihood estimates of the parameters are presented in Table 5.

The overall model was partially supported based on some of the practical goodness of fit indices: x^2 (85, N=125) = 255.7, $p = .000$, CFI = .953, TLI = .934, NFI = .932. However, the RMSEA value was unacceptable at .127. This model accounted for 10% of the variance in child abuse potential as measured by the CAP. There were no significant relationships between person-level risk and stress or outcome. Community level risk, however, was found to be significantly related to child abuse potential (beta = .195, $p = .05$) and parenting stress (beta = .263, $p = .01$). Parenting stress had a direct effect on child abuse potential that approached significance (beta = .178, $p < .10$). This suggests that neighborhood risk is mediated by parenting stress in affecting potentially abusive parenting practices. This pattern of findings suggests that person-level risk factors, as measured in the current study, are unrelated to parenting stress or attitudes. Conversely, neighborhood level risk at Time 0 (the birth of the baby) can affect stress six months later as well as predict abusive parenting attitudes at one year, and perhaps

beyond.

Table 5: Standardized Parameter Estimates for Model I — CAP Outcome

Parameter	Parameter Estimate	p	R^2
Community Level Risk →			
percent non-white	.913	.000	.83
percent below poverty line	.855	.000	.73
percent female headed households	.987	.000	.98
percent mothers not working	.619	.000	.38
Stress →			
parent domain 1	.595	.000	.35
parent domain 2	.546	.000	.30
child domain 1	.798	.000	.64
child domain 2	.853	.000	.73
Child Abuse Potential →			
CAP Distress	.852	.000	.73
CAP Problems with family	.622	.000	.39
CAP Problems with others	.745	.000	.55
CAP Rigidity	.443	.000	.20
CAP Unhappiness	.455	.000	.21
CAP Problems with self and child	.424	.000	.18

Figure 3:
Model of multiple influences of risk on child abuse potential
(CAP subscales measuring outcome)
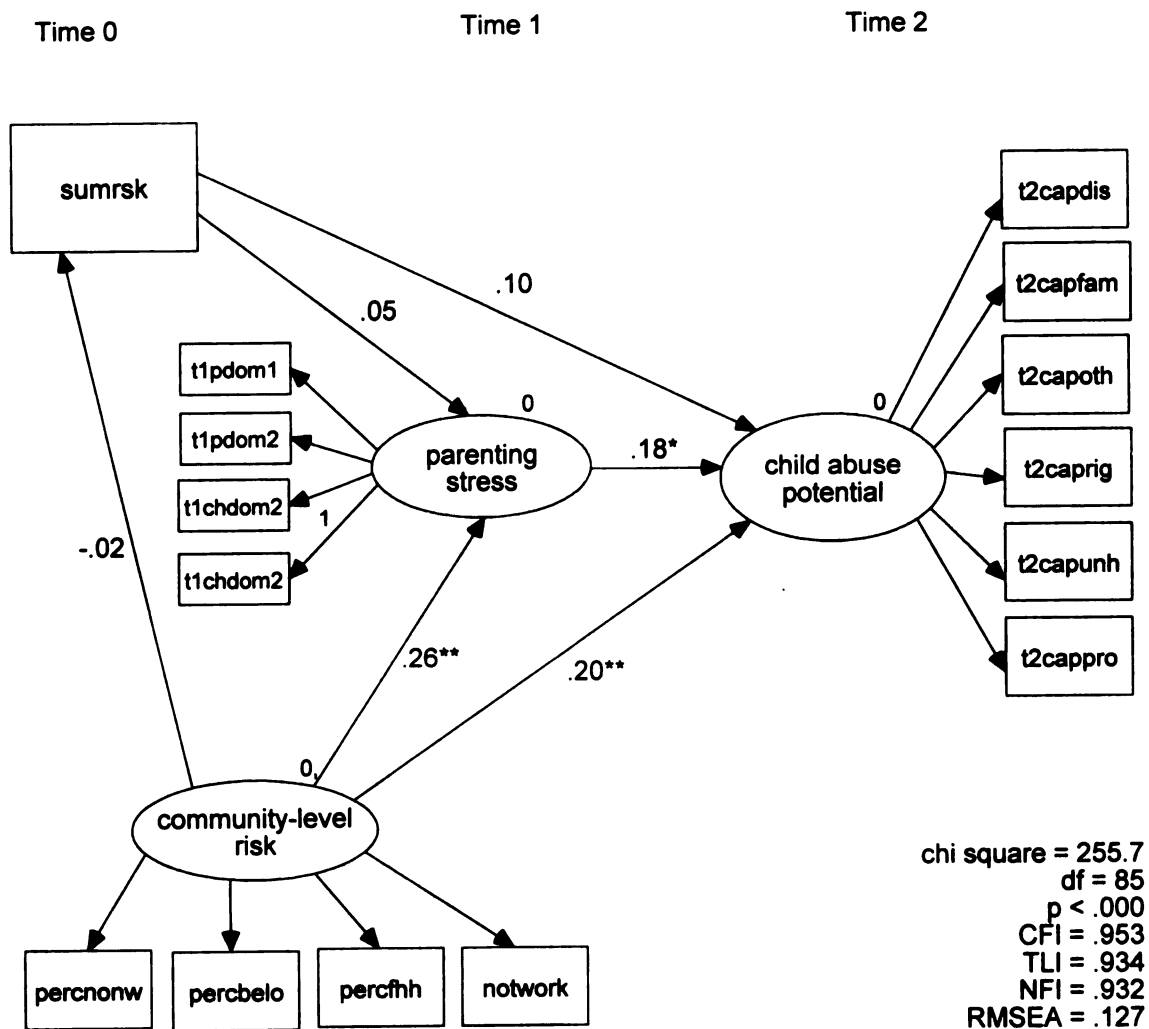
Model II: Denver Developmental Screening Test Measuring Outcome

Similar to the previous model, this measurement model was examined for cross-loading items (based on Modification Indices) and items that loaded weakly on their factor (nonsignificant parameter estimates, $p < .05$). As was the case with the previous model, these criteria warranted the deletion of neighborhood transiency rate from the community-level risk factor. Consequently, all indicators loaded significantly ($p < .05$) and substantially (standardized parameter estimates $> .30$), and modification indices suggested no cross-loading indicators. This model is presented in Figure 4 and the standardized maximum likelihood estimates of the parameters are presented in Table 6.

Table 6: Standardized Parameter Estimates for Model II — Denver Outcome

Parameter	Parameter Estimate	p	R^2
Community Level Risk →			
percent non-white	.913	.000	.83
percent below poverty line	.853	.000	.73
percent female headed households	.987	.000	.98
percent mothers not working	.612	.000	.38
Stress →			
parent domain 1	.565	.000	.32
parent domain 2	.516	.000	.27
child domain 1	.814	.000	.67
child domain 2	.868	.000	.75
Child Development→			
Denver delays	.691	.000	.48
Denver cautions	.640	.000	.41
Denver Advances	-.403	.000	.16

The overall model was partially supported based on some of the practical goodness of fit indices: x^2 (49, N=125) = 173.2, p = .000, CFI = .960, TLI = .936, NFI = .945, although the RMSEA value was .143, indicating a poor model fit. This model accounted for 8% of the variance in child developmental outcomes as measured by the Denver.

The significant relationships elucidated by this model were those between person level risk at the birth of the baby and developmental outcomes at age one year (beta = .215, p = .05), and community level risk and parenting stress (beta = .263, p = .01). Stress was unrelated to developmental outcome as was community level risk.

Figure 4:
Model of multiple influences of risk on child abuse potential
(Denver Developmental Screening Test measuring outcome)

Alternative Models

The testing of alternative models is contraindicated in SEM analyses due to the risk of capitalizing on chance alone. However, post hoc analyses, based on the original theoretical model, were tested to assess relationships between aspects of risk and parenting outcome not measured in the above analyses.

Models III and IV: The original model was intended to test distinct ecological factors at the intra-personal, inter-personal, and community levels in relation to parenting outcome. The measurement qualities of the risk screen used to assess intra- and inter-personal risk, however, were such that these levels had to be combined into person-level risk because inter-personal risk was so poorly distributed (0 interpersonal risk factors = 89%, 1 interpersonal risk factor = 10%, 2 or more interpersonal risk factors = 1%). Combing the intra- and inter- personal levels resulted in normal distribution (see Table 3 in Methods section). Models III and IV discard interpersonal level variables (family crisis, family violence, inadequate social support, 4 or more preschool children at home, mother-child separations) and look only at intra-personal level risk (maternal age, maternal physical health, maternal mental illness, maternal history of abuse, maternal substance abuse, unwanted pregnancy, child physical health, child temperament, and child accidents) in relation to the CAP and Denver outcomes, respectively. In these analyses, the CAP abuse scale was used as an observed variable, as opposed to breaking out the sub-scales as was done in the previous model. This was done to test whether the aggregate abuse scale accounted for a greater amount of variance.

Model III: The overall model was partially supported based on some of the practical goodness of fit indices: x^2 (31, N=125) = 179.0, p = .000, CFI = .951, TLI = .913, NFI = .942, although the RMSEA value was .196, indicating a poor model fit. This model (see Figure 5), using the CAP Abuse Scale, accounted for 10% of the variance in child abuse potential as did the previous model that employed the six CAP subscales.

Unlike the previous model, the relationships between intra-personal level risk at the birth of the baby and child abuse potential at age one year approached significance (beta = .15, p = .08). Similar to the previous model, community level risk was significantly related to parenting stress (beta = .26, p = .01) and abuse potential (beta = .19, p = .05). Again, parenting stress approached significance in its association with abuse potential (beta = .18, p = .10).

Model IV: The model was partially supported based on some of the practical fit indices: x^2 (49, N=125) = 172.9, p = .000, CFI = .959, TLI = .935, NFI = .945, although the RMSEA value was .143, indicating a poor model fit. This model (see Figure 6) accounted for 6% of the variance in child developmental outcome, as opposed to 8% accounted for by the previous model. Further, the only significant relationship elucidated by this model was between community level risk and parenting stress (beta = .25, p = .01). Hence, extracting the inter-personal level risk factors from the risk screen nullified the relationship between person-level risk and child developmental outcome in this model. Notably, testing the model with only inter-personal level risk factors, as opposed to intra-personal level, from the risk screen, revealed similar results: the only significant path was between community level risk and parenting stress, with no association between interpersonal level risk and outcome.

Table 7: Alternative Models in Post Hoc Model-Fitting Process Compared to Original Hypothesized Models

Models	x^2	df	Δx^2	Δdf	CFI	NFI	RMSEA
I: Hypothesized Model - CAP subscales measuring outcome	255.7	85	----	----	.953	.932	.196
II: Hypothesized Model - Denver measuring outcome	173.2	49	----	----	.960	.945	.143
III: Inter-personal level risk excluded (CAP abuse scale measuring outcome)	179.0	31	76.7	54	.951	.942	.196
IV: Inter-personal level risk excluded (Denver measuring outcome)	205.4	49	-32.2	0	.951	.937	.160

Figure 5:
Model III - Intrapersonal level risk in relation to model variables
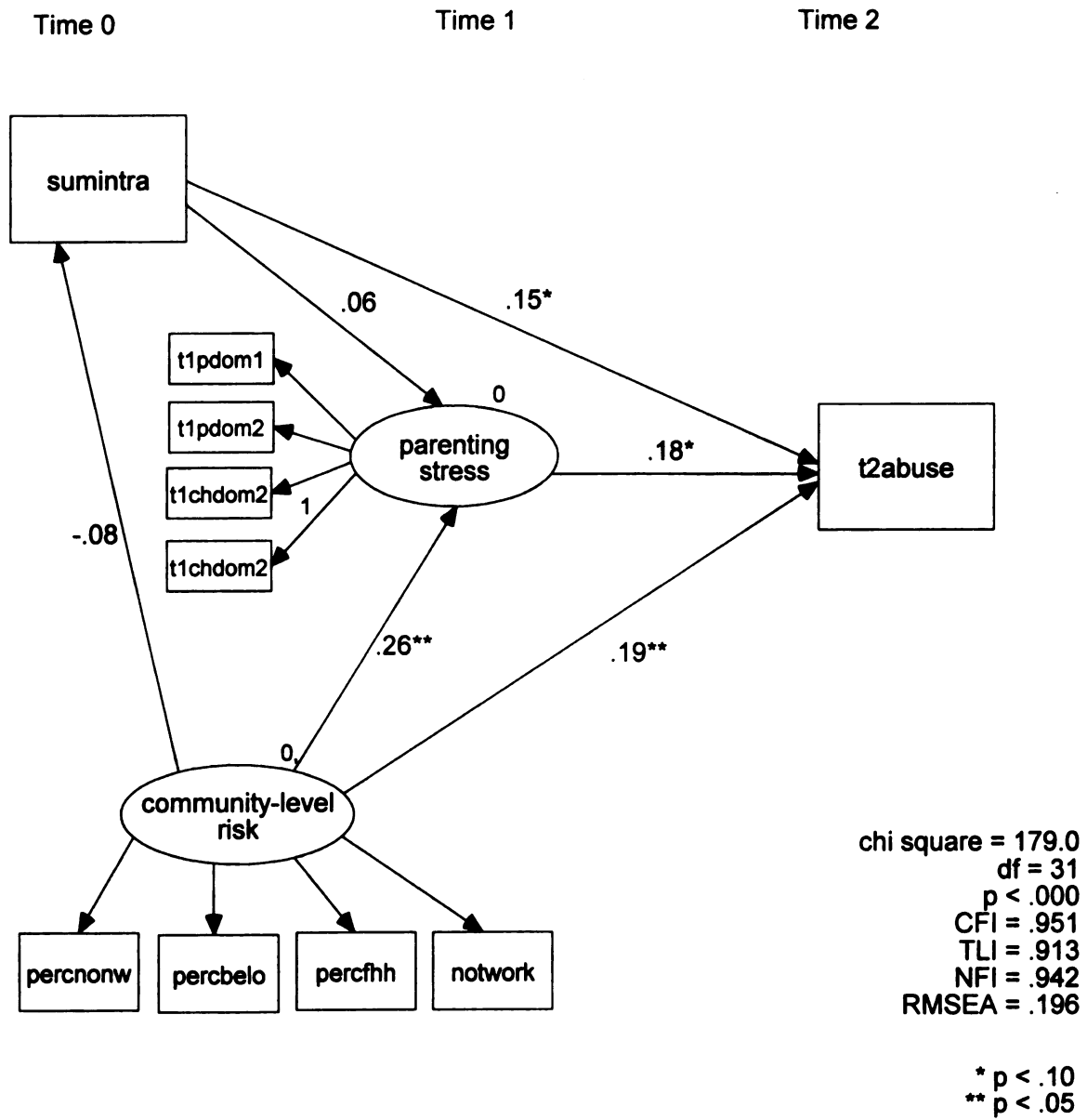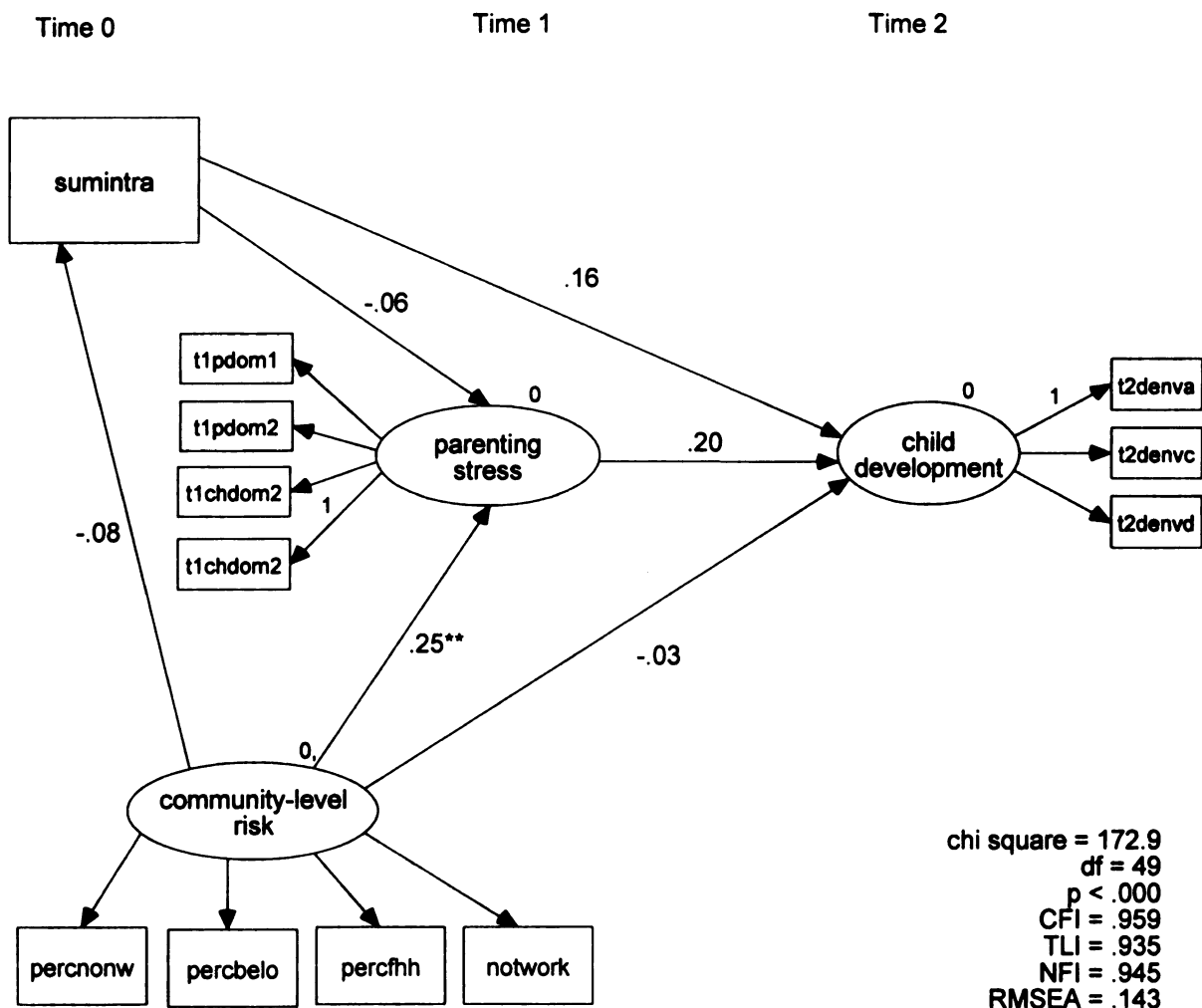(CAP abuse scale measuring outcome)

Figure 6:
Model IV - Intrapersonal level risk in relation to model variables
(Denver measuring outcome)

Time 0

Time 1

Time 2

chi square = 172.9
df = 49
p < .000
CFI = .959
TLI = .935
NFI = .945
RMSEA = .143

** p < .05

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DISCUSSION

The data provided partial support for the theoretical model proposed in this study. In the first model, the risk screen that was used to measure person-level risk at the birth of the baby was unrelated to parenting stress six months later and potentially abusive parenting attitudes at age one year, and it was unaffected by community-level risk. As hypothesized, however, community-level risk had a direct and stress-mediated effect on abusive attitudes. In the second model, person-level risk at birth was significantly related to child developmental outcome at age one year, as was predicted. Parenting stress in this second model was affected by community-level risk, but it was unrelated to outcome, and it was unaffected by person-level risk. When taken together, these results indicate that risk factors at different ecological levels predict differentially to outcome domains. This supports the assertion that outcome is not a unidimensional construct. In the absence of actual substantiated cases of abuse, the ability of risk factors to predict outcome depends on the level of risk being assessed and the component of outcome being tapped. From an ecological perspective, there are an infinite number of combinations of "risk factors" and "outcome measures" which casts serious doubt on the practicality of risk assessment. As has been argued, child maltreatment is very difficult to define, and the decision where to draw the line between adequate and inadequate parenting is highly arbitrary. In this investigation, the line was drawn quite liberally, encompassing attitudes that indicate potential to abuse and developmental outcomes that may be indicative of inadequate parenting. These choices resulted in support for some of the hypothesized relationships in the model, but lacked support for the model as a whole.

Another notable finding of this study was the ability of risk factors at the birth of

the baby to predict outcome more than 12 months later. This represents an improvement over most risk assessment investigations which measure concurrent risk and outcome(cf., Rodwell and Chambers, 1992). We can conclude from the current findings that neighborhood strain at the birth of the baby is related to parenting stress six months later, which in turn affects parental attitudes at one year. This indicates that exosystemic factors were more temporally stable than person-level risk in relation to parental attitudes. Likewise, person-level risk at the birth of the baby has the ability to predict developmental outcome a year later. It would be of interest, however, to conduct a longitudinal investigation in which early risk is evaluated in relation to outcome over a much longer span of time than the 12 months evaluated here. This would allow formulations to be drawn about the stability of risk over time, and evaluation of those factors that change risk status in both positive and negative directions over time.

Practical Implications of this Study

The most notable finding of this study was the absence of relationship between person-level risk factors at the birth of the baby and parenting stress and abusive parenting attitudes, six and twelve months later, respectively. The risk screen, however, was the sole instrument employed in the original study to determine intervention eligibility. The assumption underlying its use was that endorsement of any of the items indicated an "at risk" status, identifying individuals for intervention services. In light of the current findings, it appears that its practical utility is unjustified. Conversely, neighborhood characteristics, including ethno-cultural make-up, percentage of residents living below the poverty line, percentage of female-headed households, and percentage of families with mothers who work, were predictive of parenting stress and abusive

attitudes. These indicators, however, in the practical realm are rarely entered into the equation to determine individual's risk status and subsequent program eligibility. This lends support to Garbarino and Sherman's (1980) assertion that community variables create neighborhood strain that fosters dysfunctional parenting practices, and that risk assessment should be focused broader, at communities rather than individuals and families.

Ideally, prevention services should target all aspects of functioning within the social ecology that place children at risk. Traditionally, however, prevention efforts have been targeted at parents and children with the goal of altering those behaviors and attitudes that contribute to an elevated risk for poor parenting or child outcomes (Daro & McCurdy, 1994). For instance, programs targeting parents seek to enhance knowledge of child development, strengthen basic parenting skills, and offer ongoing social support to minimize the negative sequelae of stress. Programs aimed at children attempt to strengthen their resistence to initial maltreatment, provide coping strategies, and mediate the negative influences of environmental deficits (Daro & McCurdy, 1994). The current findings underscore the importance of shifting preventive resources to target neighborhood and community functioning. Given the finding that neighborhood risk is a more powerful predictor of parental stress and negative parenting attitudes, attention needs to be directed at first understanding the relationship between community-risk and outcome (i.e., how community factors exert their effect on attitudes and behaviors) and then programs need to be tailored toward enhancing community strengths and supports.

Theoretical Implications of this Study

Risk is a very fluid concept that is difficult, if not impossible, to operationalize

and quantify. This study attempted to measure risk at the intrapersonal, interpersonal, and community levels of analysis and relate these risk levels to subsequent outcome. The focal questions addressed by this study were whether risk at different levels of the ecological context differentially predicted parent and child outcomes, and whether risk changed over time or was temporally stable. Moreover, this study asked whether different ecological risks caused certain negative outcomes, or whether it exerted its effect by exacerbating parenting stress which in turn affected outcome. In summary, the findings indicate that all risk is not equal, and that different ecological contexts of risk affect outcome domains differently. Stress mediated the relationship between community level risk and parenting attitudes, but was unrelated to person-level risk and child developmental outcomes. Moreover, the differential effects of intra- and inter- personal risk raise important questions. It is unclear why interpersonal risk items were so rarely endorsed. It is also unclear whether these risk factors are less prevalent, or whether they were poorly measured by the risk screen. When teased apart and tested separately in the model, they negated the relationship between person level risk and developmental outcome. But when tested in relation to parenting attitudes, intra-personal level risk approached significance, whereas the sum of inter- and intra- personal level risk had no association to this outcome measure. Perhaps this lends credence to the argument that risk is a very fluid concept that is multidimensional in nature (cf., Marsh and Wolfe, 1991), and is affects different outcome domains differently. Overall, the study findings were able to provide limited insight into these questions, but not without reservations because of the imperfect conceptualization and measurement of risk that plagues this field as a whole (cf., Zigler, 1976).

Limitations of this Study

Many of the limitations of this study are inherent to the risk assessment literature as a whole. There are no clear-cut definitions of child abuse and neglect. Because the goal of this investigation was to study prevention, the outcome measure was an approximation of potential to abuse, encompassing attitudinal and behavioral indicators. Substantiation of abuse is a far from clear-cut practice, and as has been discussed, even these behavioral definitions are variable and open to interpretation, as well as miss the mark of prevention. Future research should focus on the relationship between ecological risk factors and measures of parental functioning.

This study was limited by the use of the KCHS risk screen to measure intra- and inter- personal risk. This measure was designed as an aggregate measure to determine basic risk load. In a post hoc fashion, it was separated into ecological tiers for the purpose of the current investigation. It is unclear whether the lack of relationship between person level risk and other variables in the model was due to poor measurement quality. Overall, participants endorsed very few intra- and inter- personal level risk factors – almost one-third scored zero on this measure. Such low endorsement of person-level risk may reflect a relatively healthy subject pool, or an invalid measure of this construct. An area for future research would be to develop a valid and reliable risk screen that measures risk factors at distinct ecological levels, allowing for a more thorough evaluation of the relationship between risk and outcome. Another measurement deficiency in this study was the use of the PSI to measure parenting stress. This instrument lacks face validity due to the broad definition of stress employed by this

measure. Perhaps a more precise definition and measurement of this construct would have resulted in more predictive power. Some important factors were omitted from this model that deserve mention. Specifically, the current model lacked a cultural risk measure. The ethno-cultural makeup of each neighborhood was used to account for this level in the ecology, but the literature indicates that this level of analysis deserves its own tier within the ecology. Another shortcoming in the current investigation was the absence of measures of resiliency factors. In a truly ecological, transactional model this is an important dimension to include because resiliency and compensatory mechanisms have been shown to play an important role in human functioning in general and risk processes in particular.

The methodological problems inherent in this study included the small sample size, and the flawed screening procedure that resulted in unequal intervention and control groups. The sample size was limited by the availability of KCHS screening data which was not collected by KCHS research staff, but by program bureaucrats. The screening procedure was also a result of KCHS program officials deviating from research protocol. Alas, one of the costs associated with community-based field research is that the richness of the data is often hampered by extraneous confounds within the study environment.

The various limitations of this study can identify directions for future research. Beyond the poor measurement quality of several of the instruments, it is most likely that the model was only partially supported by the data due to errors of omission. As has been argued throughout these analyses, risk is a multidimensional construct that is difficult to define and quantify. Although it would be impossible to construct a list of all of the ecological forces exerting an effect on parental functioning, the literature reviewed

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provides guidelines for a more precise inventory than what was able to be tested here.

For instance, at the individual level, Pianta and colleagues (1989) found that factors such as low self-esteem, poor impulse control, external locus of control, negative affectivity, and decreased ability to cope with stress were found to increase the likelihood that an individual will commit child abuse. Another important factor, that was not explicitly examined, is attachment. This may affect whether or not abusive practices are passed on from one generation to the next (Bowlby,1969). Omissions at the interpersonal ecological level included parenting style, discipline techniques, domestic violence, and social support, all factors described in the literature as significantly tied to child maltreatment (cf., Herrenkohl et al., 1983; Robataille et al., 1985; Straus et al., 1983). At the community level, many researchers have added to Garbarino and Sherman's (1980) list of neighborhood strains. Some of the risk factors explicated by this literature, but not tested in the current research, include perception of social support and social integration (Deccio et al.,1994), number of vacant and single family dwellings in the neighborhood, degree of urbanization, residential density, neighborhood desirability, and neighborhood development (Zuravin, 1989). The macrosystemic level of analysis was poorly represented in the current study. Cultural sanctions of physical discipline must be accounted for (Parke, 1982), as well as cross-cultural differences in family values, supervision of children, and provision of medical care (English and Pecora, 1994). Finally, an ideal risk model must include measures of resiliency and compensatory mechanisms (cf., Cicchetti and Lynch, 1993; Belsky, 1993). Although it was beyond the scope of the current investigation to test all of the risk factors related to child maltreatment that are described in the literature(alas, this might be too ambitious an

undertaking for any researcher), future studies should attempt to use empirically tested

risk factors to guide their decision-making process. Theoretically driven choices, precise

measurement, and empirically supported relationships might result in a more accurate

model of risk.

Lessons from Other Disciplines

The use of risk assessment is fraught with theoretical, conceptual, and practical

difficulties that are in no way unique to the field of child abuse prevention. Lessons can

be learned from other disciplines. Gina Kolata (2000) reported in the New York Times

on a new screening test for lung cancer. This test involves the use of a spiral CT scanner

which can detect tumors many times smaller than those found with conventional chest X-

rays. The controversy of this procedure revolves around the fact that even though its use

has become widespread, there is no empirical evidence that early detection reduces the

risk of death from lung cancer. In fact, large clinical trials examining whether such

screenings saved lives found that although more cancers were found in the screened

group, and at earlier stages, the screenings did nothing to cut the death rate from lung

cancer. One physician interviewed summed up these findings by remarking that "these

conclusions are not based on a lack of evidence of an effect, but are based on good

evidence that there is no effect." The relevance of this example for the current

investigation is that early screening and prediction may not lead directly to the desired

outcome. Kaplan (2000) argues that the identification of a disease state on the pathway

between a risk factor and the outcome is interesting, but not essential. Although investing

resources in the early identification and treatment of cancer might increase average life

expectancy – which Kolata (2000) contends it does not – the same benefit might also be

achieved by investments to reduce cigarette use or exposure to airborne carcinogens. In other words, public health can be enhanced by removing the risk factor or altering the risky behavior, rather than relying on screening procedures to identify cases. It is important to consider the possibility that within the child abuse paradigm, even if we are able to predict with accuracy who will maltreat their children, this does not in any way insure that we will then be able to reduce the number of child maltreatment cases that occur. Hence, we must be open to the possibility that prediction (or risk assessment) is only one avenue to reaching the desired outcome (obliteration of child abuse) and that alternative avenues must also be explored.

Conclusions

Given the findings of this study that neighborhood characteristics were more predictive than person-level risk factors of potential to abuse, it appears that the method of risk assessment used by the KCHS child abuse prevention program was off-track. Secondary prevention, by definition, is individually-focused because it involves identifying individuals at risk for future dysfunctional behavior. Primary prevention, on the other hand, circumvents this problem by delivering interventions to a much wider audience, such as an entire community. Targeting risky neighborhoods for intervention services rather than individuals could also address sources of parenting stress at the exosystemic level, which was shown in the current investigation to mediate community risk factors. Those factors that cause parenting stress could be targeted in community-wide preventive interventions. Because primary prevention is based on a behavioral rather than disease model (Kaplan, 2000), it does not require diagnosis. Hence, this model may be more appropriate to the prevention of child maltreatment because of the

arbitrary nature of labeling, quantifying, and diagnosing this phenomenon. Moreover, within the behavioral model, interventions are behavioral in nature, and may involve individual behavioral change such as involvement in parenting education groups to public policy changes such as more accessible and affordable child care.

In conclusion, this investigation contributes to our understanding of risk processes specifically, as well as supports the use of more universal prevention guidelines. First, it was demonstrated that the practical screening of clients for inclusion in preventive interventions, based on individual and interpersonal characteristics, is unjustified. In addition to this empirical finding, this practice is further flawed by numerous conceptual and theoretical complications. Second, even if prediction accuracy can be achieved, there is no evidence that such procedures will lead to decreased incidence rates of child maltreatment. Medical model evidence shows that secondary prevention does very little to improve public health and decrease unwanted outcomes (Kaplan, 2000). This prevention strategy may be limited in its effectiveness even when the prevention target is a disease state with clear risk factors such as smoking and lung cancer. Primary prevention, on the other hand, is more cost efficient (Kaplan, 2000), is not based on diagnosis and targeting techniques, and when universally applied targets those risk factors at the community level. Notably, these factors were most significantly related to outcome in the current investigation.

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APPENDIX A

Summary of Intervention Effects from Time 1 to Time 2

Change within the Intervention Group from Time 1 to Time 2

Variable	Time 1 mean (sd)	Time 2 mean (sd)	F value
1. Child Abuse Potential	192.64 (87.41)	186.31 (83.40)	.59 (n.s.)
2. Parenting Stress Inventory			
child easily distracted	27.17 (4.93)	28.08 (7.60)	.60 (n.s.)
mother does not feel reinforced	11.17 (4.07)	10.59 (3.80)	.31 (n.s.)
child negative mood	11.15 (3.55)	11.12 (3.36)	1.19 (n.s.)
mother's unacceptance of child	13.41 (5.09)	13.73 (5.10)	.06 (n.s.)
child unable to adapt to changes	29.38 (6.07)	30.01 (6.46)	.12 (n.s.)
mother feels incompetent as a parent	32.44 (6.07)	31.42 (7.29)	.03 (n.s.)
lack of attachment to child	13.88 (4.35)	13.42 (4.27)	.03 (n.s.)
mother feels restricted by parenting role	21.51 (5.39)	20.85 (4.58)	.31 (n.s.)
maternal depression	23.72 (5.94)	22.51 (5.82)	1.91 (n.s.)
poor spousal relationship due to parenting	20.52 (5.63)	20.06 (4.93)	1.49 (n.s.)
maternal isolation	16.43 (4.61)	16.08 (6.27)	.01 (n.s.)
maternal health problems	14.59 (3.57)	13.45 (3.55)	7.79**
demandingness of child	20.58 (5.61)	21.45 (5.53)	.95 (n.s.)
overall negative perceptions of child	108.95 (25.87)	114.98 (24.13)	2.55 (n.s.)
overall negative perceptions of parenting	139.59 (24.96)	135.80 (28.63)	.08 (n.s.)
overall parenting stress indicators	249.60 (42.26)	250.77 (46.29)	1.87 (n.s.)
3. Child Development·			
Denver Advances	1.43 (1.79)	1.26 (1.70)	0.87 (n.s.)
Denver Cautions	.66 (1.16)	.79 (1.20)	.29 (n.s.)
Denver Delays	.31 (.87)	.43 (1.22)	1.80 (n.s.)

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

APPENDIX B

Narrative Description of Levels of Risk Given to Raters and List of Risk Factors from
Healthy Start Screening Form

Etiological models of child maltreatment are largely multidimensional (for

example, Belsky's ecological model of the determinants of parenting), however, risk

assessment instruments tend to be unidimensional, requiring that a total number of risk

factors be added together to arrive at a composite risk factor "score." Inherent in the

unidimensional, or checklist, approach, is the assumption that all risk factors are equal,

and it is the composite score or total number of risk factors that is critical in predicting

outcome. Another way to look at the assessment of risk factors, that is more reflective of

the dimensionality of etiological models, is to develop dimensional risk assessment

instruments. It is predicted that a dimensional conceptualization of risk can lead to more

accurate predictions about later parent functioning because parenting is a multiply-

determined, or multidimensional construct. Some of the ecological dimensions that have

been described in the literature as contributing to parent functioning include: 1) historical

and psychological characteristics of the parents (intrapersonal variables), 2) attributes of

the child, 3) familial and social network supports and stressors (interpersonal variables),

and 4) community/sociocultural sources of stress and support (community variables).

The current investigation is an attempt to develop a multidimensional model of

risk assessment, and to test the hypothesis that such a model does a better job of

predicting parenting outcomes than traditional checklist approaches to risk assessment.

As a first step, it is necessary to sort through the various risk factors used by KCHS, and

try to categorize each into one of the dimensions described above. Below, I have

described in more detail each of the dimensions I am interested in looking at. After

reading each description, please use your best judgement to try to fit each risk factor into

one of the categories. If a particular risk factor does not seem to fit any of the categories,

it can be sorted into an "other" category.

1. Intrapersonal Level:

Several enduring characteristics of the individual have been shown to

influence parenting. Developmental history (the type and quality of parenting

received as a child, etc.) and personality style (attachment style, temperament,

resilience, etc.) have been shown to affect parenting ability. Linkages between

parental psychological well-being and parental functioning can also be traced.

Psychological well-being may include such factors as self-esteem, depression, and

psychological resources. Age and developmental level are indicators of maturity,

which have also been linked to more positive parenting practices. Lastly,

maternal health can affect parenting ability.

Child characteristics have been shown to influence parental care-giving.

These characteristics include the age of the child, physical health and

development, temperament, responsiveness to parents, and behavioral problems.

2. Interpersonal Level:

The marital relationship is an influential support system for parents which

in turn affects parental functioning. General network support can also provide

both support and stress, depending upon the "goodness-of-fit" between the level

of support desired and that received. Other interpersonal relationships such as

those with friends, extended family, co-workers, and helping professionals can

also affect parental functioning. In general, all relationship variables would fit in this category, including the parent-child interaction.

3. Community/sociocultural Level:

This level of analysis includes the "community climate" (number single-parent households in the neighborhood, criminal activity, transiency, employment rates, social cohesiveness of neighborhood, involvement of neighborhood in community activism, availability of community resources, social alienation due to cultural differences/language barriers, etc.), SES, and social/community resources and strains.

4. "Other"

List of risk factors from Healthy Start Screening Form:

jaundice
asphyxia
meconium aspiration
failure to thrive
congenital abnormalities
feeding problems
premie/low birth weight/less than 5lbs. 8oz.
excessive irritability
positive drug screen (baby)
IUGR
small gestational age (SGA)
lead poisoning
atypical/recurrent accidents
chronic otitis media (ear infections)
bronchopulmonary dysplasia
immunization concerns
unplanned/unwanted pregnancy
less than 18 years old, and no support system
adolescent mother
primary caregiver/child separation
mental illness/low functioning

pre-existing medical condition
single parent
4 or more preschool children
history of reproductive problems
no prenatal care/late to receive prenatal care
severe prenatal complications
severe perinatal complications
poor nutrition (mom)
overweight/underweight
smoking
language barrier
acute family crisis
no medical insurance
inadequate health care
financial need
unemployed
history of medical/genetic problems
family violence
substance abuse
severe chronic physical illness
homeless/other dangerous living condition
history of abuse/neglect (mom)
parenting concerns
other concerns that may result in infant death, injury, impairment, or illness
isolation/lack of support

APPENDIX C

Parenting Stress Index (Abidin, 1990)

Directions: In answering the following questions, please think about the child in the KCHS program.

The questions on the following pages ask you to mark an answer which best describes your feelings. While you may not find an answer which exactly states your feelings, please mark the answer which comes closest to describing how you feel. **YOUR FIRST REACTION TO EACH QUESTION SHOULD BE YOUR ANSWER.**

Please mark the degree to which you agree or disagree with the following statements by filling in the number which best matches how you feel. If you are not sure, please fill in #3.

1	**2**	**3**	**4**	**5**
Strongly Agree	**Agree**	**Not Sure**	**Disagree**	**Strongly Disagree**

1. When my child wants something, my child usually keeps trying to get it.

2. My child is so active that it exhausts me.

3. My child appears disorganized and is easily distracted.

4. Compared to most, my child has more difficulty concentrating and paying attention.

5. My child will often stay occupied with a toy for more than 10 minutes.

6. My child wanders away much more than I expected.

7. My child is much more active than I expected.

8. My child squirms and kicks a great deal when being dressed or bathed. 9. My child can be easily distracted from wanting something.

10. My child rarely does things for me that make me feel good.

11. Most times I feel that my child likes me and wants to be close to me.

12. Sometimes I feel my child doesn't like me and doesn't want to be close to me.

13. My child smiles at me much less than I expected.

14. When I do things for my child I get the feeling that my efforts are not appreciated very much.

15. Which statement best describes your child?

       1. almost always likes to play with me,

       2. sometimes likes to play with me,

       4. usually doesn't like to play with me,

     5. almost never likes to play with me.

16. My child cries and fusses:

     1. much less than I had expected,

     2. less than I expected,

     3. about as much as I expected,

     4. much more than I expected,

     5. it seems almost constant,

17. My child seems to cry or fuss more often than most children.

18. When playing, my child doesn't often giggle or laugh.

19. My child generally wakes up in a bad mood.

20. I feel that my child is very moody and easily upset.

21. My child looks a little different than I expected and it bothers me at times.

22. In some areas my child seems to have forgotten past learnings and has gone back to doing things characteristic of younger children.

23. My child doesn't seem to learn as quickly as most children..

24. My child doesn't seem to smile as much as most children.

25. My child does a few things which bother me a great deal.

26. My child is not able to do as much as I expected.

27. My child does not like to be cuddled or touched very much.

28. When my child came home from the hospital, I had doubtful feelings about my abilities to handle being a parent.

29. Being a parent is harder than I thought it would be.

30. I feel capable and on top of things when I am caring for my child.

31. Compared to the average child, my child has a great deal of difficulty in getting used to changes in schedules or changes around the house.

32. My child reacts very strongly when something happens that my child doesn't like.

33. Leaving my child with a baby-sitter is usually a problem.

34. My child gets upset easily over the smallest thing.

35. My child easily notices and overreacts to loud sounds and bright lights.

36. My child's sleeping or eating schedule was much harder to establish than I expected.

37. My child usually avoids a new toy for a while before beginning to play with it.

38. It takes a long time and is very hard for my child to get used to new things.

39. My child doesn't seem comfortable when meeting strangers.

40. When upset, my child is:

1. easy to calm down,
2. harder to calm down than I expected,
4. very difficult to calm down,
5. nothing I do helps to calm my child.

41. I have found that getting my child to do something or stop doing something is;

   1. much harder than I expected,
   2. somewhat harder than I expected,
   3. about as hard as I expected,
   4. somewhat easier than I expected,
   5. much easier than I expected.

42. Think carefully and count the number of things which your child does that bothers you. For example: dawdles, refuses to listen, overactive, cries, interrupts, fights, whines, etc. Please fill in the number which includes the number of things you counted.

   1. 1-3
   2. 4-5
   3. 6-7
   4. 8-9
   5. 10+

43. When my child cries it usually lasts:

   1. less than 2 minutes
   2. 2-5 minutes
   3. 5-10 minutes
   4. 10-15 minutes
   5. more than 15 minutes

44. There are some things my child does that really bother me a lot.

45. My child has had more health problems than I expected.

46. As my child has grown older and become more independent, I find myself more worried that
   my child will get hurt or into trouble.

47. My child turned out to be more of a problem than I had expected.

48. My child seems to be much harder to care for than most.

49. My child is always hanging on me.

50. My child makes more demands on me than most children.

51. I can't make decisions without help.

52. I have had many more problems raising children than I expected

53. I enjoy being a parent.

54. I feel that I am successful most of the time when I try to get my child to do or not do something.

55. Since I brought my last child home from the hospital, I find that I am not able to take care of

       this child as well as I thought I could. I need help.

56. I often have the feeling that I cannot handle things very well. 57. When I think about myself as a parent I believe:

       1. I can handle anything that happens

       2. I can handle most things pretty well

       3. Sometimes I have doubts, but find that I handle most things without any problems.

       4. I have some doubts about being able to handle things

       5. I don't think I handle things very well at all.

58. I feel that I am:

       1. a very good parent

       2. a better than average parent

       3. an average parent

       4. a person who has some trouble being a parent

       5. not very good at being a parent

59. What were the highest levels in school or college you and the child's father/mother completed?

       Mother:

              1. 1-8th grade

              2. 9-12th grade

              3. Vocational or some college

              4. College graduate

              5. Graduate or professional school

60. Father:

              1. 1-8th grade

              2. 9-12th grade

              3. Vocational or some college

              4. College graduate

5. Graduate or professional school

61. How easy is it for you to understand what your child wants or needs?

    1. very easy,

    2. easy,

    3. somewhat difficult,

    4. it is very hard,

    5. I usually can't figure out what the problem is.

62. It takes a long time for parents to develop close, warm feelings for their children.

63. I expected to have closer and warmer feelings for my child than I do and this bothers me.

64. Sometimes my child does things that bother me just to be mean.

65. When I was young, I never felt comfortable holding or taking care of children.

66. My child knows I am his or her parent and wants me more than other people.

67. The number of children that I have now is too many.

68. Most of my life is spent doing things for my child.

69. I find myself giving up more of my life to meet my children's needs than I ever expected.

70. I feel trapped by me responsibilities.

71. I often feel than my child's needs control my life.

72. Since having this child I have been unable to do new and different things.

73. Since having a child I feel that I am almost never able to do things that I like to do.

74. It is hard to find a place in our home where I can go to be by myself.

75. When I think about the kind of parent I am, I often feel guilty or bad about myself.

76. I am unhappy with the last purchase of clothing I made for myself.

77. When my child misbehaves or fusses too much I feel responsible, as if I didn't do something right.

78. I feel every time my child does something wrong it is really my fault. .

79. I often feel guilty about the way I feel towards my child.

80. There are quite a few things that bother me about my life.

81. I felt sadder and more depressed than I expected after leaving the hospital with my baby.

82. I wind up feeling guilty when I get angry at my child and this bothers me.

83. After my child had been home from the hospital for about a month, I noticed that I was feeling more sad and depressed than I expected84. Since having my child, my spouse (male/female friend) has not given me as much help and support as I expected85. Having a child has caused more problems than I expected in my relationship with my spouse

(male/female friend).

86. Since having a child my spouse (or male/female friend) and I don't do as many things together.

87. Since having my child, my spouse (or male/female friend) and I don't spend as much time together as a family as I expected

88. Since having my last child, I have had less interest in sex.

89. Having a child seems to have increased the number of problems we have with in-laws

and relatives.

90. Having children has been much more expensive than I had expected.

91. I feel alone and without friends.

92. When I go to a party I usually expect not to enjoy myself.

93. I am not as interested in people as I used to be.

94. I often have the feeling that other people my own age don't particularly like my company.

95. When I run into a problem taking care of my children I have a lot of people to whom I can talk to get help or advice

96. Since having children I have a lot fewer chances to see my friends and to make new friends.

97. During the past six months I have been sicker than usual or have had more aches and pains

than I normally do.

98. Physically, I feel good most of the time.

99. Having a child has caused changes in the way I sleep.

100. I don't enjoy things as I used to.

101. Since I've had my child:

1. I have been sick a great deal,

2. I haven't felt as good,

3. I haven't' noticed any change in my health,

4. I have been healthier.

APPENDIX D

Child Abuse Potential Inventory (Milner, 1986)

The following questionnaire includes a series of statements which may be applied to yourself. Read each of the statements and determine if you **AGREE** or **DISAGREE** with the statement.

1. I never feel sorry for others.
2. I enjoy having pets.
3. I have always been strong and healthy.
4. I like most people.
5. I am a confused person.6. I do not trust most people.
7. People expect too much from me.
8. Children should never be bad.
9. I am often mixed up.
10. Spanking that only bruises a child is okay.
11. I always try to check on my child when it's crying.
12. I sometimes act without thinking.
13. You cannot depend on others.
14. I am a happy person.
15. I like to do things with my family.
16. Teenage girls need to be protected
17. I am often angry inside.
18. Sometimes I feel all alone in the world.
19. Everything in a home should always be in its place.
20. I sometimes worry that I cannot meet the needs of a child.
21. Knives are dangerous for children
22. I often feel rejected.
23. I am often lonely inside.
24. Little boys should never learn sissy games.
25. I often feel very frustrated.26. Children should never disobey.
27. I love all children.
28. Sometimes I fear that I will lose control of myself.
29. I sometimes wish that my father would have loved me more.
30. I have a child who is clumsy.31. I know what is the right and wrong way to act.
32. My telephone number is unlisted.
33. The birth of a child will usually cause problems in a marriage.
34. I am always a good person.
35. I never worry about my health
36. I sometimes worry that I will not have enough to eat.
37. I have never wanted to hurt someone else.
38. I am an unlucky person.
39. I am usually a quiet person.
40. Children are pests.
41. Things have usually gone against me in life.
42. Picking up a baby whenever he cries spoils him

43. I sometimes am very quiet.
44. I sometimes lose my temper.
45. I have a child who is bad.
46. I sometimes think of myself first.
47. I sometimes feel worthless.
48. My parents did not really care about me.
49. I am sometimes very sad.
50. Children are really little adults.
51. I have a child who breaks things.
52. I often feel worried.
53. It is okay to let a child stay in dirty diapers for a while.
54. A child should never talk back.
55. Sometimes my behavior is childish.
56. I am often easily upset.
57. Sometimes I have bad thoughts.
58. Everyone must think of himself first.
59. A crying child will never be happy.
60. I have never hated another person.
61. Children should not learn how to swim.
62. I always do what is right.
63. I am often worried inside.
64. I have a child who is sick a lot.
65. Sometimes I do not like the way I act.
66. I sometimes fail to keep all of my promises.
67. People have caused me a lot of pain.
68. Children should stay clean.
69. I have a child who gets into trouble a lot
70. I never get mad at others.
71. I always get along with others.
72. I often think about what I have to do.
73. I find it hard to relax.
74. These days a person doesn't really know on whom one can count
75. My life is happy
76. I have a physical handicap.
77. Children should have play clothes and good clothes.
78. Other people do not understand how I feel .
79. A five year old who wets his bed is bad.
80. Children should be quiet and listen.
81. I have several close friends in my neighborhood.
82. The school is primarily responsible for educating the child.
83. My family fights a lot.
84. I have headaches.
85. As a child I was abused.
86. Spanking is the best punishment.
87. I do not like to be touched by others.

88. People who ask for help are weak.
89. Children should be washed before bed.
90. I do not laugh very much.
91. I have several close friends.
92. People should take care of their own needs.
93. I have fears no one knows about
94. My family has problems getting along
95. Life often seems useless to me.
96. A child should be potty trained by the time he's one year old.
97. A child in a mud puddle is a happy sight.
98. People do not understand me.
99. I often feel worthless.
100. Other people have made my life unhappy.
101. I am always a kind person.
102. Sometimes I do not know why I act as I do.
103. I have many personal problems.
104. I have a child who often hurts himself.
105. I often feel very upset.
106. People sometimes take advantage of me.
107. My life is good
108. A home should be spotless.
109. I am easily upset by my problems.
110. I never listen to gossip.
111. My parents did not understand me.
112. Many things in life make me angry.
113. My child has special problems.
114. I do not like most children.
115. Children should be seen and not heard.
116. Most children are alike.
117. It is important for children to read.
118. I am often depressed.
119. Children should occasionally be thoughtful of their parents.
120. I am often upset.
121. People don't get along with me.
122. A good child keeps his toys and clothes neat and orderly.
123. Children should always make their parents happy.
124. It is natural for a child to sometimes talk back.
125. I am never unfair to others.
126. Occasionally, I enjoy not having to take care of my child.
127. Children should always be neat.
128. I have a child who is slow.
129. A parent must use punishment if he wants to control a child's behavior.
130. Children should never cause trouble.
131. I usually punish my child when it is crying.
132. A child needs very strict rules.

133. Children should never go against their parents' orders.
134. I often feel better than others.
135. Children sometimes get on my nerves.
136. As a child I was often afraid.
137. Children should always be quiet and polite.
138. I am often upset and do not know why.
139. My daily work upsets me.
140. I sometimes fear that my children will not love me.
141. I have a good sex life.
142. I have read articles and books on child rearing.
143. I often feel very alone.
144. People should not show anger.
145. I often feel alone.
146. I sometimes say bad words.
147. Right now, I am deeply in love.
148. My family has many problems.
149. I never do anything that is bad for my health.
150. I am always happy with what I have.
151. Other people have made my life hard.
152. I laugh some almost every day.
153. I sometimes worry that my needs will not be met.
154. I often feel afraid.
155. I sometimes act silly.
156. A person should keep his business to himself.
157. I never raise my voice in anger
158. As a child I was knocked around by my parents.
159. I sometimes think of myself before others.
160. I always tell the truth.

APPENDIX E

Summary of Intervention - Control Group Comparisons

Comparison of Intervention and Control Groups on Time 1 Demographic variables

Variable	Intervention mean (sd)	Control mean (sd)	F value
1. mother's education	11.01 (2.49)	11.59 (2.30)	2.41 (n.s.)
2. father's education	11.43 (2.65)	12.38 (2.26)	5.05*
3. mother's age	23.36 (6.00)	23.83 (5.10)	.31 (n.s.)
4. father's age	27.02 (7.28)	26.77 (5.81)	.05 (n.s.)
	percentage	percentage	chi square
5. marital status			1.34 (n.s.)
married	30%	36%	
single	68%	63%	
divorced	1%	1%	
separated	1%	0%	
6. mother employed			2.20 (n.s.)
yes	32%	40%	
no	68%	60%	
7. father employed			.32 (n.s.)
yes	78%	73%	
no	22%	27%	
8. mother's citizenship			4.00*
U.S. citizen	87%	96%	
non-U.S. citizen	13%	4%	
9. father's citenship			5.53*
U.S. citizen	86%	97%	
non-U.S. citizen	14%	3%	

Comparison of Intervention and Control Groups on Time 1 Parenting Variables,

Child Development, and Community Resource Participation

Variable	Intervention mean (sd)	Control mean (sd)	F value
1. Child Abuse Potential	191.45 (87.44)	128.02 (75.45)	27.44 ***
2. Parenting Stress Inventory			
child easily distracted	27.27 (4.86)	26.14 (4.28)	2.80 (n.s.)
mother does not feel reinforced	11.35 (4.17)	9.78 (3.53)	7.65 **
child negative mood	11.16 (3.45)	9.68 (2.80)	9.60 **
mother's unacceptance of child	13.43 (5.13)	11.29 (3.76)	9.91 **
child unable to adapt to changes	29.43 (6.35)	26.33 (5.70)	12.01 **
mother feels incompetent as a parent	32.57 (6.03)	27.32 (5.54)	35.52 ***
lack of attachment to child	13.93 (4.32)	11.81 (2.93)	14.12 ***
mother feels restricted by	21.36 (5.45)	18.14 (5.32)	17.01***
maternal depression	23.62 (5.97)	18.67 (5.25)	36.01***
poor spousal relationship	20.24 (5.61)	17.72 (5.94)	9.20**
maternal isolation	16.20 (4.22)	13.86 (4.15)	14.86***
maternal health problems	14.55 (3.59)	13.01 (3.90)	8.36**
demandingness of child	20.68 (5.68)	16.58 (4.47)	28.48***

negative perceptions of child	109.31 (26.23)	98.85 (18.81)	9.22 **
overall negative perceptions	139.28 (24.28)	120.52 (24.51)	28.66***
overall parenting stress indicators	249.57 (41.57)	219.37 (38.04)	26.99***
3. Child Development			
Denver II Advances	1.43 (1.79)	.90 (1.24)	4.79*
Denver II Cautions	.66 (1.16)	.32 (.65)	5.03*
Denver II Delays	.31 (.87)	.04 (.21)	6.00*
4. Community Resources			
number community resources	6.27 (4.00)	6.92 (2.57)	2.43 (n.s.)
number community resources	5.57 (4.33)	5.28 (2.44)	1.14 (n.s.)
number community resources	3.47 (2.85)	2.63 (1.63)	3.66*

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

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