

## ABSTRACT

SABOURIN WARD, CARYN. The Examination of Individual Differences Among Abused Children Using Cluster Analysis. (Under the direction of Mary E. Haskett, Ph.D.).

Investigations historically have been designed to identify the ways in which abused children differ from their nonabused peers. Although those studies have been instrumental in increasing the understanding of typical sequela of child abuse, past research has not informed us about differences that might exist within groups of abused children. The purpose of the current study was to examine individual differences in social adjustment among physically abused children using cluster analysis, a strategy based on a person-oriented approach to understanding individual differences. Participants were 98 children and their parents. All of the children had a substantiated history of physical abuse. Children's problem solving skills and intent attributions were evaluated using hypothetical vignettes. In addition, parents and children participated in a 30-minute play session that was videotaped for later coding of parent behavior. Approximately six months after the clinic assessment, each child was observed during unstructured play and teachers completed the Social Behavior Scale (SBS) to describe the child's adjustment. Cluster analyses were conducted on seven variables derived from the sample of playground behavior and the SBS. Using a number of criteria, support was found to extract three clusters. The "Social Difficulties" cluster was comprised of children who received the highest ratings for social maladjustment and the lowest for prosocial behavior. The "Socially Well Adjusted" subgroup was comprised of children who received the highest teacher ratings for prosocial behavior and the lowest for social maladjustment. Children comprising the "At Risk" cluster were moderately well adjusted in social behavior; their scores were between those of the other clusters. A secondary purpose

of the proposed research was to examine whether intellectual functioning, attributions of intent, social problem solving skills, and/or parental warmth predicted cluster membership. Only hostile attributions of intent was found to be a significant predictor of cluster membership. Findings support our assertion that there are clinically-relevant subgroups among children who have experienced abuse. Although these findings should be considered preliminary pending replication, they do point to the potential utility of examining individual differences in functioning among samples of abused children.

THE EXAMINATION OF INDIVIDUAL DIFFERENCES AMONG  
ABUSED CHILDREN USING CLUSTER ANALYSIS

By

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## DEDICATION

This dissertation is dedicated to my husband, David C. Ward. Without his never ending love, support, and patience, I would not have been as successful in completing my doctorate.

Thank you for being there for me, you truly balance me.

## BIOGRAPHY

Caryn Sabourin Ward was born on November 12<sup>th</sup>, 1976 to Roland and Claire Sabourin. She is the fourth of five children and grew up in Bethlehem, Pennsylvania. Caryn graduated from Liberty High School in 1994 and went on to complete her Bachelor of Arts in Psychology at Bloomsburg University of Pennsylvania. At Bloomsburg, Caryn was a Pennsylvania Service Scholar where she completed over 7,000 hours of community service. She completed her Bachelors in 1998 and started her graduate education at the University of North Carolina – Wilmington. Under the supervision of Dr. Caroline Clements, Caryn obtained her Masters of Arts in Experimental Psychology in 2000. Her thesis topic was the behavioral adjustment of children exposed to domestic violence. Caryn then began attending North Carolina State University for her doctorate in School Psychology. While working at NC State University, Caryn married David C. Ward and had her son, Christian David in 2003. During her time at NC State, Caryn was involved in multiple research projects with different faculty. She completed her pre-doctoral internship with Wake County Public Schools in the 2005-2006 academic year under the supervision of Dr. Erchul and Dr. Myers.

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## CHAPTER ONE

### Introduction

Child abuse and neglect are detrimental to today's society. The US Department of Health and Human Services released in 2003 that 3 million referrals were made to state social services agencies regarding the welfare of children in 2001 (National Clearinghouse on Child Abuse and Neglect, 2004). The incidence of child maltreatment is quite high given that maltreatment was substantiated for over 903,000 of these referrals. Furthermore, 19% of these cases involved physical maltreatment and in 80% of those cases the perpetrator was a parent. Physical abuse is often defined as "the infliction of bodily injury on a child by other than accidental means" (Cicchetti & Toth, 2000, p. 91). The potential negative effects of experiencing physical maltreatment by a parent or primary caregiver have been well documented in the empirical literature.

The consequences of physical maltreatment by a parent can be not only immediately detrimental to the child but also can have long term effects. Experiencing physical maltreatment affects children's biological, social, and cognitive development. In terms of social development, researchers have shown that physically maltreated children exhibit more aggression in comparison to the level of aggression demonstrated by nonmaltreated peers (Burgess & Conger, 1978; Hoffman-Plotkin & Twentyman, 1984; Egeland & Sroufe, 1981; Kaufman & Cicchetti, 1989). Physically maltreated children also have been found to exhibit more withdrawn behaviors and internalizing behavior problems compared to their non-maltreated peers (Egeland, Sroufe, & Erikson, 1983; Salzinger, Kaplan, Pelcovitz, Samit, & Krieger, 1984). In addition, research has demonstrated that physical maltreatment in childhood can be a risk factor for violence and other forms of delinquency in adolescence

(Fergusson, Horwood, & Lynskey, 1996; Herrenkohl, Egolf, & Herrenkohl, 1997; Wolfe, 1999). These negative behaviors are related to physically abused children's difficulty in forming and sustaining relationships in childhood and in adulthood (Fatout, 1990). In terms of cognitive development, physically abused children have been found to demonstrate poor problem-solving skills (Haskett, 1990) and inadequate social cognition in terms of hostile attributional biases for others' intentions (Price & Glad, 2003).

However, not every physically abused child demonstrates negative consequences of being maltreated or has negative outcomes as a result of the abuse (Cicchetti & Rogosch, 1997). In fact, individual differences appear to exist among children who have experienced physical abuse. The purpose of this investigation was to examine these individual differences within a sample of physically abused children. Researchers need to identify and understand why some maltreated children adjust well and do not demonstrate social maladjustment despite experiencing physical abuse. If researchers are able to identify factors that account for or predict these individual differences in maltreated children's social adjustment, interventions might be tailored to meet the needs of subgroups of abused children with common treatment needs. These tailored interventions would then need to be examined as to whether they were effective and efficacious. Perhaps as a result of the improvements in treatment, abused children and their families would have better outcomes. In addition, understanding factors associated with individual differences may inform policies that directly affect these children and their families. For example, policies may become more specific in terms of which services and treatment approaches are recommended for intervening with maltreating families. To illustrate, a state-wide Task Force on Child Abuse Prevention in the state of North Carolina recently produced a document (Institute of Medicine, 2005) that

summarizes the research on protective factors for abused children and encourages evidence-based prevention efforts to strengthen those particular factors.

Evidence of individual differences among physically abused children can be seen in the results of current literature on the effects of abuse on children's social behavior.

Researchers have historically analyzed and reported mean scores obtained by abused and nonabused children on the variables of interest, yet wide variability can be found within samples of abused children. Specifically, the standard deviations of scores on measures are quite large and may imply that not everyone in the sample responds or behaves similarly. Secondly, even though most investigations of group differences in social behavior between abused and nonabused children indicate that there are significant group differences, those findings are not stable across studies. For example, many studies have indicated that abused children obtained higher scores than comparison children on measures of internalizing and externalizing disorders (e.g., Salzinger, Feldan, Hammer, & Rosario, 1993); however, there are also investigators who have not found those differences (e.g., Lewis, 1980).

Discrepancies in findings across studies can indicate diversity among abused children. In summary, evidence suggests that not every child will show difficulties in social adjustment as a result of experiencing abuse.

Investigations of children who function well despite experiencing adversities such as physical abuse have highlighted individual differences in functioning among those high risk children. Research on these children, who are often referred to as showing features of resilience or having a resilient pattern, provides evidence that despite being at risk for maladjustment, some abused children function relatively "normally" or similarly to children who have not experienced the risk factor of abuse (Cicchetti, Rogosch, Lynch, & Holt,

1993). This line of research also has identified factors, such as parent warmth, that could account for these individual differences (Egeland, Jacobvitz, & Sroufe, 1988).

Another line of research that provides evidence of diversity among abused children is that which addresses typologies of families characterized by abuse (e.g., Oldershaw, Walters, & Hall, 1989). Identifying typologies of families is one method of using a “person-oriented” approach to examine individual differences among families or individuals within those families. Using a person-oriented approach allows a researcher to identify subgroups of people within a larger group who fit a common pattern across different aspects of functioning (Buckner, Mezzacappa, & Beardslee, 2003). The person-oriented approach has been found to be useful in examining heterogeneity among families characterized by violence (Haskett, Smith Scott, & Sabourin Ward, 2004); to date, there are no accessible published reports of the application of this approach to children who have been physically abused.

Although there is evidence to support the existence of diversity in functioning among physically abused children, further research is needed to understand the factors that account for these differences. Traditionally, interventions for physically abused children have been designed without taking into account individual differences among abused children. In addition, the effectiveness of most of these treatments has been disappointing (National Call for Action, 2004). If interventions are designed to account for individual strengths and needs, clinicians and researchers may find that these treatments will yield greater effects and result in better outcomes for children and their families (Schellenbach, Trickett, & Susman, 1991).

#### *Purpose of the Proposed Research*

The purpose of the current research was to explore the existence of individual differences within a sample of children with a history of substantiated physical abuse.

Substantial research supports the notion of individual differences in outcomes among physically maltreated children, yet those differences have not been thoroughly examined. To explore the existence of heterogeneity in outcomes, the exploratory strategy of cluster analysis was used. Specifically, cluster analysis was used to derive subtypes of physically maltreated children based on behavioral adjustment as reported by the children's teachers and observed on the playground. In addition, several factors hypothesized to predict individual differences in social adjustment of maltreated children were examined. These factors included intellectual functioning, social information processing mechanisms of attributions of intent and response generation, and parental warmth. An overview of the person-oriented approach, the influence of physical abuse, and support for the possibility of individual differences in abused children's social adjustment are presented next.

## CHAPTER TWO

### Review of Literature

#### *The Person-Oriented Approach*

Two broad types of data analytic approaches used to examine characteristics of samples of participants are the variable-oriented approach and the person-oriented approach. Using the variable-oriented approach, researchers examine the associations among variables as well as their relations to a specific criterion, such as clinical cut-off points (Magnusson, 1998). Variables are labels applied to the psychological construct or processes being examined. According to the variable-oriented approach, each individual's score on a certain variable is only meaningful in relation to other individuals' scores for that same variable. For example, an individual's raw score for aggression is interpreted by using other individuals' raw scores of aggression within the sample. An assumption of this approach is that the correlations between variables for a sample of individuals are relevant to the relationships between variables for an individual in that particular sample. The statistical model most often used in this approach is the linear model, which forms the basis of common statistical analyses such as Pearson correlations and analysis of variance. Use of the linear model requires several assumptions, such as the assumption that individuals can be compared on continuous dimensions in meaningful ways. Other assumptions are (a) individuals differ quantitatively not qualitatively, and (b) the relationships among variables are the same for all individuals. The focus of such analyses is on explaining the correlation matrix or variance-covariance matrix (Bergman & Magnusson, 1997). Consequently, the results of analyses computed by researchers using such an approach are variable oriented. The results provide information about psychological concepts across individuals within the sample. One cannot

truly address individual differences using the variable oriented approach. Thus, the variable-oriented approach is quite limited in scope and depth of information that it can provide in regards to individual differences. The majority of studies designed to examine abused children have used the variable-oriented approach.

The person-oriented approach, in contrast, has been found to be promising in identifying and examining individual differences among samples. Specifically, a person-oriented approach conceptualizes an individual as an “integrated, hierarchically organized totality, rather than a summation of variables” (Magnusson, 1998, p. 51). The person-oriented approach compensates for the limitations of the variable oriented approach by allowing an examination of people who, together, fit a common pattern across different aspects of functioning (Buckner et al., 2003). Thus, patterns of values are studied empirically and a more complex and holistic picture is formed of individuals. For example, a person’s raw score on aggression is meaningful from its place in the overall pattern of data for that individual. Although variables are still being used in this approach, they have no meaning by themselves (Bergman & Magnusson, 1997). They are only interpretable in the overall pattern of behavior and their relations with other variables for the individual.

Application of the person-oriented approach involves several assumptions. According to Bergman and Magnusson (1997), development is the result of interactions between the environment and characteristics specific to the individual. In addition, the overall process of development is complex, with interactions between different factors operating at many levels. Another assumption of this approach is that processes of development within an individual occur in a lawful and organized manner. As a result of this lawfulness, patterns of factors can be found within individuals. These factors are meaningful in terms of their

associations with other factors. The final assumption of this approach is that although there are infinite patterns of development that are different, common patterns are present within and among individuals. Thus, an advantage of this approach, as stated by Magnusson (1998), is that results can be generalized to people and not to variables.

A common statistical method used to address the person-oriented approach is cluster analysis. Cluster analysis is a statistical procedure that can be used to assess individual differences in terms of patterns of data and “delineate homogeneous subgroups within a sample” (Thompson & Christiansen, 1999, p. 317). It allows the researcher to meaningfully distinguish subtypes or subgroups within a heterogeneous sample. Thus, it creates subtypes within a sample that are similar to each other on various attributes. Using cluster analysis allows the researcher to draw distinctions about the unique characteristics of each subgroup. Cluster analysis has been found to be effective in examining individual differences in children’s functioning (Hughes & Luke, 1998; McKinney & Speece, 1986; Speece, McKinney, & Appelbaum, 1985). For example, McKinney and Speece (1986) identified distinct subtypes of children identified with learning disabilities. Individual differences were found in these children’s behavioral functioning in terms of their independence-dependence, task-orientation–distractibility, extroversion-introversion, and considerateness-hostility. Cluster analysis also has been useful in examining the heterogeneity of children within families characterized by violence (Hughes & Luke, 1998; Grych, Jouriles, Swank, McDonald, & Norwood, 2000). A more detailed review of these investigations, which provide a foundation for the current study, is provided later in the section entitled “Clinical Relevance of Typologies of Families.” Next, a review of the influence of physical abuse on children is presented.

## *The Influence of Physical Abuse*

### *Cognitive Competence*

The consequences of abuse on various domains of children's cognitive development have been demonstrated by numerous researchers (Cerezo & Frias, 1993; Haskett, 1990; Hoffman-Plotkin & Twentyman, 1984; Weiss, Dodge, Bates, & Petit, 1992). Specifically, researchers have shown a relationship between the experience of abuse and low scores on tests of intellectual ability. An early study conducted by Hoffman-Plotkin and Twentyman (1984) indicated that physically abused as well as neglected children obtained significantly lower scores on the *Stanford-Binet*, *Peabody Vocabulary Test*, and *Merrill Palmer Scale of Mental Tests* compared to scores obtained by the matched comparison children. Similarly, Nightengail and Walker (1991) and Salzinger, Kaplan, Pelcovitz, Samit, and Kreiger (1984) found that abused children obtained significantly lower scores on the *Wechsler Intelligence Scale for Children - Revised Edition* compared to scores obtained by comparison children.

Given the association found between experiencing physical abuse and low intelligence scores, it is not surprising that abused children also have been found to perform poorly on academic tasks (Salzinger et al., 1984; Shonk & Cicchetti, 2001). To illustrate, Salzinger and colleagues (1984) and Kinard (2001) found that children referred to child protective services for physical abuse and neglect obtained significantly lower scores on reading and math achievement tests compared to scores obtained by non-referred children. Furthermore, Kinard found that abused children were more likely to overestimate their level of competence for reading and arithmetic. It is important to note that the association between low academic achievement as measured by grades and physical abuse has not always been demonstrated (Eckenrode, Laird, & Doris, 1993; Vondra, Barnett, & Cicchetti, 1989).

Specifically, Eckenrode and colleagues (1993) found no significant differences between physically abused children and comparison children in grades for reading/English or math.

Another domain of cognitive development in which physically abused children have shown deficits is in the domain of social information processing. Based on Crick and Dodge's (1994) model of social information processing, the key components include attending to and encoding of social cues, interpreting peer's intentions (i.e., attributions), clarifying goals of behavior, generating responses to the problem situation, evaluating responses generated, deciding on a response, and acting out the chosen response. Physically abused children have been found to demonstrate more encoding errors, hostile attributional biases, and aggressive responses in comparison to the number of errors, biases, and responses generated by nonabused children (Dodge, Pettit, Bates, & Valente, 1995; Price & Glad, 2003; Trickett, 1993). In addition, abused children expect positive outcomes of the aggressive solutions they generate at higher rates in comparison to the number of positive outcomes expected by nonabused children (Dodge et al., 1995). Haskett (1990) and Smith and Walden (1999) also found that physically abused children generated significantly fewer solutions to hypothetical peer problems in comparison to the number of solutions generated by matched comparison children.

To summarize, although there are some discrepancies in findings across studies, abused children often have been found to demonstrate deficits in various areas of their cognitive functioning in comparison to nonmaltreated peers. Differences have been found in intellectual functioning, academic achievement, and social information processing skills of abused and comparison children. Each of these impairments (i.e., low IQ scores and disturbances in social information processing operations) have been found to be related to

social and psychological adjustment problems; thus, it follows that abused children will demonstrate adjustment problems in the domain of social functioning. Research on the social and psychological adjustment of abused children follows.

### *Social and Psychological Adjustment*

In addition to deficits in their cognitive development, the effects of physical abuse can be seen in children's social adjustment. The link between parenting factors such as use of harsh, abusive discipline and children's social adjustment has been well established in the literature (Cicchetti & Toth, 2000). In terms of externalizing behavior problems, research has demonstrated that physically abused children exhibit higher rates of aggression than the rates exhibited by their nonabused peers. This result has been found by both direct observation (Alessandri, 1991; Hoffman-Plotkin & Twentyman, 1984) and by teacher and parent report on behavior rating scales (Haskett & Kistner, 1991; Salzinger et al., 1993). Researchers also have found that abused children are rated by their peers and teachers as socially withdrawn (Bolger & Patterson, 2001; Salzinger et al., 1993; Salzinger, Feldman, Ng-Mak, Mojica, & Stockhammer, 2001).

In addition to aggression and socially withdrawn behavior, researchers have found, using sociometric data and peer nominations, that physically abused children have lower peer status and are rejected at higher rates in comparison to nonabused peers (Bolger & Patterson, 2001; Bolger, Patterson, & Kupersmidt 1998; Rogosch & Cicchetti, 1994; Salzinger et al., 1993). To illustrate, Haskett and Kistner (1991) found that physically maltreated children in daycare were rated by their peers as being less well liked and their social initiations to peers were less likely to be reciprocated than were initiations made by nonabused peers.

In terms of internalizing problems, researchers have demonstrated that physically abused children exhibit higher levels of depression in comparison to depression levels of their nonabused peers (Kazdin, Moser, Colbus, & Bell, 1985; Kolko, 1992). Children who have experienced maltreatment also report lower self-esteem in contrast to self-esteem of comparison children (Gross & Keller, 1992; Kaufman & Cicchetti, 1989). In addition to low self-esteem, physically abused children demonstrate a more negative self-concept compared to the self-concept of matched comparison children (Kinard, 1980).

In summary, the influence of physical abuse on children's cognitive and social adjustment has been well documented in the literature. In terms of their social adjustment, abused children exhibit higher rates of aggression (Alessandri, 1991), internalizing and externalizing behavior problems (Cicchetti & Toth, 1995; 2000), and socially withdrawn behaviors (Salinzger et al., 2001). Not surprisingly given their cognitive and social incompetence, physically abused children are often found to have low social status (Bolger et al., 1998; Salinzger et al., 1993). However, on close inspection of the literature, individual differences in physically abused children's social adjustment can be found. Support for individual differences in abused children's social adjustment is presented next.

#### *Individual Differences in Abused Children's Social Adjustment*

The following discussion of support for individual differences is organized into two sections: indirect evidence and direct evidence. Indirect evidence consists of results from empirical studies in which the investigators were not purposefully examining individual differences in abused children's functioning. Often the purpose of these investigations was to examine group differences between maltreated and nonmaltreated children. Thus, the results reported here in the "indirect evidence" section are drawn from the broader literature on child

abuse. Alternatively, direct evidence refers to investigations in which researchers purposefully set out to examine individual differences among abused children. Within this section of direct evidence, research in which investigators examined children who showed features of resilience to the effects of physical abuse is presented first, followed by results of researchers who have examined typologies of families.

#### *Indirect Evidence for Individual Differences*

*Wide variability within samples.* Few researchers have examined the variability within samples of abused children. Most investigations of characteristics of abused children have focused on an examination of group differences between children with known histories of physical abuse and nonabused comparison children. Even in those studies, however, individual differences in the functioning of abused children are evident. Specifically, support for individual differences can be seen in the substantial deviations in scores within samples of abused children. For example, Kaufman and Cicchetti (1989) asked counselors to rate abused children's behavior on several measures that yielded scores with a potential range from 0 to 63. These researchers found large standard deviations on the aggressive ( $M = 45$ ,  $SD = 27$ ) and withdrawn subscales ( $M = 51$ ,  $SD = 30$ ). For further illustration, Wodarski, Kurtz, Gaudin, and Howing (1990) found large standard deviations on the parent and teacher forms of the *Child Behavior Checklist* (CBCL) for a sample of 22 physically abused children. For interpretation purposes, the CBCL uses the  $T$  distribution with a  $T$ -score having a mean of 50 and a  $SD$  of 10. On the parent form, the mean and standard deviation for the total number of problems were 55.23 and 32.48, respectively. On the teacher form, the mean was 40.87 and the standard deviation was 32.85. Wodarski and colleagues (1990) also measured peer adjustment by creating a composite index using individual items from the CBCL, a child

interview, and a self-concept measure. The mean for the peer adjustment scale was 4.00, with a standard deviation of 2.83.

Investigators almost never make note of the variability within their samples of abused children, yet wide variability in functioning is readily apparent. Diversity in outcomes is seen regardless of the methods by which social adjustment is measured (i.e., observation, rating scales, or sociometric methods). Variability among abused children is often greater than variability among comparison children, and diversity in scores on standardized measures such as the CBCL is greater for abused children than for norming samples. Indirect evidence for individual differences can also be found in studies designed to examine group differences between abused and nonabused children; some of those studies have failed to find the expected group differences. This evidence is presented next.

*Wide variability in findings across studies.* As noted above, the bulk of the research on characteristics of abused children indicates that abused children differ in their social adjustment from nonabused children. However, several sets of researchers have not found significant group differences in social adjustment between abused and nonabused children (e.g., Cicchetti & Rogosch, 1997; Howes & Eldredge, 1985; Lewis, 1980). These findings suggest that all abused children do not differ significantly from nonabused peers. The failure to find differences between abused and nonabused children could be explained by multiple factors, such as the presence of the moderators or low statistical power. However, inconsistent results across studies also could be a hint that all abused children are not homogeneous in functioning. For example, Lewis (1980) did not observe any differences between abused preschoolers and nonabused preschoolers in terms of social play with peers and group differences in withdrawn, overly hostile, or passive behaviors were not found.

Similarly, Howes and Eledredge (1985) observed no differences between abused children in well-established peer groups and nonabused children in both well-established peer groups and newly formed groups in terms of their negative and positive social behavior towards peers, number of initiating interactions, and complexity of peer play. These results demonstrate that not every abused child experiences deficits in their social behavior and peer relations. The exclusive assessment of group differences, common in prior investigations of abused children, ignores the diversity in social functioning of abused children.

In summary, investigations of social behavior with samples of abused children have provided some evidence of wide variability in functioning, as indicated by large standard deviations on many measures and by inconsistent descriptions of abused children between studies (e.g., some studies indicate significant differences between abused and nonabused children, and others do not). On close examination of extant research, one may posit that there are likely to be wide individual differences in social behavior within a sample of abused children. Indeed, direct evidence for the existence of individual differences among abused children is evident in investigations of resiliency among abused children. Support for individual differences also can be found in results of cluster analyses designed to examine different patterns of parenting within abusive families.

#### *Direct Evidence for Individual Differences*

Resilience has been defined in numerous ways throughout the literature. Rutter (1990), a leader in the field, defined resilience as having positive outcomes despite the experience of risk factors. According to Masten, Best, and Garmezy (1990), resilience is commonly used to describe the following phenomena: having positive outcomes despite the experience of high risk factors, the maintenance of competent functioning during stress, and

recovery from trauma. Numerous risk and protective factors that contribute to the development of resilience among high-risk populations have been identified. Risk factors can be defined as “factors that increase a child’s vulnerability or the likelihood that he or she will develop difficulties in situations of stress, even minor stress” (Grizenko & Fisher, 1992, p. 711). Others have defined risk factors as “statistical correlates of poor or negative outcomes” (Masten et al., 1990, p. 426). Protective factors, in contrast, are defined as those factors that “moderate the effects of individual vulnerabilities or environmental hazards so that the adaptational trajectory is more positive than would be the case if these protective factors are not operational” (Masten et al., 1990, p. 426). Current researchers in the field of resilience have argued for more specificity in use of the term protective factor; specifically, Luthar and Zelazo (2003) argued that the terms “beneficial” or “compensatory” should be used when referring to factors, such as intelligence, that yield benefits to all children, regardless of presence of risks. The term protective should be used when the factor (e.g., sensitive parenting) functions as a shield for children who experience the risk factor. Protective factors that have been identified range from individual child factors such as intellectual ability (Fergusson & Lynskey, 1997) and social information processing mechanisms such as good problem solving skills (Anthony, 1987), to contextual or environmental factors such as parental warmth (Werner & Smith, 1982).

An important note must be stated regarding semantics associated with the study of resilience. Historically, researchers have used the term “resilient” to describe children who have adjusted well despite experiencing adversity (Luthar, 2003). However, current investigators have recognized that using the term “resilient” implies that it is a characteristic of an individual (Luthar, 2003). This usage of the term “resilient” has been misleading to

researchers and clinicians because resilience is not a trait but a dynamic and transactional process (Luthar, Cicchetti, & Becker, 2000). As a result of this distinction, Luthar and colleagues have advocated for use of the term resilience rather than “resilient.” It has been recommended that investigators should report that children demonstrate “features of resilience” or a “resilient pattern” (Luthar, 2003).

*Resilience among maltreated children.* Researchers who have examined resilient patterns of abused children have found that not all children develop deficits or negative outcomes in social behavior (e.g., Cicchetti & Rogosch, 1997). For example, Farber and Egeland (1987) examined features of resilience among maltreated children from infancy to preschool age. Their participants were drawn from a larger study consisting of pregnant women identified as being at risk for maltreating their infants. Mothers were followed from birth till the children were preschool age. Children were assessed on the following competencies: attachment at 12 and 18 months of age, autonomous functioning at 24 months of age, self-awareness and socialization at 42 months, and peer relations and socialization in preschool. Forty-four mothers were subsequently identified as abusive or neglectful; 85 mothers not identified as abusive served as the comparison sample. As hypothesized, maltreated children were not functioning as competently as were the comparison children at each of the assessments; however there were several maltreated children who *were* functioning competently at the various assessment periods. For example, 53.7% and 53.8% of the maltreated children were securely attached at 12 and 18 months, respectively. When functioning was examined longitudinally, it was evident that many maltreated children who were functioning well at one assessment period declined at the next assessment period. For example, only 40% of the maltreated children were found to be competent as measured by

the problem solving task given at 24 months, and 22% were competent in terms of their peer relations at the preschool assessment. Despite these generally negative outcomes, Farber and Egeland found variability within the maltreated sample, which is indicative of individual differences in social adjustment among maltreated children.

Other investigators of the process of resilience among maltreated children found small percentages of their sample having features of resilience. Cicchetti and colleagues (1993) examined features of resilience in a sample of 127 maltreated children and 79 matched nonmaltreated children. The children ranged from 8 to 13 years of age and the majority of children were from minority ethnic groups. Depression, self-esteem, intelligence, and social behavior were measured by self, peer, and counselor reports. Information regarding the children's adaptation to school (e.g., attendance and disciplinary actions) was obtained from school records. A composite of adaptive functioning based on seven indices was created. These indices included (a) prosocial behavior, (b) disruptive-aggressive behavior, (c) withdrawn behavior, (d) depression, (e) internalizing problems, (f) externalizing problems, and (g) the school risk index. Both maltreated and nonmaltreated children were then categorized into three levels of competence; high (resilient), middle, or low functioning. For the low functioning group, maltreated children were overrepresented compared to the representation by non-maltreated children. Although maltreated children as an entire group were found to exhibit lower competence in comparison to the level of competence exhibited by nonmaltreated children, 18% of the maltreated children were categorized as high functioning. In the high functioning category, maltreated and nonmaltreated children were found to be equally represented. In addition, the majority of maltreated children were found to be competent on at least two of the seven indices.

Cicchetti and Rogosch (1997) attempted to further examine individual differences among abused children in a 3-year longitudinal study. Their sample consisted of 213 maltreated and nonmaltreated children who attended a summer camp for low-income and disadvantaged children. At the time one assessment, children ranged in age from 6 to 11 years. In addition to the measures used by Cicchetti and colleagues (1993), the children completed a relatedness scale to assess their perceptions of their relationships with their mothers, and the counselors completed a questionnaire to measure the quality of the relationship between the counselor and student. For each year of the study, an adaptive functioning composite was created based on the same seven indices used by Cicchetti and colleagues (1993). An overall adaptive functioning composite was also created by summing the three adaptive functioning composites for each year. Cicchetti and Rogosch then assigned children to groups based on their adaptive functioning over the three-year period. Significantly more maltreated children than nonmaltreated children were members of the low functioning group. In addition, significantly more nonmaltreated children were found in the high-functioning group. In spite of these generally negative findings, a very small percentage (1.5%) of maltreated children was in the high functioning group for all three years. In any of the three years of assessment, only 9.8% of the maltreated children were identified as functioning competently. It is evident from these results that the percentage of children identified as having features of resiliency varies depending on how competent functioning is operationalized, but clearly, a portion of children who have experienced abusive parenting are able to function competently in one or more areas of adjustment.

Drawing from the larger database of Cicchetti and Rogosch (1997), Flores, Cicchetti, and Rogosch (2005) examined resilience among maltreated Latino children ( $n = 76$ ). Using

the same measures as Cicchetti and Rogosch (1997), Flores and colleagues (2005) created an overall adaptive functioning score for children's social competence and behavioral symptomatology. A total of nine indicators obtained from counselors and peers were used. These nine indicators included (a) prosocial behavior, (b) aggression, (c) withdrawn behavior, (d) cooperative behavior, (d) disruptive behavior, (e) shy behavior, (f) fighting behavior, (g) internalizing problems, and (h) externalizing problems. Flores and colleagues then divided the sample of Latino children into either a "high functioning group" or "not high functioning group" based on the nine indicators of adaptive functioning. Only 9.2% of the maltreated Latino children were labeled as high functioning, which was significantly lower in comparison to the number of nonmaltreated Latino children (17.5%) labeled as high functioning. In addition, significantly more maltreated Latino children were found in the low functioning group. The percentage of maltreated Latino children identified as high functioning (9.8%) was consistent with the percentage of maltreated children identified as high functioning in any year of assessment in the larger sample that included non-Latino maltreated children (Cicchetti & Rogosch, 1997).

The majority of investigations have been designed to examine resilience among maltreated children who were younger in age, but in a longitudinal study of resilience among older maltreated children, Herrenkohl, Herrenkohl, and Egolf (1994) examined resilience in a late adolescent sample of 105 physically abused and 86 neglected children. Children's behaviors were assessed in elementary school by using school records and a teacher report form of a behavioral rating scale. Children were placed in the category of resilient if they received scores that were in the top 40% of the sample on three composites created from items on the behavior rating scale. The three composites were cognitive/academic

functioning, social functioning, and emotional functioning. The researchers found that 25 of the 88 children (28%) labeled as resilient or high functioning had a history of being physically abused or neglected. In late adolescence, Herrenkohl and colleagues interviewed 23 of the 25 maltreated children labeled as resilient. Only 14 (61%) of these 23 students graduated from high-school or were still in school at the time of the assessment. Thus, resilience, as operationally defined by the researchers, did not persist over time for all of the maltreated children. Similar to Cicchetti and colleagues (1993, 1997), Herrenkohl, Herrenkohl, and Egolf (1994) found a small number of maltreated children who did not experience deficits in their social functioning. In addition, it appears that features of resilience are fluid over time and depend on the domain of functioning being assessed.

Fluidity in adjustment is also evident in findings of a longitudinal study of resilient functioning among abused children conducted by Bolger and Patterson (2003). Those investigators explored individual differences among 107 maltreated children (ages 8-10) who were part of a larger study. Children's social and psychological adjustment as well as academic achievement was assessed once a year over a three-year time period. Bolger and Patterson operationalized resilience as high social preference scores, low scores on teacher ratings of internalizing and externalizing problems and high scores on achievement tests. During at least one year of the study, nine maltreated children (8%) were identified as having high positive adjustment in at least one domain being assessed. Only one maltreated child was found to sustain positive adjustment across all three years of the study.

Bolger and Patterson (2003) also created a composite of adaptation based on the four domains being assessed by using factor analysis on the larger sample of maltreated and nonmaltreated children. A child was identified as positively adjusted if his or her composite

score was at or above the median of the sample. Using this particular method, 23 maltreated children (21%) were identified as being well adjusted during at least one year of the study but only five children (4%) were consistently well adjusted for all three years of the study. Similar to Cicchetti and Rogosch (1997), Bolger and Patterson found a very small percentage of maltreated children who were competent at one time point in the study and an even smaller percentage of maltreated children who were well-adjusted consistently throughout the study.

Using retrospective methodology, McGolin and Widom (2001) conducted a study to examine resilience among adults who had experienced abuse (physical or sexual) and/or neglect as children. Using substantiated cases, the researchers identified 749 adults who had been maltreated between infancy and 11 years of age. At the time of the interview, participants ranged in age from 18 to 41 years. Resilience was defined on the basis of eight domains of functioning including employment, housing status, education, social activity, mental health, absence of substance abuse, criminal record, and self-reports of violence. Each person received a score of zero (not successful) or one (successful) for each domain, thus the overall score ranged from zero to eight. Individuals were then categorized as having a resilient pattern if they scored a six or higher on the composite score. Twenty-two percent of the maltreated individuals were labeled as having a resilient pattern. Significantly more maltreated females than males were considered to be showing features of resilience. The authors concluded that not all adults abused in childhood experienced the detrimental consequences of abuse in the eight domains of functioning they assessed. The researchers also called for research designed to examine the underlying mechanisms that differentiated

the maltreated individuals with features of resilience from those that did not have a resilient pattern.

In addition to examining whether or not maltreated children exhibit features of resilience, researchers have also attempted to identify attributes, skills, or experiences that contribute to maltreated children's successful adaptation. These factors are referred to as "protective"; such factors have been classified into those at the level of the individual child, and those that operate at the level of family, neighborhood, and society. Some of the factors specific to the individual child include intellectual functioning (Herrenkohl et al., 1994), perceived control (Bolger & Patterson, 2003; Moran & Eckenrode, 1992), self-esteem, ego-control, and ego-resiliency (Cicchetti et al., 1993; Cicchetti & Rogosch, 1997; Flores et al., 2005). Stability of the home, clear parental expectations regarding academic performance, and the absence of chronic and pervasive abuse are family contextual factors that predict positive outcomes for abused children (Herrenkohl et al., 1994). In general, the majority of research on protective factors has focused on factors specific to the individual, with much less attention to the importance of parenting and family context in predicting positive adaptation among abused children.

One can summarize from the research on resilience among maltreated children that a small proportion of maltreated children do not appear to experience the detrimental consequences associated with maltreatment. In addition, past research points to a number of attributes or skills that have emerged as contributors to adaptive functioning of maltreated children. However, a number of methodological limitations and knowledge gaps are present in this literature. The first limitation of extant research is that researchers in the field of resilience often include in their sample children who have experienced different types of

maltreatment. For example, Moran and Eckenrode's (1992) and Bolger and Patterson's (2003) samples consisted of children who had experienced physical abuse and/or sexual abuse. Past research indicates that there are very different outcomes for children who have experienced physical abuse, neglect, or sexual abuse. In addition, differential predictors of competent functioning have emerged for physical abuse versus other types of abuse (Egeland et al., 1983). The fact that there are unique predictors for each type of abuse highlights the importance of examining individual differences within groups of maltreated children who have all experienced the same form of maltreatment.

Knowledge of protective factors for abused children is quite limited. Studies have only recently been published in this important area. The present study was designed to contribute to closing the knowledge gaps in the existing literature. It is important to identify the factors associated with diversity in functioning among abused children so that interventions can be tailored to help children cope successfully with the experience of being maltreated. One other gap in this literature is that the majority of protective factors examined have been characteristics specific to the individual, such as perceived control and self-esteem. Protective factors also need to be identified that are not specific to the individual, such as the broader context of parenting. This type of research is needed because individual differences in development are often influenced by characteristics of the environment (Bergman & Magnusson, 1997).

Despite limitations of research on individual differences among abused children, this research has indicated that not every maltreated child experiences the negative effects of abuse. In fact, a small percentage of physically abused children appear to function competently in terms of social adjustment. This result provides direct evidence for the

existence of individual differences among maltreated children. Direct evidence for the existence of heterogeneity among abusive children also can be found in research in which investigators take a person-oriented approach to examining patterns of abusive parenting. Researchers have used the method of cluster analysis to assess individual differences among abusive families. A review of this research illustrates the utility of adopting a person oriented approach to examine individual differences in families characterized by violence.

*Clinical relevance of typologies of families.* Although the purpose of the present study was to assess individual differences among children using cluster analysis, a review of the literature using cluster analysis with families, parents specifically, is relevant because this literature illustrates the utility of adopting a person-oriented approach with families characterized by violence. Cluster analysis has been used successfully to identify clinically relevant subtypes in a sample of abusive parents (Haskett et al., 2004; Oldershaw et al., 1989). Oldershaw and colleagues (1989) used K\_Means clustering procedure to identify three subgroups among 73 physically abusive mothers based on observed parenting behavior. Subtypes (labeled “Emotionally Distant,” “Intrusive,” and “Hostile”) differed in terms of their affect, discipline and control strategies, and responses to their children’s requests and initiations. The researchers found that the subtypes of abusive mothers also differed by characteristics of their children. Specifically, children of Intrusive mothers were less compliant and aggressive and laughed less in comparison to the behavior of children whose mothers’ membership was in the other groups. Children of Hostile mothers were found to display more bids for attention than any other group of children. Emotionally Distant mothers perceived their children as less hostile and less aggressive as compared to the other two abusive groups of mothers.

Haskett and colleagues (2004) attempted to determine the degree to which Oldershaw and colleagues' findings could be replicated using a more heterogeneous sample of abusive parents who had not been referred to treatment. Variables included in the cluster analysis were observed parenting behavior and affect and self-reported discipline techniques. Using Ward's cluster analysis, a 4-group and a 2-group cluster solution were extracted. Little support was provided for clinical relevance of the four cluster solution; thus, the two-cluster solution was explored more fully. Parents in Cluster One displayed more positive regard, positive affect, and sensitivity and less intrusiveness and disengagement in comparison to the behavior exhibited by parents in Cluster Two. In terms of their children's adjustment, Cluster One parents viewed their children's behavior problems to be significantly less bothersome in comparison to the views exhibited by parents in Cluster Two but there were no statistically group differences on ratings of overt or relational aggression. Teachers rated children of parents in Cluster One as being more prosocial in comparison to the ratings of children whose parents were in Cluster Two. In addition, children of parents in Cluster One generated more solutions in a social problem-solving task in comparison to the number of solutions generated by children of parents in Cluster Two.

In summary, clinically relevant subgroups of abusive parents have been identified using the statistical procedure of cluster analysis. However, few attempts have been made to use cluster analysis to derive subtypes of abused children as a method of examining individual differences in their social behavior. A literature search conducted in February, 2006 on PsychInfo resulted in finding two studies based on cluster analysis to identify subtypes of abused children. Unfortunately, these studies were conducted in Canada and Spain and were not available in English. However, several researchers used cluster analysis

with samples of children who witnessed domestic violence. These studies are relevant to the current research because they illustrate the utility of using a person-oriented approach to examining individual differences in adjustment of children exposed to family violence; characteristics of physically abused children and child witnesses of domestic violence show remarkably similar patterns of functioning (Hughes, Parkinson, & Vargo, 1989; Wolfe, Jaffe, Wilson, & Zak, 1985).

Cluster analysis was used by Hughes and Luke (1998) to examine heterogeneity within a sample of 58 children exposed to domestic violence. Children and their mothers were residing in a shelter at the time of the assessment, and the children ranged in age from 6 to 12 years. In addition to witnessing domestic violence, 50% of the children had been physically abused, according to reports by their mothers. Mothers completed a variety of measures to assess the amount of violence in the family, perceptions of the child, and their mental health functioning. The children completed measures of their own mental health functioning and self-esteem.

Using Ward's clustering method, Hughes and Luke found support for five clusters. The cluster analysis was based on behavior problems, internalizing distress, and self-esteem. Cluster one consisted of 21 children and was labeled as "Hanging in There." The children in this cluster had the fewest behavior problems, low levels of anxiety, and average self-esteem. The second cluster, labeled "Doing Well," consisted of 15 children. These children had the second lowest number of behavior problems and they reported no anxiety and high self-esteem. The last three clusters were comprised of children who experienced behavior problems and distress. Cluster three was comprised of nine children and labeled "High Behavior Problems." These children were described as having the highest number of

behavior problems, low levels of anxiety, and high self-esteem. The fourth cluster consisted of nine children and was labeled “High General Distress.” The children in this cluster reported the highest level of anxiety, some behavior problems, and low self-esteem. The final cluster was labeled “Depressed Kids” and consisted of four children. These children reported the lowest self-esteem of the clusters and moderate levels of anxiety; however, they were described as having few behavior problems.

Clusters were then validated by comparing them on family demographics, family violence, maternal psychological functioning, and children’s psychological functioning. The clusters were found to be significantly different from each other in children’s gender, household income, mothers’ employment, physical abuse of the children, and the frequency with which mothers were hurt by their partners. Clusters also were significantly different from each other on age of mothers and children, children’s depression, mother’s depression, verbal aggression by mothers to their partner, months with partner and months of partner abuse. Specifically for age differences, mothers and children in the Depressed Kids cluster were older. For the children’s depression score, children in the Highly Distressed cluster and the Depressed Kids cluster reported higher levels of depression in comparison to the levels of depression demonstrated by mothers in the other clusters. However for maternal psychopathology, mothers of children in the High Behavior Problems and Highly Distressed groups reported the highest levels of depression. In addition, those mothers reported significantly more use of verbal aggression towards their partners in comparison to level of verbal aggression used by mothers in the other three clusters. Mothers of the Depressed Kids cluster reported the lowest levels of depression, and they differed significantly from the other

clusters on being with their partners the longest and thus perhaps experiencing abuse for the longest amount of time.

Hughes and Luke (1998) concluded that there were subgroups of child witnesses of spousal violence whose adjustment and treatment needs differed significantly. In addition, the authors posited several factors that may have contributed to differences in adjustment among the children. Those factors included duration of abuse, children's attribution for the abuse, maternal depression, maternal use of verbal aggression towards partner, and parenting styles such as harsh and inconsistent disciplinary styles or low levels of parental warmth.

Individual differences among children who witnessed violence between their parents also were examined by Grych, Jouriles, Swank, McDonald, and Norwood (2000). Grych and colleagues' sample consisted of 228 children who ranged in age from 8 to 14 years. The children and their mothers were residing in a shelter for battered women at the time of the assessment. Mothers completed measures of partner violence and perceptions of their children's behavior, and children also completed measures of parental violence and their own mental health.

Five clusters were extracted. Children in cluster one ( $n = 71$ ) were functioning within the normal range for depression, self-esteem and behavioral functioning. In addition, they reported the highest self-esteem among the clusters. Cluster one was labeled as "No Problems Reported." Children in cluster two ( $n = 44$ ) demonstrated elevated levels of internalizing and externalizing behavior problems. They exhibited higher levels of externalizing problems in comparison to the levels of problems demonstrated by children in clusters four and five and was thus labeled as "Multiproblem – Externalizing." Cluster three consisted of 47 children and was labeled as "Externalizing." These children obtained scores

in the clinical range on the externalizing behavior problems scale. In addition they reported having no internalizing behavior problems and high self-esteem. The fourth cluster, labeled “Mild Distress,” consisted of 40 children who had a somewhat elevated internalizing problem score and very low levels of externalizing behavior problems. Finally, the fifth cluster ( $n = 26$ ) was labeled as “Multiproblem – Internalizing.” Children in this cluster reported high levels of depressive symptoms and were rated by parents as having somewhat elevated levels of externalizing behavior problems.

Clusters were then validated by examining whether they could be differentiated on mothers’ and children’s reports of interparental violence, children’s report of parent-child aggression, children’s appraisals of interparental conflict, and demographic variables. Overall, few differences were found between the Multiproblem-Externalizing and the Multiproblem – Internalizing clusters. The majority of differences were found between the Multiproblem clusters and the remaining clusters. Specifically, children within the Multiproblem clusters observed higher levels of interparental violence, reported higher levels of parent-child aggression, and obtained higher scores on appraisals of interpersonal conflict.

Grych and colleagues concluded that clinically relevant, distinct patterns of adjustment were found among children who had experienced a common trauma - exposure to domestic violence. Also similarly to Hughes and Luke (1998), Grych and colleagues called for further research to examine factors that predict different patterns of adjustment. Grych and colleagues found that amount and type of aggression children experienced differentiated the clusters, as did children’s perceptions and appraisals of the interparental conflict. As can be seen, the use of cluster analysis to explore heterogeneity within samples of children exposed to domestic violence was constructive. It is evident that children exposed to

domestic violence present with divergent patterns of behavioral and mental health functioning.

As can be seen from these studies, the utility of cluster analysis as a person-centered approach is promising for the examination of individual differences. In discussions of their findings, both sets of researchers called for investigators to examine factors that would account for these individual differences in response to domestic violence. Several factors or underlying processes have been theorized and/or found to contribute to individual differences among maltreated children. A discussion of these factors is presented next.

#### *Factors Accounting for Individual Differences*

A number of factors were posited by the current investigator to contribute to individual differences in functioning among abused children. There are factors that are specific to the individual, including intellectual ability and social information processing skills. Social information processing skills can include attributions of intent and problem solving skills. Another set of processes that may account for diversity in outcomes involve the parenting context. The factor of interest to the current research is that of parental warmth. All of these individual and contextual factors have been found to be important in predicting developmental outcomes for children. More detailed discussions of the links between child social adjustment and each of these factors are presented next.

#### *Cognitive Functioning*

Children's cognitive functioning has been found to predict individual differences in several domains of adjustment. For example, intelligence has been posited and found by many researchers to be a protective factor or a predictor of children's competent functioning in academics and social behavior among children who have experienced risk (Masten et al.,

1988; Masten et al., 1990; Masten & Coatsworth, 1998; Masten et al., 1999; Werner & Smith, 1982). Garmezy, Masten and Tellegen (1984) found that when children experienced increasing levels of stress, those with above average intelligence demonstrated fewer impairments in social competence than did those children with lower intellectual functioning.

Other researchers have found similar results. Pianta, Egeland, and Sroufe (1990) found that competent boys of mothers who experienced high levels of stress were more intelligent in comparison to the intelligence demonstrated by the less competent sons of highly stressed mothers. Another example would be the research of Radke-Yarrow and Brown (1993), who found that children in high-risk families who were defined as having features of resilience had significantly higher IQs in comparison to the IQs of children not having features of resilience. Resilience for this particular study was defined as the absence of psychiatric diagnoses.

Other researchers, such as Buckner and colleagues (2003), found that intelligence was predictive of adaptive functioning among youth living in poverty. However, Buckner and colleagues found that intelligence was only predictive when resilience was defined on a continuous scale and not categorically (i.e., resilient, not resilient). Resilience was defined by these researchers as good overall adaptive functioning, absence of significant psychiatric symptoms as measured by self-report, absence of behavior problems as measured by parent report, and overall competence on a behavioral rating scale completed by parents. Researchers have posited from these results that children with good cognitive functioning have the skills necessary to cope successfully when in adverse situations (Masten & Coatsworth, 1998).

Intelligence also has been examined as a contributor to individual differences among maltreated children. Herrenkohl and colleagues' (1994) longitudinal study of resilience among maltreated children suggested that intelligence was a factor that contributed to abused adolescent's successful adaptation, defined as graduation from high school. The successful adolescents with a history of maltreatment had average or above average intelligence. It is important to note that at least one researcher did *not* find strong support for intelligence as a protective factor; Cicchetti and colleagues (1993) found intelligence to make a "marginally significant ( $p < .06$ )" contribution to the prediction of adaptive functioning (p. 641). In a further examination of intelligence as a protective factor, Cicchetti and Rogosch (1997) did not find intelligence to be predictive of adaptive functioning for maltreated children; however, intelligence was predictive of positive adaptation for nonmaltreated children. Similarly to Buckner and colleagues (2003), intelligence was not associated with adaptive functioning when Cicchetti and Rogosch defined resilience on a continuous scale. However, Cicchetti and Rogosch (1997) also examined the relation of intelligence to patterns of functioning across three years of assessment. The different patterns of functioning were (a) low, (b) medium, (c) high, (d) improve, (e) decline, and (f) unstable. They found that the high functioning group demonstrated higher levels of intellectual functioning in comparison to the intellectual functioning exhibited by the other groups. In summary, although intelligence was not found a predictor of adaptive functioning when resilience was defined on a continuum, differences in intellectual functioning were found between the subgroups of children who demonstrated unique patterns of functioning.

Although the bulk of evidence points to the protective influence of intelligence, Luthar (1991) found that intelligence operated as a "vulnerability factor" for adolescents

experiencing a very high level of stress. Stress was operationalized as the number of negative life events experienced in the past year. Specifically, Luthar (1991) found that “at low stress levels, intelligence was positively related to competence for school grades and classroom assertiveness. When stress was high, on the other hand, the intelligent children appeared to lose their advantage and demonstrated competence levels more similar to those of less intelligent children” (p. 611). Due to research suggesting that highly intelligent adolescents were more sensitive to their environment, Luthar hypothesized that brighter children were more sensitive to stress and thus lost their advantage over less intelligent children.

In summary, intelligence has been found to account for individual differences in the functioning of children who have experienced a variety of adverse conditions (Masten et al., 1988; Masten et al., 1990; Masten & Coatsworth, 1998; Masten et al., 1999; Werner & Smith, 1982). Although there is some evidence to support the role of intelligence in accounting for individual differences among children who have experienced maltreatment, the evidence to date has been inconclusive. The discrepancy in support of intelligence as a contributor to individual differences could be due to the way in which resilience was operationally defined (i.e., categorically versus a continuum) or it could be due to age differences (i.e., middle childhood versus adolescence) between the various samples investigated. As stated earlier, a limitation of these studies is that several types of maltreatment were represented in the sample. Differential findings may be possible for the various types of abuse (e.g., sexual versus physical). Another gap in the majority of research designed to examine protective factors among children experiencing adversities other than maltreatment is that few researchers examined intelligence as a protective factor for competence in social functioning, specifically. Often, global measures of competence were

used, such as absence of psychopathology (e.g., Radke-Yarrow & Brown, 1993). More research is needed to explore the role of intelligence in contributing to individual differences in social adjustment among physically abused children. If intelligence is found to be a contributor to individual differences, interventions could be designed to capitalize on a child's level of intellectual functioning as a strength to help compensate for identified weaknesses. If intellectual functioning is low, treatment can be designed to build strategies to cope with this risk factor. Research would then be needed to examine the clinical utility and effectiveness of these interventions.

### *Social Information Processing Mechanisms*

A strong relationship has been found between social information processing (SIP) mechanisms and the social behavior of children (Crick & Dodge, 1994; Dodge & Price, 1994; Lochman & Dodge, 1994). Crick and Dodge (1994) reformulated a model of children's SIP mechanisms that motivate and contribute to how children interact with their peers. The model consists of a series of steps in which children encode internal and external cues, interpret the encoded cues (e.g., making of causal and intent attributions), clarify their goals or intended outcomes of the situation, access or construct responses, evaluate those responses and select a response, and finally, behaviorally enact their chosen solution. According to this model, if children engage in the SIP steps skillfully, they tend to engage in socially competent behavior. In addition, the model is cyclical such that children's behavioral enactment of a chosen response invokes a behavioral response from the peer. Children then begin the steps of the model over again by encoding cues regarding peers' behavioral responses, and so on.

A vast body of research has been generated over the past two decades, and the findings demonstrate that the SIP model has great utility in understanding the social cognitive processes that distinguish socially competent children from those who are less socially skilled and more aggressive. The results of this research are relevant to the current study given the high rates of aggression found among maltreated children (Bolger & Patterson, 2003; Salzinger et al., 1993; 2001). Following a review of the research on the SIP model in the general developmental literature, a discussion of the application of this model to abused children's social behavior is presented.

Researchers have demonstrated that aggressive children have deficits or biases at all steps of the model. For example, Dodge and Tomlin (1987) found that aggressive children encoded fewer cues in comparison to the number of cues encoded by nonaggressive children. In addition, at step two of the model, aggressive children frequently attributed hostile intent to peers in ambiguous situations. Aggressive children at step four of the model have been found to access and generate fewer responses in comparison to the number of responses generated or accessed by their nonaggressive peers (Dodge, Pettit, McClaskey & Brown, 1986; Pettit, Dodge, & Brown, 1988). Aggressive children also have been found to select and engage in aggressive responses more often in comparison to the frequency of aggressive response selected by their peers (Mize & Ladd, 1988).

Aggressive children's biases or deficits in two of the steps have received greater empirical support than other steps and include interpretation of cues, specifically attributions of intent, and response generation. In addition, Crick and Dodge (1994) proposed that these SIP mechanisms have more of an impact on the social behavior of children. Thus, the current research examined whether hostile attributions of intent and response generation predicted

individual differences among abused children. Results of research designed to examine these SIP mechanisms and their potential to account for individual differences in how children interact with their peers are discussed next.

*Attributions of intent.* As stated earlier, aggressive children have been found to attribute hostile intent to peers' behaviors in situations where the intent of the peer is ambiguous (Crick & Dodge, 1996; Quiggle, Garber, Panak, & Dodge, 1992). To illustrate, Orobio de Castro, Veerman, Koops, Bosch, and Monshouwer (2002) conducted a meta-analysis of the research on the relationship between hostile intent attributions to peers and child aggression. In their review of 41 studies consisting of a total of 6,017 participants, a significant relationship between hostile attributions of intent and aggression behavior was found, with a weighted mean effect size of .17. However, effect sizes for the individual studies reviewed ranged widely from -.29 to .65. As can be seen from this meta-analysis, the relationship between hostile attributions of intent about a peer's intentions and aggression appears to be consistent, but can vary in strength across studies.

Given the high rates of aggression found among maltreated children, it is not remarkable that maltreated children hold hostile attributions of intent about peers' intentions (Price & Glad, 2003). To illustrate how attributions of intent typically are measured, Price and Glad's (2003) investigation is described in detail. They investigated the attributions of intent in a sample of 44 children with a substantiated history of maltreatment and 56 comparison children. The average age of both maltreated and nonmaltreated children was 6.5 years of age. Children's attributions for peer intentions were assessed by reading hypothetical situations depicting a problematic social situation in which the intention of the antagonist in the story was ambiguous. Five different relationship figures were represented in the stories,

including the child's mother, the child's father, an unfamiliar teacher, the child's best friend, and an unfamiliar peer. After each story was read, children were asked to explain why the negative outcomes had occurred and whether the other person was being mean, not being mean or whether it was hard to tell. Results revealed significant differences between maltreated and nonmaltreated children's attributions of intent for the various relationship figures depicted in the hypothetical situations. Specifically, maltreated boys generated more hostile attributions of intent towards all five relationship figures in comparison to the number of hostile attributions of intent generated by maltreated girls and nonmaltreated children. Maltreated girls were found to have greater hostile attributions of intent towards their father in comparison to the number of hostile attributions of intent produced by nonmaltreated children. These findings indicate that maltreated boys are likely to have a hostile attributional bias for peer behavior.

Other researchers have examined whether maltreated children's hostile attributions of intent predict their social behavior (Dodge, Bates, & Pettit, 1990; Price & Landsverk, 1998). For example, Dodge and colleagues (1990) found that the relationship between maltreatment and later aggression was predicted by hostile attributions of intent. Dodge, Pettit, Bates, and Valente (1995) further investigated the possible role of hostile attributions of intent in predicting later aggression in a sample of 584 maltreated children. Consistent with expectations, Dodge and colleagues (1995) found that physically abused children demonstrated higher levels of conduct problems in comparison to the level of problems demonstrated nonmaltreated children. In addition, the abused children demonstrated greater hostile attributions of intent. It was also found that children's hostile attributions of intent were significantly related to and predicted teachers' report of conduct problems for the

sample as a whole. Dodge and colleagues used an alternative and less common method to identify the children in their sample as physically abused. As a result, the results may not generalize as well to children identified by child protection agencies. The current research involved children with a history of physical abuse substantiated by a child protection agency.

Other researchers such as Price and Landsverk (1998) have found hostile attributions to be predictive of abused children's social competence but not to be predictive of abused children's behavior problems. Price and Landsverk assessed whether intent attributions predicted social behavior for 124 abused children who ranged from 5 to 10 years of age and had been placed in foster care. As stated earlier, the researchers found that social competence, but not behavioral problems, was predicted by maltreated children's hostile attributions of intent. Price and Landsverk posited that the lack of relationship between intent attributions and behavioral problems could be due to the fact that children's behavior problems were measured by broadband scales of behavior. It is possible that hostile attributions of intent would be related to maltreated children's aggressive behavior if measures of aggression, specifically, were used.

Past research provides some evidence that attributions of intent for peer behavior might be quite important in terms of social adjustment. However, the degree to which attributions predict individual differences among abused children had not been assessed prior to the current research. If attributions differentiate abused children who are functioning well from those who struggle with social interactions, a priority of treatment might be to assist children in attributing appropriate intentions regarding their peers' behavior. One purpose of the present study was to explore whether attributions of intent were predictive of individual differences in the social behavior of abused children.

*Response generation/problem-solving.* Not only have aggressive children been characterized by hostile attributions of intent, they have also been found to be poor social problem-solvers. That is, they generate fewer solutions and select more often aggressive solutions to social problems (Lochman & Dodge, 1994; Quiggle et al., 1992). To illustrate how problem-solving is often measured, Trickett's (1993) study will be described in some detail. She examined abused children's social problem solving skills and parent's childrearing beliefs and practices in a sample of 58 families. Half of these families had a history of substantiated abuse and the children ranged in age from 4 to 11 years of age. Children's problem solving skills were assessed using hypothetical problem situations; children were asked to generate as many solutions as possible to the problem. Solutions were then coded as either high quality solutions (i.e., prosocial responses) or low quality (i.e., solutions involving use of force, aggression, ignoring, tricking or lying). Abused children were found to generate significantly more low-quality solutions in comparison to the number of low quality solutions generated by nonabused children. No significant group differences were found in terms of the number of high quality solutions.

Poor problem solving skills of abused children likely interfere with their social adjustment. The SIP mechanism of response generation or social problem solving skills has been found to predict abused children's social competence and behavior (Price & Landsverk, 1998). Price and Landsverk measured children's ability to generate responses to hypothetical social problems by asking children what they would say or do if the problem situation had happened to them. As with hostile intent attributions, social problem solving was found to be predictive of abused children's social competence as reported by parents 6 to 8 months later.

Unlike intent attributions, social problem solving was found to be predictive of children's behavioral problems as reported by parents.

Many researchers have assumed that social problem solving skills have a protective function for children (Anthony, 1987; Masten et al., 1990; Werner, 1995). Specifically, investigators who have studied children's successful adaptation despite the experience of adversity or risk factors (e.g., parental psychosis) have claimed that strong problem solving skills are a prerequisite for successful coping (Anthony, 1987; Werner & Smith, 1982). Some studies have, in fact, found support for this claim. To illustrate, Vance, Fernandes, and Biber (1998) identified good problem solving skills, as reported by teachers, to predict positive school progress in a sample of highly aggressive and emotional disturbed youth. Vance and colleagues did not directly assess children's problem solving skills; instead, they relied on teachers' reports of the children's skills. In the current study, abused children's problem solving skills were directly assessed.

Social problem-solving skills as a protective factor for maltreated children have not been researched. Based on the previous results of investigators who found social problem solving skills to be an important predictor of social behavior among maltreated and aggressive children, the contribution of social problem solving skills to individual differences in the ability of abused children to interact with their peers was explored in this study. The factors discussed thus far as contributing to individual differences are at the individual child level. Other factors that might predict individual differences can be found in the social context of childrearing. Parental warmth, an important element of the childrearing context, was a focus of the proposed research.

### *Parental Warmth*

Factors that operate external to the individual child, including the surrounding childrearing context, can be highly influential on children's social development. One primary facet of the environmental context is parenting practices and the parent/child relationship. Researchers have found that parenting styles and behaviors within the social context of childrearing are important contributors to children's adjustment (Booth, Rose-Krasnor, McKinnon & Rubin, 1994; Darling & Steinberg, 1993; Dishion 1990; Pettit, Bates, & Dodge, 1997). Specifically, researchers have documented a strong link between parental affective style and children's behavior with peers (Gottman & Fainsilber-Katz, 1989; Kahen, Katz, & Gottman, 1994; Putallaz, 1987; Roopnarine & Adams, 1987). Furthermore, the relationship between parental affective style and the social behavior of children has been found in families characterized by the use of harsh discipline (Parker & Herrera, 1996; Pettit et al., 1997; Pettit, Dodge, & Brown, 1988). Harsh parenting can include various forms of parenting behavior ranging from spanking to physical abuse. As reviewed earlier, harsh parenting in the form of physical abuse has been found to be associated with poor outcomes in social adjustment of children (Alessandri, 1991; Dodge et al., 1990; Haskett & Kistner, 1991).

One aspect of parenting style associated with children's social behavior is that of parental warmth (Darling & Steinberg, 1993). Parental warmth has been defined in various ways in the research. To illustrate, Zhou and colleagues (2002) defined parental warmth as parenting behavior that was supportive, affectionate, and sensitive to a child's need as well as the expression of approval and positive emotion towards the child (Zhou et al., 2002). For the purpose of the current research, parental warmth was defined as parent's positive regard,

support or responsiveness to the child's emotional and physical needs, emotional and physical involvement with the child, and lively animation and energy during parent-child interactions.

Because parenting behaviors have been found to be important predictors of children's social adjustment, the protective functions of various parenting characteristics have been examined for children exposed to risk (Belsky, 1984; Egeland et al., 1988; Masten et al., 1988). For example, Masten and colleagues (1988) examined parenting quality as a protective factor for 205 children exposed to stressful life events. Parenting quality was assessed by an interview and global rating scales completed by the interviewers and included quality of parent-child relationship; parental expectations; consistency of family rules; parental encouragement of the child's school achievement, independence, and ability to get along with others; parental perceptiveness of children; and parents' overall positiveness toward the child. Children's competence was defined by grades in school, classroom disruptiveness as measured by teacher report, and social engagement as measured by a sociometric measure. Results demonstrated that parenting quality was a significant predictor of all three measures of competence. Children who were more competent in terms of high achievement, little classroom disruptiveness, and high engagement experienced a higher quality of parenting in comparison to children who were not as competent. A limitation of this research is that parenting qualities were assessed by an interview and not directly observed. Although interviews were conducted in the family's home, it was not clear from the method description if the child was present. If the child was not present, interviewers' ratings must have been based solely on the parents' responses to the questions, which can be

problematic. The current research involved an observation of the parent and child interacting in a laboratory setting as the method for measuring parenting qualities.

Observed parental warmth and support has been identified as a protective factor for families exposed to disadvantaged socioeconomic status (Pianta et al., 1990). Pianta and colleagues' (1990) sample ( $N = 133$ ) consisted of mothers drawn from a larger database who were considered at risk for caretaking problems due to disadvantaged economic status. The researchers observed mothers' parenting behavior in a parent-child interaction involving teaching tasks when the child was 42 months of age. Parenting behavior was rated in terms of support, hostility, confidence, quality of instruction, respect for autonomy, and structure and limit setting. Pianta and colleagues found that highly stressed mothers of competent boys were more emotionally responsive and supportive in comparison to the behavior exhibited by mothers of less competent boys. Highly stressed mothers of less competent boys demonstrated greater lack of respect for autonomy, poorer quality of instruction, and lack of structure and limit setting in comparison to the behaviors demonstrated by mother of competent boys. As can be seen from these results, parental affective style in terms of being emotionally responsive and supportive was predictive of individual differences in competence among children at risk due to exposure to maternal stress.

Many abusive parents are characterized by low parental warmth. One might assume, therefore, that parental warmth could not be a protective factor for abused children; however, there is evidence that variations in level of warmth are evident even among abusive parents. Based on the sample of abused parents drawn from the same data set on which the current sample was drawn, Haskett and colleagues (2004) demonstrated that a large number of abusive parents showed high levels of observed positive regard and sensitivity toward their

children. Thus, it is possible that parental warmth may contribute to individual differences among abusive children. Indeed, parental warmth as a contributor to individual differences within samples of maltreated children has been examined in a few studies.

Drawing from the same larger database utilized by Pianta and colleagues (1990), Farber and Egeland (1987) identified 44 maltreating mothers and their children. The authors defined child competence as success on several developmental tasks from 12 to 42 months of age. Parenting behavior was assessed at each of the time periods. At the 12 month assessment, mothers of securely attached maltreated infants were found to be more sensitive to the infants' cues in comparison to the level of sensitivity demonstrated by mothers of anxiously attached maltreated infants. Mothers of attached maltreated infants at 18 months of age scored lower on hostility in comparison to the level of hostility exhibited by mothers of anxiously attached maltreated infants. Mothers' emotional support measured at the 24 month assessment was not found to be related to the maltreated toddlers' competency at this age. Similar to the results of Pianta et al., (1990), Farber and Egeland found that at 42 months of age, mothers of competent maltreated children were rated as providing better quality instruction, giving more emotional support, and showing greater respect for autonomy in comparison to the parenting behavior demonstrated by mothers of incompetent children.

Parental affect also has been examined as a protective factor for abused adolescents. Perkins and Jones (1994) conducted a study to investigate parental support as a protective factor for risk behaviors (i.e., alcohol use, tobacco use, drug use, sexual activity, antisocial behavior, attempted suicide, and purging) in adolescence. Their sample consisted of 3, 281 adolescents who reported being abused by an adult. Parental affect was measured by adolescent report and was referred to as "parental support"; the indicator of parental support

also included adolescents' perceptions of the help provided by their parents and overall family happiness. Parental support was associated with decreased likelihood of engaging in the risky behaviors of alcohol use, tobacco use, suicide, and purging. Parental support was not found to be a protective factor for antisocial behavior. A limitation of this study is that the history of being abused and parental support were measured by the adolescents' report. In addition, the measure of parental support included help and support, which participants could have interpreted as financial support. Thus, results are limited in their generalizability to other abused children, and can not address the protective function of parental warmth, specifically.

Overall it appears from the investigations of resilience among children at risk that parental affect can have a protective function for those children (Pettit et al., 1997; Pianta et al., 1990). In addition, although some support is provided for parental warmth as a contributor to individual differences among maltreated children, specifically (Farber & Egeland, 1987), extant research is limited and characterized by methodological weaknesses. Thus, one purpose of the present study was to explore the potential role of parental warmth in prediction of individual differences in social adjustment of physically abused children. Currently, interventions for abusive parents focus largely on reducing the frequency and severity of harsh discipline. If parental warmth is found to be associated with more positive outcomes for some abused children, and lack of warmth is associated with negative outcomes, perhaps interventions could be tailored to improve the positive aspects of parenting as well as reduce the negative aspects of child rearing common among abusive parents. Clinical research would then be needed to examine the efficacy of these interventions.

## CHAPTER THREE

### Statement of the Problem

The negative consequences of physical abuse for children's social adjustment have been well documented (Cicchetti & Toth, 2000; Margolin & Gordis, 2000). Abused children, as a group, are characterized by high rates of aggression (Alessandri, 1991), internalizing and externalizing behavior problems (Cicchetti & Toth, 1995; 2000), social withdrawal (Salzinger et al., 2001), and low social status (Bolger et al., 1998; Salzinger et al., 1993). Investigations historically have been designed to focus on the examination of how abused children differ from their nonabused peers. Although those studies have been instrumental in increasing the understanding of typical sequelae of child abuse, past research has not informed us about the differences that might exist within groups of abused children.

A useful approach to examining social adjustment within groups of children is the person-oriented approach. The person-oriented approach compensates for limitations of the variable-oriented approach by examining subgroups of children who are similar in their ability to interact with peers (Buckner et al., 2003). By studying subgroups of individuals who are similar in functioning, a greater depth of information is provided regarding individuals (Magnusson, 1998). Utilizing the person-oriented approach to examine diversity in functioning may help tailor interventions and policies in regards to certain subgroups of larger populations, such as abusive families, and thus potentially result in better outcomes for those families. Subsequent research would be needed to examine whether these tailored interventions are more efficacious and effective compared to practices that are not tailored to specific subgroups of abused children.

In addition to increased understanding of diversity in social adjustment among abused children, research designed to identify factors that might contribute to individual differences among abused children is also needed. Investigations of children who adapt well despite the experience of being maltreated provide support for the existence of individual differences and have the potential to identify factors that contribute to those differences. However, past investigations of protective factors for abuse are characterized by samples of children who have experienced various forms of abuse. As stated earlier, differential outcomes, and perhaps different protective factors, may be possible for the various types of abuse. Furthermore, prior studies were designed to investigate a limited number and range of protective factors. The majority of protective factors that have been studied were characteristics of the individual child; contextual factors for the developing child, such as parenting style, have been relatively ignored in past studies.

Thus, the purpose of the current study was to examine individual differences in social adjustment within a sample of physically abused children. Based on recommendations of Magnusson (1998), cluster analysis was used to investigate diversity in adjustment of abused children. Further, several factors hypothesized to predict individual differences in abused children's social adjustment were examined, including child characteristics as well as parenting behavior.

### *Research Questions and Hypotheses*

As previously stated, individual differences in social adjustment of maltreated children was examined using cluster analysis. Clustering was based on children's observed social behavior on the playground and teacher's report of social behavior as measured by the Social Behavior Scale (SBS). Cluster analysis is an exploratory procedure; thus, specific

hypotheses as to the number of clusters identified and descriptions of the clusters could not be made apriori. However, several hypotheses were made in regards to factors expected to predict individual differences (i.e., cluster membership) in social behavior:

1. It was hypothesized that children's scores on a standardized measure of intellectual functioning would be a significant predictor of cluster membership.
2. It was hypothesized that children's attributions of hostile peer intent would be a significant predictor of cluster membership.
3. It was hypothesized that children's ability to generate a range of solutions to peer social problems would be a significant predictor of cluster membership.
4. It was hypothesized that level of parental warmth would be a significant predictor of cluster membership.

## CHAPTER FOUR

### Method

Existing data from a larger investigation designed to examine the impact of parenting and child social cognition on children's social adjustment were used in the current research. Criteria for inclusion in the larger study included (a) a report of abuse to the social services registry within the prior 12 months, (b) confirmation that the child/parent dyad was living in the same home, (c) an absence of a history of sexual abuse, and (d) the child was between the ages of 4 – 11 years. For the proposed study, the criterion of having data available for cluster analysis (i.e., teacher report of social behavior and playground observation) was included in addition to the above criteria. As a result, 19 participants from the larger data base were excluded due to missing data on one or both of the measures required for inclusion.

#### *Participants*

Participants included 98 children (50 boys; 48 girls) and their parents, who were predominantly mothers (97%). Children ranged in age from 4 to 11 years ( $M = 7.45$  years,  $SD = 1.65$ ). Twenty-three percent of the children were Caucasian, 72% were African American, and the remaining were Hispanic or mixed race. Forty percent of the parents were married and the majority (53%) were employed. The families came from a variety of socio-economic backgrounds, with 7% at the highest levels of the Hollingshead index of SES (1975) and 50% at the lowest two levels. The mean parent age was 33 years ( $SD = 7.30$ ; range = 22-56).

All children had a substantiated history of physical abuse or neglect involving inappropriate discipline ( $n = 14$ ). To substantiate physical abuse in the state in which these participants resided, social workers were required to document serious injuries (e.g., broken

bones, severe burns) resulting from the use of “cruel or grossly inappropriate” procedures or devices by the caretaker. Less serious injuries (e.g., bruises, lacerations) typically resulted in substantiation of “neglect involving improper discipline.” Because those cases of neglect were similar in typology to physical abuse substantiated in other states, the research criteria for this study included substantiated physical abuse and neglect involving improper discipline.

### *Instrumentation*

#### *Measures of Adjustment to be Used for Clustering*

*Teacher report of social behavior.* The Social Behavior Scale (SBS; Appendix A) is a 39-item teacher-report questionnaire developed by the researchers for the larger study, and was used in the current study to assess children’s social behavior. Teachers were asked to rate children on a 5-point scale (Never True to Almost Always True) to indicate the degree to which each item was descriptive of the child. Teachers completed the SBS six months after the initial data collection in the clinic setting. Teachers were required to have known the child for at least 6 weeks before completing the measure. Items form seven subscales, including: (a) Prosocial (5 questions, e.g., helpful to peers); (b) Relational Aggression (7 questions, e.g., tries to get others to dislike a peer); (c) Overt Aggression (7 questions, e.g., kicks or hits others); (d) Asocial (6 questions, e.g., solitary child); (e) Excluded (7 questions, e.g., not chosen as a playmate.); (f) Depressed (3 questions, e.g., looks sad); and (g) Victimized (3 questions, e.g., get hit or bullied). All subscales except the Depressed subscale were used in the current research.

The Prosocial, Relational Aggression, Overt Aggression, and Depressed subscales are composite scales drawn from items on two assessment tools, the Children’s Social Behavior Scale-Teacher Form (CSBS-T; Crick, 1996) and the Preschool Social Behavior Scale Teacher

Form (PSBS-T; Crick, Casas, & Mosher, 1997). These scales were used in development of the SBS due to their strong psychometric properties. Crick (1996) found that the short-term stability of the CSBS-T ranged from .80 to .93. Long-term stability (6 months) was lower, ranging from .56 to .78. The scales showed moderate to strong correlations with coincident peer assessments of social behavior and were predictive of future teacher and peer ratings of social acceptance and peer rejection. Crick and colleagues (1997) found that correlations between teacher ratings on the PSBS-T and ratings by peers were moderate, ranging between .42 and .31.

The Asocial Behavior, Excluded, and Victimized subscales of the SBS were taken without modification from the Child Behavior Scale (CBS; Ladd & Profilet, 1996). The developers found that the subscale scores on the CBS were stable across two samples and over six months. Further, correlations between teacher ratings on the CBS and observed classroom behaviors were low to moderate, ranging between .17 and .30. Correlations between teacher ratings on the CBS and peer perceived aggression were low to moderate, ranging from .08 to .42.

Factor analysis of the SBS, based on 180 participants in the larger sample from which the current study was drawn, supported the 7-factor structure. Internal consistency of subscales was high ( $\alpha$  range = .78 to .93; Haskett, 2001a). Children's scores on the Overt Aggression, Relational Aggression, and Excluded subscales were related in a prior study to their parents' harsh parenting style and disciplinary practices. Overt Aggression and Prosocial subscale scores were related in expected ways to playground observations of children's peer relations (Haskett & Willoughby, in press). That study was based on the larger data base on which the current sample was drawn. There have been no independent examinations of the psychometric properties of the SBS.

*Playground observation.* To measure children's social behavior in a naturalistic setting, each participant child was observed on the school playground during a regularly scheduled recess

period. Children were observed for 30 minutes of unstructured play and behavior was coded by trained observers. During the continuous live observation, a 15-second interval recording system (Appendix B) was employed in which the child was observed for ten seconds and then the occurrence of any target behaviors that occurred during that interval was recorded during the next five seconds. In each interval a maximum of one notation was made (i.e., present or absent) for each target behavior.

Trained undergraduate observers targeted the occurrence or absence of four behaviors for recording. The first of these was Engagement, defined as physical and verbal behavior directed to another peer or group of peers that had the purpose of engaging the peer in interaction or continuing the interaction initiated by a peer. Parameters to score this category included proximity of the child to a peer or group of peers and active behaviors such as talking, eye contact and/or touching. Examples of these behaviors included involvement in group games, asking for or delivering help, general comments and laughing or smiling with peers. The second category of behavior was Negative Behavior. This category included negative verbal expressions or physical gestures to peers not involving physical contact. Examples of Negative Behavior included teasing, name calling, profanity, tale bearing, verbal or physical threats and commands. Rough Play was the third category selected for coding. These behaviors included physical contact with peers of a negative nature but without the strength or intensity to be classified as aggressive. Behaviors included holding onto children's clothes, elbowing or shouldering and roughhousing as part of a games such as touch football. Aggression was the final category selected for coding. Aggression was defined as negative contact with a peer or object that included the potential for harm or damage. Behaviors encompassed by this category included hitting, scratching and throwing objects at children, taking another child's toy and damage to property.

Specifically, the percent of intervals in which each behavior occurred was calculated. Inter-rater reliability of coding was determined for 25% of the observations using a second observer. Intraclass correlations (ICC 2,1) using an absolute agreement definition were .80 for Rough Play, .86 for Negative Behavior, .88 for Aggression, and .95 for Engagement. The conducted research utilized the Negative Behavior, Rough Play, and Aggression categories to create a composite score by summing the scores in these three categories. A composite score was used to increase the variability of this measure due to the low rates of each of the three negative behaviors. A “Negative Rough Play” ratio was then derived by dividing the number of intervals in which participants were engaged in negative behavior, rough play, or aggression (i.e., the composite score described above) by the total amount of social behavior (the composite score plus rate of engagement). The Negative Rough Play ratio was used in the current research because it places the composite score in the context of all the children’s social behavior. Utilizing a ratio provided a sense of how salient the child’s negative social behavior might have been to his or her peers. Support for the validity of Negative Rough Play ratio is provided by Haskett and Willoughby (in press), who found that children’s social behavior as measured by the Negative Rough Play Ratio was predicted, as expected, by parenting style. Significant relationships also have been found between children’s scores on Negative Rough Play Ratio and teacher ratings of overt aggression ( $r = .29, p < .05$ ) and prosocial behavior ( $r = -.19, p < .05$ ) on the Social Behavior Scale (Haskett, Ahern, Sabourin Ward, & Allaire, in press).

#### *Measures of Predictors of Cluster Membership*

*Measure of intellectual functioning.* The Kaufman Brief Intelligence Test (K-BIT; Kaufman & Kaufman, 1990) was used to measure children’s intelligence. The K-BIT is a

short measure of verbal and nonverbal abilities for children and adults ages 4-90. The K-BIT consists of two subscales: Verbal (composed of two subtests, Expressive Vocabulary and Definition) and Nonverbal (composed of the Matrices subtest). Expressive Vocabulary items require the naming of pictured objects, and Definition items require the identification of words corresponding to a verbal description and a partial spelling of words. The Matrices subtest is comprised of multiple-choice items that require the recognition of relationships among visual stimuli. A Composite IQ score is generated from the two subscales and has a mean of 100 and a standard deviation of 15.

The K-BIT has proven to be a valid estimate of intelligence in a wide range of children and adolescents. Kaufman and Kaufman (1990) found the split half reliabilities of the Verbal, Nonverbal, and Composite scores to be .91, .85, and .93, respectively. Chin and colleagues (2001) conducted a study with 60 children who ranged from 6 to 7 years of age. Correlations between the Verbal, Nonverbal, and Composite scale of the K-BIT and WISC-III were .60, .48, and .63 respectively. The K-BIT has been used as a measure of intelligence with families characterized by abuse (Chaffin et al., 2004).

#### *Measure of Social Information Processing Mechanisms*

*Social Problem Solving Measure (SPSM)*. The SPSM (Appendix C) was used as a measure of children's problem-solving ability. It was developed by researchers of the Fast Track Project (Conduct Problems Prevention Group, 1991a). The SPSM was developed to measure children's ability to generate solutions to hypothetical peer social problems. The SPSM includes eight vignettes, presented verbally and accompanied by pictures that depict a peer conflict. For example, children are read the following as one of the eight vignettes.

“Pretend this is you and that this is Kathy/Danny. Kathy/Danny is the same age as you, \_\_\_\_\_ years old. Kathy/Danny has been on the swing for a long, long time and doesn’t seem to want to share the swing with you. You would really like to play on the swing.

What could you say or do so that you could play on the swing?”

Gender and race of the children in the vignettes are matched to the child participant. Children were asked to generate solutions to the problem situation. If a child repeated an answer or could not come up with any additional answers, the interviewer prompted the child (maximum of three prompts) to help the child generate more solutions. Prompts included “What else could you do?,” “What else could you say,” or “What are some different things you could say or do?” Once the child generated six different solutions or could not generate any new solutions with three prompts, the next vignette was presented.

Each solution was then coded by trained undergraduate research assistants as one of 13 types. The types included the following: (a) Ask/Borrow/Trade (e.g., Can I have the marker?); (b) Entry Conversation (e.g., What is your name?); (c) Please (e.g., when the child uses the word please); (d) Passive/Interacted/Playing with Another Object (e.g., ignore them, run away), (e) Problem Identification (e.g., tell them “you took my turn”), (f) Authority Aid/Tattle (e.g., “I’m going to get the teacher”); (g) Cry; (h) Trick/Finagle (e.g., get the child to go after another toy and then get the toy they wanted); (i) Command (e.g., “Give me a turn”); (j) Force/Grab/Assertiveness; (k) Aggression/ Damage Property (e.g., break the toy); (l) Verbal Aggressive/Negative Gestures/Treats (e.g., sticking out their tongue at the other child); (m) Relational Aggression (e.g., “I will not be your friend anymore”).

For the original SPSM, inter-item reliability of coding was assessed by the test developers using a large nonclinical sample of 387 children from four communities in the

United States utilizing six response categories (Corrigan, 2003). Inter-item reliability coefficients for the six categories ranged from .71 (Aggressive responses) to .40 (Irrelevant responses). Aggressive scales were positively correlated to problem behavior scores based on teacher report of child adjustment, which lends support for construct validity.

For the current study, the total number of solution types generated represented the child's brainstorming ability (i.e., response generation), and scores could thus range from 0 to 13. Inter-rater reliability was assessed in the larger research project for approximately 30% of the participants using a second coder. The Pearson coefficient estimating reliability for the number of solutions generated was .92.

*Home Interview with Children (HIWC)*. The HIWC (Appendix D) was used as a measure of a child's view of peer intentions in social situations in which peers' intentions are ambiguous. The HIWC was developed by the Fast Track Project (Conduct Problems Prevention Research Group, 1991b) to assess children's attributional style for peer intent. The measure consisted of eight vignettes describing social problem situations between peers. Four problems were related to exclusion by peers and four related to a physical conflict. Each vignette was designed to depict a peer interaction in which child participants were asked to pretend they were the protagonist. For example, one item stated, "Pretend you see some kids playing on the playground. You would really like to play with them, so you go over and ask one of them if you can play. They say no." Children were asked to (a) state why the antagonist peer in the vignette did what he or she did and (b) report what they would do about the peer's behavior. Gender and race of peers in the vignettes were matched to the child participant.

To administer the HIWC, each of the eight vignettes was read aloud and test administration was audiotaped for later coding. Each of the child's responses to the attribution

question (i.e., why the child in the vignette did what they did) were coded by trained undergraduate research staff as either Hostile (e.g., “he was being mean”), Non-Hostile (e.g., “it was an accident”), or Don’t Know (e.g., when participant was unable to generate a reason for the peer’s behavior). The number of hostile responses was then summed, thus, for purposes of the proposed research, the total number of hostile attributions was used as the measure of attributional style (possible range 0 to 8).

Internal consistency of the HIWC was assessed by the test developers using Cronbach’s alpha; reliability for items assessing attributions was .80 (Conduct Problems Prevention Research Group, 1991b). Adequate validity has been established in numerous studies (e.g., Dodge et al., 1990) and use of hypothetical problem vignettes is the standard method for evaluating intent attributions. For the current study, inter-rater reliability of the percentage of hostile attributions was assessed using the Pearson Product-Moment correlation for a sub-sample of 35 participants in the larger research project, and was found to be .87 for the full measure, .88 for the Exclusion problems, and .76 for the Physical problems.

#### *Measure of Parental Warmth*

*Observation of parent-child interactions (PCI).* Each parent-child dyad participated in a 30-minute interaction session based on procedures developed by Mash and Johnson (1982). The parent-child interaction session consisted of three 10-minute segments. The first 10 minute segment was a “free play” session, in which parents were asked to play with their child in a room with a standard set of age-appropriate play materials (e.g., small blocks, markers and paper). The second segment was a structured “instructions” task in which parents were told to ask their children to clean up the play materials, draw a picture of a person, and then sit quietly while the parent read a magazine. In the final segment,

“teaching/frustration,” dyads were involved in a timed teaching task in which parents were instructed to help their children quickly complete two age-appropriate puzzles. Parents were told to help their children without touching the puzzle pieces. A visible and audible timer was set for 10 minutes to increase time intensity. All three situations were videotaped using a hidden camera. Parents and children were aware that their interactions were being recorded. Only the first two segments will be used in the current research because the demand characteristics of the third segment resulted in limited variability in one of the parenting behaviors (i.e., Sensitivity) was of interest in this study (Haskett, 2001b).

Uninformed coders viewed the videotaped interactions, and rated parents on several dimensions using the Qualitative Ratings of Parent-Child Interactions (Appendix E; Cox, 1997; Paley, Cox, & Kanoy, 2001). Parenting behavior was coded by graduate research assistants trained to 80% reliability with the primary coder. The six parenting dimensions coded were Positive Regard for the Child, Negative Regard for the Child, Sensitivity, Disengaged, Intrusiveness, and Flatness of Affect. The current research used four dimensions of parenting to reflect a warm parenting style identified by factor analysis in a previous study (Kreig, 2003). The Positive Regard category represents the parent’s positive feelings for the child that are expressed through both verbal and physical behaviors such as smiles, hugs, and praise for the child. The Sensitivity category reflects the parent’s support or responsiveness to the child’s emotional and physical needs, as demonstrated by such behaviors as adapting to the child’s mood and scaffolding of tasks to allow the child task mastery. The Detachment category represents the parent’s emotional and physical involvement with the child, and is reflected in behaviors such as not responding to the child’s cues or vocalizations. The Flat

Affect category represents the parent's animation and energy during the interaction, and is characterized by blank, impassive facial expressions, and monotone vocal expressions.

For each 10-minute segment, the coder assigned a rating for each parenting category. Ratings for each category range from one to seven with a rating of "one" given for behavior that is not at all characteristic of the category, and a rating of "seven" given for behavior that is highly characteristic of the category. The rating process involved two steps. The first step in assigning ratings involved the coder viewing the 10-minute segment in its entirety and forming an initial impression of the quantity and quality of each of the categories to be rated. Coders took notes on significant behaviors that characterized the four categories. After viewing the segment once, the coder scored each of the four categories as either "characteristic" (a 5, 6, or 7 rating) or "uncharacteristic" (a 1, 2, or 3 rating). The second step involved the coder viewing the segment a second time and making finer distinctions of the rating. Coders were encouraged to stop and rewind the tape at any point for additional viewing of relevant behaviors and clarification of scoring. This qualitative scoring method allowed the coder to take into consideration both the number of behaviors in each category as well as the intensity of the behavior.

For the purposes of the current research, a score for Warm Parenting Style was computed by summing the ratings for Positive Regard, Sensitivity, Detachment (reverse scored), and Flat Affect (reverse scored) for the "free-play" and "instruction" segments. The Warm Parenting Style was therefore comprised of eight raw scores (i.e., a rating score for each of the four parenting categories for both the first and the second segments of the parent-child interaction session), and each score ranged from 1-7. Thus, Warm Parenting Style score

could range from a low of 8 to a high of 56, with higher scores representing a warmer, more sensitive parenting approach.

Psychometric properties of the coding system appear to be strong. Many studies have shown strong validity of the coding system. For example, investigators who have used the coding system with somewhat younger children report that scores on the Sensitivity, Positive Regard, and Intrusiveness dimensions predict child attachment and maternal depression (Campbell, Brownell, Hungerford, Spieker, Mohan, & Blessing, 2004). Scores also relate to attachment classification (NICHD Early Child Care Research Network, 2006).

On the basis of the larger data set on which the current sample was drawn, inter-rater reliability was assessed and judged to be adequate; kappa coefficients for the six categories ranged from .76 to .92, with a mean of .85 for the categories to be included in the current research. In support of validity of the parent-child observations and coding system, scores on the parenting dimensions were significantly related in the expected directions to measures of parental emotional health and parent-to-child CTS scores (Haskett et al., 2004). Furthermore, cluster analysis of abusive parents' scores on the parenting dimension revealed clinically meaningful subgroups of abusive parents (Haskett et al., 2004).

#### *Procedure*

To recruit abusive parents, social workers gave eligible parents a packet containing a description of the project and contact information for project staff. In addition, the primary investigator of the larger study conducted a periodic review of the child protective services registry to identify eligible children. Recruitment materials were mailed directly to parents whose children were deemed eligible.

Contact between project staff and parents was initiated by interested parents who called the project office. During the phone call, project staff conducted a psychosocial interview to determine whether families met the inclusion and exclusion criteria. To encourage participation, transportation to the data collection site and childcare were available. In addition, parents were invited to return for feedback about their family evaluation, and each parent in the family who participated received \$75 and was entered in a monthly drawing for a \$75 certificate to a department store. As a safeguard for parents who might not have participated due to fear of potential misuse of their data, a Certificate of Confidentiality was obtained from the federal Department of Health and Human Services in an effort to protect parents from use of research records in court proceedings.

After completion of the psychosocial interview, parents were scheduled for a 3 – 4 hour data collection session at a university family clinic. During the clinic assessment, informed consent was obtained from parents, including permission to conduct a school-based observation of their children's social adjustment and for their children's teachers to complete the Social Behavioral Scale (SBS). Measures for the proposed research were administered by trained undergraduate assistants who were supervised by doctoral level graduate students. Parents completed an intelligence assessment and self-report measures about parenting and children, knowledge of problem solving, and general happiness. Children's intelligence, problem solving skills, social skills, and attributions were evaluated. In addition, a 30-minute videotape of the parent and child interacting in three different situations was made. Research staff members were not aware of the family's involvement with child protective services or their substantiated abuse history. All measures were completed in private, comfortable interview rooms. If parents had difficulty reading, test items were read aloud to them.

Approximately six months after the clinic assessment, each child was observed during unstructured play on the school playground. The observers were trained to code social behavior that reflected various aspects of the child's social adjustment. Also at this time the child's teacher was asked to complete a behavior checklist to describe the child's adjustment. All clinic and school-based procedures were approved by the university institutional review board.

## CHAPTER FIVE

### Results

#### *Descriptive Statistics*

Means and standard deviations of the variables assessing children's social behavior, intelligence, attributional style for peer intent, problem-solving ability, and their parents' warm parenting behavior were computed for the whole sample and those data are presented in Table 1. Sample sizes varied somewhat for each measure due to missing data for the four validation measures (i.e., intelligence, attributional style for peer intent, problem-solving ability, and warm parenting behavior). To aid in interpretation of the SBS scores, it is noted that the range for all the subscales on the SBS was 1 to 5. Raw scores on the Prosocial subscale of the SBS, with a range of 2 to 5 ( $M = 3.45$ ,  $SD = .77$ ), revealed that most children, according to their teacher, were often engaging in positive social behavior within the school setting. In terms of negative social behavior, most children were reported to be engaging rarely in the socially maladjusted behaviors of relational aggression ( $M = 1.75$ ,  $SD = .69$ ), overt aggression ( $M = 1.78$ ,  $SD = .78$ ), and asocial behavior ( $M = 1.91$ ,  $SD = .80$ ). In addition, teachers described the children in the sample as seldom being excluded ( $M = 1.99$ ,  $SD = .92$ ) or victimized ( $M = 1.74$ ,  $SD = .76$ ) by their peers. Observations on the playground also revealed that the proportion of negative behavior in which children were engaged, in relation to all of their social behavior, was low ( $M = .10$ ,  $SD = .09$ ).

Based on the Kaufman Brief Intelligence Test (K-BIT), the mean intelligence score for the full sample was 96.98 ( $SD = 10.85$ ), with a range of 73 to 128. The Composite IQ score on the K-BIT has a mean of 100 and a standard deviation of 15. Children's attributional

Table 1

*Mean Raw Scores and Standard Deviations of Measures for Full Sample (N = 98)*

Variable	<i>M</i>	<i>SD</i>	Range
Clustering Variables			
Children's Social Adjustment SBS <sup>a</sup>			
Prosocial Behavior	3.45	.77	2.0 - 5.0
Relational Aggression	1.75	.69	1.0 - 4.0
Overt Aggression	1.78	.78	1.0 - 4.85
Asocial Behavior	1.91	.80	1.0 - 4.66
Excluded	1.99	.92	1.0 - 5.0
Victimized	1.74	.76	1.0 - 4.33
Negative Rough Play Ratio <sup>a</sup>	.10	.09	.00 - .46
Validation Variables			
KBIT Composite IQ score <sup>b</sup>	96.98	10.85	73.0 - 128.0
Hostile Attributions <sup>c</sup>	4.70	2.06	0.0 - 8.0
Total Number of Types of Solutions <sup>d</sup>	7.14	1.90	3.0 - 11.0
Warm Parenting Style <sup>e</sup>	27.85	3.45	16.0 - 34.0

<sup>a</sup>*n* = 98<sup>b</sup>*n* = 85<sup>c</sup>*n* = 93<sup>d</sup>*n* = 95<sup>e</sup>*n* = 82

style for peer intent, as measured by the number of hostile attributions generated on the HIWC, ranged from 0 to 8 ( $M = 4.70$ ,  $SD = 2.06$ ). The lowest and highest numbers of hostile attributions possible were 0 and 8 respectively. Children's problem-solving ability, as measured by number of different types of solutions generated, ranged from 3 to 11 types of solutions ( $M = 7.14$ ,  $SD = 1.90$ ). The lowest and highest number of different types of solutions possible were 0 and 13 respectively, thus children in the sample demonstrated a range of problem-solving abilities. Finally, Warm Parenting Style raw scores ranged from 16 to 34, with an average score of 27.85 ( $SD = 3.45$ ). The lowest and highest scores possible were 8 and 56 respectively.

### *Clustering Strategy*

To examine individual differences in social adjustment within a sample of abused children, the statistical procedure of cluster analysis was used. Cluster analyses were conducted on seven variables derived from observed social behavior on the playground (i.e., the Negative Rough Play ratio) and teacher report of social behavior (i.e., six subscales of the SBS). The first step was to determine the clustering method and associated proximity index. Given the exploratory nature of this study, a hierarchical agglomerative, versus a partitioning, clustering procedure was adopted. Ward's minimum-variance method was used; however, models were re-estimated using an average-linkage method to ensure that clusters were robust to estimation method. Squared Euclidian distance served as a proximity index. Because scaling of variables can influence a cluster analysis, scores used in the analysis were standardized so that all variables were on a similar scale. Thus, the scores on the six subscales of the SBS and the Negative Rough Play ratio were transformed into  $z$  scores with a mean of 0 and standard deviation of 1. The next step was to establish a set of criteria to

facilitate cluster extraction. A variety of complementary indices were employed, including the cubic clustering criterion (CCC), the pseudo  $F$  and  $t$  statistics (PSF, PST), the proportion of variance accounted for by a given number of clusters ( $R^2$ ), as well as visual inspection of a cluster dendrogram and scree plot. In the visual inspection of the dendrogram and scree plot generated by the Ward's minimum-variance method, support was seen for extracting solutions of three or ten clusters (see Appendix F). Following procedures outlined in the SAS STAT User's guide (2000), the actual values of CCC, PST, and PSF statistics were also considered. In general, higher values for CCC, PSF, and  $R^2$  indicate better solutions. A ten-cluster solution ( $R^2 = .664$ ) accounted for a greater proportion of the variance than a three-cluster solution ( $R^2 = .377$ ). For the CCC, values greater than 2 or 3 indicate good clusters and values less than zero indicate non-optimal solutions. The CCC values found in Table 2 implied that none of the solutions were optimal. Relatively large values of the PSF indicate better solutions. Inspection of the PSF values indicated extracting two (PSF = 36.3) or three clusters (PSF = 28.8). Large "breaks" in the value of the PST between successive cluster solutions is also indicative of a preferable solution. For interpretation purposes, one examines the PST column until the first value markedly larger than the previous value is found, then move back up the column by one cluster. Thus, possible viable solutions included two clusters (PST = 12.8), four clusters (PST = 6.5), or seven clusters (PST = 6.2). Finally, each solution had to result in clusters with a sufficient number of individuals to permit between-subgroup statistical comparisons on validation measures.

Using all of those criteria, support was found to extract a three-cluster solution for the following reasons. The visual inspection of the dendrogram and scree plot supported a three-

Table 2

*Results of Criteria for Cluster Extraction*

Number of Clusters	R <sup>2</sup>	CCC	PSF	PST
Ward's minimum-variance method				
15	.74	-1.5	17.2	5.6
14	.72	-1.8	17.4	7.2
13	.71	-2.0	17.6	3.5
12	.69	-2.2	18.0	7.3
11	.68	-2.2	18.6	5.3
10	.66	-2.3	19.3	3.8
9	.63	-3.1	19.3	6.3
8	.60	-3.7	19.7	8.4
7	.57	-4.4	20.1	6.2
6	.53	-4.4	20.9	12.1
5	.48	-5.0	22.0	12.4
4	.43	-4.7	23.9	6.5
<b>3</b>	<b>.37</b>	<b>-3.4</b>	<b>28.8</b>	<b>11.1</b>
2	.27	-2.3	36.3	12.8
1	.00	0.00	.	36.3

(table continues)

Table 2 Continued

Number of Clusters	R <sup>2</sup>	CCC	PSF	PST
Average-linkage method				
15	.66	-7.2	11.8	13.4
14	.64	-7.9	11.6	6.2
13	.62	-8.2	11.7	5.2
12	.61	-7.8	12.4	2.7
11	.59	-7.7	12.9	4.1
10	.58	-7.3	13.9	2.4
9	.57	-6.6	15.3	.
8	.50	-9.4	13.2	15.1
7	.37	-15	8.9	25.2
6	.33	-13	9.4	5.9
5	.32	-13	11.1	1.7
4	.30	-10	13.7	2.7
<b>3</b>	<b>.27</b>	<b>-7.5</b>	<b>17.5</b>	<b>4.4</b>
2	.06	-8.9	6.4	27.3
1	.00	0.00	.	6.4

*Note.* The bolded numbers are criteria for a three cluster solution for clustering solutions. CCC = cubic clustering criterion; PSF = the pseudo F statistic; PST = the pseudo *t* statistic

or ten-cluster solution. However, extracting 10 clusters would have resulted in clusters with extremely small sample sizes, thus limiting the clinical utility and interpretability of the findings. The remaining indicators of  $R^2$ , CCC, PSF and PST values were not particularly strong for a three-cluster solution but did not suggest a viable alternative solution. Finally, when clusters were re-estimated using the average linkage method, consistent results were obtained. Using the average-linkage method, the visual inspection of the dendrogram and scree plot also supported a three- or ten-cluster solution. The proportion of variance accounted for by a ten-cluster solution ( $R^2 = .58$ ) was higher than a three-cluster solution ( $R^2 = .27$ ). Again the CCC values indicated a non-optimal solution. However, the PSF values indicated extracting either nine (PSF = 15.3) or three clusters (PSF = 17.5) and the PST values supported an extraction of either eight (PST = 15.1) or three clusters (PST = 4.4). See Table 2 for the full results.

### *Description*

Clusters were comprised of 33, 44, and 21 members, and differed significantly on teacher report of all dimensions of social behavior (all  $ps < .0001$ ) but did not differ significantly on the single measure of observed behavior. Cluster 3 ( $n = 21$ ), labeled “Social Difficulties,” was comprised of children who received the highest mean ratings for social maladjustment and the lowest for prosocial behavior. Social maladjustment as measured by the SBS included overt aggression, relational aggression, asocial behavior, exclusion, and victimization. Cluster 2 ( $n = 44$ ), labeled “Socially Well Adjusted,” was comprised of children who received the highest mean teacher ratings for prosocial behavior and the lowest for socially maladjusted behavior. Children comprising Cluster 1 ( $n = 33$ ), labeled “At Risk,”

were moderately well adjusted in social behavior; their scores were between those of the other clusters. See Table 3 for means and standard deviations of the clustering variables for each cluster and tests for significant differences between clusters on those variables.

There were few cluster differences on socio-demographic factors. No significant differences were found for child age or race; family size or SES; parent age, race, education, employment, or marital status. The only cluster difference was on child gender,  $X^2(2, 98) = 6.05, p = .05$ ) with significantly more males in Cluster 1 (At Risk) than in Cluster 3 (Social Difficulties). See Table 4 for the means and standard deviations of the demographic variables for each cluster and tests for significant differences between clusters on the demographic variables.

#### *Analysis of Predictors of Individual Differences*

To examine hypotheses one through four, a series of multinomial logistic regression analyses were conducted, with cluster membership as the dependent variable. Please see Appendix H for the descriptive statistics of the predictor variables by cluster. Prior to the regression analyses, a series of Pearson product-moment correlations were computed to test for multicollinearity among the predictor variables of children's intelligence, problem-solving ability, attribution style for peer intent, and their parents' warm parenting behavior. One significant relationship was found between children's attribution style for peer intent and their parents' warm parenting behavior,  $r = -.237, p = .037$ . Thus, children were less likely to have a hostile attribution response style for peer intent when their parents engaged in more warm parenting behavior. Due to the small percentage of overlap (approximately 4%) between attribution style for peer intent and parental warmth, multicollinearity did not appear to be a problem (see Table 5 for the full results).

Table 3

*Means and Standard Deviations of Clustering Variables*

Variable	Cluster 1 “At Risk” ( <i>n</i> = 33)		Cluster 2 “Socially Well Adjusted” ( <i>n</i> =44)		Cluster 3 “Social Difficulties” ( <i>n</i> =21)		<i>F</i> value
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Social Behavior Scale:							
Prosocial Behavior	3.03 <sub>a</sub>	(.48)	4.09 <sub>b</sub>	(.53)	2.76 <sub>a</sub>	(.46)	66.45***
Relational Aggression	1.95 <sub>a</sub>	(.49)	1.32 <sub>b</sub>	(.42)	2.32 <sub>a</sub>	(.83)	26.42***
Overt Aggression	2.20 <sub>a</sub>	(.61)	1.18 <sub>b</sub>	(.26)	2.37 <sub>a</sub>	(.86)	46.49***
Asocial Behavior	1.70 <sub>a</sub>	(.59)	1.74 <sub>a</sub>	(.65)	2.61 <sub>b</sub>	(.99)	12.61***
Excluded	1.78 <sub>a</sub>	(.50)	1.55 <sub>a</sub>	(.62)	3.23 <sub>b</sub>	(.86)	50.78***
Victimized	1.81 <sub>a</sub>	(.63)	1.27 <sub>b</sub>	(.39)	2.62 <sub>c</sub>	(.70)	41.87***
Playground Observation:							
Negative Rough Play Ratio	.12	(.11)	.10	(.08)	.11	(.08)	.51

*Note.* Means in the same row that do not share subscripts differ at  $p < .05$  using the Scheffe's test.

\*\*\* $p < .001$

Table 4

*Means and Standard Deviations of Demographic Variables for Each of the Clusters*

Variable	At Risk ( <i>n</i> = 33)	Socially Well Adjusted ( <i>n</i> =44)	Social Difficulties ( <i>n</i> =21)	test statistic ( <i>F</i> or $\chi^2$ value)
Child Characteristics:				
Mean Child Age (months)	89.36 (19.95)	86.73 (19.19)	95.67 (20.11)	1.47ns
	(7.45 years)	(7.22 years)	(7.97 years)	
Child Gender				6.05*
Male	22 (67%)	21 (48%)	7 (33%)	
Female	11 (33%)	23 (52%)	14 (67%)	
Child Race				1.38ns
Caucasian	6 (18%)	13 (29%)	7 (33%)	
African-American	27 (82%)	31 (71%)	14 (67%)	
				(table continues)

Table 4 Continued

Variable	At Risk ( <i>n</i> = 33)	Socially Well Adjusted ( <i>n</i> =44)	Social Difficulties ( <i>n</i> =21)	test statistic ( <i>F</i> or $\chi^2$ value)
Parent Characteristics:				
Mean Parent Age	33.79 (9.08)	32.75 (6.36)	32.39 (6.13)	.31ns
Parent Gender				1.76ns
Male	2 (6%)	1 (2%)	0 (0%)	
Female	31 (94%)	43 (98%)	21 (100%)	
Parent Race				6.16ns
Caucasian	6 (18%)	15 (34%)	6 (29%)	
African-American	27 (82%)	29 (66%)	14 (66%)	
Other	-	-	1 (5%)	
(table continues)				

Table 4 Continued

Variable	At Risk ( <i>n</i> = 33)	Socially Well Adjusted ( <i>n</i> =44)	Social Difficulties ( <i>n</i> =21)	test statistic ( <i>F</i> or $\chi^2$ value)
Parental Education				10.57ns
Less than HS	7 (22%)	8 (18%)	3 (15%)	
Completed HS	12 (36%)	13 (30%)	8 (38%)	
Some College	11 (33%)	12 (27%)	6 (29%)	
Completed College	3 (9%)	11 (25%)	4 (18%)	
Parental Employment				1.17ns
Yes	20 (61%)	22 (50%)	10 (48%)	
No	13 (39%)	22 (50%)	11 (52%)	
Marital Status				5.38ns
Married/Living	9 (27%)	23 (52%)	7 (33%)	
Single/Divorced	24 (73%)	21 (48%)	14 (67%)	
				(table continues)

Table 4 Continued

Variable	At Risk ( <i>n</i> = 33)	Socially Well Adjusted ( <i>n</i> =44)	Social Difficulties ( <i>n</i> =21)	test statistic ( <i>F</i> or $\chi^2$ value)
Family Characteristics:				
Mean Family Size	4 (1.26)	4 (1.17)	4 (1.14)	.06ns
SES				9.77ns
I	-	6 (14%)	1 (5%)	
II	12 (37%)	9 (20%)	8 (38%)	
III	6 (18%)	6 (14%)	1 (5%)	
IV	5 (15%)	10 (22%)	4 (19%)	
V	10 (30%)	13 (30%)	7 (33%)	

*Note.* “ns” indicates that p-value was greater than .15.

\**p* = .05

Table 5

*Pairwise Pearson Product-Moment Correlations Among the Validation Variables (N = 98)*

Variables	1	2	3	4
1. Intelligence	-	-.01	.08	.10
2. Attribution style for peer intent		-	.18	-.24*
3. Problem-solving ability			-	-.01
4. Warm Parenting Style				-

\* $p < .05$

For all of the regression analyses, child gender was entered as a covariate due to the statistically significant differences between the clusters on child gender. Within each regression analysis, five sets of statistics were computed. First, a goodness of fit test for the model was computed with a Pearson chi-square. A nonsignificant chi-square indicated that the model adequately described the data. Second, the overall fit of the model was tested with the likelihood ratio (*LR*) statistic, which tested whether the final model fit the data better than a null model or one in which the parameter coefficients were equal to zero. The chi-square statistic provided in this test measured the difference between the -2 log-likelihood of the test and the null models. For interpretation purposes, a significance level less than .05 for the chi-square tests indicated that the model out-performed the null model. Third, *LR* tests were computed for each of the predictor variables to test for the contributions of each predictor variable in the model. As with the *LR* test for the final model, a significance level less than .05 for the chi-square test indicated that the individual predictor variable contributed to the model. Next, the percentage of individuals correctly classified by the model was computed. A “good” model should correctly identify a high percentage of participants in the clusters. Fourth, pseudo  $R^2$  statistics were computed to provide an estimate of how much of the variance was accounted for by the model. Large pseudo  $R^2$  statistics indicated that more of the variance in the dependent variable of cluster membership was explained from the model, and pseudo  $R^2$  statistics could range from 0 to 1. Finally, the effects of each predictor variable were tested by computing a parameter estimates table (Beta, Standard Error, Wald Statistic, degrees of freedom, significance level, and Exp B).

For hypothesis one, intellectual functioning (i.e., K-BIT Composite IQ score) was entered as the predictor (i.e., independent variable) and gender was entered as a covariate. The goodness of fit test,  $\chi^2(100, N = 85) = 101.02, p = .45$  was nonsignificant, indicating that the model adequately described the data. However, the test for the overall fit of the model was not significant according to the likelihood ratio (*LR*) statistic,  $\chi^2(4, N = 85) = 6.64, p = .15$ , which suggested that the model did not outperform the null model. Intellectual functioning was not a significant predictor of cluster membership according to the *LR* test,  $\chi^2(2, N = 85) = .238, p = .88$ , thus, hypothesis one was not supported. According to the pseudo  $R^2$  statistic, intelligence accounted for 7% of the variance in cluster membership. The percentage of individuals correctly classified by the model was computed; the model successfully classified 51% of the cases: 69% for Cluster 1 (At Risk), 62% for Cluster 2 (Socially Well Adjusted), and 0% for Cluster 3 (Social Difficulties).

For hypotheses two and three, the percentage of hostile attributions generated on the HIWC and total number of types of solutions generated on the CPSM were entered (as a block) as the independent variables of the regression equation and gender was entered as a covariate. The goodness of fit test,  $\chi^2(104, N = 91) = 107.17, p = .39$ , was nonsignificant, indicating that the model adequately described the data. The test for the overall fit of the model was not significant according to the *LR*,  $\chi^2(6, N = 91) = 12.57, p = .05$ , which suggested that the model outperformed the null model. Children's attribution style for peer intent,  $\chi^2(2, N = 91) = 6.33, p = .04$ , was a significant predictor of cluster membership, however, problem-solving ability,  $\chi^2(2, N = 91) = .09, p = .95$ , was not a significant predictor of cluster membership. Thus, hypothesis two was supported but hypothesis three was not supported. Because the dependent variable consisted of three levels, two sets of

contrasts were performed. In the first contrast, each additional hostile attribution generated increased the odds of belonging to Cluster 1 by 20.9% ( $OR = 1.209$ ) in comparison to Cluster 3. In the second contrast, each additional hostile attribution generated decreased the odds of belonging to Cluster 2 by 12.5% ( $OR = .875$ ) in comparison to Cluster 3. According to the pseudo  $R^2$  statistic, attribution style for peer intent and problem solving ability together accounted for 13% of the variance in cluster membership. The model successfully classified 50% of the cases: 57% for Cluster 1 (At Risk), 68% for Cluster 2 (Socially Well Adjusted), and 5% for Cluster 3 (Social Difficulties).

The Warm Parenting Style score of the PCI was entered as the predictor variable to test the fourth hypothesis. The goodness of fit test,  $\chi^2(48, N = 82) = 35.76, p = .90$  was nonsignificant indicating that the model adequately described the data. However, the test for the overall fit of the model was not significant according to the  $LR$  statistic,  $\chi^2(4, N = 82) = 7.75, p = .10$ , which suggested that the model did not outperform the null model. Parental warmth as measured by the Warm Parenting Style score was not found to be a significant predictor of cluster membership as evidenced by the nonsignificant  $LR$  test,  $\chi^2(2, N = 82) = 3.96, p = .14$ . According to the pseudo  $R^2$  statistic, parental warmth accounted for 9% of the variance in cluster membership. Thus, support for hypothesis four was not found. The model successfully classified 51% of the individuals: 39% for Cluster 1 (At Risk), 76% for Cluster 2 (Socially Well Adjusted), and 18% for Cluster 3 (Social Difficulties).

## CHAPTER SIX

### Discussion

Potential negative consequences of physical abuse for children's social adjustment have been well documented and include high rates of aggression, internalizing and externalizing behavior problems, social withdrawal, and low peer social status (Cicchetti & Toth, 2000; Margolin & Gordis, 2000). Investigations historically have been designed to identify the ways in which abused children differ from their nonabused peers. Although those studies have been instrumental in increasing the understanding of typical sequelae of child abuse, past research has not informed us about differences that might exist within groups of abused children. Few investigators have purposefully examined individual differences in social adjustment within samples of abused children, despite variability evident on close inspection of data available in past studies. Support for individual differences also can be seen in the percentage of maltreated children who have adapted successfully despite being maltreated. Identification of individual differences may assist in illustrating the unique treatment needs of subgroups of abused children. Currently in the field of maltreatment, interventions have been designed without accounting for individual differences. The evidence to support whether these interventions are effective has been limited (National Call for Action, 2004). Clinicians and researchers in the field of maltreatment have encouraged researchers to identify factors associated with individual differences and to develop evidence-based practices to strengthen identified protective factors (Institute of Medicine, 2005).

To begin to fill gaps in existing knowledge, the current study was designed to examine individual differences in social adjustment among physically abused children using

cluster analysis, a strategy based on a person-oriented approach to understanding individual differences. One strength of the current study was the examination of several aspects of children's social adjustment, using a multi-method assessment. Children were rated by teachers not only on aggression and prosocial behavior but also on exclusion, victimization, and asocial behavior. Children also were observed at their school playground. Thus, an attempt was made to capture a picture of the children's social behavior that included aggression as well as other indicators of social adjustment. In addition, a range of variables were examined as potential predictors of cluster differences. Those variables included intellectual functioning, social information processing mechanisms of attributions of intent and response generation, and parental warmth. Measures of predictors were collected six months prior to the measures of social behavior. Thus, the current study represented a stringent test of these predictors. The following chapter includes a discussion of the results of this study, limitations and directions for future research, and implications of this research. A summary of the results including additional post hoc analyses conduct to help explain the current results are presented next.

### *Summary of Findings*

On first review of scores on the SBS and playground observations for the full sample, it might be assumed that this group of abused children was fairly well adjusted in terms of social competence. That is, scores on the teacher measure of social behavior generally were low, and the sample did not appear to be highly aggressive on the playground. Results of cluster analysis, however, supported this investigator's assertion that individual differences were present within the sample. Three subgroups of children were extracted; each cluster was unique in terms of the pattern of social competence that described the cluster. The Socially

Well-Adjusted subgroup of maltreated children was rated by teachers as engaging in appropriate social behavior often and rarely engaging in the socially maladjusted behaviors of overt aggression, relational aggression, and asocial behavior. In addition, these children were rated as rarely being excluded or victimized by their peers. In comparison, the children in the Social Difficulties cluster were rated as seldom engaging in prosocial behaviors and engaging in some of the maladjusted social behaviors. In addition, these children were rated as “sometimes” being excluded and victimized by their peers. It is important to note that children within in the Social Difficulties cluster were less similar to each other in comparison to the similarity found between the children in the other two clusters. Similarly, children in the At Risk cluster were identified as seldom engaging in prosocial behaviors, but unlike children in the Social Difficulties cluster, children in the At Risk cluster were identified as rarely engaging in socially maladjusted behaviors, including exclusion and victimization by peers.

In an examination of demographic characteristics of clusters, few significant differences were found. The only significant difference was that there were more males in the At Risk cluster than in the Social Difficulties cluster. In terms of the 14 children with a history of abuse involving inappropriate discipline, eight of these children were members of the At Risk cluster with the remaining six children belonging either to other two clusters evenly. Children in all three clusters were on average about 7 years old and their parents were on average 32 to 33 years of age. Although statistically significant differences in parent education were not found between the clusters, the Social Difficulties cluster was comprised of the smallest percentage of parents out of the sample who had completed high school or college or some college. The At Risk cluster was comprised of children with

the highest number of single parents, followed by the Social Difficulties cluster. In summary, children in Socially Well Adjusted cluster appeared to be a bit more “advantaged” on some of the demographic factors such as parental education and marital status in comparison to children in other clusters. It is important to note, however, that statistically significant differences were not found between clusters on these demographic variables.

*Post hoc analyses.* Because there are no norms for the SBS or playground observation data, it is difficult to determine the degree to which each cluster was actually well adjusted or having difficulties in social adjustment. As a way to place scores of this sample into a meaningful context, the sample of abused children was compared to a sample of “comparison” children ( $n = 77$ ) who were identified as *not* having a substantiated history of abuse. The comparison sample was recruited via the larger study from which the current data set was drawn. Comparison children were closely matched to the abused children on parent and child age, gender, race, educational attainment, family size, marital status, and socioeconomic status. There was a statistically significant group difference in family size ( $p < .05$ ), but the difference between 3.66 family members for the comparison children and 4.17 for the abusive children was probably not clinically meaningful. In addition, a statistically significant group difference was found in parental employment,  $\chi^2 (1, N = 175) = 5.26, p = .05$ . Significantly more parents (47%) of the abused children were unemployed in comparison to the number of unemployed parents (30%) of the nonabused children. Consequently, family size and parental employment were entered as covariates in the post hoc analyses in an attempt to control for those differences between samples.

Appendices G and H show the full results of post hoc analyses. When the overall sample of abused children was compared to the comparison children on teacher reports of

social behavior and observed social behavior, a significant difference was found on only one subscale, Prosocial behavior. The comparison children were rated by their teachers as engaging in more prosocial behavior than the abused children. However, when each cluster of abused children was compared to the comparison sample, many interesting findings emerged. Specifically, the comparison children were rated as engaging in more prosocial behavior than children in the At Risk and Social Difficulties clusters, but not the Socially Well Adjusted cluster. In terms of socially maladjusted behaviors, children in the Social Difficulties cluster were rated as engaging in significantly more relational aggression, overt aggression, and asocial behavior in comparison to ratings of the nonabused children. In addition, children in the Social Difficulties cluster were rated as being significantly more excluded and victimized by their peers in comparison to the ratings of nonabused children. One other significant difference between the comparison children and children in the At-Risk cluster was found in overt aggression, with At-Risk children engaging in higher rates.

Interesting differences were found between the comparison children and the abused children in the Socially Well Adjusted cluster, with comparison children actually being *less* well adjusted. Children in the Socially Well-Adjusted cluster were rated as engaging in significantly more prosocial behavior in comparison to the ratings of the nonabused children. In addition, comparison children were rated as engaging in significantly more overt aggression and relational aggression in comparison to the ratings of Socially Well Adjusted abused children. Furthermore, comparison children were rated as being significantly more victimized by their peers in comparison to ratings of abused children in the Socially Well Adjusted cluster.

These post hoc analyses lend further support for the examination of individual differences within samples of abused children and support the assertion that the clusters of abused children in this study differed in meaningful ways. As can be seen, the multiple differences between the subgroups of abused children and the comparison children were masked when global group differences were computed. In some previous examinations of global group differences in children's social behavior, researchers such as Cicchetti and colleagues (1992) did not find differences between abused and nonabused children's social behaviors. Given the findings of the current research, one may speculate that there was wide variability in social behavior within those samples of abused children and because that variability was not explored, distinctions between abused and nonabused children were not found. A discussion of the patterns of behavior found within the subgroups of abused children is presented next.

### *Individual Differences*

*Socially well adjusted cluster.* The pattern of findings in the cluster analysis of the current study was consistent with research designed to examine resilience among maltreated children. Children in the Socially Well Adjusted cluster could perhaps be viewed as demonstrating a "resilient pattern" of adjustment. It would have been advantageous to compare scores of children in this cluster with scores on normed measures. However, the comparison of this subgroup of children to nonabused children does provide some degree of confirmation of the assertion that this subgroup was comprised of well adjusted children. As was seen, the abused children in the Socially Well Adjusted cluster were rated as engaging in more prosocial behavior and less overt aggression and relational aggression in comparison to the ratings of the nonabused children. Researchers examining resilience among maltreated

children identified a small percentage of abused children functioning competently (Bolger & Patterson, 2003; Cicchetti & Rogosch, 1997; Farber & Egeland, 1987). However, the percentage of children identified as having a resilient pattern in those studies was smaller (range 1.8% to 28%) than the percentage of children identified in the Socially Well Adjusted cluster (45%) in the current study.

These differences in percentage of maltreated children identified as functioning competently in past research compared to the percentage of children in the Socially Well Adjusted cluster may be due to a number of reasons. First, researchers examining resilience often included in their sample children who experienced different types of maltreatment such as physical abuse and sexual abuse. Experiencing multiple forms of abuse may have a greater impact in comparison to the impact of one form of abuse on children's social adjustment (Talbot, 2001). Secondly, researchers in the field of resilience often defined resilience as competent functioning across multiple domains, such as academic achievement and social functioning (e.g., Bolger & Patterson, 2003). In the current study, individual differences in functioning were examined only in the domain of social adjustment. Thus, one may speculate that the percentage of abused children identified in the current study would be smaller if the cluster analysis had been based on additional domains of adjustment such as academic achievement in addition to social behavior. Finally, previous researchers often examined resilience among maltreated children longitudinally. When resilience was examined longitudinally, the percentage of children identified as having a resilient pattern was lower than the percentage of children who demonstrated resilience at one point in time (Cicchetti, et al., 1997; Herrenkohl et al., 1994). The current study only assessed maltreated children's social functioning at one time period. It is possible that the number of children in the Socially

Well Adjusted cluster would decrease if those children were followed over time.

Examination of the social functioning of children in all clusters longitudinally is an important direction for future research.

*Social difficulties cluster.* Finding a subgroup of abused children who were characterized by social difficulties is consistent with the research of previous investigators who have found a relationship between the experience of being abused and difficulties in social adjustment (Cicchetti & Toth, 2000; Salzinger et al., 1993; 2001). What appeared to be the biggest difference between the subgroups of abused children was in ratings of their prosocial behavior. That is, children in the At-Risk cluster and the Socially Well Adjusted cluster were rated as engaging often in prosocial behavior whereas the children in the Social Difficulties cluster were rated as rarely engaging in prosocial behavior. Past research on abused children has found that abused children often have difficulty engaging in prosocial behavior (Salzinger et al., 1993). For example, Salzinger and colleagues (2001) found that abused children engaged in less prosocial behavior in comparison to the ratings of the nonabused children. This finding of low rates of prosocial behavior has direct clinical implications for intervention design and research. Treatments should perhaps be designed to focus on the teaching of these prosocial behaviors, such as sharing. These interventions would then need to be examined as to whether they are effective and efficacious. For example, Fantuzzo, Manz, Atkins, and Meyers (2005) have developed an intervention program, entitled Resilient Peer Treatment (RPT), to enhance the social competence of maltreated preschoolers. The main focus of the treatment is the pairing of a maltreated child with a “resilient” peer who displays high levels of positive interactive play even though he or she comes from a similar high-risk environment. Fantuzzo and Stevenson (1997) have found

this treatment program to be effective in clinic and natural classroom settings (Fantuzzo et al., 2005). They also found an increase in maltreated children's positive interactive play, fewer behavioral problems, and higher teacher ratings of their social skills in comparison to the ratings of control groups.

Although children in the Social Difficulties cluster were experiencing more difficulty than abused children in the other clusters and the comparison children, it does not appear to be to the extent that has been found in previous examinations of the social adjustment of maltreated children. For example, many studies have found clinically elevated scores on internalizing and externalizing problems for abused children (Kaufman & Cicchetti, 1989; Manly, Kim, Rogosch, & Cicchetti, 2001). A possible explanation for differences in level of behavioral difficulties across studies could be that all of the children in this study were in the custody of their parents, so chronically abused children or children who had experienced extreme violence probably were not included. More severe and chronic abuse may have a greater negative impact or influence on children's social behavior than less severe or one-time incidents of abuse. For example, Manly and colleagues (2001) found that chronic maltreatment was associated with more maladaptive outcomes in comparison to the associations found between experiencing less severe physical abuse or neglect and maladaptive behaviors.

*At-risk cluster.* The final cluster identified in the current study was comprised of children identified as At-Risk. As stated earlier, these children were similar to the children in the Social Difficulties cluster in that they were rated as seldom engaging in prosocial behavior; unlike the children in the Social Difficulties cluster, however, they were rated as rarely engaging in the socially maladjusted behaviors. Thus, there appeared to be a subgroup

of abused children who engaged in few negative social behaviors, yet engaged in few positive social behaviors as well. In addition, their teachers rated them as rarely being excluded or victimized by their peers. Thus, one might describe these children as being withdrawn in terms of social behavior.

The abused children in the At-Risk cluster appeared to be demonstrating a pattern of social behavior similar to that seen in “neglected” children found in the research designed to examine children’s social status within a peer group. Socially neglected children are those children who are neither rated highly liked nor disliked by their peers. Researchers have found that these children tend to be characterized as withdrawn and are less socially active than popular, average, or peer-rejected children (Bergin, 1986; Rubin & Mills, 1988). In addition, Franz and Gross (2001) found socially neglected children to be rated by their teachers as engaging in few positive social interactions with their peers. Furthermore, Newcomb, Bukowski, and Pattee (1993) found in a meta-analysis of the sociometric research a profile consistently marked by less sociability and aggression for children of neglected status. In the post hoc analyses, abused children in the At-Risk cluster were rated as engaging in more overt aggression and less prosocial behavior in comparison to the ratings of the nonabused children. Thus, these abused children appeared to be engaging in behaviors typically found in profiles of children with a social status of neglected.

Researchers that have examined abused children’s social standing in peer groups have found that physically abused children have lower peer status in comparison to the status of nonabused children (Bolger & Patterson, 2001; Bolger et al., 1998; Haskett & Kistner, 1991; Salzinger et al., 1993). However, a larger percentage of abused children are generally found to have the social status of “rejected” rather than the status of “neglected.” For example,

Salzinger and colleagues (1993) found 39% of abused children to be categorized as rejected versus 8% of the abused children categorized as neglected. In the current sample, 33% of the abused children were identified as a member of the At-Risk cluster. Additional research would be needed to determine whether the children in the At-Risk cluster were demonstrating a pattern of social behavior empirically consistent with a social status of neglected and if they were demonstrating any internalizing behaviors (e.g., low self-esteem or social anxiety) often seen in children with the social status of neglected. This type of research would help identify further the unique treatment needs of the abused children found in the At-Risk cluster.

It was interesting that a larger proportion of boys were in the At Risk cluster than in the Social Difficulties cluster. Close examination of the differences between the children in the At-Risk and Social Difficulties clusters provides some insight into this finding. Statistically significant differences were *not* found between these two clusters for teacher reports of overt aggression, relational aggression, and prosocial behavior or for observations of negative behavior on the playground. Thus, the clusters did not differ in aggressive or prosocial behavior; however, they did differ significantly in terms of their asocial behavior and the degree to which they were excluded and victimized by their peers. It seems as if relatively high levels of aggression and low rates of prosocial behavior, combined with social exclusion and victimization (i.e., characteristics of the Social Difficulties cluster), might be less common among abused males than relatively high aggression and low prosocial behavior without peer exclusion and victimization (i.e., characteristics of the At Risk cluster).

An issue to be considered in the interpretation of the larger proportion of boys in the At Risk cluster than in the Social Difficulties cluster is that overtly aggressive girls are more

likely than aggressive boys to be victimized (Kochenderfer-Ladd, 2003). Further, girls experienced more peer rejection than boys when they were physically aggressive (Underwood, 2003). Perhaps engaging in aggressive behavior is more detrimental (in terms of victimization and exclusion by peers) to girls' peer relations than it is for boys' peer relations. That is, perhaps the association between engaging in aggressive behavior and experiencing peer victimization and exclusion is stronger for girls than boys. This association could clarify why fewer boys in the Social Difficulties cluster were rated as being more victimized and excluded from their peers in comparison to the number of boys found in the At-Risk cluster who were not rated as experiencing as much victimization and exclusion. This assertion could perhaps be partially supported by Perry, Willard, and Perry's (1990) research, which found boys to care significantly less than girls about peer rejection as a consequence for direct physical and verbal aggression. Further research examining this possible explanation for the gender differences found between clusters is needed. For example, research examining abused children's sociometric status and social behavior would be needed to investigate whether abused girls who are aggressive are more likely to be victimized and excluded by their peers in comparison to the victimization and exclusion rates of abused boys who are aggressive.

In summary, three subgroups of abused children were extracted on the basis of cluster analysis, and the subgroupings appeared to have some degree of clinical relevance. Post-hoc analyses with the comparison children further supported the assertion that the clusters of abused children differed in meaningful ways. In an examination of the extracted clusters, there appeared to be possible unique treatment needs among them, such as deficits in prosocial behaviors for children in the Social Difficulties cluster. An important direction for

future research is to determine the degree to which these three subgroups can be replicated in other samples of abused children. Pending such replication, these findings should be considered promising but tentative. A review and discussion of the findings regarding the individual hypothesized results are presented next.

#### *Factors Accounting for Individual Differences*

A number of factors were posited to contribute to individual differences in social adjustment among abused children. Some of these factors were specific to the individual and included intellectual functioning and the social information processing skills of attributions of intent and problem-solving skills. In addition, a factor within the parenting context, specifically parental warmth, was posited to contribute to individual differences among abused children. All of these individual and contextual factors have been found to be important in predicting developmental outcomes for children. Furthermore, intellectual functioning and parental warmth have been found to function as protective factors for abused children (Cicchetti et al., 1993; Farber & Egeland, 1987). In the present study, however, intelligence, problem-solving ability, and parental warmth did not predict cluster membership. However, hostile attributions of intent was found to contribute significantly to cluster membership.

*Social information processing mechanisms.* The social information processing mechanisms of attributions of intent and solution generation have been found in previous research to be related to children's social behavior (Crick & Dodge, 1994; Quiggle et al., 1992). However, little research has been conducted to explore the role of these processing operations as predictors of individual differences in abused children's social behavior and peer relationships. In the current study, hostile attributions of intent for peer responses' was

found to be predictive of cluster membership. This finding fills a gap in existing literature. Limited research has been conducted to examine the degree to which hostile attributions account for individual differences in maltreated children's behavior. For example, researchers examining the resilient functioning of maltreated children have not examined whether non-hostile attributions of intent function as a protective factor for maltreated children. In the current study, increases in hostile attributions across hypothetical vignettes decreased the odds of belonging to the Socially Well Adjusted cluster by 12.5% in comparison to the Social Difficulties cluster. The children in the Socially Well Adjusted subgroup were found to be demonstrating what appeared to be a resilient pattern of functioning. Based on these results, researchers may want to examine whether reasonable attributions of intent function as a protective factor or whether having a strong propensity to attribute hostile intent to peers is a particularly strong risk factor for abused children.

According to Grayson (2006), in order to draw firm conclusions about the significance of an independent variable such as hostile attributions of intent, results of the logistic regression analyses (logit coefficient) should be significant but there also should be significant correlations between the variables. Thus, a series of post hoc correlational analyses were conducted to examine the relation between abused children's social behavior and attributions of intent. Those analyses revealed no significant relations between abused children's attributions and their subsequent behavior on the playground or between attributions and teachers' reports of social behavior six months later (see Appendix I).

The results of the current study indicate a significant logit for hostile attributions of intent, however, significant relations were not found between measures of social behavior and hostile attributions of intent. There are several explanations for these seemingly

inconsistent results. The first of these is that logistic coefficients reflect linear and nonlinear relationships, whereas correlation coefficients reflect only linear relationships. Second, Pearson product moment correlations are based on the assumption that data are normally distributed; normally distributed data for the dependent variable is not an assumption of multinomial logistic regression. In the current study, tests of skewness indicated that hostile attributions of intent were normally distributed; however, several subscales of the Social Behavior Scale were not. Third, a significant logit means there is a relation between the independent variable and the dependent variable for selected groups, but not necessarily overall. Thus in the current study, it is possible that hostile attributions of intent were significantly related to the social behavior of one cluster of abused children yet not for the entire sample of abused children. In conclusion, attributions of hostile intent significantly predicted cluster membership, as hypothesized; however, there would be greater confidence in this finding if the correlational analyses also had been significant. Future research will be necessary to examine both the predictive ability of hostile attributions and its relationship to the social behavior of abused children in order to draw firm conclusions about attributions of intent.

A second social information processing operation examined as a predictor of cluster membership was problem solving skills. Maltreated children have been found in previous research to be poor problem-solvers (Smith & Walden, 1999; Trickett, 1993) and problem-solving skills have been found to be predictive of maltreated children's social behavior in previous research (Price & Landsverk, 1998). The results of the multinomial regression analyses indicated that problem-solving ability was not a significant predictor of abused children's cluster membership. Furthermore, contrary to previous research, post hoc analyses

showed no significant relations between abused children's problem-solving skills and socially maladjusted behaviors (see Appendix I). Finally, post hoc analyses (Dunnett's T) revealed no significant differences between the clusters of abused children and the comparison children (see Appendix H). On average, the comparison children generated eight different types of solutions ( $M = 8.00$ ,  $SD = 2.00$ ) to the hypothetical solutions and the abused children generated seven different types of solutions ( $M = 7.14$ ,  $SD = 1.90$ ) to the hypothetical solutions. In conclusion, based on a series of analyses, support was not found for abused children's ability to generate multiple solutions to hypothetical peer problems to be relevant to understanding their social behavior six months later.

Perhaps the age of the sample is an issue to be considered when interpreting the lack of support for problem-solving contributing to individual differences. As stated earlier, the majority of the children were 8 years of age or under. In the larger developmental literature on social information processing, Dodge and Price (1994) found that the relationship between behavioral competence and social information processing patterns, including response generation (i.e., problem-solving), was significantly stronger for children who were 8 years of age or older in comparison to the strength of the relationship for children who were 7 years of age or younger. In addition, these researchers found that older children generated significantly more behavioral responses to videotaped vignettes in comparison to the number of responses generated by younger children. Based on these findings, Dodge and Price concluded that "as a skill in a processing task increases across age, it becomes more relevant to individual differences in behavior" (p. 1395). Perhaps problem-solving ability would contribute to differences among subgroups of older maltreated children; this possibility could be the focus of subsequent research.

One other issue that should be considered in the interpretation of findings related to problem-solving is the conceptualization of problem-solving. In the current study, problem-solving was conceptualized and measured as the ability to generate different types of solutions in response to hypothetical vignettes. Previous researchers that found problem-solving ability to be predictive of maltreated children's social behavior conceptualized problem-solving ability in terms of quality of solutions generated (Price & Landsverk, 1998). For example, Price and Landsverk (1998) investigated whether aggressive, ineffective, competence, and nonassertive problem-solving strategies were predictive of maltreated children's social adjustment. Perhaps it is not the *number* of different solutions but the *quality* of solutions that contributes to individual differences in social behavior among abused children; this possibility could also be the focus of subsequent research.

*Intellectual functioning.* Intellectual functioning has been found in several investigations to contribute to individual differences among children who have experienced a variety of adverse conditions such as poverty (Buckner et al., 2003; Masten & Coatsworth, 1998). Some evidence has been found to support the role of intelligence in accounting for individual differences among children who have experienced maltreatment (Herrenkohl et al., 1994), although, the evidence to date has been inconclusive (Cicchetti et al., 1993; Cicchetti & Rogosch, 1997). In the current study, scores on a brief measure of intellectual functioning did not predict cluster membership of abused children. Furthermore, a series of post hoc analyses revealed that intellectual functioning was not significantly related to abused children's social behavior as measured by the SBS and playground observation, further confirming results of the multinomial regression analyses (see Appendix I). Thus, results of the current study were consistent with those researchers (i.e., Cicchetti et al., 1993;

Cicchetti & Rogosch, 1997) who found that intelligence was not predictive of individual differences among abused children.

In the current study, individual differences were examined solely in the domain of social behavior. Other researchers have examined the function of intelligence in predicting multiple domains of functioning such as academic achievement in addition to social behavior functioning (e.g., Herrenkohl et al., 1994) or researchers have used global measures of competence (e.g., Radke-Yarrow & Brown, 1993). Perhaps intelligence is a better predictor of global competence than it is for social functioning. Or, as suggested by Haskett, Nears, Sabourin Ward, and McPhearson (in press), intelligence might serve as an indirect predictor of social competence of maltreated children, through its influence on such factors early stimulation in the home environment or academic engagement and motivation. For example, Shonk and Cicchetti (2001) found that cognitive competence (i.e., intellectual functioning) in addition to scholastic competence, academic effort, and self-direction and motivation served as a mediator in the link between maltreatment and academic maladjustment.

Perhaps intellectual functioning did not predict cluster membership because the age of the sample was young relative to prior research that demonstrated a link between IQ and adjustment. The current sample consisted of children who ranged in age from 4 to 11 years. Other investigators who have found intelligence to contribute to individual differences have done so using samples of maltreated adolescents (Herrenkohl et al., 1994). In addition, Luthar (1991) found that intelligence operated as a vulnerability factor for maltreated adolescents. It is possible that the role of intelligence in contributing to individual differences differs depending on the age or developmental stage of the child. Investigations that have demonstrated a lack of support for a relationship between children's intellectual functioning

and social adjustment used younger children (Hoffman-Plotkin & Twentyman, 1984). Additional research examining the ability of intellectual functioning to predict cluster membership at different developmental stages within a sample of abused children would be needed to confirm this speculation.

*Parental warmth.* Researchers have found that parenting styles and behaviors within the social context of childrearing are important contributors to children's adjustment (Booth et al., 1994; Dishion, 1990; Pettit et al., 1997). Specifically, researchers have documented a strong link between parental affective style such as parental warmth and children's behavior with peers (Kahen et al., 1994; Putallaz, 1987). Furthermore, parental warmth has been found to function as a protective factor for children exposed to various risks including maltreatment (Egeland et al., 1983; Farber & Egeland, 1987; Perkins & Jones, 1994). As stated earlier, parental warmth was not found in the current study to contribute to cluster membership for abused children. Also contrary to previous research, significant relationships were not found between parental warmth and abused children's social behavior as measured by teacher report and playground observation (see Appendix I).

One issue that needs to be considered in the interpretation of the nonsignificant findings for parent warmth is how it was conceptualized. The construct of parental warmth encompassed warmth, sensitivity, behavioral animation, and engagement. Previous researchers have defined parental affect style of warmth differently, such as to include supportive parenting (Perkins & Jones, 1994; Pianta et al., 1990) or emotional support (Farber & Egeland, 1987). Furthermore, researchers have found that different aspects or indicators of supportive parenting are associated with children's behavioral adjustment in a differentiated manner (Grolnick & Slowiaczek, 1994; Patterson, Reid, & Dishion, 1992).

For example, Pettit, Bates, and Dodge (1997) found that multiple indicators of supportive parenting (i.e., observed maternal warmth, maternal interest and involvement with children's contact with peers, use of inductive discipline techniques, and proactive teaching) were independent of each other and were related in different ways to child outcomes. To illustrate, the use of inductive discipline (i.e., calm discussion) and proactive teaching were related to children's externalizing problems. However, maternal warmth was not. Maternal warmth was found instead to be predictive of children's academic performance. Perhaps the use of a composite indicator of warmth resulted in the inability of this variable to contribute to abused children's cluster membership. Future research examining individual aspects of warm parenting would be needed to further investigate this possibility.

Another consideration in interpretation of findings for parental warmth lies in the data collection procedure. In the current study, parenting behavior was only observed for 30 minutes at one point in time. This observation was a relatively brief sample of parenting behavior during a somewhat contrived play session. In addition, the measure of parenting behavior was collected six months prior to the time at which children's social behavior was observed on the playground and rated by their teachers. Consistent with research from the general developmental literature, researchers measuring maltreating parents' behavior and children's social behavior at the same point in time have found strong relations between the two constructs (Farber & Egeland, 1987; Pianta et al., 1990). Perhaps parental warmth of abusive parents is a good predictor of their children's concurrent behavior, but is less related to children's subsequent social behavior. Additional research examining the ability of parental warmth to predict current and subsequent social behavior is needed to confirm this explanation.

Leaders in the field of resilience (e.g., Luthar & Zelazo, 2003) argue that aspects of the parent-child relationship and the child's broader environment are probably more influential in competence among children at risk for maladaptation than are children's personal characteristics. This was not the case for the current sample of abused children. The current findings could be viewed as support for Cicchetti and Rogosch's (1997) assertion that interpersonal relations are *less* relevant than individual child factors to understanding resilient functioning of maltreated children. These researchers found that relationship factors such as the maternal emotional availability or desire for maternal closeness were not predictive of resilient functioning for maltreated children; however, those factors were predictive of resilient functioning for a group of nonmaltreated socioeconomically disadvantaged children. The investigators hypothesized that maltreated children might have essentially abandoned the potential value of relationships in their striving to adapt to developmental demands, and instead were focused on self-reliance. Asking whether individual child attributes or the childrearing context of maltreated children are more critical to outcomes is perhaps illogical since complex interactions of both child resources and family supports probably are the best predictors of resilience. Such interactions of personal and environment factors should receive greater attention in future studies. Limitations of the current research and directions for future research are discussed next.

#### *Limitations of the Research and Directions for Future Research*

Several limitations must be considered in the interpretation of the results of this study. First, the *pattern* of results should be considered in interpretation, rather than any single finding due to the exploratory nature of this investigation. In addition the clusters were formed on the basis of a relatively brief observation and teacher report of social

maladjustment. The stability of those measures over time is unknown. As a result of the exploratory nature and unknown stability of the clustering measures, cluster membership may not be stable over time. Longitudinal research is needed to determine whether these patterns are stable not only within a sample of abused children but across samples of abused children as well. Pending such replication, the pattern of findings should be considered promising but tentative. Furthermore, longitudinal research would be useful in investigating whether different factors predict cluster membership. As reviewed earlier, the relationships found between SIP mechanisms, such as problem-solving ability (Dodge & Price, 1994), and children's social behavior have varied by age. Longitudinal research would help identify whether children's problem-solving ability is more likely to predict cluster membership as children age.

Secondly, several limitations regarding the measures used in the current research are present. The teacher report measure of social behavior in the current study was not standardized. Thus, one's ability to draw conclusions about levels of aggression and other social behaviors of children in current study in comparison to norming groups of children is limited. A direction for future research would be to use standardized measures of social behavior or sociometric methods in an attempt to discuss abused children's adjustment relative to nonabused and typically-developing children. In addition, the use of a standardized measure would allow for comparisons to be more easily made with previous research (i.e., are the abused children displaying similar rates of maladjusted behavior as seen in previous studies and are they demonstrating behaviors of clinical significance in comparison to the behavioral norms for children similar in age?). Another limitation related to the measures used in the current study is the use of a single 30-minute observation of

parenting behavior in a clinic setting. This observation was a relatively brief time period to capture a complete picture of parenting behavior, and it is not known whether the behavior observed was typical for the parent. Finally, presentation of hypothetical vignettes served as the method for measuring children's problem-solving ability and attributions of intent. Although this is a very common method of assessment of social information processing, alternative ways of measuring these constructs such as the use of actual stage social interaction or in vivo methods might have produced different results. In fact, larger effect sizes have been found in the general literature on attributions of intent with the use of these methods compared to effect sizes for studies based on hypothetical vignettes (Orobio de Castro et al., 2002).

Related to limitations regarding methodology, the characteristics of the sample should be considered. All parents in this study had custody of their children at the time of data collection, so children who had been chronically abused or had experienced extreme abuse probably were not included. Inclusion of those children might have resulted in a different cluster solution, particularly if severity of abuse had been a clustering variable. Thus, the generalizability of findings to other samples is limited. Previous investigations designed to examine individual differences among children exposed to domestic violence using a person-oriented approach have found frequency and severity of violence to be important in differentiating subgroups of children exposed to violence (Grych et al., 2000; Hughes & Luke, 1998). Accounting for the frequency and severity of abuse may also assist in further examining the ability of different factors (e.g., hostile attributions of intent and problem solving ability) in contributing to individual differences in the social behavior of abused children.

Finally, it is readily acknowledged that the scope of the current study was somewhat restricted. The current research was designed to investigate functioning in the sole domain of social behavior. As has been found in previous research, the experience of abuse not only influences children's social behavior but their cognitive and academic competence as well. The examination of individual differences within multiple domains of functioning would illustrate further the unique needs of these children. Additionally, the current study was limited in scope to the examination of only four predictors of individual differences, and only one of those factors significantly predicted cluster membership. Certainly, there are many other potential protective factors to consider in future research. Factors at the neighborhood and community levels, in particular, were not examined in the current study and deserve attention in future research. A final limitation of the current study is that predictors of cluster membership were examined individually. It is certainly possible that various factors account for individual differences among abused children *in interaction with other factors*. Moderation among predictors of individual differences should be the focus of future studies.

#### *Conclusion and Implications for Practice*

The current study was designed to examine the individual differences in social adjustment within a sample of physically abused children. Several general conclusions can be drawn from the results of this study. First, clinically relevant subgroups of abused children were evident in this sample. A percentage of the abused children demonstrated social adjustment that was relatively positive compared to other abused children and to nonabused children. On the other hand, a smaller percentage of the abused children were experiencing difficulty in their social behavior; their low ratings for prosocial behavior were particularly noteworthy. Finally, a subgroup of children was identified who were rated as engaging in

limited positive *and* negative social behavior. Post hoc analyses with the sample of comparison children supported the conclusion that the clusters of abused children differed in meaningful ways.

A second conclusion can be made in regards to the use of cluster analysis with a sample of abused children. Cluster analysis has not been used often by researchers examining the functioning of abused children. Upon examination of the results of the current study, researchers may want to consider this method and the adoption of a person-oriented approach in examining variability within samples of abused children. Finally, initial evidence of unique treatment needs was seen among the particular sample of abused children. For example, the children who were experiencing social difficulties appeared to be in need of social skills remediation, particularly in the area of prosocial behavior. This study could serve as a catalyst for a line of continuing research on individual differences among abused children that informs treatment needs of these children.

Finally, several implications for practice can be drawn from the results of the current research. The findings highlight the importance of taking into account individual differences in abused children's social adjustment. Different patterns of social adjustment emerged. Current interventions designed for abused children should take into account these individual differences. If done so, perhaps improvements in outcomes will be obtained for these families. For example, the lack of positive social behavior found among the children in the Social Difficulties cluster and lack of social behavior found among the children in the At Risk cluster has direct treatment implications. Treatment for children within the Social Difficulties cluster should focus not only on decreasing the negative behavior but focus as well on teaching what to do or the prosocial behavior. Additionally, treatment programs may

want to incorporate into their assessment of needs other factors such as attributions of intent and level of parental warmth due to that these factors were found to be predictive of the different patterns of functioning. If weaknesses or strengths are found in these areas, they should be improved upon or built upon in treatment.

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## Appendices

## Appendix A

## Social Behavior Scale

Child's Name: \_\_\_\_\_

Teacher's Name: \_\_\_\_\_

Date form completed: \_\_\_\_\_

How long have you know this student? \_\_\_\_\_

Using the 5 point scale below, please indicate the degree to which each statement describes this child. Then place the completed scale in the envelope provided and mail back to Dr. Mary Haskett. Thank you.

1 = Never True 2 = Rarely True 3 = Sometimes True 4 = Often True 5 = Almost Always True

- |  |   |   |   |   |   |
|--|---|---|---|---|---|
| 1. This child is good at taking turns.   | 1 | 2 | 3 | 4 | 5 |
| 2. This child tells a peer that s/he won't play with that peer or be that peer's friend unless s/he does what this child asks. | 1 | 2 | 3 | 4 | 5 |
| 3. This child is a solitary child.   | 1 | 2 | 3 | 4 | 5 |
| 4. This child hurts other child by pinching them.  | 1 | 2 | 3 | 4 | 5 |
| 5. This child tries to get others to dislike them by telling lies about the peers to others.                                   | 1 | 2 | 3 | 4 | 5 |
| 6. This child likes to play alone.   | 1 | 2 | 3 | 4 | 5 |
| 7. This child is ignored by peers.   | 1 | 2 | 3 | 4 | 5 |
| 8. This child verbally threatens to hit or beat up other children.   | 1 | 2 | 3 | 4 | 5 |
| 9. This child ruins others peer's things when s/he is upset.   | 1 | 2 | 3 | 4 | 5 |
| 10. Peers say mean things to this child at school.   | 1 | 2 | 3 | 4 | 5 |
| 11. This child pushes or shoves other children.  | 1 | 2 | 3 | 4 | 5 |
| 12. This child prefers to play alone.  | 1 | 2 | 3 | 4 | 5 |
| 13. This child verbally threatens to physically harm a child in order to get what they want.                                   | 1 | 2 | 3 | 4 | 5 |

14. This child tells others not to play with or be a peer's friend.	1	2	3	4	5
15. This child is helpful to peers.	1	2	3	4	5
16. This child is not chosen as a playmate.	1	2	3	4	5
17. When mad at a peer, this child keeps that peer from being in the play group.	1	2	3	4	5
18. Peers avoid this child.	1	2	3	4	5
19. This child tries to cheer up peers when they are sad or upset about something.	1	2	3	4	5
20. This child tries to dominate or bully peers.	1	2	3	4	5
21. This child doesn't have much fun.	1	2	3	4	5
22. This child is ridiculed or picked on by peers.	1	2	3	4	5
23. This child doesn't smile much.	1	2	3	4	5
24. Peers refuse to let this child play.	1	2	3	4	5
25. This child keeps peers at a distance.	1	2	3	4	5
26. This child kicks or hits others.	1	2	3	4	5
27. This child avoids peers.	1	2	3	4	5
28. This child is kind to peers.	1	2	3	4	5
29. This child tries to get others to dislike a peer.	1	2	3	4	5
30. This child is not liked much.	1	2	3	4	5
31. This child is excluded from peer's activities.	1	2	3	4	5
32. Peers say bad things about this child to other kids at school.	1	2	3	4	5
33. This child withdraws from peer activities.	1	2	3	4	5
34. This child tells a peer that they won't be invited to their birthday party unless s/he does	1	2	3	4	5

what the child wants.

35. This child gets hit or bullied at school.	1	2	3	4	5
36. This child looks sad.	1	2	3	4	5
37. This child verbally threatens to keep a peer out of the play group if the peer doesn't do what the child asks.	1	2	3	4	5
38. This child says or odes nice things for other kids.	1	2	3	4	5
39. Please rate this child's <u>overall academic performance</u> this year.	A	B	C	D	F

---

		Sum	Mean
Prosocial	1: __, 15: __, 19: __, 28: __, 38: __,	_____/5	_____
Relational A.	2: __, 5: __, 14: __, 17: __, 29: __, 34: __, 27: __	_____/7	_____
Overt A.	4: __, 8: __, 9: __, 11: __, 13: __, 20: __, 26: __	_____/7	_____
Asocial	3: __, 6: __, 12: __, 25: __, 27: __, 33: __	_____/6	_____
Excluded	7: __, 16: __, 18: __, 22: __, 24: __, 30: __, 31: __	_____/7	_____
Depressed	21: __, 23: __, 36: __	_____/3	_____
Victimized	10: __, 32: __, 25: __		_____

## Appendix B

### Procedures for observations sessions

#### Prior to school visit:

You will be called as soon as a data collection session is scheduled. The information will also be emailed to you.

The following information will be provided:

- ◆ Name and subject # of the child to observe
- ◆ Name of the school, principal, and teacher
- ◆ Names of the observers who should be present
- ◆ Whether you are primary or reliability observer

Gather materials:

- ◆ Sufficient data sheets (white for primary; yellow for reliability)
- ◆ Clipboard and pencils
- ◆ Two tape players, two interval tapes, back-up batteries
- ◆ Your name tag
- ◆ Copy of teacher report forms and return envelope for teacher
- ◆ Sunglasses
- ◆ Phone numbers and directions to each school.

#### At the school:

When arriving at the school (10 minutes prior to scheduled observation), let the main office know you have arrived, sign in and proceed to the classroom. Make sure your name tag is on. Remind the teacher of your purpose and request the teacher report forms. If the teacher has to cancel the play session, reschedule and leave the room. Make sure to check out in the main office. Let Dr. Haskett know when the session has been rescheduled.

If the play session will occur, wait quietly back in the room until the class is ready to proceed. Ask the teacher to unobtrusively point out the child you will be observing and make sure you are clear as to which child s/he has pointed out.

Follow the classroom to the playground or the gym.

#### On the playground:

Put on your sunglasses. Find an unobtrusive, centrally located area in which to observe and put the headphones on. Do not engage in talk amongst yourselves. Instead fix your vision into the distance or focus on your papers. Avoid eye contact with children but do not ignore children who make direct attempts to get your attention. Estimate and record the number and ages of children present on the playground.

Continue until the data collection session is complete (30 minutes) or until the children are not longer available to observe.

If the session lasts less than 20 minutes, schedule a second session with the teacher, and inform Dr. Haskett.

After observations:

- ◆ If possible, thank the teacher for his/her assistance while still on the playground so you do not have to interrupt the class once they are inside.
- ◆ Note any irregularities in the data collection session.
- ◆ Go directly to the office to sign out of school.
- ◆ Return data to the lab within 24 hours.
- ◆ Report any complications to Dr. Haskett (515-1710) immediately.

This observational approach involves interval coding. There may be two coders: a primary coder and a secondary coder. The primary coder is responsible for gathering all materials (cassette recorder, interval tape, coding sheets, teacher report forms, information on the child, and directions to the school) and returning all materials to the lab within 24 hours. The secondary coder is responsible for recording the information at the school site and giving the complete form to the primary coder to return to the lab. This observation system is called a focal child system. One child, called the “target”, is observed continuously for 30 minutes.

Behavior to be coded includes the following four social behaviors:

1. Engagement (ENG) Verbal or physical behavior directed to another peer or group of peers (not teachers) that has the purpose of engaging the peer in interaction or continuing the interaction begun by a peer. This may be neutral or positive behavior. Defining features of engagement include general proximity and active behavior such as touching, eye contact, talking, etc. Actively participating in a game is also included. It is not onlooker behavior such as hanging out beside a group of children (for example on the monkey bars), watching but not joining the activity.

Examples include:

- ◆ Offer to help or request for help, sharing, providing information
- ◆ Invitation to play or response to invitation
- ◆ Playing chase or racing with another child or group of children
- ◆ Swinging or playing on monkey bards, with conversation or eye contact
- ◆ Digging a hole in the dirt with others (but only if they are working on the same hole, not if target is digging a hole beside others but not joining via eye contact or conversation)

2. Negative (NEG) Negative verbal or gestural behavior directed to another child, or saying negative things about another child. This category does not include physical contact (see RP and AGGR below).

Examples include:

- ◆ teasing (“your underwear is showing,” “ha ha you dropped it”)
  - ◆ reprimands (“you shouldn’t do that”)
  - ◆ commands (“command here now”)
  - ◆ tattling (even if legitimate complaint)
  - ◆ threatening (“I’m gonna hit you”)
  - ◆ profanity
  - ◆ saying mean things (“his parents are so ugly”)
  - ◆ instances of relational aggression (“you can’t play with us”)
  - ◆ sticking tongues out, displaying a threatening gesture
  - ◆ taunting or challenging gestures, growling
3. Rough Play (RP) Physical contact with a peer that is rough and negative but not of sufficient to be AGGR. These behaviors often occur during “roughhousing” but might occur in isolation, for example, brushing up against another child roughly while running past another child. This behavior may occur in the context of engagement, but might be coded alone if only the RP occurs in the interval

Examples include:

- ◆ holding onto a child’s clothes
  - ◆ holding a peer tightly
  - ◆ elbowing or shouldering
  - ◆ physical contact while playing touch football or other game
  - ◆ bumping into one another
4. Aggression (AGGR) Physical contact with a peer or object that constitutes an attack with clear potential to harm OR taking something belonging to another child. This does not have to be intent (we can’t guess at a child’s intentions). Record even if the behavior seems ‘accidental’. A single behavior chain may include RP then become AGGR.

Examples include:

- ◆ hit, slap, scratch, pull hair, bite, kick, pinch, butt with head, head lock, twist toward the child, pulling to the ground.
- ◆ destroying property
- ◆ taking (or attempting to take) a toy that someone else is clearly playing with.
- ◆ taking a toy is recorded when the object is in the hands of another child or if it is a piece of a game being played with (e.g., a ball).
- ◆ taking articles of clothing such as shoes
- ◆ any type of hitting even when part of a game
- ◆ if target is holding another person, it would be aggression when the target tries to restrain the person while she or he is trying to get away

ID# \_\_\_\_\_ Date \_\_\_\_\_ Observer \_\_\_\_\_  
 Observation# \_\_\_\_\_ Sq. Footage \_\_\_\_\_ #/Age rage of peers \_\_\_\_\_

	Eng	Neg	Rp	Agg			Eng	Neg	Rp	Agg			Eng	Neg	Rp	Agg
1.1						11.1							21.1			
1.2						11.2							21.2			
1.3						11.3							21.3			
1.4						11.4							21.4			
	Eng	Neg	Rp	Agg			Eng	Neg	Rp	Agg			Eng	Neg	Rp	Agg
2.1						12.1							22.1			
2.2						12.2							22.2			
2.3						12.3							22.3			
2.4						12.4							22.4			
	Eng	Neg	Rp	Agg			Eng	Neg	Rp	Agg			Eng	Neg	Rp	Agg
3.1						13.1							23.1			
3.2						13.2							23.2			
3.3						13.3							23.3			
3.4						13.4							23.4			
	Eng	Neg	Rp	Agg			Eng	Neg	Rp	Agg			Eng	Neg	Rp	Agg
4.1						14.1							24.1			
4.2						14.2							24.2			
4.3						14.3							24.3			
4.4						14.4							24.4			
	Eng	Neg	Rp	Agg			Eng	Neg	Rp	Agg			Eng	Neg	Rp	Agg
5.1						15.1							25.1			
5.2						15.2							25.2			
5.3						15.3							25.3			
5.4						15.4							25.4			
	Eng	Neg	Rp	Agg			Eng	Neg	Rp	Agg			Eng	Neg	Rp	Agg
6.1						16.1							26.1			
6.2						16.2							26.2			
6.3						16.3							26.3			
6.4						16.4							26.4			
	Eng	Neg	Rp	Agg			Eng	Neg	Rp	Agg			Eng	Neg	Rp	Agg
7.1						17.1							27.1			
7.2						17.2							27.2			
7.3						17.3							27.3			
7.4						17.4							27.4			
	Eng	Neg	Rp	Agg			Eng	Neg	Rp	Agg			Eng	Neg	Rp	Agg
8.1						18.1							28.1			
8.2						18.2							28.1			
8.3						18.3							28.3			
8.4						18.4							28.4			
	Eng	Neg	Rp	Agg			Eng	Neg	Rp	Agg			Eng	Neg	Rp	Agg
9.1						19.1							29.1			
9.2						19.2							29.2			
9.3						19.3							29.3			

9.4						19.4						29.4				
	Eng	Neg	Rp	Agg			Eng	Neg	Rp	Agg			Eng	Neg	Rp	Agg
10.1						20.1						30.1				
10.2						20.2						30.2				
10.3						20.3						30.3				
10.4						20.4						30.4				

## Appendix C

## Social Problem Solving Measure

ID#: \_\_\_\_\_ Date: \_\_\_\_\_ Interviewer: \_\_\_\_\_  
 Reliability: \_\_\_\_\_

1. Pretend this is YOU and this is KATHY/DANNY. KATHY/DANNY is the same as you, \_\_\_\_\_, years old. KATHY/DANNY has been on the swing for a long, long time and doesn't want to share the swing with you. YOU would really like to play on the swing. What could you say or do so that YOU could play on the swing?

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

6. \_\_\_\_\_

2. Pretend this is YOU and this JENNY/ANDY. Let's also pretend that this is your FIRST day at school. YOU and JENNY/ANDY are in the same class and YOU would like to be friends with JENNY/ANDY, but JENNY/ANDY doesn't say anything to you. What could YOU say or do so that YOU could get to be friends with JENNY/ANDY?

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

6. \_\_\_\_\_

3. Pretend that this YOU and this ERIKA/JOE. You just got a good spot near the front of the line to go outside and ERIKA/JOE pushes you out of line and takes your place. What could YOU say or do so that YOU could get your place in line back?

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

6. \_\_\_\_\_

4. Pretend that this is YOU and this is COLLEEN/JOSH. COLLEEN/JOSH and some other kids are playing on the jungle gym at school. YOU would like to play with COLLEEN/JOSH and other kids, but they haven't asked you. What could YOU say or do to get to play with COLLEEN/JOSH and other kids?

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

6. \_\_\_\_\_

5. Pretend that this is YOU and this TRACY/TREVOR. You and TRACY/TREVOR are playing a game and you realize that TRACY/TREVOR has taken your turn. What could you say or do so that YOU could get your turn?

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

6. \_\_\_\_\_

6. Pretend that this is you and that this is KRISTEN/RYAN. KRISTEN/RYAN and some other kids are playing tag. YOU would really like to play with KRISTEN/RYAN and the other kids, but they haven't asked you. What could YOU say or do to get to play with KRISTEN/RYAN and the other kids?

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

6. \_\_\_\_\_

7. Pretend that this is YOU and this is DONNA/BILLY. You and DONNA/BILLY are both on the playground and DONNA/BILLY starts calling you names and making fun of you. What could YOU say or do to get DONNA/BILLY to stop teasing you?

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

6. \_\_\_\_\_

8. Pretend that this is you and this NINA/RICHARD. NINA/RICHARD and some other kids are choosing up sides for kickball. YOU would really like to play with NINA/RICHARD and the other kids, but they haven't asked you. What could YOU say or do to get play kickball?

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

6. \_\_\_\_\_

## APPENDIX D

## HOME INTERVIEW WITH CHILD (HIWC)

ID# \_\_\_\_\_ Date: \_\_\_\_\_ Interviewer: \_\_\_\_\_

A. Pretend that you are standing on the playground playing catch with a kid named Todd/Jessica. You throw the ball to Todd/Jessica and h/she catches it. You turn around, and the next thing you realize Todd/Jessica has thrown the ball and hit you in the middle of the back. The ball hits you hard, and it hurts a lot.

1. Why do you think Todd/Jessica hit you in the back?

---



---

1 Nonhostile

2 Hostile

3 Don't Know

2. What would you do about Todd/Jessica after s/he hit you?

---



---

B. Pretend that you see some kids playing on the playground. You would really like to play with them, so you go over and ask one of them, a kid named Alan/Leah, if you can play. Alan/Leah says no.

3. Why do you think Alan/Lean said no?

---



---

1 Nonhostile

2 Hostile

3 Don't Know

4. What would you do about Alan/Lean after he/she said no?

---



---

C. Pretend that you are walking to school and you are wearing brand new sneakers. You really like your new sneakers and this is the first day you have worn them. Suddenly, you are bumped from behind by a kid named John/Lisa. You stumble into a mud puddle and your new sneakers get muddy.

5. Why do you think John/Lisa bumped into you?

---



---

1 Nonhostile

2 Hostile

3 Don't Know

6. What you do about John/Lisa after he/she bumped you?

---



---

D. Pretend that you are a new kid in school and you would really like to make friends. At lunch time, you see some kids you would like to sit with and you go over to their table. You ask if you can sit with them and a kid named Carl/Carolyn says no.

7. Why do you think Carl/Carolyn said no?

---



---

1 Nonhostile

2 Hostile

3 Don't Know

8. What would you do about Carl/Carolyn after he/she said no?

---



---

E. Pretend you go to the first meeting of a club you want to join. You would like to make friends with the other kids in the club. You walk up to some of the other kids and say "HI!", but they don't say anything back.

9. Why do you think the other kids didn't answer you?

---



---

1 Nonhostile

2 Hostile

3 Don't Know

10. What would you do about the other kids after they didn't answer you?

---



---

F. Pretend that you are walking down the hallway in school. You're carrying your books in your arm and talking to a friend. Suddenly, a kid named Brett/Devon bumps you from behind. You stumble and fall and your books go flying across the floor. The other kids in the hall start laughing.

11. Why do you think Brett/Devon bumped into you?

---



---

1 Nonhostile

2 Hostile

3 Don't Know

12. What would you do about Brett/Devon after he/she bumped into you?

---



---

G. Pretend it is your first day at school. You don't know a lot of the other kids and you would like to make friends with them. You see some kids playing a rope game so you walk up and say "Hi!" but no one answers you.

13. Why do you think the other kids didn't answer you?

---

---

1 Nonhostile

2 Hostile

3 Don't Know

14. What would you do about the other kids after they didn't answer you?

---

---

H. Pretend you and your class went on a field trip to the zoo. You stop to buy a coke. Suddenly, a kid named Al/Robin bumps your arm and spills your coke all over your shirt. The coke is cold, and your shirt is all wet.

15. Why do you think Al/Robin bumped into you?

---

---

1 Nonhostile

2 Hostile

3 Don't Know

16. What would you do about Al/Robin after he/she bumped into you?

---

---

## Appendix E

### Qualitative Ratings: Parent Child Interaction At 24-36 Months of Age

Martha J. Cox (1997)

#### Qualitative Scales

Each set of qualitative ratings is to be based on 10-20 minutes of semi-structured observation. These ratings can be applied to a variety of challenge situations for the child and parent (i.e., tool use tasks, puzzle tasks). The scales are typically used with mothers or fathers and their children during the years 2-3. The observer should take longhand notes of the parent or child behaviors as they relate to each scale and organize the notes by coding category. It is recommended that the observer watch the tape once taking minimal notes; watch the tape a second time taking careful notes of parent and child behaviors related to the scales; score the parent variable and then watch the tape for a third time to consider those scores; and score the child variables and then watch the tape a fourth time to consider those scores.

In assigning a rating, the observer should use a two-step process (borrowing from the logic of Harter). The first step is to ask, "is this dimension characteristic (a 5 or 6 or 7 rating) or not characteristic (a 1 or 2 or 3 rating) or neither characteristic (a 4) of the person being rated?" Once this decision is made, then the rater needs to make a finer discrimination between 5, 6, or 7 and 1, 2, and 3 ratings.

Ratings for most of the scales should be based on the quality and quantity of the behavior. Thus, evaluations should be made taking into account the quality of the observed behaviors in relation to the proportion of the time they were observed.

## Scaling for Coding Parent-Child Interaction

### Introduction

These scales will be qualitative ratings of three 10-minute parent-child interactions. They are in adaptation of scales developed by Cox (1997) for observing parent-child behaviors for young children but are adaptable for use with older children. The scales are to be used to code behaviors from five categories of interaction; Sensitivity, Intrusiveness, Detachment/Engagement, Positive Regard for the child, Negative Regard for the child, and Flat Affect. The scales are scored on a seven point Likert type system.

The process of observation should be as follows. The observer should watch the designated 10-minute segment of the tape completely taking minimal notes relating to the chosen categories. These notes should include initial impressions of the interaction under scrutiny and significant behaviors observed that support these impressions. Subsequent to watching the tape, the observer should decide if the interaction was characteristic or not characteristic of the interaction and a preliminary score should be assigned (see scoring criteria on p. 2).

The tape should be watched a second time with careful note taking of the parent and parent-child behaviors relating to the categories. After the second viewing, a final specific score should be assigned for each category under consideration. The tape may be stopped at any time and rewound to review key segments or behaviors.

These guidelines need to be maintained throughout the project. A standard and repeatable procedure is one of the best ways to ensure reliability. As you become more familiar with the scale, the rating of behaviors will become more fluent. With practice, it will be possible to rate several categories at the same time.

The ratings should be made on both the quality and quantity of the behaviors. That is, the characteristics of the behavior should be noted in proportion of their occurrence. For example, if a parent displays a general characteristic of warmth and support for the child punctuated by one incident of irritation, that incident however discordant, should not be the sole basis for rating the parent's behavior as not characteristic of warmth and support.

### Scoring

The Likert type of the scales consisting of ratings from one to seven. In assigning a number to the observed behaviors a two-step process should be employed. First, the observer should ask him or herself, "is this dimension characteristic (a 5 or 6 or 7 rating) or not characteristic (a 1 or 2 or 3 rating) or neither characteristic (a 4) of the person being rated?" Once this decision is made, then the rater needs to make a finer discrimination between 5, 6, or 7 and 1, 2, and 3 ratings. The middle number, four, will be used as midpoint determinant of the behavior to answer the question "is the category characteristic or not characteristic of the observed behavior?" The final scoring should take place after viewing the tape a second time and be reviewed during the third viewing.

Conceptual markers to use in both the initial and final assignation of numbers are the following: one indicates that the applied scale is not at all characteristic or indicative of the observed interaction, three suggests the interaction is slightly or minimally indicative of the interaction, five indicates the behaviors observed are significantly or predominantly characteristic of the interaction and seven suggests that the interactions are exceptionally indicative of the behavior category under consideration.

### Scale Categories

#### Positive Regard for the Child:

Rationale: the category represents the parent's positive feelings towards the child as expressed during interactions with him or her. Positive feelings may be shown by speaking to the child in a warm soft tone of voice, hugging or other expressions of physical affection, an expressive face, smiling, relaxed, oriented toward the child, positive verbal behaviors shown by praising, joking, laughing, listening to the child, making eye contact when talking, watching attentively and appearing playful.

Ratings on this category are based on both the quantity and quality of positive behaviors. Quantity is simply the frequency with which representative behaviors are demonstrated. Quality refers to the intensity of the behavior and may be thought of as levels of expressiveness, enthusiasm, playfulness and or warmth.

1 = Not at all characteristic: Parent shows none of the behaviors noted above either physical or verbal. For example, the parent initiates no physical contact with the child and demonstrates no verbal affection. The parent may appear negative with the child or neutral, flat or expressionless. This rating may also be applied if the positive expression seems inappropriate to the situation (laughing at child noncompliance or giving clearly unwanted physical contact. Quality and quantity of behaviors are both nonexistent.

3 = Minimally characteristic: Parents display some positive verbal and/or physical behavior toward the child but it is minimal, weak in quality and/or infrequent in quantity. The parent may praise the child one or two times and smile infrequently with the child. The predominant impression of the interaction is neutral/disengaged, intrusive or negative.

5 = Moderately characteristic: Parents display predominantly positive behaviors toward the child with more frequent behaviors of higher quality. The sense of the interaction is clearly more positive than the 3 rating but positive regard waxes and wanes. Physical contact appears to be nurturing to the child. Praise is appropriately timed.

7 = Very characteristic: Parents are exceptionally high in physical and verbal expression of positive regard extending throughout the session. There are frequent expressions of praise, almost constant smiling and joking. Parents seem lighthearted and clearly delighted by the child.

### Negative Regard for the Child:

Rationale: The category represents both the frequency and intensity of negative affect and behavior toward the child. Behaviors indicative of this category include expressions of disapproval (Not appropriate limit setting), harsh negative tone of voice when speaking with the child, tense body and or tense facial muscle evidence of frustration with the child and/or a strained or pained expression, threatening the child and or punishment without explanation, physical roughness, and belittling the child, put downs, use of unflattering names and sarcasm. Intrusive behaviors are scored by another category and should not be considered for this category unless there is a punitive quality to them.

Ratings on this category are based on both the quantity and quality of negative behaviors. Quantity refers to the frequency with which representative behaviors are demonstrated. Quality refers to the intensity of the behavior and may be thought of as levels of tension, harshness or disapproval within the session.

1 Not at all characteristic: This rating should be assigned to parents who do not display any negative verbal or physical behaviors. No evidence of anger, frustration, disgust or dislike should be evident in parent's voice or facial expression. The parent may appear positive or expressionless and flat but not negative.

3 Minimally characteristic: This rating should be given to parents who are minimally negative with low frequency and intensity of negative expressions or behaviors. There may be instances of frustration with what the child is doing but positive and neutral expressions may also be observed.

5 Moderately characteristic: This rating should be assigned to parents who predominately display negative verbal and or physical behaviors but may display some neutral and even positive behaviors as well. Persistent low intensity negative behaviors or some evidence of high intensity negative regard are observed.

7 Highly characteristic: Feelings of negative regard are expressed strongly, or consistent levels of negative behavior are observed. The overriding affect pervading the parent child interaction is negative.

### Sensitivity/Supportive Presence

Rationale: This category primarily refers to parental behaviors observed in relation to evolved free play, clean-up and puzzle solving activities. Either the parent or the child may have chosen the activity. The process after the initiation of the activity is the important point. The focus is on how the parent helps the child have positive play and learning experiences especially when the child is dealing with a difficult task or a chosen activity during the free play session. The sensitive and supportive parent shows a balance between allowing the child to play or work autonomously while maintaining a level of involvement and support that ensures the child will succeed in and enjoy the experience. If, for example, a child is having difficulty with a task, the parent may be verbally reassuring and encouraging, may give a

suggestion or hit and perhaps lean physically closer to the child. A sensitive interaction is well timed to the child's responses and appears to be in sync or appropriate with what the child seems to need. The parent helps keep the child interested if need be and also allows for autonomy when desired by the child. A sensitive parent helps the child regulate frustration, boredom, and anger with encouragement and the parent can adapt his or her interactions to the child's mood and effort. Conversely, a parent scoring low in this category fails to provide supportive cues to the child, may appear passive, aloof and uninvolved or conversely intrusive, taking over the interaction. He or she may give the impression of greater concern for personal behavior and perceived adequacy as a parent rather than of the child's feelings or actions. The parent may appear to be performing for the camera, for example.

Ratings on this category are based on both the quantity and quality of sensitive/supportive behaviors. Quantity is simply the frequency with which behaviors are demonstrated. Quality refers to the intensity of the behavior and may be thought of as levels of verbal support, encouragement connection with the child within the session.

1 Not at all characteristic: There are not signs of parental sensitivity or support for the child. The parent is either totally intrusive or detached, aloof or unavailable. The parent does not respond appropriately to the child's verbal and physical cues and interactions are primarily ill timed or inappropriate. The parent completely fails to be supportive of the child.

3 Minimally characteristic: The parent gives some support but it is sporadic and poorly timed to the child's needs. The child may look frustrated and/or ask for help and the parent fails to respond in a brief time. The dominant mode is one of parental insensitivity i.e., intrusiveness although some positive behaviors like encouragement or praise may also be noted.

5 Moderately characteristic: The parent provides good but occasionally inconsistent support, reassurance and confidence in the child's ability during activities and tasks. The parents are however, predominantly supportive and sensitive but some supportive responses may be ill timed.

7 Highly characteristic: This parent skillfully and sensitively provides support throughout the sessions. The parent sets up the situation demonstrating confidence in the child's ability to complete the activity. If the child is having difficulty, the parent finds a way to encourage whatever effort the child makes. Although inadequate efforts may be rejected, this is done with sensitivity and confidence with the child. This rating should be assigned to parents who are exceptionally sensitive. Interactions with the child are characteristically well timed and appropriate.

#### Detachment/Disengagement

Rationale: This category represents the level of parental interest and emotional involvement with the child as they play together or work to complete the assigned tasks. The detached parent seems unaware of the child's need for interaction and does not respond to the child's looks, cues or vocalizations. The parent may sit quietly aloof not paying attention to the child and there seems to be little relationship between the child's behavior and the parent's

response to it. The child may initiate conversation for example and the parent does not respond or responds inappropriately. The parent's behavioral timing seems out of synchrony with the child's affect and behavior. Simply allowing the child to complete the puzzle or play by him or herself is not necessarily a sign of detachment. This may be appropriate if the child is doing well and is happy and the parent checks in with the child visually. The detached parent seems passive, emotionally uninvolved, bored, and enthusiastic about the child is doing. Behaviors suggestive of detachment may include facing away from the child without attempting to visually check in, infrequent eye contact or conversation, not responding to the child's vocalization and or smiles, and ignoring what the child is doing. Being intrusive and even negative is not being detached.

Ratings on this category are based on both the quantity and quality of negative behaviors. Quantity is simply the frequency with which behaviors are demonstrated. Quality refers to the intensity of the behavior and may be thought of as levels of indifference and a lack of involvement within the session.

1 Not at all characteristic: This rating should be given to parents who display no detachment or underinvolvement. When interacting with the child, the parent is clearly emotionally involved. These parents may be sensitive to the child's needs or intrusive as rated by other categories.

3 Minimally characteristic: This rating should be assigned who display minimal detachment. They may briefly look away from what the child is doing or not respond to everything the child says. While the parent is sometimes uninvolved, he/she is clearly more involved than not.

5 Moderately characteristic: This rating should be given to parents who appear predominantly detached. They are observed to be verbally and or physically aloof from the child, facing away more often than being oriented to the child and frequently not responding to the child's conversation. The parent is relatively more uninvolved than involved.

7 Highly characteristic: This rating should be assigned to parents who are so detached that it seems worrisome. The child sits without parent attention almost the entire time even when the parent is in close proximity. The parent may move away from the child or withdraw emotionally.

### Intrusiveness

Rationale: A parent scoring high in this category lacks respect for the child as an individual and fails to recognize or understand the child's need for autonomy and independence. The parent interferes with the child's needs, desires, interests or actual behaviors and dominates or leads the interaction. Setting appropriate behavioral limits for the child with directives is not necessarily intrusive. Intrusiveness may be reflected by a parents' failure to follow the child's lead in interactions. Choosing the activity during play sessions is intrusive. Intrusiveness can also occur in a physical manner grabbing the child's hands and placing them somewhere else or inappropriate affection such as hugging or kissing that interferes with the child efforts.

The parent may be verbally intrusive by imposing directions or not allowing the child to make suggestions or pursue independent efforts. It is also important to observe the context of parental intrusion referring to child behaviors that precede them and the child's responses to the behaviors. What may seem intrusive to the coder may not be to the child. These context clues are highly subjective, however, and if clear evidence of parental intrusion is present it should be scored as such.

Ratings on the category are based on both the quantity and quality of intrusive behavior. Quantity is simply the frequency with which behaviors are demonstrated. Quality refers to the intensity of the behavior and may be thought of as levels of intrusiveness and parental control within the session.

1 No intrusiveness: No signs of intrusiveness are present. The parent may be involved with the child yet continue to give sensitive encouragement while allowing the child to choose activities and decide how to complete them. The parent may alternatively, appear totally uninvolved with the child and appear detached or withdrawn. In either case, the parent does not impose directives or suggestions on the child unless the child needs or asks for that direction. If directives or suggestions are given, it is in a manner showing patience and respect for the child. A parent may also offer the child help and let the child decide to accept or reject it. If requested, the parent will allow the child to work alone.

3 Moderately low intrusiveness: There is some evidence for intrusiveness but it is not pervasive. The parent may initially choose the play activity but then allow the child to take the lead in play. The instances that do occur are of low intensity and may not interfere materially with the child's need for autonomy. Directives may be poorly timed, for example.

5 High intrusiveness: There are clear incidents of intrusiveness throughout the sessions and it is clear that the parent's agenda has precedence over the child's needs and interests. There may be either some high intensity interactions or persistent low level intrusive interactions such as frequent but not constant suggestions as to how activities should proceed. For example, the parent may physically direct behavior more than once or may appear uninvolved for long periods but whenever there is an interaction appear consistently intrusive.

7 Very high intrusiveness: The parent is highly intrusive. The parent runs the show and almost constantly intervenes inappropriately without cues from the child with a stream of directives and suggestions. Highly intrusive parents seem to react to their own schedule rather than basing their actions upon the needs of the child. The parent is domineering and may demonstrate power assertive techniques to get the child to comply either with verbal commands or physical directives.

#### Flatness of Affect

Rationale: This category represents the parent's level of animation in face and voice. Flatness is exhibited by blank impassive facial expressions and monotone verbal expressions. It is marked by a lack of animation or apparent energy. Parents who display intrusive and negative verbal behaviors or expressions with their children are not flat. Also if the parent is

not expressing much verbal animation but is watching the child with interest, it is a sign that the parent's affect may not be flat. The parent may simply be reserved. This category assesses the parent's overall demeanor not just animation with the child. Behaviors are rated not what is being said.

Ratings on this category are based on both quality and quantity of flat behaviors. Quantity is simply the frequency with which behaviors are demonstrated. Quality refers to the intensity of the behavior and may be thought of as levels of flatness or blankness.

1 Not at all characteristic: This rating should be assigned to parents who exhibit no flatness. There is consistent animation in the parent's demeanor, behaviors, and voice.

3 Minimally characteristic: This rating should be given to parents who exhibit some flatness. The parent is usually animated but there is some time when facial expression is blank and impassive and the voice is monotone.

5 Moderately characteristic: This rating should be assigned to parents who are predominately flat. Infrequent periods of animation may alternate with more clear and prolonged periods of flatness.

7 Highly characteristic: There is a consistent absence of animation in expression and or voice.

## Scoring Sheet for Parent Child Interaction

Name \_\_\_\_\_ Date \_\_\_\_\_ Segment 1 2 3  
 Parent ID# \_\_\_\_\_ Child ID # \_\_\_\_\_

## 1. Positive Regard

Notes:

- 1
- 2
- 3
- 4
- 5
- 6
- 7

## 2. Negative Regard

Notes:

- 1
- 2
- 3
- 4
- 5
- 6
- 7

## 3. Sensitivity/Support

Notes:

- 1
- 2
- 3
- 4
- 5
- 6
- 7

## 4. Disengagement/Engagement

Notes:

- 1
- 2
- 3
- 4
- 5
- 6
- 7

## 5. Intrusiveness

Notes:

- 1
- 2
- 3
- 4
- 5
- 6
- 7

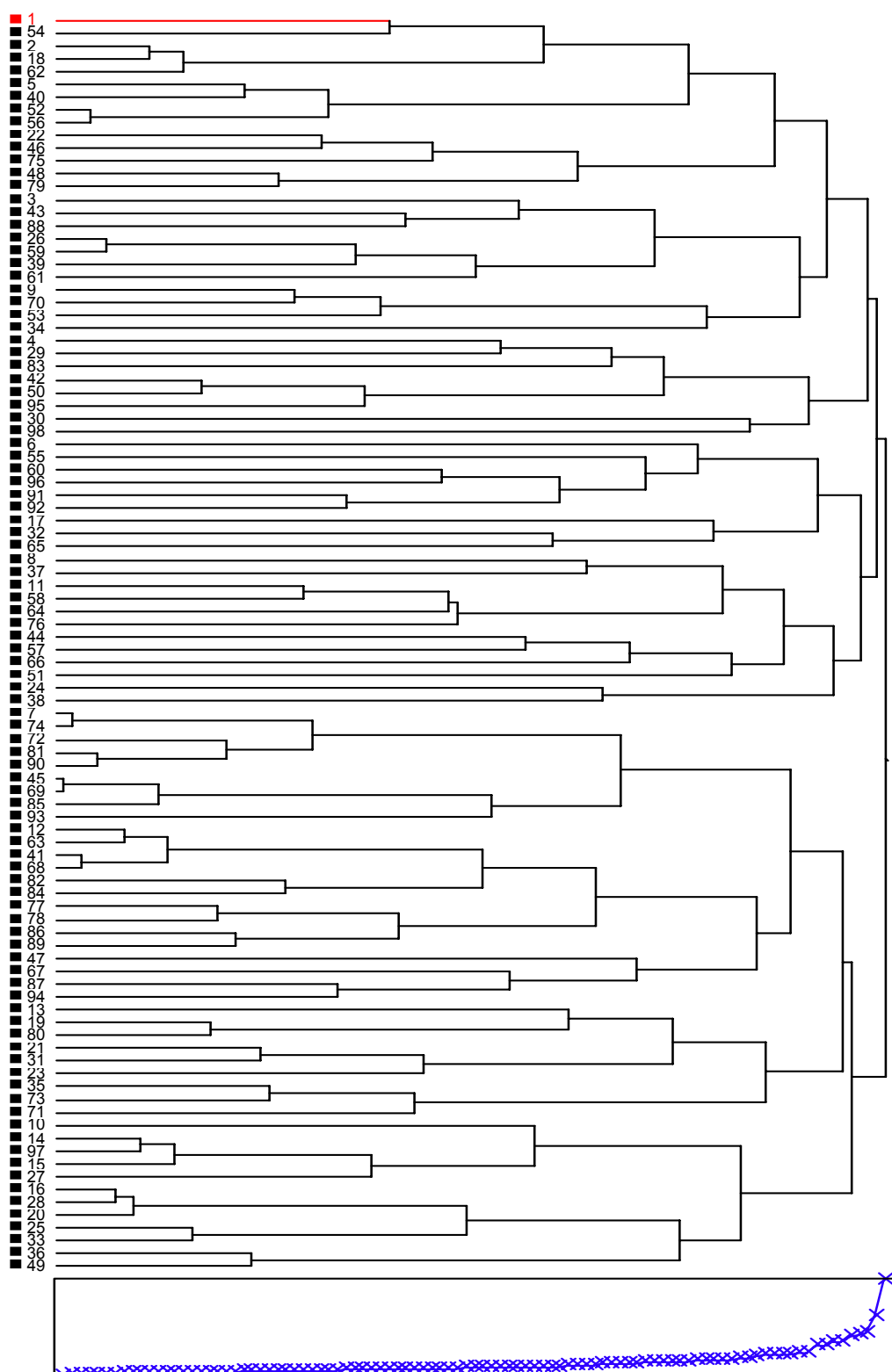
## 6. Flat Affect

Notes:

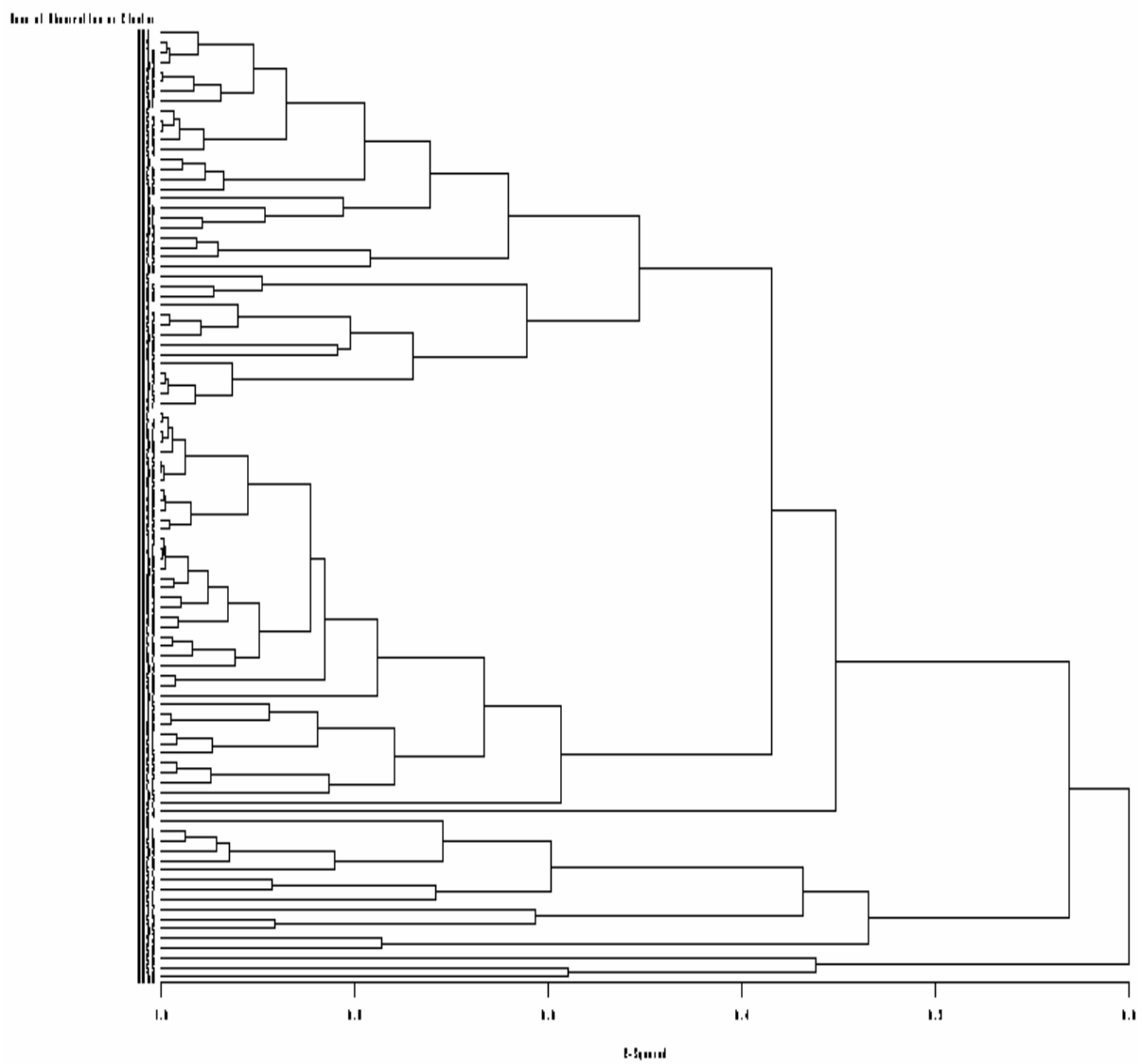
- 1
- 2
- 3
- 4
- 5
- 6
- 7

## Appendix F

Dendrogram and Scree Plot for using Ward's Minimum Variance Method



## Dendrogram using Average Linkage Method



## Appendix G

Means and Standard Deviations of Clustering Variables for  
Abused and Comparison Samples

Variable	Abused Sample		Comparison Sample		F value
	(n = 98)		(n=77)		
	M	SD	M	SD	
<i>Social Behavior Scale:</i>					
Prosocial Behavior	3.45	(.77)	3.71	(.72)	5.12*
Relational Aggression	1.75	(.69)	1.70	(.79)	.19
Overt Aggression	1.78	(.78)	1.59	(.71)	2.57
Asocial Behavior	1.91	(.80)	1.76	(.62)	1.94
Excluded	1.99	(.92)	1.80	(.75)	2.20
Victimized	1.74	(.76)	1.61	(.57)	1.40
<i>Playground Observation:</i>					
Negative Rough Play Ratio	.10	(.09)	.12	(.11)	.84

\* $p < .05$

## Appendix H

## Means and Standard Deviations of All Variables for Clusters and Comparison Sample

Variable	At Risk		Socially Well		Social Difficulties		Comparison		<i>F</i> value
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
	<i>(n = 33)</i>		<i>(n=44)</i>		<i>(n=21)</i>		<i>(n = 78)</i>		
<i>Social Behavior Scale:</i>									
Prosocial Behavior	3.03 <sub>a</sub>	(.48)	4.09 <sub>b</sub>	(.53)	2.76 <sub>a</sub>	(.46)	3.71 <sub>c</sub>	(.71)	32.95*
Relational Aggression	1.95 <sub>a,c</sub>	(.49)	1.32 <sub>b</sub>	(.42)	2.32 <sub>a</sub>	(.83)	1.70 <sub>c</sub>	(.79)	12.23*
Overt Aggression	2.20 <sub>a</sub>	(.61)	1.18 <sub>b</sub>	(.26)	2.37 <sub>a</sub>	(.86)	1.59 <sub>c</sub>	(.71)	25.75*
Asocial Behavior	1.70 <sub>a</sub>	(.59)	1.74 <sub>a</sub>	(.65)	2.61 <sub>b</sub>	(.99)	1.76 <sub>a</sub>	(.62)	10.26*
Excluded	1.78 <sub>a</sub>	(.50)	1.55 <sub>a</sub>	(.62)	3.23 <sub>b</sub>	(.86)	1.80 <sub>a</sub>	(.75)	30.28*
Victimized	1.81 <sub>a</sub>	(.63)	1.27 <sub>b</sub>	(.39)	2.62 <sub>c</sub>	(.70)	1.61 <sub>a</sub>	(.57)	27.98*

(table continues)

## Appendix H Continued

Variable	Cluster 1		Cluster 2		Cluster 3		Comparison		<i>F</i> value
	<i>(n</i> = 33)		<i>(n</i> = 44)		<i>(n</i> = 21)		<i>(n</i> = 78)		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
<i>Playground Observation:</i>									
Negative Rough Play Ratio	.12	(.11)	.10	(.08)	.11	(.08)	.12	(.11)	.56
<i>Validation Variables:</i>									
KBIT Composite IQ score	97.96	(9.29)	97.26	(11.22)	95.29	(14.47)	101.00	(14.97)	.52
Hostile Attributions	5.26	(1.94)	4.10	(2.17)	4.50	(1.73)	4.69	(1.96)	1.55
Total Number of Types of Solutions	7.22	(1.65)	7.23	(2.09)	6.86	(1.88)	8.16	(2.14)	3.02
Warm Parenting Style	27.70	(3.05)	28.48	(2.90)	27.29	(3.43)	28.53	(3.71)	.83

Note. Means in the same row that do not share subscripts differ at  $p < .05$  in the Dunnett T3 test.

\* $p < .05$

## Appendix I

Pairwise Pearson Product-Moment Correlations Among Abused Children's Social Behavior and the Validation Variables (N = 98)

Variables	1	2	3	4	5	6	7	8	9	10	11
1. Intelligence	-	-.01	.08	.10	-.00	-.17	.12	-.09	.15	.21	-.07
2. Attribution style for peer intent		-	.18	-.24*	-.19	.18	.14	.09	.07	.02	.01
3. Problem-solving ability			-	-.01	-.27*	.06	.16	.17	.18	.12	.03
4. Warm Parenting Style				-	.11	-.11	-.12	-.01	-.06	-.14	-.03
5. Prosocial Behavior					-	-.37*	-.55*	-.22*	-.47*	-.51*	-.19
6. Relational Aggression						-	.61*	.15	.23*	.33*	-.01
7. Overt Aggression							-	.06	.36*	.50*	.21*
8. Asocial Behavior								-	.54*	.33*	-.21*
9. Exclusion									-	.71*	.06
10. Victimization										-	.09
11. Negative Rough Play Ratio											-

\* $p < .05$