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THE HOME ENVIRONMENT AND INTELLECTUAL FUNCTIONING IN YOUNG CHILDREN WHO EXPERIENCE DOMESTIC VIOLENCE

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By

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ABSTRACT

THE HOME ENVIRONMENT AND INTELLECTUAL FUNCTIONING IN YOUNG CHILDREN WHO EXPERIENCE DOMESTIC VIOLENCE

By

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Research has shown that young children who witness domestic violence develop numerous socio-emotional problems; however, very little is known about the possible effects on their intellectual functioning. This study examined both the direct and indirect effects of experiencing domestic violence, defined as male-to-female abuse, on preschoolers' intellectual functioning. It was hypothesized that direct exposure to domestic violence would be related to lower levels of intellectual functioning, and that children who were exposed to domestic violence *and* were abused by a parent would have more problems in intellectual functioning than children exposed to only one of these types of family violence. In addition to this direct pathway, it was hypothesized that the intellectual quality of the home environment would mediate the relationship between domestic violence and preschoolers' intellectual development. Domestic violence was also expected to have an indirect relationship to intellectual abilities through maternal depression. One hundred mothers and their 3 to 5 year-old children participated in the study. Results revealed that there was no direct relationship between domestic violence and preschoolers' intellectual functioning. However, domestic violence was indirectly related to children's intellectual functioning through mothers' level of depression and the quality of the home environment.

Dedicated to the women and children who shared their experiences and taught me so much, and to my husband, Martin, for his love and support from the very beginning.

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INTRODUCTION

In its most general sense, the term "domestic violence" includes violence between spouses, siblings, parent-child violence, and violence against elderly relatives. However, most studies, including the present one, use the term to refer specifically to woman abuse. Domestic violence can range from acts of coercion and control to physical and sexual abuse and currently occurs at a staggering rate. For example, Browne (1993) reported between 21% and 34% of women in this country will be physically attacked by an intimate partner. Furthermore, more than 50% of all women murdered during the first half of the 1980s were murdered by their partners (Browne & Williams, 1989). Battering of women also occurs across all racial and ethnic groups, educational levels, and religious affiliations (Walker, 1994).

Research has found that many battered women are mothers, suggesting there are large numbers of children who witness domestic violence (Walker, 1979). Indeed, approximately 3.3 million children are at risk for witnessing violence against their mothers (Carlson, 1984). Up until recently, research has focused on the detrimental effects to the abused women, giving little attention to the possible effects on the child witnesses. Further, the small body of literature on child witnesses has focused almost exclusively on socio-emotional outcomes, virtually ignoring the possible effects of domestic violence on intellectual and cognitive functioning. This is surprising since intellectual development and academic success have been shown to be important protective factors, as well as risk factors, for other areas of functioning (e.g., Luthar & Zigler, 1991).

The existing research has also been largely descriptive in nature, telling little about the processes through which witnessing domestic violence affects children's development. It is crucial to assess these complex pathways, particularly the ones that promote effective adaptation in children living with ongoing stressful life circumstances, for the success of any prevention or intervention program. Finally, surprisingly little attention has been given to preschoolers compared to school-age children, despite the fact that preschoolers may be at a greater risk because of a number of developmental limitations (Hughes, 1988), including limited emotional repertoires, coping options, and cognitive abilities, greater dependence on supportive adults, and less experience with mastering stressful events.

The present study will address various limitations of the current literature while examining several variables that have not yet been investigated in preschool-age children who have experienced domestic violence. This study will examine the quality of the home environment, including aspects such as the amount and variety of intellectual stimulation, as a possible mediator between experiencing domestic violence and children's intellectual functioning. The few existing studies that have addressed mediators between domestic violence and children's adjustment have examined a narrow range of variables, mostly attributes of the mother such as maternal stress or maternal psychological health. Although maternal attributes and child characteristics are important for intervention purposes, this study seeks to examine broader family factors since domestic violence is presumably not an isolated event and the early family environment is so crucial to the well-being of young children. Because child abuse is present in about 35% to 70% of all homes characterized by domestic violence (Jouriles & Norwood, 1995; O'Keefe, 1995), this study will also examine the differential impact between being

directly exposed to domestic violence and both being exposed to domestic violence *and* being a direct victim of parental aggression. In order to be consistent with existing literature, the term "witnessing violence" throughout this paper will include both direct witnessing and witnessing the aftermath of the violence, i.e., bruises or marks on the mother. It is hoped that this study will contribute to a greater understanding of how domestic violence affects children's development so that effective prevention programs may be developed.

Domestic Violence and Preschoolers' Socio-Emotional Development

As mentioned above, most of the existing research on children who have witnessed domestic violence has examined the socio-emotional adjustment of school-age children. These studies indicate that school-age witnesses show more internalizing and externalizing problems, more depression, and greater posttraumatic stress symptoms compared to non-witnesses according to maternal report (Graham-Bermann & Levendosky, 1997; Jouriles, Murphy, & O'Leary, 1989; Rossman et al., 1993; Spaccarelli, Sandler, & Roosa, 1994; Sternberg et al., 1993). They also appear to have greater social problems (Dawud et al., 1991) and more aggressive biases in their cognitions, i.e., more expectations of aggression (Rossman et al., 1995). Much less is known about the effects of domestic violence on preschoolers due to a lack of research in this area. Assuming the effects on preschoolers are the same as the effects on school-age children is erroneous, since these two groups of children show considerable differences. For example, important developmental issues for preschoolers might be a developing sense of trust and order in the world, a sense of mastery, and a foundation for intellectual strivings. School achievement and a more complex level of social relationships may be

more central to school-age children. Preschoolers also have different cognitive limitations than older children which impact how stressful events are perceived and mastered. These developmental differences may cause unique problems and manifestations of distress for the two age groups, as well as distinct consequences for future development. Because the current study is interested in a greater understanding of the impact of domestic violence on preschoolers specifically, only studies that have included preschool-age children will be reviewed in detail here.

Most studies with preschoolers have been descriptive in nature, that is, they have compared child witnesses of domestic violence to a comparison group and reported the between group differences. For example, Hinchey and Gavelek (1982) examined the ability to empathize in 32 preschoolers between the ages of 4 and 5 who had witnessed domestic violence and were staying in a shelter for battered women. They found that child witnesses performed significantly worse than non-witnesses on three out of four empathy measures, suggesting that witnessing violence between parents negatively impacted their ability to understand another person's point of view or feelings. Further, these researchers found that girls from violent homes performed more poorly on a role-taking task than boys from violent homes, suggesting that witnessing domestic violence may impact boys and girls differently starting at an early age.

Hughes and colleagues have produced a number of reports on the effects of domestic violence in preschool-age children. In one study (Hughes & Barad, 1983), these researchers looked at a number of behavior problems and the self-concept of preschoolers (N=18) who were staying in a battered women's shelter. Although there were no sex differences among preschoolers, preschoolers showed more problems than school-age children staying at the same shelter, suggesting that they may be more vulnerable to the

effects of witnessing domestic violence. Preschoolers also reported having self-esteem levels well below average, i.e., roughly 1.5 standard deviations below a comparison group from the same county. In a later study, Hughes (1988) found that young children who were both abused themselves and witnesses to their mother's abuse (N=55) showed significantly higher total behavior problems than children who were only witnesses (N=40) and children from non-violent homes (N=83). Abused witnesses also scored significantly higher on a behavior problem intensity score than control children. These findings support Hughes' notion of a "double whammy" effect. That is, both witnessing parental abuse and being the direct victim of abuse increases the likelihood of emotional problems because there are more stressors with which the child needs to face. This notion may also help explain why preschoolers appear to be more vulnerable than school-age children since they may have fewer resources with which to cope.

Hughes, Parkinson, and Vargo (1989) later found that a group of 12 abused witnesses showed more internalizing and externalizing problems according to maternal report than 23 children from non-violent homes, but non-abused witnesses (N=24) did not significantly differ from either group. On total behavior problems, abused witnesses scored higher than witnesses who scored higher than control children. A similar study found that abused witnesses were higher on internalizing and externalizing behavior problems and lower on social competence than non-abused witnesses, again suggesting that the "double whammy" of both witnessing violence and being abused has an even more profound effect on children than only witnessing violence (Davis & Carlson, 1987). Interestingly, additional analyses revealed that preschool boys were doing significantly worse than school-age boys, while preschool girls were doing significantly better than school-age girls. These results are consistent with some researchers' assertions that girls

may be affected by discordant homes just as boys are, but the negative effects may take longer to show up in girls (Jaffe, Wolfe, Wilson, & Zak, 1985; Spaccarelli et al., 1994).

Another study compared children between the ages of 4-16 who had been abused (N=18) to witnesses (N=32) and to 15 control children (Jaffe, Wolfe, Wilson, & Zak; 1986). They reported that abused children scored higher than witnesses who scored higher than control children on externalizing behavior reported by mothers. Abused children and witnesses scored higher than controls on internalizing problems, but did not differ from each other. There were no group differences on social competence. These results must be interpreted cautiously, however, since the authors did not assess spouse abuse in the child abuse group nor did they assess child abuse in the witness group. Like several of the other studies reviewed here (Hughes, 1988; Hughes et al., 1989; Davis & Carlson, 1987), preschoolers were grouped with school-age children, rendering findings less conclusive due to the heterogeneous nature of the group. That is, samples with such wide age ranges make it more difficult to draw conclusions about the effects of domestic violence on preschoolers specifically.

Finally, Rossman et al. (1993) examined a number of outcome measures in preschoolers who had witnessed domestic violence. Contrary to other findings, preschool-age witnesses did not display more externalizing behavior problems nor did they have lower social competence scores than non-witness controls. Preschoolers also appeared to be doing significantly better than older children. In several other analyses, preschoolers were grouped with older children to form a group of 4 to 9 year-old witnesses (N=23). According to mothers, this group had more internalizing behavior problems, more dissociative symptoms, and more posttraumatic stress symptoms compared to non-witness controls (N=42) and abused witnesses (N=15). However, it is

unclear whether this would be true of preschoolers specifically or whether these effects were due to the inclusion of older children. The authors explained the surprisingly low scores of abused witnesses by suggesting that abused children may suppress some behaviors (i.e., yelling or arguing) to avoid further abuse, thus appearing to have less problems.

Only a handful of studies have examined possible mediators between domestic violence and preschoolers' adjustment. Based on the understanding that parenting and maternal psychological health is crucial to children's adjustment, Graham-Bermann and Levendosky (1998) found that mothers' self-esteem, depression, and experience of emotional abuse mediated preschoolers' outcome. Specifically, mothers' self-esteem was the greatest predictor of children's internalizing problems, mothers' self-esteem and frequency of emotional abuse were the greatest predictors of child externalizing problems, and mothers' emotional abuse and depression predicted negative emotional expression and regulation in the children (i.e., inappropriate responses to events, expressions of sadness, worry, and frustration). Similarly, Rossman et al. (1993) found that maternal distress and maternal comfort toward the child mediated the impact of witnessing violence on children's trauma symptoms. They also reported that the frequency of violent events and the amount of help available at the scene of the event moderated children's trauma symptoms.

Holden and Ritchie (1991) examined a number of parenting characteristics as mediators between domestic violence and young children's adjustment by suggesting that domestic violence can affect parenting in three ways: a) it can raise maternal stress, which renders mothers less emotionally available to their children, b) negative marital interactions may "spill over" into parent-child interactions, and c) it can increase

inconsistent parenting due to disagreements over child-rearing practices and changes in parenting by one spouse when the other is present. They found that mothers in violent homes had more parenting stress, were less consistent, and less attentive to their children than comparison mothers. According to maternal report, fathers in violent homes were more irritable, less affectionate, and participated less with their children's activities than comparison fathers. Further, both maternal stress and paternal irritability mediated the effects of domestic violence on children's behavior problems. Surprisingly, this study found that preschoolers had less behavior problems and better social skills than school-age children. Although this study assessed the prevalence of child abuse among the sample (about half experienced abuse), the researchers did not examine the differences between the witness group and the abused witness group.

Finally, Wolfe and colleagues examined maternal stress and adjustment as possible mediators of preschoolers' adjustment. They found that maternal stress accounted for 18% to 21% of children's behavior problems (Wolfe, Jaffe, Wilson, & Zak, 1985). These researchers also reported that violent homes were characterized by a host of negative factors such as frequent moves and separations. The authors asserted that at this point, no direct causal link can be established between domestic violence and children's problems because the mechanisms through which violence impacts children are poorly understood, and there are probably many associated variables that have not yet been explored. As in other studies, this one grouped preschoolers with older children making the results less conclusive about the pathways through which domestic violence affects preschoolers specifically. However, there is general agreement among studies that parenting, maternal stress, and maternal psychological functioning are several important

factors that may mediate the negative effects of domestic violence on preschool-age witnesses.

Limitations of the Literature on Domestic Violence and Children's Development

The existing literature on the impact of domestic violence on preschoolers' socio-emotional functioning is somewhat mixed and often confusing. Some studies found that witnesses were doing no worse than non-witness controls, while others found that witnesses adjusted much worse than control children. Some found that being a victim of abuse as well as witnessing parental abuse contributed to poor adjustment in certain areas of functioning above and beyond the effects of witnessing violence, while others did not. Some studies found that girls adjusted better than boys, others found boys' adjustment was better than girls', and some found no gender differences in adjustment. Similarly, some studies showed that preschoolers fared worse than school-age children, while others reported the reverse. There are a number of methodological shortcomings of the literature that contribute to these inconsistent results and hinder our understanding of the effects of domestic violence on young children.

Issues of Definition

Most studies have not provided a comprehensive, well-defined description of the type of violence children are exposed to, including the frequency, severity, duration, and recency of exposure. Further, researchers rarely specify whether children actually witness the violent event or whether they "witness" the negative aftereffects such as marks on the mother, disruption in the home, relocation into a shelter, etc...

Some researchers also argue that assessing domestic violence as a dichotomous variable, which virtually all studies have done, may not be as helpful or sensitive as

assessing violence along a continuum (Jouriles et al., 1989). Further, almost all researchers define domestic violence as physical violence between adult partners, neglecting important dimensions such as verbal and sexual abuse.

Sample Selection

The vast majority of studies have included small sample sizes, i.e., seven preschoolers in an abused group and four preschoolers in the witness group (Hughes et al., 1989), making it difficult to interpret findings. Many do not include an adequate comparison sample, i.e., just correlating variables within a sample of children from violent homes. Those that do include a comparison sample often fail to control for a number of confounding variables such as child abuse (which occurs around 50% of the time in these families), socioeconomic status (SES), verbal or psychological abuse, and stability of the home environment. A few studies included only male children, and several included children with a wide range of ages, i.e., 4 to 16 years old (Jaffe et al., 1986). This group is too heterogeneous and includes children with different emotional, cognitive, and social developmental levels. Support for the separation of preschoolers from school-age children comes from several studies which have shown that the effects of domestic violence do indeed differ between these two age groups (i.e., Hughes, 1988).

The majority of studies have obtained their samples from mothers and children residing in battered women's shelters, a sample which is probably not representative of the population of battered women and child witnesses. It is possible that this group represents a more severe group due to being in an acute crisis state and to the additional stressor of relocating temporarily into a shelter. Fantuzzo et al. (1991) attempted to understand the effects of shelter residence versus home residence on preschool witnesses. They found that shelter residents reported greater internalizing problems and lower social

competency than children at home after controlling for verbal and physical abuse. Also, the shelter group was characterized by a lower level of maternal acceptance. Unfortunately, there are virtually no data on participants' pre- and post-shelter functioning.

Lack of Mediating and Moderating Variables

Too often, investigators try to draw direct links between witnessing violence and specific child behaviors. Even when connections are made, it is still unclear through what processes or mechanisms children are being affected. Although some researchers have begun to look at some moderating variables such as age and gender, almost all have ignored possible mediating variables. Those that have addressed possible mediators have focused almost solely on maternal attributes, despite the fact that domestic violence disrupts the entire family functioning. As can be seen in various studies, many children adjust rather poorly to being exposed to family violence. However, many children are able to adjust at comparable levels to "normal" children and may be considered "resilient." Thus, there appears to be various unknown variables that undermine some children's adjustment making them more vulnerable to the stress of living in a violent home, as well as protective factors that serve to buffer or lessen the effects of a violent home in other children. Identifying these variables can help researchers and clinicians develop effective intervention programs, as well as help clarify the nature of this complex problem.

Outcome measures

Although most studies reviewed used standardized measures to assess children's adjustment, the current literature on domestic violence has focused almost exclusively on socio-emotional measures of children's health. A large gap in the literature on child witnesses to domestic violence, including both preschool-age and school-age children,

has been the effects that this type of family violence has on children's intellectual and cognitive functioning. This is surprising since intellectual deficits have been found in other high-risk child populations and because this area of functioning appears to be important for a number of other domains of adjustment. The current study will address this gap by examining the intellectual functioning of preschoolers who experience domestic violence, as well as improve upon a number of other limitations in the existing literature. The handful of studies that have empirically examined the intellectual functioning of children who have witnessed domestic violence will be reviewed next.

Domestic Violence and Children's Intellectual Development

The few studies that have looked at the impact of domestic violence on children's intellectual functioning have found evidence of deficits and delays. Westra and Martin (1981) compared the intellectual functioning using the McCarthy Scales of Children's Abilities (McCarthy, 1972) in 2 to 8 year-old children who had witnessed domestic violence (N=20) to normative scores from the general population. They found that child witnesses scored significantly lower than normative children on the verbal, quantitative, motor, and overall cognitive ability scores after controlling for low SES. Unfortunately, the study was limited by the wide age range of the sample for reasons already mentioned. It would have been interesting to know how preschool-age witnesses compared to school-age witnesses. This study also neglected to control for child abuse and only included children from a battered women's shelter. Although these authors did not empirically test any mediating variables, they suggested that these delays were due to the more pervasive, pathological family environment in which family violence takes place. They reported that there was evidence of decreased stimulation for the child and less attention given to

the child, which may have mediated the impact of domestic violence on the children's development.

Another study found that child witnesses (N=38; ages 4 to 9) had significantly lower scores on receptive language, measured by the Peabody Picture Vocabulary Test (PPVT; Dunn, 1965), than a control group of children (Rossman et al., 1993). This control group included 42 families experiencing recent stressful, nonviolent events who had similar SES backgrounds to the domestic violence group, suggesting that the low scores may not simply be a function of a stressful home environment. These authors also compared child witnesses to children who both witnessed domestic violence and had been victims of parental violence and found that the two groups did not significantly differ from one another on intellectual functioning. This indicates that experiencing violence directly may not negatively impact children's intellectual functioning above and beyond witnessing violence, although other authors (e.g., Hughes, 1988) have shown that experiencing both types of violence may be related to even greater emotional problems than witnessing alone.

Two other studies have addressed the impact of witnessing violence on school-age children's intellectual development. Mathias, Martin, and Murray (1995) found that approximately 50% of children who had witnessed domestic violence and who had been out of a violent home for at least one and a half years (N=79) had significant deficits (at least 1 year behind) in reading abilities, both in reading accuracy and reading comprehension, according to the Neale Analysis of Reading Ability-Revised (Neale, 1988). Furthermore, there were no gender differences in reading abilities nor were there any differences between witnesses and abused witnesses (approximately 65% of witnesses had experienced abuse). Unfortunately, this study did not compare the witness

groups to a control group to determine whether witnesses had significantly lower reading scores than control children, although one would suspect this to be true. Unlike other studies, this report suggests that negative effects on intellectual functioning may be long lasting for children exposed to domestic violence.

In the second study, Moore and Pepler (1998) compared child witnesses staying in a battered women's shelter (N=113) to children in a homeless shelter (N=82), children from one-parent families (N=82), and children from two-parent families (N=100) on reading and math scores using the Revised Wide Range Achievement Test (WRAT-R; Jastak & Wilkinson, 1984) and on a subscale of the WISC-R (Wechsler, 1974) that measures attention and short-term memory (Digit Span). The authors found that child witnesses did not score significantly below children from one-parent families on reading scores, but both of these groups scored significantly below children from two-parent homes after controlling for maternal education. Homeless children had the lowest reading scores. The math scores of child witnesses did not significantly differ from any of the other groups. The witnesses and the homeless children had significantly lower Digit Span scores than the other two groups, but did not differ from each other. Children in the comparison groups had not witnessed domestic violence in the last 12 months, suggesting that more than violence per se may be involved in negatively affecting children's intellectual abilities. The authors suggested that depressed scores among child witnesses, homeless children, and children from one-parent families may be due to some shared family risk factors, although they did not empirically examine any such familial factor.

Unfortunately, this is the extent to which researchers have addressed the impact of witnessing domestic violence on children's intellectual performance. As is true for

studies addressing the socio-emotional adjustment of child witnesses, these studies included relatively small sample sizes and varying types of comparison groups. Furthermore, each study used different outcome measures, making it difficult to compare results across studies. Only two existing studies included preschoolers, and even those combined preschoolers with older children, leaving virtually nothing known about the relationship between domestic violence and preschoolers' intellectual and cognitive development. In addition, none of the studies addressing intellectual behaviors empirically accounted for possible mediating variables. Therefore, it is unclear through what mechanisms or processes domestic violence might impact this area of functioning.

Child Abuse and Children's Intellectual Development

Because there is a significant co-occurrence between witnessing domestic violence and being directly abused by a parent and because these two groups of children both grow up in a violent home, the relationship between child abuse and intellectual development will be reviewed. Examining the child abuse literature, which is more extensive than the domestic violence literature, may provide a greater understanding of the impact that witnessing domestic violence might have on children's intellectual and cognitive development. Once again, only studies that included young children will be reviewed here.

In one of the first longitudinal studies with abused children, Elmer (1977) followed-up 17 abused infants and 17 nonabused, but hospitalized, infants 8 years later and tested them on a variety of outcome measures. She found that there were no differences in language abilities or (psychologist) ratings of academic achievement when the children were 8 years of age, although both groups displayed relatively severe deficits

in this domain compared to normative scores. Because both groups were matched for low SES, she concluded that intellectual deficits were more influenced by social class than by abuse. However, this author did not control for a number of potentially confounding variables, including violence within the family. She noted that many parents in the comparison group reported severe violent episodes such as a father breaking a mother's arm. These violent episodes could certainly be a possible reason for the lack of between-group differences, rather than social class.

Unlike the conclusions drawn by Elmer (1977), Perry, Doran, and Wells (1983) found significant differences between a group of physically abused children and a group of nonabused children on measures of intellectual functioning. The abused children (N=21; thirteen children younger than 5 years and eight children older than 5 years) scored significantly lower on a measure of verbal comprehension than the control group, with 50% of the abused group scoring lower than one standard deviation from the mean and 6% scoring below two standard deviations, compared to 22% and 0% respectively. The abused group also showed more deficits in language abilities and academic success, indicating that abused children's problems can be pervasive. These two groups were matched on demographic variables including SES and maternal education was controlled for, leading the authors to conclude that differences in intellectual functioning may not be simply a function of class.

A number of studies have looked at more narrow age ranges of children, lending greater clarification to the effects at different developmental stages. One study compared test results from a number of measures including the Stanford-Binet (Terman & Merrill, 1960) and the PPVT between preschoolers who had experienced different types of maltreatment and preschoolers with no history of maltreatment (Hoffman-Plotkin &

Twentyman, 1984). Scores for children who were physically abused (N=14) did not differ statistically from children who had been neglected (N=14) on any measure, but both of these groups had significantly lower scores than nonmaltreated children (N=14) on all measures. These authors noted no explanation for their findings, but did report that abused children were rated by trained observers as more aggressive, while neglected children were rated as more withdrawn. It is possible that these two ways of behaving may illustrate different paths to the same outcome. Interestingly, another study conducted by these researchers found no significant differences between abused preschoolers, neglected preschoolers, and nonmaltreated preschoolers on the PPVT (Rohrbeck & Twentyman, 1986), although this could be due to the small sample sizes in each group (N=12).

Allen and Oliver (1982) also examined intellectual functioning measured by the Preschool Language Scale (Zimmerman, Steiner, & Evatt, 1979) among different types of maltreated preschoolers. Groups included physical abuse only, neglect only, both physical abuse and neglect, and a nonmaltreated comparison group. The results showed that neglect was the only significant predictor of poor auditory comprehension and poor verbal abilities. Further, there was no correlation between these cognitive abilities and physical abuse or between these abilities and the interaction of abuse and neglect. These authors concluded that deficits in intellectual functioning among maltreated children may have been due to a lack of stimulation in the environment of neglected children, rather than abuse per se. In addition, they noted that other studies finding a relationship between physical abuse and intellectual deficits might really be seeing the hidden effect of neglect in their subjects. This is an interesting hypothesis that other researchers have made as well.

For example, Fox, Long, and Langlois (1988) studied groups of children between the ages of 3 and 18 who had been either physically abused, severely neglected, generally neglected (less severe), or not abused. They used several different measures of language comprehension and found that severely neglected children were the only children that scored significantly lower than the control group. Average percentiles on the PPVT were highest for nonabused control children (52.5), followed by generally neglected (40.9), abused (28.9), and severely neglected children (23.1). Like Allen and Oliver (1982), these authors hypothesized that environmental deprivation experienced by neglected children results in a lack of exposure to parent-child interactions that are crucial for learning language. Another possibility they proposed was that abused and neglected children may learn not to respond (which inhibits learning) for fear of responding erroneously and being severely punished. That is, maltreated children may learn that it is adaptive to withdraw from the world and not attempt exploratory activities necessary for adequate learning.

Yet another study examining different aspects of intellectual functioning among maltreated preschoolers found that physically abused preschoolers scored significantly lower on the McCarthy scales of verbal, memory, and overall cognitive abilities than a comparison group of 10 nonabused preschoolers attending a Head Start Program (Friedrich, Einbender, & Luecke, 1983). No differences were observed between the groups on reading and math scores on the Wide Range Achievement Test (WRAT). However, the authors noted that this may be due to an insufficient bottom in the WRAT for preschoolers. This study was limited by the low number of children and the all-male sample. However, the age range was narrow enough (3 to 5 years) to be relatively certain that developmental variables were not confounding the results. These results also support

other findings that the deficits seen in abused children may be found in multiple areas of intellectual functioning.

The final study reviewed here (Erickson, Egeland, & Pianta, 1989) reflects the only other longitudinal study to date besides Elmer (1977). This study used a developmental perspective, emphasizing that consequences of early maltreatment probably manifest differently at different developmental periods. The researchers identified mothers at risk for caretaking problems during their last trimester of pregnancy, and assessments were conducted at frequent intervals from then through the late preschool years of their children. In addition to a control group, four maltreatment groups were identified: physically abusive (N=24), sexually abusive (N=11), psychologically unavailable (N=19), and physically neglectful (N=24). Beginning when the children were 4 1/2 years of age, they were observed extensively in their preschools and were administered several subtests from the Wechsler Preschool and Primary Scale of Intelligence (WPPSI; Wechsler, 1967). Results indicated that physically abused preschoolers performed significantly worse than control children on three of the four WPPSI subtests (Block Design, Vocabulary, and Comprehension), neglected children had lower scores on the Vocabulary, Comprehension, and Animal House subtests, and the psychologically unavailable group and sexually abused group scored lower on Block Design compared to control children. Furthermore, children who were abused at younger ages had lower WPPSI scores than children abused at older ages. Neglected children showed the most severe and varied problems at ages 5 and 6. The authors explained, as other researchers have, that a major reason for these problems may lie in the history of deprivation and lack of stimulation these children experience. Further, the effects of this deprivation may become even more apparent as academic demands are made on the child,

making early interventions crucial for this population. Unlike other child abuse research, this study used a prospective longitudinal design, greatly enhancing the inferences that can be drawn from its results.

In summary, most of the studies to date indicate that young children suffering from different types of maltreatment have intellectual, cognitive, and academic impairments. Neglected children appear to be most at risk for intellectual delays, while sexually abused children seem less at risk for these particular problems (although they may be at risk in other areas). These deficits have been found within different age groups using a variety of measures including standardized intelligence tests, observations, school records, and other academic test scores. Further, deficits appeared in multiple areas of intellectual functioning such as memory, attention, reading, language, and readiness to learn. Except for Erickson et al. (1989), the literature on child abuse and preschoolers' intellectual functioning has unfortunately also been atheoretical and descriptive. That is, researchers report a number of differences between abused and nonabused children without much explanation for why these deficits exist. However, many researchers have speculated that harmful qualities of the home environment in which these children grow up may be more directly related to their intellectual deficits than the abuse per se. That is, child abuse negatively impacts the home environment in a number of ways, which in turn disrupts the child's intellectual development.

For example, in addition to those mentioned above, several other researchers have pointed out that the home environment of abusive families is characterized by less time in close proximity to children, less engagement and involvement in children's activities, and a gross lack of stimulation (Allen & Oliver, 1982; Azar, Barnes, & Twentyman, 1988; Barahal, Waterman, & Martin, 1981; Eckenrode, Laird, & Doris, 1993; Fox et al., 1988).

This lack of stimulation is particularly evident in neglectful families, offering a better understanding of why neglected children's intellectual development seems to be so profoundly affected. Crittenden (1981) reported that neglectful mothers "offered so little stimulation and responded to so few signals that they left their infants...largely responsible for their own stimulation" (pg. 210). Erickson et al. (1989) noted that the neglected children in their study not only had a history of deprivation in social, emotional, cognitive, and language development, they received overall poor quality care and lived with chaotic and disruptive conditions. These children lacked stimulation in a number of areas including having little contact with other children, less play materials, and less educationally stimulating experiences. Furthermore, these effects of deprivation became more and more apparent as academic demands were made on the child, suggesting that many of the negative consequences stemming from a lack of stimulation start becoming apparent around the preschool period.

Other researchers have noted that the family environment of abused children is characterized by low levels of parent-child interactions, especially positive and synchronous ones, and an insensitivity and unresponsiveness to children's needs. Abusive parents tend to be more disengaged from their children and do not modify their behavior in response to their children (Azar et al., 1988; Bousha & Twentyman, 1984). Abusive parents have also been shown to have a negatively distorted view of their children, often expecting more out of their children than they are capable (Houck & King, 1989). This may help explain their insensitive parenting, aversive behaviors, and lack of interactions with their children (Azar et al., 1988), which all prevent the developmentally important drive for effectiveness and competence (Martin, 1979).

Very few of these family variables have been empirically linked to preschoolers' intellectual development, although the findings with neglected children do offer some support for this theory. Many researchers believe that these family variables may play a more direct role in determining childhood outcomes than individual acts of abuse because they are more continuously present and pervasive (Azar et al., 1988; Houck & King, 1989). Further, qualities of the home environment such as those discussed here are not the same as socioeconomic status, which has been the traditional measure of "home background" or "home environment." Socioeconomic status focuses on what the parents *have*, not what the parents *do*, and empirical evidence suggests that qualitative aspects of the home environment may be more closely related to children's intellectual and academic abilities than SES (Bradley et al., 1989; Greaney, 1986).

The role of the home environment as a mediator between child abuse and preschoolers' intellectual functioning seems viable and believed by many investigators in this area of research. It seems reasonable to think that similar processes may be at work in other high-risk populations as well, such as children who witness domestic violence. That is, domestic violence might undermine opportunities for stimulating experiences and positive parent-child interactions, may cause a child to withdraw, and may change the overall home environment, all of which could disrupt children's intellectual development. Unfortunately, researchers have just begun to look at the intellectual development of child witnesses, and possible mechanisms have yet to be explored. In order to apply what is known about abused children to child witnesses of domestic violence and to better understand the possible processes involved in families experiencing domestic violence, it is important to first gain a more thorough understanding of the optimal environmental conditions for intellectual development during the preschool years.

Importance of the Early Home Environment for Intellectual Development

Normal Populations

There is a large body of literature showing the importance of certain qualities of the early home environment for children's intellectual and cognitive development. For example, Clarke-Stewart (1973) examined a number of maternal behaviors that appeared to be "optimal" for young children's development using a longitudinal design. She found that optimal care was characterized by warm, nonrejecting, and intellectually stimulating behaviors (visually, verbally, and tactually), which led to greater cognitive and intellectual abilities in toddlers. The more a mother talked to an infant, exposing him/her to language, the larger the child's vocabulary and the faster the child learned language. Optimal care also included general responsiveness to the child, more time interacting and playing with the child, making available more toys, and adaptability to the child's needs. These characteristics all increased the young child's competence, intellectual skills, and motivation.

The developmental task of active and secure exploration of the world is also important for intellectual development. Beginning in toddlerhood and extending into the preschool period, most children learn that it is fun to explore and manipulate the environment, which increases their sense of control and autonomy (Sroufe & Cooper, 1988). However, certain parent-child interactions are necessary for the success of this task. Parents need to understand a child's current capacities, as well as participate in and encourage the child's strivings. It is important for children to have a secure attachment to a caregiver as well, in order to give them the comfort to explore their capacities fully while remembering that the caregiver is nearby. Research has found that secure

youngsters tend to show more self-reliance, are more enthusiastic about facing challenges, show less frustration, and are more flexible and persistent in problem-solving (Sroufe & Cooper, 1988), all characteristics that promote intellectual abilities.

One group of researchers has been studying the long term effects of the early home environment on children's intellectual and cognitive abilities for decades and has consistently demonstrated the importance of certain familial qualities (Bradley & Caldwell, 1976; Bradley & Caldwell, 1984; Bradley et al., 1989). The home environment was measured in all of their studies using a scale the authors constructed called the Home Observation for the Measurement of the Environment (HOME; Caldwell & Bradley, 1984), which assesses the quality of stimulation found in the early home environment. This instrument includes scales such as Maternal Responsivity, Organization and Safety of the Environment, Provision of Appropriate Play Materials, and Opportunities for Daily Stimulation, all of which are considered types of stimulation important for healthy development.

In one of their earlier studies, Bradley and Caldwell (1976) investigated changes in mental abilities in a group of normal infants from 6 months to 36 months (N=77), as well as associated factors in the home environment. These authors noted that it is important to examine such relationships in preschoolers because marked changes in cognitive performance occur during this period and parents have their greatest impact on mental development during these years. The results indicated that infants who showed improvement on mental/cognitive abilities from 6 to 36 months had environments that encouraged and challenged the child to develop skills, were organized, had a high level of maternal involvement, and had a variety of play materials.

In a later study, these authors followed-up the same children when they were in first grade to see how the early home environment affected academic performance years later (Bradley & Caldwell, 1984). At this time, they found that specific environmental factors during infancy predicted achievement, while other factors were no longer related to achievement. More specifically, organization of the home was positively correlated with first grade reading scores, availability of play materials was related to better reading, language, and math scores, and a variety of stimulating experiences was related to better language scores. Infant maternal involvement was less important for first grade achievement than for 3 year-old intelligence. When the 24-month HOME scores were correlated with first grade scores, there were even more significant correlations. Maternal acceptance, available toys, maternal involvement, and variety of stimulating experiences were related to all three areas of achievement. Availability of appropriate toys was consistently the best predictor of later school achievement. Based on Piagetian theory, these researchers reasoned that children need concrete learning experiences during the early sensorimotor and preoperational levels of thinking to develop adequately. Toys and stimulating materials serve this purpose, as well as facilitate learning and modeling from parents and older siblings.

The same children were again assessed at 10-11 years of age using school achievement scores (Bradley, Caldwell, & Rock, 1988). The current home environment using the school-age version of the HOME was also administered. There were no significant correlations between the 6-month HOME scores and the 10 year-old achievement scores, but there were several between the 24-month HOME scores (particularly Availability of Toys and Parental Involvement) and later achievement. The current HOME scores showed the highest correlations with achievement scores,

suggesting that the current environment is most important to intellectual functioning. This study also discovered that few families had consistent HOME scores across the 10-year period, suggesting that home environments are not fixed and do not necessarily determine future adjustment. However, there was evidence that the stability of the Parental Involvement dimension across time was key in terms of school achievement at age 10. Despite the fact that infant HOME scores did not correlate with 10 year-old achievement, these authors suggested that these early environmental characteristics start the child on a developmental path that will ultimately affect later functioning. That is, the home environment at 6 months most likely affects cognitive competence, security, and motivation during infancy and toddlerhood, which may then influence abilities in the early school years.

Bradley and colleagues (Bradley et al., 1989) found similar results in a collaborative study across six sites in North America. Correlations between HOME scores and mental test scores beginning at 12 months (average correlation coefficient was .17) increased into the second year (average coefficient was .41) and became stable thereafter, although those with the Parental Responsivity scale continued to increase. Correlations between maternal education and occupation and mental test scores also increased into the second year (from .25 to .48) and then became stable. Interestingly, these authors found that SES contributed only a small amount to a child's intellectual development above and beyond the home environment (increase in $\underline{R}^2$ was .04), while home environment contributed a significant amount above and beyond SES (increase in $\underline{R}^2$ was .17). Other researchers have noted that the home environment may be more closely related to children's abilities than SES and maternal intelligence as well. In

addition, some have suggested that the home environment has a greater impact on verbal intelligence and school performance than on nonverbal intelligence (Greaney, 1986).

In a recent review of the literature on early family environments and young children's development, Stollak (1997) concluded that the following environmental factors have been found to be statistically related to the intellectual functioning of infants, toddlers, and preschoolers: 1) highly stimulating and complex environments with a variety of available toys, 2) caregivers who are involved with their children, especially in intellectual activities, 3) caregivers who are affectionate, responsive, accessible, and attentive to their children's needs, 4) caregivers who encourage and minimally restrict their child's autonomous actions, including exploratory and curious behaviors which lead to a sense of mastery, and 5) caregivers who display these types of complex, exploratory behaviors themselves as a model for the child to imitate. These environmental and caregiver characteristics clearly depict the intellectual and emotional atmosphere of the home that is necessary for the development of intellectual and cognitive abilities in young children.

High-Risk Populations

A number of other studies have looked at the relationship between early environmental factors and intellectual development in high-risk populations as well. For example, McGowan and Johnson (1984) assessed mother-child interactions and aspects of the home environment in a group of Mexican-American mothers and preschoolers from low SES backgrounds (N=86). Path analyses revealed that maternal attitudes stressing independence and maternal stimulation of the child at 3 years of age (defined by use of reasoning, encouragement of child verbalizations, and high level of mother-child interactions) predicted children's school achievement test performance and classroom

behavior at 7 to 9 years of age. Also, children whose mothers had more education and less traditional attitudes performed better in the classroom than children of less educated, more traditional mothers, although maternal stimulation appeared to mediate the effects of these two maternal variables.

Using recorded observations of mother-child interactions beginning at 12 months of age and ending at 30 months, McGlaughlin, Empson, Morrissey, and Sever (1980) looked at relations between the home environment and child development in 60 disadvantaged families. They found a number of variables measured during infancy to be significantly related to the child's cognitive competence at 30 months of age including: total number of mother-child interactions, intellectually stimulating interactions, frequent use of speech and talking by the mother, and a teaching style of technique used by the mother during interactions. Further, this facilitative style of interacting appeared to increase in importance as the young child got older.

Yeates, MacPhee, Campbell, and Ramey (1983) sought to examine the contributions of maternal IQ and the home environment on young children's intellectual development in a sample of children at risk for "sociocultural retardation." Children were assessed with the Bayley Scales of Infant Development at 6 and 18 months of age and with the Stanford-Binet at 24, 36, and 48 months of age, and the home environment was measured using the HOME inventory. Although there were several correlations between the total HOME score and children's IQ at different ages, there were less significant correlations than those found in other studies examining more heterogeneous, low-risk samples (i.e., Bradley & Caldwell, 1976). Additional hierarchical regressions were performed to assess the independent contributions of maternal IQ and home environment after the other was controlled. At 24 months, home environment failed to be

a significant predictor after maternal IQ was controlled, while maternal IQ remained significant after home environment was controlled. At 36 months, home environment again failed to be a predictor after maternal IQ was entered into the equation, but maternal IQ also failed to be a predictor after home environment was entered first. Finally, at 48 months, home environment did contribute significantly to children's IQ after maternal IQ was controlled, but maternal IQ failed to contribute after home environment was entered first.

These results suggest a shift in importance from maternal IQ to the home environment as predictors of children's intellectual competence. That is, maternal IQ seems to be the more important factor in earlier years, but this importance declines and the home environment becomes the more important factor as children move into the preschool period. The authors postulate that there is a shift in the importance of biological and environmental determinants of intelligence during the course of development. That is, development is largely driven by maturational factors during the first few years of life, but is more influenced by the environment during later years. It is also possible that maternal IQ is still an important factor during these later years, but that its effect is expressed indirectly through the home environment. That is, maternal IQ may influence the quality of the home environment, i.e., amount of stimulation and enriching experiences, which in turn may influence children's IQ. The home environment may become the more direct contributor to intelligence as children become less dependent on mothers and interact more with their environment. There appears to be some evidence for this latter hypothesis based on a study done by different researchers.

This study examined the home environment as a mediator between maternal and child IQ in a large sample (N=608) of low birthweight, premature infants followed

through their third year (Bradley et al., 1993). Maternal IQ and home environment (measured by the HOME) were significantly related to child IQ scores in all families except for those whose mothers had low IQ scores < 70. There were no significant relationships within this latter group. These authors explained that when the range of IQs is restricted, the effect of maternal IQ on home environment and child IQ is lessened relative to other factors. For both 12 month and 36 month age points, there was a significant mediation effect from maternal IQ to child IQ through the home environment. This was particularly strong at 36 months. These results suggest that maternal IQ contributes to the home environment including the amount of stimulation provided to children, which then in turn impacts children's intellectual abilities.

Overall, it appears that similar processes between the early home environment and young children's intellectual development are found within both "normal" children and high-risk children, including children who have been abused. Studies have consistently demonstrated the importance of a variety of intellectually stimulating experiences within the home and a positive parent-child relationship for young children's intellectual and cognitive functioning. These home factors may be particularly important during the preschool period when children's cognitive abilities begin to expand as they move into more advanced levels of development and as they begin to create and elicit their own kinds of stimulation from the environment. Since it appears that these family processes (or absence of) may explain the intellectual deficits among abused children, it also seems likely that these processes may be at work within families experiencing domestic violence. That is, these environmental deficits may mediate the relationship between domestic violence and preschoolers' intellectual functioning among child witnesses.

Implications for Children Who Witness Domestic Violence

The Home Environment of Children Who Experience Domestic Violence

Very little is actually known about the home environments of families living with domestic violence. Researchers and clinicians have mainly theorized about the family processes that occur within these distressed homes, but virtually no empirical work has been conducted. For example, Jaffe has written about the family disruption hypothesis to help explain how domestic violence impacts child witnesses (Jaffe, Wolfe, & Wilson, 1990). This hypothesis, grounded in family systems theory, states that domestic violence may impact children indirectly through a number of other events and familial characteristics that are changed or affected by the presence of violence. That is, domestic violence is likely to "set into motion" a number of other negative processes that either singly or in combination disrupt a child's normal routine and ongoing development. Jaffe et al. (1990) further explain that the child must not only face the immediate threat of danger, fear, and unpredictable adults (the direct effects of domestic violence), but must also cope with the "myriad forms of fallout from the conflict" such as parental ineffectiveness, changes in residence and family income, and a chaotic, inconsistent home environment (the indirect effects of domestic violence). Unfortunately, most researchers have chosen only to empirically test the more direct effects of domestic violence on child witnesses, even though the pathways of indirect influence are an important source of prevention and intervention efforts.

As Jaffe et al. (1990) note, the home environment is often defined by or at least strongly influenced by the primary caregiver, usually the mother. Therefore, the family disruption hypothesis can be taken a step further by saying that domestic violence may indirectly affect children's adjustment through its negative impact on maternal

psychological functioning and maternal parenting capacities. Because domestic violence results in great emotional distress for mothers, mothers are less able to parent effectively and less able to provide an optimal environment for their children. Indeed, there is a large body of evidence that demonstrates the relationship between domestic violence and numerous negative outcomes for battered women, which ultimately affect their children.

Walker (1978; 1979) uses the concept of learned helplessness to explain the battered woman's experience. She found that many abused women begin to feel like they have no control over what happens to them since their responses or reactions do little to change their batterers' actions. They begin to feel helpless and powerless over the abuse they are enduring. Because they learn and strongly believe that their actions have no consequences, battered women may eventually stop trying to improve their circumstances including getting outside help. Walker also notes that battered women may isolate themselves out of shame, may blame themselves for the abuse, and may start to believe the negative comments made to them by their abusers. This feeling of helplessness and powerlessness may also generalize to other areas of the women's life. Battered women may feel helpless over their parenting capacities and effectiveness, and these feelings may be increased by raising children who are also struggling with domestic violence (Levendosky & Graham-Bermann, 1997a). They may feel that nothing they say or do with their children will have any consequences, and they may eventually stop trying to influence their children's life. Instead, they may withdraw and become more passive in their parental role.

Some researchers have focused on the trauma symptoms seen in battered women (Herman, 1992; Levendosky & Graham-Bermann, 1997a). Some of these symptoms include somatization, dissociation, depression, and characterological changes, and they

appear to be complex and diffuse because of the prolonged trauma through which these women suffer. These researchers propose that domestic violence overwhelms mothers psychologically and physiologically, which affects their ability to parent. More specifically, Levendosky and Graham-Bermann (1997a) suggest that symptoms seen in battered woman such as oscillations between numbing and hyperarousal, self-blame, shame, anxiety, intrusive memories, and constriction of feelings may reduce mothers' effectiveness as a parent. Parenting may shift through periods of withdrawal, anger, and warmth, as these mothers attempt to cope with the violence and their traumatized state. Their loss of trust in loved ones may also cause them to either withdraw from their children or to become overprotective, restricting children's efforts towards independence.

Both learned helplessness and trauma are believed to lead to depression, another commonly cited consequence of domestic violence for battered women. For example, Cascardi and O'Leary (1992) reported that 52% of their sample of abused women showed severe levels of depression and 70% showed at least a moderate level of depression. Also, more severe battering was related to increased depressive symptoms and decreased self-esteem. Maternal depression has been shown to have numerous negative consequences on the home environment and on parenting as well. In a review of the literature, Downey and Coyne (1990) found that parents who report being depressed are less verbal with their children, less positive, and less responsive to their children's needs. Such mothers showed lower rates of affective expression, less interest in their children, and more self-absorption, all reflecting the mother's anhedonia and reduced energy levels. They also tended to view their parental role less positively than non-depressed mothers, which may lead to withdrawal or hostility toward the child. Parenting may be especially difficult for depressed parents when children are young and require more

sustained attention and tolerance. Although Downey and Coyne (1990) discuss these maternal characteristics in terms of children's emotional difficulties, it is also likely that maternal depression results in a less stimulating home environment and fewer parent-child interactions, which are both important for children's intellectual and cognitive functioning.

Researchers in the area of domestic violence have shown some empirical support for the role of maternal functioning as a mediator between domestic violence and children's adjustment. Graham-Bermann and Levendosky (1998) found that mother's self-esteem, depression, and experience of emotional abuse mediated the effects of domestic violence on preschoolers' internalizing problems, externalizing problems, and affect regulation. Another study found that domestic violence predicted negative maternal psychological functioning, which predicted poorer parenting (Levendosky & Graham-Bermann, 1997b). Both of these latter variables predicted children's adjustment problems. Holden and Ritchie (1991) reported that battered mothers were less sensitive and less consistent with their children and experienced greater parenting stress, which led to greater child behavior problems, while other researchers reported that level of maternal stress mediated the impact of domestic violence on children's behavior and trauma symptoms (Jaffe et al., 1985; Rossman et al., 1993; Wolfe et al., 1985).

In summary, it is clear that domestic violence impacts mothers in ways that may hinder their ability to provide an optimal home environment and to parent effectively. One can easily imagine how the necessary environmental conditions for children's intellectual development could be disrupted in families living with domestic violence based on what is known about the toll it takes on battered mothers. Feelings of helplessness, anger, and depression most likely interfere with the ability to be warm and

consistent. Depression, dissociation, fear, and withdrawal may interfere with mothers' responsiveness, involvement, adaptability, and verbal interactions with their children. Fear and distrust may also cause mothers to be hypervigilant and overprotective, inhibiting children's independent behavior. Perhaps most importantly, these psychological sequelae probably limit exposure to and opportunities for rich, intellectually stimulating experiences for children who witness domestic violence. As of yet, however, no empirical studies have tested whether domestic violence disrupts broader family processes, either directly or indirectly through its impact on mothers. How these family factors and maternal characteristics affect children's intellectual functioning is also yet to be examined empirically.

Hypotheses of the Present Study (see Figure 1)

Research has just begun to address the impact that witnessing domestic violence has on young children. Virtually nothing is known about the intellectual development in this population, particularly with toddlers and preschoolers, a stage when parents have their greatest impact on children's cognitive development (Bradley & Caldwell, 1976). However, numerous studies have demonstrated multiple intellectual deficits in abused children, a group of children also growing up in violent homes. Because abused children are similar to child witnesses in a number of ways and because there is a large overlap between these two groups, it seems reasonable to apply what is known about abused children to children living with domestic violence. Therefore, this study hypothesizes that preschoolers who are directly exposed to domestic violence will display more problems in intellectual functioning than preschoolers who are not directly exposed to any type of family violence.

Hughes and colleagues (e.g., Hughes, 1988) have suggested that children who not only witness domestic violence, but who are also the direct victims of parental aggression, will show more adjustment problems than children who only witness domestic violence. Most, but not all, studies have shown that children faced with this "double whammy" do indeed show greater behavioral and emotional problems. This notion that multiple stressors will increase the likelihood of behavior problems above the likelihood when faced with one stressor could apply to children's intellectual development as well. Therefore, this study also predicts that preschoolers who are exposed to their mothers being battered *and* who directly experience violence by a parent will show greater problems with intellectual functioning than preschoolers who are only exposed to domestic violence and preschoolers who are only victims of parental abuse. These differences are expected to hold true even after controlling for SES and family income.

Studies with both normal and high-risk children, including children who have been abused, report that there are a number of important qualities of the home environment that are crucial for the intellectual development of young children. These include a variety of stimulating experiences, involved and responsive caregivers, and the encouragement of autonomy and intellectual behaviors. Many researchers (e.g., Westra & Martin, 1981) have suggested and shown that intellectual deficits found in children from violent homes are more directly due to an absence of these environmental characteristics rather than due to the abuse per se. That is, the home environments of abused children are characterized by little parent-child interaction, less parental engagement and involvement in children's activities, and a gross lack of stimulation. Further, abusive parents are more insensitive and unresponsive toward their children. All

of these deficits in the home environment appear to mediate the relationship between child abuse and intellectual functioning.

The context in which children who experience domestic violence live appears to share a number of negative qualities with other high-risk families, such as homes where child abuse occurs. Therefore, it seems likely that similar processes are involved between the home environment and intellectual development in children who witness domestic violence. For example, domestic violence might cause the home environment to be unpredictable and chaotic. Mothers and children may be forced to relocate or move temporarily into a battered women's shelter. Or perhaps there is more inconsistency in the family's daily routine because of the batterer's unpredictability. This chaotic atmosphere would likely interfere with the availability of stimulating experiences and opportunities for children. Another example is that battered mothers who move away from their batterers may be forced to work more outside of the home, leaving less time for interacting with their children. Fear, in both the mother and child, might also interfere with an atmosphere conducive to healthy development, i.e., by interfering with quiet, relaxing times for the mother and child to read or play together.

Therefore, it is hypothesized that domestic violence will negatively impact the quality of the home environment, which will then contribute to a lower level of intellectual functioning in preschool witnesses. That is, domestic violence will indirectly influence preschoolers' intellectual development through the impoverished intellectual quality of the home environment. More specifically, language stimulation, stimulation of academic behavior, and variety of stimulation in the home (all scales emphasizing verbal interactions between parent and child, language, reading, and cultural activities) will predict verbal intelligence scores, while the amount of toys and games and degree of

affection and warmth (scales emphasizing verbal and spatial abilities and maternal warmth) will predict both verbal and visual-spatial intelligence scores. The overall home environment, defined by the combination of these characteristics, will be related to both types of intelligence scores. These relationships will be true even after controlling for SES and family income.

It is also possible that domestic violence impacts the environment in which children grow up in other, more indirect ways, i.e., through its effects on mothers. Although there has been no empirical research on the overall home environment of child witnesses, findings have shown that domestic violence negatively impacts a woman's psychological health and her parenting capacities. Battered women suffer from depression, trauma symptoms, and a number of other psychological problems which most likely lead to less stimulating behaviors, less parent-child interactions, and less sensitivity toward the child. Based on this research, this study hypothesizes that domestic violence will be related to maternal depression, which will be related to a deficit of important aspects of the home environment. The home environment will in turn be related to lower levels of intellectual performance by preschoolers.

METHOD

Participants

Participants in the study included 100 women and their 3 to 5 year-old children (44 boys and 56 girls). Preschoolers must have been living with their mothers at least 50% of the time. In all cases, mothers had custody of the child who participated in the study. If mothers had several preschoolers living with her, one preschooler was chosen randomly to participate in the study. Participants were recruited with fliers (see Appendix B) from the following agencies and programs in a medium-size, midwestern city: 57% from local Head Start preschools, 17% from the Family Independence Agency (FIA), 7% from a local domestic violence shelter, and 18% from the general community.

Mothers' ages ranged from 19 to 46 years, with an average age of 27.9 years (SD = 6.2). Children's ages ranged from 3.0 to 5.9 years, with an average age of 4.4 years (SD = .70). Seventy-nine percent (79%) of the children attended preschool for approximately 14 hours per week on average (SD = 10.3 hours). Family income ranged from $0 to $6170.00 per month, averaging $1320.00 per month (SD = $964.00). Based on Hollingshead (1975) scoring, the average socioeconomic status was 32.4 (SD = 12.6). See Table 1 for demographic information on marital status, racial composition, maternal education, and maternal occupation.

When mothers were asked directly, "have you been in an abusive relationship?," 51% reported that they had been in such a relationship with a romantic partner. However, 70% endorsed one or more physically violent episodes of abuse by a partner sometime during their lifetime when filling out the domestic violence questionnaires (43% reported this for a present relationship and 47% reported this for a past relationship, with some reporting both). This figure increased to 78% by including items asking about verbal

aggression, i.e., threats of violence, in addition to physical aggression. Therefore, while only slightly more than half of mothers admitted to being involved in an abusive relationship at one time (either past or present), a large majority of women had been physically attacked by a romantic partner on at least one occasion. Finally, 38 mothers reported that they had stayed in a shelter at least once, 19 of which were shelters specifically for battered women.

Table 1
Demographic Information on Study Participants (N=100)

Characteristic	n (and %)
Marital Status	
Single	42
Married	25
Divorced	13
Separated	10
Living with partner	10
Maternal Race	
African American	42
Caucasian	42
Hispanic/Latino	10
Biracial	5
Asian	1
Child Race	
African American	43
Biracial	24
Caucasian	21
Hispanic/Latino	11
Asian	1
Maternal Education Level	
Grade school or less	1
Some High School	19
High School Graduate	22
Some College	47
College Graduate	10
Graduate degree	1
Maternal Occupation	
Unemployed	24
Homemaker	14
Semiskilled or Unskilled worker	15
Clerical, Sales	19
Technician, Skilled worker	16
Managers, Minor Professionals	7
Administrators, Professionals	5

Procedures

Research assistants, both undergraduate and graduate level, were trained to administer all questionnaires and tests before data collection began. Research assistants recruited mothers and children from Head Start preschools, a domestic violence shelter, FIA, and in the general community by handing out and posting fliers. Mothers contacted the study office if they were interested in participating and either of two graduate students, including myself, did a brief screening over the phone to determine eligibility for the study. When a potential participant met all of the criteria and agreed to participate, an appointment was made. The appointments took place in the mother's home or in the domestic violence shelter for shelter residents and lasted approximately two hours.

Two research assistants traveled to the family's home or to the shelter; one met with the mother while the other met with the preschooler in a separate room. The mother first completed an informed consent form for herself and for her child (see Appendix A), and verbal assent was asked of the preschooler. Mothers were informed about anonymity and confidentiality, and they were told that their participation was voluntary and that they could withdraw from the study at any time. They were also informed that a report would be made to Child Protective Services if unreported child abuse was discovered during the interview. Confidentiality was maintained by assigning all participants an identification number, which was placed on all data rather than subjects' names, and the subject identification list was kept apart from the data.

Mothers were administered questionnaires by research assistants, who were blind to the battering status of the family. Research assistants read all questions aloud and marked down the mothers' responses. Oral administration attempted to control for

mothers' varied reading abilities, possible illiteracy, and inconsistent responses. In order to maintain the blindness of the interviewer, the questionnaire assessing domestic violence was administered last. In addition to asking questions about the home environment, research assistants also coded a number of aspects of the home based on their observations. While mothers were being interviewed, several instruments measuring intellectual abilities were administered to the participating preschoolers. Children were not asked about the level of violence within the family. Mothers were paid $50.00 for their participation and children were given a toy worth approximately $5.00.

Materials

Demographics

A brief questionnaire was administered to obtain basic demographic information such as marital status, ethnicity, maternal education, maternal occupation, and family income (see Appendix C). Socioeconomic status was then computed using Hollingshead index (1975).

Severity of Violence Against Women Scales

The type and severity of domestic violence, defined here as male-to-female violence in adult partners, was measured by the Severity of Violence Against Women Scales (SVAWS; Marshall, 1992). This self-report contains 46 items which make up nine dimensions of violence: Symbolic Violence, i.e., hit or kicked a wall, Threats of Mild Violence, Threats of Moderate Violence, Threats of Serious Violence, Mild Violence, Minor Violence, Moderate Violence, Serious Violence, and Sexual Violence. These nine dimensions were produced in a community sample of 208 women using Maximum Likelihood factor analysis. Coefficient alphas ranged from a low of .89 for Symbolic Violence to a high of .96 for Mild and Serious Violence, indicating high

internal consistency within dimensions. These women were also asked to rate each of the 46 acts from 1-10 on seriousness, aggressiveness, abusiveness, physical harm, and psychological/emotional harm in order to obtain a global concept of severity. Severity ratings for each of the acts was then assigned by calculating the mean of these five ratings. In addition, each act was given a physical harm weighting and an emotional harm weighting based on the women's ratings.

Because this instrument asks about sensitive information, item administration begins with the least threatening Symbolic Violence items and ends with Sexual Violence items. Women rate the frequency of each act perpetrated against them within a certain time period, i.e., within the past 12 months, from 0 to 3 (never, once, a few times, many times). Scores are produced by multiplying the weight and frequency of each act and then summing the products of items within each dimension. The authors suggest using the physical harm weights rather than emotional harm weights for women drawn from the community and shelters since all acts are either directly or indirectly physical. This procedure assumes that even "minor" acts may become more harmful with repetition. For the purposes of the present study, physical harm weights and frequencies were multiplied for each act, and all 46 products were summed for a total "domestic violence" score that better captured the severity of violence defined by several dimensions of harm. These dimensions and severity levels are not considered in other widely used measures of domestic violence.

Mothers completed the questionnaire for both the last 12 months and the next most recent abusive relationship (if applicable). This measure had high internal consistency with the present sample; coefficient alphas were .97 for the total domestic violence score for current partner and .98 for the total domestic violence score for past

partner. In addition to assessing the presence of domestic violence, the current study also used this instrument to assess the amount of violence that the preschooler actually witnessed, either by seeing or hearing the violence. This was done by asking the mother to mark which acts the child witnessed with an "X." For analyses that required grouping, any child that had directly witnessed at least one physically violent event was included in the "direct exposure" group. Degree of direct exposure was calculated by summing the number of "X"s. See Appendix D.

Conflict Tactics Scale (CTS)

Parent-child violence was measured using the CTS (Straus, 1979), a 19-item questionnaire tapping into three modes of dealing with conflict: Reasoning, Verbal Aggression, and Physical Aggression (see Appendix E). Mothers completed the questionnaire twice, once for her own actions toward the child and once for her partner's actions towards the child. Items start with those behaviors low in coerciveness and progress to more coercive and aggressive acts ending with "used a knife or gun on your child." Mothers were asked to rate the number of times each action occurred during the previous year using categories ranging from "Never" to "More than 20 times." The CTS is scored by summing the response category code values for each act.

Internal reliability was established in the original report for all three dimensions using coefficient Alpha. These coefficients were: Reasoning = .69, Verbal Aggression = .77, and Physical Violence = .62. Concurrent validity was tested by comparing undergraduate reports to parental reports of family conflict. Correlation coefficients ranged from .12 on the reasoning scale for mother and child reports to .64 on the violence scale for father and child reports. Straus (1979) also noted that there is evidence for construct validity based on numerous correlations found in a number of studies between

CTS scores and other variables that are consistent with relevant theory, i.e., a negative correlation between scores and socioeconomic status. Other researchers have also found good validity for the CTS. For example, Jouriles, Barling, and O'Leary (1987) reported that CTS scores were related to hypothesized outcomes of parent-child abuse.

In the present study, one score was calculated using the Verbal and Physical Aggression items. Coefficient alpha was .78 on the scale assessing mothers' partners' behaviors and .65 on the scale for mothers' behaviors, indicating good reliability. For analyses requiring grouping, children who experienced one or more physically violent episodes of abuse were included in the "abused" group.

Beck Depression Inventory (BDI)

The BDI (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) is a 21-item self-report which was used to assess the current severity of maternal depression (see Appendix F). The instrument covers a variety of symptoms of depression such as depressed mood, pessimism, sleep disturbances, and changes in appetite. Each item consists of 4 statements that are ranked from neutral to severe, and values from 0-3 are assigned to each statement. The respondent is asked to circle the one statement that best describes the way she has been feeling during the past week. For example, question 1 consists of the statements "I do not feel sad.", "I feel sad," "I am sad all the time and I can't snap out of it," and "I am so sad or unhappy that I can't stand it." The total depression score is obtained by summing the answers of all 21 items. Possible scores range from 0-63, with scores of 0-9 indicating no depression, 10-15 indicating mild depression, 16-23 indicating moderate depression, and 24-63 indicating severe depression.

The BDI was originally designed for use in psychiatric populations. Beck et al. (1961) reported that split-half reliability estimates yielded a coefficient of .93 after a

Spearman-Brown correction, indicating high internal consistency. They also examined the validity by comparing BDI scores to psychiatric ratings of depression and found a correlation coefficient of .67, which was highly significant. A later study (Bumberry, Oliver, & McClure, 1978) demonstrated the validity of the instrument in a university population as well. Using psychiatric ratings as the criterion, Bumberry et al. found a correlation coefficient of .77 between the BDI and interview ratings. These studies illustrate the wide applicability and use of the instrument.

In the present study, the BDI showed high internal consistency with a coefficient alpha of .87. Using a split-half reliability estimate with Spearman-Brown correction, as was done in Beck et al.'s (1961) original study, resulted in a coefficient of .80. Scores ranged from 0 to 44. According to the categories described above, 66 women in this sample had "no" depression, 17 women had a mild level of depression, 13 women had a moderate level of depression, and 4 women had a severe level of depression.

Home Observation for Measurement of the Environment-Preschool Version (HOME)

The preschool version of the HOME inventory (Bradley & Caldwell, 1979) was designed to measure aspects of the quantity and quality of the home environment that relate to the social, emotional, and cognitive development of 3 to 6 year-old children. This inventory is currently one of the most widely used instruments for measuring the quality of the home environment of young children. Items were originally selected on the basis of empirical evidence for certain types of experiences conducive to childhood development. These experiences include such things as positive parent-child interactions, number and kind of play materials, variety of stimulation, and encouragement of intellectual behaviors. The authors originally intended all items to be based on direct

observation of caregiver-child interactions, however, other important child experiences were excluded as a result, and the authors decided to add interview data as well. Therefore, the HOME inventory is administered in the home using both observation and interview data while the child is present and awake.

The current version is the second major revision to the scale and includes 55 dichotomous-choice items (see Appendix G). A "yes" indicates the familial environment has a certain positive characteristic or experience, while a "no" indicates an absence of that particular aspect of the environment. This version was developed from a longer, 80-item version through factor and item analysis in order to increase efficiency of the scale and to improve other psychometric properties of the instrument. The factor analysis was conducted on 232 volunteer families representing a wide range of socioeconomic levels. A varimax rotation using an eigen-value of 1.0 produced seven factors that contained at least 4 items each and a number of other 1 or 2 item factors. Forty-six items having a loading of at least .30 or better on these seven factors were kept. Nine other items were retained on the basis that they were significantly correlated with achievement, making up an eighth factor.

Because the current study was primarily concerned with the home environment in relation to preschoolers' current intellectual functioning, only those subscales that showed especially strong correlations with preschoolers' IQ scores in Bradley and Caldwell's original study (1979) were used to operationalize the intellectual quality of the family environment. These five subscales, described below, are: Stimulation through Toys, Games, and Reading Materials, Language Stimulation, Pride, Affection, and Warmth, Stimulation of Academic Behavior, and Variety of Stimulation. The remaining

three HOME subscales are: Safety of Physical Environment, Appropriate Modeling, and Physical Punishment.

Stimulation Through Toys, Games, and Reading Materials - this factor includes items that describe the availability of toys and materials that help a child learn, such as puzzles and books.

Language Stimulation - items within this factor inquire about the degree to which a child is encouraged to learn language and vocabulary. For example, does the parent encourage the child to express him/herself and does the parent use correct grammar and pronunciation?

Pride, Affection, and Warmth - this factor provides a rough description of the parent-child relationship and the opportunity for the child to form a secure attachment with the parent. For example, items capture parental behaviors such as holding the child, responding to the child, and praising the child.

Stimulation of Academic Behavior - this factor measures the degree of parental encouragement of specific intellectual behaviors such as learning colors, numbers, and simple reading skills.

Variety of Stimulation - this factor includes a variety of items about stimulation within the home, as well as stimulating out-of-home activities. For example, questions ask whether the child has been taken on trips or family outings and whether the child interacts with both parents at home.

Most subscales consist of some items that are reported by the mother and some items that are based on interviewer observations. A subscale score is equal to the number of items answered with a "yes." Thus, a more positive, stimulating home environment

has a higher score. For the purposes of this study, a total HOME score was calculated by summing the raw score on all five subscales described above.

In their original study, Bradley and Caldwell (1979) reported that their interrater agreement on observation items reached a 95% agreement rate. They also reported that reliability estimates of the HOME inventory demonstrated good internal consistency, with Kuder-Richardson coefficients ranging from .53 to .83 for the subscales and .93 for the total scale. The HOME displayed moderate stability from 3 years to 4.5 years of age with coefficients ranging from .05 to .70.

Concurrent validity estimates were first based on correlations between the HOME and socioeconomic status and children's scores on the Stanford-Binet Intelligence Scale. There were significant correlations between the HOME and maternal and paternal education, but not with maternal and paternal occupation. All 3 year-old HOME subscale scores were significantly correlated with 3 year-old IQ scores, but three scales showed especially high correlations: Stimulation through Toys, Games, and Reading Materials, Pride, Affection, and Warmth, and Variety of Stimulation. These same three scales and the Stimulation of Academic Behavior subscale also showed substantial correlations with 4.5 year-old IQ scores indicating good predictive validity. Four and a half year-old IQ scores showed highest correlations with the following 4.5 year-old HOME scales: Stimulation through Toys, Games, and Reading materials, Language Stimulation, Stimulation of Academic Behavior, and Variety of Stimulation. These relationships remained consistent for 5 and 6 year-olds as well.

In the present study, both research assistants that traveled to the family's home completed the observation items separately, and percent agreement was calculated. The average interrater agreement in this study was 90%. Afterwards, items of disagreement

were discussed with a third person until consensus was reached, and items were then used in calculating subscale scores. Kuder-Richardson coefficients in the present study were as follows: Stimulation Through Toys, Games, and Reading Materials: .59, Language Stimulation: .03, Pride, Affection, and Warmth: .54, Stimulation of Academic Behavior: .34, Variety of Stimulation: .25, and Total Home Score: .74. These results indicate poor internal reliabilities for the Home subscales, but a fairly good reliability for the total score.

Peabody Picture Vocabulary Test-Revised (PPVT-R)

The PPVT-R (Dunn & Dunn, 1981) measures a child's receptive (or hearing) vocabulary and provides a quick estimate for a person's verbal ability. Although it is not a test of "general" intelligence, numerous studies have shown that vocabulary tests provide the closest estimate of an IQ score compared with any other single test. The PPVT-R can be given to young children beginning at the age of 2.5. The test consists of two equivalent forms, L and M, each of which contains 175 items. The present study used Form L. Each test item consists of a page with four simple drawings of various objects. These pictures are placed in front of the child, and the child is asked to point to the picture that best describes the meaning of a word given by the examiner. The test is discontinued after the child has made six errors in eight consecutive responses. Raw scores, which can be converted to standardized scores based on a large normative group, are calculated by subtracting the number of errors from the number of the last item administered.

Split-half correlations revealed internal consistency coefficients that ranged from .67 to .73 in preschool-age children for Form L. Test-retest coefficients ranged from .74 to .83 for immediate retest and .52 to .78 for delayed retest within this age group (Dunn

& Dunn, 1981). Because the authors found a substantial overlap between the original and revised versions, much of their validity information reported for the PPVT-R was based on the PPVT. They reported high correlations between the PPVT and other vocabulary tests, coefficients mostly between .60 and .80s, slightly lower correlations with full intelligence tests, and moderate correlations with achievement tests administered concurrently (coefficients around .50). The median correlation between the PPVT and the Verbal Scale of the Wechsler Preschool and Primary Scale of Intelligence was .56.

Wechsler Preschool and Primary Scale of Intelligence-Revised (WPPSI-R)

The Block Design subtest of the WPPSI-R (Wechsler, 1989) was used to measure children's visual-spatial abilities as another means of capturing intellectual functioning. In this test, an examiner puts colored blocks together in a certain design and then asks the child to make an identical arrangement using his/her own blocks. The designs get progressively harder. The child is allowed a certain amount of time for each design, and the subtest is discontinued after 3 consecutive failures. The subtest is scored by summing the points earned for each correct design.

Internal reliability estimates (split-half coefficients corrected by Spearman Brown formula) for Block Design based on the standardization sample are as follows: .83 for 3 year-olds, .87 for 4 year-olds, and .86 for 5 year-olds (Wechsler, 1989). These are among the highest of all performance subtests of the WPPSI-R. Test-retest reliability was .80 for the entire group of preschoolers. These figures demonstrate strong reliability for this particular subtest. Validity has also been demonstrated in a number of ways. Wechsler (1989) reported that results from a factor analysis revealed that Block Design had the highest loading of all subtests on the Performance factor (.70). Item-total correlations also revealed that this subtest correlated more highly with the total Performance score

than any other Performance subtest at ages 4, 4.5, 5, 5.5, and 6.0. Validity studies have also shown high correlations between the full scale scores of the WPPSI-R and the WISC-R (r=.85), the McCarthy scales (r=.81), and the Stanford-Binet (r=.74; Thorndike, Hagen, & Sattler, 1986; Wechsler, 1989).

RESULTS

Missing Data

Data from 100 participants were used for statistical analyses. The results from a number of analyses reflect missing data points. In particular, two participants refused to report family income level, five PPVT-R scores were invalid due to administration problems (i.e., failure to establish a basal), three families had incomplete data on domestic violence, and four families had incomplete data on child abuse.

Descriptive Data

For the entire sample, the average PPVT-R score was 88.8 with a standard deviation of 16.9. This compares to the national average of 100 with a standard deviation of 15. Although the sample average was within one standard deviation of the national norm, it was considerably below the national average. The average WPPSI-R Block Design score for the entire sample was 8.7 with a standard deviation of 2.5, which compares to the national average of 10 and standard deviation of 3. Again, the scores for this sample were below average compared to the national norms. For those children whose mothers had experienced some form of physical abuse by a partner, the average PPVT-R score was 86.7 (standard deviation of 16.5) and the average Block Design score was 8.7 (standard deviation of 2.4). Children whose mothers had never experienced physical abuse by a partner had an average PPVT-R score of 94.1 (standard deviation of 17.0) and an average Block Design score of 8.7 (standard deviation of 3.0).

Direct Exposure to Family Violence and Intellectual Functioning

It was hypothesized that children directly exposed to domestic violence, i.e., seeing or hearing the violence, would display lower levels of intellectual functioning than children not directly exposed to any type of family violence after controlling for SES and

family income. For these analyses, children in the direct exposure group must have seen or heard a physically violent act perpetrated against their mothers within the last year. Children in the control group had neither been exposed to domestic violence nor child abuse in the last year. A MANCOVA analysis was performed with SES and family income as covariates and PPVT-R and WPPSI-R Block Design as dependent variables. Contrary to what was expected, there were no significant differences between the exposed (n = 28) and non-exposed (n = 26) groups of children on the PPVT-R and the WPPSI-R Block Design subtest, F (1, 53) = .05 and F (1, 54) = .54, respectively.

The second hypothesis was that children directly exposed to domestic violence *and* who directly experienced violence by either parent would show more problems in intellectual functioning than children who were only exposed to domestic violence and children who were only victims of parental abuse. That is, children exposed to two types of family violence would have more problems than children exposed to only one type of family violence. Again, direct exposure to domestic violence was defined by seeing or hearing a physically violent event within the last year, and parental abuse was defined as one or more physically violent acts toward children by either parent within the last year. Unexpectedly, MANCOVA results revealed no significant between-group differences on intellectual functioning after controlling for SES and income, F (3, 86) = .31 for PPVT-R and F (3, 91) = 1.16 for the Block Design. That is, children exposed to two types of family violence (n = 24) did not display lower intellectual scores than children exposed to one type of family violence (domestic violence only: n = 4; child abuse only: n = 45). However, an independent t-test revealed a trend towards a difference on the Block Design between the combined exposure group (M = 8.50, SD = 2.19) and the domestic violence only group (M = 10.75, SD = 1.50), t (28) = 1.97, p = .06.

Finally, it was hypothesized that the more direct exposure to domestic violence and the more abuse children experienced within the last year, the greater intellectual problems they would have after controlling for SES and income. To test this hypothesis, two hierarchical regressions were performed with SES and income entered first, followed by level of exposure and level of abuse as predictors; once using the PPVT-R and once using the Block Design as the outcome variable. Surprisingly, results revealed no significant direct relationships between level of exposure and abuse and children's PPVT-R (exposure: $r = -.17$, $p = .17$, and abuse: $r = .13$, $p = .27$) and Block Design scores (exposure: $r = -.15$, $p = .22$, and abuse: $r = .20$, $p = .09$) after controlling for demographic factors.

Indirect Effects of Domestic Violence on Intellectual Functioning

In addition to hypothesizing a direct effect of family violence on preschoolers' intellectual functioning, it was hypothesized that domestic violence would indirectly impact intellectual functioning regardless of whether or not children actually saw or heard the violence. In addition, it was thought that both current and past domestic violence would indirectly influence intellectual functioning through its effect on other variables. Therefore, these analyses combined any present and past experiences of domestic violence into a total domestic violence score.

The first hypothesis was that domestic violence would negatively impact the quality of the home environment, which would in turn contribute to a lower level of intellectual functioning in preschoolers. That is, the home environment would mediate the relationship between domestic violence and preschoolers' intellectual functioning. It was hypothesized that this would be true even after controlling for SES and family income. These hypotheses were examined using Baron and Kenny's (1986) method for

testing mediational models. According to these authors, a test for mediation includes three regressions: the mediating variable is regressed on the independent variable, the dependent variable is regressed on the independent variable, and the dependent variable is regressed on both the independent variable and on the mediator. To establish mediation, the following must be true: the independent variable must affect the mediating variable, the mediator must affect the dependent variable, and the independent variable must affect the dependent variable. If all of these conditions hold and a previously significant relationship between the independent variable and dependent variable is significantly reduced after controlling for the mediating variable, mediation is demonstrated. These regression equations were performed twice; once using the PPVT-R as the measure for intellectual functioning and once using the Block Design as a measure of intellectual functioning.

The first regression in this series revealed that domestic violence (the independent variable) was not significantly related to the home environment (the mediating variable; $r = -.04$, $p = .72$). However, the home environment was significantly related to the dependent variables after controlling for SES and family income; both to PPVT-R scores ($r = .37$, $p < .001$) and to WPPSI-R Block Design scores ($r = .30$, $p < .01$). Finally, domestic violence was not directly related to PPVT-R scores or WPPSI-R scores ($r = -.13$, $p = .22$, and $r = .04$, $p = .67$). Although mediation was not established since the independent variable was not related to the mediator or to the dependent variables, the home environment was highly related to both types of intellectual functioning. See Table 2 for the full regression model.

Table 2

Hierarchical Regression Analysis For Domestic Violence and Home Environment as Predictors of Intellectual Functioning

Variable	PPVT-R (n=90)	WPPSI-R (n=95)
Step 1		
SES	.00	-.02
Income	.18	.17
Adjusted R^2	.01	.00
Step 2		
Domestic Violence	-.12	.06
Home Environment	.40***	.31**
Adjusted R^2	.14**	.08*

Note. Except as noted, numbers represent standardized beta weights

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

Certain aspects of the home environment were also expected to be related to different types of intellectual functioning. It was hypothesized that after controlling for SES and income, language stimulation, stimulation of academic behavior, and variety of stimulation would predict verbal intelligence scores specifically, while amount of toys and games and amount of affection and warmth in the home would predict both verbal and visual-spatial intelligence scores. A series of hierarchical regression analyses were performed with SES and income entered first, followed by each Home subscale.

As expected, language stimulation in the home was correlated with verbal intelligence scores (r = .23, p < .05) but not with visual-spatial scores (r = .16, p = .11). However, the relationship between language stimulation and PPVT-R scores was reduced to a statistical trend after controlling for SES and income (r = .20, p = .06). Stimulation of academic behavior in the home and variety of stimulation were also significantly correlated with verbal intelligence (r = .22, p <.05; r = .29, p < .01, respectively), even after controlling for SES and income (r = .20, p = .05; r = .26, p < .01). As expected, neither variable predicted visual-spatial abilities (r = .12, p =.25; r = .14, p = .15, respectively).

As hypothesized, the amount of toys and games in the home was related to verbal intelligence scores (r = .19, p = .06, statistical trend) and visual-spatial intelligence scores (r = .26, p <.01). After controlling for SES and income, the relationship between toys/games and verbal scores was no longer a trend (r = .16, p =.14). However, toys/games still predicted WPPSI-R Block Design scores (r = .26, p < .01). Finally, as expected, the amount of pride and affection in the home was significantly related to both PPVT-R scores (r = .36, p < .01) and WPPSI-R scores (r = .28, p < .01), even after controlling for SES and income (r = .39, p < .001; r = .31, p < .01, respectively). See Table 3 for results from correlation analyses between all Home subscales and measures of intellectual functioning.

In addition to expecting domestic violence to have a direct effect on the home environment, domestic violence was believed to impact the home environment indirectly through its effects on maternal depression. Therefore, it was hypothesized that domestic violence would lead to maternal depression, which would lead to an impoverished home environment. The home environment would in turn lead to problems in preschoolers'

intellectual functioning. Baron and Kenny's (1986) method for testing mediation was used to analyze the mediating role of maternal depression between domestic violence and home environment, as well as the mediating role of the home environment between maternal depression and intellectual functioning. Again, the PPVT-R and

Table 3

Intercorrelations Between Home Subscales and Intellectual Functioning

Variable	PPVT-R (n=95)	WPPSI-R (N=100)
Stimulation Through Toys & Games	.19^{+}	.26**
Language Stimulation	.23*	.16
Safety of Physical Environment	.29**	.14
Pride, Affection, and Warmth	.36***	.28**
Stimulation of Academic Behavior	.22*	.12
Appropriate Modeling	.27**	.17^{+}
Variety of Stimulation	.29**	.14
Physical Punishment	.28**	.21*

Note. Higher scores on all home subscales indicate a more positive environment.

$^{+}$ $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Block Design were each examined separately as dependent variables, and SES and family income were controlled by entering them first into the regression equations.

The first regression showed a significant positive relationship between domestic violence and maternal depression ($r = .32$, $p < .01$). When current and past battering were separated, results revealed that previous experiences of domestic violence were

significantly related to depression ($r = .29$, $p < .01$), but the relationship between current domestic violence and depression was only a statistical trend ($r = .17$, $p = .10$). In addition, high maternal depression predicted a more negative, impoverished home environment ($r = -.23$, $p < .05$). However, there was no direct relationship between domestic violence and the home environment after controlling for SES and income ($r = -.01$, $p = .95$). Although mediation was not established because there was not a significant relationship between the independent and dependent variable, domestic violence predicted maternal depression which in turn predicted the home environment. However, results from the full regression model revealed that maternal depression was no longer a significant predictor of the home environment after SES and income were accounted for. See Table 4 for these results.

Finally, the home environment was expected to mediate the relationship between maternal depression and children's intellectual functioning. As mentioned previously, regression analyses demonstrated a significant relationship between maternal depression and the home environment ($r = -.23$, $p < .05$). After SES and income were controlled, the home environment also predicted PPVT-R scores ($r = .37$, $p < .001$) and WPPSI-R Block Design scores ($r = .30$, $p < .01$). The third regression equation revealed that maternal depression was related to children's PPVT-R scores ($r = -.30$, $p < .01$), but not to WPPSI-R scores ($r = -.05$, $p = .60$).

Results from the full model with PPVT-R as the dependent variable showed that both the home environment and maternal depression remained significant predictors of verbal scores after controlling for SES and income ($r = .32$, $p < .01$; $r = -.23$, $p < .05$, respectively). Although maternal depression was still significantly related to PPVT-R scores after the home environment was accounted for, the strength of this relationship

Table 4

Hierarchical Regression Analysis For Domestic Violence and Maternal Depression as Predictors of Home Environment

Variable	Home Environment (n=95)
Step 1	
SES	.22*
Income	.20^{+}
Adjusted R^2	.10**
Step 2	
Domestic Violence	.05
Maternal Depression	-.18
Adjusted R^2	.10**

Note. Except as noted, numbers represent standardized beta weights

$^{+}p < .10$, * $p < .05$, ** $p < .01$

decreased. Therefore, the home environment partially mediated the relationship between depression and verbal intellectual abilities. The only significant predictor of WPPSI-R scores in the full model was the home environment ($r = .31$, $p < .01$). Since depression was unrelated to WPPSI-R scores, mediation was not established for visual-spatial abilities. See Table 5.

See Figure 2 for path analysis results showing the indirect relationship between domestic violence and preschoolers' intellectual functioning.

Table 5

Hierarchical Regression Analysis For Maternal Depression and Home Environment as Predictors of Intellectual Functioning

Variable	PPVT-R (n=93)	WPPSI-R (n=98)
Step 1		
SES	.02	-.04
Income	.18	.16
Adjusted R^2	.02	.00
Step 2		
Maternal Depression	-.23*	.02
Home Environment	.33**	.31**
Adjusted R^2	.17***	.07*

Note. Except as noted, numbers represent standardized beta weights

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

DISCUSSION

Participants in this study represented a high-risk group of women and children. Twenty-four percent of mothers were unemployed, and an additional 14% identified themselves as homemakers, making for a total of more than a third of subjects not working outside of the home. Average SES and monthly income figures were very low. The average monthly income was $1320.00 a month for an average of four people living in the home. This means that the average family in this study was just below the poverty level, defined by a cut-off of $15,967 per year for a family of four (U.S. Census Bureau, 1996). Because income and SES are highly related to educational and intellectual functioning (Bouchard & Segal, 1985; Marjoribanks, 1972; Mercy & Steelman, 1982), it is not surprisingly then, that the average PPVT-R scores and Block Design scores for the children in this sample were considerably below the national average.

This study examined the direct relationship between domestic violence and child abuse on preschoolers' intellectual functioning, as well as the ways in which domestic violence might indirectly impact intellectual functioning. Only a few existing studies have examined the intellectual abilities and school achievement of children who witness domestic violence, and most of these studies included school-aged children only. The results from these initial reports have suggested that child witnesses show lower scores on intelligence and achievement tests compared to children from non-violent homes, although at least one study found no difference between child witnesses and children from low SES backgrounds.

Based on this limited amount of research, it was hypothesized in the present study that preschoolers who were directly exposed to domestic violence, i.e., seeing or hearing the violence, would have lower scores on both verbal and visual-spatial intelligence tests

than children who were not exposed to any type of family violence. That is, a direct relationship between domestic violence and intellectual functioning was expected when children actually saw or heard the events. Unexpectedly, results revealed no between-group differences on PPVT-R scores and Block Design scores. Children who had directly witnessed violence against their mothers in the last year did not show significantly lower scores on these tests than children who were not exposed to violence.

One possible reason for the lack of findings may have been inaccurate or inappropriate group placement. For these analyses, exposed children must have seen or heard domestic violence according to maternal report. Surprisingly few mothers who had experienced domestic violence acknowledged that their children had been directly exposed to the violence. It is possible that mothers were simply unaware that their children had seen or heard the violence, or perhaps mothers were reluctant to admit this due to guilt or embarrassment. As a result of possible underreporting, many children who had been directly exposed may have been placed in the "no exposure" group.

A related explanation is that *direct* exposure may not be as important as simply living in a home with domestic violence. Again, the non-exposed group included children whose mothers reported domestic violence but who said that their children had not seen or heard the violence occurring. However, this hypothesis was examined, and post-hoc analyses revealed that this was not the case. When groupings were based on any domestic violence within the last year, regardless of direct exposure, there were still no between- group differences in intellectual functioning. Despite these findings, it is still believed that domestic violence in general was underreported, and that the no-violence group probably included women who had experienced abuse. One piece of evidence to support this notion was the finding that 47% of the no-violence group reported physical

abuse by a *previous* partner (not within the last 12 months). Therefore, women may have been more willing or likely to admit past abuse rather than current abuse. It is also possible that examining only the last 12 months did not adequately capture the direct effects of domestic violence on these children's functioning.

Another possible reason that there were no significant differences between exposed children and non-exposed children might be the small group sizes. Due to such small groupings, there may not have been enough power to detect statistically significant differences between groups.

Finally, it is possible that exposure to domestic violence did not affect preschoolers' intellectual functioning above and beyond other risk factors shared by all children. Both groups had considerably low SES and family income, and although these variables were not directly related to intellectual functioning, the two groups may have shared a number of characteristics related to SES that impacted the children's intellectual functioning in the same way. For example, the two groups may have been similar in number of life stressors, level of social support, community violence, parental emphasis on education, and parenting styles. Thus, after controlling for these variables, exposure to domestic violence was not significantly related to intellectual abilities. This explanation would be consistent with at least one other study which reported no differences between child witnesses and homeless children, reportedly because the groups shared a number of other important risk factors that predisposed them to lower functioning (Moore & Pepler, 1998).

Because child abuse occurs in approximately 50% of homes with domestic violence (e.g., Hughes et al., 1989), many researchers have assessed the differential impact of witnessing domestic violence, being abused, and both witnessing violence *and*

being abused. Most of this work has looked specifically at the effects of these types of violence on children's socio-emotional development. In general, studies have shown that experiencing both types of violence has larger negative effects than experiencing only one type of family violence. Therefore, this study hypothesized that preschoolers who were directly exposed to their mothers being battered *and* who directly experienced physical abuse by either parent within the last year would show greater problems in intellectual functioning than children who were only exposed to domestic violence and children who were only victims of parental abuse. Again, results revealed no group differences on intellectual functioning.

The lack of between-group differences might be explained by the same reasons as those used to explain the lack of differences between exposed and non-exposed children. All groups had equally low levels of SES and family income, and there may have been important related factors that all groups had in common, i.e., amount of life stressors. Because children were placed into more specific groups, each group had an even smaller number of subjects. For example, the domestic violence only group had four subjects. Most of the children exposed to domestic violence were also abused so that once abuse was considered, they represented the combined group. Inaccurate reporting of direct exposure to violence by mothers may also have obscured group differences. If children who were really exposed to domestic violence were placed in the "abuse only" group because mothers did not admit exposure, the groups would not have been made up of different children in the first place. Similar reasoning could be true for the "abused" groups as well. Mothers were told ahead of time that a report would be made to Protective Services if unreported child abuse was discovered during the interview. This most likely led to underreporting of recent physical abuse in the home, particularly more

serious abuse. In addition, it is probable that mothers minimized abuse due to social desirability.

Another possible explanation for no group differences is also related to the nature of groupings. In this study, parental abuse was defined as one or more instances of physical aggression within the last year. However, this definition may have been too broad, including families who were not really "abusive." For example, mothers who reported that they had spanked their children once or grabbed their children once were considered "abusive" and placed in either the abuse only or abuse/domestic violence group. However, families showing more "mild" forms of physical discipline may be more similar to the nonviolent group than to families using more severe forms of physical discipline. Unfortunately, due to the small number of subjects reporting more severe abuse, it was not possible to use more stringent cut-offs for group placement.

Finally, it is possible that the effects of experiencing two types of family violence does not have a more negative effect on children's intellectual development than experiencing one type of violence. Perhaps the cumulative impact of both types of violence are different for children's intellectual development than for their socio-emotional development, which has been shown to be affected more by both types of violence. Therefore, the lack of group differences may be real and may provide support for one previous study that reported no differences between child witnesses and abused witnesses on PPVT scores (Rossman et al., 1993).

In addition to expecting between group differences on verbal and visual-spatial intelligence scores, it was hypothesized that the degree of exposure and abuse would predict intelligence scores. That is, the more exposure to domestic violence and child abuse, the lower scores children would obtain. Surprisingly, these factors were not

directly related to PPVT-R and Block Design scores after controlling for SES and family income. Analyzing exposure and abuse as continuous variables eliminates some of the problems associated with problematic definitions of groups. However, it does not eliminate the possibility of underreporting (inaccurate self-report) or the more important role of shared risk factors among the entire group. Also, it is possible that family violence simply does not have a direct relationship to preschoolers' intellectual functioning, but rather affects their intelligence in a more indirect way. The role of potential mediating variables will be discussed next.

This study hypothesized that mothers' experiences of domestic violence, both currently and in the past, would influence the home environment in which children were raised. In turn, the home environment was expected to predict children's verbal and visual-spatial abilities. This latter relationship has been demonstrated in both normal and at-risk samples, but has never been examined in children who have lived with domestic violence. Although domestic violence did not directly predict the home environment in this sample, the home environment was significantly related to both types of intellectual functioning after controlling for SES and family income. Not only did the home environment remain a significant predictor after controlling for demographic factors, but SES and income were unrelated to children's intelligence scores after accounting for the home environment. There has been a debate among researchers about whether SES or the home environment is more important for children's intellectual development and whether they are actually different constructs (Bradley et al., 1989; Greaney, 1986). The general consensus has been that they are different constructs (albeit related), and that the home environment plays a larger role as children move into the preschool period compared to infancy.

For example, Bradley et al. (1989) found that SES contributed only a small amount to children's intellectual abilities above and beyond the home environment, while home environment contributed a significant amount beyond SES. Similarly, Campbell and Ramey (1983) reported that maternal IQ was a more important predictor of mental ability scores than home environment during infancy, but the reverse was true during the preschool years. The results from the present study support the notion that the home environment is more important for intellectual functioning during the preschool years than SES or income level. That is, more specific environmental factors such as the amount and variety of stimulation, the encouragement of academic behaviors, and positive parent-child interactions are more important for preschooler development than more global environmental factors, possibly because it is during this period that children begin to create and elicit their own stimulation from the environment.

Previous studies have also found a stronger link between the home environment and children's intellectual functioning in low-risk samples compared to higher-risk samples, although some significant relationships have been found in the latter group. The results of the present study demonstrate that the home environment is indeed very important for preschoolers' functioning in higher-risk groups. These findings suggest that intervention programs can be successful at improving young children's intellectual and cognitive abilities by attempting to improve the quality of the home environment in which they are raised. For example, it is possible to provide more stimulating toys and games, to teach parents how to encourage intellectual behaviors in their children, and to teach parents how to interact in more positive, stimulating ways with their children.

In addition to linking the overall home environment to children's intellectual functioning, specific characteristics of the home environment were expected to

differentially predict verbal and visual-spatial abilities. The present study hypothesized that language stimulation, stimulation of academic behavior, and variety of stimulation would predict verbal intelligence scores specifically, while amount of toys and games and amount of affection and warmth would predict both verbal and visual-spatial scores. All of these predictions were supported, although two relationships became non-significant after controlling for SES and income. The results from these analyses demonstrate that specific characteristics of the home environment are related to specific areas of intellectual functioning. Previous studies examining the home environment have typically used a global or "total" home environment measure and have not addressed the possibility of more precise relationships.

Results showing no direct relationship between domestic violence and the home environment were surprising. One possible reason for not finding a significant relationship was the particular home environment measure used in this study. The HOME inventory was originally designed to measure aspects of the home environment that specifically related to children's cognitive abilities. The major emphasis of the measure is on the amount and quality of stimulating experiences in the home. Unfortunately, this instrument does not measure other important aspects of the home environment that are likely to be affected by domestic violence and that may also influence intellectual development.

For example, the instrument does not tap into the amount of chaos or unpredictability in the home, which is thought to be high in domestic violence families (Jaffe et al., 1990). Predictability in areas such as discipline, nurturance, and family routines are thought to be important for children's sense of security and well-being. On the other hand, unpredictability may cause feelings of helplessness, low self-efficacy, and

may inhibit a child's exploratory behaviors (Ross & Hill, 1996). A related aspect of the environment is frequent relocation which is common among families living with domestic violence. Other important characteristics of the home environment not accounted for by the HOME include organization or family structure, roles, problem solving styles, family rules, communication styles, and patterns of control. Therefore, it is certainly still feasible that domestic violence does directly impact the home environment, but in ways not measured in the present study. Because this is the first study to empirically examine the role of the home environment, it will be important for future studies to look at the impact of domestic violence on different aspects of the environment.

Another possible reason that the present study did not find a significant relationship between domestic violence and the home environment might be inaccurate reporting by mothers about the quality of the environment. Although many items on the HOME inventory are based on observation (and these tended to provide more varied, accurate data), many self-report items are value-laden and vulnerable to social desirability, particularly because they inquire about the *parent's* role in shaping the child's environment. Most mothers can identify the "correct" response, and it is possible that mothers responded in more socially desirable rather than accurate ways. For example, only one participant said no to the following questions: "is your child encouraged to learn nursery rhymes, prayers, songs, etc...(patterned speech)?," "is your child encouraged to learn numbers?," and "has your child been taken by a family member on at least one outing every other week?". Based on the experiences of the interviewers in this study, a measure with more observation items would be helpful in better capturing the nature of the home environment.

Finally, it is possible that battering may not negatively affect many women's ability to provide a stimulating home environment. Many battered women may somehow be able to encourage academic behavior in their children and to provide stimulating experiences for them despite being in an abusive relationship. In this case, battering may have a more indirect effect on the home environment rather than a direct effect. Because this was anticipated, it was hypothesized that domestic violence would also impact the home environment indirectly through its effects on mothers' level of depression. Consistent with this hypothesis, results showed that domestic violence did impact mothers' level of depression, which in turn negatively impacted the home environment. As was already discussed, the home environment then predicted children's intellectual functioning. Thus, it may be that depressed, battered women are unable to provide the necessary stimulation for children, while non-depressed battered women are able to provide such environmental experiences.

This indirect path from domestic violence to children's intellectual functioning is supported by several areas of previous research. Existing studies have repeatedly demonstrated a relationship between domestic violence and maternal psychological functioning, and it has been suggested that the well-being of child witnesses' is mediated through the mother (Jaffe et al., 1990). For example, Jaffe and colleagues (Jaffe et al., 1985; Wolfe et al., 1985) have reported that battered women are significantly more stressed and ineffective with their children than non-battered women. Abused women are also more likely to feel helpless, powerless (Walker, 1979), depressed, and are more likely to display trauma symptoms than nonbattered women (Cascardi & O'Leary, 1992; Herman, 1992 Levendosky & Graham-Bermann, 1997a).

Other researchers have specifically examined the impact that domestic violence has on mothers' parenting abilities and parenting styles. Levendosky and Graham-Bermann (1997a; 1997b) have shown that domestic violence has a negative effect on psychological functioning, which in turn predicts less effective parenting. They have reported that parenting may shift from withdrawal to overprotection and from anger to warmth in battered women, and these women tend to feel more helpless over their parenting capacities. Similarly, another study found that battered women displayed less sensitive and less consistent parenting than other women (Holden & Ritchie, 1991).

In addition, maternal psychological functioning and parenting have been shown to mediate the relationship between domestic violence and children's socio-emotional well-being. For example, one study found that women's self-esteem and depression mediated the effects of domestic violence on preschoolers' internalizing and externalizing problems, as well as their affect regulation (Graham-Bermann & Levendosky, 1998). Other studies have demonstrated that maternal stress and poor parenting practices predicts greater problems in several areas of children's adjustment in battered women (Holden & Ritchie, 1991; Levendosky & Graham-Bermann, 1997b; Rossman et al., 1993). In sum, it seems that domestic violence indirectly impacts children's socio-emotional functioning primarily through its negative effects on mothers. In addition, Jaffe et al. (1990) posits that child witnesses' problems and greater needs for stability may play a reciprocal role by placing more stress on mothers.

Finally, previous research on depressed parents have found that depressed mothers tend to be less verbal, less positive, and less responsive to their children. In addition, depressed mothers tend to view their parental role less positively than non-depressed mothers, which may contribute to hostility or withdrawal from the child

(Downey & Coyne, 1990). It is not surprisingly when one considers the symptoms of depression, that maternal depression led to less verbal interactions with children, less warmth, less stimulation of academic behavior, and less variety of stimulation in this study.

In addition to affecting the home environment which impacted intellectual functioning, it is interesting that maternal depression had a direct effect on PPVT-R scores, but not on Block Design scores. Having a depressed parent might significantly reduce the amount of language stimulation and verbal interactions that children have with others, which might impact verbal abilities more than other types of abilities. In addition, it has been suggested that verbal abilities are more influenced by general environmental factors, which might include having a depressed parent, than are visual-spatial abilities (Greaney, 1986; Mercy & Steelman, 1982). Thus, even though the home environment was significantly associated with both verbal and visual-spatial abilities, another factor that influences the environment (maternal depression) was only *directly* related to verbal abilities.

Limitations of the Present Study

There are a number of limitations to the present study that warrant consideration when interpreting the findings. A few that have already been mentioned include the small number of participants for between-group analyses, the limited item content on the HOME inventory, and biases inherent in self-report data. There were a number of measures particularly prone to inaccurate reporting by mothers. It is very likely that mothers minimized the amount of domestic violence in the home, the amount of direct exposure that children experienced, and the amount of child abuse in the home. Underreporting may be due to embarrassment or shame, a fear of being reported to Child

Protective Services, or may be due to mothers' lack of awareness of what their children are actually experiencing (especially in terms of direct exposure and abuse by a partner).

Another limitation is that virtually all participants were low-income and low SES. Consequently, the results of this study are not generalizable to other groups of battered women such as those in middle or high SES groups. It is possible that these women did not participate in the study because recruitment efforts focused on higher-risk groups (e.g., Head Start, FIA), and they were less likely to need the money and more likely to have other resources available to them. It is unclear whether the findings would be similar or different in these other groups. Women in this sample also do not represent a group of battered women that may be at the more severe end of battering; those that were too afraid to take part in the study because their partner may discover their participation or those that may be so isolated they did not have the opportunity to see fliers about the study.

Because of the children's age, it was not possible to obtain their self-report on the amount of violence in the home, their perception of the violence, or its impact on them. Several previous studies examining the impact of violence on older children have reported significant discrepancies between informants (Hughes & Barad, 1983; Jouriles & Norwood, 1995; McCloskey et al., 1995; Spaccarelli et al., 1994; Sternberg et al., 1993) suggesting the need to obtain other people's perceptions of the type and amount of violence in the home. There is evidence to suggest that mothers may be negatively biased when evaluating children's adjustment (Hughes & Barad, 1983), as well as the possibility that mothers may underreport problems (Graham-Bermann & Levendosky, 1997; Spaccarelli et al., 1994). Similarly, this study was unable to obtain teacher report on children's academic functioning because of limited resources. In addition, over 20% of

the children in this study were not attending preschool at the time. Teacher data would have been an interesting and useful addition to measurements of intellectual functioning, as well as to level of suspected abuse in the home.

Another major area that went unexamined in this study was the possibility of gender differences in intellectual functioning as a result of domestic violence. Some researchers have found evidence that domestic violence affects boys and girls differently. Several studies have reported that boys are more affected by domestic violence than girls in terms of behavior problems (Porter & O'Leary, 1980; Stagg et al., 1989), although some studies showed this to be true in school-age children but not in preschool-age children (Hughes & Barad, 1983). That is, there may be a gender by age interaction. Other studies have reported greater effects in girls (Spaccarelli et al., 1994), while still others find no sex differences in the effects of domestic violence on both preschool and school-age samples (Hinchey & Gavelek, 1982; McCloskey et al., 1995; O'Keefe, 1994). These studies have all assessed the impact of violence on children's socio-emotional functioning, and it is still unclear whether there are any gender differences in terms of children's intellectual functioning, particularly at the preschool age. In order to address this limitation, post-hoc analyses were conducted, and results indicated no gender differences in intellectual functioning or for the impact of domestic violence on children's intellectual test scores. That is, boys and girls were not differentially impacted by domestic violence in the present study.

There were a number of other important variables that were not included in the current study. For example, this study did not account for the effects of other types of violence that children may experience such as sibling violence or community violence. In a review of the effects of violence on children, Osofsky (1995) reported that as many

as 72% of children living in urban cities are exposed to community violence, and community violence is highly related to children's distress symptoms and to family violence. Although this study did not take place in a large, urban city, it did assess people from a medium-sized city who may experience some of the community or neighborhood problems characteristic of larger cities. Anecdotal data from this study support this possibility. For example, one interview had to be rescheduled because a mother's older child had just had a gun pointed at her while riding her bike, and another woman described the fear she had for her children when they played outside because of the neighborhood crack houses. Clearly, there is probably exposure to violence and other negative community conditions that also affected the children in this study.

Although physical abuse was measured in this study, childhood neglect was left unexamined. This type of maltreatment is important to assess because previous research has found this form of abuse to be most related to children's intellectual development compared to other types of maltreatment (e.g., Erickson et al., 1989). Also, no other study looking at the effects of domestic violence on young children has examined the co-occurrence and effects of neglect on child witnesses. Other factors that are potentially involved in the pathway from domestic violence to preschooler intellectual functioning, but were not examined in the current study, include the role of social support for both mothers and children, parenting practices, number of negative life events or life stressors, availability of resources to the family, maternal IQ, and other characteristics of the home environment not captured by the HOME inventory. As is true for all studies, it is impossible to measure all potentially important variables. However, these ideas provide important directions for future research.

Finally, the results from this study are limited by the cross-sectional design. Because all variables were measured at the same point in time, it is impossible to determine causal relationships among variables. A longitudinal design would be necessary to evaluate whether domestic violence actually causes changes in variables that then cause differences in children's intellectual development. In the current study, it is unclear whether preschoolers' intellectual functioning was influenced by unknown past events such as previous living arrangements, previous school or daycare experiences, or other types of experiences that may influence intellectual development.

Implications of the Present Study

This study is an important contribution to the literature on the effects of family violence on young children because it improved upon many limitations inherent in previous research, while addressing two gaps in the literature: the effects of violence on preschool-age children and the effects of violence on children's intellectual and cognitive functioning. These two areas have not received nearly as much attention as the effects on school-age children and socio-emotional adjustment. One particular strength of this study was the measurement of domestic violence. This is one of the few existing studies to assess different dimensions of domestic violence such as severity, frequency, and recency of violence. Scoring accounted for the severity and frequency of violence experienced by mothers, and information on present and past abusive relationships was obtained. In addition, domestic violence was assessed as a continuous variable with the idea that categorizing women based on an arbitrary cut-off is not as sensitive as assessing along a continuum (Jouriles et al., 1989). Violence can range from infrequent "mild" episodes of abuse to frequent, severe forms of abuse and determining who should be

considered "abused" is a difficult, if not impossible, task. Finally, this study assessed the degree of *direct* exposure to domestic violence that children experienced and tested both the effects of direct exposure and the effects of simply living in a violent home regardless of direct exposure. Most of the existing studies do not examine direct exposure at all and do not specify the type of exposure (direct or indirect) that they are investigating.

The size and nature of the sample in the present study is also an improvement over most existing studies. A sample size of 100 allows greater confidence in the results compared to much smaller groups of individuals seen in other studies. Although children between the ages of 3 and 5 may differ widely in developmental level, this study also used a much more narrow age range for child participants than other studies. For example, two of the existing studies examining the impact of domestic violence on children's intellectual functioning had samples ranging from 2 to 8 years of age (Westra & Martin, 1981) and 4 to 9 years of age (Rossman et al., 1993). The cognitive abilities and developmental tasks differ greatly between preschoolers and school-age children, and it is hard to interpret findings when children from both ages are combined into one group. Because a number of studies have demonstrated differential impacts on preschool and school-age children (e.g., Hughes & Barad, 1983), it is crucial to use more homogenous groups of children in terms of ages.

The participants in this study were also a primarily non-shelter group. The majority of previous studies have recruited subjects from domestic violence shelters only, which represent a very specific group of battered women, so it has been unclear in the past how domestic violence may impact women and children in a more community-based sample. In addition, samples consisting of shelter residents only are confounded by additional factors such as being in a crisis stage, relocation into a shelter, possible

homelessness, etc... which make it hard to determine if effects seen are actually due to these factors or due to experiencing violence. A community sample presumably controls for the potential influence of some of these factors. Families in this study also represented a range of ethnicities with over 50% of the sample representing ethnic minorities. This is important because ethnic minority populations are often neglected in research, leaving little known information about their functioning and well-being. In addition, it is critical to assess the effects of family violence in ethnic minorities because they are already faced with additional risk factors such as limited resources, which the majority do not generally face. In conclusion, although still limited, the results from this study may be more generalizable than those from most previous reports due to these characteristics of the sample.

Another important strength in the present study was the use of multi-method measurement. Instruments included not only self-report questionnaires, but standardized tests administered by trained examiners and observational data. These latter two types of data are not vulnerable to self-report biases inherent in questionnaire data. In addition, standardized assessment instruments tend to produce more reliable and valid information (Fantuzzo & Lindquist, 1989). Thus, the use of standardized tests and observational data allow greater confidence in results. In addition, this study used multiple sources of information, which has been lacking in previous studies. Various predictors were either observed or reported by mothers, while data for the outcome variable were obtained from children. Because mothers may be biased to either underreport or overreport problems, false positive correlations can occur when all information comes from one informant.

Finally, rather than simply looking at the direct effects of violence on young children, this study attempted to explain how violence might affect children's functioning

by examining potential mediating variables. Investigators have only recently begun to look at the pathways through which domestic violence can impact children's adjustment, and it is this information that will be able to inform and guide intervention programs for children.

Although this study improved upon several limitations in the existing literature, there need to be many more studies with increasingly better methodology, and many other variables still need to be considered. Only one or two studies have now examined the intellectual functioning of preschool-aged witnesses, but this is not an acceptable amount. It is surprising that so few researchers have neglected this area of adjustment since intellectual functioning and academic success have been shown to be important protective factors, as well as risk factors, for other areas of functioning such as peer acceptance, emotional health, and delinquency (Garmezy, Masten, & Tellegen, 1984; Luthar & Zigler, 1991).

There are also many other potentially important variables that have not been investigated in this population. As suggested by O'Keefe (1994), an ecological model would be a useful framework for studying the effects of domestic violence on children. Based on this model, factors at multiple system levels should be examined for a more complete understanding of the various, interrelated processes that could be contributing to children's functioning. These might include child temperament or parental psychopathology at the individual level, structure and organization of the system and level of unpredictability in the home at the family level, and amount of resources or neighborhood violence at the community level. Studies also need to assess moderating and mediating variables in order to better understand *how* violence affects children. Further, not all child witnesses display greater health or adjustment problems, and it is

important to determine what factors might protect child witnesses from the effects of family violence.

Future studies need to continue to expand methods of measurement. Domestic violence needs to be clearly defined, and different dimensions of violence should be considered, i.e., frequency, duration, amount of direct exposure. Basic characteristics such as age and sex of child, amount of concurrent child abuse, and socioeconomic status should always be accounted for. Multiple informants should be used whenever possible to minimize single reporter biases. Furthermore, instruments that are based more on observation may provide more accurate and meaningful data. For example, researchers could observe children in the school or could observe parent-child interactions, as well as different aspects of the home environment. In addition, more studies need to include non-shelter women and women in middle and higher economic classes in order to determine how domestic violence impacts women and children in these other groups. For example, effects may be less severe in women who have more social and financial resources.

Finally, more longitudinal studies are needed to clarify the complex relationships among all of these factors. Virtually all of the studies to date have been cross-sectional, making it impossible to draw cause and effect relationships. As noted by Fantuzzo and Lindquist (1989), we have little information about the long-term effects of witnessing violence as a child. Although some studies have assessed adults' memories of childhood violence, these studies are problematic because of their retrospective design. Longitudinal studies would make it possible to study effects that are currently unfolding. It is also important to remember that child development is best understood from a transactional model (Sameroff, 1975), which considers development a result of constant interaction and mutual influence between the child and his/her environment. A

longitudinal study using an ecological, transactional model would likely provide useful information that is currently lacking in the literature.

Conclusions

This study empirically examined the direct and indirect effects of domestic violence on preschoolers' intellectual functioning. It was the first study to examine the potential role of maternal depression and the home environment on the intellectual functioning of children experiencing domestic violence. In this respect, it is one of the few studies to empirically test Jaffe et al.'s (1990) family disruption hypothesis, which states that domestic violence likely impacts children indirectly through its effects on various other family processes and characteristics. It is believed that these "by-products" of the violence can interfere with children's well-being as much as the violence per se. Other studies have attempted to address these relationships by studying the role of maternal psychological well-being and parenting styles in battered mothers on children's adjustment. However, this is the first study to really examine the overall home environment, particularly through direct observation of the home through home interviews.

The results of this study partially supported the hypotheses. Although domestic violence and child abuse was not directly related to preschoolers' intellectual functioning in this study, domestic violence did have an indirect relationship to preschoolers' intellectual functioning through its effects on maternal depression and the home environment. More specifically, domestic violence was related to maternal depression, which predicted a poorer home environment, which in turn was related to lower functioning in both verbal and visual-spatial abilities. This suggests that at least for children's intellectual functioning, domestic violence is more likely to have an indirect

effect through other related variables rather than a direct effect. These findings provide empirical support for the family disruption hypothesis by showing that the "by-products" of domestic violence may have more significant consequences for children's well-being.

In addition to providing empirical support for Jaffe et al.'s (1990) theory, these results also have important implications for the treatment of women and children who experience domestic violence. For women and children who are currently living in a violent home, it is important to help women leave the abusive relationship so that she and her children are no longer exposed to the violence. However, there may be times when this is not feasible, i.e., due to severe levels of depression, lack of alternative living situations, lack of financial resources, or when the partner threatens to kill the mother or children. Thus, other interventions are important in addition to stopping the violence altogether.

Results from the present study also show that domestic violence may affect mothers and children even after the violence has ended. For example, mothers' depression in this study was more affected by previous abuse than current abuse. Therefore, one possible way of protecting children from the harmful effects of violence is by reducing mothers' level of depression. It is absolutely essential that battered mothers obtain psychological and/or psychiatric help in alleviating their depressive symptoms. In addition, social support networks, support groups, and other community resources may help limit mothers' feelings of isolation and depression. The results from this study suggest that non-depressed, battered mothers may be able to provide important stimulating experiences for their children which are important for intellectual development. Thus, efforts aimed at helping mothers psychologically cope with their

experiences of domestic violence will also serve to help children recover from being exposed to the violence.

Intervention programs could also aid families experiencing domestic violence by working to increase the quality of the home environment. Clinicians could encourage and model positive verbal interactions with children, they could help mothers learn how to stimulate exploratory behaviors in children which might increase children's feelings of mastery, and programs could provide stimulating play materials for children. These efforts may be particularly relevant during the toddler and preschool periods, during which children are beginning to explore the environment and cognitive competencies are rapidly increasing. In addition, the results from this study suggest that specific characteristics of the home environment are related to specific cognitive abilities. Thus, if a child is showing language delays for example, certain aspects of the home environment such as language stimulation and reading materials may be targeted for change.

In sum, this study has provided a better understanding for the way in which domestic violence may impact preschoolers' intellectual functioning, as well as important suggestions for clinical interventions with this population. Both clinicians and researchers must consider other important maternal and familial characteristics that co-occur with domestic violence when evaluating its effects on child witnesses. Potential protective factors must be identified and targeted by interventionists in order to maximize children's well-being. Finally, although intervening with preschool-age children is preferable to waiting until children enter school, earlier preventative efforts should be the goal. For example, prevention efforts could be aimed at identifying and treating high-risk

families during pregnancy or immediately after childbirth. It is only through prevention that children will have the best possible chances of living healthy and productive lives.

APPENDICES

Appendix A

FAMILY RELATIONSHIPS STUDY
CONSENT FORM-Mother

You are invited to participate in a survey of families. We hope to learn about the strengths of families in a variety of situations, including domestic violence. We hope to learn from mothers about the strategies they use to face the daily challenges and their perceptions of their preschoolers. We are also interested in aspects of the home environment and preschooler development. This information will be used to help people to plan better programs for families, especially families with domestic violence.

If you decide to take part in the survey, you will be asked to fill out questionnaires about how you and your preschooler have been doing recently, and events that have happened to both of you. You will be asked to be videotaped engaging in a task with your preschooler. This will take a total of 2-3 hours. You will also be asked to make a second appointment to be done in your home at your convenience. You will be paid $50 for your participation, and your preschooler will be given a toy.

All information will be kept strictly confidential. Names will be removed from all questionnaires after identification numbers are added. Only identification numbers will be put on the videotapes. Only the study project members will have access to the questionnaires and videotapes. The videotapes will be watched and coded by study project members. All data (including questionnaires and videotapes) will be kept in locked file cabinets in a locked office. No one will be identifiable in any reports written about this study. Data will be reported about groups rather than individuals. The only exception is in the case of ongoing child abuse, in which case we will need to make a report to Protective Services.

In addition, we are interested in contacting your child's preschool teacher to have him/her fill out a questionnaire about your child's behavior at school. The teacher will not be informed as to the nature of the study, but will only be told that this is about family relationships. The teacher will be paid $10 for his/her participation in the study. Please fill in the name of your child's preschool teacher, name of the preschool and phone number below.

You have the right to withdraw your participation at any time with no penalty or negative consequences. Your decision to participate or not to participate will not affect your relationship with any social service agencies, your child's preschool, or Michigan State University. If you have any questions, please ask us. If you have questions later, you can contact Dr. Alytia Levendosky at (517) 353-6396.

****

I have read and understood the above statements. I understand that my participation in this study is completely voluntary and that I can withdraw either myself or my child at any time.

_____ _____

Signature of Participant Date

_____ _____

Witness Date

Alytia Levendosky, Ph.D.
Michigan State University
Department of Psychology
121 Snyder Hall
East Lansing, MI 48824-1117

FAMILY RELATIONSHIPS STUDY

CONSENT FORM-Mother for Preschooler

You are invited to participate in a survey of families. We hope to learn about the strengths of families in a variety of situations, including domestic violence. We hope to learn from mothers about the strategies they use to face the daily challenges and their perceptions of their preschoolers. We are also interested in aspects of the home environment and preschooler development. This information will be used to help people to plan better programs for families, especially families with domestic violence.

If you decide to take part in the survey, you will be asked to allow a research assistant to ask your preschooler some questions about themselves and events that may have happened to them recently. The researcher will also have your child complete some simple school-like tasks. You will then be asked to be videotaped engaging in a task with your preschooler. This will take a total of 2-3 hours. You will be paid $50 for your participation, and your preschooler will be given a toy.

All information will be kept strictly confidential. Names will be removed from all questionnaires after identification numbers are added. Only the study project members will have access to the questionnaires. No one will be identifiable in any reports written about this study. Data will be reported about groups rather than individuals. The only exception is in the case of ongoing child abuse, in which case we will need to make a report to Protective Services.

You have the right to withdraw your participation at any time with no penalty or negative consequences. Your decision to participate or not to participate will not affect your relationship with any social service agencies, your child's preschool, or Michigan State University. If you have any questions, please ask us. If you have questions later, you can contact Dr. Alytia Levendosky at (517) 353-6396.

****

I have read and understood the above statements. I understand that my participation in this study is completely voluntary and that I can withdraw either myself or my child at any time.

_____ _____

Signature of Participant Date

_____

Name of Child

_____ _____

Witness Date

Alytia Levendosky, Ph.D.
Michigan State University
Department of Psychology, 121 Snyder Hall
East Lansing, MI 48824-1117

Appendix B

Preschool Study

A study of family relationships of mothers and preschoolers between 3 and 5 years of age. Mothers and children will participate in two 2 hour meetings.

Mothers will be paid
$50 for their time and children
will receive a small gift

If you are interested or would like more information, please call Dr. Alytia Levendosky at Michigan State University:

432-1447

Dear Parents:

We are writing to ask you and your preschool child to participate in this research project:

Preschool Study

This is a study of family relationships of mothers and preschoolers between 3 and 5 years of age. Mothers and children will participate in two 2 hour meetings.

Mothers will be paid $50 for their time and children will receive a small gift

This project is being run by Dr. Alytia Levendosky at Michigan State University: 432-1447

If you are interested or would like more information, please rip off and fill out the bottom of this form and return it to your child's classroom teacher. Thanks!

Your name _____

Your child's name

_____

Your address _____

_____

Your phone number

_____

Appendix C

THE PRESCHOOL STUDY
Demographic Questionnaire

PLEASE PROVIDE THE FOLLOWING INFORMATION ABOUT YOURSELF AND YOUR FAMILY. REMEMBER THAT ALL INFORMATION WILL REMAIN COMPLETELY CONFIDENTIAL

1) First name of the child participating in the survey _____

2) What is your child's date of birth? ____ / ____ / 19___

3) Please list the members of your family: List your child, yourself, your partner (if any), followed by any other family members listed from OLDEST TO YOUNGEST. Be sure to indicate the relationship TO THE CHILD IN THE STUDY (e.g mother, stepmother, brother, step sister, half brother, aunt, grandmother, nonrelative (specify), etc.). Leave partner blank if no current partner.

	First Name	Relationship to Child	Sex	Age	Living with you?
Child	1.	Self			
You	2.				
Partner (if any)	3.				
Oldest member	4.				
2nd oldest	5.				
3rd oldest	6.				
4th oldest	7.				
5th oldest	8.				

6th oldest 9.

4) What are the total number of people currently living in your home? _____

5) Current marital status

[ ] Single
[ ] Living with partner (how long?_____)
[ ] Married (how long?_____)
[ ] Separated (how long?_____)
[ ] Divorced (how long?_____)
[ ] Widowed (how long?_____)

6) Who has custody of the child in the study?

[ ] You [ ] Other (Who? _____)

7) Racial or ethnic group?

you	child	
[ ]	[ ]	Native American
[ ]	[ ]	Asian
[ ]	[ ]	Black, African-American
[ ]	[ ]	Latino, Hispanic-American
[ ]	[ ]	Biracial (mixed): specify _____
[ ]	[ ]	White
[ ]	[ ]	Other _____

8) What is the highest level of education you have completed?

[ ] Grade school or less
[ ] Some high school
[ ] High school degree/GED
[ ] Some college
[ ] College degree
[ ] Some graduate school
[ ] Graduate degree

9) Is your child currently enrolled in preschool? [ ] yes [ ] no
Where?_____
If yes, for how many hours per week? _____
Is your child currently enrolled in day care? [ ] yes [ ] no
If yes, for how many hours per week? _____
If yes, which best describes the day care setting?

[ ] Individual provider in your home
[ ] Individual provider(s) in their home (total of 1-2 children)
[ ] Individual provider(s) in their home (total of 3 or more children)
[ ] Daycare center

10) Are you working at this time?

[ ] Yes Hours per week? _____
[ ] No

11) Which one of the following best describes your occupation?

[ ] Artist, writer, designer, craftsperson
[ ] Farmer, agricultural worker
[ ] Homemaker
[ ] Manager, administrator
[ ] Professional: specify type _____
[ ] Technician, skilled worker
[ ] Student
[ ] Semiskilled or unskilled worker
[ ] White-collar (sales, clerical, secretary)
[ ] Retired
[ ] Unemployed
[ ] Other

12) What is your total family income (include public assistance received, if any)?

$_____ (Circle one: per month or per year)

13) Which of the following best describes your religious affiliation?

[ ] Protestant (what type? _____)
[ ] Catholic
[ ] Jewish
[ ] Muslim
[ ] Atheism/Agnosticism
[ ] No religious affiliation

14) How long have you been living in your current housing?

[ ] less than 1 month
[ ] 1 to 3 months
[ ] 4 to 6 months
[ ] 7 to 12 months
[ ] 1 to 3 years
[ ] more than 3 years

15) How long have you lived in this state?_____(Circle one: months or years)

16) How many times have you moved since the preschooler in the study was born?

[ ] once
[ ] 2 to 3 times
[ ] 4 to 5 times
[ ] more than 5 times

17) Have you ever stayed in a shelter before?

[ ] Yes, how many times?_____

[ ] No

18) If Yes, what kind of a shelter did you stay in?

[ ] For battered women

[ ] For homeless women

[ ] Other _____

19) Have you ever been in an abusive relationship?

[ ] Yes

[ ] No

20) If yes to 19, what are the dates of that relationship(s).

	Month / Year relationship started	Month / Year relationship ended (write "current" if ongoing)
Abusive relationship #1	_____/_____	_____/_____
Abusive relationship #2	_____/_____	_____/_____
Abusive relationship #3	_____/_____	_____/_____
Abusive relationship #4	_____/_____	_____/_____
Abusive relationship #5	_____/_____	_____/_____

Appendix D
Severity of Violence Against Women Scales

During the past year, you and your partner have probably experienced anger or conflict. Below is a list of behaviors your partner may have done **during the past 12 months.** Describe how often your partner has done each behavior by writing a number from the following scale.

1	2	3	4
never	once	a few times	many times

Also, mark an X next to those items which your preschooler who is in the study witnessed, either by seeing or hearing it.
PLEASE INDICATE DATES OF THIS RELATIONSHIP: ____/____/____ TO ____/____/____

How often has your partner:

_____1. Hit or kicked a wall, door or furniture
_____2. Threw, smashed or broke an object
_____3. Driven dangerously with you in the car
_____4. Threw an object at you
_____5. Shook a finger at you
_____6. Made threatening gestures or faces at you
_____7. Shook a fist at you
_____8. Acted like a bully toward you
_____9. Destroyed something belonging to you
_____10. Threatened to harm or damage things you care about
_____11. Threatened to destroy property
_____12. Threatened someone you care about
_____13. Threatened to hurt you
_____14. Threatened to kill himself
_____15. Threatened you with a club-like object
_____16. Threatened you with a knife or gun
_____17. Threatened to kill you
_____18. Threatened you with a weapon
_____19. Acted like he wanted to kill you
_____20. Held you down, pinning you in place
_____21. Pushed or shoved you
_____22. Shook or roughly handled you
_____23. Scratched you
_____24. Pulled your hair
_____25. Twisted your arm
_____26. Spanked you
_____27. Bit you
_____28. Slapped you with the palm of his/her hand
_____29. Slapped you with the back of his/her hand
_____30. Slapped you around your face and head
_____31. Kicked you
_____32. Hit you with an object
_____33. Stomped on you
_____34. Choked you
_____35. Punched you
_____36. Burned you w/something
_____37. Used a club-like object on you
_____38. Beat you up
_____39. Used a knife or gun on you
_____40. Demanded sex whether you wanted to or not
_____41. Made you have oral sex against your will
_____42. Made you have sexual intercourse against your will
_____43. Physically forced you to have sex
_____44. Made you have anal sex against your will
_____45. Used an object on you in a sexual way
_____46. Grabbed you suddenly or forcefully

Use the following scale:

1	2	3	4
never	once	a few times	many times

During your previous relationship, how often did your partner do the following? Again please check any items that your preschooler witnessed in the right-hand column.

_____1. Hit or kicked a wall, door or furniture _____
_____2. Threw, smashed or broke an object _____
_____3. Driven dangerously with you in the car _____
_____4. Threw an object at you _____
_____5. Shook a finger at you _____
_____6. Made threatening gestures or faces at you _____
_____7. Shook a fist at you _____
_____8. Acted like a bully toward you _____
_____9. Destroyed something belonging to you _____
_____10. Threatened to harm or damage things you care about _____
_____11. Threatened to destroy property _____
_____12. Threatened someone you care about _____
_____13. Threatened to hurt you _____
_____14. Threatened to kill himself _____
_____15. Threatened you with a club-like object _____
_____16. Threatened you with a knife or gun _____
_____17. Threatened to kill you _____
_____18. Threatened you with a weapon _____
_____19. Acted like he wanted to kill you _____
_____20. Held you down, pinning you in place _____
_____21. Pushed or shoved you _____
_____22. Shook or roughly handled you _____
_____23. Scratched you _____
_____24. Pulled your hair _____
_____25. Twisted your arm _____
_____26. Spanked you _____
_____27. Bit you _____
_____28. Slapped you with the palm of his/her hand _____
_____29. Slapped you with the back of his/her hand _____
_____30. Slapped you around your face and head _____
_____31. Kicked you _____
_____32. Hit you with an object _____
_____33. Stomped on you _____
_____34. Choked you _____
_____35. Punched you _____
_____36. Burned you w/something _____
_____37. Used a club-like object on you _____
_____38. Beat you up _____
_____39. Used a knife or gun on you _____
_____40. Demanded sex whether you wanted to or not _____
_____41. Made you have oral sex against your will _____
_____42. Made you have sexual intercourse against your will _____
_____43. Physically forced you to have sex _____
_____44. Made you have anal sex against your will _____
_____45. Used an object on you in a sexual way _____
_____46. Grabbed you suddenly or forcefully _____

Appendix E

Conflict Tactics Scale

The following is a list of some things that your husband/partner might have done with your child when the two of them had a dispute or disagreement.

Please use the following scale to answer each item:

0=Never, 1=Once, 2=Twice, 3= 3-5 times, 4= 6-10 times, 5= 11-20 times, 6=more than 20 times, X= Don't know

	In the past year	Ever happened
1. Discussed the issue calmly with your child	_____	Yes No
2. Got information to back up your side of things	_____	Yes No
3. Brought in or tried to bring in some someone to help settle things	_____	Yes No
4. Insulted or swore at your child	_____	Yes No
5. Sulked or refused to talk about it	_____	Yes No
6. Stomped out of the room or house (or yard)	_____	Yes No
7. Cried	_____	Yes No
8. Did or said something to spite your child	_____	Yes No
9. Threatened to hit or throw something at your child	_____	Yes No
10. Threw or smashed or hit or kicked something, but not at your child	_____	Yes No
11. Actually threw something at your child	_____	Yes No
12. Pushed, grabbed, or shoved your child	_____	Yes No
13. Slapped your child	_____	Yes No
14. Kicked, bit, or hit your child with a fist	_____	Yes No
15. Hit or tried to hit your child with something	_____	Yes No
16. Beat up your child	_____	Yes No
17. Threatened your child with a knife or gun	_____	Yes No
18. Used a knife or gun on your child	_____	Yes No
19. Other_____	_____	Yes No

The following is a list of some things that you might have done with your child when the two of you had a dispute or disagreement.

Please use the following scale to answer each item:

0=Never, 1=Once, 2=Twice, 3= 3-5 times, 4= 6-10 times, 5= 11-20 times, 6=more than 20 times, X= Don't know

	In the past year	Ever happened
1. Discussed the issue calmly with your child	_____	Yes No
2. Got information to back up your side of things	_____	Yes No
3. Brought in or tried to bring in some someone to help settle things	_____	Yes No
4. Insulted or swore at your child	_____	Yes No
5. Sulked or refused to talk about it	_____	Yes No
6. Stomped out of the room or house (or yard)	_____	Yes No
7. Cried	_____	Yes No
8. Did or said something to spite your child	_____	Yes No
9. Threatened to hit or throw something at your child	_____	Yes No
10. Threw or smashed or hit or kicked something, but not at your child	_____	Yes No
11. Actually threw something at your child	_____	Yes No
12. Pushed, grabbed, or shoved your child	_____	Yes No
13. Slapped your child	_____	Yes No
14. Kicked, bit, or hit your child with a fist	_____	Yes No
15. Hit or tried to hit your child with something	_____	Yes No
16. Beat up your child	_____	Yes No
17. Threatened your child with a knife or gun	_____	Yes No
18. Used a knife or gun on your child	_____	Yes No
19. Other_____	_____	Yes No

Appendix F
Beck Depression Inventory

In answering these questions, think about each item carefully and give the answer out of the group of 4 items that best reflects how you have been feeling **during the past week**.

1. [ ] I do not feel sad.
   [ ] I feel sad.
   [ ] I am sad all the time and I can't snap out of it.
   [ ] I am so sad or unhappy that I can't stand it.

2. [ ] I am not particularly discouraged about the future.
   [ ] I feel discouraged about the future.
   [ ] I feel I have nothing to look forward to.
   [ ] I feel that the future is hopeless and that things cannot improve.

3. [ ] I do not feel like a failure.
   [ ] I feel I have failed more than the average person.
   [ ] As I look back on my life, all I can see is a lot of failures.
   [ ] I feel I am a complete failure as a person.

4. [ ] I get as much satisfaction out of things as I used to.
   [ ] I don't enjoy things the way I used to.
   [ ] I don't get real satisfaction out of anything anymore.
   [ ] I am dissatisfied or bored with everything.

5. [ ] I don't feel particularly guilty.
   [ ] I feel guilty a good part of the time.
   [ ] I feel quite guilty most of the time.
   [ ] I feel guilty all of the time.

6. [ ] I don't feel I am being punished.
   [ ] I feel I may be punished.
   [ ] I expect to be punished.
   [ ] I feel I am being punished.

7. [ ] I don't feel disappointed in myself.
   [ ] I am disappointed in myself.
   [ ] I am disgusted with myself.
   [ ] I hate myself.

8. [ ] I don't feel I am any worse than anybody else.
   [ ] I am critical of myself for all my weaknesses or mistakes.
   [ ] I blame myself all the time for my faults.
   [ ] I blame myself for everything bad that happens.

9. [ ] I don't have any thoughts of killing myself.
[ ] I have thoughts of killing myself, but I would not carry them out.
[ ] I would like to kill myself.
[ ] I would kill myself if I had the chance.

10. [ ] I don't cry any more than usual.
[ ] I cry more now than I used to.
[ ] I cry all the time now.
[ ] I used to be able to cry, but now I can't cry even though I want to.

11. [ ] I am no more irritated by things than I ever am.
[ ] I am slightly more irritated now than usual.
[ ] I am quite annoyed or irritated a good deal of the time.
[ ] I feel irritated all the time now.

12. [ ] I have not lost interest in other people.
[ ] I am less interested in other people than I used to be.
[ ] I have lost most of my interest in other people.
[ ] I have lost all of my interest in other people.

13. [ ] I make decisions about as well as I ever could.
[ ] I put off making decisions more than I used to.
[ ] I have greater difficulty in making decisions than before.
[ ] I can't make decisions at all anymore.

14. [ ] I don't feel that I look any worse than I used to.
[ ] I am worried that I am looking old or unattractive.
[ ] I feel that there are permanent changes in my appearance that make me look unattractive.
[ ] I believe that I look ugly.

15. [ ] I can work about as well as before.
[ ] It takes an extra effort to get started at doing something.
[ ] I have to push myself very hard to do anything.
[ ] I can't do any work at all.

16. [ ] I can sleep as well as usual.
[ ] I don't sleep as well as I used to.
[ ] I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.
[ ] I wake up several hours earlier than I used to and cannot get back to sleep.

17. [ ] I don't get more tired than usual.
[ ] I get tired more easily than I used to.
[ ] I get tired from doing almost everything.
[ ] I am too tired to do anything.

18. [ ] My appetite is no worse than usual.
[ ] My appetite is not as good as it used to be.
[ ] My appetite is much worse now.
[ ] I have no appetite at all anymore.

19. [ ] I haven't lost much weight, if any, lately.
[ ] I have lost more than five pounds.
[ ] I have lost more than ten pounds.
[ ] I have lost more than fifteen pounds.

20. [ ] I am no more worried about my health than usual.
[ ] I am worried about physical problems such as aches and pains, or upset stomach, or constipation.
[ ] I am very worried about my physical problems and it's hard to think of much else.
[ ] I am so worried about my physical problems that I cannot think about anything else.

21. [ ] I have not noticed any recent change in my interest in sex.
[ ] I am less interested in sex than I used to be.
[ ] I am much less interested in sex now.
[ ] I have lost interest in sex completely.

Appendix G
Home Observation for Measurement of the Environment

PRESCHOOL HOME INVENTORY ID# _____

I'm going to be asking you some general questions about your son/daughter ( ), including things he/she does during free time, activities that you may or may not do with him/her, and other questions about your daily routine with him/her. Other questions may be more specific about certain activities.

A. **What is a typical day like? Start with things you remember when ( ) first woke up, say yesterday.** (Don't allow too much detail for time purposes. Jot down important points and ask mom to slow down if necessary)

B. **Give me some examples of places you go and take ( ) with you**, e.g., grocery store, doctor's office or clinic, relatives, outings such as a picnic.

44. **About how often does that happen? At least every other week?**
(circle) At least 1X every other week Less than every other week

46. **During the past year, has ( ) been taken by a family member to a scientific, historical, or art museum?**
yes no

45. **Has ( ) been taken by a family member on a trip of more than 50 miles from home during the past year?**
yes no

14. **Sometimes parents are concerned about how their children will behave when they take them on outings. In general, has ( ) learned manners such as "Please" and "Thank you" and "I'm sorry"? How did s/he learn these?**
Child learns manners from parents Child does not learn manners from parents

C. **Now I'm interested in knowing something about the kinds of toys and play materials your child likes to play with. Can you tell me what ( ) likes to play with <u>at home</u>?**

[This is an open-ended question. If the mother does not spontaneously address items 1-6, 12, 43 below, ask about them by specifically saying "**Does ( ) ever play with toys that teach colors and shapes? Like what?" "Does ( ) ever play with puzzles?"** Ask for specific examples of what is in the home and for her to point them out if they are nearby so she doesn't just answer "yes" to anything]

1. **Toys to learn colors and sizes and shapes—pressouts, play school, pegboards, etc...?**

yes no

2. **Three or more puzzles?**

yes no

3. **Record player and at least 5 children's records or taperecorder and children's audiocassettes?**

yes no

4. **Ever do art activities like finger paints, play dough, crayons or paint and paper, etc..?**

yes no

5. **Toys or games that require concentration and physical skills like coloring, paint by number, dot book, paper dolls, etc..?**

yes no

6. **Toys or games that help with learning numbers (blocks with numbers, books about numbers, games with numbers, etc..)?**

yes no

12. **Toys to learn animals--books about animals, circus, games, animal puzzles, etc...?**

yes no

43. **Real or toy musical instrument (piano, drum, toy xylophone, guitar, etc..)?**

yes no

47. **Does ( ) pick up and put away toys after play without help?**

yes no

49. **Is there a place where ( ) can display his/her artwork or anything s/he makes? Does this ever happen?**

Child's artwork is displayed in home | Child's artwork not displayed in home

D. **One of the hardest things about having young children around the house is that they are always demanding attention and you have a lot of other things to do besides pay attention to them. For example, kids this age ask a lot of questions.**

16. **Does ( ) ask a lot of questions or want to tell you about his/her day? What do you do?**

Parent listens to child Parent does not listen to child

26. **Do you manage to find time to hold ( ) on your lap (or hold next to you)? About how often do you do that? When do you usually do that? For how long?**

Parent holds child Parent does not hold child
10-15 minutes/day 10-15 minutes/day

E. **How do you manage mealtimes at your home?**

50. **On most days, does ( ) eat at least one meal with you? With both of you** (if romantic partner lives in home)? (one parent families get an automatic "no" for this question)

Child eats with 2 parental figures Child does not eat with 2 parental figures

Give me some examples of foods s/he likes.
Dislikes

18. **Who usually chooses what ( ) eats (any meal)?**

Child has some say Child has no say

51. **Do the two of you ever go to the grocery store----if so, can s/he choose favorite foods?**

Child can choose some food Child does not choose food

38. **Sometimes kids are hungry between meals--is that true of ( )? How do you manage that?**

Child able to delay gratification for food Child cannot delay gratification
(doesn't whine or demand) (whines/demands food)

F. **In general, does ( ) mind you pretty well? Or do you have to punish him/her to get him/her to do what you want?**

55. **About how many times/week would you say you have to spank him/her? What usually happens to cause this** (what does the child do)?

Child spanked less than 1X/week Child spanked one or more times/week

41. **What happens when ( ) gets mad or negative and tells you about it?**

Child allowed to express negative feelings Child not allowed to express negative feelings

42. **What happens if ( ) hits you?** (If mother says this has never happened, ask what she would do if it did).

Child allowed to hit parent Child not allowed to hit parent

G. **A child as young as ( ) ties a mother down much of the time. Do you ever manage to get away by yourself?**

9. **Do you have time to read the newspaper? Daily?**
   Reads paper daily Does not read paper daily
10. **Time to read magazines? Subscribe?**
   Subscribes to at least 1 magazine Does not subscribe to magazines
7. **Time to read ( ) books of his/her own? About how many** (children's books)?
   owns/uses 10 children's books Less than 10 children's books
8. (If books are not visible), **have you set aside a special place for them** (any books)?
   >10 books visible in home <10 books visible in home
39. **I'm sure you find the TV a lot of company. Do you usually leave it on during the day or just turn it on for special programs?**
   TV used judiciously TV left on all day OR does not own TV

H. **( ) seems to be a smart kid.**

11. **Does s/he know her/his shapes already?**
   yes no
13. **Alphabet?**
   yes no
33. **Is ( ) encouraged to learn colors?**
   yes no
34. **To learn nursery rhymes, prayers, songs, or something like this** (patterned speech)?
   yes no
35. **Encouraged to learn spatial relationships (up, down, under, big, little, etc...)? How?**
   yes no
36. **To learn numbers? How?**
   yes no
37. **To read a few words? How?**
   yes no

Additional questions for preschool HOME for **Shelter moms**

19. **Are there any areas of your home that need physical repair? Like what? Anything that needs fixing?**

Home is not dangerous for child	Home is dangerous for child

20. **Does your child have any outside area to play? What's that like** (how big, any hazards..)?

Outside play area is safe	Outside play area is not safe

21. **What does the inside of your home look like in general?**

Home is not dark or monotonous	Home is dark/monotonous

22. **What's your neighborhood like? Do you enjoy looking around it? Do you like to be outside at home?**

Neighborhood is aesthetically pleasing	Neighborhood is not aesthetically pleasing

23. **Approximately, what size is your home, i.e., how many rooms are there and about how big are each?**

At least 100 sq. feet per person in home	Less than 100 sq. feet per person in home

24. **Do you wish you had more space in your home or is it spacious enough? Do you feel like it is overcrowded, i.e., cluttered or lots of furniture?**

Rooms not cluttered/overcrowded	Rooms are cluttered/overcrowded

25. **Are you able to find the time to organize and tidy up the home?**

House is kept clean	House is not kept clean

For mothers in shelters or otherwise unable to have a home visit, do the best you can to observe and code items 15, 17, 27-32, 40, 48, 52-54. Most of these require interactions with their children in front of the observer, but some do not, i.e., "mother uses correct grammar."

Home Observation for Measurement of the Environment
Preschool Version

I.	STIMULATION THROUGH TOYS, GAMES, AND READING MATERIALS	YES	NO
1.	Toys to learn colors and sizes and shapes—pressouts, play school, pegboards, etc...		
2.	Three or more puzzles.		
3.	Record player and at least five children's records.		
4.	Toys or game permitting free expression (finger paints, play dough, crayons, or paint and paper, etc...).		
5.	Toys or game necessitating refined movements (play by by number, dot book, paper dolls, crayons and coloring books).		
6.	Toys or game facilitating learning numbers (blocks with numbers, books about numbers, games with numbers).		
7.	Ten children's books.		
8.	At least ten books are present and visible in the apartment.		
9.	Family buys a newspaper daily and reads it.		
10.	Family subscribes to at least one magazine.		
11.	Child is encouraged to learn shapes.		
	SUBSCORE		

II.	POSITIVE SOCIAL RESPONSIVENESS	YES	NO
12.	Toys to learn animals—books about animals, circus, games, animal puzzles, etc.		
13.	Child is encouraged to learn the alphabet		
14.	Parent teaches child some simple manners—to say, "Please," "thank you," I'm sorry."		
15.	Mother uses correct grammar and pronunciation.		
16.	Parent encourages child to relate experiences or takes time to listen to him relate experiences.		
17.	When speaking of or to child, mother's voice conveys positive feeling.		
18.	Child is permitted some choice in lunch or breakfast menu.		
	SUBSCORE		

III.	PHYSICAL ENVIRONMENT, SAFE, CLEAN AND CONDUCIVE TO DEVELOPMENT	YES	NO
19.	Building has no potentially dangerous structural or health defect (e.g., plaster coming down from ceiling, stairway with boards missing, rodents, etc.).		
20.	Child's outside play environment appears safe and free of hazards. (no outside play area requires an automatic no).		
21.	The interior of the apartment is not dark or perceptibly monotonous.		
22.	Neighborhood has trees, grass, birds—is aesthetically pleasing.		
23.	There is at least 100 square feet of living space per person in the house.		
24.	In terms of available floor space, the rooms are not over-crowded with furniture.		
25.	All visible rooms of the house are reasonably clean and minimally cluttered.		
	SUBSCORE		

IV.	PRIDE, AFFECTION, AND WARMTH	YES	NO
26.	Parent holds child close ten to fifteen minutes per day, e.g., during TV, story time, visiting.		
27.	Mother converses with child at least twice during visit (scolding and suspicious comments not counted).		
28.	Mother answers child's questions or requests verbally.		
29.	Mother usually responds verbally to child's talking.		
30.	Mother spontaneously praises child's qualities or behavior twice during visit.		
31.	Mother caresses, kisses, or cuddles child at least once during visit.		
32.	Mother sets up situation that allows child to show off during visit.		
	SUBSCORE		

V.	STIMULATION OF ACADEMIC BEHAVIOR	YES	NO
33.	Child is encouraged to learn colors.		
34.	Child is encouraged to learn pattered speech (nursery rhymes, prayers, songs, TV commercials, etc.).		
35.	Child is encouraged to learn spatial relationships		

(up, down, under, big, little, etc.).

36. Child is encouraged to learn numbers.
37. Child is encouraged to learn to read a few words.

SUBSCORE

VI.	MODELING AND ENCOURAGEMENT OF SOCIAL MATURITY	YES	NO
38.	Some delay of food gratification is demanded of the child, e.g., not to whine or demand food unless within ½ hour of meal time.		
39.	Family has TV, and it is used judiciously, not left on continuously. (No TV requires an automatic NO—any scheduling scores YES).		
40.	Mother introduces interviewer to child		
41.	Child can express negative feelings without harsh reprisal.		
42.	Child is permitted to hit parent without harsh reprisal.		

SUBSCORE

VII.	VARIETY OF STIMULATION	YES	NO
43.	Real or toy musical instrument (piano, drum, toy xylophone or guitar, etc.).		
44.	Family members have taken child on one outing (picnic, shopping excursion) at least every other week.		
45.	Child has been taken by family member on a trip more than 50 miles from his home during the past year (50 mile radial distance not total distance).		
46.	Child has been taken by a family member to a scientific, historical, or art museum within the past year.		
47.	Tries to get child to pick up and put away toys after play session—without help.		
48.	Mother uses complex sentence structure and some long words in conversing.		
49.	Child's art work is displayed some place in house (anything the child makes.)		
50.	Child eats at least one meal per day, on most days, with mother (or mother figure) and father (or father figure). (one parent families get an automatic NO).		
51.	Parent lets child choose certain favoritve food products or brands at grocery store.		

SUBSCORE

VIII. PHYSICAL PUNISHMENT	YES	NO
52. Mother does not scold (yell) or derogate child more than once during visit.		
53. Mother does not use physical restraint, shake, grab, or pinch child during visit.		
54. Mother neither slaps or spanks child during visit.		
55. No more than one instance of physical punishment occurred during the past week (accept parental report).		

SUBSCORE

Figure 1. Model of Domestic Violence and Children's Intellectual Functioning

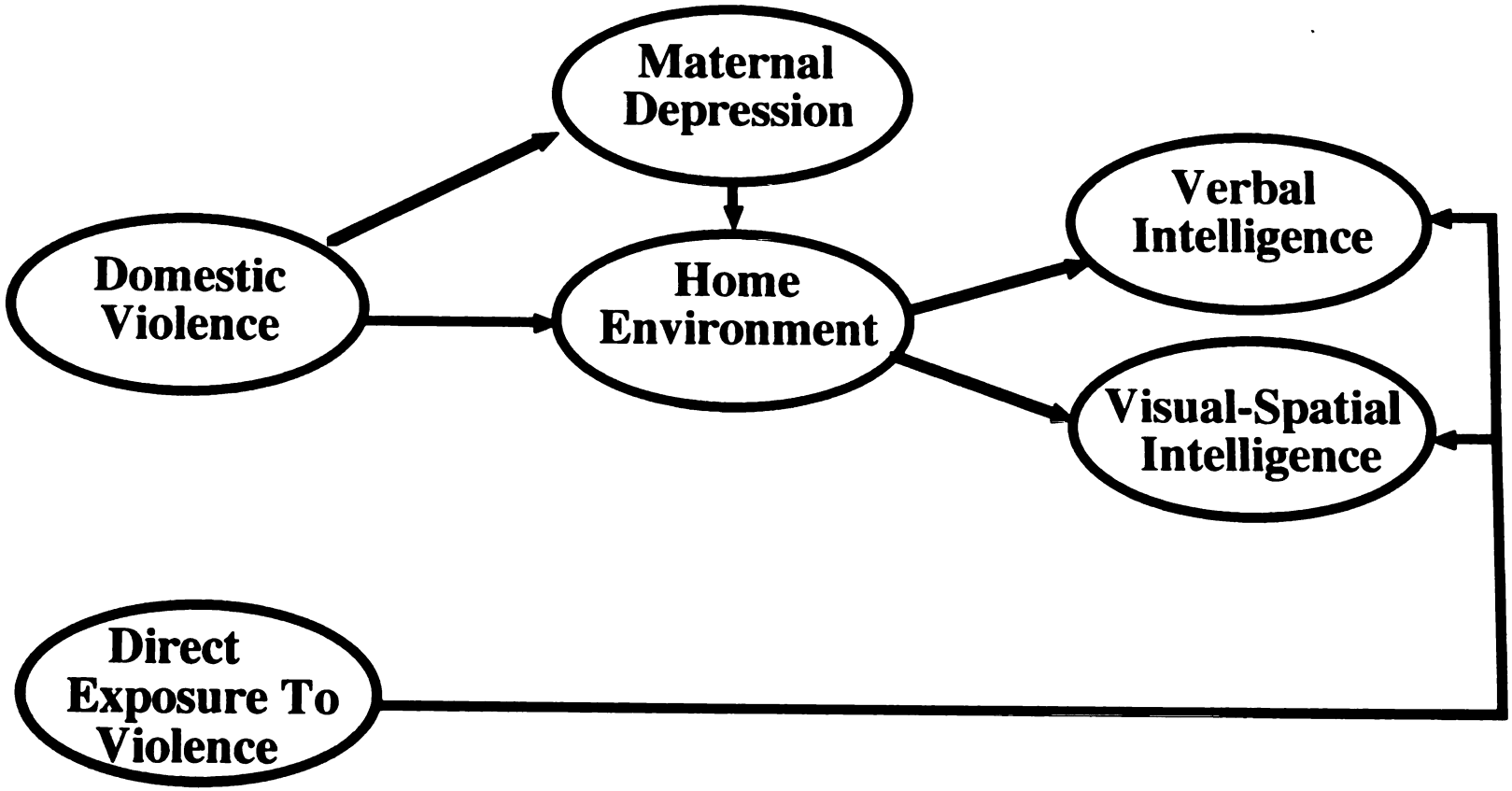
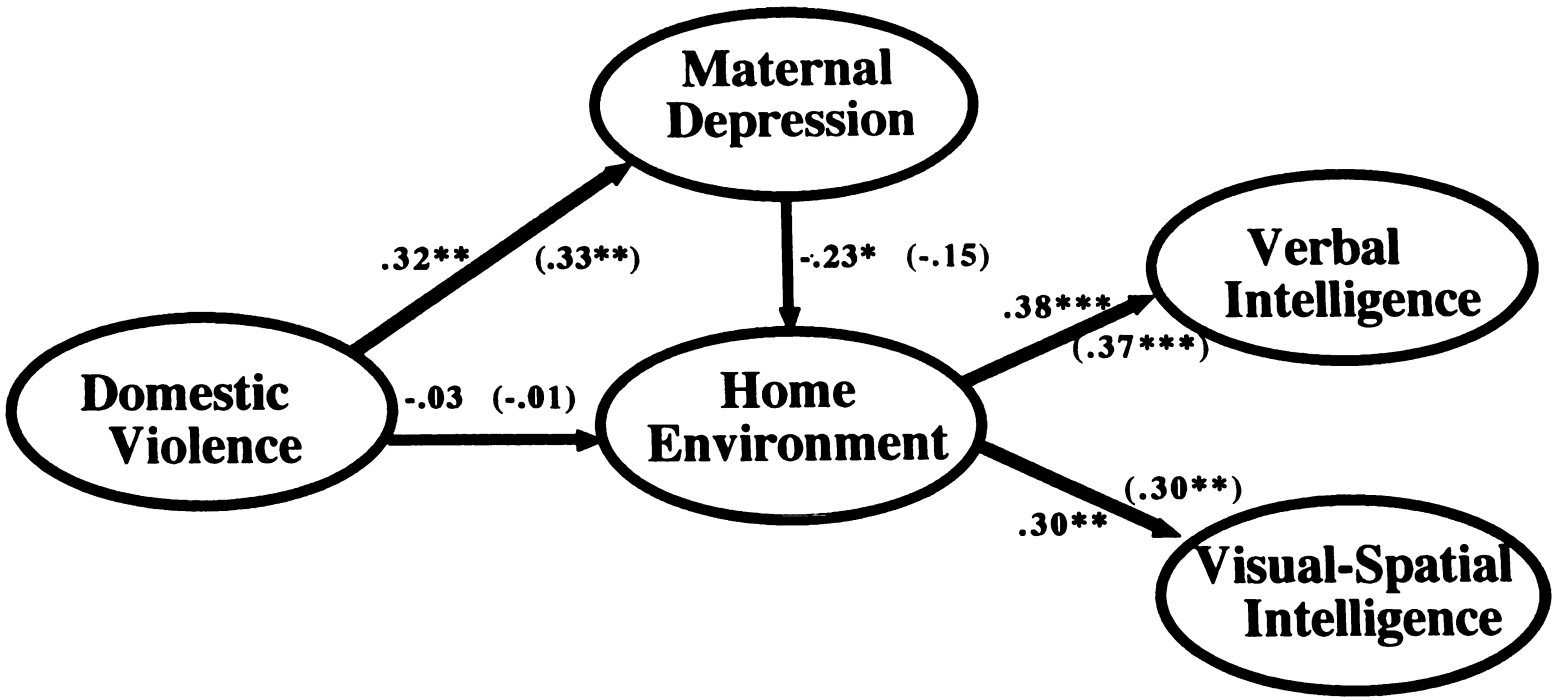


Figure 2. Path Analysis for Domestic Violence and Children's Intellectual Functioning



*p < .05, **p < .01, ***p < .001
() indicate coefficients after controlling for SES and income

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