CHILDHOOD MALTREATMENT, FAMILY ENVIRONMENT, AND PROBLEM SOLVING STYLE IN ADULT CRIMINAL OFFENDERS: A COMPARATIVE STUDY

by

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As members of the Dissertation Committee, we certify that we have read the dissertation prepared by Nicole Schneider Kitei entitled Childhood maltreatment, family environment, and problem-solving style in adult criminal offenders: A comparative study and recommend that it be accepted as fulfilling the dissertation requirement for the Degree of Doctor of Philosophy

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ABSTRACT

This study investigated the relationship between experiences of childhood maltreatment, family functioning, problem-solving style, and criminal offending. Participants (N = 120) were all male and classified as violent (V), non-violent (NV), or non-offenders (NO) based on their criminal histories. The Childhood Trauma Questionnaire (CTQ), Family-of-Origin Scale (FOS), Social Problem-Solving Inventory-Revised (SPSI-R), Beck Depression Inventory (BDI), and Brief Symptom Inventory (BSI) were administered to all participants. Results suggest that V's reported significantly more maltreatment compared to NO's. V's came from the least healthy families while NO's came from the healthiest families. Finally, V's were more likely to use an impulsive approach and less likely to use a rational approach to solving problems than NO's. Experiences of physical neglect discriminated the groups. This study also discovered previously ignored correlations between these variables within each of the three groups and implications of these new findings are discussed.

INTRODUCTION

High quality rigorous empirical research is needed to understand the etiology of violent offending in modern society. For example, it is unlikely that one single etiological factor is responsible for the development of violent behavior; rather a combination of multiple factors is probable (Dodge, Pettit, Bates, & Valente, 1995). Past research has identified three variables that are likely related to future violent behavior: child maltreatment, negative family environment, and poor social information processing and problem-solving.

Maltreatment and Offending

Although most maltreated children do not go on to commit acts of violence, there is data to suggest that many violent offenders have experienced some form of maltreatment during childhood (Caesar, 1988; Dutton & Hart, 1994; Freedman & Hemenway, 2000; Haapasalo & Moilanen, 2004; Hamilton, Falshaw, & Browne, 2002; Miller & Knutson, 1997; Steele, 1975; Weeks & Widom, 1998; Widom, 1989a), and that significantly more violent offenders evidence a history of childhood maltreatment compared to non-violent or non-offending controls (Freedman & Hemenway, 2000; Herrera & McCloskey, 2003; Lewis & Shanok, 1979; Stone, 2001; Weeks & Widom, 1998; Weiler & Widom, 1996; Widom, 1998; Widom & Ames, 1994). Although there is some debate in the field about the inter-generational transmission of maltreatment, there is less debate about the relationship between childhood victimization and future criminal records (e.g., Widom, 1989a). Prevalence rates of maltreatment in the histories of

offenders range from 9% to 80% (Weeks & Widom, 1998). Studies of detained juvenile offenders reveal an even stronger relationship – between 72%-84% have histories of child abuse (Lewis, Shanok, Pincus, & Glaser, 1979; Steele, 1975). Official reports of physical abuse have even been used to successfully predict arrests for violent crimes (e.g., Haapasalo & Moilanen, 2004; Widom & Sheppard, 1996); "The correlation between harsh physical discipline and aggressive/delinquent behavior is one of the most consistent findings in the literature" (Stoolmiller, Patterson, & Snyder, 1997, p. 223). Support for the relationship between maltreatment and future aggressive behavior is indicated even when controlling for variables that are more likely to occur in abusive homes (e.g., low SES, high stress, low support, child temperament, and marital violence) (Dodge, et al., 1995; Weiss, et al., 1992).

Research on adult inmates reveals that 31% have been physically abused, 11% have been sexually abused, and 13% have been neglected as children (Dutton & Hart, 1994). This research also concluded that men who had been victimized as children were three times more likely to engage in violent acts as adults compared to non-maltreated controls. In another sample of 301 adult male felons randomly selected from a New York state correctional facility, 68.4% reported some form of early childhood victimization before age 12, a finding that provides support to the belief that the majority of offenders have experienced childhood victimization (Weeks & Widom, 1998). In yet another sample, this time of a sample of men sentenced to death in California, fourteen of the sixteen studied had a history of severe physical and/or sexual abuse including being knocked unconscious, bruising, broken bones, welts, and severe lashings (Freedman &

Hemenway, 2000). The data gathered in Miller & Knutson's (1996) study of 314 inmates also strongly suggested that they (compared to controls) suffered severe punishment during childhood and that within the inmate sample, those charged with violent offenses experienced the most extreme form of discipline compared to non-violent offenders.

These findings are supported internationally. Researchers in England found that 55% of incarcerated offenders had suffered both repeated victimization by the same perpetrator as well as re-victimization by another perpetrator (Hamilton, Falshaw, & Browne, 2002). Only 6.5% had experienced a single incident of maltreatment, less than 21% of the offenders in this sample had not experienced maltreatment. These findings led the researchers to conclude that victimization is strongly associated with serious violent offending. A Finnish study of 89 inmates, which looked at maltreatment history and convictions for both violent and non-violent crimes, found that abused children (physically abused in particular) are more likely to become criminally violent in adulthood (Haapasalo & Moilanen, 2004 p. 141). And a Canadian study of child maltreatment and future dating violence revealed that boys who had been abused or neglected were at significantly greater risk for using threatening behaviors or physical violence against their partners compared to controls (Wolfe, Scott, Wekerle, & Pittman, 2001). Again, the findings led this team of researchers to conclude that childhood maltreatment is a significant risk factor for future maladjustment and dating violence.

Prospective cohort studies reveal that being abused or neglected in childhood increases an individual's risk for delinquency, adult criminal behavior, and violent criminal behavior (e.g., Rivera & Widom, 1990; Widom, 1989a). For example, Widom

(1989b) examined 908 court cases of child abuse and neglect between 1967-1971 that involved incidents of maltreatment perpetrated against children 11 years of age or younger. She followed these cases into adulthood to determine the extent of adult criminal behavior. Her findings revealed that abused and neglected subjects had higher rates of criminality and arrests for violent offenses than non-abused controls. More specifically, maltreated subjects were 1.72 times more likely to be arrested for a crime 20 years later compared to non-maltreated controls. She also found that although abused and neglected subjects were not arrested for incidents involving the abuse or neglect of their own children, they were involved with other types violent offending.

More support for the relationship between a history of maltreatment and future violent offending comes from the domestic violence literature. When Caesar (1988), for example, assessed the relationship between marital violence and child abuse in the families of origin of wife assaulters versus martially non-violent men, she found that the batterers were more likely than controls to have been abused as children. Sixty percent of the batterers came from violent homes versus just 20% of non-violent men. Among men who reported a history of family violence, between 34-54% engaged in marital violence compared to between 8-27% of men without such a history (Delsol & Margolin, 2004).

Despite the empirical support for the relationship between childhood maltreatment and violent offending, there are limits in this literature that call into question the validity of its conclusions. First, not all research has supported the findings. For example, results from a large-scale study of almost 20,000 incarcerated males, suggested that inmates who reported childhood abuse were less likely to have been

arrested and incarcerated for a violent offense than those who reported no history of childhood maltreatment (Zingraff & Belyea, 1986). Similarly, Zingraff, Leiter, Myers, & Johnson (1993) found no significant differences between maltreated subjects and non-maltreated subjects regarding their propensity to commit violent offenses. Further, in Weeks and Widom's (1998) study of incarcerated adult male felons, no differences were found between violent and non-violent offenders in the extent to which they reported a history of sexual abuse (their findings did suggest significant differences between these groups in terms of their experiences of childhood neglect).

Second, although most studies claim to be investigating child abuse in the histories of offenders, attention is often paid only to one form or sub-category of maltreatment. For example, researchers tend to choose between physical abuse, sexual abuse, *or* neglect, often failing to consider the presence or additive effect of all three forms of maltreatment or a combination thereof (e.g., Brewer-Smyth, Burgess, & Shults, 2004; Freedman & Hemenway, 2000; Herrera & McCloskey, 2003; Miller & Knutson, 1997).

Third, although neglect is the most prevalent form of child maltreatment, its potential impact is often ignored in research (English, 1998). Studies often focus attention on overt acts of abuse rather than on the covert but arguably more harmful effects of physical and emotional neglect. Neglect is the failure to provide for a child's needs; physical neglect refers to the failure to provide necessary food, shelter and appropriate supervision; emotional neglect refers to the failure to provide for a child's emotional needs, psychological care, or permitting the child to use alcohol and other

drugs (U.S. Department of Health and Human Services, 2005). An estimated 906,000 children were found to be victims of child maltreatment in 2003 (U.S. Department of Health and Human Services, 2003). The largest portion, 61%, were victims of neglect versus 19% who were physically abused, 10% who were sexually abused, and 5% who were emotionally abused. Given the prevalence rates, it's puzzling why neglect is given less empirical attention in the maltreatment and offending literature compared to other forms of maltreatment.

Fourth, childhood maltreatment is often presented categorically (i.e., absent vs. present) rather than dimensionally (e.g., none, low, moderate, severe), resulting in a failure to obtain an understanding of gradations. For example, how much hitting and with what magnitude constitutes physical abuse?

Fifth, it is problematic when researchers target vague variables such as 'violence in the home' or 'family violence' because it is then up to the reader to determine what defines these terms (e.g., Bergman & Brismar, 1994). Does 'violence in the home' mean that the child watched his or her parents engaging in physical altercations or does it mean that the child was the direct recipient of the attacks? Without clear definitions of the variables being measured, error and noise can render the findings fruitless and make comparisons across studies difficult (Weeks & Widom, 1998).

Sixth, there are major problems with the way maltreatment data is gathered. For example, much of the data on the history of maltreatment in offender populations comes from archival reports, even though as much as 50% of maltreatment experiences/incidents fail to make it into available archival records (Miller & Knutson,

1997). This lack of sensitivity in study design renders findings difficult to accept and interpret given the vast underreporting it represents. Even when a research study utilizes self-report questionnaires, these instruments frequently attempt to assess maltreatment experiences with only one or two questions (e.g., "Have you been the victim of abuse?") (Delsol & Margolin, 2004; Weeks & Widom, 1998). Using a small number of questions to assess such a complex issue as maltreatment is problematic because participants may not be qualified to assess the type of maltreatment they have witnessed, they may not know that what they have experienced qualifies as maltreatment, and responding with a "yes" or "no" answer only indicates presence versus absence rather than considering type and severity of the stated abuse.

Seventh, the studies that characterize this literature commonly lump violent and non-violent offenders into one offender category (e.g., Miller & Knutson, 1998). When multiple types of offenders are lumped into one category, it becomes difficult to determine specific effects and conditions unique to sub-types of offenders (e.g., sex offenders, violent offenders, non-violent offenders). While these studies are interesting, their utility is compromised by their lack of specificity. Further, even when researchers attempt to make a distinction between violent and non-violent offenders, the definition of what constitutes each group varies across studies and across teams of behavioral scientists. For example, while one team of researchers (e.g., Weeks & Widom, 1998) may include robbery, assault, manslaughter, involuntary manslaughter, and rape among the 'violent offenses', another team may limit their definition of 'violent offenses' to offenders who have "physically attacked another person" (Langevin, et al., 1987 p. 83).

Eighth, once the one general offender group is chosen, it may or may not be compared to a non-offending control group (e.g., Miller & Knutson, 1998). In many cases, studies fail to include a control group, just looking within the offender sample for evidence of the variable under investigation (e.g., Freedman & Hemenway, 2000; Stone, 2001). In other cases, studies compare a violent group to only a non-violent group, failing to assess for differences between offenders and non-offenders (e.g., Brewer-Smythe, Burgess, & Shults, 2004).

Finally, some authors are skeptical of the extent to which a history of maltreatment is a causal factor in the future perpetration of violent offending (Stoolmiller, Patterson, & Snyder, 1997) and stress that correlation does not imply causation. These researchers emphasize the importance of looking at different variables to predict offending behavior rather than settling for a correlational relationship which is prevalent throughout the literature. For instance, other factors such as family environment, and social information processing or problem-solving skill deficits, may better account for the differences between groups. It is important to go beyond correlation and to look at the relative contributions of different variables (alone and in combination) and their ability to predict offense type.

Family Environment and Offending

Family functioning and relationships play a major role in human development and behavior (Niedermeier, Searight, Handal, Manley, & Brown, 1995; Sroufe, 2005). Although definitions of what constitutes a healthy family differ widely, there is evidence to suggest that a balance of autonomy and intimacy within a family unit is a defining

feature of optimal family health (Lewis, Beavers, Gossett, & Phillips, 1976). Autonomy is characterized by a family's tendency to promote individual responsibility within the family, to encourage openness toward other family members, and to deal openly with issues of separation and loss. Intimacy is best described as a family's ability to encourage the expression of feelings in another member, to promote warmth in the home and sensitivity to the feelings of other family members, and to deal with conflicts (Niedermeier, et al., 1995).

Violent offenders often grow up in families that lack the qualities described above (e.g., Clingempeel & Henggeler, 2003; Freedman & Hemenway, 2000). Not only do their families lack the positive, protective traits above, they often possess a host of negative traits. Research demonstrates that the family environment of many violent offenders is fraught with domestic violence, poly-substance abuse, family mental illness, and distant, inconsistent parenting (Bergman & Brismar, 1994; Browne, Miller, & Maguin, 1999; Delsol & Margolin, 2004; Freedman & Hemenway, 2000; Granic & Patterson, 2006; Sroufe, 2005; Vuchinich, Bank, & Patterson, 1992). Childhood environments fraught with these negative, stressful factors can disrupt the formation of healthy attachments to caregivers and interfere with the development of functional, reciprocal future relationships (Sroufe, Egeland, & Carlson, 2005). The impact of early relationship experiences plays an important role in shaping cognition and behavior as well as subsequent relationships throughout the years (Suess & Sroufe, 2005). Research has demonstrated that the quality of these relationships formed in childhood, primarily with family members, is also related to the development of self-reliance, social

competence, and the ability for emotion regulation. Unhealthy early attachments can influence pathology and antisocial behavior (Sroufe, 2005).

In addition to the importance of early relationships, behavioral scientists argue that certain patterns of thinking and behaving are often transmitted from one generation to the next (Farrington, 2002; Moffitt, 2005). For example, investigations into the childhood environments of criminals have revealed a pattern whereby certain families seem to continue their criminal behavior from generation to generation. Recent research suggests that a small percentage (10%) of any community's families is responsible for more than 50% of that community's criminal offenses (Moffitt, 2005). There is now mounting empirical support for the notion that parental criminality is a significant predictor of future criminality in the next generation (Farrington, 2002). In fact, having a criminal father doubles the risk of a son being convicted (Farrington, 2000). What is it about criminal and antisocial families that continues the development of antisocial behavior from generation to generation?

Scientists are now attempting to answer these questions by studying likely mechanisms involved in the development of criminal behavior. For example, one of the factors thought to be at work in this process is the lack or type of expressed maternal emotion (Caspi et al., 2004; Rogosch, Cicchetti, & Toth, 2004). In an interesting study of mono-zygotic twins, Caspi, et al., (2004) were able to predict children's antisocial behavior problems from maternal expressed emotion. More specifically, the twin who received fewer positive comments and less warmth from the mother was more likely to evidence antisocial behavior problems. The authors suggest that one of the differences

between children in the same family where one goes on to offend while the other does not may be in their non-shared environmental experiences of maternal expressed emotion. The differences found using mono-zygotic twins to assess the impact of maternal expressed emotion on future antisocial behavior highlights the importance of studying the family environment of offenders.

Another family environment factor receiving recent empirical attention for its role in the development of antisocial behavior is the use of ineffective parenting strategies. Conduct problems and antisocial behavior in children and adolescents are more common in homes marked by authoritarian parenting styles in the mother and father, poor supervision, low father involvement, inconsistent parenting, and conflict between parents (Smith & Farrington, 2004). Smith and Farrington's (2004) study found that 42% of authoritarian fathers had children with conduct problems compared to 25% of non-authoritarian fathers. Two characteristics of ineffective parenting, poor communication and poor supervision, have both been shown to predict future violent behavior (Loeber, et al., 2005).

Coercion theory offers a way to understand and explain the development of antisocial behavior through these ineffective parent-child interactions (Granic & Patterson, 2006; Patterson, 1982). Coercion theory suggests that antisocial behavior is reinforced through parental acquiescence to a child's coercive behavior (e.g., whining, tantrums) when s/he is upset or feels wronged (Granic & Patterson, 2006). Research indicates that this cycle is usually started by the adult family member. For example, one study found that aggressive children are interrupted by a family member at least once

every three minutes with an unclear command in an irritated tone of voice demanding something of them such as "quit playing video games all the time" (Granic & Patterson, 2006, p. 105). The child then becomes upset and whines or cries until the parent gives up and gives in to the child's demands, thus reinforcing that temper tantrums and whining are effective strategies for getting what they want. In adolescence and then adulthood, whining and temper tantrums may escalate into aggression and violence. Patterns such as these have been shown to predict future long-term clinical problems (Forgatch & DeGarmo, 2002).

Family systems theory offers another means by which we can understand the development of antisocial behavior. This theory emphasizes that family functioning is "an ongoing transactional interplay between an active changing organism in a dynamic changing context" (Davies & Cicchetti, 2004, p. 478). A multitude of family characteristics and behaviors can influence and change the family dynamic as well as individual functioning (e.g., alliances, boundary disturbances, enmeshed parent-child relations) and clinical problems that had previously been thought to originate within the individual are now being treated with family systems approaches (Sexton & Alexander, 2002). In fact, family-based interventions are now the "treatment of choice" for adolescent behavior disorders (Sexton & Alexander, 2002, p. 238). For example, in a study comparing multisystemic therapy (MST) (Borduin, Henggeler, Blaske, & Stein, 1990; Henggeler, et al., 1991) to individual therapy for the treatment of adolescent antisocial behavior, the juveniles randomly assigned to MST showed a 70% reduction in re-arrest rates compared to the juveniles who received individual therapy (Borduin,

Mann, Cone, Henggeler, Fucci, et al., 1995). Given the influential and indisputable role of the family in the development of future beliefs and behavior, it's important to look at family functioning in addition to maltreatment history in order to obtain a global assessment of an offender's childhood experiences.

The most significant limitations to the research looking at family environment and violent offending are definitional and population specific. First, although some studies agree that a marker of family health is a balance between autonomy and intimacy, the majority differ greatly in terms of their definition of what constitutes family health versus dysfunction (Delsol & Margolin, 2004). Some data suggest a dysfunctional home to be one in which younger family members witness inter-parental aggression (Delsol & Margolin, 2004), while others consider the absence of parental warmth and open communication to be dysfunctional (Nierermeier, et al., 1995). Second, the population targeted for study often differs from study to study. So while there is some research on family environment, it does not consistently apply to violent offenders. Too often studies refer to "aggressive" or "antisocial" individuals to encapsulate the spectrum of behavior ranging from unwanted to severely violent (e.g., Herrera & McCloskey, 2003). As a result, we have little sensitive and specific data on the family functioning of violent offenders.

Social Problem-Solving Skills and Offending

Careful, thoughtful processing at each step of the decision-making process is thought to lead to competent performance outcomes for the situation at hand (Crick & Dodge, 1996). Not surprisingly, some research shows that violent offenders exhibit

significantly more deficits in their approach to and style of problem-solving, and in their problem solving ability, when compared to non-violent and non-offending controls (Date & Ronan, 2000; Guerra & Slaby, 1990; Holtzworth-Monroe & Hutchinson, 1993). Individuals who are aggressive have been shown to attend to and encode more hostile cues at the expense of other non-hostile cues in their environment prior to responding to a situation, increasing the likelihood they will respond with violence (Dodge, 2000; Dodge & Newman, 1981). Similarly, those who attend to irrelevant cues when attempting to solve a problem are more likely to become aggressive than those who focus on cues that are relevant to the specific situation or task (Dodge, et al., 1995).

Studies focusing on offending youth also have found greater deficits in problem-solving skill compared to their non-offending counterparts, making them more likely to seek illegal solutions (Dishion, Loeber, Stouthamer-Loeber, & Patterson, 1984; Kennedy, 1984). Delinquent behavior then represents a deficient form of problem-solving for individuals who know of no other way to resolve conflict (Brezina, 2000).

Other research indicates that some adult offenders possess adequate problem-solving skills, but are deficient in recognizing which situations require their use (Hains, 1984). Not surprisingly, low levels of competence in being able to recognize when and how to employ appropriate problem-solving skills is associated with higher levels of criminal behavior (Compas, Malcarne, & Fondacaro, 1988). For example, Holtzworth-Munroe's (1991) social information processing model of marital violence suggests that the way husbands attend to and interpret their wives behavior relates to their behavioral response (violent or non-violent). Men who are violent toward their wives provide less

competent responses to difficult situations than non-violent men (Holtzworth-Munroe & Anglin, 1991). Other research finds that men from violent families in which abuse occurred (as determined by the Conflict Tactics Scale) are able to resolve significantly fewer conflict situations related to marital problems in a laboratory setting than men raised in non-violent homes (Burnett & Daniels, 1985).

Since possessing competent problem-solving skills and knowing when to use them is incompatible with engaging in antisocial behavior, problem-solving skills training has been incorporated into treatment with various types of offenders (Cunliffe, 1992; Guerra & Slaby, 1990; Sarason & Ganzer, 1973; Sarason & Sarason, 1981). Results indicate that training programs that teach offenders how to communicate more effectively, take another's perspective, consider alternative responses, and weigh potential consequences, help to reduce aggressive behavior (Guerra & Slaby, 1990; Cunliffe, 1992).

Unfortunately, similar to the maltreatment literature, definitional and methodological problems also taint the generalizability of findings in the problem-solving literature. For example, the problem-solving skills of many categories of violent offenders (e.g., sex offenders, homicide, assault, and robbery) are typically lumped together and assessed, muddling the specificity of the results. This precludes researchers from determining if people who commit homicide have a different style of or approach to problem-solving than those who commit robbery only. Additionally, measures of problem-solving style are often reported only as an overall score rather than broken down into subscales that more specifically assess the approach various offender groups are

using to make decisions and respond to conflict. And, then the overly broad group is compared to *either* a non-violent *or* a non-offender group, not both (e.g., Date & Ronan, 2000). Selecting only one control sample limits the specificity and hence utility of the findings. For example, comparing a violent group to a non-violent group will provide an indication of how violent offenders differ from non-violent offenders, but tells us nothing about how offenders differ from non-offenders. Similarly, comparing a violent or non-violent group only to non-offenders does not allow for an understanding of differences between types of offender populations.

The Present Study

In response to the limitations noted in the prior research, the present study used the Childhood Trauma Questionnaire (1998) to measure five categories of maltreatment (physical, sexual, and emotional abuse, physical and emotional neglect) alone and in combination to assess main and interaction effects for these variables. The measures were dimensional (i.e., assigned levels such as none to minimal, moderate, severe to extreme) and not categorical (i.e., present vs. absent), in order to assess their presence and severity. This approach also allowed information to be gathered directly from participants, rather than relying on archival records.

The present study also employed a measure of family functioning (Family of Origin Scale, 1985; described later) in order to obtain a global picture of the individual's family health rather than maltreatment experience alone. Because it was not possible to empirically examine all of the family environment variables at once in the present study, we chose a measure of family functioning that includes the most central and significant

constructs needed to understand the type of family the participant grew up in. The Family-of-Origin Scale (FOS), described later in this article, not only provides an overall score of family health, but it is further divided to yield scores of autonomy and intimacy levels (defined above). Further yet, it has ten subscales that measure a comprehensive set of family traits and interactions. These central constructs measured by the FOS include the clarity of thoughts and feelings in the family, the extent to which family members claim responsibility for their own actions, are receptive to one another's viewpoints, and are able to openly discuss difficult issues such as separation and loss. Additionally considered are the extent to which a warm, positive atmosphere exists in the family, the family's conflict resolution skills, and intra-familial levels of empathy and trust. These dimensions of communication skill, warmth, trust, and responsibility within a family unit go beyond the specificity of maternal expressed emotion, family criminality, or parenting skill to provide a picture of the vital day to day tone and interactions of the participant's family which was the intent of the present study.

Finally, the Social Problem-Solving Inventory-Revised (SPSI-R, 2002; discussed later) was used because it yields scores for five different problem-solving styles rather than just one total score. It bears repeating that the only way to understand, intervene, predict, and effectively prevent violent offending is by moving from broad study designs with too many variables to more specific, well defined research with clear definitions, categories, goals, and hence outcomes.

The above assessments were administered to three groups for comparison purposes: violent offenders, non-violent offenders, and non-offenders. Violent offenders

were defined as those who have physically assaulted another individual either with a weapon or with a part of their own body. Non-violent offenders were those who have committed a minor drug offense, theft, or forgery/fraud. Non-offenders were individuals who had never been arrested.

Moreover, although there is substantial support for the correlation between maltreatment and violent behavior, unhealthy family environments and violent behavior, deficient problem-solving-style and violent behavior, and child maltreatment and deficient problem-solving style, there is a paucity of research that looks at potential predictors of violent offending simultaneously to assess relative contributions of each individually as well as in conjunction. More specifically, it is often the case that one study will look at the connection between maltreatment and offending, while a second and separate study considers the association between problem-solving skill and offending. These variables are rarely considered in combination. Thus the main goals of this study are to examine the relationship between childhood trauma, family environment, social problem-solving style, and offense status (i.e., violent, non-violent, and non-offender).

There are five specific research questions to be addressed in the present study. First, are there any significant differences between the three groups in terms of childhood experiences of trauma? It was predicted that the violent offenders would report more exposure to all forms of maltreatment as compared to either of the other two groups. It was also predicted that non-offenders would report the least amount of exposure to all forms of maltreatment, but would be non-significantly different from non-violent

offenders. We expected that although the non-offender group would evidence the least exposure to maltreatment, the effects would be most significant when compared to violent offenders. Given that the non-violent offenses included in this study consist of fraud, forgery, and theft, simply denying a history of arrest does not guarantee that the non-offender group has not committed such offenses. While it similarly does not guarantee that the non-offender group has not committed violent offenses, the odds of an aggravated assault not coming to the attention of the authorities are fewer.

Second, do the three groups differ in terms of their family-of-origin functioning as measured by the Family-of-Origin Scale (Hovestadt, Anderson, Piercy, Cochran, & Fine, 1985)? Do they come from very different families in terms of their ability to find a balance between promoting autonomy while maintaining intimacy? It was predicted that the violent group would come from the least healthy family units (as measured by their scores on the Autonomy and Intimacy Subscales of the Family of Origin scale), but would not significantly differ from those of the non-violent group. Finally, it was predicted that both offender groups will differ significantly from the non-offender group.

Third, how do these three groups differ in terms of their style of solving problems and their approach to decision-making on a day-to-day basis? Do the three groups process and respond to conflict and decision-making using different styles? Which group(s) employs a positive problem orientation and which prefers a negative problem approach? Do they differ in terms of their impulsivity and carelessness in problem-solving? This set of questions was addressed by analyzing the participants' responses to the Social Problem-Solving Inventory-Revised (SPSI-R, 2002) which includes five

subscales of problem-solving style. It was predicted that the violent group would utilize a negative problem orientation significantly more often than either of the other groups. It was also predicted that the violent group would evidence significantly higher scores on the Impulsivity/Carelessness Subcale of the SPSI-R than either of the other two groups, followed by the non-violent and then the non-offender group.

Fourth, we were interested in the ability of the specified measures to predict offender status. Could offender group be predicted from the respondent's scores on the subscales of the CTQ, the FOS, or the SPSI-R? Are the participants with a history of maltreatment more likely to be violent offenders versus non-violent or non-offenders? Would participants with poor problem solving abilities be more likely to be violent offenders? The goal with this research question was to use discriminant function analysis to see if offense status could be predicted from the subscales of the measures of interest (CTQ, FOS, & SPSI-R). Discriminant function analysis (DFA) is used to determine which variables discriminate between two or more groups. In the present study, DFA is being used to determine which variable(s) is the best predictor of offender status (V, NV, or NO).

Computationally, discriminant function analysis is similar to analysis of variance (Field, 2000). DFA is MANOVA reversed. In MANOVA, the independent variables are the groups and the dependent variables are the predictors whereas in DFA, the independent variables are the predictors and the dependent variables are the groups (Tabachnick & Fidell, 1996). While MANOVA is used to find a linear combination of variables that will maximize the difference between the groups, DFA is used to establish

a linear combination of dependent variables that discriminates the groups (Hill & Lewicki, 2006). It is designed to answer the question, "Can a particular variable or combination of variables be used to predict group membership?" DFA is broken down into two steps: 1) testing the significance of a set of discriminant functions, and 2) classification. The first step is computationally identical to MANOVA and tests for significant differences between groups with regard to all variables entered into the function. Then subjects are classified by an automatically determined combination of variables with the first function providing the most overall discrimination between the groups followed by the second which provides the second most discrimination, and so on. The basic idea underlying DFA is to determine whether groups differ with regard to the mean of a variable, and then to use that variable to predict group membership. Researchers commonly include a number of different measures in their studies in order to determine the ones that discriminate between the groups of interest (i.e., offer the best prediction) (Hill & Lewicki, 2006). The goal is to find a linear combination of variables that maximally discriminates among the offender groups.

Fifth and finally, it is important to ask if and how the variables interact with one another. Does maltreatment history interact with problem-solving style? Does maltreatment history interact with family functioning? What about specific types of maltreatment and specific types of problem-solving styles? The literature indicates that maltreated children have significantly poorer problem-solving abilities (Egeland, Sroufe, & Erickson, 1983; Smith & Walden, 1999) and come from dysfunctional family

environments (Cicchetti, 2004; Gold, Hyman, & Andres-Hyman, 2004). Based on this literature, we wondered if a history of maltreatment (any type) would interact with a particular type of family functioning to predict offender status more than the main effect of either variable alone. Based on this prior research, it was hypothesized that maltreatment history would interact with problem-solving style (specifically impulsive/careless and negative styles). More specifically, we hypothesized that the combination of a history of maltreatment and a negative and/or impulsive style of problem-solving would have a greater effect on offending than either variable alone. Because maltreatment and family environment may be highly correlated with one another (i.e., dysfunctional families are likely to show high maltreatment rates), these variables may not be sufficiently conceptually distinct to test for an interaction (e.g., collinear). Thus, we first decided to look for a high correlation between these two variables, and if it turned out that they were sufficiently distinct constructs we then would test for an interaction between maltreatment and family dysfunction. Specifically, multicollinearity exists when the assumption that variables are independent of one another is violated. Although there is no set cut-point at which multicollinearity is suddenly considered a problem, typically it is only a concern when the relationship is very strong (i.e., $r = .80$ and above) (Cohen, Cohen, West, & Aiken, 2003). Given that neither of the FOS subscales were correlated with any of the CTQ subscales at a level greater than the absolute value of $r = .72$ (see Table 2.), these variables are considered conceptually distinct. We then predicted that the combined effects of a history of maltreatment and a highly dysfunctional family would be greater than the effect of either variable alone.

METHOD

Participants

A total of 120 participants were recruited for this study. Sixty-five violent and non-violent male offenders were randomly selected from the Pima County Superior Court database system for adult male offenders on probation in Pima County Arizona. The selection criteria were their offense type and their ability to read and understand the English language. Offenders had been assessed at intake into the probation system for literacy and were additionally reminded that they could ask questions to assure they understood the test material. Violent offenders (N = 44) were defined as those who were convicted of assault, aggravated assault, aggravated assault with a deadly weapon, aggravated assault with serious physical injury, domestic violence (in which there was a physical assault), and battery. Non-violent offenders (N = 21) were defined as those who were convicted of fraud, theft, forgery, or drug offenses and had no history of violent offending. The criminal history of each offender was obtained and thoroughly screened to insure inclusion in the appropriate group. All offender-participants were compensated with 3 hours of community service for their participation.

The non-offenders (N= 55) were Pima Community College students in Tucson, Arizona, who were over 18 years of age, attending an introductory psychology or introductory statistics course, and had no arrest history. The students were awarded between 10-20 extra credit points (at their professor's discretion) for their participation.

Descriptive Statistics

Demographic variables including age, marital status, number of children,

ethnicity, education, employment, annual income, and family of origin income were considered for all three groups. Scores from the BSI and BDI are also included in this section. All three groups, violent (M = 27.14, SD = 4.34), non-violent (M = 24.95, SD = 5.19), and non-offenders (M = 20.56 yrs; SD = 2.87) differed significantly from each other in terms of age (presented here in years). The non-offenders were significantly younger than both the non-violent offenders and the violent offenders $F(2, 117) = 35.6$, $p < .001$ and the non-violent offenders were significantly younger than the violent offenders $F(2, 117) = 35.6$, $p < .05$.

Marital status was grouped into cohabitating with a romantic partner/married versus not cohabitating with a romantic partner/not married to tap the construct of whether or not the subject was in a significant relationship at the time. The groups did not differ significantly on this variable with 91% of non-offenders not cohabitating/not married compared to 76% of the non-violent group and 84% of the violent group $\times^2(2, N = 120) = 2.88$, $p = .24$. The groups did differ significantly in terms of the number of children they had $F(2, 115) = 22.2$, $p < .001$, with non-offenders having the fewest (M = .00, SD = .00), followed by the non-violent offenders (M = .86, SD = 1.32) and then the violent offenders (M = 1.44, SD = 1.52). Non-offenders had significantly fewer children than both the non-violent ($p < .01$) and violent ($p < .001$) groups and the non-violent group had significantly fewer children than the violent group ($p < .05$).

Numbers and percentages of the ethnic make-up of the three groups are presented in Table 1 below.

Table 1.

Ethnicity of participants in each offender group (N, %)

Ethnicity	Offense status		
	NO	NV	V
White, non-Hispanic	25	5	15
%	45.5	23.8	34.1
Hispanic	22	11	23
%	40	52.4	52.3
Black, non-Hispanic	0	2	5
%	0	9.5	11.4
Asian/PacificIslander	4	0	0
%	7.3	0	0
Other/Multiracial	4	3	1
%	7.3	14.3	2.3

While the majority of the non-offender group were White, non-Hispanic, the majority of both the non-violent and violent groups were Hispanic. Chi square revealed a significant difference between groups on this variable $\times^2(8, N = 120) = 16.95$, $p = .03$. Thus, age and ethnicity were both controlled for in the subsequent analyses.

The non-offenders had significantly more years of education ($M = 12.47$, $SD = .98$), than the violent offenders ($M = 11.45$, $SD = 1.4$), $F(2, 117) = 8.1$, $p < .001$. The non-violent group ($M = 11.90$, $SD = 1.5$) did not differ from the non-offenders nor the violent offenders on this variable. Ninety-three percent of the non-offenders had

graduated high school versus 43% of the non-violent group and only 26% of the violent group. Chi-square tests indicate a significant difference between the groups on this variable $\times^2(8, N = 119) = 52.4$, p = .000. Twenty-six percent of the violent group had obtained no degree compared to 19% of non-violent offenders and 0% of non-offenders. When describing their type of employment, the majority of non-offenders (53%) considered their role as "student" to be their employment compared to 9.5% of the non-violent group and only 2.3% of the violent group. The majority of both the non-violent (48%) and violent (64%) groups considered themselves "skilled laborers." Chi square tests revealed a significant difference between the groups on this variable $\times^2(12, N = 120) = 42.98$, p = .000, and ANOVA further revealed that the non-violent and violent groups did not differ on this "type of employment" variable, but the non-offenders differed from both the non-violent $F(2, 117) = 15.2$, $p < .01$, and violent $F(2, 117) = 15.2$, $p < .001$ offender groups $F(2, 117) = 15.2$, $p < .001$.

Chi square tests indicated that the groups differed in terms of their annual income $\times^2(14, N = 119) = 39.31$, p = .000. ANOVA further revealed that the offender groups did not differ from one another in terms of their annual income, but did differ significantly from the non-offender group $F(2, 116) = 12.06$, $p < .001$ who earned the least amount of money (likely due to their status as students). Conversely, when we looked at the amount of money earned by the participants' family of origin, the non-offenders' families were significantly wealthier than both the non-violent $F(2, 115) = 11.87$, $p < .05$ and violent offender $F(2, 115) = 11.87$, $p < .001$ groups.

The final two variables considered for descriptive purposes were the participants'

scores on the BDI and the BSI. One-way ANOVA revealed no significant differences across the groups $F(2, 117) = 2.73$, $p = .07$ on the BDI, nor did the three groups differ significantly from one another on the BSI $F(2, 117) = 1.28$, $p = .28$.

Procedure

Upon arrival at the Pima County Superior Court – South Office, probationers checked in with the principal investigator. Given the staffing constraints of the Court Center, it was impossible to have the subjects tested in either all-violent groups or all non-violent groups. Only the PI, who was aware of each offender's offense type, handed each participant a coded assessment packet to match their offense status. All Pima students received the same packets. Hence, there was no special coding required for the control samples' packets. All participants were informed that they would be responding to self-report questionnaires which asked them sensitive questions about their childhood environment, their interactions with family while they were growing up, and their thoughts, feelings, behaviors, and approach to dealing with problems in daily life. Additionally, all participants were informed that there were no right or wrong answers, they could skip any question that made them feel uncomfortable, they could choose to withdraw from the study at any time, and their responses were completely confidential (e.g., their probation officers, attorneys, professors, or judges would not be able to view their data).

Identical procedures were followed with all three groups of participants (NO, NV, & V) who were first given an informed consent to read and sign, which informed them that there was no way to link their responses with their identity and thus were encouraged

to be honest when responding. Next, after participants read the informed consent, they were reminded not to write any identifying information on the questionnaires, and were invited to ask questions prior to signing the form and beginning the study. Additionally, all participants were also informed that they could ask questions at any time during the study. Finally, when finished with the study, participants were handed a debriefing form which explained, in more detail, the nature of the present study and the importance of their participation, and told they may leave (either the court center or the classroom).

Measures

All measures were in self-report format, with no face-to-face interviewing of the participants required. All participants received the same five assessments (described below) in addition to a demographic form that asked for information such as sex, age, marital status, education, ethnicity, income, etc. Pima Community College students were additionally asked if they had ever been arrested.

CTQ. The Childhood Trauma Questionnaire (CTQ) (Bernstein & Fink, 1998), a 28-item self-report instrument designed to assess the type and severity of various forms of abuse and neglect in an individual's past, was used to assess childhood maltreatment. The assessment has six subscales: 1) Physical Abuse, 2) Sexual Abuse, 3) Emotional Abuse, 4) Physical Neglect, 5) Emotional Neglect, and 6) a Minimization. Rather than asking the subject to assess whether or not they believe they were abused or neglected as some studies do (e.g., Haapasalo & Moilanen, 2004), the CTQ asks the subject to respond to a number of specific questions which are then compiled to arrive at a determination of maltreatment. The CTQ has been shown to exhibit good reliability and validity

(Bernstein & Fink, 1998; Wolfe, Scott, Wekerle, & Pittman, 2001).

As measured by the CTQ, physical abuse has taken place when "bodily assaults on a child by an older person that pose a risk of, or result in, injury have occurred" (Bernstein & Fink, 1998, p. 2). Sexual abuse refers to "sexual contact or conduct between a child and older person; explicit coercion is a frequent but not essential feature of these experiences" (p. 2). The tool defines emotional abuse as "verbal assaults on a child's sense of worth or well-being or any humiliating, demeaning, or threatening behavior directed toward a child by an older person" (p.2). Physical neglect refers to "the failure of caregivers to provide a child's basic physical needs, including food, shelter, safety and supervision, and health" (p.2). Finally, emotional neglect is thought to have occurred when there has been a "failure of caregivers to provide a child's basic psychological and emotional needs, such as love, encouragement, belonging, and support" (p.2).

FOS. The Family of Origin Scale (FOS) (Hovestadt, Anderson, Piercy, Cochran, & Fine, 1985) is a 40-item measure of various aspects of family functioning including family warmth, clarity of expression, responsibility, respect for others, openness to others, empathy, trust, cohesion, and adaptability. The conceptual foundation of the scale is based on two key dimensions, autonomy and intimacy, which are thought to promote a balance of individuality and connectedness within a family unit (Niedermeier, et al., 1995). Factor analyses conducted by various teams of researchers attest to its validity and reliability (e.g., Gavin & Wamboldt, 1992; Mazer, Mangrum, Hovestadt, & Brashear, 1990; Niedermeier, et al., 1995).

SPSI-R. The Social Problem Solving Inventory-Revised (SPSI-R) (D'Zurilla, Nezu, & Maydeu-Olivares, 2002), a 52-item self-report assessment, is designed to measure and evaluate the subject's style of responding to and solving conflicts and problems in daily living. This scale also has five subscales: 1) Positive Problem Orientation, 2) Negative Problem Orientation, 3) Rational Problem Solving, 4) Impulsivity/Carelessness Style, and 5) Avoidance Style. Participants are asked to rate their responses to questions such as, "After carrying out my solution to a problem, I analyze what went right and what went wrong" or "When I am attempting to solve a problem, I act on the first idea that occurs to me" on a 5-point likert-type scale with response choices ranging from "Not at All True of Me" to "Extremely True of Me." The SPSI-R has demonstrated high internal consistency, test-retest reliability, and validity (D'Zurilla, et al., 2002). Internal reliability analyses will be performed to ensure item correlation between items and total scores for each scale and related subscales as they pertain to the current sample.

Individuals who obtain high scores on the positive problem orientation subscale are more likely to see a problem as a challenge rather than a threat, believe that problems are solvable, believe in their ability to solve problems, and commit themselves to solving a problem rather than avoiding it. Participants who score highly on the negative problem orientation subscale are more likely to view a problem as a threat to their well-being, doubt their own ability to solve problems successfully, and to become frustrated and upset when confronted with problems in their daily lives. High scores on the rational problem-solving subscale indicate that a participant is the type who carefully gathers

facts about a problem, sets realistic goals to solve the problem, and is able to generate alternative solutions while considering the consequences of his or her actions. People who obtain high scores on the impulsivity/carelessness scale tend to consider few alternative solutions, scan potential consequences quickly, and generally function ineffectively in problem-solving situations. Finally, those who score highly on the avoidant subscale are more likely to avoid problems rather than confront them, to put off solving the problem for as long as possible, and to wait for problems to solve themselves rather than attempt to solve them (D'Zurilla, Nezu, & Maydeu-Olivares, 2002, p. 30-31).

BDI and BSI. In order to obtain the most accurate data, differences in participant's level of psychopathology was assessed. If there are significant differences in the level of psychopathology between groups, it will be treated as a covariate in our analyses. Thus, the Beck Depression Inventory (Beck, Steer, & Brown, 1996) and the Brief Symptom Inventory (Derogatis & Spencer, 1982) were included. Although the Beck Depression Inventory (BDI-II) is a tool used primarily to screen for depression, the Brief Symptom Inventory (BSI) paints a more comprehensive picture of the participant's overall psychological and behavioral health. In conjunction, these assessments yield a clinical depiction of the respondent's symptoms of depression, anxiety, obsessive-compulsiveness, hostility, paranoia, etc. The BDI has been repeatedly shown in empirical research to have excellent reliability and validity (Beck, Steer, & Brown, 1996; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961).

Reliability Analyses

Both the Beck Depression Inventory (BDI-II) and the Brief Symptom Inventory

(BSI) demonstrated high reliability with this sample (∝alpha = .90 and .98, respectively). For the Childhood Trauma Questionnaire (CTQ), reliability was assessed for not only the total scale score, but for the five subscales as well. The CTQ total scale had good reliability (∝ = .88), and so did the Physical Abuse, Sexual Abuse, Emotional Abuse, and Emotional Neglect Subscales (∝= .86, .93, .86, and .85, respectively). The CTQ's Physical Neglect Subscale showed only fair reliability (∝ = .67), but it is important to keep in mind that each subscale only had five items from which to assess reliability. Turning to the Family of Origin Scale (FOS), reliability was high for this measure with this sample. The total FOS scale score demonstrated high reliability (∝ .96) as did the Autonomy and Intimacy Subscales (∝ .92 and ∝ .93 respectively). Finally, reliability was high with this sample for the Social Problem-Solving Inventory - Revised (SPSI-R) total scale score (∝= .90) and its Positive Problem Orientation, Negative Problem Orientation, Rational Style, Impulsive/Careless Style, and Avoidant Style Subscales (∝ = .78, .91, .95, .85, .82, respectively).

RESULTS

Before the results are discussed, the topic of unequal cell size requires some attention. Given the unequal cell sizes in this study, it is important to note the way in which we handled and controlled for potential problems this may cause with the analytic strategies we employed. The specific analyses used in the present study are rather robust to uneven sample sizes. In MANOVA and DFA unequal sample sizes are acceptable. The sample size of the smallest group needs to exceed the number of predictor variables and should generally be at least 20 for 4-5 predictors (Hill & Lewicki, 2006). Although unequal cell size is not a serious problem in parametric statistics like MANOVA, ANOVA, and DFA, there is still concern about the heterogeneity of variance; that is, the variance in one cell may be different from the variance in another cell. To deal with this problem, we specified Type III sum of squares (which is the default in both MANOVA and GLM), indicating that the effect being looked at is being controlled for all the other effects in the model without regard to the weight provided by cell size. Additionally, although MANOVA assumes equal cell sizes, as long as there are at least 20 subjects per cell, the data are generally robust enough to overcome any violations of this assumption. As a rule, analysis of variance can be done with an unbalanced design especially if certain steps are taken (e.g., using sum of squares Type III, reporting the estimated marginal means (the unweighted means), running post-hoc and simple main effects using the "compare main effects" option under the estimated marginal means). All analyses in the present study were conducted and reported this way.

Correlations

Correlations between dependent variables were also run and are illustrated in Table 2 below. Means are also provided for all groups on each dependent measure.

Table 2.

Intercorrelations Between Subscales for All Participants

Subscale	1	2	3	4	5	6	7	8	9	10	11	12
1. CTQ Em Neglect	--											
2. CTQ Em Abuse	.64**	--										
3. CTQ Phy Neglect	.64**	.47**	--									
4. CTQ Phy Abuse	.56**	.66**	.49**	--								
5. CTQ Sex Abuse	.45**	.47**	.31**	.41**	--							
6. FOS Autonomy	-.71**	-.62**	-.48**	-.51**	-.35**	--						
7. FOS Intimacy	-.72**	-.66**	-.51**	-.52**	-.33**	.89**	--					
8. SPSI-R AS	.17	.28**	.11	.16*	.11	-.25**	-.27**	--				
9. SPSI-R ICS	.25**	.34**	.18	.16	.11	-.39**	-.36**	.71**	--			
10. SPSI-R NPO	.27**	.43**	.17	.18	.15	-.38**	-.41**	.81**	.74**	--		
11. SPSI-R PPO	-.33**	-.21*	-.18*	-.06	-.07	.42**	.40**	-.31**	-.22*	-.37**	--	
12. SPSI-R RS	-.33**	-.20*	-.21*	-.06	-.05	.39**	.34**	-.21*	-.26**	-.22*	.77**	--
Mean of Scale	2.22	2.21	2.05	2.15	1.95	71.12	74.86	7.62	11.09	9.83	12.16	40.08

Note. CTQ = Childhood Trauma Questionnaire; Em Neglect = Emotional Neglect; Em Abuse = Emotional Abuse, Phy Neglect = Physical Neglect; Phy Abuse = Physical Abuse; Sex Abuse = Sexual Abuse; FOS = Family of Origin Scale; SPSI-R = Social Problem-Solving Inventory-Revised; AS = Avoidant Scale; ICS = Impulsive/Carelessness Scale; NPO = Negative Problem Orientation; PPO = Positive Problem Orientation; RS = Rational Style.
* = $p < .05$; ** = $p < .01$

As is evident in Table 2 above, all types of maltreatment are correlated with each other, both subscales of family functioning are correlated with each other, and all problem-solving subscales are correlated with each other. Interestingly, all types of

maltreatment are negatively correlated with both the Intimacy and Autonomy Subscales of the FOS indicating that as maltreatment scores increase, family health tends to decrease. Also of note, when emotional neglect, physical neglect, and emotional abuse scores increase, scores on the Impulsivity/Carelessness Subscale also increase indicating a positive correlation between these variables while scores on the Positive Problem Orientation and Rational Style Subscales decrease indicating a negative correlation. Higher scores on the Emotional Abuse and Emotional Neglect Subscales are also associated with higher scores on the Negative Problem Orientation style of problem-solving.

There is a negative correlation between Autonomy and Intimacy scores and all three subscales of the SPSI-R that measure poor problem-solving (i.e., Impulsivity/Carelessness, Negative Problem Orientation, and Avoidant Style) meaning that higher family functioning is associated with lower scores on impulsivity, avoidance, and negative orientation toward solving problems. Higher family functioning is also positively correlated with the two subscales of the SPSI-R that measure good problem-solving styles (i.e., Positive Problem Orientation and Rational Style) indicating that higher family health scores tend to go with higher problem-solving skills.

For violent offenders, similar to the overall sample, all types of maltreatment were negatively correlated with family health. Additionally, there was a positive correlation between the Emotional Abuse Subscale and Impulsivity/Carelessness Subscale indicating that for violent offenders, higher levels of emotional abuse are associated with higher levels of impulsive problem-solving. Emotional abuse and physical neglect are positively

correlated with a negative orientation to solving problems for these offenders in particular, while emotional neglect is negatively correlated with both a positive and rational orientation to problem-solving. Finally, for the violent offender group, there is a positive correlation between the Autonomy and Intimacy Subscales and the subscales of the SPSI-R that measure good problem-solving ability (i.e., Positive Problem Orientation and Rational Style) indicating that higher levels of family health are associated with better problem-solving styles. Conversely, there is a negative correlation between the Autonomy Subscale and the poorer types of problem-solving (i.e., Negative Problem Orientation, Avoidant Style, and Impulsive/Carelessness).

For non-violent offenders, there is a negative correlation between emotional abuse and neglect and family health indicating that higher scores on these specific types of maltreatment are associated with lower family functioning for these offenders. Also for these particular offenders, emotional abuse is the type of maltreatment associated with impulsive problem-solving. Physical neglect is negatively correlated with both a positive and a rational style of solving problems in this offender group. Finally, for this offender group, only the Intimacy Subscale of the FOS was significantly correlated with problem-solving style. Specifically, higher scores on the Intimacy Subscale were associated with lower scores on Impulsivity/Carelessness and Negative Problem Orientation and higher scores on the Positive Problem Orientation.

For the non-offender group, all types of maltreatment are negatively correlated with both subscales of family health (i.e., Autonomy and Intimacy) meaning that higher maltreatment scores are associated with lower family health. Also in this offender group,

higher levels of emotional neglect are associated with higher levels of negative problem-solving and lower levels of positive problem-solving. For these non-offending participants, emotional abuse is related to higher levels of avoidance, negativity, and impulsivity in their approach to and style of solving problems in their lives. Higher scores on the Intimacy and Autonomy Subscales, for the non-offenders, is associated with lower scores on the Impulsive/Carelessness and Negative Problem Orientation Subscales and higher scores on the Positive Problem Orientation Subscale.

Childhood Trauma Questionnaire

Our first hypothesis (Hy1) asked whether there would be significant differences between the groups in terms of their experiences of childhood maltreatment. We predicted that the violent offenders would report more exposure to all forms of maltreatment as compared to either of the other two groups. We also predicted that non-offenders would report the least amount of exposure to all forms of maltreatment, but would be non-significantly different from non-violent offenders. We expected that although the non-offender group would evidence the least exposure to maltreatment, the effects would be most significant when compared to violent offenders. Multivariate tests indicated a significant difference between the groups on this measure (/\= .03). Univariate analyses revealed group differences on each subscale of the CTQ other than the Sexual Abuse Subscale (i.e., Physical Abuse Subscale $F(2,117) = 4.55$, $p = .01$, Physical Neglect Subscale $F(2, 117) = 8.62$, $p < .001$, Emotional Abuse Subscale $F(2,117) = 3.37$, $p < .05$, Emotional Neglect Subscale $F(2, 117) = 4.71$, $p = .01$).

Post-hoc comparisons were run to establish where the significant differences

between the three groups were. Our predictions were supported, in part, as follows. For the Emotional Neglect Subscale, although there was a trend suggesting that the non-offending (NO) group experienced the least amount of emotional neglect, followed by the non-violent (NV) group, and lastly by the violent (V) group who experienced the most, the only significant difference was between the NO's and the V's $F(2, 117) = 4.71$, $p < .01$, $d = .7$. For the Emotional Abuse Subscale, the NO's differed significantly from both the NV $F(2, 117) = 3.37$, $p < .05$, $d = .5$, and V offenders $F(2, 117) = 3.37$, $p < .05$, $d = .5$ but the two offending groups did not differ from each other $F(2, 117) = 3.37$, $p = .67$. In terms of experiences of physical neglect, NO's reported the least amount, followed by NV's, and then V's who reported the most although the only significant difference was between the NO and V groups $F(2, 117) = 8.62$, $p < .001$, $d = .8$. Results on the Physical Abuse Subscale again suggested a trend, with the NO's reporting the least amount of childhood physical abuse followed by the NV's and lastly by the V group who reported the most physical abuse, although differences were only significant between the NO and V groups $F(2, 117) = 4.55$, $p < .01$, $d = .7$. Finally, no differences were found between groups on the Sexual Abuse Subscale of the CTQ $F(2, 117) = 1.49$, $p = .23$.

Severity of abuse was also considered for the three groups and percentages for each group in each severity level across all subscales are presented in Table 2 below. Chi square analyses revealed significant differences on two subscales in terms of severity of experiences: physical $\times^2(6, N = 120) = 24.06$, $p = .000$, and emotional $\times^2(6, N = 120) = 12.42$, $p = .002$ neglect. Results indicated that the V group was least likely to report none or minimal experiences of physical neglect and most likely to report low to moderate,

moderate to severe, and severe to extreme experiences on this variable. Regarding the level of emotional neglect the groups experienced, results indicated that, again, the V group was least likely to report none or minimal experiences of emotional neglect, but most likely to report low to moderate and moderate to severe experiences in this area. The NV's reported the highest levels of emotional neglect. ANOVA was conducted to assess more specifically where the differences were between the groups in terms of severity of physical and emotional neglect. The significant difference was found between the V's, who were significantly more likely to have experienced physical neglect in their childhood, and the NO's $F(2, 117) = 8.62$, $p < .001$. Similarly, V's differed significantly from NO's in the amount of emotional neglect they reported as well $F(2, 117) = 4.71$, $p < .02$.

Table 3

Severity of Maltreatment Experiences Reported by Each Offender Group

Subscale	None-Minimal		Low-Moderate		Mod-Severe		Severe-Extreme	
Physical	NO	39	NO	2	NO	2	NO	1
Neglect	NV	10	NV	1	NV	1	NV	3
	V	18	V	3	V	10	V	5
Emotional	NO	35	NO	8	NO	2	NO	2
Neglect	NV	11	NV	2	NV	1	NV	3
	V	18	V	11	V	4	V	4
Physical Abuse	NO	33	NO	8	NO	4	NO	2
	NV	10	NV	3	NV	3	NV	2
	V	18	V	5	V	5	V	8
Emotional	NO	32	NO	10	NO	1	NO	2
Abuse	NV	10	NV	2	NV	2	NV	4
	V	18	V	8	V	4	V	6
Sexual Abuse	NO	40	NO	2	NO	4	NO	2
	NV	13	NV	1	NV	0	NV	3
	V	25	V	4	V	5	V	5

Note. All values represent percentages
NO = Non Offenders; NV = Non Violent Offenders; V = Violent Offenders

Family of Origin Scale

Our second hypothesis (Hy2) questioned whether the three groups differed in terms of their family-of-origin functioning. We predicted that the violent group would come from the least healthy family units (as measured by their scores on the Autonomy and Intimacy Subscales of the Family of Origin Scale), but would not significantly differ from those of the non-violent group. Finally, it was predicted that both offender groups would differ significantly from the non-offender group. Results supported our predictions in part as follows. Although the multivariate test revealed no significant differences between the groups in terms of their Autonomy and Intimacy Subscale scores of the Family of Origin Scale (/\ = .12), pairwise comparisons show significant

differences between the non-offenders and the violent offenders on both the Intimacy Subscale score (p = .01), *d* = .6 and the Autonomy Subscale score (p = .05). Univariate tests find significant differences between groups on the Intimacy Subscale $F(2, 115) = 3.49$, $p < .05$, but not the Autonomy Subscale $F(2, 115) = 2.47$, $p = .10$. No differences were found between non-violent offenders and non-offenders or between non-violent offenders and violent offenders on either of the FOS subscales. Results suggested that violent offenders come from significantly less healthy family units compared to non-offending controls.

Social Problem-Solving Inventory - Revised

The third hypothesis (Hy3) asked whether these three groups differed in terms of their style of solving problems and their approach to decision-making on a day-to-day basis, and if they process and respond to conflict and decision-making using different styles. We predicted that the violent group would utilize a negative problem orientation (NPO) significantly more often than either of the other groups. It was also predicted that the violent group would evidence significantly higher scores on the Impulsivity/Carelessness Subscale (ICS) of the SPSI-R than either of the other two groups, followed by the non-violent and then the non-offender group. Our predictions were partially supported as follows. Although MANOVA was non-significant ($\Lambda = .27$), pairwise comparisons reveal a significant difference between violent offenders and non-offenders on the Rational Problem Scale (p = .03), *d* = .2. In terms of their style and approach to solving problems, NO's were significantly more likely to use a rational style of problem-solving than V offenders. Although V's scored higher on the

Impulsive/Careless and Negative Problem Orientation Subscales and lower on the Positive Problem Orientation and Rational Problem Solving Subscales than both the other groups, no other differences were significant between the groups. All participants tended to indicate that they utilized a rational approach to problem solving and generally reported low levels of impulsivity, carelessness, or avoidance.

Discrimination of groups

To address our fourth hypothesis (Hy4) for this study, discriminant function analyses (DFA) were run for each of the variables listed above. Specifically, we wondered if a particular variable would be able to discriminate the offender groups from each other and to predict offense status. We used stepwise DFA in which a model of discrimination is built step by step. More specifically, at each step, all variables are evaluated to determine which one will contribute most to the discrimination between groups. In this type of analysis, only the variables that significantly discriminated the groups were given an opportunity to be tested in the discriminant model. Age and ethnicity of participants were also entered into each model to see if the subscales of interest would be better predictors of offense status than these demographic variables (on which the groups differed).

The variables entered into the first model, for the CTQ, included age, ethnicity, and the five subscales of the measure (e.g., physical and emotional neglect, physical and emotional abuse, and sexual abuse). Results indicate that, for this sample, two variables emerged as discriminating; age $F(1, 117) = .31$, $p < .05$, $b = .9$ and the Physical Neglect Subscale $F(2, 116) = .55$, $p < .05$, $b = .05$, suggesting that the older the participant and the

higher the Physical Neglect Subscale score, the more likely they are to be violent. Standardized *b* coefficients are determined for each significant function and the larger the standardized *b* coefficient (weight), the larger is the particular variable's unique contribution to the discrimination of groups. Further, it is useful to note that the functions are orthogonal meaning that their contributions to the discrimination between groups will not overlap. Using the participant's age and score on the Physical Neglect Subscale of the CTQ, groups were correctly classified by their offense status 72% of the time.

The next DFA model looked at the ability of the Intimacy and Autonomy Subscales of the Family of Origin Scale (FOS) to discriminate offender groups. Variables entered into this model included participant's age, ethnicity, Intimacy Subscale of FOS and Autonomy Subscale of FOS. Given that MANOVA for the FOS was non-significant, it is not surprising that the only variable that significantly discriminated the offender groups was age $F(2, 117) = .62$, $p < .001$, $b = 1.0$, again indicating that the older the participant, the more likely they were to be violent. Using the age of the participants, offender groups were correctly classified 69% of the time.

In the third DFA, we looked at the SPSI-R subscales to see if a particular variable or a linear combination of variables could discriminate the groups. Variables entered into this analysis included age, ethnicity, and the five subscales of the SPSI-R (Positive Problem Orientation, Negative Problem Orientation, Avoidant Style, Impulsive/Carelessness Style, and Rational Style). Again, based on the non-significant MANOVA conducted on the SPSI-R, it is not surprising that the only variable able to

discriminate the groups was the participant's age $F(1, 117) = .31$, $p < .05$, $b = 1.00$. As with the two functions above, the older the participant, the more likely he was to be a violent offender in this sample. Surprisingly, none of the subscales of the SPSI-R were better than the age variable at discriminating offender groups.

Finally, a stepwise DFA was conducted on the total scale scores of the three independent variables to see if a particular measure or combination of measures would be able to discriminate the offender groups. Entered into this analysis were CTQ Total Score, FOS Total Score, and SPSI-R Total Score as well as subject's age and ethnicity. Results indicate that two variables significantly discriminated the offender groups: age $F(1, 117) = .31$, $p < .05$, $b = .9$ and the CTQ Total Score $F(2, 116) = .50$, $p < .05$, $b = .6$. This finding means that, for participants in this study, being older and having higher scores on the Childhood Trauma Questionnaire (signifying more exposure to maltreatment) indicates a higher probability of being a violent offender. These two variables together were able to correctly classify participants into their offender group 72% of the time.

Based on these results we see that age was the variable that best discriminated the three groups. That said the Physical Neglect Subscale and the CTQ Total score were also able to significantly discriminate groups by offender status. Of the three independent variables considered (i.e., CTQ, FOS, & SPSI-R), the groups differed most in terms of their experiences of abuse and neglect as measured by the Childhood Trauma Questionnaire and this measure was also most useful at discriminating the groups from one another.

For our fifth and final hypothesis (Hy5), we wondered if maltreatment would interact with either problem-solving style or family functioning to affect offender status. More specifically, we wanted to know if offender status (e.g., the outcome variable) would differ by two variables simultaneously (maltreatment *and* problem-solving style) in a way that can't be explained by just one or the other (maltreatment *or* problem-solving style). We predicted that maltreatment history would interact with problem-solving style (specifically impulsive/careless and negative styles) for violent offenders. More precisely, we hypothesized that those with a combination of a history of maltreatment and a negative and/or impulsive approach to problem-solving would be more likely to be violent. We also predicted that those participants with a combination of maltreatment and low family functioning would be more likely to be violent.

Interactions were tested using several types of statistical analyses (i.e., ANOVA, Logistic Regression, and Discriminant Function). In the ANOVA framework, median splits were used to look at interactions that did not involve categorical dependent variables as this cannot be done in this type of analysis. Using the median split strategy, CTQ scores, FOS scores and SPSI-R scores took turns each being the dependent variable and every combination of offense status, maltreatment, problem-solving style, and family functioning were tested for interactions. No significant interactions were discovered using this design. Next, Logistic Regression was used to test for interactions but there were again none of significance. The only significant interaction was found in DFA between the Physical Neglect Subscale and the Autonomy Subscale $F(2, 117) = 9.31$, $p < .001$, $b = 1.00$. This interaction means that the combination of these variables was better

able to predict offender status that either variable alone. The combination of high Physical Neglect Subscale scores and low Autonomy Subscale scores was better able to discriminate between the three groups than either subscale individually. Specifically, participants with higher scores on the Physical Neglect Subscale and lower scores on the Autonomy Subscale of the FOS were more likely to be violent. Other than this one interaction, although the variables had an effect on offense status, their effects were largely independent of one another.

It is also important to report that an examination of the distribution of scores on the three DV's indicated that data were skewed only for the Childhood Trauma Questionnaire (CTQ) and not for the Family of Origin Scale (FOS) or the Social Problem-Solving Inventory-Revised (SPSI-R). Those data were log transformed to normalize them and the analyses were re-conducted on the transformed data. Transforming those data did not change any of the findings likely because MANOVA is robust to violations of normality.

DISCUSSION

Given the importance of understanding the etiology of criminal offending in our society, research must go beyond the already established relationships between maltreatment and offending, family environment and offending, and problem-solving style and offending to look at how these three important variables relate to each other within individual groups of offenders (i.e., NO, NV, & V groups). It is no longer enough to study the association between each of these variables and offending only; their individual relationships with offending have been well established in the literature already (Date & Ronan, 2000; Dodge, 2000; Dodge & Newman, 1981; Freedman & Hemenway, 2000; Guerra & Slaby, 1990; Holtzworth-Monroe & Hutchinson, 1993; Weeks & Widom, 1998; Widom, 1989a). In order to take the next step in understanding the etiology of criminal offending, the present study went beyond looking at these previously studied associations and began to address the ignored issue of how and for whom these variables may work together. More specifically, although prior research has studied each of these variables individually, no one has considered their relationship to each other and how they may be related in different ways for different types of offenders. Given the empirical support for the notion that it's unlikely that any one variable explains the etiology of offending, it is a wonder why research in this area continues to focus on one variable at a time as opposed to looking at relationships between variables. This is, in part, what makes the present work so important. Since a better picture of the development of criminal behavior is more likely to be found by examining the interrelationships between variables of interest, this is what we did. Prior to this study,

the relationship between individual types of maltreatment, family health factors measured by the FOS, and specific styles of solving problems had never been investigated both within and between groups of violent, non-violent, and non-offenders.

In addition to improving the literature conceptually, the present study also went beyond the methods employed by prior research teams. The majority of research on adult offenders has been conducted in a case study framework or suffers from small sample sizes (with N's as low as 16 total subjects) and lacks comparison groups. Previously, offenders have been interviewed about these personal variables, a technique which has been shown to compromise candidness (Widom, 1989a). In the present study, participants were not interviewed and confidentiality was carefully protected and repeatedly stressed to the participants. Additionally, we chose not to simply look at violent offenders, but to compare these offenders to two comparison groups in order to learn about the unique ways they differ.

The results of the present study are important for three paramount reasons. First, they replicate some of the key findings from previous research. Specifically, the finding that violent offenders report more exposure to maltreatment in childhood compared to non-offending controls was replicated in the present study. Also replicated was the finding that violent offenders come from less healthy families, with lower levels of intra-familial warmth, empathy, trust, and conflict resolution skills compared to non-offenders. Finally, the present study repeated the previously substantiated relationship between poor problem-solving style and offending by revealing significantly lower levels of rational,

thoughtful, and systematic types of solving conflicts in violent offenders compared to non-offending controls.

Second, it is interesting and notable that the Physical Neglect Subscale was able to significantly discriminate between the three groups. As noted earlier, although neglect is often ignored in research, it is the most common form of child maltreatment (Sirotnak, Moore, & Smith, 2006; U.S. Department of Health and Human Services, 2003). Incongruously, it is more often childhood physical and sexual abuse that are the focus of investigation and empirical attention. The present study validates the importance of attending to the uniquely deleterious effects of neglect given the significant associations between this type of maltreatment and poor problem-solving styles as well as its unique ability to discriminate the three groups from each other.

Third, and perhaps most interesting, our results indicate that there may be new and unique combinations of individual types of maltreatment, family functioning, and problem-solving styles that are associated in different ways for different groups of people. It makes intuitive sense, but has not been empirically examined, that the type of maltreatment that is associated with a particular style of resolving problems may be different for violent offenders than for non-violent or non-offenders. Understanding which type of maltreatment is associated with which type of problem-solving for which type of offender takes the field to a new level of specificity in understanding the etiology of offending behavior.

Associations between Dependent Variables for All Groups

From the present study we learned that for all three groups, emotional abuse is the type of maltreatment most highly associated with an impulsive and careless problem-solving style. Despite the attention paid to physical and sexual abuse, these two types of maltreatment are not related to poor problem-solving in the same way or at the same level as emotional abuse. It appears that there is something unique to the emotional assaults, intimidation, and humiliation that negatively affect the development of healthy problem-solving skills. Further, given that this type of maltreatment is a significant predictor of personality disorder (Bierer, Yehuda, Schmeidler, Mitropoulou, New, et al., 2003), it is possible that the development of a personality disorder is then what disrupts competent problem-solving. Another association found for all three groups was that higher levels of family health as measured by the FOS are related to lower levels of negative problem orientation and to higher levels of both positive and rational styles of problem-solving. This means that there is likely something protective about a warm, open, respectful, trustworthy family unit that fosters the promotion of competent problem-solving skills.

Associations between Dependent Variables for Violent Offenders

For the violent offenders in particular, we found that higher emotional neglect subscale scores are associated with lower scores on the positive and rational problem-solving scales. Theoretically, this ultimate lack of concern for and attention to a child's needs for love, affection, and guidance may promote a negative and defensive worldview which affects not only the child's emotional and moral development but also their ability to effectively approach life's problems. This new finding is important because it may allow for a greater level of precision in identifying which type of maltreatment is most

likely to occur in violent samples of offenders and why. It provides evidence for a connection between failure to provide for a child's emotional needs and failure for that child to develop proficient problem-solving techniques. From here, identification, prevention, and intervention efforts may be improved because we can address the unique effects of this type of maltreatment on deficient social problem-solving in the development of criminal behavior. It is also interesting that research has shown an association between emotional neglect and substance use, risky sexual behavior, and poor self care (Rodgers, Lang, Laffaye, Satz, Dresselhaus, et al., 2004). It's also possible that substance abuse is mediating the relationship between emotional neglect and poor problem-solving.

Associations between Dependent Variables for Non-Violent Offenders

For the non-violent offender group, higher scores on the physical neglect subscale are associated with lower positive and rational approaches to problem-solving. In this case, the failure to provide for the physical needs of these individuals during childhood was associated with poorer problem-solving style and, given that they are committing less serious offenses, this may mean that physical neglect does not have the same impact as emotional neglect on disrupting effective and non-violent conflict resolution skills. Physical neglect has been linked to disturbed adult relationships, poor interpersonal functioning, and lack of assertiveness (Drapeau & Perry, 2004). It may be possible that physical neglect is related to poor problem-solving ability via its effect on low interpersonal functioning and lack of assertiveness skill. Deciphering the unique contributions of both physical and emotional neglect is important as it may assist mental

health professionals in assessing and treating the distinctive psychological, cognitive, emotional, and behavioral sequellae that may result from each.

Associations between Dependent Variables for Non-Offenders

For the non-offending controls, higher levels of emotional neglect and emotional abuse are associated with higher scores on the negative, avoidant, and impulsive SPSI-R subscales and with lower scores on the positive problem orientation style of this measure. Here there is something about the emotional types of abuse and neglect that is negatively influencing effective problem-solving skill. The dismissal and rejection unique to emotional neglect and the humiliation, threats, and verbal assaults unique to emotional abuse may impair the victim's ability to develop a clear and effective approach to conflict resolution. Again, despite the attention given to overt corporal acts of abuse such as physical and sexual, and the intuitive sense it may make to assume a more likely connection exists between these physical acts and various forms of pathology, in this case it's the emotional acts of maltreatment that are associated with negative problem-solving outcomes.

Future Research Needs

Mediating Variables. Although the present study provides evidence for never before seen associations between these variables, by no means can we assume they are causally related. The associations described above raise questions about potential mechanisms involved in the unique relationships between these dependent measures for the different offender groups. In order to learn the sequence of events from maltreatment to offending, future research must use path analyses to test for causal relationships and

the directions of these relationships. For example, although we now know there is an association between emotional neglect and lower levels of positive and rational problem-solving in violent offenders, only future research will tell us if emotional neglect is able to predict low levels of problem-solving skill and, in turn, if low problem-solving ability will be able to then predict violent offending.

Neglect. Given that the conservatively estimated direct and indirect costs of child abuse and neglect are $94 billion per year (U.S. Department of Health and Human Services, 2001), and that adult criminality accounts for over half of this estimate (> $55 billion), research on the relationship between maltreatment and offending is of critical value. The results of the present study suggest that neglect, in particular, is an understudied but important type of childhood maltreatment. Given that 61% of the 906,000 children that were found to be victims of child maltreatment in 2003 were victims of neglect (U.S. Department of Health and Human Services, 2003), future research should pay closer attention to the unique effects of both its physical and emotional forms.

Protective Factors. The present study not only highlighted specific risk factors for criminal offending, it also drew attention to protective factors. It emphasized the importance and likely protective role healthy families play in the development of effective problem-solving strategies. For example, we found that higher levels of family health (as measured by the FOS) are related to lower levels of negative problem orientation and to higher levels of both positive and rational styles of problem-solving. Future research should focus on understanding how and for whom not only risk but also

protective factors operate. The more we know about which aspects of healthy family units have protective effects, the more we can incorporate these aspects into prevention and intervention efforts.

As mentioned earlier, although a number of family environment variables have been linked to future offending including family criminality, lack of expressed maternal emotion, and ineffective parenting skills, it was not possible to consider all these variables at once in the present study. We chose the FOS in order to tap the most fundamental constructs of family functioning such as warmth, empathy, trust, clarity of thoughts and feelings, and ability to discuss difficult issues like separation and loss. On the one hand, this measure provides an overall indication of family health, divides that overall score into dimensions of autonomy and intimacy each of which have five subscales, and is considered a comprehensive assessment of the type of family our participants grew up in. On the other hand, in order to appreciate the relative contributions of a range of family environment variables, future research should include other substantiated constructs such as level of parenting skill and maternal expressed emotion in addition to this more global indicator of family health.

Concluding Reflections

In conclusion, of the three constructs examined in the present study (childhood maltreatment, family health, and problem-solving style), the greatest differences were found between groups in terms of their exposure to childhood abuse and neglect. Although there is no evidence to suggest that people who are abused during childhood go on to become abusers themselves, there does seem to be evidence (also supported here)

that violent offenders report significantly more abuse and neglect in childhood than non-offending controls. It seems that there is more evidence to suggest that childhood maltreatment is related to adult criminal offending than there is to suggest that maltreated children go on to repeat the same cycle of abuse or neglect experienced in their own childhood. It is also important to remember that although there does seem to be evidence for a relationship between maltreatment and criminal offending, the majority of abused and neglected children do not go on to offend (Widom, 1989a).

Finally, it should be noted that the present study has both noteworthy strengths and weaknesses. It improved upon prior research in six ways. First, rather than looking at only one type of abuse or neglect, we looked at five subscales including physical, emotional, and sexual abuse and physical and emotional neglect. Second, we considered childhood maltreatment dimensionally (looking at severity) rather than categorically (i.e., present vs. absent). Third, we wanted to look not only at the differences between the extreme groups of non-offenders versus violent offenders, but also at a non-violent offending group to see how, if at all, they might differ from the others. Fourth, we looked at not just one, but five sub-types of problem-solving to get a better idea of the approaches and strategies employed by the different groups when attempting to resolve conflicts in daily life. Fifth, while the majority of studies on the effects of childhood victimization look at juveniles (Widom, 1989a), our study attempted to assess the impact these experiences may have well into adulthood in terms of adult criminal offending. Sixth, rather than lumping different types of offenders into one overly generalized

"offender" group or referring to them as "antisocial" or "aggressive", which leaves definitions up to the reader, we carefully separated and defined our three groups.

Despite these strengths, the present work also has a number of limitations. First and most notably, our non-offending control sample was not as closely matched to the offending groups as we had hoped. Although we took covariates into account in the analyses, demographic differences were significant and may have added error into the results. In the future, a better matched sample might be drawn from day labor employment agencies or job corps programs in the community. Next, there is evidence to indicate that retrospective accounts of childhood maltreatment are often inaccurate and under-reported (Widom & Shepard, 1996). Although there was no interviewing of participants and all responses were confidential, there are a number of inaccuracies that may have entered in to respondents' answers. Further, there are inherent risks in using self-report formats with forensic populations in particular, and our study could have been improved by gathering data from only those participants with an official history of abuse or neglect and comparing them to data from those with no official records of such maltreatment. Future research should attempt to correct for these limitations.

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