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AN EXPLORATION OF DIFFERENCES IN CHILDHOOD MALTREATMENT
BETWEEN VIOLENT AND NON-VIOLENT MALE JUVENILE OFFENDERS

And

CHILDHOOD MALTREATMENT AND ITS EFFECTS
ON MALE DELINQUENT CRIME:
PHYSICAL NEGLECT TRUMPS ALL

A project based upon an independent investigation,
submitted in partial fulfillment of the requirements
for the degree of Master of Social Work.

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TABLE OF CONTENTS

ACKNOWLEDGMENT.....	2
TABLE OF CONTENTS.....	3
LIST OF TABLES.....	4
CHAPTER ONE: <i>An exploration in childhood maltreatment between violent and non-violent male juvenile offenders.....</i>	5
I. ABSTRACT.....	5
II. LITERATURE REVIEW.....	6
III. METHOD.....	11
IV. RESULTS.....	14
V. DISCUSSION.....	15
REFERENCES.....	22
CHAPTER TWO : <i>Childhood maltreatment and its effects on male delinquent crime: Physical neglect trumps all.....</i>	31
I. ABSTRACT.....	31
II. LITERATURE REVIEW.....	32
III. METHOD.....	39
IV. RESULTS.....	41
V. DISCUSSION.....	45
REFERENCES.....	53

LIST OF TABLES

Table.....	Page
1. Cronbach's Alpha for CTQ and SRD Scales.....	13
2. Group CTQ Means for Violent and Non-Violent Offenders.....	14
3. Areas of Previous Research	38
4. Chronbach's Alphas for the CTQ and SRD Scales	40
5. Summary of Regression Analysis for Trauma Predicting SRD Total Delinquency Score.....	41
6. Summary of Multiple Regression Analysis for Type of Maltreatment and Total Delinquency.....	41
7. Summary of Multiple Regression Analysis for Type of Maltreatment and Property Damage.....	42
8. Summary of Multiple Regression Analysis for Type of Maltreatment and Violent Crime.....	43
9. Summary of Multiple Regression Analysis for Type of Maltreatment and Non-Violent Crime.....	44
10. Summary of Multiple Regression Analysis for Type of Maltreatment and Status Offending.....	45

Caroline I.B. Robertson
An Exploration of Differences in
Childhood Maltreatment Between
Violent and Non-Violent Male
Juvenile Offenders

ABSTRACT

Violent crime is a significant economic (Corso, Mercy, Simon, Finkelstein, & Miller, 2007) and public health problem (Krug, Mercy, Dahlberg, & Zwi, 2002) in the United States. Although adults commit the bulk of this nation's violent crime, juveniles contribute significantly to violent crime in the United States; juveniles committed twelve percent of all violent crimes in 2004 (Snyder, 2006). Although there are many individual and family characteristics that predispose juveniles to commit violent acts (Farrington, 1989; Howard & Jenson, 1999; Saner & Ellickson, 1996; Sherline, Skipper, & Broadhead, 1994; Stone & Dover, 2007), a potentially significant influence on later violence is childhood maltreatment (Rivera & Widom, 1990).

The aim of this study was to examine the maltreatment histories of 78 non-violent, incarcerated youth (e.g., drugs, public disorderly conduct) and 59 incarcerated youth who admitted to both violent (e.g., purposefully attacking someone, gang fight) and non-violent crimes from 6 treatment facilities in a Midwestern state. Is there a difference in the maltreatment histories of violent and non-violent offenders?

Using t tests, violent youth reported significantly greater frequency of physical neglect ($t=4.67, p<.001$) and sexual abuse ($t=2.72, p=.008$), and a higher total score on the Childhood Trauma Questionnaire (CTQ) ($t=2.82, p=.006$). This contradicts past literature (Capaldi & Patterson, 1996; Farrington, 1991; Happasalo & Hamalainen, 1996) and suggests that there may be more differences in the amount of maltreatment experienced by violent and non-violent offenders than previously thought.

CHAPTER ONE

Literature Review

Although rates of violent crime in the United States have been decreasing (despite a slight increase in 2006) since 1994, (U.S. Department of Justice: Bureau of Justice Statistics, 2006), violence remains a serious problem in the United States. “Violence is the intentional use of physical force against another person or against oneself, which either results in or has a high likelihood of resulting in injury or death” (Rosenberg, O’Carroll, & Powell, 1992). Violent crime includes homicide, aggravated assault, simple assault, and robbery (U.S. Department of Justice Bureau of Justice Statistics, 2006). In 2007, almost one and a half million violent crimes occurred, which is about 467 violent crimes per 100,000 inhabitants (U.S. Department of Justice: Federal Bureau of Investigations, 2007).

Violence takes a considerable economic toll on society. In 2000, 70 billion dollars was spent on non-fatal injuries and deaths caused by violence; 64.4 billion dollars was due to lost wages and 5.6 billion dollars was used for medical care (Corso, Mercy, Simon, Finkelstein, & Miller, 2007). Violence also has serious public health consequences (Krug, Mercy, Dahlberg, & Zwi, 2002; Rosenberg, et al., 1992; Sherline, Skipper, & Broadhead, 1994) including reproductive health problems, injury, psychological and behavioral problems such as depression, anxiety, alcohol abuse, and suicidal behavior, and most severely, death (Krug et al., 2002). Because of these considerable consequences, it is important that an attempt is made to decrease societal violence.

Although adults commit the bulk of this nation’s violent crime, juveniles contribute significantly to the violent crime problem in the United States; juveniles committed twelve percent of all violent crimes in 2004 (Snyder, 2006). Most juvenile delinquents offend only during adolescence, however, there is a group that goes on to offend in adulthood as well

(Moffitt, 1993) and researchers (Kempf-Leonard, Tracy, & Howell, 2001) have found that juvenile delinquents are at a significantly increased risk to become adult offenders. There is continuity between childhood aggression and antisocial behavior and adult violence: aggressive and antisocial boys may become deviant and antisocial adults who commit violent acts (Farrington, 1989; Farrington, 1991; Robins & Ratcliff, 1979). Establishing effective interventions to reduce rates of juvenile violent crime will not only reduce current violent crime levels, but should also impact adult crime rates by stopping future adult offenders in adolescence (Garrido & Morales, 2007).

Past researchers (Buka & Earls, 1993; Cornell, 1990; Farrington, 1989; Howard & Jenson, 1999; Saner & Ellickson, 1996; Sherline, Skipper, & Broadhead, 1994; Stattin & Magnusson, 1989; Stone & Dover, 2007) cite many individual and family characteristics that may predispose adolescents to become violent. However, a potentially significant influence on later violence is childhood maltreatment (Rivera & Widom, 1990; Widom, 1989). The myriad of negative and lasting effects that childhood and adolescent maltreatment has on its victims (Egeland, Yates, Appleyard, & van Dulmen, 2002; Eckenrode, Laird, & Doris, 1993; Davies, 2004; Johnson, Kotch, Catellier, Winsor, Durort, Hunter, et al., 2002; Reidy, 1977), including increasing the likelihood of juvenile offending (Ireland, Smith, & Thornberry, 2002; Maschi, Bradley, & Morken, 2008; Stewart, Livingston, & Dennison, 2008), partly explains why maltreatment might increase subsequent violent behavior. However, these researchers do not explore whether specific patterns of maltreatment lead to violent and non-violent offenses, rather, they look at how maltreatment as a whole effects delinquency as a whole. There are other theories that also help explicate the maltreatment and delinquency connection.

For example, considering the Freudian theory of repetition compulsion (Mitchell & Black, 1995) and Bandura's (1986) social learning theory may be helpful. Repetition compulsion is the human propensity to repeat maladaptive relationship patterns and to seek out relationships that simulate early, significant attachments with caregivers (Mitchell & Black, 1995). While according to social learning theory, children learn through observation and then replicate what they have seen (Burton & Meezan, 2004). These theories suggest that maltreated children who become juvenile offenders would likely commit offenses that mimic the maltreatment they suffered either to recreate the attachments they had or because that is how they have learned to interact with people. Children who suffered violent abuse would be more likely than non-violently abused children to become violent offenders, because by committing violent offenses, they are recreating and mimicking the traumatic environment in which they grew up. It seems plausible that these theorists would posit that violent juvenile delinquents may have more severe maltreatment histories than non-violent juvenile delinquents.

Researchers have compared violent and non-violent offenders on measures other than maltreatment history such as neuropsychological assessments (Spellacy, 1977; Tarter, Hegedus, Alterman, & Katz-Garris, 1983) the Minnesota Multiphasic Personality Inventory (Spellacy, 1977), intellectual abilities such as IQ (Auffrey, Fritz, Lin, & Bistak, 1999; Tarter et al., 1983; Walsh, 1987), educational tests (Tarter et al., 1983), child and parental substance abuse, juvenile court history, assaultive behavior, and sexual deviance (Auffrey et al., 1999). However, fewer researchers (Capaldi & Patterson, 1996; Happasalo & Hamalainen, 1996; Loeber & Schmaling, 1985; Rivera & Widom, 1990; Widom, 1989) have examined violent and non-violent offenders and their maltreatment histories (Happasalo & Hamalainen, 1996) and their findings are inconsistent.

In two different longitudinal studies, researchers found no significant differences in the amount or severity of the negative verbal interactions (Capaldi & Patterson, 1996), cruel parental attitude, or authoritarian parenting (Farrington, 1991) experienced by violent and non-violent offenders. There were also no differences in the amount or severity of domestic violence (Auffrye, et al., 1999), psychological abuse (Happasalo & Hamalainen, 1996), physical abuse (Auffrye, et al., 1999; Capaldi & Patterson, 1996; Happasalo & Hamalainen, 1996; Lewis, Moy, Jackson, Aaronson, Restifo, Serra et al., 1985), or neglect (Happasalo & Hamalainen, 1996), endured by violent and non-violent offenders. In fact, one group of researchers (Guitierrez & Reich, 1981) found that physically abused children were less likely than their siblings and non-abused control group to partake in aggressive and violent behavior. Examining these studies, it seems that it may be the co-existence of multiple stressors that causes violence and not just the presence and severity of maltreatment (Lewis, et al., 1985).

However, other researchers have found a connection between maltreatment and later violence ranging from near significance (Lewis, Shanok, Pincus, & Glaser, 1979), to a small but significant relationship (Rivera & Widom, 1990), to large and significant (English, Widom & Brandford, 2002). In general, delinquent families (Loeber & Dishion, 1983; Patterson, DeBaryshe, & Ramsey, 1989) and families of aggressive boys (McCord, McCord, & Howard, 1961) are characterized by harsh and inconsistent discipline, minimal parental involvement, and poor monitoring and supervision. One study found that one in three families of violent juveniles used physical discipline (Fagan & Wexler, 1987).

Few researchers have directly compared violent and non-violent juveniles and their histories of childhood maltreatment (Happasalo & Hamalainen, 1996). Therefore it is necessary to look at related studies. For example, Lewis, Pincus, Lovely, Sptizer, & Moy (1987) compared

delinquents to non-delinquents and found that the delinquent group experienced significantly more physical abuse and came from more violent homes than the non-delinquent group. Within each group, physical abuse distinguished the more aggressive individuals from the less aggressive ones, suggesting that maltreatment may be one component of aggressive behavior, which is a known precursor to violence. In a longitudinal study, another group of researchers (Cohen, Smailes, & Brown, 2004) looked at the effects of physical abuse, sexual abuse, and neglect separately and found that physical abuse had the most significant effect on later adult violence. Adults physically abused as children were more likely than adults who were not maltreated as children to commit later violence. It is therefore possible that physical abuse also increases violence for juveniles. Loeber & Schmalting (1985) examined children and adolescents, who fought only (violent offending), stole only (non-violent offending), fought and stole (both violent and non-violent offending), or had no delinquent behavior. Their findings yielded that the group that fought and stole and only fought had the most disturbed child-rearing practices. That is, they were the least well monitored and had the highest level of maternal rejection, suggesting that neglect may contribute to later violence.

The researchers who have directly compared the maltreatment histories of violent and non-violent juveniles also have conflicting results. Some confirm that childhood maltreatment does in fact increase later violence, however, according to others this connection may not be as significant as one might assume (Rivera & Widom, 1990). Rivera and Widom (1990) found that overall, abused and neglected children had higher frequencies of violent offending, but interestingly, the frequencies did not always reach significance. However, in similar study, English, Widom, and Brandford (2002) found that abuse and neglect had a more significant effect on later violence than previously thought: abused and neglected children were 11 times

more likely than the control group to be arrested for juvenile violence. In a comparison of mildly violent juveniles (no violence, isolated fire setting, or threatening violence) with severely violent juveniles (having committed murder, rape, assault, armed robbery, or multiple episodes of arson), researchers found that the more severely violent juveniles had experienced significantly more abuse and witnessed significantly more violence than less violent juveniles (Lewis et al., 1979). Another group of researchers, who compared juvenile murders to non-violent juveniles, found that the murders were more likely to have been raised in violent households and were almost twice as likely to have been physically abused as the non-violent delinquents (Lewis, Lovely, Yeager, Ferguson, Friedman, Sloane et al., 1988).

In summary, there is a group of researchers who have found that maltreatment does not affect later violence and one group even found that it decreased later violence. However, some researchers have found that maltreatment has a limited effect on later violent behavior and other researchers have found that childhood maltreatment has a significant effect on later violence. Part of the reason for this discrepancy is due to the fact that many different types of methods have been used including longitudinal and retrospective. However, researchers using both types of methodology have confirmed and disputed that childhood maltreatment results in later violence. The question that emerges from this past literature is: is childhood maltreatment related to violent offending? One way to answer this question is to look at violent and non-violent offenders and to compare their childhood maltreatment histories. Therefore, in this study I ask the following research question: do violent and non-violent offenders differ in their histories of childhood maltreatment?

Methods

Participants

After consents were obtained, confidential data were collected from male youth with non-sexual offenses in 6 residential facilities in a Midwestern state. Multi-paged pencil and paper surveys were collected from 161 adjudicated delinquent youth.

In this sample, 47.3% (n=78) of the youth admitted to only non-violent crimes (e.g., drugs, public disorderly conduct, alcohol use) and 35.8% (n=59) of the youth admitted to both violent (e.g., purposefully attacking someone, gang fight) and non-violent crimes. These groups were used for further analyses.

The average age of the sample (N = 161) was 16.51 years ($SD = 1.23$ years). On average they were in the 9th grade ($SD = 1.32$ grades) with no differences between the groups. In terms of race, 53.9 % of participants selected African American, 33.9% of participants selected Caucasian, 6.0 % of participants selected Other, and 6.2% of participants did not select any option for race. There were no significant differences by race between the groups.

Materials

The Childhood Trauma Questionnaire (CTQ) (Bernstein & Fink, 1998) is a 37-item scale that provides a brief and relatively noninvasive screening of traumatic experiences in childhood using a 5-point frequency scale ranging from 1 (never true) to 5 (very often true). There are five subscales: physical abuse, emotional abuse, sexual abuse, physical neglect, and emotional neglect. All of the subscales have acceptable to good internal consistency in this study, Cronbach's alphas on the five CTQ subscales range from .73 (Physical Neglect) to .91 (Emotional Neglect; see Table 1).

Elliot, Huizinga and Ageton's (1985) Self Reported Delinquency Measure (SRD) was used to assess delinquency. The scale has 32 questions using a 7-point frequency scale from 1 (never) to 7 (2-3 times per day) on questions ranging from drug use to aggression. The instrument has several subscales including General Delinquency, Property Damage, Public Disorderly, Felony Assault, Felony Theft, Robbery, Alcohol Use, Drug Use, and Selling Drugs. However, for the purposes of this study, the scales were collapsed to create a Violent Crime subscale and a Non-Violent Crime subscale. All of the subscales have acceptable to good internal consistency in this study, Cronbach's alphas on the SRD subscales range from .63 (Violent Crime) to .91 (Total Delinquency; see Table 1).

Table 1: Cronbach's Alpha for CTQ and SRD Scales

Scale	Cronbach's Alpha	Number of items
CTQ sexual abuse	.778	6
CTQ physical abuse	.899	5
CTQ emotional abuse	.852	5
CTQ emotional neglect	.913	9
CTQ physical neglect	.730	8
CTQ total	.890	34
SRD total	.910	32
SRD nonviolence	.906	24
SRD violence (note: without rape)	.628	5

Results

Using t tests, violent youth reported a significantly greater frequency of physical neglect ($t= 4.67, p<.001$) and sexual abuse ($t=2.72, p=.008$), and a higher total CTQ score ($t=2.82, p=.006$). The two groups did not differ significantly on physical abuse ($t=1.61, p=.11$), emotional abuse ($t=1.82, p=.07$), or emotional neglect ($t=.47, p=.64$). See table 2 for group means.

Table 2: Group CTQ Means for Violent and Non-Violent Offenders

Abuse Type	Violent/Non-violent	N	Mean	S.D.
CTQ Total*	Non-violent	75	48.00*	16.01
	Violent	57	55.89*	15.92
Physical Neglect**	Non-violent	75	11.09**	3.72
	Violent	57	15.18**	5.74
Sexual Abuse*	Non-violent	75	7.36*	2.13
	Violent	56	8.66*	3.08
Physical Abuse	Non-violent	75	6.57	3.63
	Violent	57	7.65	3.94
Emotional Abuse	Non-violent	75	6.12	3.45
	Violent	56	7.13	2.85
Emotional Neglect	Non-violent	75	15.41	8.05
	Violent	57	16.04	7.00

** $p=.001$

* $p<.01$

Discussion

Results from this study support researchers who found that violent youth have experienced more childhood maltreatment than non-violent youth (English, Widom & Brandford, 2002; Lewis, Shanok, Pincus, & Glaser, 1979; Rivera & Widom, 1990). In this study, violent offenders reported more physical neglect, sexual abuse, and total maltreatment than did non-violent offenders. These findings make sense in light of unpublished research conducted by Robertson (2009) showing that physical neglect and sexual abuse are significant predictors of the frequency of delinquency and that only physical neglect is a significant predictor of property damage, violent crime, and status offending. In light of this past and present research, it seems that physical neglect and sexual abuse have serious and lasting consequences on victims, especially in terms of later violence.

Physical neglect is the refusal or delay of health care, inadequate supervision, expelling a child from the home, disregarding a child's safety, and ignoring a child's physical needs such as nutrition, clothing, or hygiene (Goldman, Salus, Wolcott, & Kennedy, 2003). Physical neglect affects a wide range of developmental needs which means it impacts many aspects of a child's life and development. Negative effects of neglect can be observed in babies, with neglected infants showing more disturbed attachments with caregivers than non-neglected infants (Carlson, Cicchetti, Barnett, & Braunwald, 1989). In older children, neglect leads to increases in aggressive, disruptive, and oppositional behavior in comparison to non-maltreated children (Manly, Kim, Rogosch, & Cicchetti, 2001). And school aged neglected children have significantly more academic problems than even physically abused children (Wodarski, Kurtz, Gaudin, & Howing, 1990). These social and academic limitations of neglected children may impair their decision-making, rendering them more likely to engage in violent activity.

Examining Maslow's hierarchy of needs (Maslow, 1943), albeit quite old, may be a useful heuristic to help understand the harmful effects of physical neglect.

According to Maslow (1943) the most fundamental human need is physiological; above all else, humans are driven to satisfy their hunger and thirst and need for adequate air and temperature. After these basic physiological needs are met, comes a hierarchy of needs including safety, love, self-esteem, and self actualization, which Maslow (1943) posited needed to be met for a successful and fulfilling life (Harper, Harper, & Stills, 2003). When physical neglect is present, none of these needs are met, which has severe effects on a child. For example, unmet safety needs lead to anxiety and the "terror reaction" in children (Maslow, 1943). Perhaps adolescents who are physically neglected become violent because they were forced to survive on their own as children and learned to use unconventional means, such as violence, to survive. It is possible that growing up without basic physical necessities causes children and adolescents to behave in an un-socialized manner to get their needs met.

Childhood sexual abuse also has severe and lasting effects on its victims. In an extensive review of the literature examining the effects of childhood sexual abuse on children and adolescents, Browne and Finkelhor (1986) present a plethora of effects including: emotional disturbance ranging from mild to severe, increased anger, hostility, depression, fear, guilt, shame, and phobias, disturbances in sleeping and eating, school problems, running away, low self esteem, and inappropriate sexualized behavior. These effects may endure into adulthood as evidenced by researchers who have found that adults who were sexually abused as children have many problems including higher rates of depression and interpersonal problems (Whiffen, Thompson, & Aube, 2000), increased suicide attempts (Breire & Runtz, 1986; Dube, Anda, Whitfield, Brown, Feletti, Dong et al., 2005), poorer health (Sachs-Ericson, Blazer, Plant, &

Arrow, 2005), family and marital problems, and illicit drug use (Dube et al., 2005). In general, trauma, which is often experienced via neglect and sexual abuse, results in a violation of trust, causes disturbed attachments, and interferes with empathy (Greenwald, 2002), which can help explain why neglect and sexual abuse effect later violence. The increase in negative emotions such as anger and hostility, also helps explain why they contribute to later violence. However, there are other explanations for this connection, such as genetics.

For example, in one study conducted by Caspi, McClay, Moffitt, Mill, Martin, Craig et al. (2002), researchers found that genetics played a significant part in whether maltreated children behaved in an antisocial manner. Children with a genotype that led to high levels of Monoamine Oxidase A (MAOA), an enzyme that breaks down serotonin and norepinephrin (Cases, Seif, Grimsby, Gasper, Chen, Pourin et al., 1995) were less likely to behave in an antisocial manner than children with low levels. This indicates that certain genotypes may predispose individuals to behave in an antisocial manner if they are maltreated. In essence, specific genotypes are activated if childhood maltreatment is present and this activation then results in a higher or lower probability of behaving in an antisocial way. Genetic research was beyond the scope of the current study, however, it is important to consider the effects that genetics may have had on the results. It is possible that the presence or absence of MAOA in participants may have influenced the results.

It is also important to focus on the non-significant results in this study. Why did physical abuse not have an impact on later violence? According to the Freudian theory of repetition compulsion and Bandura's social learning theory, it seems that physical abuse would increase later violent offending, but in this study it did not. This is an interesting finding as past

researchers have found that abused children are more aggressive than neglected or non-maltreated children (Howes & Eldrege, 1985; Reidy, 1977).

Seligman's theory of learned helplessness (Maier & Seligman, 1976; Peterson, Maier, & Seligman, 1995; Seligman & Maier, 1967) may help explain these results. When Seligman's dogs became unable to escape a painful shock, they initially struggled and then ceased to fight and passively accepted the pain. Perhaps this is what happens to abused children. They initially fight back with aggression, but then gradually learn that no amount of fighting will change their caregiver's abusive behavior and they give up. Initial childhood aggression is extinguished because it ceases to stop the physical abuse and therefore physically abused children do not end up being violent. Children may feel that their abuse is uncontrollable and eventually stop trying to change their situation.

Another possible explanation is that physical abuse may often be utilized as a type of punishment and child victims may feel responsible for the abuse and may reason that they deserved it because they behaved badly. Perhaps children are less likely to feel responsible for physical neglect and sexual abuse and are more likely to feel responsible for physical abuse. This self blame may create a false sense of control: perhaps physically abused children feel more in control of their abuse than physically neglected or sexually abused children. Maier & Seligman (1976) cite past researchers who have found that uncontrollable unpleasant events cause more emotional disruption than unpleasant events that are perceived as controllable. Maybe a perceived sense of control renders abused children less likely to become violent.

Finally, it is possible that physically abused children are less likely to be violent because they were so scarred by the violence from which they suffered, that they are motivated not to harm others as they themselves were harmed. Perhaps being exposed to physical abuse also

means that children witnessed domestic violence. It is possible that this extreme exposure to violence taught them how harmful violence can be and made them want to avoid being violent.

Clinical and Research Implications

In this study, violent and non-violent youth had significantly different histories of maltreatment, which indicates that types of maltreatment affect children differently and can result in distinct patterns of anti-social behavior. Therefore, interventions used to treat young victims of maltreatment, should be carefully tailored to target specific types of maltreatment. Future research should begin to examine what specific interventions work most effectively to combat the effects of each type of maltreatment. In light of the present and past research (Robertson, 2009), it is clear that intervening and treating the effects of physical neglect is particularly important. Because physical neglect is not as violent or physically damaging as physical abuse, it may often be overlooked, which can have dire consequences. Early detection and treatment of physical neglect is vital and researchers and clinicians should continue examining effective ways of identifying and combating the effects of physical neglect.

It is also important to consider what other variables contribute to violent behavior and how these variables are affected by childhood maltreatment. Researchers have documented a myriad of individual and family factors that influence later violence (Buka & Earls, 1993; Cornell, 1990; Farrington, 1989; Howard & Jenson, 1999; Saner & Ellickson, 1996; Sherline, Skipper, & Broadhead, 1994; Stattin & Magnusson, 1989; Stone & Dover, 2007) and it will be important to continue parsing out how the different factors interact and influence each other to result in violent behavior. Not every child who was physically neglected or sexually abused becomes violent; indeed, most do not. Therefore, researchers should continue to examine

protective factors and look at ways in which clinicians can boost the resiliency of maltreatment survivors.

Finally, it is important that researchers investigate whether or not these findings apply to other samples such as females, non-institutionalized youth, or individuals of different ages and races.

Limitations

The sample was limited as participants were adjudicated, incarcerated, adolescent, males held in six treatment facilities in the Midwest. Therefore, the results of this study cannot be extended to other geographic regions, females, sexually offending males, or non-institutionalized males. It is important to consider how the results may have been influenced by the fact that participants were held in residential treatment facilities. It is likely that the youth in this study had more severe criminal records than non-institutionalized youth, which may have affected the results. If the sample had included delinquent adolescents who suffered from maltreatment, but were not in residential treatment facilities, perhaps the results would have been different.

Second, although the Cronbach Alpha's for the subscales of delinquent crime were adequate, the violent crime scale were .628, which means it did not measure violent crime as well as it could have, which may have impacted the results. Third, it is likely that some participants were not totally truthful when filling out their surveys or simply could not accurately remember their pasts, which could have impacted the results. Fourth, it is possible that factors other maltreatment influenced violent behavior and influenced the results. For example, genetics plays a role in violence and it was certainly beyond the scope of this study to examine genetics. Therefore, when interpreting the results, it is important to keep extraneous and unmeasured variables in mind.

Conclusion

The results of this study indicate that there are in fact differences in the childhood maltreatment experiences of violent and non-violent youth for this particular sample. However, maltreatment is not the only determinant of later violence. Violent behavior can best be conceptualized as an equation with a myriad of individual, family, and environmental characteristics constituting the different parts of the equation. Every individual's development is different and many different equations result in violent behavior. Therefore, it is impossible to figure out an exact and fixed equation for violent behavior. However, researchers should continue to strive to figure out the different elements of the equation in order to better understand the causes of violent behavior. This current research should be used to help researchers as they continue on the quest of better understanding the causes of violent behavior, so that successful interventions may be created with the ultimate goal of decreasing juvenile violence.

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CHAPTER TWO

Caroline I.B. Robertson
Childhood Maltreatment and its
Effects on Male Delinquent Crime:
Physical Neglect Trumps All

ABSTRACT

Past research confirms that childhood and adolescent maltreatment increases the likelihood of juvenile offending (Ireland, Smith, & Thornberry, 2002; Maschi, Bradley, & Morken, 2008; Stewart, Livingston, & Dennison, 2008). However, research examining how specific types of maltreatment (physical abuse, emotional abuse, sexual abuse, physical neglect, emotional neglect) impact later delinquent offense (violent crime, non-violent crime, status offending, property offending) is minimal. The aim of this study is to augment and expand upon this scant literature. One hundred and sixty-one non-sexual offending, male, juvenile delinquents held in six residential treatment facilities in a Midwestern state, were the subjects of this study. Each participant filled out the Childhood Trauma Questionnaire (CTQ) (Bernstein & Fink, 1998) and the Self Reported Delinquency measure (SRD) (Elliot, Huizinga and Ageton, 1985) in addition to demographic information. Results show that maltreatment accounts for 12.1% of delinquency and that physical neglect is the most significant predictor of violent crime, non-violent crime, property offending, and status offending.

Literature Review

Crime is a worldwide problem and rates are on the rise in industrialized nations (Lahey, Moffitt, & Caspi, 2003). Crime takes a significant economic toll on society, costing the United States more than one trillion dollars per year (Anderson, 1999). Juvenile crimes contribute significantly to the crime problem in the United States: every year about 2.4 million youths are arrested, accounting for seventeen percent of annual arrests (Abram, Teplin, Charles, Longworth, McClelland, & Dulcan, 2004); juveniles committed twelve percent of all violent crimes in 2004 (Snyder, 2006). Although crimes worldwide are increasing (Lahey et al., 2003) juvenile crimes in the United States have been decreasing since 1994, however, between 1991 and 2003, there was a 28% increase in the number of youths committed and held in private and public facilities (Snyder & Sickmund, 2006) indicating that juvenile crime remains a significant social problem. Juveniles comprised twenty-five percent of the U.S. resident population in 2002, and the U.S. Census expects this to stay consistent through at least 2050 (Snyder & Sickmund, 2006).

There are many risk factors that predispose children to become juvenile offenders including poverty (Comer, 2004; Lahey, Moffitt, & Caspi, 2003; Quinsey, Skilling, Lalumiere, & Craige, 2004; Thornberry & Krohn, 2003), genetic vulnerability to risk factors (Comer, 2004; Lahey et al., 2003), peer rejection (Lahey et al., 2003), personal characteristics such as inattention, aggression, risk taking, low empathy, negative emotional reactivity, and difficulty adapting to change (Lahey et al., 2003), aversive, inconsistent, and unsupportive relationships with peers and family (Comer, 2004; Lahey et al., 2003; Maschi, Bradley, & Morken, 2008; Quinsey et al., 2004; Stewart, Livingston, & Dennison, 2008; Thornberry & Krohn, 2003), a low IQ (Lahey et al., 2003; Quinsey et al., 2004), being a member of a delinquent peer group (Maschi

et al., 2008; Thornberry & Krohn, 2003), and exposure to violence (Maschi, 2006; Kruttschnitt & Dornfeld, 1993; Kumpfer & Alvarado, 1998). Many studies also cite the impact of child/adolescent maltreatment (Ireland, Smith, & Thornberry, 2002; Maschi et al., 2008; Stewart et al., 2008), physical abuse (Dembo, Williams, Wothke, Schmeidler, & Brown, 1992; Dembo, Schmeidler & Childs, 2007; Egeland, Yates, Appleyard, & Van Dulmen, 2002; Haapsalo & Pokela, 1999; Kaufman & Widom, 1999; Kumpfer & Alvarado, 1998; Lansford, Miller-Johnson, Berlin, Dodge, Bates, & Pettit, 2007; Mersky & Reynolds, 2007; Paperny & Deisher, 1983; Salzinger, Feldman, & Mg-Mak, 2008; Widom & Maxfield, 1996), sexual abuse (Dembo, et al., 1992; Dembo et al., 2007) and neglect (Haapsalo & Pokela, 1999; Kaufman & Widom, 1999; Kumpfer & Alvarado, 1998; Mersky & Reynolds, 2007; Paperny & Deisher, 1983; Widom & Maxfield, 1996) on later juvenile delinquency.

Child and adolescent maltreatment has significant lasting effects on victims. For example, witnessing violence and/or being a victim of maltreatment leads to an increase in anger, depression, and anxiety (Johnson, Kotch, Catellier, Winsor, Durort, Hunter, et al., 2002). Maltreated school aged children have higher rates of peer rejection (Egeland et al., 2002; Davies, 2004), higher rates of aggression (Eckenrode, Laird, & Doris, 1993; Reidy, 1977), more difficulty appraising social situations, delayed language development, low academic performance, cognitive disorganization, poor problem-solving abilities, and insecure attachment (Davies, 2004). Physical abuse has been found to have a particularly strong effect on males, causing more psychological problems than in females (Wareham & Dembo, 2007).

Examining the myriad of negative outcomes of childhood and adolescent maltreatment, it makes sense that many researchers have found a link between childhood maltreatment and subsequent delinquency. Researchers have also found a link between childhood and adolescent

maltreatment and later adult criminality (Widom, 1989; Widom, Schuck, & White, 2006). However, few studies specify how specific types of maltreatment (physical abuse, emotional abuse, sexual abuse, physical neglect, emotional neglect) affect the type of subsequent delinquent crime (violent crime, non-violent crime, property offense, status offense).

The Freudian theory of repetition compulsion (Mitchell & Black, 1995) and Bandura's (1986) social learning theory, suggest that maltreated children who become juvenile offenders would most likely commit offenses that mimic the maltreatment they suffered. Repetition compulsion is the human propensity to repeat maladaptive relationship patterns and to seek out relationships that simulate early, significant attachments with caregivers (Mitchell & Black, 1995). In light of this theory, it makes sense that maltreated children would be more likely than non-maltreated children to become offenders. By offending, they are in a sense recreating the traumatic environment in which they grew up. While according to social learning theory, children learn through observation and then replicate what they have seen (Burton & Meezan, 2004). Therefore, a child who has been physically abused might be more likely to get into physical fights or be violent and a child who was sexually abused might be more likely to become a sexual offender. Some of the past research in this area supports this hypothesis and other research does not.

There are a few researchers (Maschi, 2006; Mersky & Reynolds, 2007; Widom & Maxfield, 1996; Zingraff, Leiter, Myers, & Johnsen, 1993) who have begun to examine the relationship between type of maltreatment and type of delinquent crime. Because types of maltreatment often co-occur (Falshaw, Browne, & Hollin, 1996; Haapasalo & Pokela, 1999; Trickett & McBride-Chang, 1995), it is difficult, if not impossible, to isolate types of maltreatment in order to understand how they individually relate to type of delinquent crime.

Therefore, the results of past research in this area vary from a minimal connection between abuse type and delinquency type (Zingraff et al., 1993) to a more substantial connection (Mashi, 2006; Widom & Maxfield, 1996). The current study expands upon this past research by filling in missing information

Maltreatment in general has been found to lead to increased levels of status offenses (Zingraff et al., 1993), violent crime (Mersky & Reynolds, 2007), and non-violent crime (Mersky & Reynolds, 2007). But how do specific types of maltreatment relate to the different types of crime?

In terms of physical abuse, past researcher yielded slightly conflicting results. Some researchers found that children who suffer from physical abuse are significantly more likely than control subjects to commit violent crimes (Mersky & Reynolds, 2007; Widom & Maxfield, 1996) and non-violent crimes (Mersky & Reynolds, 2007). However, one group of researchers found that abused children were less likely than their non-abused siblings and peers to commit later aggressive crimes (Gutierrez & Reich, 1981). Another group of researchers found that the significant correlation between physical abuse and later violent crime was rendered insignificant when the frequency of maltreatment was added to the statistical analysis (Zingraff et al., 1993). In Widom's well known longitudinal studies, abused children were not found to be more likely to commit delinquent property crimes, however, children who suffered from both abuse and neglect were significantly more likely than controls to be arrested for delinquent property crimes (Widom & Ames, 1994). Surprisingly, physically abused children were found to be more likely than sexually abused and neglected children to commit delinquent sex crimes, particularly violent sex crimes (Widom & Ames, 1994).

Sexual abuse has been found to decrease a child's chances for being arrested for a property offense (Mashi, 2006) and to have no relationship with later violent crime (Maschi, 2006; Widom & Maxfield, 2006). Sexually abused children go on to commit the lowest number of violent crimes (Widom, 1989; Widom & Maxfield, 1996). However, in another study, sexual abuse caused a significant increase in status offenses as compared to abused children (Zingraff et al., 1993). A statistically significant number of sexually offending youth report being victims of sexual abuse (Burton, 2008; Burton, Miller, & Shill, 2002) indicating that sexual abuse is more likely than other types of maltreatment to relate to later sexual offending. However, Widom & Ames (1994) found that sexually abused and neglected children were equally likely to become sexually offending delinquents.

Neglect has a surprisingly significant impact upon its victims (Widom & Maxfield, 1996), but researches still disagree about its effects. Researchers found that there was no significant difference between abused and neglected children and rates of later violent and non-violent crime (Mersky & Reynolds, 2007; Widom & Maxfield). That is, abused and neglected children are equally likely to commit violent and non-violent crimes. However, Zingraff et al. (1993) found that the significant increase in the likelihood of arrest for violent crime, property crime, and status offense due to neglect, was rendered insignificant when the frequency of maltreatment was introduced to the statistical analysis. Similarly, Mersky & Reynolds (2007) found that the significant increase in arrests for non-violent crimes due to neglect was rendered insignificant in a second robustness analysis.

The aforementioned researchers have begun to examine the link between maltreatment type and type of delinquent crime with some conflicting results. Overall, childhood and adolescent maltreatment increases the likelihood that an individual will become a juvenile

delinquent (Ireland, Smith, & Thornberry, 2002; Maschi et al., 2008; Mersky & Reynolds, 2007; Stewart et al., 2008; Zingraff et al., 1993), but according to Zingraff et al. this connection is much weaker than previously supposed. According to some researchers (Mersky & Reynolds, 2007; Widom & Maxfield, 2006), abuse and neglect are equally powerful in predicting delinquent violent and non-violent offending. And the combination of abuse and neglect together increases the likelihood of property offending (Widom & Ames, 1994). In contrast, after repeated analysis, other researchers (Zingraff et al., 1993) have rendered the connection between abuse and neglect and violent and non-violent crimes insignificant. Sexual abuse seems to be related to delinquent and adult sexual offenses only (Burton, 2008; Burton et al., 2002; Widom & Ames, 1994), but sexual abuse may have just as much influence on later sexual offending as neglect (Widom & Ames, 1994). Although this past research begins to explain the complex links between abuse type and type of delinquent crime, it fails to explain the entire picture. Table 3 visually displays this past research.

Table 3: Areas of previous research

	Property Crime	Violent Crime	Non-Violent Crime	Status Offence
Maltreatment	●Zingraff et al., 1993	●Zingraff et al., 1993 ●Mersky & Reynolds, 2007	●Mersky & Reynolds, 2007	●Zingraff et al., 1993
Physical Abuse	●Widom & Ames, 1994	●Widom & Maxfield, 2006 ● Mersky & Reynolds, 2007 ●Zingraff et al., 1993	● Mersky & Reynolds, 2007	
Neglect	●Zingraff et al., 1993 ●Widom & Ames, 1994	●Widom & Maxfield, 2006 ● Mersky & Reynolds, 2007 ●Zingraff et al., 1993	● Mersky & Reynolds, 2007	●Zingraff et al., 1993
Sexual Abuse	●Maschi, 2006	●Widom & Maxfield, 2006 ●Maschi, 2006		●Zingraff et al., 1993

It is important that additional attempts are made to clarify the link between type of maltreatment and type of delinquent crime in order to better understand the impact of maltreatment on children and their potential future offending behavior. Therefore, the research question for this study is: how does type of childhood maltreatment (physical abuse, emotional

abuse, sexual abuse, emotional neglect, and physical neglect) predict type of delinquent crime (total delinquent crime, non-violent crime, violent crime, status offense, and property crime)?

Methods

Participants

After consents were obtained, confidential data were collected from male youth with nonsexual offenses in 6 residential facilities in a Midwestern state. Multi-paged pencil and paper surveys were collected from 161 adjudicated delinquent youth.

The average age of the sample ($N = 161$) was 16.51 years ($SD = 1.23$ years). On average they were in the 9th grade ($SD = 1.32$ grades). In terms of race, 53.9 % of participants selected African American, 33.9% of participants selected Caucasian, 6.0 % of participants selected Other, and 6.2% of participants did not select any option for race.

Materials

The Childhood Trauma Questionnaire (CTQ) (Bernstein & Fink, 1998) is a 37-item scale that provides a brief and relatively noninvasive screening of traumatic experiences in childhood using a 5-point frequency scale ranging from 1 (never true) to 5 (very often true). There are five subscales: physical abuse, emotional abuse, sexual abuse, physical neglect, and emotional neglect. All of the subscales have acceptable to good internal consistency in this study. Cronbach's alphas on the five CTQ subscales range from .73 (Physical Neglect) to .91 (Emotional Neglect; see Table 4).

Elliot, Huizinga and Ageton's (1985) Self Reported Delinquency measure (SRD) was used to assess frequency of delinquent offending. The scale has 32 questions using a 7-point frequency scale from 0 (never) to 7 (2-3 times per day) on questions ranging from drug use to aggression. The instrument has several subscales including General Delinquency, Property

Damage, Public Disorderly, Felony Assault, Felony Theft, Robbery, Alcohol Use, Drug Use, and Selling Drugs. However, for the purposes of this study, only the General Delinquency and Property Damage subscales were utilized. The other scales were recombined to create a Violent Crime subscale, a Non-Violent Crime subscale, and a Status Offense subscale. All of the subscales have acceptable to good internal consistency in this study. Cronbach's alphas on the five SRD subscales range from .63 (Violent Crime) to .91 (Total Delinquency; see Table 4).

Table 4: Cronbach's Alpha for the CTQ and SRD Scales

Scale	Cronbach's Alpha	Number of items
CTQ emotional neglect	.913	9
CTQ physical abuse	.899	5
CTQ total	.890	34
CTQ emotional abuse	.852	5
CTQ sexual abuse	.778	6
CTQ physical neglect	.730	8
SRD total	.910	32
SRD nonviolence	.906	24
SRD property damage	.767	3
SRD status	.668	2
SRD violence (note: without rape)	.628	5

Results

The frequency of trauma (maltreatment) significantly predicts 12.1% of the frequency of delinquency ($F= 17.84$ (131), $p = .000$) (see Table 5).

Table 5: Summary of Regression Analysis for Trauma Predicting SRD Total Delinquency Score

Variable	B	SE B	β
CTQ total score	.51	.12	.35*

$R^2 = .121$

* $p < .001$

In a multivariate analysis regressing the frequency of all five types of trauma (physical abuse, sexual abuse, emotional abuse, physical neglect, and emotional neglect CTQ scales) onto the SRD total delinquency scale, only physical neglect and sexual abuse are significant predictors of the frequency of delinquency ($F = 13.58$ (130) $p = .000$). In this model, trauma accounts for 35.2% of the variability in delinquency.

Table 6: Summary of Multiple Regression Analysis for Type of Maltreatment and Total Delinquency

Variable	B	SE B	β
Physical Neglect	2.33	.44	.49**
Sexual Abuse	1.61	.75	.18*
Emotional Abuse	1.22	.85	.16
Emotional Neglect	-.49	.26	-.15
Physical Abuse	-.52	.72	-.08

Note: Values are sorted by p value.

$R^2 = .35$

* $p < .05$

** $p < .001$

In a multivariate analysis regressing the frequency of all five types of trauma (physical abuse, sexual abuse, emotional abuse, physical neglect, and emotional neglect CTQ scales) onto the SRD property damage scale, only physical neglect is a significant predictor of the frequency of property damage ($F = 6.14 (129) p=.000$). Trauma accounts for 20.5% of the variability in delinquency.

Table 7: Summary of Multiple Regression Analysis for Type of Maltreatment and Property Damage

Variable	B	SE B	β
Physical Neglect	.12	.04	.29*
Sexual Abuse	.03	.07	.03
Emotional Abuse	.16	.08	.24
Emotional Neglect	-.04	.03	-.15
Physical Abuse	.02	.07	.04

Note: Values are sorted by p value.

$R^2 = .21$

* $p < .01$

In a multivariate analysis regressing the frequency of all five types of trauma (physical abuse, sexual abuse, emotional abuse, physical neglect, and emotional neglect CTQ scales) onto a created violent crime scale, only physical neglect is a significant predictor of the frequency of violent crime ($F = 11.61 (130) p=.000$). Trauma accounts for 31.7% of the variability in delinquency.

Table 8: Summary of Multiple Regression Analysis for Type of Maltreatment and Violent Crime

Variable	B	SE B	β
Physical Neglect	.38	.07	.54*
Sexual Abuse	.18	.11	.14
Emotional Abuse	-.06	.13	-.05
Emotional Neglect	.01	.04	.02
Physical Abuse	-.08	.11	-.08

Note: Values are sorted by p value.

$R^2 = .32$

* $p < .001$

In a multivariate analysis regressing the frequency of all five types of trauma (physical abuse, sexual abuse, emotional abuse, physical neglect, and emotional neglect CTQ scales) onto a created nonviolent crime scale, physical neglect, emotional neglect, and sexual abuse (in descending order) are significant predictors of the frequency of nonviolent crime ($F = 12.63$ (130) $p = .000$). Trauma accounts for 33.6% of the variability in delinquency.

Table 9: Summary of Multiple Regression Analysis for Type of Maltreatment and Non-Violent Crime

Variable	B	SE B	β
Physical Neglect	1.95	.40	.46**
Sexual Abuse	1.43	.67	.18*
Emotional Neglect	-.50	.23	-.17*
Emotional Abuse	1.28	.77	.19
Physical Abuse	-.45	.65	-.08

Note: Values are sorted by p value.

$R^2 = .34$

* $p < .01$

** $p < .001$

In a multivariate analysis regressing the frequency of all five types of trauma (physical abuse, sexual abuse, emotional abuse, physical neglect, and emotional neglect CTQ scales) onto a created status offending scale physical neglect is a significant predictor of the frequency of status offending ($F = 4.41$ (130) $p = .001$).

Table 10: Summary of Multiple Regression Analysis for Type of Maltreatment and Status

Offending

Variable	B	SE B	β
Physical Neglect	.23	.09	.28*
Sexual Abuse	.14	.15	.09
Emotional Abuse	.23	.17	.18
Emotional Neglect	-.11	.05	-.19
Physical Abuse	-.03	.15	-.03

Note: Values are sorted by p value.

 $R^2 = .15$ * $p < .01$ ** $p < .001$

Discussion

This study supports past research (Ireland, Smith, & Thornberry, 2002; Maschi et al., 2008; Stewart et al., 2008) and found that overall the frequency of childhood maltreatment predicts the frequency of later delinquent offending. In other words, the more frequently a child suffers maltreatment the more likely it is that he will commit a delinquent offense. This study found that maltreatment accounts for 12.1% of later delinquent offending, a finding that is even lower than the 14% that Zingraff et al. (1993) found and certainly lower than the 50%-75% cited in past literature (Zingraff et al., 1993). Maltreatment significantly predicts future delinquent offending, but it is physical neglect that plays the most considerable part in this connection for both total delinquency and for each analysis of additional delinquency type.

In various multiple regressions, physical neglect was the only type of childhood maltreatment found to significantly increase an individual's likelihood of committing later property damage, status offending, and violent crime. Physical neglect, emotional neglect, and sexual abuse (in that order) had a significant impact on later non-violent offending. Past researchers (Mersky & Reynolds, 2007; Widom & Ames, 1994; Widom & Maxfield, 2006; Zingraff et al., 1993) confirm that neglect does lead to increases in property crime, violent crime, non-violent crime, and status offending. However, this study found that it was specifically *physical* neglect that accounts for the increase in these forms of delinquency.

Previous studies have found that neglect was as significant a predictor of later delinquent crime as physical abuse (Mersky & Reynolds, 2007; Widom & Maxfield, 1996). However, other studies have not found it to be as important as this study. Based on the Freudian theory of repetition compulsion (Mitchell & Black, 1995) and Bandura's (1986) social learning theory, it would make sense for physical abuse to be more highly correlated with violent offending, especially because abused children are more aggressive than neglected children (Eckenrode, Laird, & Doris, 1993; Hoffman-Plotkin & Twentyman, 1984) however this was not the case. Why did physical neglect have such a strong effect on its victims in terms of later delinquent offending?

According to the U.S. Department of Health and Human Services, Administration on Children, Youth and Families 2006 report, neglect is the most prevalent form of maltreatment. In 2006, 64.1% of children in the U.S. were victims of neglect as compared to 16% who were physically abused, 8.8% who were sexually abused, and 6.6% who were emotionally abused (U.S. Department of Health and Human Services, Administration on Children, Youth and Families, 2006).

To understand why physical neglect has such severe consequences on its victims, it is necessary to first define what physical neglect entails. Physical neglect is the refusal or delay of health care, inadequate supervision, expelling a child from the home, disregarding a child's safety, and ignoring a child's physical needs such as nutrition, clothing, or hygiene (Goldman, Salus, Wolcott, & Kennedy, 2003). Physical neglect affects a wide range of developmental needs which means it affects many aspects of a child's life and development. Examining Maslow's hierarchy of needs (Maslow, 1943) is a useful way to conceptualize the effects of physical neglect.

According to Maslow (1943) the most fundamental human need is physiological; above all else, humans are driven to satisfy their hunger and thirst and need for adequate air and temperature (Maslow, 1943). After this need comes safety needs, love, self-esteem, and finally self actualization (Maslow, 1943). When physical neglect is present, none of these needs are met, which has severe effects on a child. For example, unmet safety needs lead to anxiety and the "terror reaction" in children (Maslow, 1943). The effects of physical neglect on a child are extensive.

The impact of neglect can be observed as early as infancy with, neglected infants showing more disturbed attachments with caregivers (Carlson, Cicchetti, Barnett, & Braunwald, 1989). Carlson et al., (1989) found that 82% of maltreated infants displayed disorganized/disoriented attachments as opposed to 19% of the non-maltreated control group. This disrupted attachment may be caused in part because neglected children have more negative representations of their caregivers than non-maltreated children (Shields, Ryan, & Cicchetti, 2001).

The effects of neglect continue into early childhood, with neglected preschool children showing more cognitive deficits than non-maltreated children, although their deficits are equal to those of abused children (Hoffman-Plotkin & Twentyman, 1984). There is a correlation between language delay and neglect in preschools with neglected preschoolers showing more language delay than abused preschoolers (Allen & Oliver, 1982); neglect is the type of maltreatment that is most significantly linked with expressive, receptive, and overall language delay in this age group (Culp, Watkins, Lawrence, Letts, Kelly, & Rice, 1991). Neglected preschoolers also engage in less prosocial behavior with peers and have lower rates of social interaction than non-maltreated and abused children (Hoffman-Plotkin & Twentyman, 1984).

Older neglected children are also more aggressive, disruptive, and oppositional than their non-maltreated peers, although less so than their abused peers (Manly, Kim, Rogosch, & Cicchetti, 2001). In school-aged children and adolescents, neglect that occurs alone or in combination with physical or sexual abuse, results in the lowest level of academic achievement (Eckenrode, Laird, & Doris, 1993). Although abused children also have significantly greater academic impairments than control children, neglected children have significantly more academic problems than even abused children (Wodarski, Kurtz, Gaudin, & Howing, 1990). These social and academic limitations of neglected children may impair their decision-making, rendering them more likely to engage in delinquent activity. Part of the reason these impairments may occur, are caused by the effects physical neglect has on brain development.

A large part of physical neglect is malnutrition, a problem that has serious developmental consequences. Because it is unethical to deprive human subjects of food, researchers have examined the effects of malnutrition on rats and have found that it has serious effects on brain structure. Malnourished rats have deficits in dentate gyrus granule cells (Bedi, 1991) and

malnourished and environmentally deprived rats have a lower synapse to dendrite ratio than non-malnourished and deprived rats. It seems that these effects extend to humans as well, as malnutrition during critical periods of brain growth may result in a lower IQ and other lasting cognitive deficits (Shonkoff & Marshall, 2000). In one longitudinal study, (Pollitt, Gorman, Engle, Martorell, & Rivera, 1993) malnourished children who were given a supplement high in protein did better on a battery of psycho-educational and information-processing tests than children given a supplement with less protein. Also, children who are malnourished have less energy to explore their environment and to interact with people (Brown & Pollitt, 1996).

In addition to the physical and behavioral affects of physical neglect, there are numerous risk factors that accompany neglect (Hildyard & Wolfe, 2002), so it may be that physical neglect and delinquency are co-occurring due to a third variable. Both child abuse and neglect are connected to socioeconomic status. That is, being a member of a low socioeconomic status increases stress, which results in increased maltreatment (Garbarino & Crouter, 1978). Neglect is particularly connected to a low income as evidenced by the fact that at a subarea level, cases of neglect were more likely to be substantiated in low-income areas than in high-income areas (Garbarino & Crouter, 1978). Also, a low income is more predictive of neglect than any other type of maltreatment (Martin & Walters, 1982). Children who grow up in poverty have poorer health, have increased levels of learning disabilities and developmental delays, have limited school achievement, have more emotional and behavioral issues, have less positive parent/child interactions, and are more likely to endure harsh punishment than children who do not grow up in poverty (Brooks-Gunn & Duncan, 1997). In general, a low income is associated with higher cancer rates, increased rates of children's asthma, higher mortality rates, an increase in coronary heart disease, an increase in adolescent depression, higher rates of obesity, poorer mental health

status, and uncontrolled blood pressure (Lustig & Strauser, 2007). Therefore, it may not be neglect alone that impacts later delinquent crime, it may be the stresses that accompany neglect that account for increases in delinquent crime. It is also possible that the presence of physical neglect is indicative of other stressors in the home such as parental drug and alcohol use or criminal activity.

It is interesting that physical neglect, but not emotional neglect had a significant impact on future delinquent crime. Harrington, Black, Starr, & Dubowitz (1998) found that emotional neglect, but not physical neglect, was effected by a child's difficult temperament; mother's who perceived their children to have easier temperaments had more positive interactions with them and vice versa. This finding suggests that there are different factors associated with emotional and physical neglect, which means it makes sense that physical neglect and emotional neglect have different impacts on future delinquency.

Clinical and Research Implications

The results of this study indicate that types of maltreatment effect children differently and can result in distinct patterns of anti-social behavior. Therefore, interventions used to treat young victims of maltreatment, should be carefully tailored to target specific types of maltreatment. Future research should begin to examine what specific interventions work most effectively to combat the effects of each type of maltreatment.

This research helps highlight the importance of early detection and intervention in cases of child maltreatment, especially neglect, in order to try and prevent future delinquency. Because physical neglect is not as violent or physically damaging as physical abuse, it may often be overlooked because of a lack of physical signs (Hildyard & Wolfe, 2002), which can have dire consequences. Defining neglect is also difficult because there is little consensus on a definition

(Harrington et al., 1998). It is therefore important that better screening tools and a universal definition be established in order to better detect neglect. With improved detection, early interventions can be put in place which will lessen the long term effects of neglect and might ultimately serve to decrease later delinquent offending. Although there is no national recidivism rate for juvenile delinquents (Snyder & Sickmund, 2006), recidivism is generally high. In Florida, New York, and Virginia, the average twelve month recidivism rate is 55%. Perhaps improved interventions targeting neglect might serve as a sort of tertiary prevention for future delinquency.

Limitations

Although this study had significant and important results, there were some limitations. First, the sample was limited as participants were males held in a treatment facility in the Midwest. Therefore, the results of this study cannot be extended to females, non-offending males, other geographic regions, or sexually offending males. It is important to consider how the results may have been influenced by the fact that participants were held in residential treatment facilities. It is likely that the youth in this study had more severe criminal records than non-institutionalized youth, which may have affected the results. If the sample had included delinquent adolescents who suffered from maltreatment, but were not in residential treatment facilities, perhaps the results would have been different.

Second, although the Cronbach Alpha's for the subscales of delinquent crime were mostly adequate, the status offending and violent crime scale were .668 and .628 which means they did not measure status offending and violent crime as well as they could have, which may have impacted our results. Third, it is likely that some participants were not totally truthful when filling out their surveys or simply could not accurately remember their pasts. And finally, it is

possible that factors other maltreatment influenced violent behavior and influenced the results. For example, genetics plays a role in violence and it was certainly beyond the scope of this study to examine genetics. Therefore, when interpreting the results, it is important to keep extraneous and unmeasured variables in mind.

Conclusions

Although maltreatment, especially neglect, plays a significant part in juvenile offending, it does not explain the entire picture. In this study, maltreatment accounted for 12.1% of delinquency, which means it is only a small piece of the puzzle. In order to treat juvenile offenders and decrease offense rates, discovering the remaining pieces of the puzzle will be important. However, knowing the significant impact neglect has on children and adolescents should spur policy makers and mental health providers to focus efforts of detecting and extinguishing neglect and other forms of child maltreatment. This research should be used to help researchers as they strive to better understand the causes of juvenile delinquency.

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