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Aggressive and depressed: long-term outcomes of childhood maltreatment

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AGGRESSIVE AND DEPRESSED: LONG-TERM OUTCOMES OF CHILDHOOD
MALTREATMENT

A Thesis
Presented To
Eastern Washington University
Cheney, Washington

In Partial Fulfillment of the Requirements
for the Degree
Master of Science in Experimental Psychology

By
Elizabeth Dotson
Summer 2016

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ABSTRACT

Prior research has established a relationship between childhood maltreatment and resulting maladaptive outcomes, specifically, aggressive behaviors and depressive symptomology. The present research sought to extend the current body of literature by determining whether distinctive forms and functions of aggression are related to severity of childhood maltreatment, and whether gender plays a moderating role in this relationship, and if depression is uniquely associated with maltreatment and aggression type within an undergraduate population. Results were analyzed through a 2 x 2 between-group factorial analysis of variance. Findings from the current study suggest that physical and psychological abuse are the strongest predictors of later maladaptive outcomes, both aggressive and depressive symptomology.

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Aggressive and Depressed: Long-Term Effects of Childhood Maltreatment

There exists a substantial body of literature documenting the long-term negative effects of childhood maltreatment. This research has primarily focused on physical abuse (Cullerton-Sen et al., 2008; Kim-Cohen et al., 2006; Langhinrichesen et al, 1998), sexual abuse (Amado, Arce, & Herraiz, 2014; Beitchman et al., 1992; Canton-Cortes, Cortes, & Canton, 2015), and neglect (Erickson & Egeland, 2002; Hildyard & Wolfe, 2002; Lee & Haoken, 2007). Studies have also examined psychological or emotional abuse (Allen 2011) and exposure to familial violence (Kim-Cohen et al., 2006).

Not all maltreated children have maladaptive outcomes (Jaffee et al 2007); however, those who do have experiences that are complex and diverse (Horan & Widom, 2015; Widom 1991). The most commonly studied of these maladaptive outcomes are aggressive behaviors (Cullerten-Sen et al., 2008; Lee & Hoaken, 2007) and depressive symptomology (Diaz et al., 2008; Hayashi et al., 2015). While the literature does always place emphasis on the same forms of abuse when predicting maladaptive outcomes, the research does agree childhood maltreatment leads to significantly higher rates of both aggression and depression in adolescence and adulthood (Logan-Greene & Jones, 2015; Shackman & Pollak, 2014; You & Lim, 2015).

Aggression literature has supported the differentiation between the forms and functions of aggression. Functions of aggression are purported to be either proactive or reactive (Little et al., 2003). Proactive aggression is a cold, calculated, and manipulative intent to cause harm, while reactive aggression is hot, impulsive, and emotionally dysregulated (Card & Little, 2006; Marsee & Frick, 2007). Functions of aggression are

often defined as being either physical/overt in nature or relational, both with the intent to cause harm (Little et al., 2003). Overt aggression includes the intent to cause physical harm to another, where relational aggression is displayed through intent to cause social and interpersonal harm (Cullerten-Sen et al., 2008; Marsee et al., 2008). Current research suggests these two distinctive functions of aggression, reactive and proactive, are manifested in varying ways (Byrd & Manuck, 2015; Dodge & Coie, 1987; Fite et al., 2010). A review of the literature indicates reactive aggression is more closely associated with depressive symptomology resulting from childhood maltreatment (Card & Little, 2006; Dodge et al., 1990; Raine et al., 2006). The literature suggests these functions of aggression may be manifested in two forms: relational and overt aggression (Crick & Grotpeter, 1995; Marsee & Frick, 2007).

The purpose of this study was to extend prior findings on the interaction between childhood maltreatment, aggressive forms and functions, and depression by determining whether reactive or proactive aggression, relational or overt aggression, or depression were more highly associated with specific forms of childhood maltreatment. Differences in aggression, depression, and childhood maltreatment were examined in respect to gender and extreme abuse groups.

Aggression

While there is some debate in the literature regarding the validity of a dichotomous model of aggression (Bushman & Anderson, 2001), the majority of the literature supports the distinction between proactive and reactive as unique functions of aggressive behavior. There are different theoretical perspectives that support this distinction. Proactive aggression is built from Bandura's (1973, 1986) social-cognitive

learning theory which views general aggression as a product of high self-efficacy for overall aggressive behaviors, and emphasis is placed on desirable outcomes and rewards for aggressive behavior (Card & Little, 2006). These social-cognitive outcomes have been found to be predictive of proactive aggression (Crick & Dodge, 1996). Reactive aggression has a theoretical foundation in the frustration-aggression model of behavior (Berkowitz, 1993) where individuals are angry and emotionally dysregulated (Card & Little, 2006; Dodge et al., 1990). Reactive aggression is associated with the hostile-attribution bias (Dodge et al., 1990), and reactively aggressive individuals have difficulties encoding and interpreting social cues that are seen as deficits in social-information processing.

Proactive Aggression

Proactive aggression represents predatory attacks motivated by external reward; it is associated with antisocial personality traits, blunted affect, and increased sensation seeking (Fite et al., 2010, Raine et al., 2006). This aggression is cold, premeditated, and manipulative (Blais, Solodukhin, & Forth, 2014). It is characterized by a need for goal attainment with little emotional response involved (Glenn & Raine, 2009). Its intended purpose is personal gains by means of intimidation or force. Recent research conducted by Raine et al. (2014) has suggested evidence of minimal physiological arousal in individuals exhibiting proactive (or instrumental) aggression. These findings provide support for the generally accepted belief that proactive aggression lacks the emotional component common in non-psychopathic forms of aggression (Blair, 2010; Hare, 2006; Raine et al., 2006).

Individuals exhibiting proactive aggression are organized and predatory, their acts of aggression are motivated by external reward or avoidance of punitive consequences (Fite et al., 2010). These individuals often possess a superficial charm that works for them in the short term, but they have few if any lasting relationships due to their poor interpersonal skills (Raine et al., 2006).

Reactive Aggression

Unlike proactive aggression, reactive aggression is hot, impulsive and emotionally driven (Blais, Solodukhin, & Forth, 2014). It is often associated with a history of abuse and emotion regulation problems (Gao, Raine, & Schug, 2011; Marsee, Weems, & Taylor, 2007). Raine et al. (2014) have found, in contrast to proactive aggression, reactive aggression is characterized by an increase in physiological arousal, which suggests the aggression these individuals exhibit is driven by dysregulation of the emotional response system. This arousal may result in behavior that is intentionally harmful and may serve as retaliation or defense against the individual perceived as a threat (Crick & Dodge, 1996).

Research conducted by Crick and Dodge (1996) found reactive aggression to be associated with information processing deficits; these deficits are believed to be the foundation for many of the symptoms involved as a result of errors encoding social cues. Social behavior is a function of social cues, interpretation of social cues, clarification of goals, and response decision, access, and construction. When these facets of social behavior become negatively altered, they have been found to contribute to the information processing deficits found in reactively aggressive individuals (Crick & Dodge, 1996).

Reactive aggression has been linked with increased levels of sadness, depression, and unhappiness (Shackman & Pollak, 2014). While the specific mechanism that links reactive aggression with negative emotionality remains unclear, it is speculated social rejection may play an important role in the interaction (Fite et al., 2010). As a result of these emotional deficits, reactive aggression usually takes the form of impulsive retaliation in response to a perceived insult or injury (Crick & Dodge, 1996, Reidy, Zeichner, & Martinez, 2008).

One key facet of reactive aggression is the differentiation between a perceived threat or insult and a legitimate threat or insult. Reactively aggressive individuals are incapable of discerning between the two, and often misinterpret situations resulting in impulsive, explosive aggression (Raine et al., 2006; Rappaport & Thomas, 2004). In response to their acts of aggression, these individuals will often claim they were provoked to violence. This conclusion is probably due to their inability to correctly interpret the social cues of the situation (Blais, Solodukin & Forth, 2014). Reactive aggression has also been linked to negative emotionality, as previously stated, which may lead to an increased risk of social isolation (Fite et al., 2010). In the extreme, reactive aggression is a distinctive trait of the rage seen in emotionally reactive and hostile secondary psychopaths (Jones & Paulhus, 2010; Raine et al., 2006).

Overt Aggression

Within the scope of these functions of aggression, we can further examine the forms of aggressive behavior. Overt and relational aggression can be descriptively distinguished by examining the method of harm used (Marsee & Frick 2007). Overt aggression can be either proactive or reactive in nature (Marsee et al., 2011). An overtly

aggressive individual harms others through physical and/or verbal acts intended to cause injury or harm (Coie & Dodge, 1998; Fite et al., 2011). Historically, the preponderance of aggression research has focused on the physical and verbal forms of aggression most associated with overt aggression. However, in the past two decades research has begun to devote increased attention to relational aggression. Previous to this distinction in forms of aggression, females were underrepresented in aggression research. Despite the mixed results regarding gender differentiation in aggression, the majority of studies support the suggestion that females exhibit unique forms of aggression which may be better examined through the studies of relational aggression (Crick & Grotpeter, 1995; Fite et al., 2011; Marsee & Frick, 2007). By examining aggression in both form and function, a broader conceptualization of aggression has led to an increased understanding of outcomes and helps to draw attention to aggressive females (Kistner et al., 2010). Due to these discrepancies, further research of the effects of gender on aggression are warranted.

Relational Aggression

Relational aggression harms individuals by damaging their social relationships, their feelings, and their friendships (Crick et al., 1999). It is exhibited through behavior intended to threaten or actually damage relationships (Fite et al., 2011). This form of aggression is often manifested by spreading rumors, gossiping, and targeting particular individuals for exclusion from the group. Relational aggression is often associated with psychosocial maladjustment (Crick et al., 1996; Crick & Grotpeter, 1995) and has been uniquely associated with internalizing symptoms (Fite et al., 2011). Specifically, relational aggression has been shown to be significantly predictive of increased loneliness, depression, and social isolation (Crick & Grotpeter, 1995; Fite et al., 2011).

Relational aggression can be either proactive or reactive in nature (Marsee et al., 2011; Marsee & Frick, 2007). There have been mixed results in the literature regarding sex and aggression. Early research found significant differences in sex and aggression, where relational aggression was associated with females and overt aggression was associated with males (Crick et al., 1995; Crick & Dodge, 1996). Later research has been mixed in its success to replicate these findings (Card et al., 2008).

Maltreatment

A national survey conducted in 2005 found more than one in eight children and adolescents in the United States had experienced some form of childhood maltreatment (Finkelhor et al., 2005). With childhood maltreatment being so pervasive in society, there have been many studies examining the effects of this maltreatment later in life. A review of the literature suggests that studies examining childhood maltreatment vary in the forms of maltreatment studied. For the purpose of this study, we examined childhood maltreatment in the forms of physical abuse, sexual abuse, psychological abuse, exposure to family violence, and neglect.

Physical abuse is defined as the use of physical force that may result in bodily injury, physical pain, or impairment. This may include such acts of violence as striking (with or without an object), hitting, beating, pushing, shoving, shaking, slapping, kicking, pinching, and burning (Kerrig & Stellwagen, 2009; Shackman & Pollak, 2014).

Child sexual abuse, as defined by the World Health Organization, occurs when a child is involved in a sexual activity that he or she does not fully comprehend, cannot provide informed consent to, or for which the child is not developmentally prepared, or that violates the laws or social taboos of society (WHO, 1999).

Psychological abuse, also referred to as emotional abuse in the literature, is characterized by a person subjecting, or exposing, another person to behavior that may result in psychological trauma. Psychological abuse may include threat of violence against the child or other person, name calling, yelling, insulting the child, or threatening to take away something that is important to them (Allen, 2011).

Exposure to family violence, also referred to as domestic violence, includes witnessing abuse and violence within the home that is not directed at the child.

Neglect occurs when a child's caregivers do not provide the requisite attention to his or her emotional, psychological, or physical development (Lee & Hoaken, 2007).

Not all children who experience maltreatment, in any of these forms, develop the maladaptive outcomes of aggressive behaviors or depressive symptomology (Horan & Widom, 2015; Jaffee et al., 2004). Those individuals who do grow to develop maladaptive outcomes vary in regard to type of maltreatment as well as type of outcome—aggression or depression.

Maltreatment and Aggression

While there exists a considerable body of research reporting the effects of childhood maltreatment on such maladaptive outcomes as aggression, antisocial behaviors, and criminality, many of these studies examined child abuse with in differing forms and with varying definitions of what constituted abuse (Allen, 2011; Amado, Arce & Herraiz, 2014; Arata et al., 2005). There does not appear to be an accepted consensus regarding which form of childhood maltreatment, with the exception of physical abuse, leads to the most negative and severe outcomes.

While the exact mechanism for negative outcomes is unclear, there are robust findings in the maltreatment literature demonstrating associations between childhood maltreatment and externalizing difficulties, most particularly aggression (Cullerton-Sen et al., 2008). Individuals who have been exposed to maltreatment as children, maltreatment most often focused on physical abuse and psychological abuse, encounter increased difficulty in accurately interpreting social cues and experience increased tendency to perceive hostility and anger when compared to non-maltreated adults (Pine et al., 2005; Pollak et al., 2000).

This tendency toward perceived hostility is closely associated with reactive aggression traits. Results of studies examining the effect of neglect on later outcomes are mixed; however, the majority of the research suggests individuals who experienced neglect are less likely to exhibit aggressive behaviors than individuals who suffered other forms of maltreatment (Arata et al., 2005).

A study conducted by Shackman and Pollak (2014) found individuals who experienced physical abuse in childhood had an increased rate of externalizing problems characterized by reactive aggression. More specifically, they found these individuals to exhibit increases in negative affect as well as increases in aggressive behaviors. These physically abused individuals were shown to incorrectly encode social cues, have inappropriate regulation of emotions, have increased sympathetic arousal and impulsivity, and were quick to respond with aggressive behaviors (Dodge et al., 1995; Shackman & Pollak, 2014). Research suggests reactive aggression, rather than proactive aggression, is most closely linked to maltreatment as it is posited to be the function of

aggression most commonly associated with the emotional dysregulation often seen as a result of childhood maltreatment (Donahue, McClure, & Moon, 2013).

Allen (2011) found, in a study of childhood psychological abuse, that verbal and psychological abuse significantly predicted an increased score on aggression scales. Allen cautioned; however, that research separating out a particular form of maltreatment can be problematic as there is often such a high degree of co-occurrence between types of maltreatment (Allen, 2011; Higgins & McCabe, 200).

In their landmark study, Caspi et al (2002) discuss childhood maltreatment as the universal risk factor for aggressive and antisocial behaviors. They have found the risk of childhood maltreatment to increase the risk for later criminal acts by up to 50%, although most maltreated children do not become criminal (Caspi et al., 2002). Caspi et al focused on a gene x environment interaction, examining the effects of the Monoamine oxidase A (MAOA) gene on abused versus non-abused individuals. Findings of their study suggest MAOA to be positively associated with abuse and later aggressive symptomology (Caspi et al., 2002).

Maltreatment and Depression

There is a preponderance of literature supporting the assertion that childhood maltreatment is a significant contributing factor to the later development of depressive symptomology (Infurna et al., 2015; Toth, Manly, & Cicchetti, 1992; You & Lim, 2015). Research suggests childhood maltreatment leads to difficulties with emotional processing and regulation, which may lead to both externalizing (aggression) and internalizing (depression) disorders (Young & Widom, 2014). Emotion regulation is the automatic or

controlled manipulation of the presence and/or intensity of the components of an emotional response (Gross & Thompson, 2007), and maltreated individuals have difficulty maintaining this regulation. This emotional dysregulation often leads to a difficulty in managing proper emotions, which may ultimately cause internalizing disorders, particularly depression (Cullerton-Sen et al., 2008; Shields & Cicchetti, 2001).

The literature is consistent in its findings that childhood maltreatment including physical abuse (Cullerton-Sen et al., 2008; Diaz et al, 2008), sexual abuse (Canton-Cortes et al., 2015; Gunther et al., 2015), and psychological abuse (Gunther et al., 2015) leads to increased depressive symptomology. While the exact mechanism is unclear, it could be due to a consolidation of negative cognitive thinking styles, coupled with the emotional dysregulation, which may lead to this maladaptive outcome of childhood maltreatment (Gunther et al., 2015). Research findings suggest childhood maltreatment directly predicts the severity of depression in both current and long-term depressive symptomology (Hayashi et al., 2015).

Present Study

The purpose of this study is to extend the prior findings regarding long-term effects of childhood maltreatment on an emerging adult population in both aggression and depressive symptomology.

In the present study, it was hypothesized that a gender difference would be found between forms and functions of aggression. Specifically, it was expected that females who experienced childhood maltreatment would show higher levels of relational aggression than both abused and non-abused males, and non-abused females. It was predicted that males who experienced childhood maltreatment would show higher levels

of both overt and proactive aggression over all other study participants. It was hypothesized that physical abuse in childhood to be the most significant predictor of later aggression in both males and females.

Furthermore, it is hypothesized that females who have a history of childhood maltreatment will have significantly higher rates of depression than males who have experienced childhood maltreatment. It is anticipated that abused individuals, both males and females will exhibit higher levels of depression than controls.

Methods

Selection

The participants were undergraduates enrolled in psychology courses at Eastern Washington University, N=318. Participants were offered extra credit for their participation in the study. Participants consisted of 216 females and 102 males. The majority of participants were white/non-Hispanic making up 70.4% of respondents, the remaining participants were 9.4% Hispanic/ Latin American, 8.2% Asian/ Pacific Islander, 6.3% African-American, 2.8% Native American, and 2.8% other. The average age of participants was 19 years old, see Table 1.

Design

It was initially the intent of the present study to assess the hypotheses with moderated linear regression analysis, but preliminary results suggested this approach would not be fruitful. Consequently it was decided to use the between-groups factorial analysis of variance of extreme groups. Individuals who met criteria, top 10% of abuse scores, were selected to the extreme abuse groups. Inclusion in the high/extreme abuse groups was approximately 8 -10% of participants as criterion had to be slightly adjusted

for each of the different forms of abuse. Controls were a roughly equal groups of participants randomly selected from remaining study subjects following exclusion of extreme group subjects. Criterion was that individuals would have abuse score below the top 10% so the N's would roughly match. A 2 x 2 factorial analysis of variance (ANOVA) was performed to examine the relationship between forms and functions of aggression (reactive-relational, reactive-overt, proactive-relational, proactive-overt) with childhood maltreatment, depressive symptomology and gender. This 2 x 2 between-groups ANOVA looked at the top 10% of high abuse scores versus a randomly sampled group from remaining participants.

Instruments

A battery of self-report questionnaires was administered using Sona on-line survey delivery software (Sona Systems, 2014).

Aggression was assessed using the Peer Conflict Scale (PCS) (Marsee & Frick, 2007). The PCS (Marsee & Frick, 2007) is a 40-item self-report measure including 20 items assessing reactive aggression; 10 reactive overt items and 10 reactive relational items; and 20 items assessing proactive aggression; 10 proactive overt items and 10 proactive relational items, and scores are calculated by summing the items to create the four subscales (range 0–30).

The trauma survey developed by Kerig and Stellwagen (2005) is a self-report survey assessing childhood maltreatment and trauma. The survey is retrospective, it asks only about things that happened in the past. This measure consists of five subscales measuring physical abuse, sexual abuse, psychological abuse, neglect, and exposure to

family violence. Participants are asked to rate both severity of abuse as well as frequency of abuse over the course of their childhood (0-9yrs and 10-18yrs).

Depression was measured with the Center for Epidemiological Studies Depression Scale (CES-D) (Radloff, 1977), a 20-item self-report scale designed to measure depressive symptomology in the general population with an emphasis on depressed mood. Respondents indicate how often in the past month the experiences symptoms ranging from 1 (none of the time) to 5 (most of the time). Slight modifications were made to the scale to illuminate a broader range of symptom experiences (i.e. ranking from 1 to 5 rather than 0 to 3). The scale has high internal consistency and adequate test-retest reliability (Radloff, 1977).

Confounds were controlled for through random ordering of the administration of the questionnaires. Participants remained anonymous and were never identified by anything other than their participation number.

Results

Correlations

Correlations of study variables are reported in Table 2. As expected and reported elsewhere (Fite et al.,2010; Raine et al.,2006), aggression measures were all strongly positively correlated. Both measures of overt aggression, both reactive and proactive, had a strong positive correlation with each other, $r = .63, p = .000$. Similar results were found with measures of relational aggression, $r = .67, p = .000$. Depression was found to have a significant positive correlation with both measures of reactive aggression, overt, $r = .159, p = .004$, and relational, $r = .17, p = .002$.

Pearson correlations revealed strong positive correlations between all forms of abuse, except for neglect in later childhood, and depression, see Table 2. The measures of aggression were also correlated with many of the forms of childhood maltreatment. Follow-up analyses using partial correlations controlling for the effects of physical abuse revealed that only one significant correlation. Specifically, as shown in Table 3, after controlling for the effects of physical abuse, depression was found to be positively correlated with psychological abuse in late childhood, $r = .25, p = .000$. All other correlations lost significance after controlling for the effects of physical abuse.

Group Analyses

Further analyses were undertaken for participants who had experienced physical or psychological abuse, the variables that the prior correlations had indicated to be significant for a relationship with aggression or depression. Participants were assigned to several extreme groups based on early physical, late physical, and late psychological abuse. Criteria for inclusion in one of the extreme abuse categories were scores falling at or above the 90th percentile, i.e., approximately two standard deviations above the mean of each abuse category. The respective control groups comprised of roughly equal-sized groups randomly selected from participants falling below the 90th percentile.

To establish that extreme childhood maltreatment was associated with both aggression and depression, a between-groups analysis of variance (ANOVA) was performed separately with each type of abuse, physical and psychological, to determine whether they predicted later maladaptive outcomes (type of aggression: reactive-relational, reactive-overt, proactive-relational, and proactive-relational, and depression).

The structure of each ANOVA was 2 x 2 with gender and abuse group (Extreme or Control) serving as independent variables.

Early Physical Abuse

Early physical abuse (0-9 years) was found to be a significant predictor of reactive-overt aggression only when looking at extreme abuse, $F(1,76) = 4.05, p = .048$, that is, those participants who experienced extreme abuse were significantly more likely to exhibit reactive-overt aggression than healthy controls, see Figure 2. Gender of the participant as well as a gender x abuse interaction revealed no significant relationship. Proactive-overt aggression, when looking at differences between genders, $F(1,76) = 6.84, p = .011$, found a significant main effect for gender as seen in Figure 1; males who experienced early physical abuse were significantly more likely to exhibit signs of proactive-overt aggression than their female counterparts. Extreme abuse scores nor the gender x abuse interaction revealed significant results. There was no significant relationship between early physical abuse with either form of relational aggression, reactive or proactive. However, there was a significant main effect for extreme abuse scores as a significant predictor of depression, $F(1,76) = 16.54, p = .000$, as seen in Figure 3.

Late Physical Abuse

Further between-groups analysis of variance revealed late physical abuse (10-18 years) to be a significant predictor of later maladaptive outcomes. As seen in Table 5, a significant main effect of gender was found as a significant predictor of later proactive-overt aggression, $F(1,45) = 9.06, p = .004$, with male participants exhibiting significantly

higher aggression scores, see Figure 4. In addition, individuals with extreme abuse scores were significantly more likely to express later depressive symptomology, $F(1,45) = 9.17$, $p = .004$, then controls, see Figure 5.

Late Psychological Abuse

Findings relating to psychological abuse in late childhood (10-18 years) revealed psychological abuse to be a more consistent predictor of later maladaptive outcomes across the span of variables than either early or late physical abuse. Late psychological abuse, as seen in Table 6, was a significant predictor of reactive-overt aggression, $F(1,50) = 4.99$, $p = .03$ when looking at gender differences with males exhibiting significantly higher levels, see Figure 7. Similarly, a significant main effect of gender was found in relation to predicting later proactive-overt aggression in psychologically abused males $F(1,50) = 5.21$, $p = .027$, see Figure 6. Psychological abuse was also a significant predictor of later proactive-overt aggression when examining extreme abuse scores, $F(1,50) = 4.70$, $p = .035$, as well as gender differences with males exhibiting significantly higher rates of proactive-overt aggression following childhood psychological abuse, see Figure 6. In addition, gender differences were significant predictors of later reactive-relational aggression $F(1,50) = 6.77$, $p = .012$, with males showing a significant increase in signs of reactive-relational aggression resulting from psychological abuse between the ages of 10 and 18 years old, see Figure 8. Finally, a significant main effect for extreme psychological abuse scores found for later depressive symptomology, $F(1,50) = 10.05$, $p = .003$, see Figure 9.

Discussion

The current study aimed to evaluate associations between various forms of child abuse, aggressive traits, and depressive symptomology. Importantly, this study advances the field by supporting previous findings that suggest child abuse has long-term, maladaptive effects on emerging adult populations by demonstrating the impact of abuse on later outcomes (Cullerten-Sen et al., 2008; Jaffee et al., 2005; Shackman & Pollak, 2014). Maltreated children exhibited more maladaptive outcomes, both aggression and depression, than the healthy controls. Further, gender differences were examined in association with type of abuse as well as outcomes. This extends the finding that it is important to differentiate between genders when studying aggression, although many studies still focus on aggressive males exclusively. Furthermore, this study suggests, contrary to mainstream literature, that psychological abuse, not physical abuse, may be a much more powerful predictor of later maladaptive outcomes.

Proactive aggression is characterized by organized and predatory acts often motivated by external reward or avoidance of punitive consequences (Fite et al., 2010).). This aggression is cold, premeditated, and manipulative (Blais, Solodukhin, & Forth, 2014). Overt aggressive harms others through physical and/or verbal acts with the intent to injure or harm (Coie & Dodge, 1998; Fite et al., 2011). Based on these forms and functions of aggression, it was expected that child abuse would be a predictor for both proactive and overt aggression. The current study supported this in that individuals who experienced abuse were significantly more likely to exhibit proactive-overt aggression as well as, to a lesser extent, reactive-overt aggression. This supports the findings in the literature that suggest maltreatment is strongly associated with externalizing difficulties,

particularly aggression (Cullerten-Sen et al., 2008). This early abuse may disrupt the emotion regulation abilities of the abused individual which may lead to long-term aggressive outcomes (Pollak et al., 2000; Shields & Cicchetti, 2001).

As predicted, this study suggests that males who experience child abuse are significantly more likely to form aggressive traits. This may be due to the gender differences between externalizing and internalizing coping mechanisms. Surprisingly, this study did not find gender to be a predictive factor in depressive symptomology, contrary to earlier prediction.

Reactive aggression is characterized by emotional dysregulation, impulsive, and emotionally driven actions (Blais, Solodukhin, & Forth, 2014). It was predicted that reactive aggression would be more highly associated with childhood maltreatment than this study suggests. The lack of support for this prediction may emphasize a shortcoming of the current study. Reactive aggression has been shown to be associated with the monoamine oxidase A (MAOA) gene, sometimes referred to as the “warrior gene”, and the literature suggests childhood maltreatment serves as a trigger for activation of this gene which in turn leads to increased expression of aggressive traits (Casip et al., 2002). The scope of this study was unable to examine the influence of the MAOA gene and therefore an important gene x environment interaction may be in existence. As this study has not examined this interaction, that may explain the lack of significant associations between reactive aggression and child abuse.

Findings of the current study suggest physical abuse and psychological abuse are the best predictors of later maladaptive outcomes. This may be due, at least in part, to the physical nature of most forms of abuse measured in this study. Sexual abuse, neglect, and

exposure to family violence all have a physical component to them, and this may result in considerable overlap within abuse categories (Arta et al., 2005; Cullerten-Sen et al., 2008). By controlling for physical abuse, the analysis revealed only psychological abuse to remain significant. This finding is supported in some of the existing literature, that physical and psychological abuse are the two most powerful predictive factors due to the minimal overlap (Diaz et al., 2008; You & Lim, 2015)

Furthermore, the current study suggests depression to be significantly correlated with all forms of child abuse and specifically to be associated with physical abuse as well as psychological abuse between the ages of 10 and 18 years old. There are robust findings in the literature which support this result, that child abuse is significantly related to later depressive symptomology (Canton-Cortes, Cortes, & Canton, 2015; Gunther et al., 2015; Hayashi et al., 2015; Toth, Manly, & Cicchetti, 1992). While the exact mechanisms of this relationship are still unknown, the literature suggests a potential consolidation of negative cognitive thinking styles and negative biased processing of emotional information which then lead to depressive symptomology (Guther et al., 2015; Horan & Spatz-Widom, 2015).

Limitations and Future Directions

Several limitations of the current study present compelling avenues for future research. First, this study was conducted with an undergraduate population gathered from introductory level psychology courses. As such, results from such a study may not be readily generalizable to the general population. The study population was primarily white/Caucasian, females, who were 19 years of age. This does not mirror the general population of the country. However, many of the findings of this study were consistent

with the established literature within the field. Additionally, university students may not be ideal for extreme group studies because individuals within those extreme groups may not be as likely to attend university, and therefore are not within the sample population.

Furthermore, participants responded to a series of self-report measures which may have resulted in inflated associations due to shared method variance and/or biased reporting. The childhood maltreatment surveys were retrospective in nature and relied solely on the accurate recall of participants. This may have affected the efficacy of data collection, especially those questions regarding childhood abuse in the early years of life.

Finally, this research was conducted under the scope of a larger study which aims to examine the gene x environment interaction of the MAOA gene and childhood maltreatment. As this data was not available at the time of this study, there may be several key significant interactions that are not detectable within the scope of this analysis.

Despite these noted limitations, this study extends previous research and expands the current knowledge base by supporting the link between abuse and later maladaptive symptomology. Future research should continue to parcel out the nuanced differences between forms of abuse as well as strive to conduct research within a more generalizable population.

Tables

Table 1

Demographics

<u>Sex</u>	<u>Total</u>
Female	216
Male	102
Total	318
<u>Ethnicity</u>	
White/Caucasian	224
Hispanic	30
Asian/Pacific Islander	26
Black/ African	
American	20
Native American	9
Other	9
	18.83
<u>Age</u>	(1.426)

Table 2

Pearson Correlations

<u>R.O.</u>	<u>R.O.</u>	<u>P.O.</u>	<u>R.R.</u>	<u>P.R.</u>	<u>D</u>
<u>R.O.</u>	1				
<u>P.O.</u>	.626**	1			
	.000				
<u>R.R.</u>	.378**	.405**	1		
	.000	.000			
<u>P.R.</u>	.385**	.556**	.699**	1	
	.000	.000	.000		
<u>D</u>	.159**	.118*	.173**	.100	1
	.004	.036	.002	.075	
<u>PHYS 1</u>	.121*	.117*	-.026	-.004	.197**
	.033	.038	.643	.944	.000
<u>PHYS 2</u>	.133*	.122*	-.003	.045	.203**
	.018	.031	.953	.430	.000
<u>SEX 1</u>	.014	.000	-.111	-.064	.201**
	.806	.999	.051	.264	.000
<u>SEX 2</u>	.121*	.048	.028	.072	.176**
	.032	.390	.617	.200	.002
<u>NEG 1</u>	-.016	-.023	-.086	-.068	.078
	.780	.689	.130	.229	.166
<u>NEG 2</u>	.073	.057	.006	-.013	.163**
	.197	.308	.917	.818	.004
<u>PSYC 1</u>	.131*	.131*	.046	.016	.219**
	.023	.023	.430	.777	.000
<u>PSYC 2</u>	.117*	.114*	.094	.069	.341**
	.040	.045	.100	.229	.000
<u>FAM 1</u>	.089	.053	-.037	-.027	.229**
	.116	.349	.506	.632	.000
<u>FAM 2</u>	.135*	.106	.025	.026	.214**
	.016	.060	.660	.639	.000

** . Correlation is significant at the 0.01 level (2-tailed).
* . Correlation is significant at the 0.05 level (2-tailed).

Table 3

Partial Correlations Controlling for Physical Abuse

		<u>R.O.</u>	<u>P.O.</u>	<u>R.R.</u>	<u>P.R.</u>	<u>D</u>
<u>R.O.</u>	Correlation	1.000				
	Significance (2-tailed)					
<u>P.O.</u>	Correlation	.632	1.000			
	Significance (2-tailed)	.000				
<u>R.R.</u>	Correlation	.413	.426	1.000		
	Significance (2-tailed)	.000	.000			
<u>P.R.</u>	Correlation	.411	.585	.704	1.000	
	Significance (2-tailed)	.000	.000	.000		
<u>D</u>	Correlation	.143	.106	.207	.113	1.000
	Significance (2-tailed)	.016	.076	.000	.057	
<u>SEX 1</u>	Correlation	-.019	-.064	-.112	-.074	.118
	Significance (2-tailed)	.745	.284	.059	.214	.047
<u>SEX 2</u>	Correlation	.103	.044	.026	.061	.093
	Significance (2-tailed)	.085	.456	.657	.305	.119
<u>NEG 1</u>	Correlation	-.028	-.037	-.053	-.042	-.091
	Significance (2-tailed)	.643	.540	.376	.486	.125
<u>NEG 2</u>	Correlation	.041	.026	.033	.007	.004
	Significance (2-tailed)	.492	.668	.586	.905	.944
<u>PSYC 1</u>	Correlation	.088	.077	.062	.019	.117
	Significance (2-tailed)	.140	.197	.297	.747	.049
<u>PSYC 2</u>	Correlation	.093	.073	.086	.032	.252
	Significance (2-tailed)	.119	.219	.150	.593	0.000**+
<u>FAM 1</u>	Correlation	.067	.033	-.007	.004	.086
	Significance (2-tailed)	.260	.581	.909	.948	.150
<u>FAM 2</u>	Correlation	.125	.103	.070	.059	.042
	Significance (2-tailed)	.036	.083	.239	.326	.479

Note. **+ Significant at .000 level following Bonferonni tests

Table 4

Late Physical Abuse

	<u>Proactive- Overt</u>	<u>Reactive- Overt</u>	<u>Proactive- Relational</u>	<u>Reactive- Relational</u>	<u>Depression</u>
<u>Female</u>					
Control	.63 (1.601)	1.81 (2.845)	2.13 (3.386)	3.91 (3.897)	49.38 (13.065)
Extreme	.95 (1.682)	3.16 (2.410)	1.84 (2.243)	3.47 (3.255)	62.84 (10.018)
Total	.75 (1.623)	2.31 (2.746)	2.02 (2.996)	3.75 (3.643)	54.39 (13.609)
<u>Male</u>					
Control	1.58 (2.234)	2.75 (2.094)	2.50 (2.680)	2.17 (2.517)	46.08 (9.090)
Extreme	2.65 (3.181)	4.35 (4.457)	2.18 (3.147)	2.47 (2.918)	55.59 (13.039)
Total	2.21 (2.833)	3.69 (3.704)	2.31 (2.917)	2.34 (2.716)	51.66 (12.341)
<u>Abuse</u>					
Control	.89 (1.820)	2.07 (2.671)	2.23 (3.183)	3.43 (3.631)	48.48 (12.099)
Extreme	1.75 (2.612)	3.72 (3.526)	2.00 (2.673)	3.00 (3.098)	59.42 (11.951)
Total	1.28 (2.239)	2.81 (3.175)	2.13 (2.948)	3.24 (3.387)	53.40 (13.151)
<i>Note.</i> * means (standard deviations)					

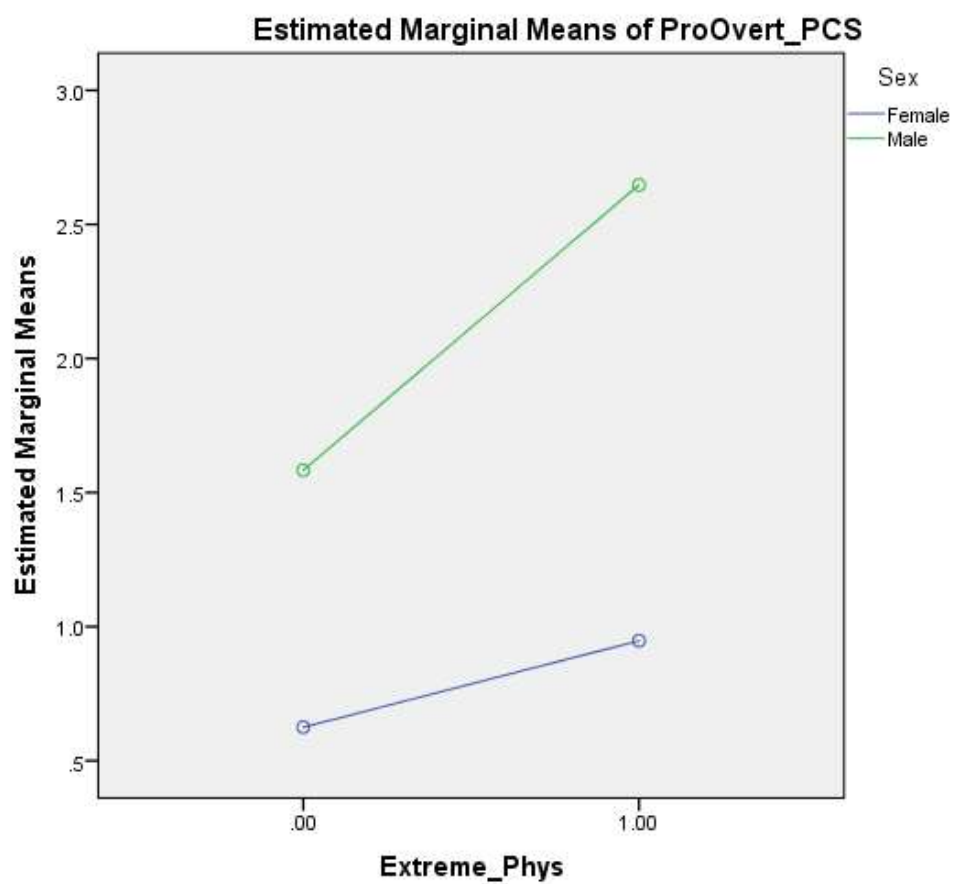
Table 5

Late Physical Abuse

	<u>Proactive- Overt</u>	<u>Reactive- Overt</u>	<u>Proactive- Relational</u>	<u>Reactive- Relational</u>	<u>Depression</u>
<u>Female</u>					
Control	.78 (1.865)	1.94 (3.298)	1.61 (3.583)	3.17 (4.076)	51.56 (10.388)
Extreme	.64 (1.277)	2.50 (2.345)	1.50 (2.029)	2.29 (2.301)	64.71 (12.785)
Total	.72 (1.611)	2.19 (2.890)	1.56 (2.961)	2.78 (3.396)	57.31 (13.104)
<u>Male</u>					
Control	2.14 (2.116)	4.00 (4.287)	2.86 (3.532)	3.14 (3.934)	47.14 (7.221)
Extreme	3.30 (3.498)	3.70 (2.710)	2.90 (3.900)	2.90 (3.604)	55.70 (14.833)
Total	2.82 (2.984)	3.82 (3.321)	2.88 (3.638)	3.00 (3.623)	52.18 (12.734)
<u>Abuse</u>					
Control	1.16 (1.993)	2.52 (3.630)	1.96 (3.541)	3.16 (3.955)	50.32 (9.673)
Extreme	1.75 (2.739)	3.00 (2.519)	2.08 (2.962)	2.54 (2.859)	60.96 (14.110)
Total	1.45 (2.381)	2.76 (3.113)	2.02 (3.237)	2.86 (3.440)	55.53 (13.078)
<i>Note.</i> * means (standard deviations)					

Table 6
Late Psychological
Abuse

	<u>Proactive- Overt</u>	<u>Reactive- Overt</u>	<u>Proactive- Relational</u>	<u>Reactive- Relational</u>	<u>Depression</u>
<u>Female</u>					
Control	.45 (1.099)	1.30 (1.689)	2.25 (2.552)	4.20 (2.895)	52.80 (12.643)
Extreme	1.06 (1.806)	2.75 (2.352)	2.38 (2.527)	3.63 (3.030)	66.31 (12.087)
Total	.72 (1.466)	1.94 (2.110)	2.31 (2.505)	3.94 (2.927)	58.81 (13.991)
<u>Male</u>					
Control	1.13 (.991)	3.50 (3.505)	1.63 (1.302)	.75 (1.165)	49.50 (19.354)
Extreme	2.90 (3.348)	4.30 (4.644)	1.90 (2.234)	2.90 (2.885)	60.60 (10.946)
Total	2.11 (2.676)	3.94 (4.080)	1.78 (1.833)	1.94 (2.485)	55.67 (15.808)
<u>Abuse</u>					
Control	.64 (1.096)	1.93 (2.493)	2.07 (2.260)	3.21 (2.961)	51.86 (14.557)
Extreme	1.77 (2.612)	3.35 (3.417)	2.19 (2.384)	3.35 (2.939)	64.12 (11.782)
Total	1.19 (2.038)	2.61 (3.031)	2.13 (2.299)	3.28 (2.923)	57.76 (14.548)
<i>Note.</i> * means (standard deviations)					

*Figures**Figure 1**Early Physical Abuse, Gender, Proactive-Overt Aggression ANOVA*

**Note: The author acknowledges that ANOVAs are not typically presented in the form of line graphs, but for clarity, they have been reported as seen above*

Figure 2
Early Physical Abuse, Extreme Group, Reactive-Overt Aggression ANOVA

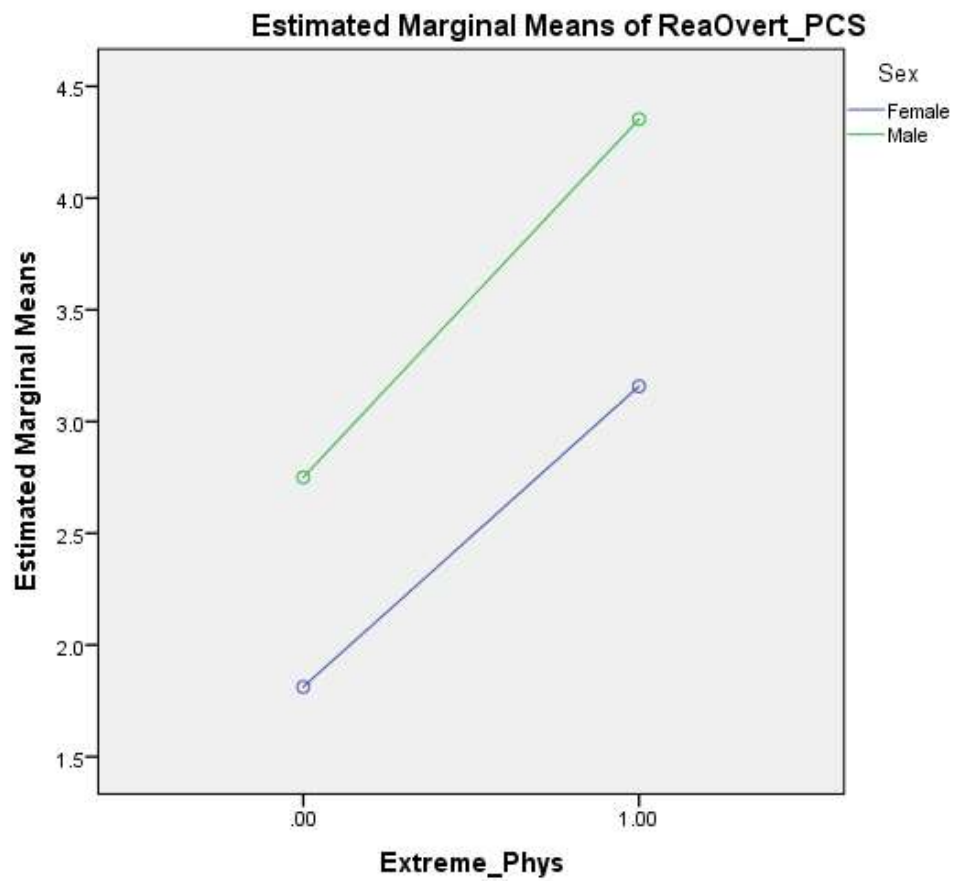


Figure 3
Early Physical Abuse, Extreme Group, Depression ANOVA

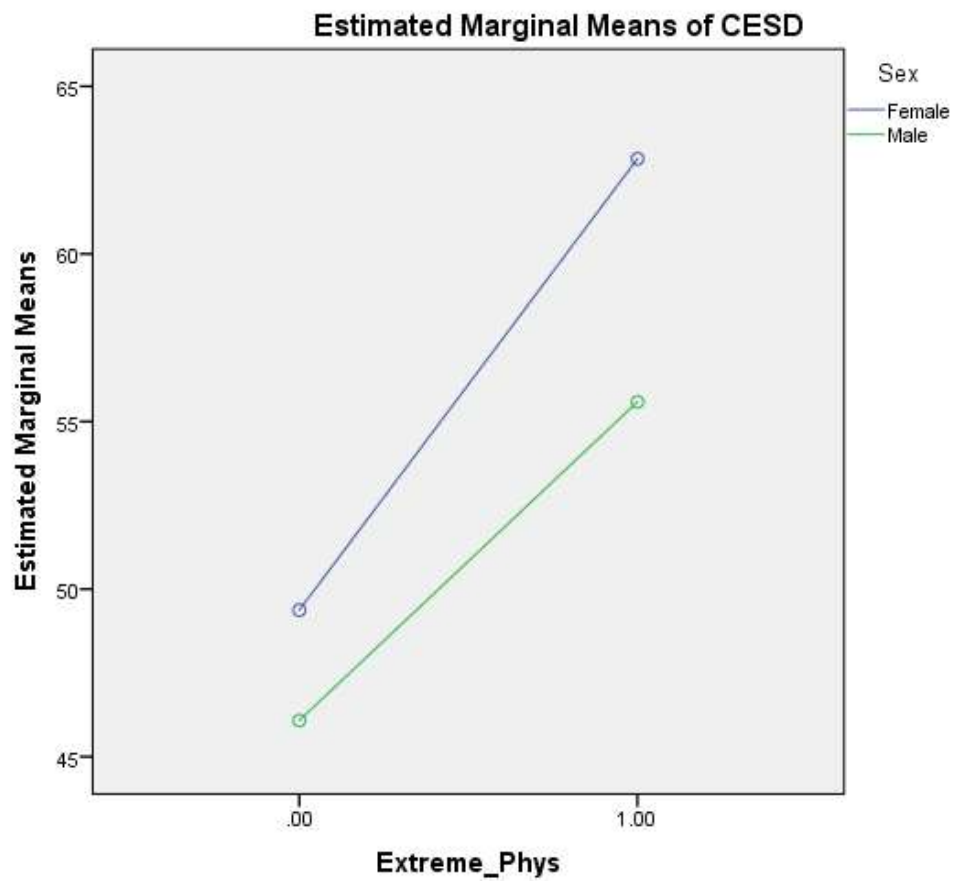


Figure 4
Late Physical Abuse, Gender, Proactive-Overt Aggression ANOVA

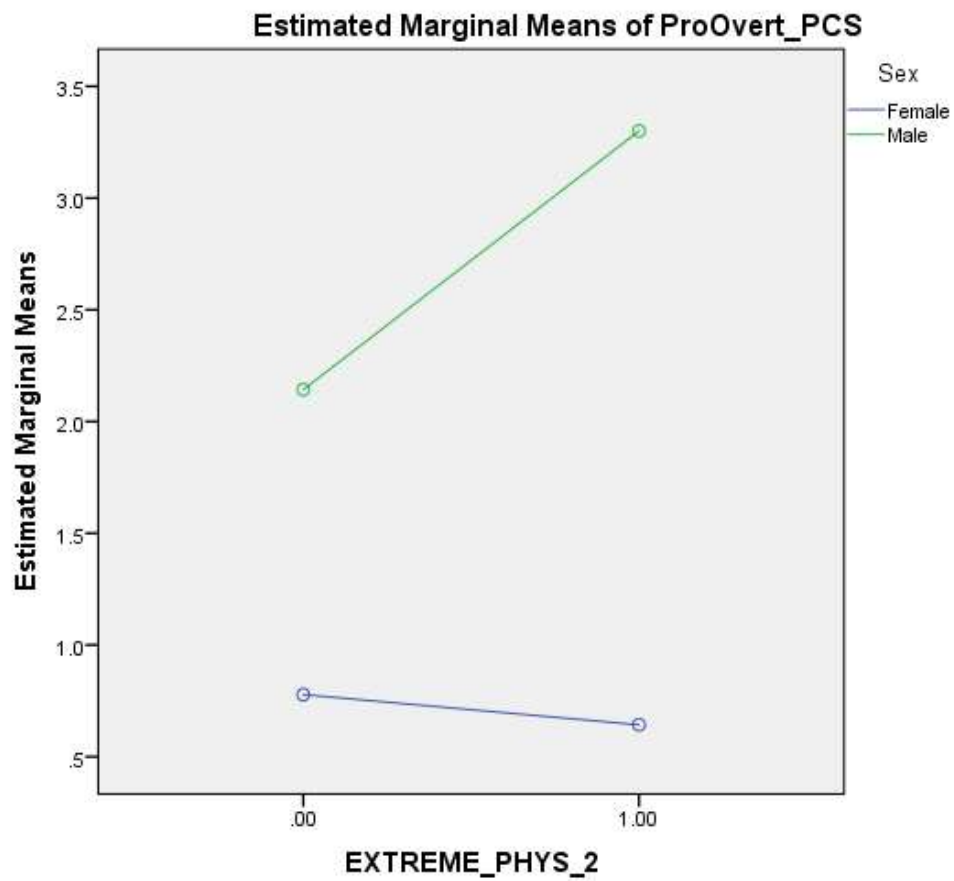


Figure 5
Late Physical Abuse, Extreme Group, Depression ANOVA

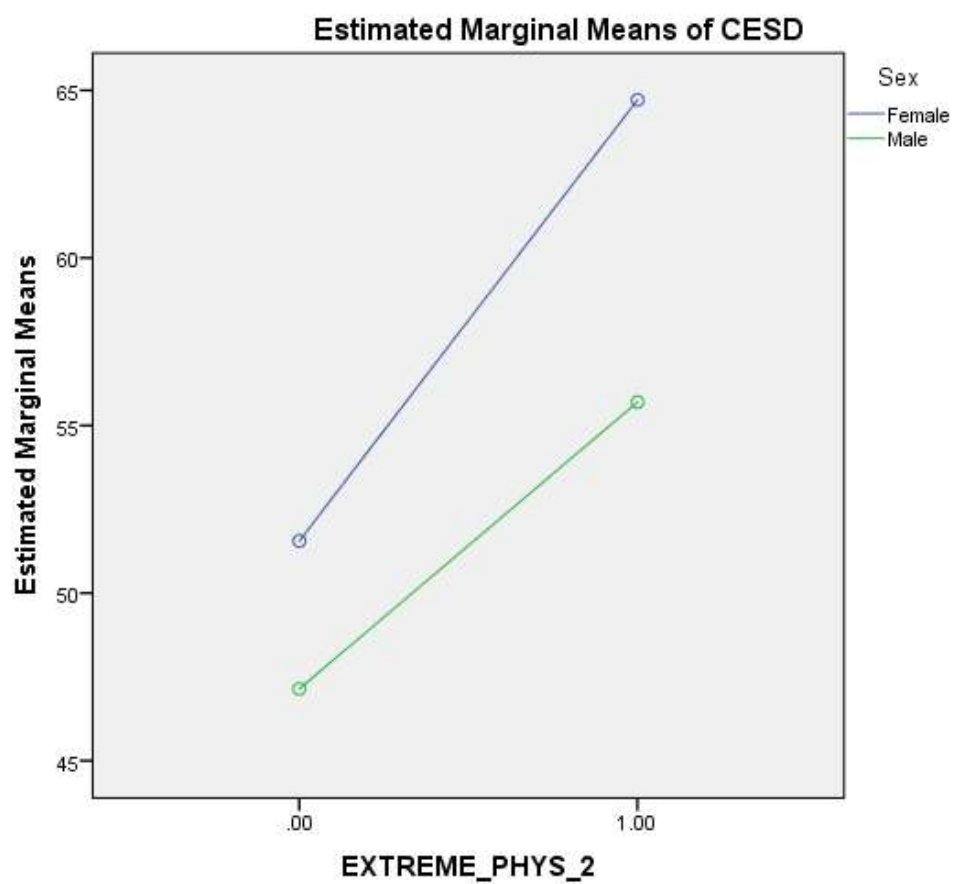


Figure 6
Late Psychological Abuse, Extreme Group, Gender, Proactive-Overt Aggression ANOVA

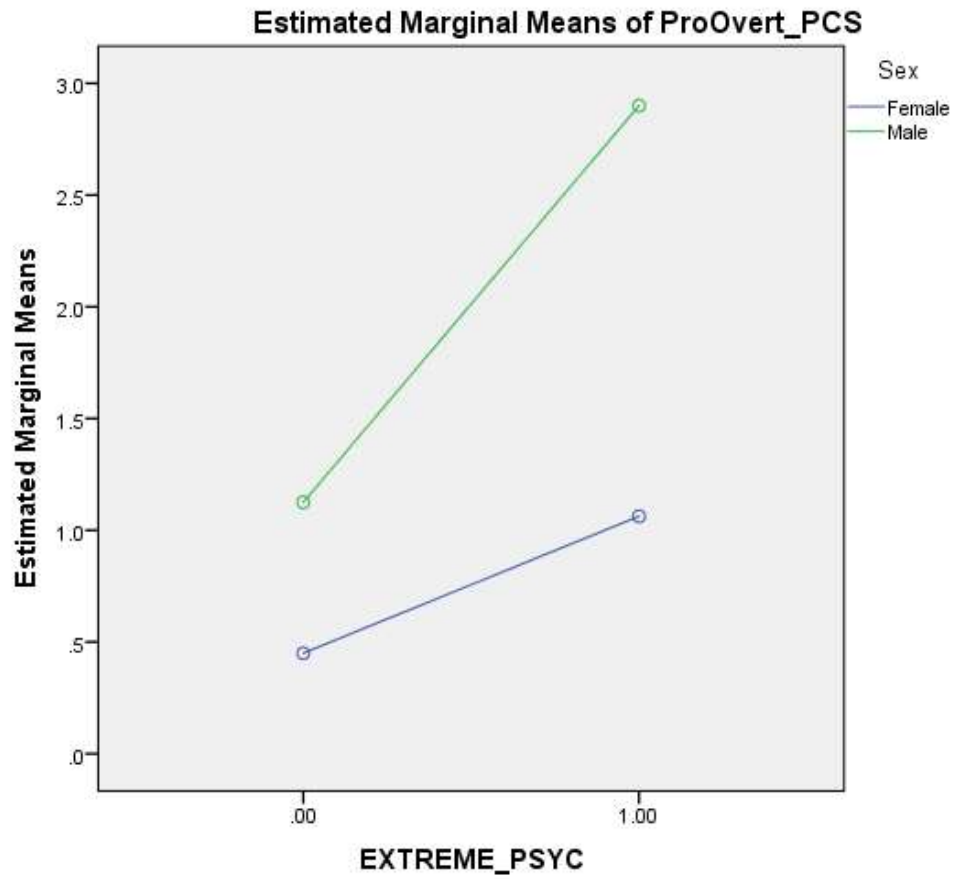


Figure 7
Late Psychological Abuse, Gender, Reactive-Overt Aggression ANOVA

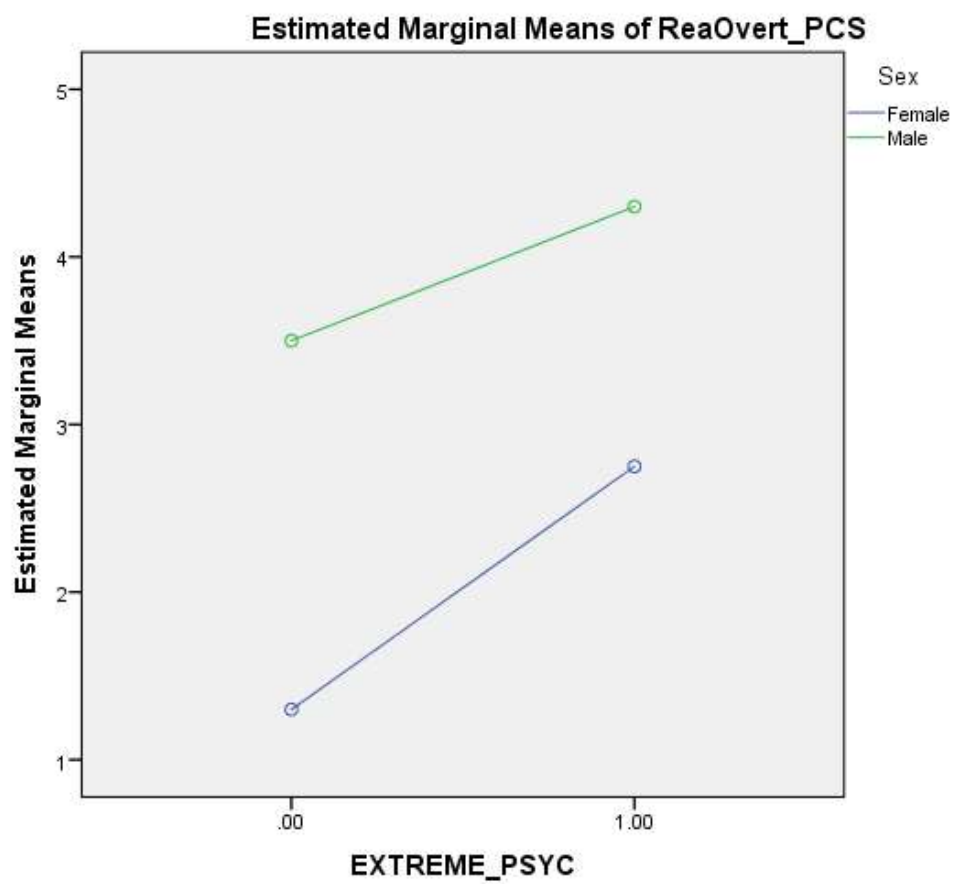


Figure 8
Late Psychological Abuse, Gender, Reactive-Relational Aggression ANOVA

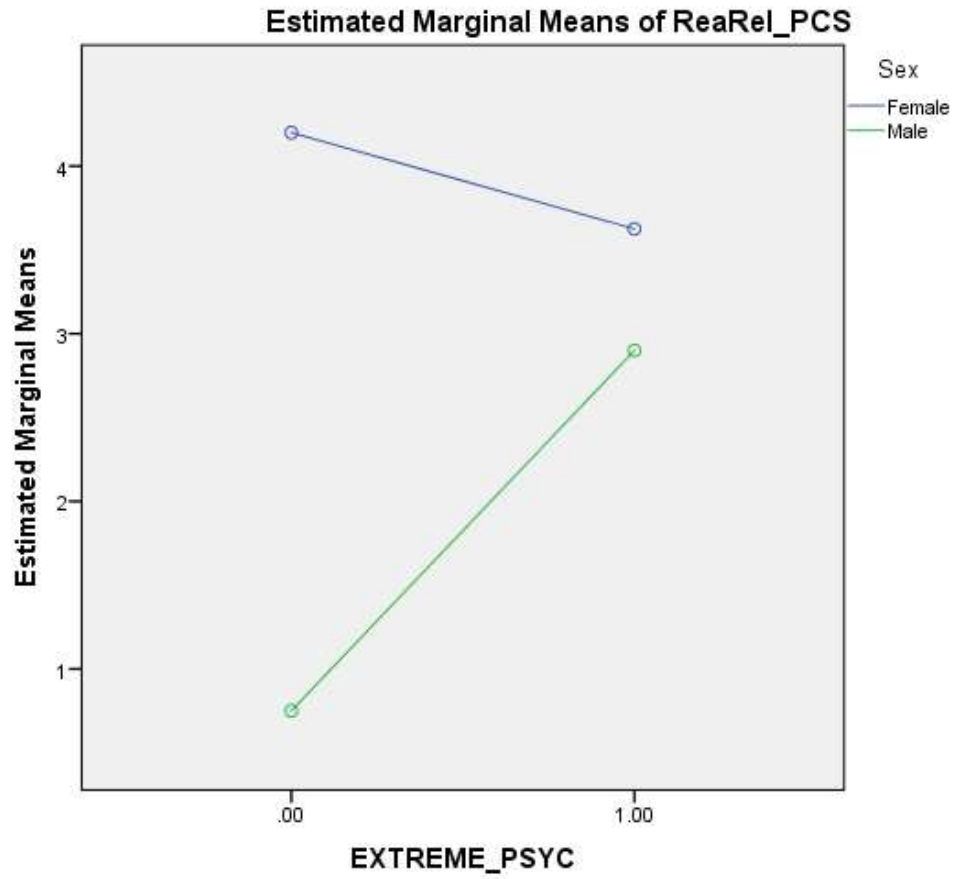
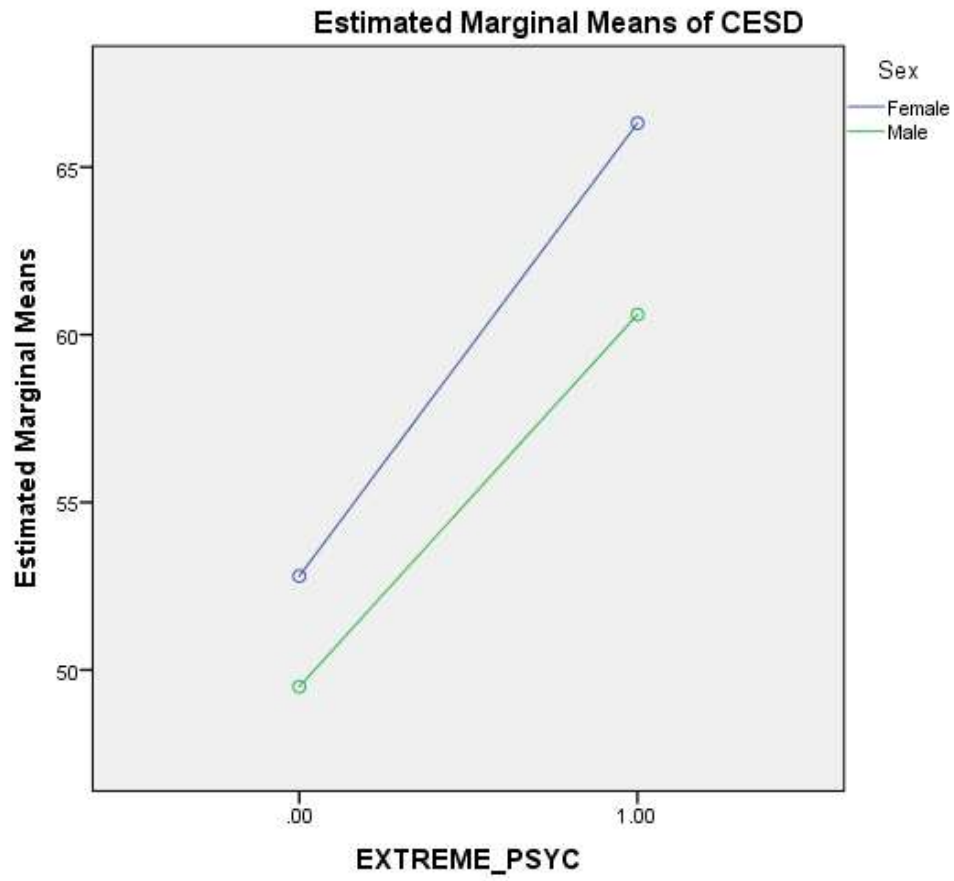


Figure 9
Late Psychological Abuse, Extreme Group, Depression ANOVA



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