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UNIVERSITY OF NORTHERN COLORADO

Greeley, Colorado

The Graduate School

THE RELATIONSHIP BETWEEN ACCURACY OF FACIAL
EMOTION RECOGNITION, PERCEIVED EMPATHIC
ABILITY, AND COGNITIVE ABILITY IN
DOMESTIC VIOLENCE OFFENDERS

A Dissertation Submitted in Partial Fulfillment
of the Requirements of the Degree of
Doctor of Philosophy

Blair Nylene

College of Education and Behavioral Sciences
Department of Applied Psychology and Counselor Education
Counseling Psychology

July 2016

This Dissertation by: Blair Nyline

Entitled: *The Relationship Between Accuracy of Facial Emotion Recognition, Perceived Empathic Ability, and Cognitive Ability in Domestic Violence Offenders*

has been approved as meeting the requirement for the Degree of Doctor of Philosophy in College of Education and Behavioral Sciences in Department of Applied Psychology and Counselor Education, Program of Counseling Psychology

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ABSTRACT

Nyline, Blair. *The Relationship Between Accuracy of Facial Emotion Recognition, Perceived Empathic Ability, and Cognitive Ability in Domestic Violence Offenders*. Published Doctor of Philosophy dissertation, University of Northern Colorado, 2016.

The inability to decode emotional cues has been associated with violence in men. The purpose of the study was to learn more about the connection between emotion recognition accuracy as it related to self-identified empathy in adult men convicted of a domestic violence offense while accounting for any significant cognitive deficits and demographic factors. Domestically violent ($n = 35$) and non-violent ($n = 35$) men were asked to label pictures of facial emotion at different levels of intensity (30.0%, 40.0%, 60.0%, 70.0%, and 100.0%). In addition, they were given the Interpersonal Reactivity Index (IRI), a brief empathy measure; the General Ability Measure for Adults (GAMA), a brief cognitive assessment; the Life Events Checklist-5 (LEC-5), a trauma questionnaire; and a demographic questionnaire. The domestic violence offenders were found to have a significant deficit in identifying the emotions of sadness and fear and identifying emotions at 40.0% and 60.0% intensity. They were found to have a significantly higher self-reported empathy rating on the IRI subscale of perceived distress, but no significant differences were found between domestic violence offenders and non-violent controls on empathy subscales of perspective taking, empathic concern, and fantasy. There was no significant difference in cognitive ability between the domestic violence offenders and the control participants. When highest education level attained

and family annual income were accounted for, they were found to have a significant impact on the ability to accurately identify emotions. When lifetime trauma history and chemical dependence history were accounted for, they were found to have no statistically significant impact on ability to accurately identify emotions. Clinical implications included a greater focus on applied emotion recognition and emotion regulation training for domestic violence offenders. Methodological implications and future research directions were discussed.

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CHAPTER I

INTRODUCTION

Background

Domestic violence has taken an emotional, social, and financial toll in some fashion on nearly every citizen in the United States. It is not simply about partners harming each other; it has been viewed as a problem of men's oppression of women, a broad public health problem, a criminal justice problem, and an economic problem both for the victims and society (Whitaker & Lutzker, 2009). The National Intimate Partner and Sexual Violence survey in 2011 found a 12-month prevalence rate of 7.5 million domestic violence incidents for women (Hamel, 2014). In the United States, 24.3% of women have experienced severe physical aggression by a partner and 48.4% have experienced psychological aggression by a partner (Jaffe, Simonet, Tett, Swopes, & Davis, 2015). One-fifth of female high school students have reported being physically or sexually abused by a partner (Hamel, 2014). Twenty-two to 39.0% of college students have reported experiencing dating violence (Harway, 2012). Intimate partner violence has accounted for up to 11.0% of total homicides in the United States (Jaffe et al., 2015). Domestic violence has been estimated to cost \$5.8 billion nationally per year (Harway, 2012). Domestic violence has had a large negative impact on the emotional and physical health of victims and has negatively impacted society as a whole (Holmes, Voith, & Gromoske, 2015).

The majority of research has focused on female rather than male victims of domestic violence due to the higher numbers of reported female victims (Gondolf, 2011). Typically, the violence has not been a single incident or limited to physical abuse. Domestic violence has often been a pattern of behavior involving physical, sexual, verbal, and emotional violence (Whitaker & Lutzker, 2009). Between 40.0% and 45.0% of women who have experienced emotional abuse and physical violence also experienced non-consensual sexual encounters from their partner and sexually degrading acts (Whitaker & Lutzker, 2009). Women who have been victims of domestic violence have reported physical health issues more often than those who have not experienced domestic violence. For example, women who have been abused by a partner experienced higher rates of irritable bowel syndrome, migraine headaches, and cardiovascular conditions such as chest pain and hypertension. In addition, they have had higher rates of urinary tract infections and sexually transmitted infections. It has been hypothesized that this higher rate of gynecological medical issues was due to being subjected to unwanted sexual intimacy by their partner and the higher rate of risky sexual behaviors by men who sexually abuse their female partners as part of domestic violence perpetration (Whitaker & Lutzker, 2009). In addition to the medical issues victims of domestic violence experienced, a variety of mental health difficulties have been documented including depression, anxiety, panic disorder, posttraumatic stress disorder, and alcohol and drug abuse. Women victims of domestic violence were also more likely to experience suicidal thoughts and had a history of suicide attempts (Whitaker & Lutzker, 2009). The high rate of physical, medical, and mental health difficulties of female victims of domestic violence further highlights the need for more understanding around this issue.

Children exposed to domestic violence in the home are put at risk in a variety of ways. In relationships where there was domestic violence occurring between partners, an increased likelihood of child abuse and neglect has been found (Whitaker & Lutzker, 2009). Child abuse is between two and four times more likely in families that have experienced domestic violence than in families without a history of domestic violence (Whitaker & Lutzker, 2009). The results of a meta-analysis of over 30 studies found the median co-occurrence of intimate partner domestic violence and childhood maltreatment was 40.0% with the most common range between 30.0%-60.0% (Daro, Edleson, & Pinderhughes, 2004). These findings suggest that in many homes where violence occurred between partners, violence was also directed toward the children. Witnessing domestic violence, even without direct abuse toward the child, could have lasting effects on children as well. These effects include the development of posttraumatic stress disorder, depression, self-injurious behaviors, future aggressive behavior, and both violent and non-violent criminal activity (Graham-Bermann & Edleson, 2001). Cognitive and emotional development in children could also be affected. Children who witnessed domestic violence or experienced violence themselves were more prone to cognitive hyperarousal toward possible danger and often experienced the emotions of sadness and anger more often than children who did not experience violence in the home (Graham-Bermann & Edleson, 2001). Children who had witnessed violence in the home were also more likely to experience health problems such as heart disease, stroke, and diabetes (Graham-Bermann & Edleson, 2001). In short, domestic violence is a societal problem that affects everyone involved, directly or indirectly, in emotional, physical, and financial ways.

Previous research has indicated that men who had experienced violence as children, either in the form of witnessing domestic violence in the home or being themselves the direct victims of abuse or neglect, have had difficulty recognizing emotions in others (Ardizzi et al., 2015; Luke & Banerjee, 2013). In addition, exposure to violence as a child has been found to be a common risk factor for future domestic violence offenses and the inability to accurately identify emotions may contribute to this correlation. A study by Gardner, Moore, and Dettore (2014) found all 48 participants convicted of assault had a significant history of physical and emotional abuse as children. There has also been some research on facial affect recognition in children who have experienced abuse and neglect that found abused and neglected children were less accurate in facial emotion recognition (Luke & Banerjee, 2013).

There has been a great deal of literature on empathy in violent criminal offenders, specifically sex offenders and those diagnosed with antisocial personality disorder (Barnett & Mann, 2013; Gery, Miljkovitch, Berthoz, & Soussignan, 2009). This has not been the case with domestic violence offenders. Empathy in sex offenders has been so heavily studied in the literature that Barnett and Mann (2013) went so far as to say, “In particular we will concern ourselves with sexual offending as this type of offending has generated by far the largest literature on empathy. (We cannot explain why empathy is seen as more relevant to sexual offending than any other type of offending)” (p. 22). There is no readily known reason why sexual offenders and those with antisocial personality disorder have been so heavily represented in the forensic empathy literature.

Research involving violent offenders has suggested that empathy, or the lack of empathy, may have played a role in one’s offense (Covell, Huss, &

Langhinrichsen-Rohling, 2007). This has made understanding the role of empathy in violent offenses important for preventative work as well as treatment after the fact to prevent recidivism. The idea behind the study of empathy in violent offenders is that victim empathy has the potential to overpower the desire to offend with the desire to not offend. An empathic connection with a potential victim motivates the offender to set in motion the mechanisms and tools he has learned to keep from offending (Grady & Rose, 2011). Previous studies on empathy with offenders have shown mixed findings. Some studies have found offenders to have significant deficits in recognizing emotional cues and have found a correlation between having a low level of emotional intelligence and aggressive behavior in violent offenders (Jaffe et al., 2015). Conversely, other research has found violent offenders to be just as skilled as controls in terms of empathic awareness (Barnett & Mann, 2013). Still other research viewed empathy to be a situational construct (Gery et al., 2009).

Empathy has previously been studied in other violent offenders in a variety of ways. Offenders have been given paper and pencil measures of empathy in which they were asked to identify how they would feel in specific situations or were asked to identify the possible emotion of another person based on a specific situation that was described. Other studies asked offenders to identify facial emotions in others through videos or pictures (Book, Quinsey, & Langford, 2007; Brook & Kosson, 2013). Often these written measures and facial emotion measures were compared to assess similarities or differences in perceived empathic ability and actual emotion recognition. The findings have been mixed. Some studies found offenders rate lower in both written empathy measures and facial affect recognition tasks than non-violent controls while others found the offenders

score similarly to non-violent controls in both written empathy measures and facial emotion identification tasks (Book et al., 2007; Brook & Kosson, 2013; Marsh & Blair, 2008). It was important to the present study to clarify these conflicting findings for the reasons mentioned above, specifically that it was hypothesized that empathy played a significant role in violent offending.

The more we know about how domestic violence offenders experience empathy, the more we would be able to build on previous literature and determine how, and to what extent, empathy may play a role in the violent act itself. Given the similarities in cycles of offending and current treatment modalities between domestic violence offenders and other violent offenders more heavily studied in the empathy literature, it was important to continue to identify the similarities and differences between the groups. A clearer picture of factors that lead to violent offending would help identify how the study of empathy and facial recognition of emotion may benefit those who work with domestic violence offenders in the way it has benefited those who work with other offenders.

Overview and Purpose of Study

The major current models of treatment have approached domestic violence offender therapy from a cognitive behavioral perspective while incorporating psychoeducation about violence and power differentials between the genders (Bowen, Gilchrist, & Beech, 2005; Gardner et al., 2014). Individual characteristics that contributed to violent behaviors are also targeted in the current models of domestic violence treatment (Yee Lee, Uken, & Sebold, 2004). The relationship between one's own thoughts and emotions are explored. There is little focus on understanding the victim's

emotions or victim empathy. There is almost no review of interpersonal interaction and understanding one's partner's thoughts and feelings (Bowen et al., 2005). Treatment programs often take a deficits perspective and assume that offenders have deficits in the knowledge or skills that are necessary for one to avoid battering. An exhaustive literature review on empathy in domestic violence offenders found few studies reviewing empathy and domestic violence. Specifically, how a domestic violence offender viewed his or her own empathic ability and how this related to his or her ability to recognize the emotions of others has not been explored in current literature. In a review of common elements in domestic violence treatment programs by Gordon and Moriarty (2003), determining the offender's baseline level of empathy and trying to increase levels of empathy, if found to be at a deficit, was not mentioned. An increased awareness in the literature of how domestic violence offenders experienced empathy and how it relates to how well they are able to correctly identify emotions in others could play an important role in increasing the effectiveness of treatment.

In recent years, those who work with the phenomenon of domestic violence (therapists, psychologists, and the legal system) have begun to realize the importance of therapeutic intervention in addition to legal intervention with perpetrators of domestic violence. Even with the increased emphasis on therapeutic intervention, there were very high recidivism rates for offenders who successfully completed treatment through the two most prevalent models, the Duluth model and the Cognitive Behavior Therapy (CBT) model of domestic violence therapy (40.0% and 45.9%, respectively; Lee, Yuken, & Sebold, 2012). In other words, if the majority of domestic violence charges filed led to convictions and those convicted offenders were mandated to attend treatment,

approximately 35,000 of them would re-offend in the State of Colorado alone. This demonstrates there is a large factor missing in how researchers and psychologists currently conceptualized and treat domestic violence offenders.

Facial emotion recognition tasks have been used with many other violent offenders to increase the knowledge of how they interact with others and helped gain understanding around why they may become violent. Facial emotion recognition tasks are a measure of cognitive empathy, which is defined as being able to identify what another person may be feeling (Barnett & Mann, 2013; Domes, Hollerbach, Vohs, Mokros, & Habermeyer, 2013). Self-report empathy measures obtain information around one's ability to put oneself in another's shoes rather than one's visceral response or emotional reaction to another, which would measure emotional empathy. Self-report empathy measures are more susceptible to social desirability factors and one's own perception while facial affect recognition tasks are a better measure of one's actual ability.

Sexual offenders, who have similarly high recidivism rates and mandated courses of therapeutic treatment to domestic violence offenders, have been studied extensively for their empathic ability and ability to recognize the emotions of others, the results of which have shaped treatment (Barnett & Mann, 2013; Gery et al., 2009; Sex Offender Management Board, 2011). In addition, there has been extensive research on facial recognition tasks and empathy with those who have been diagnosed with antisocial personality disorder or met the criteria for a psychopathy diagnosis (Book et al., 2007; Brook & Kosson, 2013; Marsh, 2013). There have been several studies that examined the ability of children who have been victims of violence or who were involved in criminal activities to accurately identify facial affect as well (Ardizzi et al., 2015; Luke &

Banerjee, 2013). This was of interest given the large proportion of men with domestic violence offenses who were also victims of violence as children or began committing crimes as children. This study proposed to add to the current literature by exploring the empathic ability of men who were domestically violent and how this related to their ability to accurately identify facial affect.

Approximately 20.0% to 25.0% of domestic violence offenders have been found to cause the most injury to victims, recidivate at the highest levels, and have been the most resistant to interventions (Gover, 2011). It was important that this facial affect recognition research was conducted specifically with this population of high-risk domestic violence offenders to help gain insight into how to make therapy most effective and prevent recidivism. Current treatment focuses primarily on each offender's problematic thoughts and behaviors on an individual level (Yee Lee et al., 2004). Their interpersonal relationship style and way of interacting with others is not a focus. Examining his or her ability to accurately identify facial emotion and comparing this to his or her perceived empathic ability, which would lead to a greater understanding of how they interact with others, was an important step forward in improving our understanding of domestic violence etiology.

To date, a thorough literature review has resulted in only one study examining the ability of domestic violence offenders to accurately identify facial emotions by Babcock, Green, and Webb (2008). The researchers divided men who were self-identified as having a history of being domestically violent into three categories based on personality testing and the offenders' primary characteristics. The men were assessed on their ability to accurately identify facial emotions and the researchers found that domestically violent

men who were categorized as “generally violent” struggled to accurately identify angry, happy, neutral, and surprised emotional expressions (Babcock et al., 2008). Domestically violent men who were categorized as “only violent in the family setting” or had predominant “borderline personality characteristics” were not found to have deficits in accurately identifying facial affect. Babcock et al., identified possible differences in IQ as a possible explanation for the significant deficits in facial emotion recognition ability in the generally violent domestic violence perpetrators. They recommended future a study control for cognitive ability before any firm implications could be drawn.

The current study included participants who were domestically violent men mandated to participate in treatment after a domestic violence offense conviction. It explored the connection between the participants’ self-identified empathic ability and ability to accurately identify facial emotion. In addition, the current study included a measure of cognitive ability to account for any significant cognitive differences that may contribute to a deficit in accurately identifying facial emotion. This study aimed to establish a clearer picture of how accurately domestic violence offenders identified the emotions of others and how this related to their perceived experience of empathy.

Empathy training has been shown to decrease violent behaviors and also resulted in a corresponding increase in pro-social behaviors in violent offenders (Covell et al., 2007). By gaining a greater understanding of how domestic violence offenders experience empathy, counseling psychologists may be able to develop more effective empathy training models with offenders and show an even greater reduction in violent behaviors. An increased awareness of how domestic violence offenders perceive their empathic ability and how this relates to their actual ability to accurately identify facial

emotion may greatly alter the way counseling psychologists approach domestic violence treatment much in the same way that the study of empathy impacted the work with other violent offenders.

Theoretical Perspectives

Empathy

According to Darwin, all people, regardless of race or culture, express emotions in the face and body in a similar fashion as part of our evolutionary heritage (Matsumoto, Keltner, Shiota, O'Sullivan, & Frank, 2008). Humans have discrete physiological responses unique to each emotional experience in order to communicate effectively with others. These emotional communications help people in relationships respond in an appropriate manner (Matsumoto et al., 2008). It makes evolutionary sense for an individual to be able to accurately read another's emotion. When one struggles with accurately identifying the emotions of another, it hinders his or her ability to effectively communicate with that person.

Research on the universal nature of identifying facial affect found that there were six consistently similar emotions displayed across cultures. Ekman (1972) first identified these emotions (anger, disgust, fear, happiness, sadness, and surprise) when he used the Facial Action Coding System (FAST) on American and Japanese participants who were filmed watching a neutral video and a stressful video for three minutes each. Each video was coded independently and the correlation between the American and Japanese facial emotions expressed spontaneously was .88 (Ekman, 1972). These findings have been replicated in at least 25 subsequently published articles that included a range of cultures including one study involving 84 athletes from 35 countries (Matsumoto & Willingham,

2006). The latter study specifically focused on the facial expressions produced when emotion was aroused and there were no social circumstances that required the individual to modify his or her facial expression; further emphasizing the universal nature of the six primary facial emotions. The ability to recognize emotions in others is an important part of daily human interaction and interpersonal relationships. Those who have been shown to lack empathy (autistic individuals, those with antisocial personality disorder, sexual offenders, children who have experienced abuse) have struggled in interpersonal relationships.

Social Information Processing

The social information processing (SIP) model conceptualizes aggression within a general model of social competence (Murphy, Norwood, & Poole, 2014). Social information processing incorporates steps beginning from decoding social cues to the generation, selection, enactment, and evaluation of responses in light of interpersonal goals and with continual reference to a central “database” of social knowledge with bidirectional influences (Murphy, 2013). The SIP model, therefore, involves constant reference to, and updating of, social scripts and schemas that reflect social and cultural influences, personality, temperament, and learning history. Various cognitive deficits such as unrealistic expectations, faulty attributions, or irrational beliefs could lead to the misinterpretation of social stimuli.

As viewed by SIP, once the social cue has been decoded, it is important to generate possible responses and determine which one was the best possible response to the situation (Holtzworth-Munroe, 1992). When presented with hypothetical relationship scenarios, male domestic violence offenders were more likely than non-violent controls

to display a hostile cognitive bias by attributing more negative intentions to female partners. This negative attribution demonstrated a deficit in the decoding stage of the SIP model (Murphy et al., 2014). Attribution to negative intentions was then influenced by the following anger and physiological arousal and led to bias in the response generation and selection processes toward aggressive options. Both internal (emotional) cues as well as external (social) cues are used to interpret the meaning and intention of others' behaviors.

Social information processing does not happen in a vacuum but in a context of cultural influences, personality, and learning history (Murphy et al., 2014). Some influential factors include posttraumatic stress, intoxication due to drugs or alcohol, and neurocognitive deficits. The presence of these situational factors could increase the risk of domestic violence perpetration by altering the processes of SIP by increasing the attribution of negative partner intent and perceived acceptability of violence (Murphy, 2013). Although these situational factors increase the likelihood for violence from the SIP perspective, the theory also views violence as “. . . an actively selected response option and therefore individuals are personally responsible for choosing to act in an abusive manner” (Murphy, 2013, p. 212). The current study was conceptualized within the SIP model with the belief that the negative attribution bias found in domestically violent men toward their partners could be influenced by a deficit in accurately decoding the partners' facial affect.

Research Questions

- Q1 To what extent do domestic violence offenders differ from non-violent controls in recognition of facial affect as measured by the Nimstim pictures of facial affect and does the intensity of the displayed emotion or specific emotion displayed play a role?

- Q2 To what extent do demographic factors as measured by a demographic questionnaire (socioeconomic status, drug and alcohol treatment referral history, education, history of own abuse) and/or cognitive abilities as measured by the General Ability Measure for Adults (GAMA) affect how accurately domestic violence offenders identify emotions in others?
- Q3 How does a domestic violence offender's self-rating of his own empathic ability as measured by the Interpersonal Reactivity Index (IRI) compare to his ability to accurately identify the emotions of others as measured by the Nimstim pictures of facial affect?
- Q4 Will the men in the current study demonstrate an own-gender bias and be better able to recognize emotion on male faces than female faces?

Limitations

It is important that limitations to this study are mentioned. The first important limitation was that the samples involved in this study were both convenience samples. Although the demographics of the domestic violence offender sample were close to the current demographics in Colorado, there was not a matched sample designed to represent the overall population for each group. This study focused on the highest risk offenders and the results may differ significantly from lower risk populations. The domestic violence offender participants may have differed in significant ways from the true population of all level C domestic violence offenders. Due to the disproportionately low number of female and lesbian, gay, bisexual, and transgender (LGBT) level C offenders in mandated treatment, the study focused only on heterosexual male offenders. Female and LGBT domestic violence offenders may differ significantly from heterosexual male offenders in ways that were not recognized. Finally, non-violent control participants were a convenience snowball sample of volunteers and not matched controls. They differed significantly from the domestic violence offender population of interest in race and ethnicity, education, income, and history of chemical dependence. These confounds may

have affected the overall results even though the study used a covariate method to account for these differences.

Another limitation of this study was the lack of consensus on the definition of empathy in the literature. There are many adaptations, and variations, of cognitive empathy such as, “using a theory of mind,” “decoding and describing the emotional state based on the facial expression of another person,” and “perspective taking, the ability to understand what another is feeling.” (Barnett & Mann, 2013; Domes et al., 2013; Muncer & Ling, 2006). Even in using a consistent definition of empathy, this study did not study the domestic violence population from any of the other proposed aspects of empathy such as emotional empathy or situational empathy (Barnett & Mann, 2013). The use of the Interpersonal Reactivity Index (IRI) as a measure of empathy was also a potential limitation to this study. Self-reported measures of empathy do not always correlate with task or ability-centered levels of empathy. This may be attributed to the high levels of transparency in questionnaire empathy measures and social desirability factors (Covell et al., 2007).

A final limitation of this study arose from the criticisms of facial affect recognition tasks. One argument is that the forced-choice format does not allow participants to pick their own emotion words (Ekman, 1999). There were other studies that have found possibly more than one universal expression for anger and disgust and this study only used one core expression for each. There is also evidence that normal populations with no history of psychopathology have difficulty differentiating between fear and surprise. The accuracy for reading the emotion of fear is approximately 60.0%-70.0% for healthy populations (Marsh & Blair, 2008). The facial recognition task

included all Caucasian faces due to a lack of availability of standardized multiracial faces.

Definition of Terms

Cognitive ability. The term cognitive ability was used to identify one's basic level of intellectual and cognitive functioning. The General Ability Measure for Adults (GAMA) was used to measure the cognitive ability of participants. The GAMA is a nonverbal measure of cognitive ability (Bardos, 2003). A nonverbal measure was used in order to minimize biases that may come with verbal assessments. Nonverbal assessments are better able to accurately identify cognitive ability without confounds such as sociocultural effects, formal education in the English language, and having a first language other than English (Bardos, 2003; McCallum, 2003).

Cognitive empathy. The broad definition of cognitive empathy is having an imaginative understanding of another person's thoughts, feelings, and actions (Besel & Yuille, 2010). One has this imaginative understanding by using a theory of the mind (Muncer & Ling, 2006). Additionally, it has been defined as having the ability to attribute emotional states of others and understanding that other people have thoughts and feelings that may be different from your own (Allison, Baron-Cohen, Wheelwright, Stone, & Muncer, 2011).

Domestic violence.

The manipulative attempt by one person to obtain power and control over his or her intimate partner with a coercive and systematic pattern of abusive behavior. Domestic violence may include psychological, physical, sexual, and stalking behaviors. The intense emotional involvement between the victim, offender, and oftentimes, children distinguish domestic violence from other types of crime. (Gover, 2011, p. 95)

Many terms have been used synonymously with domestic violence such as relationship violence or aggression, partner abuse, and intimate partner violence (Gover, 2011). An individual who attempted to obtain power and control over his or her intimate partner using one or more of the domestic violence acts is referred to as a *domestic violence offender*.

Domestic violence offender. Specifically, in this study domestic violence offender referred to individuals who had been mandated by the court to attend domestic violence treatment following a domestic violence conviction. Treatment was provided by a certified domestic violence offender treatment provider through the Domestic Violence Offender Management Board (DVOMB). All domestic violence offenders in this study were categorized as a level C domestic violence offender.

Emotional empathy. There are many facets to emotional or affective empathy. It is characterized by a visceral, automatic reactivity to another's emotions (Besel & Yuille, 2010). It also involves an observer's appropriate emotional response to the affective state of another (Allison et al., 2011; Muncer & Ling, 2006).

Empathy. There are several different models of empathy. In the social cognitive neuroscience model of empathy, empathy is viewed as a phenomenological experience that allowed an individual's brain and body to observe, process, and vicariously share the feelings, thoughts, and intentions of others (Gerdes, Geiger, Lietz, Wagaman, & Segal, 2012). The brain relies on four independent but interactive neural networks to experience empathy: (a) affective arousal, (b) self-other awareness, (c) perspective taking, and (d) emotional regulation. Other definitions of empathy have ranged from social insight to the ability to understand the cognitive and affective status of others to the experience of the

same or similar emotions of others (Muncer & Ling, 2006). One common theme in the current literature around empathy is that empathy consisted of both a cognitive and emotional or affective component, which is defined below (Allison et al., 2011).

The majority of empathy measures in the literature measured cognitive empathy because they were unable to measure the physiological response to another's emotion or measure the true emotional response to the affective state of another. The Interpersonal Reactivity Index attempts to measure both cognitive and emotional empathy by measuring four primary aspects of empathy: empathic concern, perspective taking, personal distress, and fantasy (Davis, 1983). Empathic concern is defined as one's affective response to another person's emotional state or feelings of compassion or concern. Perspective taking is viewed as the cognitive skill of the viewpoints of others and comprehending their situation without the need of comprehending corresponding feelings. Personal distress is the tendency to experience distress and discomfort in response to stressful situations. Fantasy is the reaction to fictional instead of real situations such as movies, plays, and books. It is the tendency to involve oneself in the feelings and actions of fictitious characters (Davis, 1983).

Facial emotions. Literature on facial expressions of emotion indicates that significant aspects of emotional facial expressions include:

(1) universal, reliable markers of discrete emotions when emotions are aroused and there is no reason to modify or manage the expression; (2) covary with distinct subjective experience; (3) are part of a coherent package of emotion responses that includes appraisals, physiological reactions, other nonverbal behaviors, and subsequent actions, as well as individual differences and mental and physical health; (4) are judged as discrete categories; and (5) as such, serve many interpersonal and social regulatory functions. (Matsumoto et al., 2008, p. 211)

Facial emotions recognition task. A task developed by Ekman and Freisan (1976) of standardized universal facial displays of the primary emotions. The primary emotions include happiness, sadness, anger, disgust, surprise, and fear. There are several standardized sets of facial emotion tasks including Matsumoto and Ekman's (1988) *Japanese and Caucasian Facial Emotion Data Set* and the Nimstim data set, which is available to researchers online (Tottenham et al., 2009). The facial emotion data sets are often used for research on empathy and emotion identification. Participants within the normal population are typically very accurate at identifying these emotions in data sets in which the emotion was shown at 100.0% intensity. New research has begun to blend the 100.0% intensity emotions with a neutral face using face morphing technology resulting in facial blends that demonstrate the emotion at a lesser intensity resulting in a more accurate demonstration of emotion that is more likely to be seen in everyday interactions (Gery et al., 2009).

High-risk offender. A domestic violence offender who is categorized as high risk is more likely to have a more violent offense and to have a higher likelihood to re-offend. Approximately 20.0%-25.0% of men fall into the high-risk category and the most injury to victims, recidivate at the highest levels, and are the most resistant to interventions (Gover, 2011). These offenders would be categorized as level C by the DVRNA. High-risk offenders are more likely to have antisocial personality disorder characteristics and participate in more violence outside of the home (Holtzworth-Munroe & Meehan, 2002).

Intensity of emotions. The standardized Nimstim prototypic facial expressions were used to blend the intensity of the six universal emotions (happiness, sadness, anger, disgust, fear, and surprise) to 30.0%, 40.0%, 60.0%, and 100.0% intensity (Tottenham et

al., 2009). Based on the neutral face (0.0% of emotional intensity) and the full emotional facial expression (100.0% emotional intensity) of the same actor, the computer program E-Prime (<http://www.pstnet.com/eprime.cfm>) was used to construct blends of each emotion at the increments mentioned above. The different intensity of emotions was modeled from Pham and Philippot (2010) who indicated, “. . . such full-blown displays have little ecological validity” (p. 448) and because they were easy to decode were likely to produce ceiling effects and leave little room for individual variance.

Level C domestic violence offender. An individual rated as a level C by the Domestic Violence Risk and Needs Assessment (DVRNA). There are five critical risk factors, which, if met, automatically place the offender in the level C category (Gover, 2011). These include serious homicidal or suicidal ideation, a previous domestic violence offense, the presence of a gun in the home in violation of a civil or criminal court order, the use or threatened use of weapons during the offense, and the offender was on community supervision at the time of the offense. A total of five risk factors being met, even if none are critical risk factors, would also place the offender in the level C category. All DVRNA assessments were administered by a DVOMB approved treatment provider who had obtained specialized training in DVRNA administration and scoring. Level C offenders are at the highest risk of committing another domestic violence offense.

Low-risk offender. Low risk domestic violence offenders are the least likely to use physical violence against their partners. They are also the least likely to recidivate after a domestic violence offense conviction or successfully completing treatment (Gover, 2011). They are the most likely to be violent within the home only and not generalize

their violence to outside the home (Holtzworth-Munroe & Meehan, 2002). They are also less likely than high-risk offenders to have antisocial personality or borderline personality characteristics or other psychopathology such as drug or alcohol addiction or depressive symptoms (Holtzworth-Munroe & Meehan, 2002). Low risk offenders are categorized as levels A or B on the DVRNA (Gover, 2011).

Non-violent controls. In this study and review of the literature, controls were defined as anyone who was not in the population of interest. Controls included healthy volunteers with no criminal violent or non-violent history and individuals with a criminal history but no violent history. In all studies described, control participants were volunteers who completed the same tasks and assessments as the population of interest.

Own-gender bias. The enhanced recognition of facial affect for own gender as opposed to the opposite gender.

Summary

An extensive literature review revealed a paucity of literature of empathy with domestic violence offenders or how domestic violence offenders' experience of empathy may play a role in the violent offence. Recent literature has focused considerable attention on the link between empathic deficits and violence in other violent offenders but relatively few studies have directly examined the relationship of empathy to domestic violence offenses (Covell et al., 2007). The social information processing model views domestic violence offenses as stemming from the offender's incorrect negative attributions to another's actions or emotions. This study aimed to identify possible deficits in the encoding stage of this model in domestically violent men. The current study intended to identify emotion recognition deficits by obtaining a clearer picture of

how domestically violent men perceived their own empathic abilities and how this related to their ability to accurately identify facial emotions while accounting for cognitive abilities. It was hypothesized that empathic ability played a key role in domestic violence offenses and a better understanding of how domestic violence offenders experienced empathy could improve treatment approaches, which are currently largely ineffective (Lee et al., 2012).

CHAPTER II

REVIEW OF RELEVANT LITERATURE

Introduction

Domestic violence etiology and treatment has been a primary focus in the literature of violence (Cohen, Schulz, Liu, Halassa, & Waldinger, 2015; Jaffe et al., 2015; Gibbons, Collins, & Reid, 2011). An extensive review of the literature revealed that there was little research of how empathy played a role in the etiology, treatment, and recidivism in domestic violence cases. There was an abundance of research on the role empathy played in the development of other violent offenses such as sexual offenses, violence in individuals who had antisocial personality disorder, and violent offenders who had been exposed to violence as children (Covell et al., 2007; Gardner et al., 2014; Marsh & Blair, 2008). Due to the high degree of commonalities between types of violent offenders such as a high rate of personality disorders and large number with a familial history of domestic violence and child abuse, it could be hypothesized that empathy may play a similarly significant role in the etiology and treatment of domestic violence. The extent to which victim empathy impacts domestic violence offenses is unknown.

There has been an ongoing debate about the etiology of domestic violence. One common theory of domestic violence etiology takes a gendered approach and

concludes that domestic violence is primarily a problem of men's violence against women (Dixon & Graham-Kevan, 2011). The gendered theory sees domestic violence as being caused by wider societal factors and patriarchal beliefs that encourage male dominance and female subordination. The conflicting belief is that domestic violence is a more co-combative process and that women are just as likely to be domestically violent as men (Dixon & Graham-Kevan, 2011). Research has shown that, when behavioral acts were measured, men and women appeared to be equally aggressive (Harway, 2012). Conversely, when the physical and psychological consequences of aggressive acts were included, women were far more likely to be victims of domestic violence than men.

As a result of early domestic violence studies, many states have now mandated long-term batterer intervention programs that last, on average, 30 to 40 weeks (Harway, 2012). State standards across the country have been criticized in the past for not being empirically based (Gover, 2011). The State of Colorado has been viewed as being on the forefront of domestic violence treatment guidelines and regulations. During the 2000 Colorado Legislative Session, statute (C.R.S. 16-11.8-10) was passed and created the Domestic Violence Offender Management Board (DVOMB), which was housed within the Division of Criminal Justice. In the year 2005, the State of Colorado developed a committee to conduct empirical research through the DVOMB on the effectiveness of mandated treatment. The results of this committee's research led to a revision of the Colorado state statutes for domestic violence treatment that went into effect in 2011. These revisions were based on findings that found coordinated community responses were the most promising approach to obtain reduction in domestic violence offenses. The requests for a coordinated team led to the development of the Multidisciplinary

Treatment Team (MTT), made up of treatment providers, probation or parole officers, and a victim advocate. Another empirical finding from this research indicated that 20.0% - 25.0% of batterers were causing the most injury to victims, recidivating at the highest levels, and were the most resistant to intervention. This led to the development of the Domestic Violence Risk Needs Assessment (DVRNA), which helped practitioners identify the presence of risk factors for recidivism and determined the intensity of treatment. The DVRNA placed the offender into one of three categories: low-intensity (level A), moderate intensity (level B), or high intensity (level C). Research suggested that, when the intensity of treatment corresponded to offender risk for offenses in general, there was a greater possibility for reduction in recidivism (Gover, 2011). By placing domestic violence offenders in groups based on treatment needs, the DVOMB hoped to reduce the recidivism rates for domestic violence offenders in the State of Colorado. A review of the literature did not reveal any literature on whether the steps taken by the DVOMB have resulted in a higher rate of treatment completion or a lower recidivism rate.

Domestic Violence Offenders

Domestic violence has been defined as,

The manipulative attempt by one person to obtain power and control over his or her intimate partner with a coercive and systematic pattern of abusive behavior. Domestic violence may include psychological, physical, sexual, and/or stalking behaviors. The intense emotional involvement between the victim, offender, and oftentimes, children distinguish domestic violence from other types of crime. (Gover, 2011, p. 95)

In 2008, the estimated rate of nonfatal domestic violence victimization was 4.8 per 1,000 adult women (Murphy et al., 2014). The majority of offenders were close in age to their victims and of the same race. In domestic violence cases where the victim was the

individual's spouse, males committed 86.0% of the offenses; 82.0% were White, 11.0% were Black, and 6.0% were of another race; 25.0% were ages 18-29 and 73.0% were ages 30 or older. In cases where the victim was a non-married romantic partner, the offender was male in 82.0% of cases; 67.0% were White, 21.0% were Black, and 10.0% were of another race; 56.0% were ages 18-29 and 36.0% were ages 30 and older (Truman & Morgan, 2014). These statistics indicated that the majority of male offenders were a variety of races and ages.

Common risk factors found for domestic violence offenders have included poor impulse control and lack of empathy for others, often stemming from their own early exposure to violence or victimization as a child, attachment insecurity, deficits in relationship communication and problem solving skills, and emotional dysregulation (Daro et al., 2004; Gardner et al., 2014; Murphy, 2013). Living in a poverty stricken and resource-poor community as well as associating with peers who support the use of violence are additional common risk factors for those who committed domestic violence. Men who have been domestically violent often cycle through victims and, if one leaves, they find another to fall into the same pattern of violence (Harway, 2012). In a meta-analysis of 85 studies, Stith, Smith, Penn, Ward, and Tritt (2004) looked at the most common risk factors for physically violent domestic violence offenders in heterosexual, married, or cohabitating relationships. They found large effect sizes for the use of emotional abuse, verbal abuse, and forced sex with men who reported marital dissatisfaction, illicit drug use, and attitudes condoning violence. Moderate effect sizes for violence were found for men who reported career and life stress, a history of domestic

violence, anger and hostility, alcohol use, depression, and traditional sex role ideology (Stith et al., 2004).

Domestic violence offenders are more likely than the general population to have been exposed to child abuse or domestic violence as children (Gardner et al., 2014; Murrell, Christoff, & Henning, 2007). In previous research, the severity and frequency of domestic violence committed had a strong correlation with the severity and frequency of violence the offender was exposed to as a child (Murrell et al., 2007). The most violent perpetrators were most likely to have been physically abused and to have witnessed domestic violence as children. They were also more likely to be violent outside of the home, have moderate to high levels of anger, and have antisocial personality traits. The frequency of domestic violence offenses was higher in those who were exposed to a high level of violence as children. A study by Gardner et al. (2014) found domestic violence offenders were more likely to be exposed to both physical and emotional abuse as well as neglect compared to other violent offenders who were more likely to be exposed only to physical abuse. In addition, Holmes et al. (2015) found exposure to domestic violence as a child resulted in emotional reactivity and behavioral dysregulation in addition to other prosocial skill deficits for up to 3 years after the study was conducted. Demonstrated prosocial skill deficits in children exposed to domestic violence included a lack of self-control, showing empathy, cooperation with others, and a lack of ability to interact effectively with others.

Studies have shown that being exposed to violence as a child in the form of domestic violence or child abuse could result in extreme emotional arousal and automatic alarm reactions. These alarm reactions have been demonstrated to be inappropriately

triggered by current stimuli that resembled past experiences (Paivio & Laurent, 2001). Underregulation of emotion could inhibit one's ability to accurately recognize facial affect in others. Empathic reactions to others could play a role in the reduction of aggressive and antisocial actions toward others (Miller & Eisenberg, 1988). Domestic violence often occurs while both parties are at a heightened state of emotional arousal during which alarm reactions are triggered. This could further inhibit an offender's ability to accurately read the emotional reaction of their partner, especially if they have a history of being exposed to violence (Luke & Banerjee, 2013). Domestic violence offenders could engage in aggressive behaviors such as emotional and psychological abuse even when not emotionally triggered. Increased empathy could inhibit these hurtful behaviors, with or without the presence of alarm reactions, because the offender would be better able to accurately recognize the emotions of his partner.

Theories of Domestic Violence

Feminist theory. Also called the gendered approach, feminist theory is one of the oldest and most well known theories of domestic violence etiology. It is currently by far the most prominent theory of domestic violence etiology in the field of psychology (Murphy, 2013). The primary beliefs of the feminist model were developed from the analyses of the 1970s feminist movement in Great Britain and North America. These beliefs were reflective of extensive efforts to provide safe houses and support for battered women (Murphy, 2013). The feminist model sought to understand violent relationships by examining the sociocultural context in which these relationships developed. It examined the gender-based expressions of power and control while highlighting the role of historical and social context.

There is a great deal of writing and research concluding domestic violence is primarily an issue of men's violence against women caused by wider societal rules and patriarchal beliefs (Bell & Naugle, 2008; Dixon & Graham-Kevan, 2011). It is the feminist theory belief that gender roles defined by society and taught to individuals in childhood teach individuals to place men in positions of power over women. Domestic violence has been viewed not as a response to anger but a strategy to maintain power in the relationship (Harway, 2012). This power has been viewed as the man's entitlement. These socially defined gender roles are thought to lead to victimization of women and perpetration of violence by men against women. It is believed that various tactics, including physical violence, are used by men to exert power and control over women (Bell & Naugle, 2008).

Support of the feminist theory stems from descriptive and correlational studies that found endorsement of patriarchal values from men who had committed domestic violence offenses (Bell & Naugle, 2008). This gendered perspective has been instrumental in developing therapeutic treatment interventions for both domestic violence offenders and victims. Further support came from studies that found the highest rates of domestic violence in households where the husband held patriarchal views and there was the greatest discrepancy between the husband and wife's acceptance of these patriarchal views (Bell & Naugle, 2008). In a meta-analysis on risk factors for violence, Stith et al. (2004) found that patriarchal beliefs were just one moderately predictive factor among several other predictive factors, such as depression, drug and alcohol abuse, and social learning.

Although feminist theory has provided several social, historical, and cultural contributions to the study and understanding of domestic violence, it has significant limitations. One critique of the feminist theory of domestic violence is that, in focusing on men's violence against women, it ignores the problem of women's violence against men in intimate relationships. In the feminist theory, women's aggression and violent behavior toward men are either ignored or understood as self-defense or violent resistance (Murphy, 2013). In addition, gender-based analysis has difficulty explaining the prevalence of domestic violence in same-sex relationships. The emphasis on beliefs about gender and sex roles has not been consistently supported in research of male domestic violence offenders. The feminist model provides important information about the social and historical influences on domestic violence but it ignores the individual differences that may contribute to the development of domestically violent traits.

Systems theory. Systems theories, or family violence theories, of domestic violence encompass systems theory, ecological theory, exchange or social control theory, resource theory, subculture-of-violence theory, and power theory, among others. The commonalities of these theories that make up the systems theories are discussed here. The systems theories view the root of violence as stemming not only from within the greater culture but also from within the family structure. Family conflict, acceptance of violence, and gender inequality are hypothesized to interact and lead to future violence against one's intimate partner (Bell & Naugle, 2008). Systems theory views the use of violence to address family conflicts as learned in childhood by witnessing and/or experiencing domestic violence. The theory views family tension and the likelihood of violence as being exacerbated by psychosocial stressors such as economic hardships. Systems

theories help clarify the role of empathic failure, dyadic conflict escalation, communication skills deficits, and mutual patterns of abuse (Murphy, 2013).

In systems theories, power imbalances between romantic partners are seen as increasing the tension within the entire family and, in turn, increasing the likelihood of domestic violence (Bell & Naugle, 2008). Studies that examined the impact of power structure on rates of family violence found the lowest levels of aggression in more egalitarian couples, supporting the idea that power imbalances increase the risk for domestic violence (Bell & Naugle, 2008). The systems theories view each member of the couple as contributing equally to the violence, as being equally responsible for it, and gaining equally from it (Harway, 2012). In this view, although power imbalances are acknowledged as being present in many violent relationships, both partners are seen as equally responsible for these imbalances that lead to the violence. The view that both partners are equally responsible has been criticized by feminist theory advocates as blaming the victim (Harway, 2012).

Social learning theory. Social learning theorists hypothesize that violence against intimate partners is acquired through modeling during childhood (Bell & Naugle, 2008). Methods for solving family conflicts are viewed as learned during childhood by observing parental and peer relationships. Both perpetrators and victims of domestic violence are believed to have witnessed or directly experienced physical abuse as children, leading to a development of tolerance or acceptance of violence later in life. Studies of intergenerational violence suggest that witnessing or experiencing abuse as a child is associated with future victimization and perpetration of domestic violence (Bell & Naugle, 2008). Whether or not violence continues into adulthood is thought to be

dependent on the results or consequences of early episodes of violence in peer and dating relationships. Domestic violence is maintained if it is reinforced through partner compliance or alleviation of negative feelings. Positive outcomes perpetuate the abusive behaviors and negative outcomes decrease the behavior. Direct reinforcement is not needed to maintain the violent behavior. Simply witnessing positive or negative consequences of violent behavior may be enough to determine whether one will engage in violent behavior toward a partner in the future (Bell & Naugle, 2008). Social learning can also reinforce gender roles that have been associated with an increase in domestic violence incidents. Domestic violence treatment programs have relied heavily on social learning theory, with training focused on teaching domestic violence offenders to adopt non-violent methods for addressing partner conflict (Bell & Naugle, 2008). One criticism is that social learning theories tend to downplay individual risk factors that could lead to the perpetration of domestic violence (Murphy, 2013).

Psychopathological models. Psychopathological models understand domestic violence as an outgrowth of abusive individuals' trauma histories, personality disorders, and attachment styles (Murphy, 2013). Most batterer typologies from the psychopathological perspective focus on personality characteristics from a dimensional rather than a diagnosable perspective and propose that personality characteristics are important to distinguish among subtypes of violent partners (Holtzworth-Munroe & Meehan, 2002). One prominent psychopathological model of domestic violence divides offenders into three main types based on severity of the offense(s), generality of violence, and the presence of psychopathology/personality disorder(s). These three types have been called Family Only, Generally Violent/Antisocial, and Borderline/Dysphoric (Dixon &

Graham-Kevan, 2011; Gondolf, 2011; Holtzworth-Munroe & Meehan, 2002). Family Only (FO) domestic violence offenders are believed to engage in the least marital violence as well as the least violence outside of the home (Holtzworth-Munroe & Meehan, 2002). They are also believed to exhibit the least psychopathology and, specifically, are not characterized by borderline personality or antisocial personality characteristics. Generally Violent/Antisocial (GVA) domestic violence offenders are believed to be the most violent subtype and engage in the highest level of domestic violence as well as violence outside of the home. They are most likely to display characteristics of antisocial personality disorder. Borderline/Dysphoric (BD) offenders are seen as engaging in moderate to severe levels of domestic violence but only low to moderate levels of violence outside of the home. They are seen as the most psychologically distressed and most likely to show evidence of borderline personality characteristics (Holtzworth-Munroe & Meehan, 2002).

Holtzworth-Munroe and Stuart (1994) developed the three subtypes of domestic violence offenders by conducting a comprehensive review of the batterer typologies available at the time. They summarized data across the studies and observed that offender subtypes could be classified along three descriptive dimensions. The descriptive dimensions include: (a) the severity and frequency of marital violence; (b) the generality of violence, whether it occurs predominately within or outside of the home; and (c) the presence of psychopathology or personality disorders. Later, Holtzworth-Munroe and Meehan (2002) tested the domestic violence offender typology theory among a community sample of 102 men who had been physically aggressive toward their wives in the past year. They conducted a series of cluster analyses using measures of three

descriptive dimensions: marital violence, general violence, and personality disorders. Through these cluster analyses, the three predicted subgroups of domestic violence offenders emerged as Family Only, Generally Violent/Antisocial, and Borderline/Dysphoric, as well as a fourth, unpredicted, cluster they called Low Level Antisocial. The Low Level Antisocial group fell in between the Family Only and Generally Violent/Antisocial men on the antisocial measures, leading the authors to conclude that the domestic violence offender subtypes can fall on a continuum of antisocial personality characteristics. Of the three primary subtypes (FO, GVA, and BD), approximately 50.0% were FO, 25.0% GVA, and 25.0% BD (Holtzworth-Munroe & Meehan, 2002).

Another distinction among subgroups of batterers addresses only the presence or absence of certain types of personality characteristics or disorders such as antisocial personality disorder, narcissistic personality disorder, or borderline personality disorder. Batterers with elevated scores on measures of the above three personality disorders had the highest rates of post-treatment recidivism (Hamberger & Langhinrichsen-Rohling, 2007). Higher scores on the borderline-dysphoric factor of the Millon Clinical Multiaxial Inventory III were related to treatment dropout. There may be factors common to these personality disorder characteristics that influence the offender's ability to successfully complete treatment programs as well. Individuals with these personality disorders have all been shown to have empathy deficits (Gery et al., 2009; Marissen, Deen, & Franken, 2012; Marsh & Blair, 2008). It is important to note this possible relationship between recidivism, treatment dropout, and empathy in order to improve treatment effectiveness and reduce early termination and recidivism.

One study found that 63.0% of domestic violence offenders showed evidence of personality pathology with 44.0% showing evidence of antisocial personality disorder (Gibbons et al., 2011). In their review of the literature, Gibbons et al. (2011) found a range of 49.0-88.0% prevalence of personality disorders in domestic violence offenders with the most common being antisocial personality disorder and the second most common being narcissistic personality disorder. With such high rates of personality pathology, particularly antisocial personality disorder, it is likely that much of the research being conducted on antisocial personality disorder and other personality disorders could be applied to domestic violence offenders. Of note, individuals who are domestically violent are a unique population in which many individuals do not have antisocial personality disorder or other personality disorders, it was important that empathy research be conducted for this unique population alone.

A final psychopathological model views a defining factor of domestic violence offenders as the distinction between those who are reactive/affectively violent versus those who are proactive/predatory offenders (Hanlon, Brook, Stratton, Jensen, & Rubin, 2013; Meloy, 2006). Reactive/affective violence is characterized by high levels of arousal of the sympathetic nervous system due to the emotions of anger and/or fear and is a response to perceived imminent threat (Hanlon et al., 2013). It has been described as impulsive, reactive, hostile, and emotional (Meloy, 2006). The primary goal of reactive/affective violence is to protect oneself or to harm the other person as a result of the perceived threat (Cima, Raine, Meesters, & Popma, 2013). Proactive/predatory violence is characterized by the absence of emotional arousal and the absence of perceived threat. It is cognitively planned and has been described as instrumental,

premeditated, and proactive. Proactive/predatory offenders are more likely to be diagnosed with antisocial personality disorders while the affective offenders are more likely to be diagnosed with borderline personality disorder (Meloy, 2006).

Reactive/affectively violent domestic violence offenders are also more likely to have higher levels of chronic anger and fearful attachment (Hanlon et al., 2013). They are more likely to have a close relationship with their victim, to have felt provoked, and to have acted in a state of anger. Proactive/predatory violent offenders are more likely to commit more severe physical violence on his or her victims and to have an identifiable goal in committing violence (Hanlon et al., 2013). Once again, the interplay between the type of domestic violence committed, proactive/predatory versus reactive/affective, and possible personality disorders associated with each, may play a role in their empathic abilities. It is important to acknowledge the possibility that there may be a great deal of variability in empathic ability in this population possibly explained by the different offending types.

Although individual psychopathology models of domestic violence provide a rich understanding of emotional and personality correlates of domestic violence, they often fall short in explaining the processes that link various emotional and personality factors with the perpetration of domestic violence (Murphy, 2013). In addition, they downplay the interactional, social learning, and sociocultural influences that lead to domestic violence perpetration. Many theories of domestic violence, such as feminist theory and systems theory, fear that focus on individual psychopathology diverts attention from the social restructuring needed to end the patriarchy thought to cause domestic violence (Holtzworth-Munroe & Meehan, 2002).

Social information processing. The social information processing (SIP) model conceptualizes aggression within a general model of social competence (Murphy et al., 2014). Social information processing posits men who are violent toward their partners are unable to respond appropriately to social stimuli due to deficits in social information processing (Taft et al., 2015). The SIP model views anger as interfering with rational cognitive processing, resulting in a social skills deficit that increases the likelihood of domestic violence. Social information processing incorporates steps of social processing and action. It begins with decoding social cues and moves to the generation, selection, enactment, and evaluation of responses in light of interpersonal goals and with continual reference to a central “database” of social knowledge (Murphy, 2013).

The SIP model is a biopsychosocial model that derives from research and theory on children’s aggression that has evolved to apply to a variety of situations, including the perpetration of domestic violence (Murphy et al., 2014). The original social competence model had three stages: decoding, decision-making, and enactment. Decoding “involves the interpretation and understanding of social cues” (Murphy et al., 2014, p. 8). Factors such as inattention or distraction may interrupt the reception or perception of these social cues and interfere with decoding (Holtzworth-Munroe, 1992). Various cognitive deficits such as unrealistic expectations, faulty attributions, or irrational beliefs could lead to the misinterpretation of social stimuli. Decision-making involves developing and choosing a set of actions in response to decoding (Murphy et al., 2014). Once the social cue has been decoded, it is important to generate possible responses and determine which one is the best possible response to the situation (Holtzworth-Munroe, 1992). Enactment is how one

acts out the behaviors chosen during the decision-making phase. These behaviors are what others judge as socially competent or problematic.

When presented with hypothetical relationship scenarios, male domestic violence offenders were more likely than non-violent controls to display a hostile cognitive bias by attributing more negative intentions to female partners. This negative attribution demonstrates a deficit in the decoding stage of the SIP model (Murphy et al., 2014). Attribution to negative intentions is then influenced by the following anger and arousal to bias the response generation and selection processes toward aggressive options. Previous research has demonstrated that, in samples of children, negative attribution biases that were developed as a result of maltreatment were predictive of aggressive behavior (Taft et al., 2015). In addition, researchers found men previously violent toward their partners demonstrated more negative attribution biases than men whose relationships were in distress but demonstrated no partner violence (Taft et al., 2015).

The SIP model has since been expanded to include six stages: (a) encoding social cues, (b) interpretation of social cues, (c) goal clarification, (d) response access or construction, (e) response decision; and (f) enactment (Murphy, 2013). Encoding social cues is the identification of what happened and the interpreting stage attempts to identify why it happened (Larkin, Jahoda, & MacMahon, 2013). Following the interpretation stage is goal clarification, which attempts to identify what the individual would like to happen next. Response access or construction involves the generation and retrieval of possible responses. Finally, response decision occurs when the individual chooses a response from all the possibilities and enactment is when they act out their chosen response. At each of the stages, there are bidirectional influences to a central “database”

of social knowledge (Murphy, 2013). Past experiences are stored and referred to for response access in this database and new information is constantly being added and adapting the information in the database. The central past information database influences each stage of the SIP model and could affect the current social interaction (Larkin et al., 2013).

The SIP model, therefore, involves constant reference to, and updating of, social scripts and schemas that reflects social and cultural influences, personality, temperament, and learning history. This reformulation of the model better explains the role of emotion in social information processing. Both internal (emotional) cues as well as external (social) cues are used to interpret the meaning and intention of others' behaviors. The six stages of SIP are continually influenced by the environment and previous behaviors. Social information processing does not happen in a vacuum, but in a context of cultural influences, personality, and learning history (Murphy et al., 2014). Some influential factors include posttraumatic stress, intoxication due to drugs or alcohol, and neurocognitive deficits. The presences of these situational factors could increase the risk of domestic violence perpetration by altering the processes of SIP by increasing the attribution of negative partner intent and the perceived acceptability of violence (Murphy, 2013). For example, veterans who had committed domestic violence were found to have higher instances of PTSD symptoms and higher levels of hyperarousal than veterans who had not been domestically violent (Taft et al., 2015). Hyperarousal has been linked to increased levels of aggression in previous research with veterans. The increased physiological arousal that comes with hypervigilance is consistent with the SIP model in that it placed the veterans at a higher risk for misperceptions of threat and greater

violence disinhibition (Taft et al., 2015). Although these situational factors increase the likelihood for violence from the SIP perspective, the theory also views violence as “. . . an actively selected response option and therefore individuals are personally responsible for choosing to act in an abusive manner” (Murphy, 2013, p. 212).

Recent research suggests that some aspects of social cognition linked to domestic violence perpetration may be subtle and largely outside of conscious awareness. Factors that may affect one’s pattern of violence outside of his or her awareness include intergenerational patterns of relationship aggression and exposure to trauma (Murphy et al., 2014). The inability to accurately identify emotions in one’s partner and the subsequent attribution of meaning to this inaccurate emotion could play a role in the perpetration of domestic violence.

Current Domestic Violence Treatment

Approximately 80.0% of domestic violence offender intervention program participation is mandated (Lehman & Simmons, 2009). Several models of etiology and treatment have been developed to work with these mandated clients. There are currently two predominate theories, the Duluth model and the cognitive behavior therapy model (Lehman & Simmons, 2009). Both models have many similarities as well as some key differences.

Duluth Model. The Domestic Abuse Intervention Project, more commonly known as the Duluth model, has been the most common theoretical basis for intervention with domestic violence offenders. It is a hybrid of the feminist and cognitive behavioral models of treatment (Lehman & Simmons, 2009). Treatment focuses on taking accountability for one’s actions, challenging and changing irrational beliefs and attitudes,

and education. The primary goals of the Duluth model are: (a) the reduction of paternalistic power and control attitudes and behaviors, (b) the reduction of authorization control-/dominance-oriented relationships styles (which the model theorizes to be central to IPV), and (c) the development of more egalitarian relationship styles (Gardner et al., 2014). The Duluth model views these core factors as being central to changing the violent behavior of men who commit domestic violence. The model views domestic violence as a learned behavior and treating psychological problems or working on deep personality change is not part of the process. The Duluth model works by confronting men in a group therapy setting about their sense of gendered entitlement and sexist attitudes toward women as well as their minimization and denial of abusive behavior (Lehman & Simmons, 2009). The model challenges each man to be fully accountable and take responsibility for his behavior.

Although it is currently the most common model of conceptualizing domestic violence offenders and most common form of domestic violence treatment, the Duluth model has remained highly ineffective. Previous research has shown a recidivism rate of 40.0% for offenders who successfully completed Duluth model treatment (Lee et al., 2012). There were no significant differences between offenders who received group treatment and those who did not receive treatment. Overall, there was only about a 5.0% reduction in re-offense for those who completed treatment versus arrest alone (Lee et al., 2012). In addition, only about a 50.0% of domestic violence offenders completed treatment regardless of whether treatment is court mandated. In addition, in the Duluth model, the discussion of anger or violence as a reaction to a perceived threat, either to one's safety or one's view of self, is secondary if discussed at all (Gardner et al., 2014).

The Duluth model views the discussion of anger or other psychopathology that may contribute to domestic violence as inappropriately pathologizing behavior that is better understood by paternalistic, misogynistic, and dominance-oriented features.

Cognitive Behavioral Therapy. Cognitive behavior therapy (CBT) has been the second most prominent model of domestic violence offender therapy (Lehman & Simmons, 2009). The CBT model conceptualized domestic violence as occurring due to problems with the individual's thoughts, assumptions, beliefs, and behavior. It views violence as being used because it was functional in some way to the person using it or had been functional to that person in the past. This function could be a relief of inner tension, victim compliance, or an end to an uncomfortable situation. Many CBT-based programs also address empathy and jealousy. The CBT model also demonstrates a low effectiveness rate with an effect size of $d = .29$ (Lehman & Simmons, 2009) and a recidivism rate of 45.9% (Lee et al., 2012). It has many of the same challenges as the Duluth model such as a 50.0% non-completion rate and no significant difference recidivism rate compared to arrest alone (Lee et al., 2012).

Critiques

Many have argued that the prominent theoretical models of etiology and treatment in the field of domestic violence have been limited in scope and often emphasized singular causes of domestic violence (Murphy, 2013). None of the major theories of domestic violence or the models of treatment appear to capture the entirety of the broad scope of risk and protective factors associated with domestic violence. Additionally, the vast majority appear to ignore neurobiological factors. For example, domestically violent individuals have a rate of head injury two to four times higher than non-violent controls

(Murphy, 2013). Additionally, domestic violence perpetrators show poorer average performance on a range of neuropsychological assessments measuring executive functions, impulse control, and verbal abilities. In light of these shortcomings, Murphy (2013) made an argument for a more integrative and coherent approach rather than an array of predictive factors. Social information processing model appears to account for a great deal of these shortcomings by integrating psychological, social, and biological factors in the model of the etiology of domestic violence.

Empathy

According to Darwin, all people, regardless of race or culture, express emotions on their face and in the body in a similar fashion (Matsumoto et al., 2008). Humans have discrete physiological responses unique to each emotional experience that have helped us all express emotions similarly to one another, making it easier for one to read and understand another's emotional experience. It has been part of our evolutionary heritage and has helped people in any type of relationship respond to others in an appropriate manner. It has made evolutionary sense for an individual to be able to accurately read another's emotions for their own success in interpersonal relationships as well as the community's overall success. Humans are social beings who must know how to collaborate and interact effectively for the overall good and being able to understand the emotions of another person from their facial expressions has helped with that goal.

There has been no consistent definition of empathy. Aspects of empathy have been divided into as many as five and as few as two categories or types. The primary way empathy has been conceptualized in the current literature has been to divide it into emotional empathy and cognitive empathy (Besel & Yuille, 2010). Emotional empathy is

defined as feeling the emotion of another person while maintaining a compassionate, other-focused perspective. It is characterized by a visceral, automatic reactivity to another's emotions. Cognitive empathy has been defined as having an imaginative understanding of another person's thoughts, feelings, and actions.

Barnett and Mann (2013) proposed five factors of empathy. They argued that the current research may be missing the complexity involved in empathy by focusing on only the two factors of cognitive and emotional empathy, and often viewing the two as unrelated, commonly focusing on only one factor. The five factors of empathy Barnett and Mann proposed were perspective taking, ability to experience emotion, belief that others are worthy of compassion and respect, absence of situation factors which could impair cognitive functioning or introduce competing demands, and an ability to manage the feelings of personal distress arising from an understanding of others' distress. Perspective taking and the ability to experience emotion are closely aligned with what has been called cognitive empathy and emotional empathy in the literature, respectively. The third factor of belief that others are worthy of compassion and respect was introduced because of the belief that contradictory findings regarding empathy in violent offenders, that they could both rate high and low on measures of empathy, may be a result of their views that certain individuals are not worthy of respect or compassion rather than the inability to understand or feel what the other person was feeling. Situational factors were introduced as a factor of empathy to account for the idea that not all individuals who offended lacked empathy. There may be extraneous variables such as a heightened emotional state or feeling threatened and putting their needs for safety above the needs of others that impaired their ability to be empathic in that moment.

Finally, the fifth factor of an ability to manage one's own distress that results in recognizing others' distress was introduced to account for individuals who avoid acknowledging another's pain, minimize, or justify it in order to avoid their own pain or ameliorate the feelings caused by witnessing this distress.

Empathy has been characterized as both an immediate reaction to another's emotional state as well as a multistage process (Grady & Rose, 2011). One common multistage process view of empathy sees it as having four stages: stage 1, emotional recognition, which is recognizing facial affect; stage 2, perspective taking, the ability to view the world from another's perspective; stage 3, emotion replication, the ability to experience another individual's emotion; and stage 4, response decision, the behavioral response selected based on the output of the previous three stages (Oliver, Watson, Gannon, & Beech, 2009). If an individual struggles with any of the stages of empathy in this model, it would interfere with their overall ability to react to another person in an empathic manner.

It has been debated whether empathy is a state or a trait (Grady & Rose, 2011). Empathy has been viewed as a trait that one either does or does not have and which applies across a variety of situations or a state which could be applied to varying degrees depending on the situation and, in the case of antisocial personality disorder and psychopathy, depending on the individual's own needs. If empathy is, in fact, a trait and something that one does or does not have, then it is something that cannot be learned or taught and, if at a deficit, must be something that an individual learns to function effectively without. It is also possible that an individual may be more skilled at one of the factors of empathy proposed such as cognitive or emotional empathy and it would be

important for them to use the strength in one area to bolster the weakness in another. If empathy is a state, then it would be important to determine what situations elicit empathy and what situations hamper its use. For example, with individuals diagnosed with antisocial personality disorder, it would be important to find a way to frame situations that may hamper empathy in a way that make it beneficial to them and more likely to elicit empathy.

The facial feedback hypothesis of empathy states that the expression of others' emotions has an impact on the subjective experience of one's own emotions (Andreasson & Dimberg, 2008). Individuals with high emotional empathy tend to have a stronger reaction to outside emotional stimulus and higher level of sensitivity to emotional stimulus from others. This may be due to the fact that types of emotional expression are processed in different areas of the brain, indicating they have distinct functions. Fear, for example, is processed as a distress cue and as a result the amygdala plays a key role in its interpretation (Besel & Yuille, 2010). Given emotional empathy's automatic and visceral features, it is plausible that fear recognition and emotional empathy are linked. Those with high levels of emotional empathy might have more effective amygdala function than those who do not. Studies have linked disorders associated with deficient empathy, such as antisocial personality disorder, with impaired fear recognition.

The discovery of mirror neurons has added to the facial feedback hypothesis of empathy. Mirror neurons are cortical cells that "provide the mechanism necessary for the embodied simulation of others' mental states" (Hill et al., 2013, p. 116). In other words, mirror neurons aid in the recognition of an emotion as well as the intention behind it. The observation of facial emotions has also been found to illicit rapid and spontaneous facial

mimicry. Even unconscious exposure to specific emotions results in corresponding facial reactions in the observer. When exposed to both happy and angry faces for 30 milliseconds, resulting in unconscious exposure, participants reacted with distinct facial muscle responses that corresponded with the happy or angry emotions presented (Dimberg, Thunberg, & Elmehed, 2000). It was hypothesized the corresponding facial muscle response to an emotion could then illicit the experience of that emotion. In another study of healthy, non-clinical individuals, mirror neurons provided internal stimulation of the observed facial emotion expressions and evoked similar emotions in the observer to the emotions of the observed (Enticott, Johnson, Herring, Hoy, & Fitzgerald, 2008). If one's mirror neurons are perceiving an inaccurate emotion in the observer, and this leads the observer to respond with an inaccurate emotion, it could cause a great deal of trouble in interpersonal relationships.

Written measures such as questionnaires aim to identify whether participants are able to take the perspective of another and identify what they may be feeling in a given situation. These questionnaires often have a high level of face validity and may be subject to social desirability factors (Covell et al., 2007). Facial recognition measures are better able to measure empathy skills by utilizing the facial feedback hypothesis and requiring the participant to accurately read another's emotional expression in the moment. They eliminate the verbal processing component and make it more difficult for the participant to manipulate the results based on social desirability. Self-reported measures of empathy do not always correlate with task or ability-centered levels of empathy. This may be attributed to the high levels of transparency in questionnaire empathy measures (Covell et al., 2007).

Measures of Empathy

Empathy Assessment Index

The Empathy Assessment Index (EAI) was developed to offer an efficient empathy measure that was grounded in the emerging definition of empathy based on recent advances in social cognitive neuroscience (Gerdes et al., 2012). The social cognitive neuroscience model of empathy view empathy as “. . . an induction process . . . that allows a person’s brain and body to observe, process, and vicariously share the feelings, thoughts, and intentions of others” (Gerdes et al., 2012, p. 95). The EAI is a 20-item self-report questionnaire that includes Affective Response (AR), Perspective Taking (PT), Self-Other Awareness (SOA), and Emotion Regulation (ER). Affective Response represents the core experience of empathy, an affective response that is similar or identical to the emotional state of another person. Perspective Taking is viewed as the cognitive ability for understanding the thoughts, feelings, and motivations of others and an awareness of self in relation to others. Self-Other Awareness is an individual’s ability to maintain a strong sense of self, separate from the person to whom he or she is aiming the affective response. Finally, Emotion Regulation is the ability to regulate internal emotional states. Participants are asked to rate how closely the items reflect their feelings or beliefs on a 6-point scale ranging from 1 (*never*) to 6 (*always*). The total score ranges from 20 to 120, with a higher score indicating a higher level of empathy.

Test-retest reliability using a Pearson r has ranged from .74 to .85 (Gerdes et al., 2012). Cronbach alpha scores for each of the four components have ranged from .64 to .83. The AR and PT components of the EAI have been found to have high correlations

with the Interpersonal Reactivity Index (IRI), indicating high concurrent validity (Gerdes et al., 2012).

Empathy Quotient

The Empathy Quotient (EQ) contains 60 total questions, 40 empathy questions, and 20 filler questions to distract the participant from the focus on empathy (Gery et al., 2009). The EQ was developed to measure global empathy in both healthy individuals and psychiatric populations with empathy struggles (specifically autism), this is different from other empathy measures. Responses are scored on a 4-point scale ranging from 1 (*strongly agree*) to 4 (*strongly disagree*). The internal consistency of the EQ was calculated at .884 from a sample of 1,761 university students who had a mean age of 21 years old (Wakabayashi et al., 2006). Overall, women scored significantly higher than men on the EQ (Allison et al., 2011). The EQ has been found to have an item reliability of .99 and a person reliability estimate of .92, which are both extremely high. The sample was relatively homogenous, either individuals with autism spectrum disorder, their families, or university students.

The EQ was designed to test the empathy aspect of the empathizing-systemizing (E-S) theory (Wakabayashi et al., 2006). The concept of empathizing assesses one's theory of mind, the ability to attribute mental states to others, and emotional response (Allison et al., 2011). Empathizing in this assessment is defined as “. . . the drive to identify emotions and thoughts in others and to respond to these with an appropriate emotion” (Wakabayashi et al., 2006, p. 930). The EQ was specifically developed as a new measure of empathy because existing measures of empathy were viewed as only measuring part of empathy. Baron-Cohen and Wheelwright (2004) developed the EQ

specifically to measure cognitive, affective, and a mixed component of both cognitive and affective aspects of empathy. It was first designed and developed to assess empathic abilities in adults with autism spectrum disorder (Domes et al., 2013).

Interpersonal Reactivity Index

The Interpersonal Reactivity Index (IRI) is a 28-item scale that has four subscales of empathy: Perspective Taking (PT), Fantasy (FS), Empathic Concern (EC), and Personal Distress (PD; Gery et al., 2009). Each subscale has seven items. Perspective Taking and Fantasy are thought to measure the cognitive facet of empathy, while Empathic Concern and Personal Distress are thought to identify the affective facet of empathy. The PT subscale assesses one's ability to adopt the viewpoint of another person. The FS subscale measures one's tendency to identify with fictional characters in movies, television shows, or books. The EC subscale identifies feelings of sympathy or compassion for another person. The PD subscale assesses self-oriented feelings of distress or anxiety in reaction to negative emotions of another (Gery et al., 2009). Each item is scored on a 5-point Likert scale ranging from 0 (*does not describe me well*) to 4 (*describes me very well*). Scores can range from 0 to 112 with higher scores indicating higher levels of empathy (Brown, Harkins, & Beech, 2012). Internal reliability scores have been found to range from .71 to .77 and test-retest reliability ranges from .62 to .71. Internal consistency were found to be PT = .53, FA = .67, EC = .70, and PD = .56 with county jail inmates incarcerated for a felony or misdemeanor (Brook & Kosson, 2013).

The IRI has been used to assess empathy in a variety of populations similar to domestic violence offenders such as sex offenders (Gery et al., 2009), individuals with narcissistic personality disorder (Marissen et al., 2012), and domestic violence offenders

(Covell et al., 2007). It has been “. . . validated extensively in a variety of clinical and nonclinical samples, including psychopathic offenders” (Brook & Kosson, 2013, p. 363). “For the last 30 years, the IRI has been the most frequently used and most widely research empathy self-report measure in the social sciences and offender literature” (Gerdes et al., 2012, p. 296).

Facial Emotion Recognition Tasks

Facial recognition tasks have been a widely used measure of cognitive empathy. They utilize the cognitive aspect of empathy in that they require an individual to decode and describe the emotional state of another person based on their facial expression (Domes et al., 2013). Facial emotion recognition tasks are not believed to measure emotional empathy because they only require emotional identification not one’s emotional reaction to the emotional state of another. These studies typically use a forced-choice option of the six primary facial emotions of fear, disgust, anger, sadness, happiness, and surprise along with a neutral facial expression (Ekman, 1999). The accuracy of these tasks has been contested. One argument against facial recognition tasks is that people are not allowed to pick their own emotions and, therefore, are obligated to identify an emotion using a term they typically would not. A contrast to this argument is that, if the terms chosen were truly unrelated, there would be more widespread disagreement. When given the choice of their own words across cultures and researchers, the evidence universally supports the idea that people choose similar emotion words to each other and to the six that were originally provided in previous studies (Ekman, 1999). Although the facial recognition tasks have been shown to be consistent across most cultures for those primary emotions, there are some emotions and cultures that have

contradictory findings. The differentiation between fear and surprise has been found to be the least reliable across cultures and populations. Preliterate cultures and those of Japanese origin have the most difficult time differentiating between fear and surprise (Ekman, 1999). Research has shown that Americans also have difficulty differentiating between fear and surprise, particularly when the individuals in the pictures being shown were from a different culture than the participant. Fear and surprise have only been found to be consistently distinguished in literate cultures when shown pictures from the same race and ethnicity as those completing the task. Evidence supported that there may be more than one universal expression for anger and disgust, both with the mouth open and with the mouth closed.

Several studies have shown that positive expressions more reliably discriminated than negative expressions (Carr & Lutjemeier, 2005). Facial expression discrimination improves with age and females generally show greater skill at decoding and encoding facial expressions. Research has also demonstrated that women tend to exhibit stronger own-gender bias than men, meaning they are better able to recognize emotion on female faces compared to male faces (Scherf & Scott, 2012). Conversely, Scherf and Scott (2012) noted that this difference may be due to the repeated findings that women outperform men in emotion recognition tasks in general. Additional research has found that men and women perform similarly when identifying emotion in male faces (Rehman & Herlitz, 2006).

There are several factors that have been found in the literature to affect an individual's ability to accurately identify the emotional cues on the faces of others or to rate high in written empathy measures. For example, abused children have had difficulty

posing in specific emotional facial expressions or recognizing facial expressions in others (Matsumoto et al., 2008). Individuals with current substance dependence and/or a history of alcohol dependence were also generally worse at recognizing facial emotions. Those who had lower socioeconomic status were more likely to rate higher on the Empathy Assessment Index (EAI), a written assessment of empathy (Gerdes et al., 2012). Males tend to score significantly lower than females in empathy on the Empathy Quotient (EQ), another written assessment of empathy (Muncer & Ling, 2006). Distinguishing facial affect has been shown to be problematic for children and adolescents with emotional and behavioral disorders. Adolescents with conduct disorder and a habit of externalizing problems; in particular, have demonstrated a reduced ability to accurately interpret emotions in facial expressions.

Carr and Lutjemeier (2005) found that the more often youth offenders self-reported involvement in acts of physical violence, the less accurate they were at identifying expressions on other's faces. Twenty-nine incarcerated youth offenders ranging in age from 11 to 17 years were administered the Diagnostic Analysis of Nonverbal Accuracy 2 to assess their accuracy in recognizing four facial emotions: happiness, sadness, anger, and fear. They were shown 48 adult and child facial expressions equally divided by age category, gender, and facial expression for two seconds each in a photo album. They were then asked to identify the facial expression from a fixed-choice list of options of happy, sad, angry, and fearful. Participants were also given the Index of Empathy for Children and Adolescents, a self-report measure of empathy. Overall, the youth offenders were less accurate than youth controls at identifying facial expressions of emotions. The youth offenders showed more selective

impairments in the recognition of fear. In particular, the less accurate the participants were at identifying fear in other's faces, the less empathic they were in their responses to the emotional experiences of others according to the self-reported empathy index.

In a study by Regenbogen et al. (2012), participants were asked to view video clips of 64 male and female actors telling a self-related story with either disgusted, fearful, happy, sad, or neutral emotional content. There were four different conditions created for the videos, "neutral face," "neutral prosody," "neutral speech content," and "all emotional." In each of the first three conditions, the named channel lacked emotionality while the two remaining channels still transferred the specific emotion. The fourth condition was "all emotional" in which the actor's story was accompanied by emotional facial expression, speech content, and prosody. Participants were asked to identify the emotion being portrayed in each video in all four conditions. It was found that in the "neutral face" condition participants were significantly less able to accurately identify the emotions. This was suggestive of the idea that facial cues were the most important factor in effectively identifying emotional content.

The results of a meta-analysis by Marsh and Blair (2008) indicated men with Antisocial Personality Disorder characteristics, such as incarcerated violent offenders, were not significantly impaired in recognizing happiness, anger, or disgust. They were significantly less able to recognize fear on faces than controls. The authors suggested that the specificity of the deficit in fear recognition and not other emotions signified that it was not due to more broad factors that have been found to affect facial recognition such as general intelligence, attention, task-specific motivation, or perceptual processing deficits. Although fear recognition in healthy populations has been found to be lower than

other emotions, approximately 60.0%-70.0% accuracy, it was still lower for the violent offenders at approximately 48.0% accuracy.

Theorists have suggested that violent offenders have a lower level of response to others' distress because they are unable to recognize it. One study showed a strong inverse correlation between empathy and psychopathy (Brook & Kosson, 2013). Brook and Kosson found significant recognition deficits in the emotions of fear and sadness in those who rated high in psychopathy. Participants were 103 adult male county jail inmates. All were given the Psychopathy Checklist-Revised (PCL-R). Participants were asked to identify the emotions seen in a series of 13 video recorded vignettes using a forced-choice format. Results indicated that the PCL-R scores were inversely correlated with empathic accuracy. This indicated that those who had higher scores of psychopathy were less accurate at identifying emotions in others (Brook & Kosson, 2013)

There has been conflicting evidence on the ability of violent offenders to read emotional cues. In another study on psychopathology and ability to read emotional expressions in faces, there was no difference in ability between psychopaths and normal controls (Book et al., 2007). Book et al., (2007) studied 59 male inmates who were incarcerated for a felony or misdemeanor and 60 men from the community. Participants were shown the Japanese and Caucasian Facial Expressions of Emotion and Neutral Faces (Matsumoto & Ekman, 1988) with surprise removed because it was often confused with fear (Ekman & Friesen, 1978). Participants were then asked to identify the emotion presented as well as identify the intensity after viewing each face for as long as needed (Book et al., 2007). They were also asked to view a 2-minute video and asked to rate the vulnerability of the confederate using a validated measure. There was no significant

difference between participants and controls in accuracy of identifying facial emotions. There was a significant difference in accuracy of intensity of the emotions with those who scored higher in psychopathy ratings being more accurate. Those who rated high in psychopathy scores were also more accurate in identifying assertiveness and vulnerability in others ($p = .05$; Book et al., 2007). These findings suggested that psychopaths were able to recognize emotional facial cues with the same level of skill as controls, in particular facial cues signaling distress, but given their ability to identify vulnerability in others and a pattern of taking advantage of this vulnerability, did not react emotionally as controls would.

Marissen et al. (2012) found that violent offenders diagnosed with narcissistic personality disorder were found to be less accurate in recognizing emotional expressions than were controls. In particular, they had deficits in recognizing fear and disgust. These deficits were present even when compared with the abilities of others with personality disorders. No differences were found in self-reported empathy measures, indicating that participants viewed themselves as empathic toward others and were unaware of their deficiency. It may not be that those with narcissistic personality disorder are unwilling to recognize or acknowledge the emotions of others as it is commonly thought, they may be unable to. There have been similar findings of selective empathy deficits for those with diagnosed with psychopathy in regards to the emotions of fear, disgust, and sadness (Marissen et al., 2012). The deficits for those with narcissistic personality disorder were more pervasive across emotions. It has also been suggested that these deficits in emotion recognition are magnified when the individual feels out of control or their self-esteem is threatened. This is particularly important when examining domestic violence offenders

due to the low levels of self-perceived control and high levels of threats to self esteem that occur during domestic violence incidents.

In a study comparing sex offenders, non-violent offenders, and a control group, Gery et al. (2009) found that sex offenders were less able to differentiate between anger, disgust, fear, and surprise in the facial expressions of others. The study consisted of 30 males divided into three groups matched for age and education level. The three groups included 10 prison inmates incarcerated for child sexual abuse, 10 inmates incarcerated for theft or fraud, and 10 prison staff members. Participants were asked to view 12 black and white photographs of 6 males and 6 females each displaying a facial expression of a different emotion (fear, sadness, happiness, anger, surprise, and disgust) from the prototype images from Ekman and Friesen's (1976) Pictures of Facial Affect. Face morphing technology was used to morph each image to one of three intensity levels (40.0%, 70.0%, and 100.0%) of each emotion for a total of 48 photographs. Each photograph was displayed for 6 seconds and, after each presentation, participants were asked to identify the emotion using a forced-choice response format and then asked to rate the intensity of each emotion from 0 (*neutral emotion*) to 9 (*extremely strong*). After stimulus presentation, participants were also asked to complete the written empathy questionnaires: Empathy Scale of the Impulsivity-Ventursomeness-Empathy-7 questionnaire, Interpersonal Reactivity Index (IRI), and the Empathy Quotient (EQ). Results of the IRI and EQ indicated control participants had higher perspective taking scale ratings on the IRI and higher EQ scores than the sex offender participants. Results of the facial emotion recognition task indicated that the sex offenders were less accurate in identifying facial emotion than both the non-violent offenders and the controls.

Particularly, the sex offenders confused disgust with anger and fear with surprise. They often identified disgust as anger and fear as surprise.

There has been one previous study that studied facial emotion recognition with domestic violence offenders. Babcock et al. (2008) studied facial emotion recognition accuracy in men whose partner reported an incident of aggression in the past year. The sample size consisted of 110 community sample couples. Couples were individually administered the Revised Conflict Tactics Scale (CTS2) and were considered violent if they reported one or more incidents of male-to-female violence in the past year. Couples were considered non-violent if they reported no violence between the couple in the past 5 years. Men were then given the Self Report of Psychopathy-II (SRP-II), the 14 true or false items from the Millon Clinical Multiaxial Inventory-III (MCMI-III) that assessed for borderline personality characteristics, and were interviewed about their history of violence. The men were then asked to label 60 slides chosen from Ekman and Friesen's 1976 *Picture of Facial Affect Series*. The facial affect series consisted of standardized black and white pictures of the six primary facial emotions (disgust, fear, anger, surprise, happiness, sadness, and a neutral facial expression). The men were shown nine slides each of fear, anger, surprise, disgust, and sadness; eight slides depicting happiness; and seven slides depicting a neutral face. Each face was shown for 10 seconds with a 1 second delay in between. The men were asked to identify the correct emotion using a forced-choice format by pointing the correct emotion with a pointer on a dial (Babcock et al., 2008). The men who were categorized as violent were further divided into subgroups using their Self Report of Psychopathy-II, Millon Clinical Multiaxial Inventory-III, and general violence interview scores. They were divided in to three groups: (a) family only

offenders who were lowest in marital violence, borderline personality characteristics, and general violence; (b) borderline personality offenders who were moderate in marital violence and general violence, low on psychopathy, and highest in borderline features; and (c) the last group was labeled generally violent and rated highest on marital violence, general violence, and psychopathic characteristics. The findings revealed that men who were labeled as generally violent were the only men to have impairments in rating facial affect. They displayed deficits in identifying angry, happy, neutral, and surprised faces. The men with the borderline personality characteristics were the most accurate in recognizing facial emotions.

Nonverbal Cognitive Assessments

Nonverbal cognitive assessments measure a person's intellectual ability with minimal verbal requirements (Bardos, 2001). Nonverbal assessments are better able to accurately identify cognitive ability without confounds such as sociocultural effects, formal education in the English language, and having a first language other than English (Bardos, 2003; McCallum, 2003). Due to the research that has indicated that men who commit domestic violence have often been from poverty stricken and resource-poor environments (Daro et al., 2004) and have often had struggles with drug and alcohol abuse (Stith et al., 2004) which could lead to less exposure to language-rich learning environments, formal education attainment, and negative effects on brain functioning and development, a nonverbal cognitive assessment was used for this study. In addition, Babcock et al. (2008), who conducted a facial recognition of affect study with men who had been domestically violent, acknowledged, ". . . the recognition deficits among the batterers may reflect general cognitive deficits among this group. Replications of these

finding controlling for IQ differences is necessary before firm implications can be drawn” (p. 301). This study hoped to control for IQ rather than educational attainment by using nonverbal cognitive measures.

Wechsler Adult Intelligence Scale--Fourth Edition

The Wechsler Adult Intelligence Scale--Fourth Edition (WAIS-IV) is comprised of four index scales: Verbal Comprehension Index Scale (VCI), Perceptual Reasoning Index Scale (PRI), Working Memory Index Scale (WMI), and Processing Speed Index Scale (PSI). First, the general assessment was reviewed then the nonverbal ability scales specifically were examined. The VCI is a measure of “. . . verbal concept formation, verbal reasoning, and knowledge acquired from one’s environment” (Wechsler, Coalson, & Raiford, 2008, p. 128). The PRI is a measure of “. . . perceptual and fluid reasoning, spatial processing, and visual-motor integration” (Wechsler et al., 2008, p. 128). The WMI is a measure of one’s “. . . ability to temporarily retain information in memory, perform some mental operation on, or manipulation of, it and produce a result.” (Wechsler et al., 2008, p. 128). The WMI subtests require number retention or mental arithmetic. The PSI “. . . provides a measure of the examinee’s ability to quickly and correctly scan, sequence or discriminate simple visual information” (Wechsler et al., 2008, p. 129). It requires the participant to copy or recognize shapes with a high level of speed. In the WAIS-IV, the four index scales with their two to three core subtests are examined together to determine one’s overall Full Scale Intelligence Quotient or FSIQ. For the WAIS-IV, the FSIQ is considered to be the most valid measure of overall cognitive ability. The WAIS-IV requires the administration of 10 subtests for an average testing time of 67 minutes. It was standardized on a sample of 2,200 individuals using

stratified proportional sampling across age, gender, race/ethnicity, and education.

Validity scores range from .71 to .98 with the majority ranging from .90 to .98, which is extremely high (Wechsler, 2008).

Both the VCI and the WMI are heavily based on verbal ability and previous learning and, therefore, would not be used in this study. They will not be discussed any further. The PRI and PSI do not rely on previous knowledge or verbal ability and, therefore, were considered as nonverbal measures of intelligence for this study and examined more closely. The PRI consists of three core subtests: block design, matrix reasoning, and visual puzzles (Wechsler et al., 2008). Block design asked the participant to use red and white blocks to re-create a design from viewing a picture only. It was designed to require one to analyze and synthesize abstract visual stimuli. Matrix Reasoning asks the participant to view an incomplete matrix or series and select the response that best completes the matrix or series. It requires the use of fluid intelligence, visual intelligence, and classification and spatial ability. For Visual Puzzles, the participant views a completed puzzle and selects the three pieces that could recreate the puzzle. It is designed to assess the ability to analyze and synthesize abstract visual stimuli.

The PSI contains two core subtests: Symbol Search and Coding (Wechsler et al., 2008). Symbol Search requires the participant to scan a search group and indicate whether one of the symbols in the target group matches each symbol in the search group within a specified time limit. Symbol Search is designed to assess cognitive flexibility, visual-motor coordination, and short-term visual memory in addition to processing speed. Coding asks participants to copy symbols that are paired with numbers within a specified

time limit. Coding is designed to measure short-term visual memory, learning ability, attention, and concentration.

Although the WAIS-IV has been a widely used measure of overall intelligence with strong psychometric properties, it was designed to most accurately measure overall intelligence and include all four index scales. Removing two entire index scales was likely to result in inaccurate results because that was not the purpose for which the assessment was designed. The majority of the test focuses on “academic” intelligence and focuses on traditional cognitive abilities found in the typical school setting (Wechsler, 2008). A review of the WAIS-IV in the Mental Measurements Yearbook also mentioned that the WAIS-IV is “. . . time and labor intensive to administer, score, and interpret; thus it may be most appropriate when high-stakes decisions are made” (Wechsler, 2008). The current study used a cognitive assessment focused on nonverbal abilities in order to avoid assessing only academic intelligence. The purpose of including a cognitive measure in the present study was to assess for and identify any major differences in cognitive ability, significant cognitive deficits in particular, not to make any high stakes decisions about participants. Therefore, using the two nonverbal index scales of the WAIS-IV would not be appropriate for the current study.

Comprehensive Test of Nonverbal Intelligence--Second Edition

The Comprehensive Test of Nonverbal Intelligence--Second Edition (CTONI-2) is a nonverbal intelligence test created to assess reasoning and problem solving in both children and adults (Hammill, Pearson, & Wederholt, 2009). The goal of the CTONI-2 was to minimize the influence of language ability on intelligence test scores (Delen, Kaya, & Ritter, 2012). The test does not focus on any one theory of intelligence because

it was developed using ideas drawn from a variety of other nonverbal intelligence tests with a variety of theoretical backgrounds. The primary goal of test development was to reduce or eliminate the use of language. Many other intelligence tests could be influenced by language or motor skills. The CTONI-2 is intended to measure three cognitive abilities: analogical thinking, categorical formulation, and sequential reasoning (Delen et al., 2012). There are six subtests that are used to measure these cognitive abilities using pictures and geometric designs. It is an untimed assessment and typically takes approximately 40 to 60 minutes to complete. The test does not consider the examinee's information-processing speed given that the test is untimed.

The CTONI-2 was designed, and has standard scores for, individuals from ages 6 to 89 years and 11 months (Delen et al., 2012). The standardization sample consisted of 2,927 participants from 10 states. The sample was representative of the United States population based on the Census Bureau percentages for gender, geographic region, race, parental education, and socioeconomic status. Representative age stratification intervals were also used. Internal consistency scores were all above .80 with many around .90 (Delen et al., 2012). No test-retest scores were available for only the CTONI-2; all test-retest scores for the CTONI-2 were combined with the original CTONI. The authors argued that this was acceptable due to the strong similarities between the CTONI-2 and the CTONI. The CTONI-2 was also used in combination with the CTONI for construct validity scores, which compared the CTONI and the CTONI-2 to similar measures of intelligence. The correlation coefficients ranged from .60 to .90 (Delen et al., 2012).

General Ability Measure for Adults

The General Ability Measure for Adults (GAMA) is a nonverbal assessment that has reduced the effects of verbal item content thus reducing confounding requirements for expressive language and overall academic achievement (Bardos, 2001). The theoretical model utilized in the GAMA is the concept of “g,” which is a person’s “. . . overall ability to apply knowledge and reasoning skills in solving problems” (Bardos, 2001, p. 44). The GAMA was designed as a brief measure of general ability through tasks that require visual abstract reasoning and reducing the language ability required. The test requires no manipulation of objects to reduce motor requirements and examiner involvement that could reduce confounds of examiner ability and training that could be found in the WAIS-IV. The GAMA score is reported on a standard scale with a mean of 100 and standard deviation of 15 in order to make it easier to compare to other intelligence measures.

The GAMA was standardized using a sample of 2,360 individuals ranging in age from 18 to 96 years and closely approximated the United States population using the 1990 census. The median internal consistency across age groups was 0.90 (Bardos, 2003). The average reliability across the item types was 0.65 for Construction, 0.66 for Matching, 0.79 for Sequences, and 0.81 for Analogies. In terms of validity, the GAMA scores have consistently been similar to the Wechsler Adult Intelligence Scales (WAIS-R and WAIS-III), as well as the Kaufman Adolescent and Adult Intelligence Scale (KAIT). The GAMA overall achievement score was standardized into a mean of 100 and a standard deviation of 15, much like other intelligence and achievement assessments. Although the GAMA does not have a strong emphasis on verbal ability, it does have brief

verbal directions that require a second grade reading level in English. The GAMA has been recommended for use in settings where one would like to determine an individual's overall intellectual ability when time or the situation does not allow or warrant a full comprehensive intelligence measure given its short administration time of 35 minutes (Bardos, 2001).

Empathy in Domestic Violence Offenders

Recent literature on the link between empathic deficits and violence focused primarily on childhood aggression and sexual assault but relatively few studies have directly examined the relationship of empathic deficits to domestic violence (Covell et al., 2007). The majority of studies of violence operated under the premise that empathy and aggression were antagonistic constructs and that the presence of one generally inhibited the other. For example, those operating from this view believe a batterer's ability to take the perspective of the victim or vicariously share his or her victim's experience is expected to deter his or her aggression toward the victim (Covell et al., 2007). In working with violent offenders, training aggressive individuals to experience empathy has resulted in reductions in violent behaviors along with a corresponding increase in pro-social behaviors (Covell et al., 2007). Studies that examined violent offenders, domestic violence offenders specifically, defined empathy as "remorse or feelings and expressions of regret in response to a victim's distress" (Covell et al., 2007, p. 166). In a study by Covell et al. (2007), 104 self-referred (29.0%) or mandated (60.0%) men participated in a 24-week program for domestic violence offenders (100.0% of men were referred from alternative sources). Eighty-three participants had previous criminal convictions and 20.0% had previously participated in domestic violence treatment. It was

not mentioned in the article whether participants had successfully completed these treatment programs. Prior to participating in domestic violence treatment as part of the study, participants were given a battery of assessments including the IRI and the Modified Conflict Tactics Scale – II (CTS2), a self-report measure that assessed the extent to which romantic partners engage in various types of violence and their use of non-coercive means to resolve these conflicts. The perspective taking subscale of the IRI was negatively correlated with the psychological aggression ($r = -.36$) and total violence ($r = -.28$) subscales of the CTS2 and was weakly correlated with the physical aggression ($r = -.21$) but not the sexual aggression ($r = -.00$) subscale (Covell et al., 2007). They also found significant interactions between high or low empathic concern and high or low personal distress and reports of total violence ($p = .006$ and $p = .035$, respectively). These results indicated that different dimensions of empathy both alone and in combination were related to different types of domestic violence. The authors suggested that these findings may support the idea of different batterer subtypes. Of particular interest for this study was the finding that a lack of ability to take another's perspective played a role in psychological aggression and total violence.

Summary

There has long been a debate about the etiology of domestic violence. There have been several theories including feminist theory, the psychopathological models of domestic violence, systems theory, social learning theory, and interpersonal processing theory that have attempted to explain domestic violence etiology. All of the current popular theories have significant limitations. Feminist theory views domestic violence as occurring primarily as a result of men's violence against women caused by wider societal

rules and patriarchal beliefs but ignores individual factors (Bell & Naugle, 2008; Dixon & Graham-Kevan, 2011). Psychopathological models, on the other hand, see domestic violence as stemming from individual factors such as personality disorder characteristics, trauma histories, or attachment styles but does not address societal factors (Murphy, 2013). In systems theory, family conflict, acceptance of violence, and gender inequality are hypothesized to interact and lead to future violence against one's intimate partners (Bell & Naugle, 2008). Social learning theorists hypothesize that violence against intimate partners is acquired through modeling during childhood but ignores individual risk factors (Bell & Naugle, 2008). The social information processing (SIP) model conceptualizes aggression within a general model of social competence (Murphy et al., 2014). It currently has little empirical support for the idea that deficits in encoding may impact one's likelihood to be domestically violent. The two most prominent models of domestic violence offender treatment are the Duluth model, which approaches treatment using feminist theory, and the Cognitive Behavioral therapy (CBT) model. Both models of treatment are severely lacking in treatment effectiveness with 40.0% or a 45.9% recidivism rate for individuals who complete therapy using the Duluth model or the CBT model of treatment, respectively (Lee et al., 2012).

Empathy is viewed as an important factor in reducing recidivism for domestic violence offenders. There is not one agreed upon definition of empathy although many researchers agree the expression of others' emotions has an impact on the subjective experience of one's own emotions (Andreasson & Dimberg, 2008). Researchers have attempted to identify and quantify one's empathic ability using written measures of empathy. These measures have included the Empathy Assessment Index (EAI), Empathy

Quotient (EQ), and the Interpersonal Reactivity Index (IRI). The IRI is the most widely used measure of empathy with the forensic population. In addition to written empathy measures, facial recognition tasks are a widely used measure of empathy. They utilize the cognitive aspect of empathy in that they require an individual to decode and describe the emotional state of another person based on their facial expression (Domes et al., 2013). Researchers who assess the forensic population using facial recognition of emotion tasks are currently unsure of the role that general cognitive ability plays in one's ability to accurately identify facial emotions. A nonverbal measure of cognitive ability was used in this study to attempt to identify the impact of general cognitive ability on accurately identifying facial emotion. After a review of nonverbal cognitive ability measures, the GAMA was chosen for the current study due to its specific development as an overall nonverbal measure of cognitive ability and short administration time.

Few studies have attempted to identify the link between domestic violence and empathy. Domestic violence offenders who were categorized as generally violent offenders were found to have more difficulty accurately identifying emotions in others (Babcock et al., 2008). Domestic violence offenders given the IRI were found to have different styles of offending based on how they answered different aspects of the assessment (Covell et al., 2007).

CHAPTER III

RESEARCH DESIGN AND PROCEDURES

In this chapter, the research methodology used in the present study is discussed. In particular, the present study investigated the extent to which domestic violence offenders differed from non-violent controls in their ability to accurately identify facial emotions. The present study also explored how accuracy in facial affect identification related to self-perceived empathy. Finally, how cognitive abilities and specific demographic factors impacted the ability to accurately identify facial emotion was explored. The following aspects of this study are described: (a) research design, (b) participants, (c) procedures, (d) instrumentation, (e) hypotheses, and (f) data analyses.

Specific questions included:

- Q1 To what extent do domestic violence offenders differ from non-violent controls in recognition of facial affect as measured by the Nimstim pictures of facial affect and does the intensity of the displayed emotion or specific emotion displayed play a role?
- Q2 To what extent do demographic factors as measured by a demographic questionnaire (socioeconomic status, drug and alcohol treatment referral history, education, history of own abuse) and/or cognitive abilities as measured by the General Ability Measure for Adults (GAMA) affect how accurately domestic violence offenders identify emotions in others?
- Q3 How does a domestic violence offender's self-rating of his own empathic ability as measured by the Interpersonal Reactivity Index (IRI) compare to his ability to accurately identify the emotions of others as measured by the Nimstim pictures of facial affect?
- Q4 Will the men in the current study demonstrate an own-gender bias and be better able to recognize emotion on male faces than female faces?

Research Design

The current study utilized a non-experimental research design using convenience sampling to examine the research questions mentioned above. The independent variables were group identification (domestic violence offender or non-violent control, self identified empathic ability [high or low], facial affect [high or low intensity and specific emotion presented], and cognitive ability [average or deficient]. The dependent variable was the accuracy in facial emotion identification.

Participants

Participants were a convenience sample of adult level C domestic violence offenders in mandated treatment from the Rocky Mountain region. Level C offenders are at the highest risk of failure to comply with treatment and are at the highest risk of recidivism according to the Domestic Violence Risk and Needs Assessment (DVRNA) (Gover, 2011). A recent sample of 4,095 domestic violence offenders participating in mandated treatment found that 81.0% were men, 56.0% were White, 44.0% identified as a minority race or ethnicity, and the average age was 33 years old (Gover, 2011). The research sample was similar to these demographics with 51.0% of domestic violence offender participants identifying as White and an average age of 35.29 years of age. The sample size of 35 complete trials met the requirements of adequate power. Due to the disproportionate number of male to female or LGBT domestic violence offenders in mandated treatment in the State of Colorado and the significantly different characteristics of female and LGBT offenders, this was a heterosexual male sample (Gover, 2011; Harway, 2012). Control participants were 35 complete samples of adult men recruited using a snowball-sampling method. Exclusion criteria for the control sample was a

history of perpetration of violence as indicated by self-report and any specialized training in psychology or counseling (Hooper, Stockton, Krupnick, & Green, 2011). Control participants with any training in psychology or counseling were excluded from the sample to reduce the possibility of skewed data due to participants having specialized training in empathy and emotion recognition. All participants, both domestic violence offenders and control participants, were required to be able to read and speak English fluently due to the necessity to be able to read and understand the Interpersonal Reactivity Index.

Instrumentation

Demographics Questionnaire

All participants were given a demographic questionnaire developed by the researcher. It can be viewed in its entirety in Appendix A. Information covered in the demographic questionnaire included race and ethnicity, native language, annual family income, education, and a history of drug or alcohol abuse.

Life Events Checklist-5

Participants were also given the Life Events Checklist-5 (LEC-5), a measure designed to identify one's exposure to traumatic events over the course of his or her lifetime. It is a 17-item measure that lists possibly traumatic events such as "physical assault (for example, being attacked, hit slapped, kicked, beaten up)," "combat or exposure to a war zone (in the military or as a civilian)," and "serious injury, harm, or death you caused to someone else" (Weathers et al., 2013). It then asks the participant to identify if the event "happened to me," "witnessed it," "learned about it," "not sure," and "doesn't apply." The full measure is located in Appendix B. The participant was asked to

identify which category each event fell under over the course of his or her lifetime. The LEC-5 takes approximately 5 to 10 minutes to complete. The LEC-5 is used primarily as a therapeutic tool and does not have specific cutoff scores. Each participant's total number of items they identified as "happened to me" were added together and the totals were compared between the domestic violence offender group and the non-violent control group. The LEC-5 has strong correlational properties with other popular measures of Posttraumatic Stress Disorder (PTSD) symptoms (Gray, Litz, Hsu, & Lombardo, 2004). It has a correlation of .05 or less with the Beck Depression Inventory, Beck Anxiety Inventory, the Traumatic Life Events Questionnaire (TLEQ), and the Clinician Administered PTSD Scale (CAPS).

Interpersonal Reactivity Index

Participants were given the Interpersonal Reactivity Index (IRI), which is a measure of perceived empathy commonly used in research with the offender population (Lauterbach & Hosser, 2007). The measure appears in Appendix C. The IRI is a 28-question measure of empathy that divides empathy into four dimensions: empathic concern, perspective taking, personal distress, and fantasy, each represented by seven items (Davis, 1983). Examples of each dimension can be viewed in Table 1. It takes approximately 10 to 15 minutes to complete. The IRI does not have specific cutoff scores as it is used mainly for research and not as a therapeutic tool. For the present study, each dimension of empathy score was calculated individually and any differences between the non-violent control group and domestic violence offender group were examined. Empathic concern is defined as one's affective response to another person's emotional state or feelings of compassion or concern. Perspective taking is viewed as the cognitive

skill of taking the viewpoints of others and comprehending their situation without the need of comprehending corresponding feelings. Personal distress is the tendency to experience distress and discomfort in response to stressful situations. Fantasy is the reaction to fictional instead of real situations such as movies, plays, and books. It is the tendency to involve oneself in the feelings and actions of fictitious characters (Davis, 1983).

Table 1

Example Items for the Interpersonal Reactivity Index (IRI)

Empathic concern	When I see someone being taken advantage of, I feel kind of protective towards them.
Perspective Taking	I sometimes find it difficult to see things from the "other guy's" point of view.
Personal Distress	In emergency situations, I feel apprehensive and ill-at-ease.
Fantasy	I really get involved with the feelings of the characters in a novel.

In a meta-analysis conducted on the relationship between empathy and offending by Jolliffe and Farrington (2004), approximately one-third of the studies used the IRI or parts of it to address empathy. In a study by Lauterbach and Hosser (2007), 839 prison inmates took the IRI and psychometrics was calculated. Reliability analyses resulted in a Cronbach's alpha of .66 for the fantasy dimension, .77 for the perspective-taking dimension, .77 for the empathic concern dimension, and .63 for the personal distress dimension of empathy. The correlations between the subscales and aggression found a p -value of $p < .01$ between the fantasy scale and aggression and a p -value of $p < .001$

between the perspective-taking scale, the empathic concern scale and aggression (Lauterbach & Hosser, 2007). There was no significant correlation between the personal distress scale and aggression. There were also significant correlations found between the self-reported frequency of violence offenses and the subscales of empathy. Those who reported more frequent violent offenses demonstrated lower empathy scales at the $p < .001$ level for the subscales of fantasy, perspective taking, and empathic concern. There was no significant correlation for the subscale of personal distress and the self-report of number of violent offenses. The original psychometrics of the assessment was normed on 677 male and 667 female university students (Davis, 1983). The internal reliabilities ranged from .71 to .77 and the test-retest reliabilities ranged from .62 to .71. This aligned with the later reliability statistics found with the offender population.

General Ability Measure for Adults

The General Ability Measure for Adults (GAMA) is a nonverbal assessment of general cognitive ability (Naglieri & Bardos, 1997). Examples of questions from the GAMA can be viewed in Appendix D. The GAMA “evaluates an individual’s overall general ability with items that require the application of reasoning and logic to solve problems that exclusively use abstract designs and shapes” (Bardos, 2003, p. 164). The assessment consists of 66 items categorized into 4 item types called Matching, Analogies, Sequences, and Construction (Bardos, 2003). The assessment has a set time limit of 25 minutes. Scores are divided into the descriptive categories of Well Below Average (0 to 2nd percentile), Below Average (3rd to 8th percentile), Low Average (9th to 23rd percentile), Average (25th to 73rd percentile), High Average (75th to 90th percentile), Superior (92nd to 97th percentile), and Very Superior (98th to 100th percentile).

The Matching subtest items required the examinee to identify two shapes that were identical by perceiving various shapes and color combinations and paying attention to details. The Analogies subtest required the examinee to recognize the relationship between two abstract figures in the pair presented and then identify the option that completed the relationship in the second pair of designs. The Sequence subtest required the examinee to recognize the pattern, shape, and location of a design and complete the logical sequence of the presented pattern of designs. Finally, the Construction subtest required the examinee to determine how several shapes could be combined to produce one of the designs (Bardos, 2003). These four subtests do not represent different types of ability; they represent four different ways to measure general ability by nonverbal means. All figures were printed in yellow, white, black, and blue in order to “reduce the effects of impaired color vision for some examinees” (Bardos, 2003, p. 165). According to Bardos (2003), the assessment was designed to reduce the number of confounds that come with a language-based assessment. Language items in an assessment could be influenced by one’s exposure to a formal English speaking academic environment regardless of his or her true cognitive ability. Another goal of the assessment was to reduce the influence of motor ability and speed at the item level by eliminating the use of manipulated objects.

The GAMA was standardized using a sample of 2,360 individuals ranging in age from 18 to 96 years of age and closely approximated the United States population using the 1990 census. The median internal consistency across age groups was 0.90 (Bardos, 2003). The average reliability across the item types was 0.65 for Construction, 0.66 for Matching, 0.79 for Sequences, and 0.81 for Analogies. In terms of validity, the GAMA

scores have consistently been similar to the Wechsler Adult Intelligence Scales (WAIS-R) and (WAIS-III), as well as the Kaufman Adolescent and Adult Intelligence Scale (KAIT). The GAMA overall achievement score was standardized into a mean of 100 and a standard deviation of 15, much like other intelligence and achievement assessments. Although the GAMA did not have a strong emphasis on verbal ability, it did have brief verbal directions that required a second grade reading level in English.

Emotion Recognition Items

The emotion recognition items were taken from the Nimstim data set (Tottenham et al., 2009). The Nimstim data set was built on previous facial expression data sets such as Ekman and Friesen (1978) and addressed many of the criticisms of these earlier data sets. For example, the Nimstim data set was available in color and contained a large number of stimuli and variety of facial expressions. There were a total of 672 different photographs consisting of 43 professional actors modeling 16 different facial poses of the six primary facial emotions. There were different examples of happy, sad, disgusted, fearful, angry, and surprised facial emotions with both open- and closed-mouth variations of each emotion. Calm and neutral expressions were also included. Calm was different from neutral in that it had a slight positive valence or affect. Completely neutral emotional expression is often viewed negatively by many individuals (Tottenham et al., 2009). All actors were from the same city in the United States, minimizing the subtle differences in emotional expression that could occur when participants from different countries were photographed (Tottenham et al., 2009).

Validity and reliability for the Nimstim data set were calculated using a representative group of undergraduate college students from the Midwest and a volunteer

sample from the East Coast. Validity was calculated by finding the percentage of correctly identified emotions while using Cohen's kappa to account for false positives by chance (Tottenham et al., 2009). The mean kappa percentage correct across stimuli was 0.79. Reliability was calculated by presented stimuli in a different random order in its entirety after a 20-minute break. This second presentation of stimuli was not used to calculate validity scores. The reliability score or proportion of agreement had a mean of 0.84 (Tottenham et al., 2009).

The facial emotion recognition task included six primary emotions of interest: sadness, fear, disgust, anger, happiness and surprise. Neutral was not included in order to keep the assessment as brief as possible while maintaining adequate sensitivity in the task. Neutral affect was not an emotion of interest for this study. Participants within the normal population are typically very accurate at identifying the six primary emotions in data sets in which the emotion was shown at 100.0% intensity. New research has begun to blend the 100.0% intensity emotions with a neutral face using face-morphing technology resulting in facial blends that present the emotion at a lower level of intensity. The result is a more accurate demonstration of emotion that is more likely to be seen in daily interactions (Gery et al., 2009; Pham & Philippot, 2010).

The data set used in the current study consisted of a set of faces developed by Dr. Eric Peterson and Mackenzie Peake (personal communication, September 8, 2014). Peterson and Peake constructed the facial affect recognition task based on guidelines set by previous literature (Gery et al., 2009; Tottenham et al., 2009). Specifically, an equal number of male and female faces were presented (Babcock et al., 2008; Gery et al., 2009), the percentage of facial blends was set at 30.0%, 40.0%, 60.0%, 70.0%, and

100.0% (Gery et al., 2009; Tottenham et al., 2009), and the specific emotions included in the task were sadness, anger, surprise, fear, disgust, and happiness (Babcock et al., 2008; Marsh & Blair, 2008). Examples of the facial emotion task can be viewed in Appendix E.

Six Caucasian faces from the standardized Nimstim prototypic facial expressions were used. The faces were blended using six universal emotions (happiness, sadness, anger, disgust, fear, and surprise) to 30.0%, 40.0%, 60.0%, 70.0%, and 100.0% intensity (Tottenham et al., 2009). Based on the neutral face (0.0% of emotional intensity) and the full emotional facial expression (100.0% emotional intensity) of the same actor, the computer program E-Prime (<http://www.psnet.com/eprime.cfm>) was used to present the blends of each emotion at the increments mentioned above. The different intensity of emotions was modeled from Pham and Philippot (2010) who indicated, “. . . Such full-blown displays have little ecological validity” (p. 448) because they are easy to decode and are likely to produce ceiling effects and leave little room for individual variance. The images were also masked by Peterson and Peake with a dark oval around the face to control for the possible distraction of jewelry, hair, or other factors not directly related to the facial affect. Each emotion (anger, fear, disgust, surprise, sadness, and happiness) at each level of emotional intensity (30.0%, 40.0%, 60.0%, 70.0%, and 100.0%) were shown six times using an equal number of male and female models (3 male, 3 female) for a total of 180 images.

Procedure

Prior to participant recruitment and data collection, approval from the University of Northern Colorado’s Institutional Review Board (IRB) was obtained (Appendix F). Domestic violence offender participants were recruited through Domestic Violence

Offender Management Board (DVOMB) approved treatment providers in the Rocky Mountain region. Agency directors of treatment agencies that provide domestic violence treatment were contacted directly and informed of the purpose of the study and of Institutional Review Board approval. They were asked if the primary researcher could recruit participants from their level C domestic violence offender groups. In each level C group, mandated domestic violence offenders were informed of the purpose of the study and asked to participate in the study using the script in Appendix G. They were informed that their participation was completely voluntary and would not affect their treatment, parole, or probation. Control participants were recruited through the University of Northern Colorado using a snowball sample from the lead researcher's personal and professional contacts. University of Northern Colorado control participants were recruited by the lead researcher through their classes and extracurricular events using the script in Appendix H. In addition, professional and personal contacts were asked to recruit participants through email communication using the scripts in Appendix H. All control participants were recruited via email or in a classroom setting allowing those who did not meet criteria (those with a violent history, for example) to decline to participate and reduce the external pressure to participate without disclosing a violent history. Additionally, recruiters were asked to only contact possible participants on one occasion, further reducing outside pressure. Control and domestic violence offender participants were asked to set up a participation meeting time at the time of recruitment and asked to leave their phone number and first name for a reminder phone call. The identifying information was destroyed upon data collection. The participants were informed that the researcher would identify herself and her purpose for calling when she contacted them for

the reminder phone call and that if they shared a phone number, confidentiality could not be guaranteed. Flyers were left at the meetings for undecided participants to contact the researcher with any questions (Appendix I). Participants were informed of a \$5 incentive and the opportunity to enter to win a \$25 gift card upon completion of their participation in the study.

Domestic violence offenders who chose to participate in the study met with the lead researcher at the agency from which they were recruited during normal business hours or the local public library. Control participants from the University of Northern Colorado met with the lead researcher in the assessment room in the Psychological Services Clinic on the University of Northern Colorado campus. Control participants recruited through a professional contact met with the lead researcher at a local public library. Before data collection, participants were given the informed consent (Appendix J) and had any questions answered. Participants were given a demographic questionnaire (Appendix A) and the Life Events Checklist (LEC-5; Appendix B). When they finished, they were given the Interpersonal Reactivity Index (IRI; Appendix C). After they completed the IRI, they were given the General Ability Index for Adults (GAMA; Appendix D).

Once they finished the written measures, they were informed they would be shown a series of photographs on a laptop computer depicting men and women displaying various emotional expressions. Each participant sat in front of a laptop computer approximately two feet from the screen. They were asked to maintain that distance and continue to sit straight to maintain the integrity of the measure. A picture depicting a specific emotion was presented one at a time to each participant. Using a

forced-choice response format, participants were asked to assess each emotion in the photograph concurrent to its presentation by pressing the button indicating the correct emotion. Each emotion corresponded with a number on the laptop keyboard. Once each participant identified the emotion, the screen transitioned to the next face. Each face was presented in random order for each participant. Each participant completed a practice task in which they were asked to identify 20 faces before the facial recognition task began to record results. During the practice task, the lead researcher stood next to participants and requested they identify the emotion out loud to ensure the emotion they identified corresponded with the correct number on the keyboard. Once the practice task was completed, participants were no longer asked to identify the emotion out loud and the lead researcher sat next to the participant.

Following the facial recognition task, participants were debriefed using the script in Appendix K. Any additional questions were answered and they were given the option to put their phone number into a raffle for the opportunity to win a \$25 gift certificate to Walmart. First names were attached to these phone numbers and participants were informed that confidentiality could not be guaranteed if someone else answered the phone if they were called to be informed that they had won the gift certificate.

Hypotheses

The research hypotheses used to guide this study are discussed next. The statistical methods that were used to test each hypothesis are discussed in the following section, Data Analysis. Each research question was restated for clarity followed by each research hypotheses pertaining to that specific research question. Hypotheses are listed in

the format of H1 for Hypotheses 1 and H2 for Hypotheses 2 and continue until the last hypothesis.

- Q1 To what extent do domestic violence offenders differ from non-violent controls in recognition of facial affect as measured by the Nimstim pictures of facial affect and does the intensity of the displayed emotion or specific emotion displayed play a role?
- H1 It is hypothesized that domestic violence offenders will have a significant deficit compared to non-violent controls in accurately recognizing facial affect in others as measured by the Nimstim pictures of facial affect.
- H2 It is also believed that they will have greater deficits specifically in the negative emotions (sadness, fear, anger, disgust).
- H3 It is hypothesized they will have a less significant deficit in identifying the emotion happiness.
- H4 There will be a greater difference in facial affect recognition between the domestic violence offenders and non-violent controls in the midrange (40.0%, 60.0%, and 70.0%) of facial affect intensity.
- H5 Both the domestic violence offenders and the non-violent controls will obtain similar numbers of incorrect responses when there is a low level of facial affect intensity (30.0%) and a high level of facial affect intensity (100.0%). Both groups will obtain several errors at facial affect intensity of 30.0% and few errors at facial affect intensity of 100.0% as measured by the blended Nimstim pictures of facial affect.
- Q2 To what extent do demographic factors as measured by a demographic questionnaire (socioeconomic status, drug and alcohol treatment referral history, education, history of own abuse) and/or cognitive abilities as measured by the General Ability Measure for Adults (GAMA) affect how accurately domestic violence offenders identify emotions in others?
- H6 It is hypothesized that there will be significant demographic differences between the two groups as measured by a demographic questionnaire. Specifically, annual income level, education level, history of exposure to violence as a child, and drug and alcohol treatment were examined.

- H7 When significant demographic factors are controlled for using a covariate method, there will still be significant differences between the domestic violence offenders and the non-violent controls in ability to accurately identify facial affect using the Nimstim pictures of facial affect.
- H8 There will be significant differences in cognitive ability between the domestic violence offenders and non-violent controls as measured by the GAMA with the domestic violence offenders having significantly lower scores. The majority of domestic violence offenders will not obtain scores below average, indicating that they are not cognitively impaired.
- H9 When the GAMA scores are controlled for using a covariate method, the domestic violence offenders will still score significantly lower than the non-violent controls in ability to accurately identify facial affect in the Nimstim pictures of facial affect.
- Q3 How does a domestic violence offender's self-rating of his own empathic ability as measured by the Interpersonal Reactivity Index (IRI) compare to his ability to accurately identify the emotions of others as measured by the Nimstim pictures of facial affect?
- H10 Domestic violence offenders will not be significantly different from non-violent controls in their self-reported rating of his own empathic ability as measured by the Interpersonal Reactivity Index.
- H11 Although there will be no significant difference between the domestic violence offenders and non-violent controls on self-reported ratings of empathy, there will be a significant difference between actual ability to accurately identify facial emotions as measured by the Nimstim pictures of facial affect.
- H12 The correlation between self-reported empathic ability and accuracy in identifying facial affect will be significantly weaker for the domestic violence offender than it will be for the non-violent controls.
- Q4 Will the men in the current study demonstrate an own-gender bias and be better able to recognize emotion on male faces than female faces?
- H13 It is hypothesized that there will be a significant own-gender bias and the men in the study will be better able to accurately recognize the expressed emotion in the male faces compared to female faces.

H14 This own-gender bias will be significantly greater for the domestically violent men than the non-violent men.

Data Analysis

The purpose of this study was to explore the relationship between perceived empathic ability and ability to recognize facial affect in others by domestic violence offenders. First preliminary analyses is described followed by each primary research question and corresponding statistical analyses.

Perceived empathic ability was measured using the IRI. Each question is rated on a Likert scale from A (*does not describe me well*) to E (*describes me very well*). The IRI is scored as follows: A = 0, B = 1, C = 2, D = 3, and E = 4, except for seven items which are reverse scored and A equals a score of 4 and E equals a score of 0. All scores for each item are added to reveal a total score. Facial emotion recognition was measured using the Nimstim data set. First, responses were evaluated for possible random responding. Random responding was determined based on observations of the lead researcher during the assessment and accuracy of responding. Due to it being highly unlikely that any participant, regardless of struggle to accurately identify emotion, would respond with an accuracy rate below 50.0%, any participants with a number of correct responses below 50.0% was to be removed from the data set. There were no participants that responded below 50.0% and, thus, no participant was removed. The total number of correct responses was calculated for the overall facial emotion identification task and was also calculated for the subcategories of specific facial emotion (anger, fear, surprise, disgust, happiness and sadness) and the intensity of affect presented (30.0%, 40.0%, 60.0%, 70.0%, and 100.0%). The IRI score, the overall facial affect recognition score, specific

emotion accuracy score, and facial affect intensity score were considered continuous independent variables.

As outlined in Chapters I and II, specific demographic variables such as socioeconomic status and a history of abuse as a child influenced one's likelihood to perpetrate domestic violence (Harway, 2012; Stith et al., 2004). Therefore, any significant differences in demographics were utilized as control variables. Descriptive statistics were used to identify any significant differences between the domestic violence offender group and the control group. Descriptive statistics included the mean and standard deviation for each demographic category between groups. Histograms were utilized to identify any threats to normality across the data.

A power analysis was performed using the G-Power statistical program to determine the necessary number of participants to detect a medium effect size (.25). Power was set at .80 and the alpha level at .05. Based upon these parameters, 68 participants were necessary to meet these standards and answer each research question. This study recruited 70 participants, 35 domestic violence offenders and 35 non-violent control participants.

To draw inferences from the research sample to the population, certain assumptions must be met for MANOVA. These assumptions included independent sampling, a normal distribution of data, lack of multicollinearity, and homogeneity of variance within each variable. Although participants were convenience sampled, they were independently sampled, meeting the independence requirement. The normality assumption was examined prior to running the analyses by creating histograms and examining for skewedness or other signs of a violation of normality. Although both

MANOVA and ANCOVA are robust to violations of normality, normality was preferred. The multicollinearity assumption was met as each independent variable was designed to assess a different area of empathy or other abilities. There was no identified multicollinearity between the IRI and one's facial affect recognition ability as they were designed to measure two very different aspects of cognitive empathy and were not related enough to affect multicollinearity. Finally, comparing the level of variance for each variable by viewing the histograms assessed homogeneity of variance across the variables.

Q1 To what extent do domestic violence offenders differ from non-violent controls in recognition of facial affect as measured by the Nimstim pictures of facial affect and does the intensity of the displayed emotion or specific emotion displayed play a role?

H1 It is hypothesized that domestic violence offenders will have a significant deficit compared to non-violent controls in accurately recognizing facial affect in others as measured by the Nimstim pictures of facial affect. To assess overall differences in facial emotion recognition accuracy between domestic violence offenders and non-violent controls, the overall mean number of incorrect responses to the facial affect recognition tasks was calculated for both the domestic violence offender participants and the non-violent controls. The means for each group were compared using an independent *t*-test.

H2 It is also believed that domestic violence offenders will have greater deficits specifically in the negative emotions (sadness, fear, anger, disgust).

Following an overall comparison, differences in ability to accurately identify specific emotions were calculated using a MANOVA. The six different facial emotions presented and categorization as domestic violence offender or non-violent control was considered the independent variables while accuracy of facial affect recognition was the dependent variable. A Tukey post-hoc analysis was utilized to identify which specific emotions showed differences between groups.

- H3 Domestic violence offenders will have a less significant deficit in identifying the emotion happiness.

A *t*-test was utilized to compare the mean number of correct responses to the happy faces between the domestic violence offender group and the control group.

- H4 There will be a greater difference in facial affect recognition between the domestic violence offenders and non-violent controls in the midrange (40.0%, 60.0%, and 70.0%) of facial affect intensity.

A second MANOVA was used to identify any significant deficits or strengths that occurred between groups for each mid-level intensity level of the emotions. The intensity level across emotions (40.0%, 60.0%, and 70.0%) and the group (domestic violence offender or non-violent control) were considered the independent variables. The accuracy of facial affect recognition was the dependent variable. A Tukey post-hoc analysis was conducted to determine what, if any, significant differences occurred between emotion intensity levels for each group.

- H5 Both groups will obtain similar numbers of incorrect responses when there is a low level of facial affect intensity (30.0%) and a high level of facial affect intensity (100.0%). Both groups will obtain several errors at facial affect intensity of 30.0% and few errors at facial affect intensity of 100.0% as measured by the blended Nimstim pictures of facial affect.

The previously mentioned MANOVA was used to identify any significant deficits or strengths that occurred between groups for the moderate intensity levels of the emotions. The intensity level across emotions (30.0% and 100.0%) and the group (domestic violence offender or non-violent control) was considered the independent variables. The accuracy of facial affect recognition was the dependent variable. A Tukey post-hoc analysis was conducted to determine what, if any, significant differences occurred between emotion intensity levels for each group.

Q2 To what extent do demographic factors as measured by a demographic questionnaire (socioeconomic status, drug and alcohol treatment referral history, education, history of own abuse) and/or cognitive abilities as measured by the General Ability Measure for Adults (GAMA) affect how accurately domestic violence offenders identify emotions in others?

H6 It is hypothesized that there will be significant demographic differences between the two groups as measured by a demographic questionnaire. Specifically, annual income level, education level, history of exposure to violence as a child, and drug and alcohol treatment were examined.

Significant mean differences between the domestic violence offender group and non-violent control group for continuous variables such as age, trauma history, and annual income were calculated using independent *t*-test. Significant differences between the domestically violent and non-violent groups for categorical demographic variables such as education level and a history of drug and alcohol abuse were calculated using a Chi-square test.

H7 When significant demographic factors are controlled for using a covariate method, there will still be significant differences between the domestic violence offenders and the non-violent controls in ability to accurately identify facial affect using the Nimstim pictures of facial affect.

An ANCOVA was used to compare differences in facial affect recognition while controlling for the demographic variables found to be significantly different between the groups. Emotion type (sadness, fear, anger, disgust, surprise, happiness) and participant category (domestic violence offender or non-violent control) were the independent variables. Affect recognition accuracy was the dependent variable. Demographic variables (socioeconomic status, age, race/ethnicity, chemical dependence history) were considered covariates.

H8 There will be significant differences in cognitive ability between the domestic violence offenders and non-violent controls as

measured by the GAMA with the domestic violence offenders having significantly lower scores. The majority of domestic violence offenders will not obtain scores below average, indicating that they are not cognitively impaired.

Any differences in GAMA scores between the domestic violence offenders and non-violent controls were examined by comparing the mean scores for each group using a *t*-test.

- H9 When the GAMA scores are controlled for using a covariate method, the domestic violence offenders will still score significantly lower than the non-violent controls in ability to accurately identify facial affect in the Nimstim pictures of facial affect.

The accuracy of facial affect recognition was compared between the domestic violence offenders and non-violent controls using an ANCOVA to control for any differences in GAMA scores. The different types of facial affect and whether the participant was in the domestic violence offender or non-violent control group were the control variables and the accuracy in facial recognition was the dependent variable. The GAMA scores were considered the covariate.

- Q3 How does a domestic violence offender's self-rating of his own empathic ability compare to his ability to accurately identify the emotions of others?
- H10 Domestic violence offenders will not be significantly different from non-violent controls in their self-reported rating of his own empathic ability as measured by each subscale of the Interpersonal Reactivity Index.

A 2x4 ANOVA was utilized to compare significant differences between the domestic violence offenders and the control group on each subscale of the IRI. The independent variables were group (domestic violence offender or control) and IRI subscale (Empathic Concern, Perspective Taking, Personal Distress, and Fantasy). The

dependent variable was the score on each subscale. A Tukey post-hoc analysis was used to identify any significant differences between the subscales for each group.

- H11 Although there will be no significant difference between the domestic violence offenders and non-violent controls on self-reported ratings of empathy, there will be a significant difference between actual ability to accurately identify facial emotions as measured by the Nimstim pictures of facial affect

The Pearson correlation coefficient showing the correlation between self-identified empathy and facial emotion recognition for both the domestic violence offenders and non-violent controls was compared for any significant differences.

- H12 The correlation between self-reported empathic ability and accuracy in identifying facial affect will be significantly weaker for the domestic violence offender than it will be for the non-violent controls.

The Pearson correlation coefficient showing the correlation between self-identified empathy and facial emotion recognition for both the domestic violence offenders and non-violent controls was compared for any significant differences.

- Q4 Will the men in the current study demonstrate an own-gender bias and be better able to recognize emotion on male faces than female faces?

- H13 It is hypothesized that there will be a significant own-gender bias and the men in the study will be better able to accurately recognize the expressed emotion in the male faces compared to female faces.

A dependent *t*-test was used to look for significant differences between the overall ability of both the domestic violence offenders and the non-violent controls to accurately identify emotions in male or female faces. The overall number of correct responses for male faces and female faces was calculated and compared.

- H14 This own-gender bias will be significantly greater for the domestically violent men than the non-violent men.

Any differences in own-gender bias between the domestic violence group and the non-violent control group were compared using a 2x2 ANOVA. The independent variables were group (domestic violence offender or non-violent control) and gender of the emotion task (male or female). The dependent variable was accuracy in emotion recognition. A Tukey post hoc analysis was utilized to identify any main effects across groups.

Summary

After Institutional Review Board (IRB) approval, 35 men who had been convicted of domestic violence offenses and 35 men who had no history of domestic violence offenses were compared. Each participant was given a demographic questionnaire, the Interpersonal Reactivity Index, General Ability Measure for Adults and a facial emotion identification task. Both groups were compared for overall ability to accurately identify facial emotions and ability to identify specific emotions or emotional intensities. This ability was compared while controlling for demographic variables and overall cognitive ability. Finally, the correlation between self-identified empathic ability and ability to accurately identify facial emotion was compared.

CHAPTER IV

DATA ANALYSIS AND RESULTS

Introduction

This chapter presents the data analysis results for this study in two sections. The first section provides demographic and descriptive information of the sample used to conduct the study. The second section presents the results of the analyses conducted to test the hypotheses and answer the research questions.

Description of Sample

Data were collected from 35 men who were in mandated domestic violence treatment at the time of data collection and 35 men with no history of violent behavior who acted as control participants. All 70 participants fully completed each aspect of data collection with the exception of two participants who declined to include their annual income information. In addition, each aspect of data collected, the General Ability Measure for Adults (GAMA) and Nimstim facial recognition task in particular, were reviewed for signs of random responding (Bardos, 2003; Peterson & Peake, Personal Communication, September 8, 2014). There was no evidence of random responding, thus, all 70 participants' responses were included in analysis.

Table 2 provides the breakdown of percentages and frequencies for participant age. Figure 1 presents these data in a histogram. The average age for control participants was 37.37 ($SD = 15.7$). Ages ranged from 19 to 69 years old. The average age for domestic violence offender participants was 35.29 ($SD = 9.73$). Ages ranged from 22 to

62 years of age. There was a significant mean difference in age between the control participants and the domestic violence perpetrator participants ($p = .001$) as measured by an independent t -test.

Table 2

<i>Participant Age</i>		
Age	Percentage	Number
Control Participants		
18-19	11.0%	4
20-29	26.0%	9
30-39	29.0%	10
40-49	9.0%	3
50-59	11.0%	4
60-69	14.0%	5
Domestic Violence Participants		
18-19	0.0%	0
20-29	34.0%	12
30-39	40.0%	14
40-49	14.0%	5
50-59	9.0%	3
60-69	3.0%	1

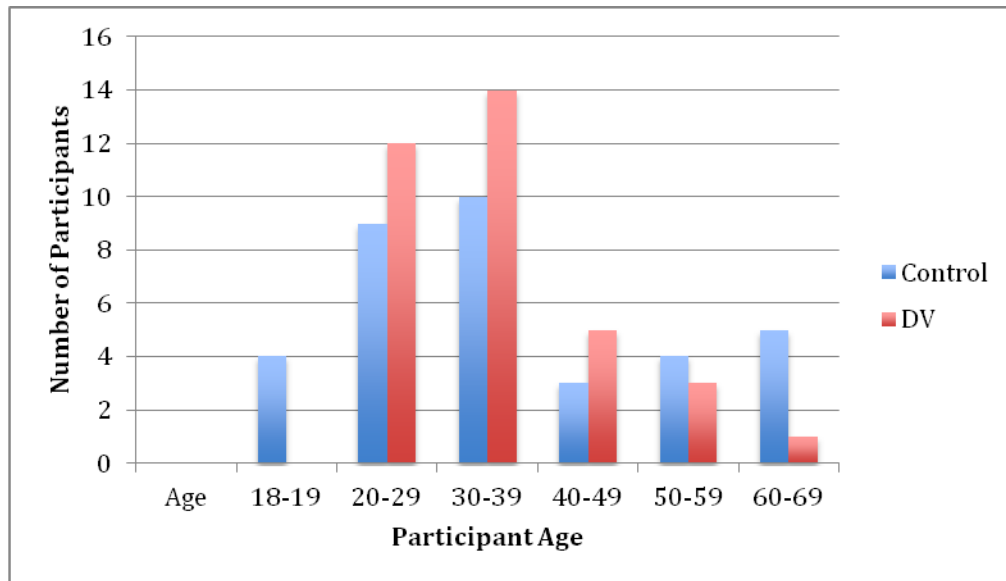


Figure 1. Age Distribution of Participants

Table 3 provides the breakdown of percentages and frequencies for participant race and ethnicity. Figure 2 presents these data in a histogram. The vast majority of control participants (77.0%) were Caucasian. While the majority of the domestic violence perpetrator participants were Caucasian as well (51.0%), a large portion of participants were Hispanic/Latino (37.0%). A Chi-square test identified a significant difference between the control group and the domestic violence perpetrator participants ($p = .021$) in racial and ethnic demographics.

Table 3

Participant Race/Ethnicity

Race/Ethnicity	Percentage	Number
Control Participants		
Caucasian	77.0%	27
Hispanic/Latino	6.0%	2
African American	6.0%	1
Asian	3.0%	1
Native American	3.0%	1
Other	3.0%	1
Multiracial	3.0%	1
Domestic Violence Participants		
Caucasian	51.0%	18
Hispanic/Latino	37.0%	13
African American	0.0%	0
Asian	0.0%	0
Native American	0.0%	0
Other	3.0%	1
Multiracial	9.0%	3

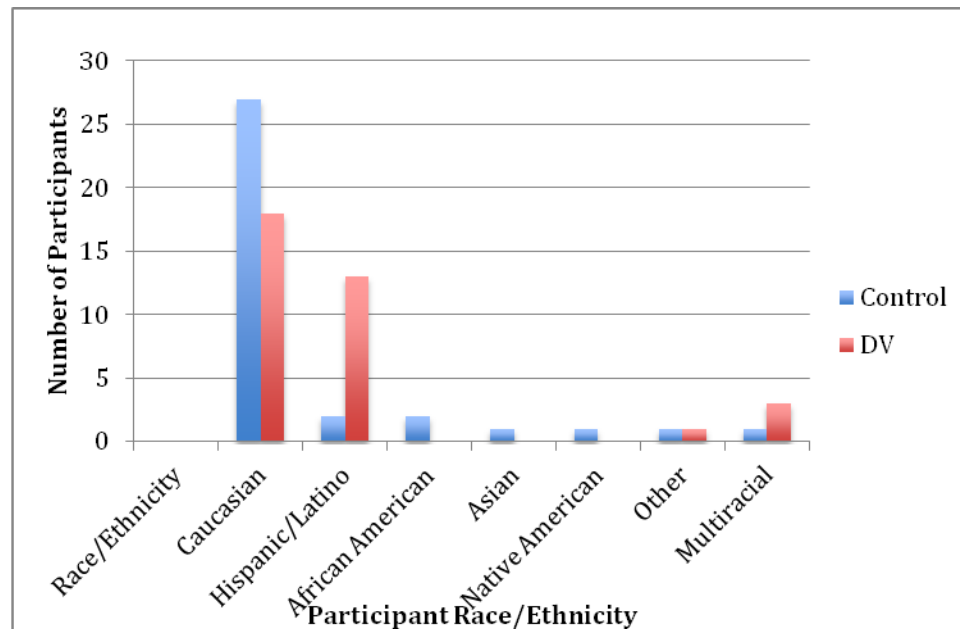


Figure 2. Race/Ethnicity of Participants

Table 4 provides the percentage and frequency of the participants' annual household income. Figure 3 presents these data in a histogram. There was a significant difference between the control participants' and the domestic violence perpetrator participants' annual income level ($p = .000$) when analyzed using an independent t -test. The majority of control participants' annual income was greater than \$85,000 (53.0%) while the majority of the domestic violence participants' annual income was in the \$10,000 to \$24,999 range (32.0%) and the \$25,000 to \$39,999 range (32.0%).

Table 4

Participant Annual Household Income

Income	Percentage	Number
Control Participants		
< \$10,000	0.0%	0
\$10,000-24,999	3.0%	1
\$25,000-39,999	6.0%	2
\$40,000-54,999	6.0%	2
\$55,000-69,999	6.0%	2
\$70,000-84,999	26.0%	9
> \$85,000	53.0%	18
Domestic Violence Participants		
< \$10,000	3.0%	1
\$10,000-24,999	32.0%	11
\$25,000-39,999	32.0%	11
\$40,000-54,999	12.0%	4
\$55,000-69,999	9.0%	3
\$70,000-84,999	0.0%	
> \$85,000	12.0%	4

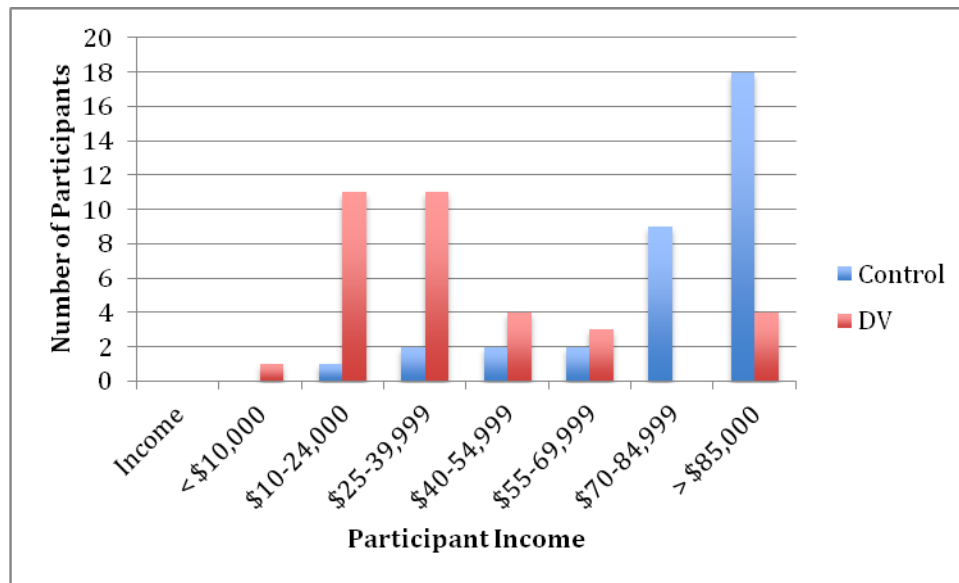


Figure 3. Annual Household Income of Participants. *Note.* One control participant and one domestic violence perpetrator participant declined to give their annual income range. Income for each participant group totals 34 participants for income demographic category.

Table 5 shows the percentage and frequency of highest level of education obtained by the participants. Figure 4 presents these data in a histogram. All of the control participants had some college education (43.0%) or a college degree (57.0%). The majority of the domestic violence perpetrator participants had some college education (37.0%). There was a significant difference ($p = .000$) between groups in educational attainment when analyzed using a Chi-square test.

Table 5

Participant Highest Level of Education

Education	Percentage	Number
Control Participants		
No High School	0.0%	0
Some High School	0.0%	0
Diploma or GED	0.0%	0
Some College	43.0%	15
College Degree	57.0%	20
Domestic Violence Participants		
No High School	3.0%	1
Some High School	26.0%	9
Diploma or GED	26.0%	9
Some College	37.0%	13
College Degree	9.0%	3

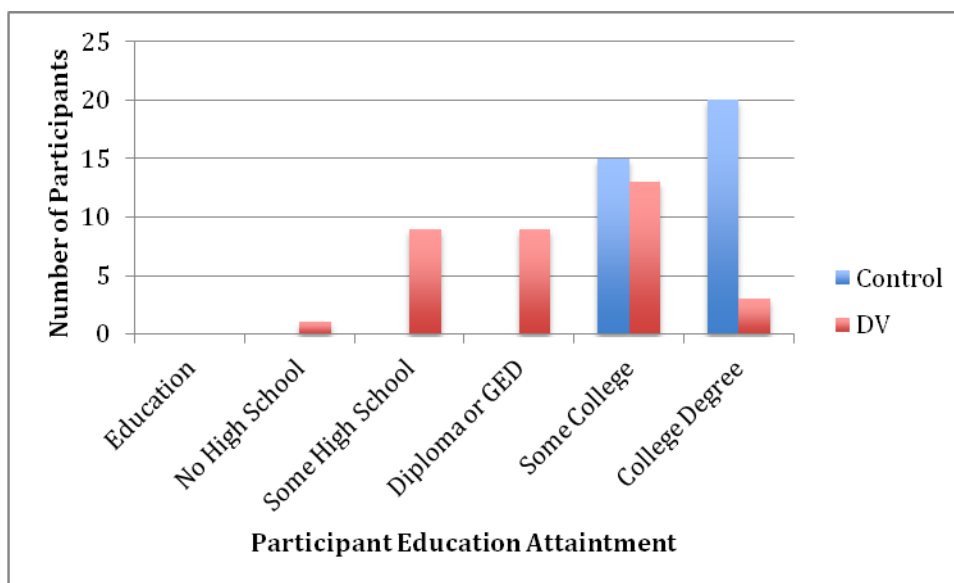


Figure 4. Highest Level of Education Achieved by Participants

In addition, when examined using a Chi-square test, there was a significant difference between the domestic violence participants and controls in terms of having a self-identified history of chemical dependence or abuse ($p = .000$). Of the control participants, 7.0% indicated they believed or had been told by someone else they abused or overused drugs or alcohol. Fifty-seven percent of the domestic violence participants indicated they had been told or believed they abused or overused drugs or alcohol.

Hypotheses Results

As discussed in the previous chapter, the research hypotheses were evaluated using several different statistical analyses including MANOVA, ANCOVA, ANOVA, independent and dependent t -tests, and Pearson product correlation. An alpha level of .05 was used to determine statistical significance throughout the analyses. The data were examined to check for violations of assumptions as well as outliers and multicollinearity.

Normality was examined with a scatterplot and suggested the assumptions of normality and linearity appear to have been met based on a visual examination of the scatterplots for the MANOVA and ANCOVA analyses.

Research Question Q1

- Q1 To what extent do domestic violence offenders differ from non-violent controls in recognition of facial affect as measured by the Nimstim pictures of facial affect and does the intensity of the displayed emotion or specific emotion displayed play a role?

Hypothesis H1

- H1 It is hypothesized that domestic violence offenders will have a significant deficit compared to non-violent controls in accurately recognizing facial affect in others as measured by the Nimstim pictures of facial affect.

A MANOVA was used to compare the overall mean differences in accuracy of facial recognition between groups. When 30.0%, 40.0%, 60.0%, 70.0%, and 100.0% facial emotion intensity were combined, domestic violence offenders were not significantly less accurate in identifying the emotions of others as identified $F(5, 64) = 2.27, p = .058$, which was not significant with a p -value set at .05 for significance. This hypothesis was not supported.

Hypothesis H2

- H2 It is also believed that they will have greater deficits specifically in the negative emotions (sadness, fear, anger, disgust).

When the negative emotions (sadness, fear, anger, disgust) were examined individually using a MANOVA, the domestic violence perpetrator participants demonstrated a deficit in accurately identifying the emotions of two of the four. The domestically violent participants were significantly less accurate at identifying the emotions of sadness $F(1, 68) = 5.47, p = .02$ and fear $F(1, 68) = 5.49, p = .02$. The

accuracy rate for anger $F(1, 68) = 0.52, p = .47$ and disgust $F(1, 68) = 1.36, p = .25$ was not significantly different between the domestic violence participants and the control participants. This hypothesis was partially supported.

Hypothesis H3

H3 It is hypothesized domestic violence participants will have a less significant deficit in identifying the emotion happiness.

When compared using a MANOVA analysis, both domestic violence perpetrator participants and control participants were most accurate at identifying the emotion of happiness $F(1,68) = 2, p = .16$; (DV mean = .83, control mean = .87). Neither group was significantly more accurate in identifying happiness. This hypothesis was supported.

Hypothesis H4

H4 There will be a greater difference in facial affect recognition between the domestic violence offenders and non-violent controls in the midrange (40.0%, 60.0%, and 70.0%) of facial affect intensity.

Domestic violence perpetrators were significantly less accurate in identifying facial emotions when only 40.0%, 60.0%, and 70.0% emotional intensity were examined using a MANOVA, $F(3, 66) = 3.57, p = 0.019$. When examined independently, domestic violence perpetrators were significantly weaker in facial emotion recognition at the 40.0% and 60.0% intensity level $F(1, 68) = 7.92, p = .006$ and $F(1, 68) = 7.29, p = .009$, respectively) but there was not a significant difference at the 70.0% intensity level $F(1, 68) = 3.54, p = .064$). This hypothesis was partially supported.

Hypothesis H5

H5 Both the domestic violence offenders and the non-violent controls will obtain similar numbers of incorrect responses when there is a low level of facial affect intensity (30.0%) and a high level of

facial affect intensity (100.0%). Both groups will obtain several errors at facial affect intensity of 30.0% and few errors at facial affect intensity of 100.0% as measured by the blended Nimstim pictures of facial affect.

When compared using a MANOVA, there were not significant differences between domestic violence participants and control groups for the lowest level of intensity (30.0%) $F(1, 68) = 2.87, p = .095$ or the highest level of intensity (100.0%) $F(1, 68) = 1.05, p = .309$. Both groups made the greatest number of errors ($M = .46$) for the 30.0% intensity level and the fewest errors in the 100.0% intensity level ($M = .75$). This hypothesis was supported.

Research Question Q2

Q2 To what extent do demographic factors as measured by a demographic questionnaire (socioeconomic status, drug and alcohol treatment referral history, education, history of own abuse) and/or cognitive abilities as measured by the General Ability Measure for Adults (GAMA) affect how accurately domestic violence offenders identify emotions in others?

Hypothesis H6

H6 It is hypothesized that there will be significant demographic differences between the two groups as measured by a demographic questionnaire. Specifically, annual income level, education level, history of exposure to violence as a child, and drug and alcohol treatment were examined.

There was a significant age difference between control participants and domestic violence participants as measured by an independent t -test $t(-.668); p = .001$, with the domestic violence perpetrator participants having a mean age of 35.29 and control participants having a mean age of 37.3. There were also significant differences in income $F(1, 66) = 50.18, p < .001$ as measured by an ANOVA with the control group having significantly greater income. When tested using an ANOVA, there was also a significant difference in highest level of education attained $F(1, 67) = 95.54, p < .001$ between the

domestic violence participants and the control participants with the control participants obtaining a higher level of education. There was a significantly greater chemical dependency history $Chi(1, 1) = 18.7, p < .001$ for the domestic violence perpetrator participants as measured by a Chi-square test. There was significant difference in ethnicity $Chi(1, 6) = 14.86, p = .021$ as measured by a Chi-square. There was no significant difference in trauma history as measured by the Life Events Checklist-5 (LEC-5; $t(1.75); p = .744$) when analyzed using an independent t-test (Weathers et al., 2013). This hypothesis was partially supported.

Hypothesis H7

H7 When significant demographic factors are controlled for using a covariate method, there will still be significant differences between the domestic violence offenders and the non-violent controls in ability to accurately identify facial affect using the Nimstim pictures of facial affect.

As mentioned above, there were significant demographic differences between the domestic violence participants and control participants in age, ethnicity, income, education, and chemical dependency history. These demographic factors were controlled for using the ANCOVA covariate method. Domestic violence participants were still significantly less accurate at identifying the emotions of others after adjusting for age ($F(1, 67) = 8.47, p = .037$), race/ethnicity ($F(1, 67) = 7.45, p = .008$), and chemical dependency history ($F(1, 67) = 7.65, p = .034$). Significant differences in facial affect identification were no longer present when the ANCOVA method was used to adjust for group differences in income $F(1, 65) = 1.33, p = .253$ and education level $F(1, 67) = 1.79, p = .185$. These findings suggested that individuals who had a higher level of income and obtained a higher level of education were more accurate in identifying facial

emotion regardless of whether they belonged to the domestic violence perpetrator group or the control group. This hypothesis was partially supported.

Hypothesis H8

H8 There will be significant differences in cognitive ability between the domestic violence offenders and non-violent controls as measured by the GAMA with the domestic violence offenders having significantly lower scores. The majority of domestic violence offenders will not obtain scores below average, indicating that they are not cognitively impaired.

When mean GAMA scores were compared using a *t*-test, there was no significant difference between the domestic violence perpetrator participants and control participants $t(-3.226), p = .111$. Domestic violence participants had mean scores in the Average range ($M = 103.86$) while the control participants had mean scores in the High Average range ($M = 112.97$). Therefore, the hypothesis was partially supported in that the domestic violence perpetrator participants obtained mean scores in the Average range and did not demonstrate any cognitive deficits. This hypothesis was partially supported.

Hypothesis H9

H9 When the GAMA scores are controlled for using a covariate method, the domestic violence offenders will still score significantly lower than the non-violent controls in ability to accurately identify facial affect in the Nimstim pictures of facial affect.

After controlling for GAMA scores using the ANCOVA covariate method, there were still significant differences between the domestic violence participants' and the control participants' overall ability to accurately identify the emotions of others $F(1, 68) = 8.64, p = .018$). This suggested factors other than cognitive ability influenced the ability to accurately identify facial emotion. This hypothesis was supported.

Research Question Q3

- Q3 How does a domestic violence offender's self-reported rating of his own empathic ability as measured by the Interpersonal Reactivity Index (IRI) compare to his ability to accurately identify the emotions of others as measured by the Nimstim pictures of facial affect?

Hypothesis H10

- H10 Domestic violence offenders will not be significantly different from non-violent controls in their self-reported rating of his own empathic ability as measured by the Interpersonal Reactivity Index.

When using a 2x4 ANOVA to analyze the different scales of the IRI, there were no significant differences between the domestic violence perpetrator participants and non-violent controls on the three scales of Fantasy ($F(1, 68) = .141, p = .708$), Perspective Taking ($F(1, 68) = .037, p = .848$), and Empathic Concern ($F(1, 68) = 1.599, p = .210$; Lauterbach & Hosser, 2007). There was a significant difference between the domestic violence participants and the control participants on the Personal Distress scale ($F(1, 68) = 5.228, p = .025$) with domestic violence perpetrator participants acknowledging a higher rate of personal distress in stressful situations ($M = 10.26$) compared to the control participants ($M = 7.62$). This hypothesis was partially supported.

Hypothesis H11

- H11 Although there will be no significant difference between the domestic violence offenders and non-violent controls on self-reported ratings of empathy, there will be a significant difference between actual ability to accurately identify facial emotions as measured by the Nimstim pictures of facial affect.

As mentioned above, when 30.0%, 40.0%, 60.0%, 70.0%, and 100.0% intensity were combined and examined using a MANOVA, $F(5, 64) = 2.27, p = .058$ which was not significant at the set p -value of .05. When only 40.0%, 60.0%, and 70.0% intensity

were examined, $F(3, 66) = 3.57, p = .019$ which was significant at the p -value of .05. In addition, when each scale of the IRI self-report empathy measure was examined, there was no significant difference between the domestic violence participants and control participants on three of the four scales (Fantasy, $F(1, 68) = .141, p = .141$; Perspective Taking, $F(1, 68) = .037, p = .848$; Empathic Concern, $F(1, 68) = 1.599, p = .210$). There was a significant difference on the scale of Personal Distress ($F(1, 68) = 5.228, p = .025$). This hypothesis was partially supported.

Hypothesis H12

H12 The correlation between self-reported empathic ability and accuracy in identifying facial affect will be significantly weaker for the domestic violence offender than it will be for the non-violent controls.

A Pearson Product Correlation was used to analyze the correlation between each of the IRI scales and the participants' overall ability to accurately identify facial emotions. In the domestic violence perpetrator group, there were no significant correlations between their facial emotion identification accuracy and any of their IRI scale scores. The only significant correlation at the $p = .01$ level was between the Perspective Taking scale and the Empathic Concern scale ($r = .570$). There were no significant correlations at the $p = .05$ level. The top half of Table 6 details the specific correlations between each scale and overall emotion identification accuracy for the domestic violence perpetrator group. For the control participants, there were also no significant differences between facial emotion identification accuracy and any of the IRI scales. The only significant correlation at the $p = .01$ level was between the Empathic Concern scale and the Personal Distress scale ($r = .452$). There were no significant correlations at the $p = .05$ level. The bottom half of Table 6 details the specific

correlations between each scale and overall emotion identification accuracy. Correlations for facial emotion recognition and each scale of the IRI between the domestic violence offender group and the control group are presented for easier direct comparison in Table 7. This hypothesis was not supported.

Table 6

Interpersonal Reactivity Index (IRI) and Facial Emotion Identification for the Domestic Violation (DV) Group

	Overall Accuracy	40.0%	60.0%	Perspective Taking	Fantasy Scale	Empathic Concern	Personal Distress
Overall Accuracy	1	.461	.523**	-.063	.158	-.125	.052
40.0%	.521**	1	.262	-.036	.044	-.060	.075
60.0%	.534**	.520**	1	.003	.263	.022	.114
Perspective Taking	.298	.220	.038	1	.223	.570**	-.076
Fantasy Scale	.018	.028	0.14	.193	1	.266	.104
Empathic Concern	.149	.307	.199	-.132	-.084	1	.015
Personal Distress	-.094	-.100	.127	-.169	-1.171	.452**	1

Note: Domestic Violation (DV) correlations are in the upper right half of the table. Control correlations are in the lower left hand of the table.

** Significant at the $p = .01$ level

Table 7

Correlation Comparison Between Groups

	Perspective Taking	Fantasy Scale	Empathic Concern	Personal Distress
Overall Accuracy				
Domestic Violence Group	-.063	.158	-.125	.052
Control Group	.298	.018	.149	-.094

Research Question Q4

- Q4 Will the men in the current study demonstrate an own-gender bias and be better able to recognize emotion on male faces than female faces?

Hypothesis H13

- H13 It is hypothesized that there will be a significant own-gender bias and the men in the study will be better able to accurately recognize the expressed emotion in the male faces compared to female faces.

When both domestic violence participants' and control participants' gender bias for facial emotion recognition was examined, they displayed a significant bias for identifying the emotions of men more accurately than the emotions of women when compared using a dependent *t*-test $t(-2.664)$, $p = 0.01$. On average, participants' mean number of accurately identified male faces was .67 compared to a mean of .59 accurately identified female faces. This hypothesis was supported.

Hypothesis H14

- H14 This own-gender bias will be significantly greater for the domestically violent men than the non-violent men.

When compared using an ANOVA, men who were convicted of domestic violence offenses displayed an even greater own-gender bias in being able to accurately

identify emotions than control participants $F(1, 68) = 3.33, p = .042$. When each gender was examined independently, there were still significant differences between domestic violence perpetrator participants and control participants in emotion identification accuracy for both men $F(1, 68) = 5.436, p = .023$ and women $F(1, 68) = 5.019, p = .028$. Figure 5 highlights the differences in facial emotion recognition by gender. This hypothesis was supported.

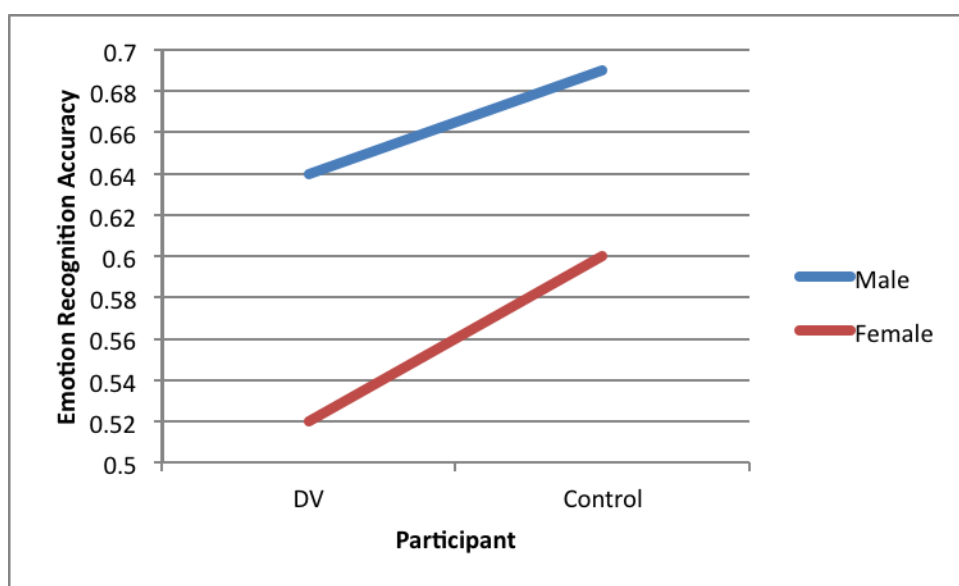


Figure 5. Emotion Recognition Accuracy by Participant Group and Gender

Summary

This chapter first presented the frequencies and descriptive statistics of the demographics for both the domestic violence perpetrator participants and non-violent control participants. Secondly, the research questions and hypotheses were tested and the results were provided. Analyses of the descriptive statistics found a significant mean difference for participant age and annual household income level with a p -value of .05 or less when using an independent t -test. There were significant differences in frequency of

occurrence for race and ethnicity, highest level of education achieved, and history of chemical dependence with a p -value of .05 or less when using Chi-square analysis.

Hypothesis H1 was tested with an independent t -test and was not supported with a p -value greater than the set significance level of .05. Hypotheses H2, H3, H4, H5, and H11 were each analyzed using a MANOVA and were each found to be partially or fully supported with a p -value of .05 or less. Hypotheses H3 and H5 were fully supported with all aspects of the hypothesis at or below a p -value of .05. Both the domestic violence group and the control group were most accurate at identifying the emotion of happiness. Both had the greatest number of errors at the 30.0% level of emotional intensity and the fewest number of errors at 100.0% emotional intensity. Hypotheses H2, H4, and H11 were each partially supported with some factors of the hypothesis at or below a p -value of .05, while other aspects did not meet the significance criteria with a p -value above .05. The domestic violence perpetrator participants were less accurate than control participants at identifying fear and sadness, but there were no significant differences in identifying disgust and surprise. Domestic violence participants were significantly less accurate than controls in identifying emotions at 40.0% and 60.0% intensity, but there was no significant difference in identifying emotions at 70.0% intensity. There was no significant difference in self-identified level of empathy on three of the four scales of the IRI. There was a significant difference between the domestic violence perpetrators and controls on the Personal Distress scale of the IRI with domestic violence participants indicating a higher level of personal distress in stressful situations.

Hypotheses H6 and H8 were tested using independent t -tests and Chi-square tests and each was partially supported. There were significant demographic differences

between the domestic violence perpetrator participants and the non-violent control participants with a p -value of .05 or less on all but one of the demographic factors measured (age, race/ethnicity, annual household income, highest educational attainment, history of chemical dependence). Control participants were significantly older, had fewer racial and ethnic minorities, had a higher annual income and education level, and were less likely to have a history of chemical dependence. There was no significant difference between the domestic violence participants and the control participants in trauma histories as measured by the LEC-5. Although the control participants were found to be in the High Average range and the domestic violence participants were found to be in the Average range on the GAMA, there was not a significant difference between participants when the p -value was set at .05.

Hypotheses H7 and H9 were analyzed using an ANCOVA and H7 was partially supported with some, but not all, factors meeting the significance criteria of a p -value at or below .05, while H9 was fully supported. After adjusting for age, race/ethnicity, and chemical dependence history, domestic violence participants were still found to be significantly less accurate at identifying the emotions of others. After adjusting for annual income and education attainment, there were no longer significant differences between domestic violence participants and control participants. After controlling for cognitive ability as measured by the GAMA, domestic violence participants were still found to be significantly less accurate at identifying the emotions of others.

Hypotheses H10 and H14 were analyzed using an ANOVA and significance of a p -value at or below .05 was partially supported for H10 and fully supported for H14. Participants did not differ significantly on three of the four scales of the IRI (Empathic

Concern, Perspective Taking, Fantasy Scale) when the p -value was .05. The Personal Distress scale was found to be significant with a p -value at or below .05 with domestic violence participants indicating a higher level of personal distress when in stressful situations. Men with domestic violence convictions were found to display even greater own-gender bias in emotion identification than non-violent controls.

Hypothesis H12 was analyzed using the Pearson Product Correlation and was not supported. There appeared to be no significant correlation between self-identified level of empathy and ability to accurately identify facial emotions. Hypothesis H13 was tested using a dependent t -test and was supported with a p -value well below .05 suggesting that both men who were domestically violent and non-violent controls demonstrated more accuracy in identifying emotions in male faces compared to female faces.

Next, Chapter V will discuss the results of the research questions and hypotheses. Chapter V will also address the theoretical, methodological, and clinical implications of this study. Lastly, limitations and future directions will be discussed.

CHAPTER V
DISCUSSION AND IMPLICATIONS
OF RESEARCH

Introduction

The previous chapter provided demographic and background information regarding the population of interest, male domestic violence offenders in mandated treatment, and the control population, men who had no violent history. The results of the statistical analyses for each of the 14 hypotheses were presented. The following chapter examines the conclusions and findings based on these results and how they fit with previous research. Additionally, implications for theory, research, and practice; limitations of the study; and future directions are covered in this chapter.

As mentioned in the first chapter, domestic violence is a common and costly problem in our society. It is not only financially costly, but has a large negative impact on the emotional and physical health of victims and negatively impacts society as a whole (Holmes et al., 2015). Empathy in violent offenders has been researched extensively in the literature but has focused primarily on sexual offenders and violent offenders diagnosed with antisocial personality disorder or psychopathy (Barnett & Mann, 2013; Gery et al., 2009). There have been many theories involving the role of empathy in violent offenses as well as factors that correlate with an increase in violent behavior (Murphy et al., 2014). For reasons that are unclear, there has been a gap in the literature regarding empirically supported theories of empathy in domestic violence offenders.

The primary view of those who study empathy in violent offenders is that a lack of empathy is a major contributing factor to violence (Covell et al., 2007). This view of empathy has led to a focus on empathy training with sex offenders. The belief is that feelings of empathy for the potential victim will overpower the desire to offend. Findings from many studies that have contributed to the view that empathy training is important have utilized paper-and-pencil measures of empathy, which have the ability to be greatly impacted by social desirability (Covell et al., 2007; Marissen et al., 2012). The present study utilized a facial recognition measure of empathy. Newer studies of empathy in violent offenders have focused more on applied tasks, such as facial emotion recognition (Brook & Kosson, 2013; Marissen et al., 2012). Results from such studies have been mixed. Some research has found violent offenders diagnosed with antisocial personality disorder to be just as accurate as controls in identifying emotions (Book et al., 2007). Other studies have found individuals who rated high in psychopathy to be less accurate in identifying the emotions of others (Brook & Kosson, 2013).

To date, there has been a gap in the literature analyzing how facial emotion recognition may play a role in domestic violence offenses. It would be beneficial to reduce this gap in the literature by examining how accuracy of facial emotion recognition could play a role in domestic violence offenses (Babcock et al., 2008). The present study examined the correlation between how domestic violence offenders rate their level of empathy with their actual ability to accurately identify the emotions of others. In addition the present study reviewed how deficits in ability to accurately identify emotions may increase the likelihood of committing a domestic violence offense.

This study utilized the Social Information Processing (SIP) model as a framework to examine empathy in domestic violence offenders (Murphy et al., 2014). The SIP model posits that recognition of facial emotions and the appropriate response to each emotion are learned at an early age. Men who have difficulty accurately recognizing, or encoding, their partner's emotional state respond in an inappropriate way. In particular, they respond with a hostile cognitive bias and incorrectly attribute negative intentions to their partners. This attribution to negative intention then leads to a response generation that is skewed toward aggressive options (Murphy et al., 2014).

The current study identified deficits in the encoding stage of the SIP model in domestically violent men. It identified emotion recognition deficits in domestically violent men compared to non-violent control participants. In addition to identifying deficits in accurate facial emotion recognition, the current study compared the self-identified level of empathy in domestically violent men to non-violent controls. It also accounted for cognitive ability and demographic factors when examining facial emotion recognition ability. Having a better idea of how accurate domestic violence offenders are at recognizing emotions in others, how they perceive their own empathic ability, and knowing if cognitive or demographic factors influence their ability to accurately identify emotions adds to the SIP model's conceptualization of domestic violence and could have an impact on future treatment directions. More empirical knowledge of empathy in male domestic violence offenders could help make treatment more effective and reduce the recidivism rate for offenders.

In addition to the SIP model, this study used Darwin's model of empathy as a communication tool to aid in the conceptualization of the findings and identifying future

clinical directions (Matsumoto et al., 2008). The communication model of empathy views all humans as expressing emotions, particularly the universal emotions of fear, sadness, disgust, anger, surprise, and happiness, in a similar fashion. The experience of these emotions, in oneself or in another person, elicits specific physiological responses to each individual emotion. The accurate expression of one's own emotion and interpretation of the emotions of others allows us to respond to others in an appropriate manner. If one is unable to accurately identify the emotion of another person, they will have a physiological response to the emotion they believe they are seeing, regardless of whether it is accurate. The physiological response they experience will incite a response. If he or she responds in an inappropriate way as a result of an inaccurate interpretation of the emotional experience of another person, the relationship suffers.

Discussion of the Results

A total of 70 participants completed all components of the study, 35 domestic violence offender participants and 35 control participants. A review of the GAMA and Nimstim facial recognition task revealed no evidence of random responding, therefore, all participants were included in data analyses. Analyses of demographic variables noted the control participants were significantly older, had a higher income, and a higher level of education than the domestic violence offender participants. The domestic violence offender participants were significantly more likely to be a racial or ethnic minority and to have a history of drug or alcohol abuse. There was not a significant difference in trauma history as measured by the Life Events Checklist-5 (LEC-5).

Research Question Q1 asked: What, if any, facial expressions of emotion do domestic violence offenders have a deficit in identifying as measured by a facial emotion

recognition task and how does the intensity of a displayed emotion factor in to any strengths or deficits? After reviewing overall ability to accurately identify facial emotions, accuracy was again analyzed for each individual emotion given past research that found positive emotions were more reliably identified than negative emotions (Carr & Lutjemeier, 2005). Participants were shown various intensities of emotional expression in order to have a more sensitive measure of emotion identification accuracy.

Results for Research Question Q1 indicated when all emotions and all intensity levels were combined there was no significant difference in accuracy of facial emotion recognition between domestic violence offenders and non-violent control participants. When emotions and emotional intensity were reviewed independently, there were some significant differences. Domestic violence offender participants had a significantly greater deficit in identifying sadness and fear compared to control participants. There was no significant difference between the two groups in accurately identifying anger and disgust. Both domestic violence offender participants and control participants were most accurate in identifying the emotion of happiness. When emotional intensity was reviewed, domestic violence offender participants were significantly less accurate in identifying emotions at 40.0%, 60.0%, and 70.0% intensity than the control participants. There was no significant difference between groups at the 30.0% and 100.0% intensity level. Both groups were least accurate at identifying emotions at the 30.0% intensity level and most accurate at identifying emotions at the 100.0% intensity level. It is likely that both groups were least accurate at identifying emotions at 30.0% intensity because, at that level, the emotion intensity was so low that the face looked nearly neutral. It is likely both groups were subject to more random responding at 30.0% emotional intensity. At

100.0% emotional intensity, the task likely did not have enough sensitivity to identify true differences in ability to identify emotions. Much as Tottenham et al. (2009) described, 100.0% emotional intensity left little room for individual variance and likely caused a ceiling effect.

The findings identifying happiness as the most accurately identified emotion for both the domestic violence offender group and the control group were consistent with the previous findings that found positive facial emotions to be more consistently accurately identified (Carr & Lutjemeier, 2005). The findings that identified fear and sadness as the two emotional identification deficits of domestic violence offenders also supported Marsh and Blair's (2008) findings that violent offenders have significant impairments in identifying fear and sadness but not happiness, disgust, or anger. The present study was the first to have similar findings with domestic violence offenders. The current sample appeared to have the same emotion identification deficits as the more generally violent offenders previously studied.

Research Question Q2 asked: To what extent do demographic factors as measured by a demographic questionnaire (SES, drug and alcohol treatment history referral, education, history of own abuse) or cognitive abilities as measured by the General Ability Measure for Adults (GAMA) affect how accurately domestic violence offenders identify emotions in others? Results for Research Question Q2 found control participants were significantly older, obtained a higher level of education, and had a higher income than the domestic violence offender participants. The domestic violence offender participants were more likely than the control participants to be a racial or ethnic minority and to have a chemical dependence history. There was no significant difference in trauma history.

Domestic violence offender participants still had a deficit in accurately identifying emotions after adjusting for the significant demographic differences of age, race and ethnicity, and chemical dependence history. This continued statistically significant deficit suggests age, race and ethnicity, and chemical dependence history did not have a significant impact on accuracy of facial emotion identification in the current study's sample. When the demographic factors of income and education level were adjusted for, there was no longer a significant difference in emotion identification accuracy between the two groups suggesting both age and income independently correlated with one's ability to accurately identify emotions. There was no significant difference in General Ability Measure for Adults (GAMA) scores between the control participants and the domestic violence offender participants. The domestic violence offender participants scored in the Average range on the nonverbal cognitive assessment. After accounting for GAMA scores for both groups, the domestic violence offender participants remained significantly less accurate in identifying facial emotions than the control participants.

The hypothesis that the domestic violence offender participants would have a greater exposure to traumatic events given previous research reporting exposure to violence as a risk factor for current violent acts was not supported in this study. Both domestic violence offender participants and control participants reported similar exposure to traumatic events. The domestic violence participant sample reported a significantly lower annual income and educational attainment level than the control participants. When income and education were controlled for, the significant difference in accuracy of emotion recognition was no longer present, indicating income and education were significant contributing factors in facial emotion recognition. Higher levels of education

and family income correlated with a better ability to accurately identify facial emotions regardless of participant group (domestic violence offender or control). Income and education as significant contributors to accuracy of facial emotion identification supported previous findings that socioeconomic status (SES) was a risk factor for domestic violence and suggested it was a factor in facial emotion recognition as well (Daro et al., 2004; Murphy, 2013). There may be confounding outside factors that improve one's ability to accurately identify facial emotions and increase one's likelihood of obtaining higher education and, thus, higher income. Future research would benefit from exploring these correlations.

Previous research has found that individuals with a history of chemical dependence generally do worse on facial emotion recognition tasks (Matsumoto et al., 2008). When the current study controlled for a history of chemical dependence, the domestic violence offender participants were still significantly less accurate in identifying facial emotions. This suggests chemical dependence alone was not a significant contributing factor to a reduced level of accuracy of facial emotion recognition. It is important to note that, although chemical dependence alone was not found to significantly impact facial emotion recognition accuracy, chemical dependence increases the likelihood that a domestic violence incident would occur under the influence of drugs or alcohol (Stith et al., 2004). The disinhibiting effects of drugs and alcohol, coupled with a deficit in accurately identifying emotions, is likely to have an impact on the occurrence and severity of domestic violence incidents and should be explored in future research.

In addition, previous research hypothesized that differences in facial emotion recognition between men who had been domestically violent and non-violent controls

may be due simply to cognitive deficits among the domestic violence offenders (Babcock et al., 2008). In the present study, there was no significant difference between the control participants and the domestic violence offender participants on the GAMA, a nonverbal cognitive assessment. After the GAMA scores were accounted for when examining differences in ability to accurately identify facial emotions, domestic violence offender participants were still significantly less accurate in identifying emotions. This continued difference after accounting for GAMA scores suggests the differences in facial emotion recognition between the groups was due to a factor other than cognitive ability.

Research Question Q3 asked: How does a domestic violence offender's self-reported rating of his own empathic ability as measured by the Interpersonal Reactivity Index (IRI) compare to his ability to accurately identify the emotions of others as measured by the Nimstim pictures of facial affect? Only one scale that showed significant differences between the domestic violence offender participants and the control participants on the Interpersonal Reactivity Index (IRI) was the Personal Distress Scale. The domestic violence offender participants reported significantly higher scores on the Personal Distress scale, meaning they reported a higher level of personal distress when in stressful situations. There was no significant correlation between accuracy of facial emotion identification and any of the subscales of the IRI for either the control group or the domestic violence offender group. For the domestic violence offender group, the one significant correlation was between the Empathic Concern scale and the Perspective Taking scale of the IRI. The higher they rated Empathic Concern, concern for the well-being of others, the more likely they were to identify as being able to put themselves in the place of another person and view situations from his or her perspective. For the

control group, the only significant correlation was between the Personal Distress scale and the Empathic Concern scale of the IRI. The more likely control participants were to indicate a high level of personal distress in stressful situations, the higher the rating of their level of concern for the well being of others. Neither the domestic violence offender participants nor the control participants had any scores of the IRI subscales related to ability to accurately identify the emotions of others, indicating self-identified empathic ability was not significantly correlated with ability to accurately identify the emotions of others for either group.

Research Question Q4 asked: Will the men in the current study demonstrate an own-gender bias and be better able to recognize emotion on male faces than female faces? When examined together, both the domestic violence offender participants and the control participants were significantly less accurate in identifying the emotions in female faces compared to male faces. When compared independently, the domestic violence offender participants showed an even greater bias in ability to accurately identify emotion in male faces over female faces compared to the control participants. The bias toward male faces means they were better able to accurately identify emotions in male faces than female faces and had an even greater deficit in accurately identifying emotions in female faces compared to control participants. The own-gender bias for domestically violent men was greater than the tendency for own gender bias already seen in the literature (Loven, Svard, Ebner, Herlitz, & Fischer, 2014). The above findings were consistent with previous studies that both men and women were better able to accurately identify emotions within their own gender (Scherf & Scott, 2012). This own-gender bias was evident in both the domestic violence offender participants and the control participants.

Additionally, there was an interaction between gender and domestic violence offense history with the domestic violence offender participants demonstrating an even greater deficit in accurately identifying the emotions of women compared to the control participants.

Summary of Results

The present study examined how accurately domestic violence offenders identified the emotions of others compared to non-violent control participants. The domestic violence offender participants demonstrated a deficit in identifying the emotions of sadness and fear compared to controls. They did not demonstrate a deficit in accurately identifying the emotions of anger, disgust, surprise, or happiness. Domestic violence offenders were significantly more accurate in identifying the emotion of happiness compared to the negative emotions of sadness, fear, disgust, and anger. They were significantly less accurate in identifying emotions in the middle range of intensity (40.0% and 60.0%) but not at either end of the spectrum of intensity (30.0%, 70.0% and 100.0%).

The present study controlled for factors that may impact accuracy in emotion identification such as cognitive ability and demographic factors. The domestic violence offender participants and the control participants significantly differed in several demographic areas with the control participants being significantly older, having a significantly higher annual family income, and a significantly higher level of education. The domestic violence offender participants were significantly more likely to be of a minority race or ethnicity and have a chemical dependence history. Domestic violence offenders still demonstrated a significant deficit in identifying the emotions of others after controlling for the demographic factors of age, race/ethnicity, and chemical

dependence history. There was no longer a significant difference in accurately identifying emotions between the groups after controlling for annual household income and highest level of education attained. There was no significant difference in cognitive ability between the groups as measured by the GAMA and domestic violence offender participants remained less able to accurately identify the emotions of others after GAMA scores were accounted for.

In addition to being asked to identify the emotions of others, participants were given a written empathy measure. The Interpersonal Reactivity Index (IRI) has four subscales: the Perspective Taking scale, the Empathic Concern scale, the Personal Distress scale, and the Fantasy scale. Domestic violence offender participants scored significantly higher than control participants on the Personal Distress scale. There were no significant differences between groups on the remaining three scales. There was no significant correlation between overall accuracy of facial emotion recognition and any of the scales of the IRI for either the control participants or the domestically violent participants. There was a significant correlation between the Perspective Taking scale and the Empathic Concern scale for the domestic violence offender participants and a significant correlation between the Empathic Concern scale and the Personal Distress scale for the control participants. Both groups of participants were significantly less accurate in identifying the emotions of women compared to men. The domestic offender participants had a significantly greater deficit in accurately identifying the emotions of women compared to the control participants.

Implications and Future Directions

Theoretical Implications

The findings in the current study added to the current literature by adding more empirical knowledge to the current theories regarding the cause and treatment of domestic violence. Previous research involving violent offenders has suggested that empathy, or the lack of empathy, may play a role in one's offense (Covell et al., 2007). The idea behind the study of empathy in violent offenders is that victim empathy has the potential to overpower the desire to offend with the desire to not offend. An empathic connection with a potential victim motivates the offender to set in motion the mechanisms and tools he has learned to keep from offending (Grady & Rose, 2011). In the present study, the findings that the domestic violence offender participants had scores just as high as the control participants on the Empathic Concern and Perspective Taking subscales of the IRI suggest the domestic violence offender participants did not lack the desire to be empathic toward others or the ability to identify what made one empathic. Their deficit in being able to accurately identify sadness and fear suggests they had difficulty applying their empathic awareness. During their domestic violence offense, a disconnect occurred when they were unable to accurately identify the feelings of their partner and were unable to respond appropriately to their partner's true emotional experience. It appears that it was not so much a lack of desire to act empathically toward their partner but an inability to accurately identify emotions that would lead to an accurate empathic response. The current study's findings are promising in that it appears future domestic violence interventions would not necessarily need to attempt to teach empathy, which would be very difficult, but to teach how to apply the empathy domestic

violence offenders already report experiencing, especially when it comes to feelings of fear and sadness.

The current study built on previous literature regarding the Social Information Processing (SIP) model, Darwin's model of emotions as a form of communication and the dichotomy between reactive/affectively violent and proactive/predatory violent offenders. Social Information Processing (SIP) is a model that views violence as occurring when one decodes social cues inaccurately, selects an inappropriate response, and acts on the chosen inappropriate response (Murphy, 2013; Murphy et al., 2014). One's own emotional state impacts his or her coding of the emotions of others and the perceived emotions of others impact one's emotional state. Increased physiological arousal increases the risk of misperceptions of threat (aka negative attribution bias) and a greater level of violence disinhibition (Taft et al., 2015). The present research findings indicate domestic violence offenders had a deficit accurately identifying the emotions of sadness and fear. When coupled with previous findings that men who had committed domestic violence offenses had a negative attribution bias, the current findings supported the idea that violence could result from inaccurate encoding and inappropriate response selection (Murphy et al., 2014). The domestic violence offenders in the present study were misidentifying sadness and fear as another emotion, likely anger, disgust, or surprise. If they experience a negative attribution bias and misidentify their partner's fear as surprise or sadness as anger or disgust, they are going to respond in a very different, and likely not empathic, way in that situation. According to the SIP model, when one inaccurately encodes fear or sadness as anger or disgust, which are more aggressive negative emotions, he or she will then select an inappropriate, and likely more violent,

response (Murphy, 2013). One is much more likely to react in an aggressive manner to the emotions of anger or disgust than to the emotions of fear or sadness.

Although the present study did not find a significant difference between the control group and the domestic violence offender group in terms of exposure to traumatic events, the domestic violence offender participants' deficit in accurately identifying fear and sadness may be due to childhood exposure to violence. Previous research on facial emotion recognition found that children who were exposed to violence were more accurate in identifying anger compared to other emotions (Pollak & Tolley-Schell, 2003). Pollak and Tolley-Schell inferred that accurate identification of anger, even at the expense of accurately identifying other emotions, served as a protective factor. Not accurately identifying anger could possibly lead to physical danger, while not accurately identify other emotions, such as fear and sadness, did not. It served the individual to view any emotional ambiguity as anger and take the appropriate steps (fight or flight) to protect oneself. It is possible that in the present study, the domestic violence offender participants misinterpreted the emotions of fear and sadness as anger, therefore. If they made the same error in their daily lives, it is possible their over-identification of anger led them to become more readily aggressive in their interactions with their partners. In addition, the accurate recognition of the emotions fear and sadness in intimate relationships may strengthen the relationship. When one sees a loved one who is fearful or sad, then the appropriate response would be to comfort and protect that individual, thus strengthening the relationship. If domestic violence offenders are unable to identify those emotions as accurately as non-violent control participants, they are less likely to take part in those relationship-building activities.

Emotions have long been viewed as a form of communication in relationships. Darwin first hypothesized emotions were used for relational purposes when he noted the universality of individual emotions (Matsumoto et al., 2008). Current research has built on this idea and the discovery of mirror neurons has added to the view of emotions as a communication tool. Mirror neurons are believed to allow individuals to “embody or simulate not just another individual’s intentions but also their state of mind, which then informs subsequent interactions with the observed agent” (Enticott et al., 2008, p. 2851). Thus, mirror neurons are believed to be involved in the development of social cognitive processes that lead to effective social interactions including empathy and facial emotion processing. Previous research has found reduced mirror neuron activation among clinical populations in which social cognitive deficits, such as accurate emotional identification deficits, were common. In healthy, non-clinical individuals, mirror neurons provide internal stimulation of the observed facial emotion expressions and evoke similar emotions in the observer to the emotions of the observed (Enticott et al., 2008). If domestic violence offenders experience reduced mirror neuron activation similar to other individuals with difficulty in accurate facial emotion recognition, they are likely to react with an inappropriate emotional response to the situation. In addition, if their mirror neurons cause an internal emotional response similar to the emotion they perceive, as with healthy individuals, but they perceive the wrong emotion, unlike healthy individuals, they would have an inappropriate emotional response in that situation as well. This is particularly important when one considers the findings of the current study in which the domestic violence offender participants were significantly less accurate in identifying the emotions of sadness and fear compared to controls. If domestic violence offenders are

misidentifying the emotions of sadness and fear as other emotions such as anger or disgust, their mirror neurons would trigger angry or disgusted emotions and, in feeling anger or disgust, the domestic violence offenders are more likely to respond in an aggressive manner.

In the current sample, domestic violence appeared to be more of a reactive response to distress or perceived insult, as evidenced by the significantly higher IRI Perceived Distress scale ratings given by the domestic violence offender participants compared to the control participants. A high Perceived Distress scale score indicated they self-identified as having a higher level of emotional distress or reactivity in stressful situations. This reactive distress pattern is a key trait in individuals who have been identified as reactive/affective violent offenders in the literature (Hanlon et al., 2013). Previous research on reactive/affective and proactive/predatory violent offenders has found domestic violence to be more consistent with reactive offending patterns (Meloy, 2006; Walters, Frederick, & Schauch, 2007). In addition, reactive offending patterns were significantly correlated with a negative attribution bias, in other words, the reactive violent offender uses his or her violent act as a reaction to a perceived injustice rather than as an opportunity to achieve certain ends (Meloy, 2006). Domestic violence offenders who, in accordance with the SIP model and the current study's findings, have a deficit in identifying sadness and fear and may use the negative attribution bias to inaccurately identify those emotions as anger or disgust. They may also be more likely to reactively and affectively respond in a violent way as a result of their emotion identification deficit.

Previous research indicated children who were reactively violent had weaker interpersonal skills and had greater difficulty encoding social cues, such as others' emotions, than proactively violent children (Walters et al., 2007). Evidence of the reactive/affective and proactive/predatory violence dichotomy in children has suggested the nature of violence committed is relatively stable over time and, thus, should be addressed in the domestic violence literature. Difficulty in accurately identifying emotion, coupled with a tendency to react aggressively when under stress, increases the likelihood for domestic violence to occur (Walters et al., 2007). In addition, hyperarousal has been strongly correlated with aggression (Taft et al., 2015). A greater focus on the impulsive nature of offending and how emotional arousal impacts the etiology of domestic violence would improve the effectiveness of domestic violence offender therapy. Current criticisms of the most common domestic violence offender treatment models have highlighted the heterogeneous nature of domestic violence offender types (Murphy, 2013). Domestic violence offenders have a wide range of personality disorder psychopathology and the reactive/affective and proactive/predatory dichotomous nature of violent offenders has had a great deal of support in the literature (Dixon & Graham-Kevan, 2011; Hanlon et al., 2013; Meloy, 2006)

Incorporating different facets from the SIP model of domestic violence, the empathy model of communication, and the reactive/affective versus proactive/predatory dichotomy of violence with the findings from the current study adds depth to the understanding of what may lead one to become domestically violent. A high level of emotional arousal in stressful situations, a common characteristic of reactive/affective violent offenders, and the domestic violence offender participants in the current study, as

measured by the Perceived Distress scale of the IRI, has been hypothesized to make one more prone to misreading another's emotions in times of high emotional conflict (Cohen et al., 2015). The correlation between reactive/affective violent offending patterns and difficulty decoding social cues aligns with the SIP model of domestic violence. The SIP model of domestic violence believes domestically violent men, while in an emotionally aroused state, are more likely to inaccurately use the negative attribution bias and view their wives' actions as critical or rejecting. This heightened emotional arousal, coupled with the negative attribution bias, escalates into aggressive ways of interacting (Cohen et al., 2015). The current study's findings that domestically violent men demonstrated deficits in identifying sadness and fear, even when not in an emotionally aroused state, suggested they may be even less accurate in identifying sadness and fear when in an escalating argument with their partners, leading to a high likelihood of violence. A violent reaction based on an inaccurate identification of one's partner's emotion as anger or disgust rather than fear or sadness breaks down the emotional communication between partners and, ultimately, harms the relationship.

In addition, previous research has demonstrated strong own-gender bias in facial emotion recognition for women, but not men, when examining non-violent populations (Loven et al., 2014; Rehnman & Herlitz, 2006; Scherf & Scott, 2012). Research has demonstrated women recognize emotion in female faces more accurately than men do, while men and women perform similarly in emotion recognition of male faces (Rehnman & Herlitz, 2006). The present study, unlike previous research, did find an own-gender bias in men when looking at facial emotion recognition. In this all-male sample, both the non-violent control group and domestic violence offender group were better able to

accurately identify the emotions of male faces compared to female faces. In addition, there was an interaction effect with the domestic violence offender group demonstrating a greater deficit and being even less accurate in identifying the emotions of female faces compared to the non-violent control group.

Scherf and Scott (2012) hypothesized that the differences in own-gender bias and women's ability to more accurately identify female faces may be due to developmental factors in adolescence when there is a focus on own-group identity and being able to accurately differentiate one's in-group from the out-group. In addition, Loven et al. (2014) hypothesized that women are better able to identify emotions as a result of early sex differences in attention because young girls show a preference in attention toward faces rather than a moving object. Boys demonstrate preference for movement over facial features. Girls are also more likely to make eye contact with an unknown individual than boys. In addition, they hypothesized that women's own gender bias for female faces may come from close interactions with other females, thus, strengthening the own-gender bias for facial emotion recognition (Loven et al., 2014).

Expanding on the hypotheses of Scherf and Scott (2012) and Loven et al., (2014), it is possible that the own-gender bias for the men in the present study may be explained using the same logic for which it was hypothesized women show an own-gender bias. Men may be more likely to demonstrate an own-gender bias in facial emotion recognition due to a need to accurately differentiate one's in-group from one's out-group beginning in early adolescence. In addition, the men in the study may have developed an own-gender bias in facial emotion recognition during young childhood when they spent more time in the presence of other males, both adult males and peers, than in the presence of

females. The even greater own-gender bias in facial emotion recognition for domestic violence offender participants may be the result of men who have been domestically violent spending even more time in the presence of other men compared to non-violent men. It could also be the result of the sexist views believed to be present by the Duluth model of domestic violence offender treatment program (Walters et al., 2007). If men who are domestically violent do hold sexist attitudes toward women, they may work harder to and, therefore, be better at, identifying the emotions of men, whom they see as their equals, compared to women, whom they see as their inferiors.

In conclusion, the present study contributed to the theoretical literature of domestic violence etiology by demonstrating domestic violence offender participants experienced deficits in accurately identifying the emotions of fear and sadness. In addition, they demonstrated deficits with more realistic emotional presentation at 40.0% and 60.0% intensity across emotions. Deficits in accuracy of emotion identification for domestic violence offenders were not influenced by cognitive deficits as previously thought. The high emotional reactivity they reported experiencing in stressful situations influenced domestic violence offenders' likelihood to react violently when misidentifying the emotional state of others.

Methodological Implications

The present study found domestic violence offenders as experiencing a deficit in accurately identifying emotions, particularly at the mid-range of emotional intensity (40.0% and 60.0%) as well as the specific emotions of fear and sadness. It also identified, and accounted for, the high-risk demographic factors of trauma history, income, education, and a history of chemical dependence. The current study found educational

attainment and annual family income to be significant contributing factors to ability to accurately identify emotions. It also identified and accounted for age, gender, and race, which were not found to be significant contributing factors to accurately identifying emotions in this study. In addition, the present study found no correlation between self-identified level of empathy and ability to accurately identify emotions in domestic violence offenders. Domestic violence offenders self-identify as having a level of empathy in the same range as non-violent control participants but were at a significant deficit in accurately identifying emotions compared to controls. Finally, the present study found no significant difference in nonverbal cognitive ability between the control group and domestic violence offender participants.

Facial emotion recognition tasks have been used with many other violent offender groups to increase the knowledge of how they interact with others and help gain understanding of why they may become violent (Barnett & Mann, 2013; Domes et al., 2013). Self-report empathy measures obtain information around one's ability to put oneself in another's shoes or identify how one views oneself in terms of empathy. Self-report empathy measures are more susceptible to social desirability factors and one's own perception, while facial affect recognition tasks are a better measure of one's actual ability. The present study combined the use of a self-report empathy measure, the IRI, with a facial emotion identification task to help identify how the two may or may not be related. The use of both an applied (facial emotion identification) and self-report (IRI) empathy measures helped give a more well-rounded and thorough view of empathy in domestic violence offenders. The present study's use of both forms of measurement helped identify that, in the case of domestic violence offenders, their self-identified level

of empathy did not correlate with their actual ability to identify the emotions of others. It was unclear in the present study whether the self-identified measure of empathy was an accurate reflection of how the domestic violence offenders viewed their level of empathy or if the high IRI scores reflected social desirability factors. In any case, the IRI measure reflected how the domestic violence offenders wanted to be perceived in their empathic ability. The facial emotion recognition task identified discrepancies between domestic violence offenders' view of their own empathy level and actual ability to act with empathy.

The present study not only utilized a facial emotion recognition task to reduce social desirability factors, it used facial morphing software to include five different emotional intensities to increase the sensitivity of the task. The present study was the first study to use facial morphing technology to gain a more realistic picture of emotion identification accuracy with domestic violence offenders. The majority of previous studies of emotion identification accuracy with violent offenders presented photographs at 100.0% emotional intensity (Babcock et al., 2008; Book et al., 2007; Brook & Kosson, 2013). The majority of the emotional expression one views on a daily basis is not at 100.0% intensity and only including faces demonstrating emotional intensity at 100.0% would likely cause ceiling effects (Pham & Philippot, 2010). The present study avoided ceiling and floor effects by including such a wide range of emotional intensity in the facial emotion recognition task. A wider range of emotional intensity made the measure more sensitive to results and gave more nuanced results.

Previous literature has identified a history of trauma, income level, and drug and alcohol use as risk factors for committing domestic violence offenses (Stith et al., 2004).

In addition, literature on facial emotion identification has identified age, gender, and race as impacting one's accuracy of facial emotion recognition (Matsumoto et al., 2008). Previous studies of facial emotion recognition accuracy in violent offenders hypothesized that differences in facial recognition accuracy may be due to cognitive deficits of the violent offenders compared to control participants (Babcock et al., 2008; Marsh & Blair, 2008). Babcock et al. (2008) questioned whether their findings that domestic violence offenders with antisocial personality disorder characteristics but not offenders with borderline personality disorder characteristics demonstrated a deficit in facial emotion identification were due to cognitive deficits rather than personality disorder or offending characteristics. Despite these hypotheses, no previous study has explicitly addressed possible cognitive differences between violent offenders and control participants. The present study administered the nonverbal cognitive assessment General Ability Measure for Adults (GAMA) to identify and account for any possible cognitive differences between the domestic violence offender group and the control group (Bardos, 2003). It has been demonstrated that verbal assessments are skewed by formal education attainment; therefore, a nonverbal cognitive assessment was chosen to avoid formal education of participants being a confounding factor. The finding regarding no statistically significant difference between the control group and the domestic violence offender group, which were all within the Average or High Average range, suggests that the domestic violence offenders' deficits in facial emotion recognition were not due to cognitive deficits. Although no significant differences were found in this study's population, it is recommended future studies include a cognitive measure as a precaution.

Given the high levels of distress when exposed to stressful situation reported by the domestic violence offender participants, it would be important to understand the role increased levels of distress play in facial emotion recognition accuracy. Research has found affective/impulsive violent offenders have lower levels of impulse control and emotional regulation, particularly in emotionally arousing or stressful situations (Hanlon et al., 2013; Jaffe et al., 2015). In addition, low levels of perspective taking, an aspect of cognitive empathy measured in the IRI, have been related to aggressive tendencies under conditions of moderate threat (Jaffe et al., 2015). The present study was, by its very nature, a mildly stressful situation given that the participants were asked to participate in an unfamiliar task with an unfamiliar person. Even though the task and situation itself was likely to cause mild anxiety, every precaution was taken to reduce participant stress. Data were collected from the domestic violence participants at their treatment agency, which was a familiar location where they went every week. In addition, they were reassured that the tasks were designed to be difficult and, as long as they performed to the best of their ability, it was what the researcher needed. The low stress environment in which they participated in the study may have influenced the domestic violence offenders' high score on the Perspective Taking subscale of the IRI. In addition, there was little research on how increased stress levels may impact domestic violence offenders' ability to accurately identify facial emotions. If they have a deficit in identify fear and sadness in a low-stress environment, a higher stress environment may reveal even greater deficits in emotion identification across a wider range of emotions. Most acts of domestic violence occur in highly stressful situations and a clearer picture of how

accuracy of facial emotion recognition is affected by distress will have a large impact on how domestic violence is treated and conceptualized in the future.

Lastly, the present study demonstrated strong sampling methodology for the domestic violence offender sample. Participants were all level C domestic violence offenders as rated by the Domestic Violence Risk Needs Assessment (DVRNA). Level C domestic violence offenders are at the highest risk for dropping out of therapy and reoffending. All domestic violence offender participants were convicted of a domestic violence offense and sentenced to probation or parole and mandated to attend therapy. The present study was the first to study empathy in men who had been convicted of domestic violence and not only identified through self-report measures. In addition, the age and racial/ethnic distribution of the domestic violence offender participants in the present study was similar to the overall distribution in the State of Colorado, from where participants were recruited. Domestic violence offenders in Colorado are 56.0% White and 44.0% identify as a minority race or ethnicity (Gover, 2011). The present sample had 51.0% domestic violence offender participants who identified as White and 49.0% identified as being of a minority race or ethnicity. In addition, the average age of domestic violence offenders in the State of Colorado is 33 years of age. The average age of the domestic violence offender participants in the present study was 35.29 years old. The control sample for the present study was significantly older (average age 37.37 years) and had significantly more participants who identified as White (77.0%). The present study relied on convenience snowball sampling to recruit domestic violence and control participants. Future studies would benefit from matched samples when comparing domestic violence offender participants and non-violent control participants.

In summary, the methodological strengths of this study built upon gaps in previous literature. For example, including a facial emotion recognition task with several different emotional intensities was a strength of the present study not addressed in previous literature. In addition, the present study addressed the hypotheses of previous studies that cognitive deficits may influence facial emotion recognition accuracy and it was not found to have a significant impact. Continued use of a cognitive measure to account for possible cognitive deficits is recommended. The present study did not account for the impact of emotional arousal on ability to accurately identify emotions; future studies would benefit from doing so. The present study demonstrated strong sampling methodology.

Clinical Implications

The findings of the current study found heterosexual male domestic violence offenders had significant deficits in accurately identifying the emotions of fear and sadness. They had a particular deficit in identifying emotions in the mid-range of emotional intensity (40.0% and 60.0%) and in identifying the emotions of women. In the current sample, domestic violence appeared to be more of a reactive response to distress or perceived insult, as evidenced by the high IRI perceived distress scale. A high perceived distress scale score indicates they self-identified as having a higher level of emotional distress or reactivity in stressful situations. This reactive distress pattern is a key trait in individuals who have been identified as reactive/affective violent offenders in the literature (Hanlon et al., 2013). Currently, the most popular models of domestic violence therapy, the Duluth model and the cognitive behavior therapy model, do not address emotion directly and instead focus on cognitive distortions and power and control

differentials in relationships. The findings from the current study highlight the need for correct emotion identification training for domestic violence offenders.

The Duluth model and the cognitive behavior therapy (CBT) model are currently the two most commonly used models of domestic violence therapy. The Duluth model works to challenge irrational beliefs and attitudes, typically focused on gendered entitlement and sexist attitudes (Lehman & Simmons, 2009). The CBT model of treatment conceptualizes domestic violence as occurring due to problems with the individual's thoughts, assumptions, beliefs, and behavior (Lehman & Simmons, 2009). The CBT model works to challenge irrational beliefs and assumptions in order to change behavior. Both models have low completion rates and low effectiveness rates. In the current sample, domestic violence appeared to be more of a reactive response to distress or perceived insult, as evidenced by the high IRI Perceived Distress scale. Reactive/affective violent offenders do not act violently as part of a calculated power and control struggle or acted-upon gendered and sexist attitudes as it is viewed with the Duluth model and the CBT model. While the current sample of domestic violence offenders may hold gendered attitudes, the reactive model of violence views reactive/affective violence, such as domestic violence, to be a result of inability to tolerate distress or a reaction to a perceived insult rather than the calculated and planned form of violence seen in the proactive offenders (Walters et al., 2007). An emphasis on more rational forms of thinking, a focus of the Duluth and CBT models of violence, is likely to have little impact on reactive/affectively violent individuals (Walters et al., 2007).

The social information processing (SIP) model views encoding and action as constantly connected to, changing, and being changed by, a central knowledge base stemming from past experience (Murphy et al., 2014). This means that new learning and knowledge can impact one's encoding and enactment phases. Both the Duluth model and the CBT model are similar to the SIP model in that supporters of these models believe learning can change one's domestically violent behavior, but both theories stop at cognitive learning. The SIP model adds to current models of therapy in that it takes one's skills of encoding and applied learning into account.

Overall, current popular models of therapy focus on cognitive awareness but not applied ability to verbally or relationally assess one's partner's emotional state or how to effectively respond to the emotion once identified (Lehman & Simmons, 2009). A more traditional, "... rational approach designed to confront established norms and beliefs about the perceived benefits of crime versus the perceived costs of crime" may be more beneficial for predatory violent offenders who are more likely to plan and calculate the cost and benefits of their crimes (Walters et al, 2007, p. 1425). A rational approach may be effective in proactive criminal thinking but will likely have little impact on reactive criminal thinking because of the impulsive and irrational nature of the aggression in the latter group.

Counseling psychologists who work with domestic violence offenders can be more effective with reactive/affective type domestic violence offenders in a variety of ways. A heightened awareness by clinicians of the current study's findings, that heterosexual male domestic violence offenders had a deficit in accurately identifying fear and sadness in female faces, could be beneficial in increasing the effectiveness of

domestic violence offender therapy. A deficit in accurately identifying the emotions of others makes it difficult for one to respond with emotional regulation or in an appropriately empathic manner. An empathic connection with a potential victim motivates the offender to set in motion the mechanisms and tools he has learned to keep from offending (Grady & Rose, 2011). A greater focus on active learning and enactment would be helpful to learn emotional information and emotion regulation application on a more visceral rather than cognitive level. Active learning does not necessarily mean only training the domestic violence offenders to more accurately identify fear and sadness in addition to the other core emotions, although it is believed that would be beneficial. Active learning could also involve informing domestic violence offenders of the emotion recognition deficits found in the literature to bring their possible limitations into their awareness. Active learning would then involve role playing in which the domestic violence offender communicates verbally with his partner to inform her of the emotion he believes she is feeling and to invite her to verbally share her feelings. This verbal communication may reduce some of the ambiguity in attempting to rely solely on emotion identification through facial expressions. A reliance on only teaching accurate emotion identification to domestic violence offenders with the hope that they become as skilled as non-violent controls is likely unrealistic. Given that child abuse and neglect is a common risk factor for future domestic violence perpetration as well as difficulty with accurate emotion identification, it is likely the domestic violence offenders' emotion recognition deficits stem from childhood and may not be able to be brought back to the baseline of non-violent controls, although it can be improved (Ardizzi et al., 2015; Luke

& Banerjee, 2013). Communication training can help fill the gap that may be left by emotion-identification training alone.

One possible interactive way to effectively teach emotion recognition and appropriate ways of responding is through the use of an interactive computer program. Sygel and Kristiansson (2014) studied the effectiveness of an interactive computer simulation system for training domestic violence offenders how to effectively respond in high stress situations. The Reactions on Display/Intimate Partner Violence (RoD/IPV) system incorporates aspects of the Duluth model, CBT model, and social learning theory, while also allowing domestic violence offenders to apply the skills they learn through the current popular models. The RoD/IPV system is designed to “facilitate change in a participant’s violent behavior by allowing him to visually observe and reflect upon common feelings, thoughts, actions, and consequences in a typical domestic violence scenario” (Sygel & Kristiansson, 2014, p. 369). During the training session using RoD/IPV, significant differences emerged between the domestically violent group and the non-violent control group regarding differences in emotional processing when they viewed emotionally laden situations. These differences in emotional processing added support to the current study’s findings that domestic violence treatment interventions may be improved by adding emotion recognition training, particularly to identifying the emotions of fear and sadness in the mid-range of emotional intensity. Using a computer simulation may increase the engagement of domestic violence offenders in treatment. The focus on applied skills may benefit reactive/affectively violent domestic violence offenders in particular, whom previous research has shown may benefit more from applied skills compared to cognitive restructuring (Walters et al., 2007). The majority of

participants in the Sygel and Kristiansson (2014) study found the RoD/IPV program to be realistic and emotionally engaging although they also indicated they were “negatively affected” while using it (p. 377). This negative emotional impact of the training on participants highlighted the need for considerable therapeutic contact and processing before and after the computer simulation portion of treatment to focus on emotional processing and emotion regulation.

The low completion rate of the two most popular models of domestic violence treatment coupled with the high drop out rates found for domestic violence offenders, highlights the need for strategies to reduce dropout rates and increase successful completion of treatment programs. There are many factors that could be influencing the high drop out rates. One possibility is the emphasis on planned cognitive factors that contribute to domestic violence, in the absence of applied skills, causes distress in the affectively violent/reactive offenders who then act impulsively and drop out. Counseling psychologists would benefit from acknowledging and processing domestic violence offender’s distress in group. Acknowledging distress is likely to enhance therapeutic gains overall in addition to reducing dropout rate. A greater focus on readily applied skills may be helpful in future domestic violence therapy. One applied skill is the ability to more accurately identify the emotions of others, fear and sadness in particular. Another skill that may be helpful to domestic violence offenders is the increased ability to verbally check in with his or her partner regarding their emotional experience in the moment. Finally, increased distress tolerance will help domestic violence offenders from acting out aggressively in a stressful situation. In addition, an awareness of the current

emotional state of clients in treatment may increase the receptivity to treatment and reduce stress and anxiety in relation to treatment.

Current clinicians who specialize in domestic violence offender therapy could better identify which clients are affectively violent and which are proactively violent by utilizing an additional screening instrument during the initial domestic violence offender evaluation. An instrument such as the Psychological Inventory of Criminal Thinking Styles, which includes Proactive and Reactive composite scales, could be effective in identifying differences in offending styles (Walters et al., 2007). Once different offending styles are identified, the domestic violence offender clients could be placed in different mandated treatment groups, one for proactive/predatory offenders and one for reactive/affective offenders. Previous research has demonstrated reactive/affective offenders respond best to anger management, stress management, and social skills training (Walters et al., 2007). It may be best if interventions are focused on the type of offender, not just the offense. Skills-based interventions are likely most beneficial to reactive/affective violent offenders. In the future, it may be beneficial to match the approach to the type of aggression used by the offender rather than exposing all offenders to same intervention. An emphasis on accurately identifying reactive/affective or proactive/predatory domestic violence offenders could assist in the development of treatment groups to fit each type of offenders' needs, thus, making treatment more effective.

In conclusion, based on the major findings of the current study, the contributions in regard to the clinical implications emphasize the importance of using applied, rather than simply cognitive, therapeutic interventions. Applied interventions are likely to make

therapy for domestic violence offenders more effective and reduce dropout rates. It would be important for counseling psychologists working with the domestic violence offender population to emphasize not only accurate emotion recognition but also effective communication regarding one's own and one's partner's emotional experience in addition to emotion regulation.

Limitations and Recommendations for Future Study

Similar to the majority of existing literature, this study was limited by the sampling characteristics, thus, influencing both internal and external validity. This study was limited to those who were available and willing to participate in a cognitively demanding task that took an hour to complete for only five dollars compensation. Thus, the sample was likely skewed toward domestic violence offenders who may have had fewer antisocial traits and more of a desire to help the primary researcher and contribute to the field of psychology given the high level of demand and low amount of monetary compensation. Future studies would benefit from ensuring recruiting strategies that include more proactive/predatory domestic violence offenders.

In addition, future studies would benefit from a control sample with education and income levels similar to the domestic violence offender population. The present study relied on snowball sampling that resulted in control participants that were heavily skewed toward highly educated, older, Caucasian individuals with a high annual income. Due to the previous research that found emotion identification accuracy improves with age, the significantly older age of the control participants may have skewed the results (Carr & Lutjemeier, 2005). Finally, the control sample overrepresented Caucasian individuals and, due to the limited number of Nimstim faces to choose from, all faces in the facial

emotion recognition task were Caucasian. This skewed the data in that much like the own-gender bias, people demonstrated an own-racial bias as well and were better able to identify emotions in their own race (Scherf & Scott, 2012). Future research would benefit from limiting any bias in the data by utilizing matched control and domestic violence offender samples in the demographic factors of age, race, annual income, and highest level of education.

When examining these significant differences between the control participants and the domestic violence offender participants, one cannot help but notice that the domestic violence offender participants are significantly more likely to be a racial minority and have significantly lower educational attainment and income. An important future direction for research in domestic violence would be to examine how racism and discrimination may play a role in who is arrested for, and convicted of, domestic violence in the first place. An important role of Counseling Psychology is to advocate for social justice among all groups and in all forms and the possibility that race and socioeconomic status play a role in domestic violence arrests and convictions is an important area for psychology to explore.

The present study included a trauma measure to account for differences in traumatic history between the domestic violence offender and control groups given the previous research suggesting a trauma history may impact one's ability to accurately identify emotions (Matsumoto et al., 2008). The trauma measure used in the present study, the Life Events Checklist-5 (LEC-5), measured a variety of possible traumatic events over the course of one's lifetime. It does not ask the number of times a specific traumatic event occurred and it does not differentiate between violent traumatic events

and those that may have been perceived as traumatic but were not violent in nature. A high number of domestic violence offenders report experiencing exposure to violence or victimization as a child, and previous findings indicated children who had been abused had difficulty mimicking the facial emotions of others (Daro et al., 2004; Gardner et al., 2014; Matsumoto et al., 2008). Future research would benefit from including a more specialized trauma measure that focuses on complex childhood trauma and exposure to violence in childhood in order to get a more sensitive measure of how exposure to violence in childhood affects self-identified empathy and ability to accurately identify emotions in adulthood. The childhood trauma questionnaire (CTQ) is a 28-item self-report measure that assesses emotional, physical, and sexual abuse in addition to emotional and physical neglect. It also assesses how often abuse and neglect occurred in childhood (Bernstein, Fink, Handelsman, & Foote, 1994). Test-retest reliability of the CTQ ranges from .79 to .86 over an average of four months (Scher, Stein, Asmundson, McCreary, Forde, 2001). The focus on childhood trauma specifically, rather than trauma over the course of one's lifetime, would give more information on the time in one's life that trauma has been found to impact ability to accurately identify emotions and correlate most strongly with likelihood to perpetrate domestic violence (Gardner et al., 2014; Murrell, Christoff, & Henning, 2007). In addition, identifying different types of trauma (i.e. sexual, physical) and the approximate number of occurrences would give a more detailed picture of how childhood trauma may impact domestic violence offenders' ability to accurately identify emotions.

The present study did not assess for possible personality disorders in participants. Given the strong correlations in the literature between reactive/affectively violent

individuals and borderline personality disorder and between proactive/predatory violent individuals and antisocial personality disorder, it would be beneficial for future studies to include an assessment for personality disorder characteristics to help parse out the dichotomous nature of violent offenders. In addition, it would be beneficial to the literature and to future treatment to identify how personality disorder characteristics interplay with reactive/affective versus proactive/predatory violence. Connecting personality disorder characteristics to the type of offender would assist with the future development of domestic violence treatment groups that are tailored to reactive/affective or proactive/predatory domestic violence offenders. Current literature suggests each type of offender would benefit from a different treatment focus (Walters et al., 2007).

One final future direction would be to include lesbian, gay, bisexual, transgender (LGBT), and female domestic violence offenders in future research of empathy and facial emotion recognition tasks. Given the previous research regarding own-gender bias and women's higher scores on empathy tasks and accuracy in facial recognition, coupled with fewer LGBT and women being mandated to participate in domestic violence offender treatment, the present study included only heterosexual men as participants. Due to these differences, theoretical and clinical implications of this study could not be generalized to treatment with LGBT and women domestic violence offenders.

Conclusion

The current study explored domestic violence offenders' ability to accurately identify facial emotions while accounting for demographic and cognitive factors. In addition, self-identified levels of empathy were correlated with accuracy in facial emotion recognition. The study found domestic violence offenders to be significantly less

accurate in identifying emotions at 40.0% and 60.0% intensity. They were also significantly less accurate than control participants in identifying sadness and fear but not surprise, anger, disgust, or happiness. Due to the nature of the forced-choice assessment, this meant they inaccurately identified fear and sadness as surprise, anger, disgust, or happiness. On the self-rated measure of empathy, the Interpersonal Reactivity Index (IRI), domestic violence offender participants and control participants had no significant differences on the Empathic Concern subscale, Perspective Taking subscale, or Fantasy subscale. Domestic violence offenders had a higher Personal Distress subscale score, indicating they self-reported a higher level of distress in stressful situations. There was no significant difference in non-verbal cognitive ability between the groups. After controlling for the demographic differences of age, ethnicity, income, education, and chemical dependence history, domestic violence offenders remained at a significant deficit in identifying facial emotions compared to controls. The two exceptions were highest level of education attained and annual family income. After controlling for those two demographic factors, there was no longer a significant difference between groups in ability to accurately identify emotions. Both groups demonstrated a significant own-gender bias and were better able to accurately identify emotions in men compared to women. The domestic violence offender participants showed an even greater deficit in accurately identifying the emotions of women compared to men than the control group.

Current prevalent treatment approaches for domestic violence focus primarily on power and control struggles driven by patriarchal beliefs and how irrational cognitions affect one's behavior. The current study highlighted how empathy training and emotion recognition, particularly in the emotions of sadness and fear, could be helpful in

increasing treatment effectiveness for domestic violence offenders. It is important for counseling psychologists to have an awareness of the interpersonal and empathy deficits that may have caused someone to commit a domestic violence offense. These deficits could be used to help guide treatment and the therapeutic approach in order to improve treatment completion rates and reduce recidivism after treatment. Counseling psychologists could increase treatment effectiveness by using interventions tailored to be useful to each offender's specific strengths and deficits in regard to emotion recognition and its impact on empathy. It is important for counseling psychologists to address domestic violence as effectively as possible to reduce its emotional, societal, and financial drain on our society.

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APPENDIX A
DEMOGRAPHICS QUESTIONNAIRE

DEMOGRAPHICS QUESTIONNAIRE

Please answer the following questions. Remember: you may skip any questions you do not wish to answer or discontinue taking this survey at any time without consequence.

What is your age? _____ years

What was the primary language spoken in your home while growing up?

What is your race/ethnicity? Select all that apply

Caucasian _____
 Hispanic/Latino _____
 African American _____
 Asian American _____
 Native American _____
 Other _____

What is your family's household income per year?

Less than \$10,000 _____
 \$10,000 to \$24,999 _____
 \$25,000 to \$39,999 _____
 \$40,000 to \$54,999 _____
 \$55,000 to \$69,999 _____
 \$70,000 to \$84,999 _____
 \$85,000 or more _____

Specify if you feel comfortable _____

What is the highest level of education you have completed?

Did not start high school _____ Some High School _____
 High School Diploma/GED _____ Some College _____
 College Degree _____

Have you ever believed, or has someone ever told you, that you have a problem with drugs or alcohol? This includes being required to attend drug or alcohol treatment by probation, parole, or another supervising agency.

Yes _____ No _____

APPENDIX B

LIFE EVENTS CHECKLIST-5 (LEC-5)

LIFE EVENTS CHECKLIST-5 (LEC-5)

Listed below are a number of difficult or stressful things that sometimes happen to people. For each event check one or more of the boxes to the right to indicate that: (a) it **happened to you** personally; (b) you **witnessed it** happen to someone else; (c) you **learned about it** happening to a close family member or close friend; (d) **you were exposed to it as part of your job** (for example, paramedic, police, military, or other first responder); (e) **you're not sure if it fits**; or (f) **it doesn't apply to you**.

Be sure to consider your **entire life** (growing up as well as adulthood) as you go through the list of events.

Event	Happened to me	Witnessed it	Learned about it	Part of my job	Not Sure	Doesn't Apply
1. Natural disaster (for example, flood, hurricane, tornado, earthquake)						
2. Fire or explosion						
3. Transportation accident (for example, car accident, boat accident, train wreck, plane crash)						
4. Serious accident at work, home, or during recreational activity						
5. Exposure to toxic substance (for example, dangerous chemicals, radiation)						
6. Physical assault (for example, being attacked, hit, slapped, kicked, beaten up)						
7. Assault with a weapon (for example, being shot, stabbed, threatened with a knife, gun, bomb)						
8. Sexual assault (rape, attempted rape, made to perform any type of sexual act through force or threat of harm)						

Event	Happened to me	Witnessed it	Learned about it	Part of my job	Not Sure	Doesn't Apply
9. Other unwanted or uncomfortable sexual experience						
10. Combat or exposure to a war-zone (in the military or as a civilian)						
11. Captivity (for example, being kidnapped, abducted, held hostage, prisoner of war)						
12. Life-threatening illness or injury						
13. Severe human suffering						
14. Sudden violent death (for example, homicide, suicide)						
15. Sudden accidental death						
16. Serious injury, harm, or death you caused to someone else						
17. Any other very stressful event or experience						

APPENDIX C
INTERPERSONAL REACTIVITY INDEX (IRI)

INTERPERSONAL REACTIVITY INDEX

The following statements inquire about your thoughts and feelings in a variety of situations. For each item, indicate how well it describes you by choosing the appropriate letter on the scale at the top of the page: A, B, C, D, or E.

When you have decided on your answer, fill in the letter on the answer sheet next to the item number. **READ EACH ITEM CAREFULLY BEFORE RESPONDING.** Answer as honestly as you can. Thank you.

ANSWER SCALE

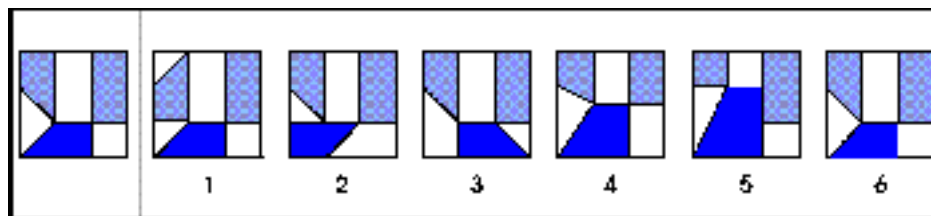
A	B	C	D	E
DOES NOT DESCRIBE ME WELL				DESCRIBES ME VERY WELL

1. I daydream and fantasize, with some regularity, about things that might happen to me.
2. I often have tender, concerned feelings for people less fortunate than me.
3. I sometimes find it difficult to see things from the "other guy's" point of view.
4. Sometimes I don't feel very sorry for other people when they are having problems.
5. I really get involved with the feelings of the characters in a novel.
6. In emergency situations, I feel apprehensive and ill-at-ease.
7. I am usually objective when I watch a movie or play, and I don't often get completely caught up in it.
8. I try to look at everybody's side of a disagreement before I make a decision.
9. When I see someone being taken advantage of, I feel kind of protective towards them.
10. I sometimes feel helpless when I am in the middle of a very emotional situation.
11. I sometimes try to understand my friends better by imagining how things look from their perspective.

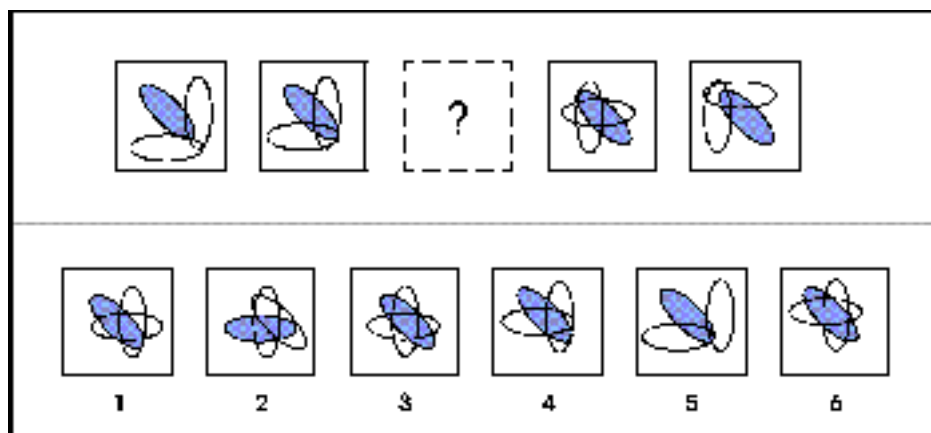
12. Becoming extremely involved in a good book or movie is somewhat rare for me.
13. When I see someone get hurt, I tend to remain calm.
14. Other people's misfortunes do not usually disturb me a great deal.
15. If I'm sure I'm right about something, I don't waste much time listening to other people's arguments.
16. After seeing a play or movie, I have felt as though I were one of the characters.
17. Being in a tense emotional situation scares me.
18. When I see someone being treated unfairly, I sometimes don't feel very much pity for them.
19. I am usually pretty effective in dealing with emergencies.
20. I am often quite touched by things that I see happen.
21. I believe that there are two sides to every question and try to look at them both.
22. I would describe myself as a pretty soft-hearted person.
23. When I watch a good movie, I can very easily put myself in the place of a leading character.
24. I tend to lose control during emergencies.
25. When I'm upset at someone, I usually try to "put myself in his shoes" for a while.
26. When I am reading an interesting story or novel, I imagine how I would feel if the events in the story were happening to me.
27. When I see someone who badly needs help in an emergency, I go to pieces.
28. Before criticizing somebody, I try to imagine how I would feel if I were in their place.

APPENDIX D
GENERAL ABILITY MEASURE FOR ADULTS (GAMA)
EXAMPLE QUESTIONS

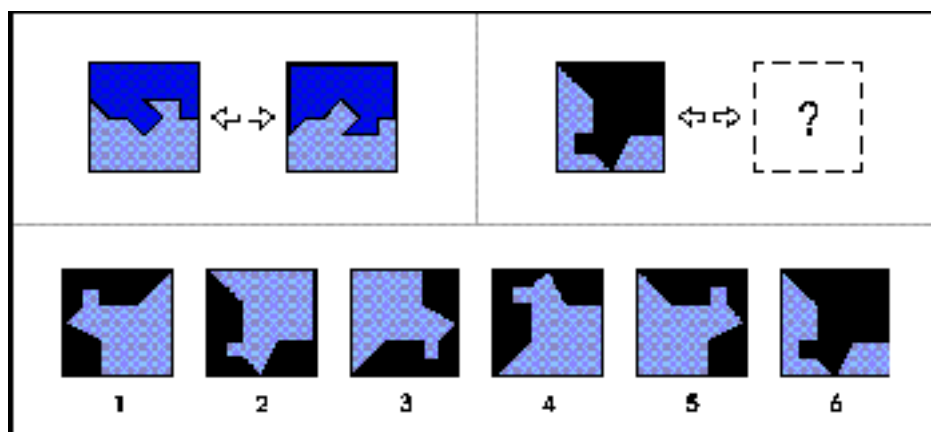
GENERAL ABILITY MEASURE FOR ADULTS (GAMA)
EXAMPLE QUESTIONS



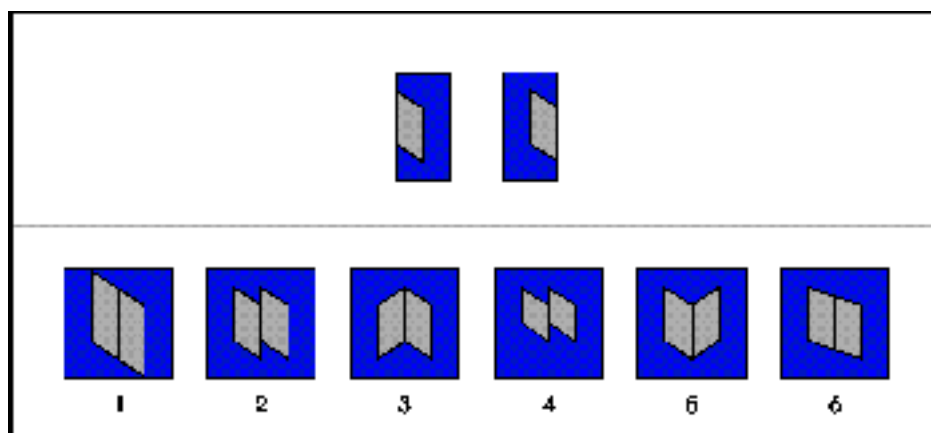
Matching: Requires examination of the shapes and colors of stimulus to determine which response option is identical.



Sequences: Requires the analysis of the interrelationships of designs as they move through space.



Analogies: Involves the discovery of the relationships in a pair of abstract figures and the recognition of similar conceptual relationships in a different pair of figures.



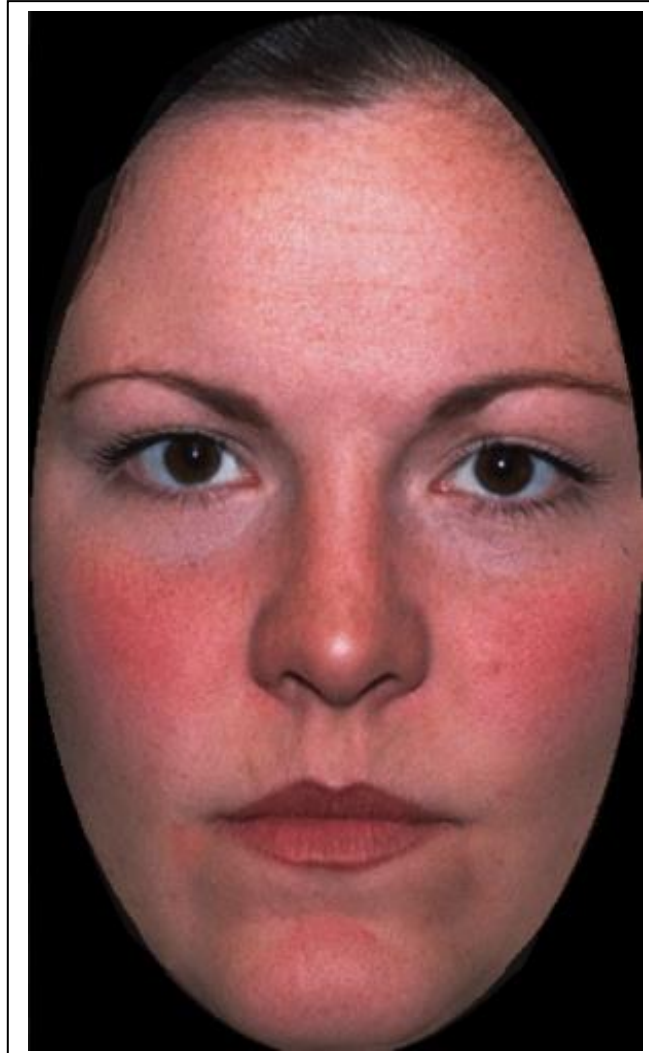
Construction: Involves the analysis, synthesis, and rotation of spatial designs to construct a new figure.

Note: All figures obtained from the Pearson website: <http://www.pearsonclinical.com/education/products/100000200/general-ability-measure-for-adults-gama.html#tab-details>

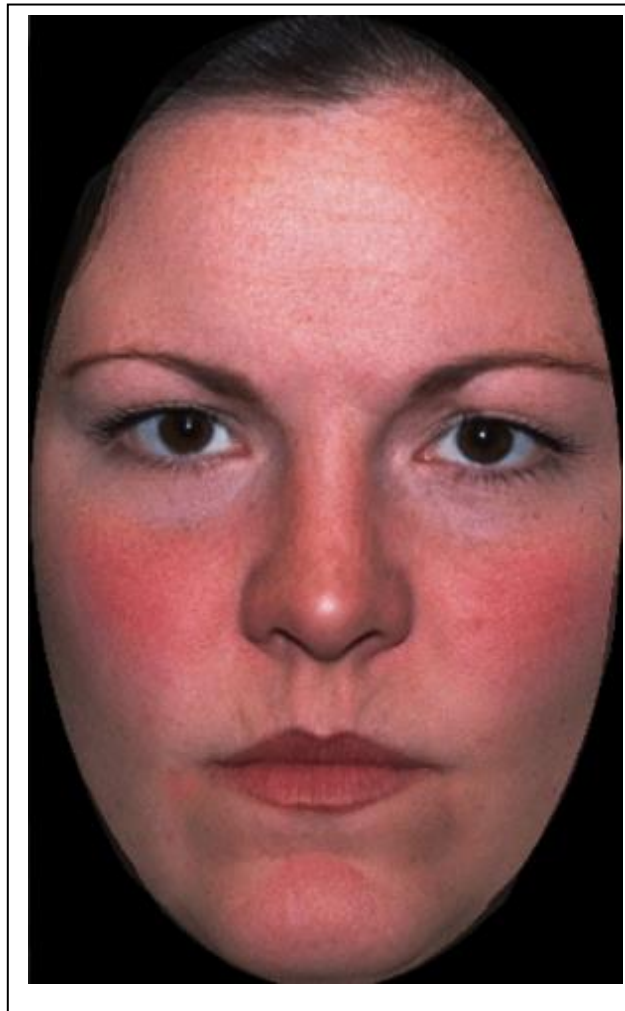
APPENDIX E

FACIAL EMOTION RECOGNITION TASK EXAMPLES

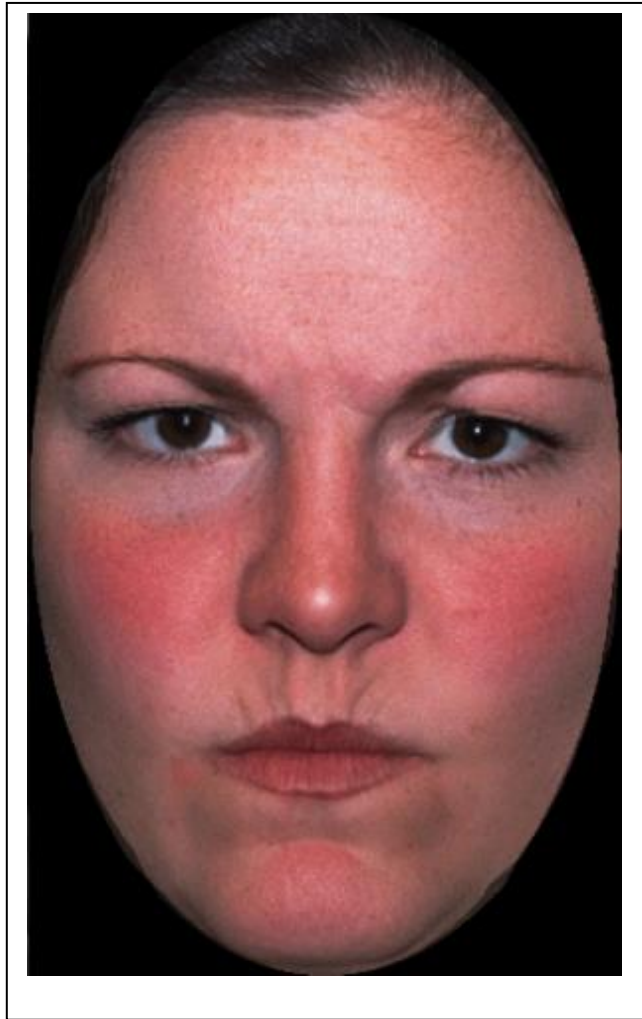
FACIAL EMOTION RECOGNITION TASK EXAMPLES



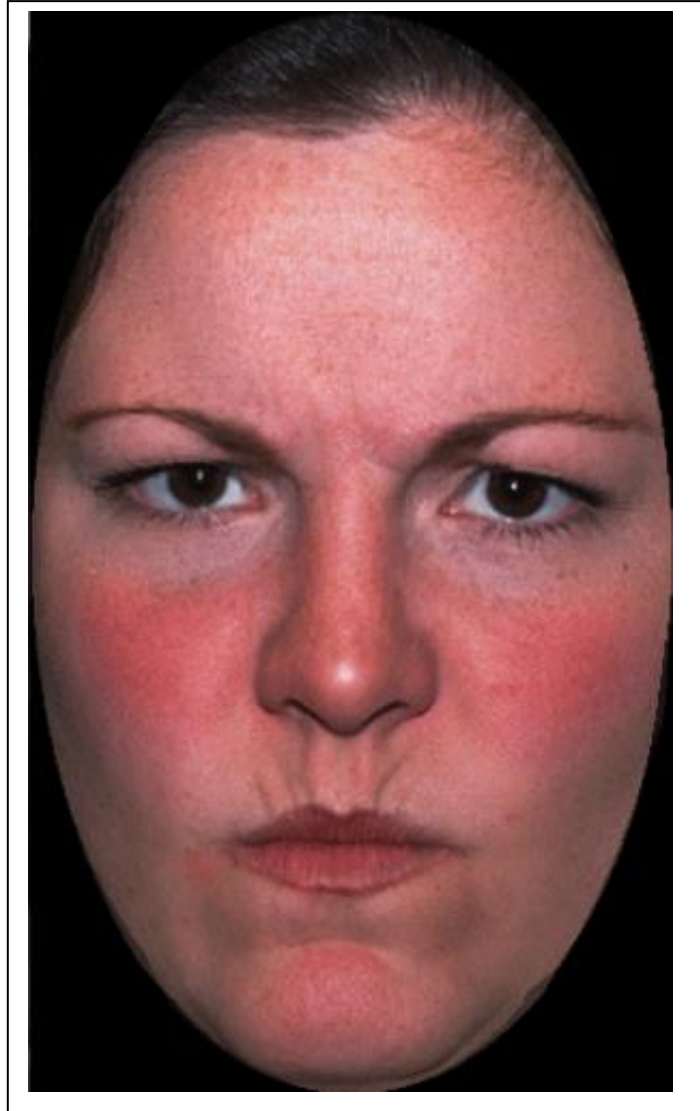
Anger
Shown at 30.0% Intensity



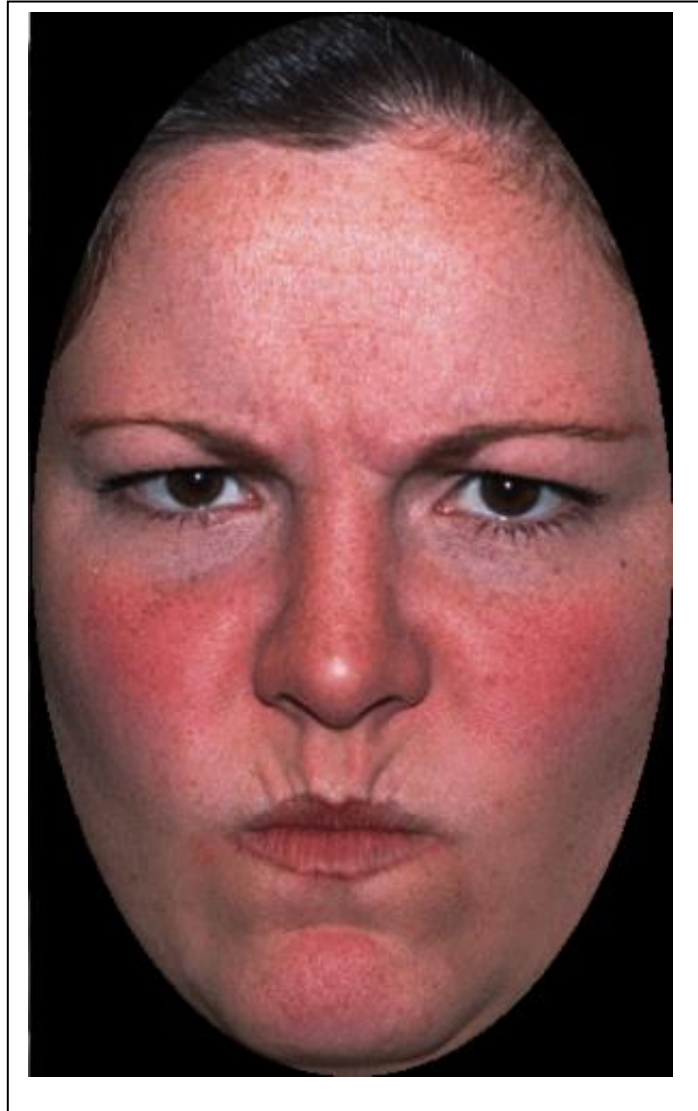
Anger
Shown at 40.0% Intensity



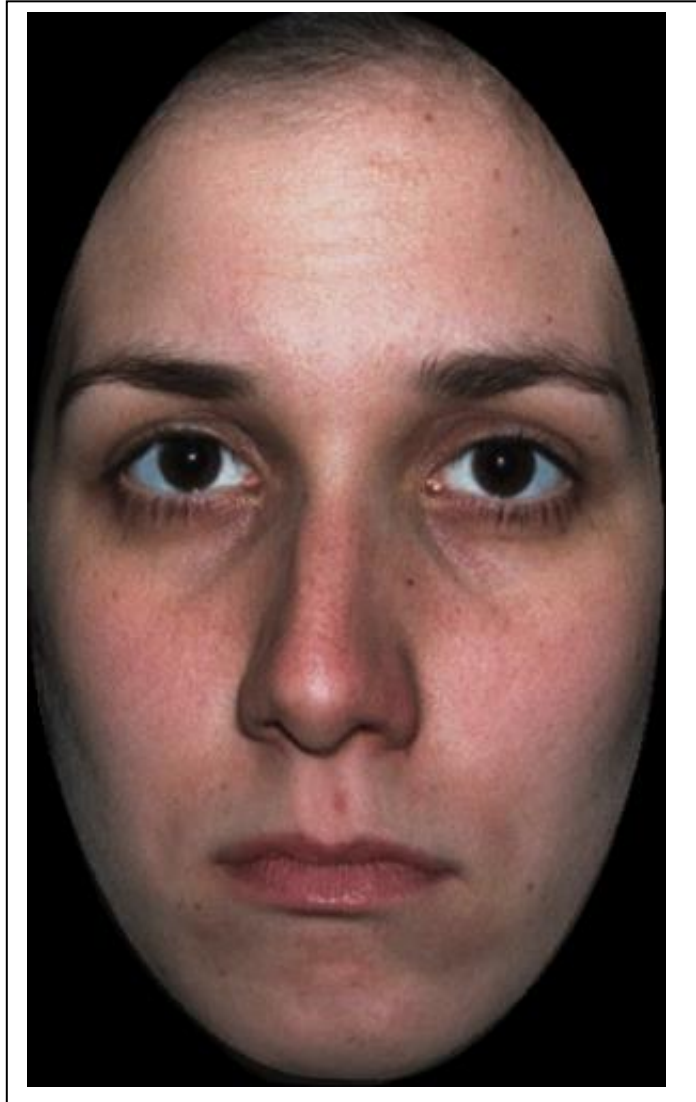
Anger
Shown at 60.0% Intensity



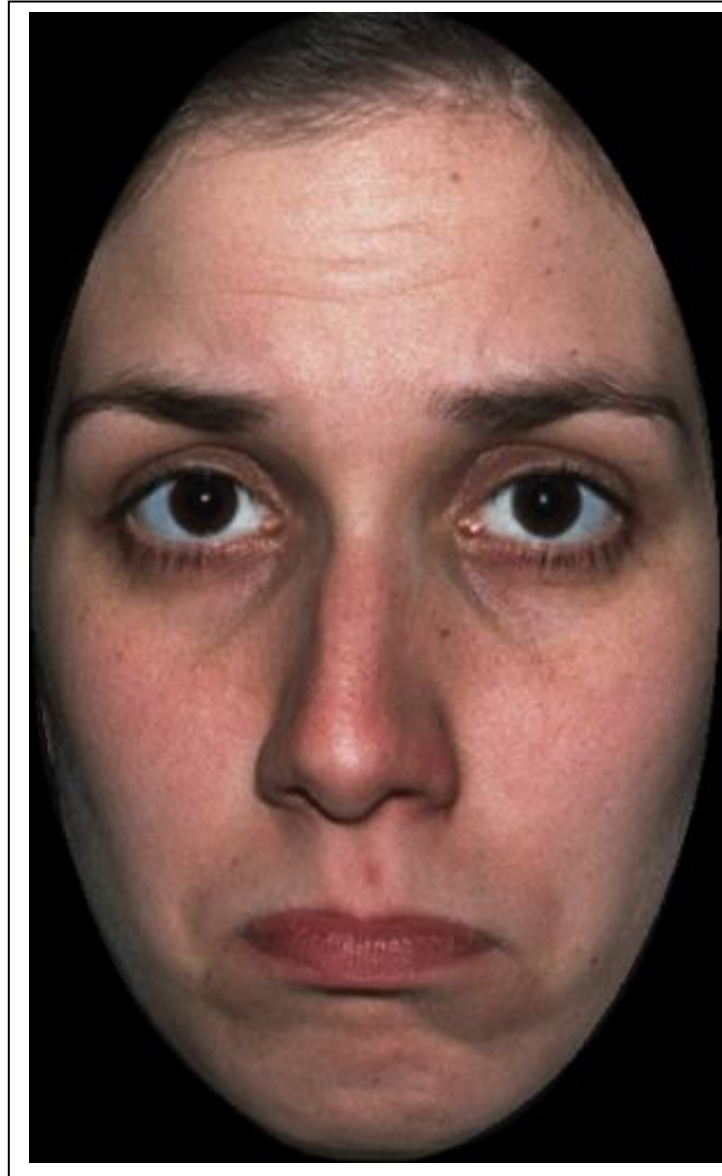
Anger
Shown at 70.0% Intensity



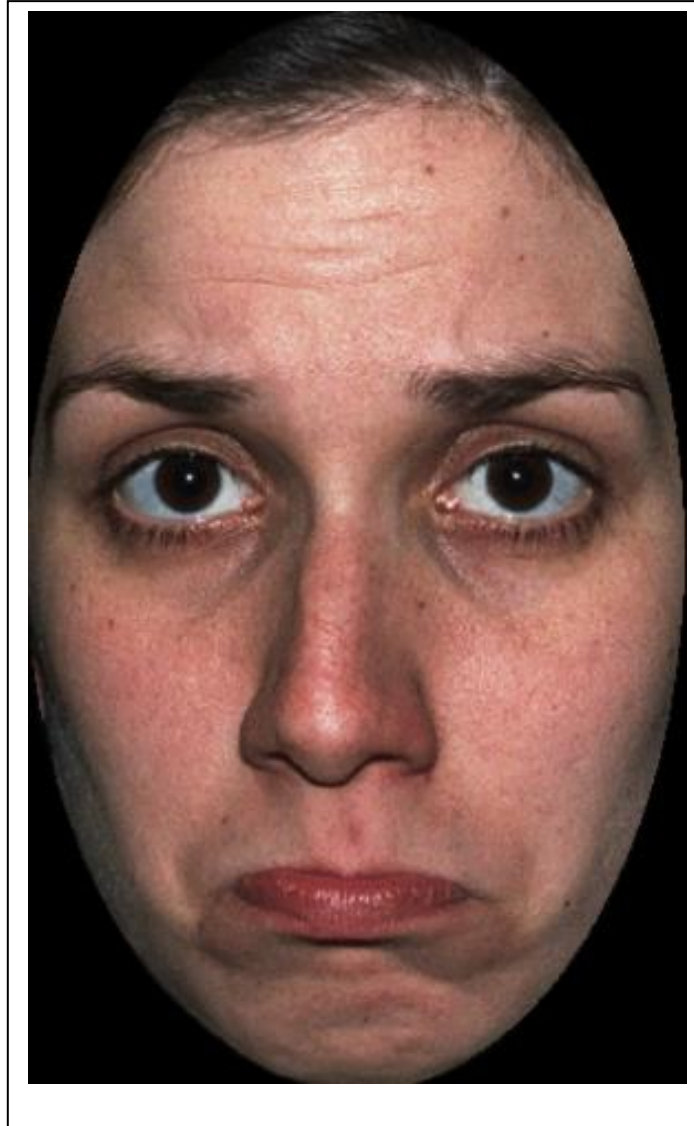
Anger
Shown at 100.0% Intensity



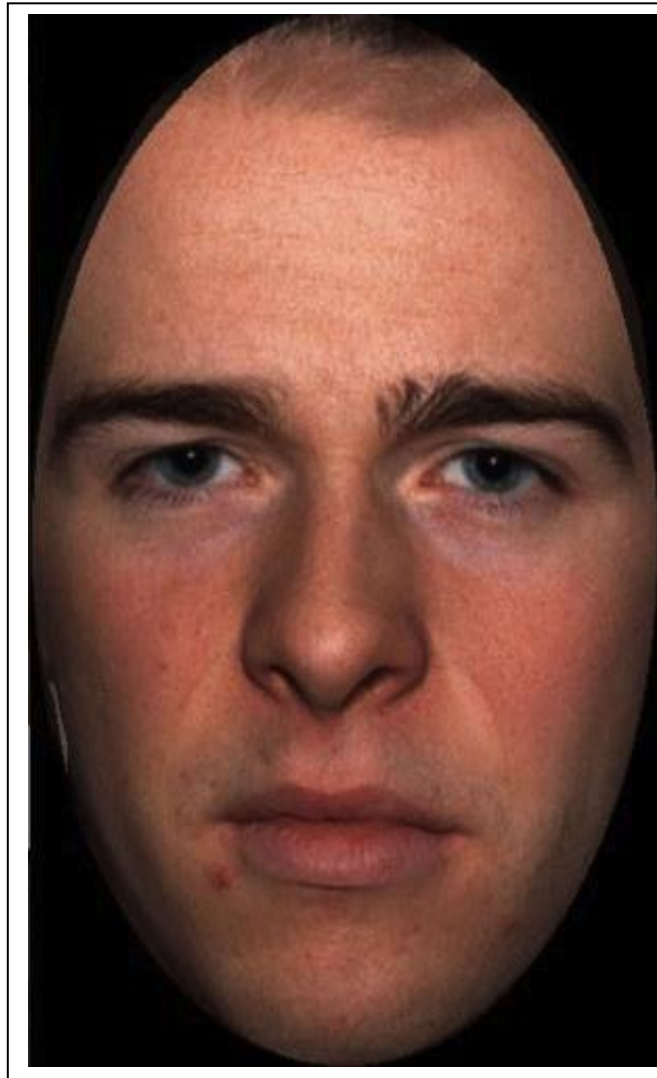
Sadness
Shown at 30.0% Intensity



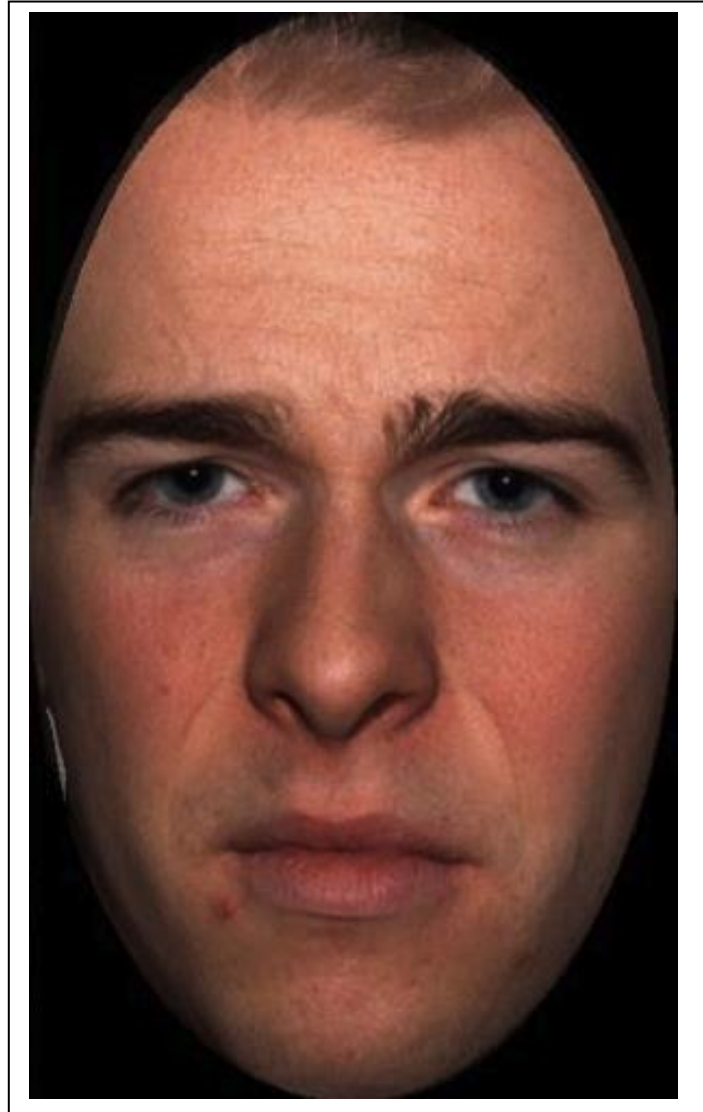
Sadness
Shown at 70.0% Intensity



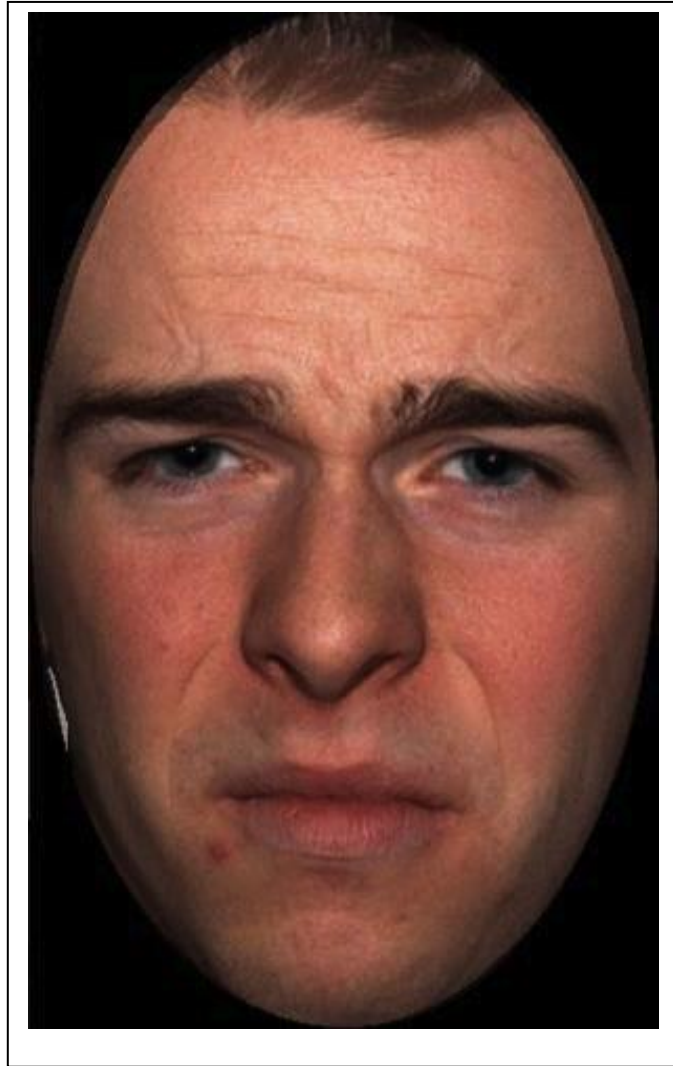
Sadness
Shown at 100.0% Intensity



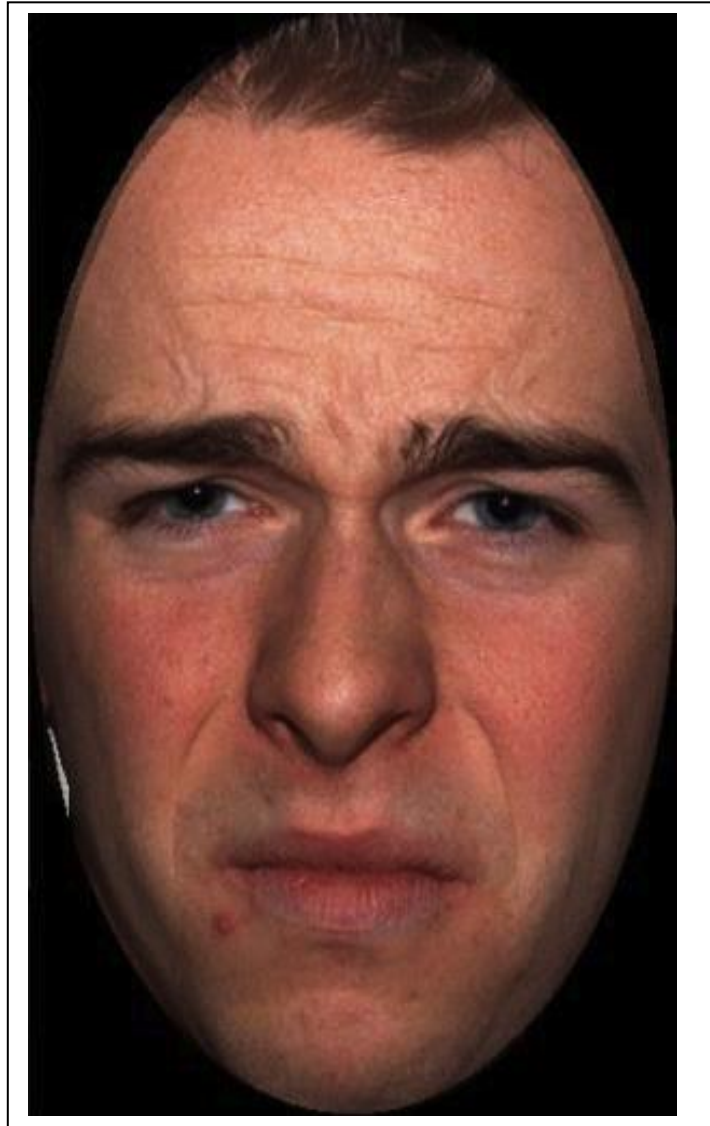
Disgust
Shown at 30.0% Intensity



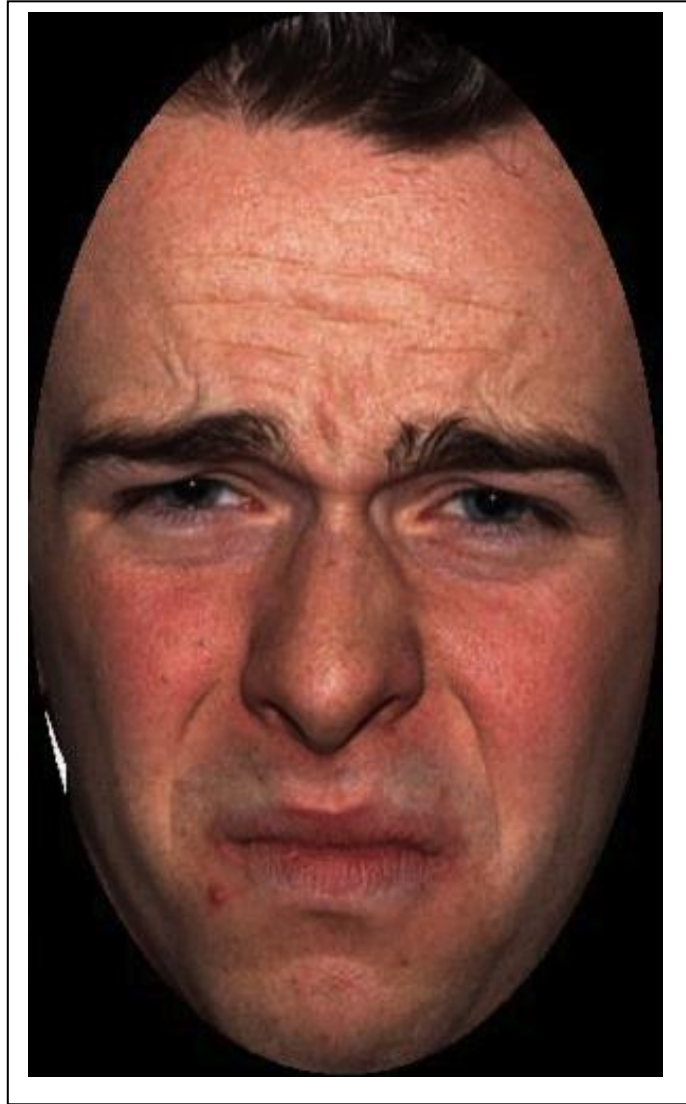
Disgust
Shown at 40.0% Intensity



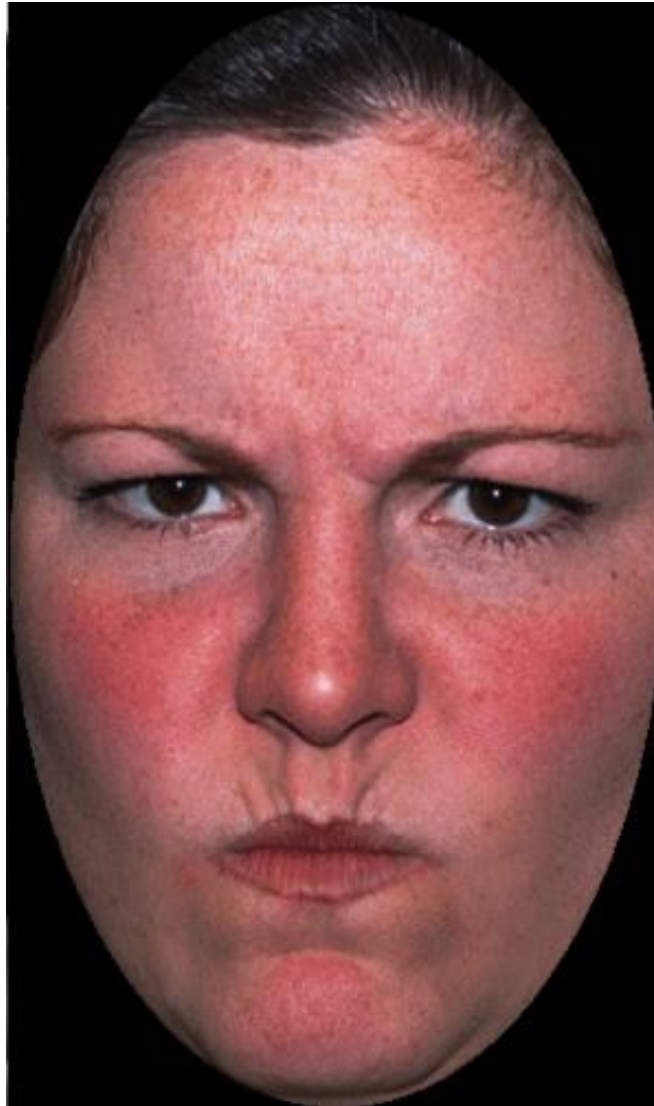
Disgust
Shown at 60.0% Intensity



Disgust
Shown at 70.0% Intensity



Disgust
Shown at 100.0% Intensity



1-Sadness 2-Happiness 3-Anger 4-Surprise 5-Fear 6-Disgust

Facial Emotion Recognition Task Format

APPENDIX F
INSTITUTIONAL REVIEW BOARD APPROVAL

INSTITUTIONAL REVIEW BOARD APPROVAL

Institutional Review Board

DATE: January 23, 2015

TO: Blair Nylene, MA, BA

FROM: University of Northern Colorado (UNCO) IRB

PROJECT TITLE: [695793-2] The Relationship Between Accuracy of Facial Emotion Recognition, Perceived Empathic Ability, and Cognitive Ability in Domestic Violence Offenders

SUBMISSION TYPE: Revision

ACTION: APPROVAL/VERIFICATION OF EXEMPT STATUS

DECISION DATE: January 22, 2015

Thank you for your submission of Revision materials for this project. The University of Northern Colorado (UNCO) IRB approves this project and verifies its status as EXEMPT according to federal IRB regulations.

Blair –

Thank you for clearly providing clarifications and revisions as requested. Please be sure to use all amended protocols and documents that were developed during the review process in your participant recruitment and data collection.

Best wishes with this very interesting research. Please don't hesitate to contact me with any IRB- related questions or concerns.

Sincerely,

Dr. Megan Stellino, UNC IRB Co-Chair

We will retain a copy of this correspondence within our records for a duration of 4 years.

If you have any questions, please contact Sherry May at 970-351-1910 or Sherry.May@unco.edu. Please include your project title and reference number in all correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within University of Northern Colorado (UNCO) IRB's records.

APPENDIX G

**PARTICIPATION RECRUITMENT SCRIPT FOR
DOMESTIC VIOLENCE OFFENDERS**

**PARTICIPATION RECRUITMENT SCRIPT FOR
DOMESTIC VIOLENCE OFFENDERS**

Hello,

My name is Blair Nylene and I am a doctoral student in Counseling Psychology at the University of Northern Colorado. I am conducting a study on how men who are currently in domestic violence treatment experience the emotions of others. I am here today to ask if any of you would like to participate in my study. Whether you choose to participate or not will not affect your progress in treatment and will be kept confidential from your therapist. All of the results from my study will be kept confidential and only I will be able to connect an identification number specific to you to your identifying information. The study involves you completing a series of questionnaires about yourself and identifying the emotions of others. It should take no more than an hour to complete. For your efforts, you will receive \$5 and, if you choose, you may enter your phone number into a raffle to win a \$25 Walmart gift card. If you are interested in participating in the study, we can set up a time now. If you would rather not schedule at this time or you have more questions, I will leave these flyers with my name and contact information as well as the name and contact information of my advisor with you here.

Thank you.

APPENDIX H
PARTICIPANT RECRUITMENT SCRIPT
FOR NON-VIOLENT CONTROLS

PARTICIPANT RECRUITMENT SCRIPT
FOR NON-VIOLENT CONTROLS

Hello,

My name is Blair Nylene and I am a doctoral student in Counseling Psychology at the University of Northern Colorado. I am conducting a study on how men who are currently in domestic violence treatment experience the emotions of others. I am here today to ask if any of you would like to participate in my study as control participants. What that means is that I need participants who do not have violent histories to compare the domestically violent participants to. All of the individual results from my study will be kept confidential and only I will be able to connect an identification number specific to you to your identifying information. The study involves you completing a series of questionnaires about yourself and identifying the emotions of others. It should take no more than an hour to complete. For your efforts, you will receive \$5 and, if you choose, you may enter your phone number into a raffle to win a \$25 Walmart gift card. If you are interested in participating in the study, we can set up a time now. If you would rather not schedule at this time or you have more questions, I will leave these flyers with my name and contact information as well as the name and contact information of my advisor with you here.

Thank you.

APPENDIX I
PARTICIPANT RECRUITMENT FLYER

PARTICIPANT RECRUITMENT FLYER

RECEIVE \$5 AND WIN A \$25 WALMART GIFT CARD!

For my doctoral dissertation I am looking for men who will participate in my study on empathy and emotions. The entire study takes about an hour. Please contact me to schedule an appointment or with any questions.

Thank you,

Blair Nylene, MA
emotions.study@gmail.com
970-353-4872

APPENDIX J
INFORMED CONSENT



CONSENT FORM FOR HUMAN PARTICIPATION IN RESEARCH

Project Title: The Relationship Between Accuracy of Recognition of Facial Emotion, Perceived Empathic Ability, and Cognitive Ability in Domestic Violence Offenders

Researcher: Blair Nylene, MA, University of Northern Colorado
Phone: 970-353-4872
E-mail: emotions.study@gmail.com

Research Advisor: Dr. Basilia Softas-Nall
Phone: 970-351-1631
E-mail: basilia.softas-nall@unco.edu

In this study you will be asked to fill out a series of questionnaires about yourself, your thoughts, and your experiences. You will also be asked to view a series of images of people making various facial expressions and asked to identify what they are feeling to the best of your ability. In order to maintain the integrity of the facial expression task, you will be asked to sit approximately 2 feet from a computer screen and you will be asked to maintain a straight posture throughout the time you are responding.

I will take every precaution to protect the confidentiality of your participation. Interview materials and transcripts will be stored in an encrypted file in a password protected folder. Consent forms will be stored in a locked filing cabinet. You will only be identified by an identification number and all of your demographic information will be connected to that identification number only. Only the lead researcher will know the name associated with the identification number. All demographic information and questionnaires will be destroyed at the conclusion of the study.

As an incentive for your participation, you will be given \$5 and you can choose to enter your phone number into a raffle drawing for a \$25 Walmart gift card upon study completion. Your phone number will not be tied to your responses.

Participation is voluntary. You may decide not to participate in this study and if you begin participation you may still decide to stop and withdraw at any time. Your decision will be respected and will not result in a loss of benefits to which you are otherwise entitled. Having read the above and having had an opportunity to ask any questions, please sign below if you would like to participate in this research. A copy of this form will be given to you to retain for future reference.

If you have any concerns about your selection or treatment as a research participant, please contact the Office of Sponsored Programs, Kepner Hall, University of Northern Colorado, Greeley, CO 80639; 970-351-2161.

Participant's Signature

Date

Blair Nylene, LPC, MA, NCC

Date

APPENDIX K
DEBRIEFING STATEMENT

DEBRIEFING STATEMENT

The study you just participated in is part of a research project that explores the relationship of perceived empathy with facial emotion recognition in men who are currently enrolled in domestic violence treatment. The goal of this study is to determine if someone's ability to identify the emotions of others relates to how empathic he thinks he is and in what ways.

APPENDIX L
MANUSCRIPT FOR PUBLICATION

The Relationship Between Accuracy of Facial
Emotion Recognition, Perceived
Empathic Ability and Cognitive Ability in
Domestic Violence Offenders
Blair Nyline
University of Northern Colorado

Abstract

The lack of ability to decode emotional cues is associated with violence in men. This study aimed to learn more about empathy perception and application in adult men who have been convicted of a domestic violence offense. Domestically violent ($n = 35$) and nonviolent ($n = 35$) men were asked to label pictures of facial emotion at different levels of intensity (30.0%, 40.0%, 60.0%, 70.0%, and 100.0%). In addition, they were given a brief empathy measure; a brief cognitive assessment; a trauma questionnaire; and a demographic questionnaire. The domestic violence offenders were found to have a significant deficit in identifying the emotions of sadness and fear and identifying emotions at 40.0% and 60.0% intensity. They were significantly less accurate in identifying the emotions of women compared to men. They were found to have a significantly higher self-reported empathy rating on the Interpersonal Reactivity Index subscale of perceived distress but no significant differences were found between domestic violence offenders and nonviolent controls on empathy subscales of perspective taking, empathic concern, and fantasy. There was no significant difference in cognitive ability between the domestic violence offenders and the control participants. When highest education level attained and family annual income were accounted for, they were found to have a significant impact on the ability to accurately identify emotions. When lifetime trauma history and chemical dependence history were accounted for, they were found to have no statistically significant impact on ability to accurately identify emotions. Clinical implications and future directions are discussed.

Keywords: domestic violence, emotion recognition, empathy, cognitive ability

The Relationship Between Accuracy of
Facial Emotion Recognition, Perceived
Empathic Ability and Cognitive Ability in
Domestic Violence Offenders

Domestic violence has been a predominant emotional, social, and financially costly problem in the United States. It is not only about partners harming each other; it is viewed as a problem of men's oppression of women, a broad public health problem, a criminal justice problem, and an economic problem both for the victims and society (Whitaker & Lutzker, 2009). In the United States, 24.3% of women have experienced severe physical aggression by a partner, and 48.4% have experienced psychological aggression by a partner (Jaffe, Simonet, Tett, Swopes, & Davis, 2015). A study by Gardner, Moore, and Dettore (2014) found all 48 participants convicted of assault had a significant history of physical and emotional abuse as children. Previous research on facial affect recognition in children who have experienced abuse and neglect that found abused and neglected children were less accurate in facial emotion recognition (Luke & Banerjee, 2013).

There is a great deal of literature on empathy in violent criminal offenders, specifically sex offenders and those diagnosed with antisocial personality disorder (Barnett & Mann, 2013; Gery, Miljkovitch, Berthoz, & Soussignan, 2009). There has not been much research on empathy for domestic violence offenders. Research involving violent offenders suggests that empathy, or the lack of empathy, may play a role in one's offense (Covell, Huss, & Langhinrichsen-Rohling, 2007). Understanding the role of empathy in violent offenses is important for preventative work as well as treatment after the fact to prevent recidivism. The idea behind the study of empathy in violent offenders is that victim empathy has the potential to overpower the desire to offend with the desire

to not offend. Previous research has found a correlation between having a low level of emotional intelligence and aggressive behavior in violent offenders (Jaffe et al., 2015). Accurately identifying the emotions of others is the first step in an effective empathic response.

Written measures and facial emotion measures are often compared to assess similarities or differences in perceived empathic ability and actual emotion recognition. The findings have been mixed. Some studies find offenders rate lower in both written empathy measures and facial affect recognition tasks than nonviolent controls while others find the offenders score similarly to nonviolent controls in both written empathy measures and facial emotion identification tasks (Marsh & Blair, 2008; Book et al, 2007; Brook & Kosson, 2012). It is important to clarify these conflicting findings for the reasons mentioned above, specifically that it is hypothesized that empathy plays a significant role in violent offending.

The more we know about how domestic violence offenders experience empathy, the more we will be able to build on previous literature and determine how, and to what extent, empathy may play a role in the violent act itself. Given the similarities in cycles of offending and current treatment modalities between domestic violence offenders and other violent offenders more heavily studied in the empathy literature, it is important to continue to identify the similarities and differences between the groups. A clearer picture of factors that lead to violent offending will help identify how the study of empathy and facial recognition of emotion may benefit those who work with domestic violence offenders in the way it has benefited those who work with other offenders.

Overview and Purpose of Study

The majority of current models of treatment approach domestic violence offender therapy from a cognitive behavioral model, incorporating psychoeducation about violence and power differentials between the genders (Bowen, Gilchrist, & Beech, 2005; Gardner et al., 2014). There is little focus on understanding the victim's emotions or victim empathy. There is almost no review of interpersonal interaction and understanding one's partner's thoughts and feelings (Bowen et al., 2005). An exhaustive literature review on empathy in domestic violence offenders found a paucity of literature on empathy and domestic violence. Specifically, how a domestic violence offender views his or her own empathic ability and how this relates to his or her ability recognize the emotions of others has not been explored in current literature.

Facial emotion recognition tasks have been used with many other violent offenders to increase the knowledge of how they interact with others and help gain understanding around why they may become violent. Facial emotion recognition tasks are a measure of cognitive empathy, which is defined as being able to identify what another person may be feeling (Domes, Hollerbach, Vohs, Mokros, & Habermeyer, 2013; Barnett & Mann, 2013). Examining his or her ability to accurately identify facial emotion and comparing this to his or her perceived empathic ability, which will lead to a greater understanding of how they interact with others, is an important step forward in improving our understanding of domestic violence etiology.

To date, a thorough literature review has resulted in only one study examining the ability of domestic violence offenders to accurately identify facial emotions by Babcock, Green, and Webb (2008). The men were assessed on their ability to accurately identify

facial emotions and the researchers found that domestically violent men who were categorized as “generally violent” struggled to accurately identify angry, happy, neutral, and surprised emotional expressions (Babcock et al., 2008). Domestically violent men who were categorized as “only violent in the family setting” or had predominant “borderline personality characteristics” were not found to have deficits in accurately identifying facial affect.

Hypotheses

In the present study, male domestic violence offenders were compared to nonviolent male controls on ability to accurately identify facial emotions in relation to their self-identified level of empathy. In addition, ability to accurately identify the emotions of others was compared after controlling for cognitive ability and demographic factors such as trauma history, age, race and ethnicity, income, education, and chemical dependence history. Based on previous research of violent offenders, was hypothesized that domestically violent men would be less accurate in identifying the emotions of others compared to nonviolent men, even after controlling for cognitive and demographic differences (Marsh & Blair, 2008; Book et al, 2007; Brook & Kosson, 2012). It was also hypothesized that there would be no significant differences in self-identified level of empathy.

Method

Participants

Participants were a convenience sample of 35 adult level C domestic violence offenders in mandated treatment from the Rocky Mountain region. Level C offenders are at the highest risk of failure to comply with treatment and are at the highest risk of

recidivism according to the Domestic Violence Risk and Needs Assessment (DVRNA) (Gover, 2011). Control participants were 35 complete samples of adult men recruited using a snowball sampling method. Exclusion criteria for the control sample was a history of perpetration of violence as indicated by self-report. (Hooper, Stockton, Krupnick, & Green, 2011). All participants, both domestic violence offenders and control participants were required to be able to read and speak English fluently due to the necessity to be able to read and understand the Interpersonal Reactivity Index.

Instrumentation

Demographics Questionnaire. All participants were given a demographic questionnaire developed by the researcher. Information covered in the demographic questionnaire includes race and ethnicity, native language, annual family income, education, and a history of drug or alcohol abuse.

Life Events Checklist-5. Participants were also given the Life Events Checklist – 5 (LEC-5), a measure designed to identify one’s exposure to traumatic events over the course of his or her lifetime. It is a 17-item measure that lists possibly traumatic events and asks the participant to identify if the event “happened to me,” “witnessed it,” “learned about it,” “not sure,” and “doesn’t apply.” The participant is asked to identify which category each event falls under over the course of his or her lifetime. The LEC-5 has strong correlational properties with other popular measures of Posttraumatic Stress Disorder (PTSD) symptoms (Gray, Litz, Hsu, & Lombardo, 2004).

Interpersonal Reactivity Index. Participants were given the Interpersonal Reactivity Index (IRI), which is a measure of perceived empathy commonly used in research with the offender population (Lauterbach & Hosser, 2007). The IRI is a 28-

question measure of empathy that divides empathy into four dimensions: empathic concern, perspective taking, personal distress, and fantasy (Davis, 1983). Empathic concern is defined as one's affective response to another person's emotional state or feelings of compassion or concern. Perspective taking is viewed as the cognitive skill of taking the viewpoints of others and comprehending their situation without the need of comprehending corresponding feelings. Personal distress is the tendency to experience distress and discomfort in response to stressful situations. Fantasy is the reaction to fictional instead of real situations such as movies, plays, and books. It is the tendency to involve oneself in the feelings and actions of fictitious characters (Davis, 1983).

General Ability Measure for Adults. The General Ability Measure for Adults (GAMA) is a nonverbal assessment of general cognitive ability (Naglieri & Bardos, 1997). The GAMA "evaluates an individual's overall general ability with items that require the application of reasoning and logic to solve problems that exclusively use abstract designs and shapes" (Bardos, 2003, p. 164). The assessment consists of 66 items categorized into four item types called Matching, Analogies, Sequences, and Construction (Bardos, 2003). The assessment has a set time limit of 25 minutes. The Matching subtest items require the examinee to identify two shapes that are identical by perceiving various shapes and color combinations and paying attention to details. The Analogies subtest requires the examinee to recognize the relationship between two abstract figures in the pair presented and then identify the option that completes the relationship in the second pair of designs. The Sequence subtest requires the examinee to recognize the pattern, shape, and location of a design and complete the logical sequence of the presented pattern of designs. Finally, the Construction subtest requires the

examinee to determine how several shapes can be combined to produce one of the designs (Bardos, 2003). According to Bardos (2003), the assessment was designed to reduce the number of confounds that come with a language-based assessment. Language items in an assessment can be influenced by one's exposure to a formal English speaking academic environment regardless of his or her true cognitive ability. Another goal of the assessment was to reduce the influence of motor ability and speed at the item level by eliminating the use of manipulated objects.

Emotion Recognition Items. The emotion recognition items were taken from the Nimstim data set (Tottenham et al., 2009). The Nimstim data set builds on previous facial expression data sets such as Ekman and Friesen, (1978) and addresses many of the criticisms of these earlier data sets. For example, the Nimstim data set is available in color and contains a large number of stimuli and variety of facial expressions. Validity and reliability for the Nimstim data set were calculated using a representative group of undergraduate college students from the Midwest and a volunteer sample from the East Coast. Validity was calculated by finding the percentage of correctly identified emotions while using Cohen's kappa to account for false positives by chance (Tottenham et al., 2009). The mean kappa percentage correct across stimuli was 0.79. Reliability was calculated by presented stimuli in a different random order in its entirety after a 20-minute break. This second presentation of stimuli was not used to calculate validity scores. The reliability score or proportion of agreement had a mean of 0.84 (Tottenham et al., 2009).

The facial emotion recognition task included six primary emotions of interest: sadness, fear, disgust, anger, happiness and surprise. Neutral was not included in order to

keep the assessment as brief as possible while maintaining adequate sensitivity in the task. Participants within the normal population are typically very accurate at identifying the six primary emotions in data sets in which the emotion is shown at 100.0% intensity. New research has begun to blend the 100.0% intensity emotions with a neutral face using face-morphing technology resulting in facial blends that demonstrate the emotion at a lower level of intensity. The result is a more accurate demonstration of emotion that is more likely to be seen in daily interactions (Gery et al., 2007; Pham & Philippot, 2010).

The data set used in the current study consisted of a set of faces developed by Eric Peterson and Mackenzie Peake (personal communication, September 8, 2014; Peterson & Peake, 2015). Peterson and Peake constructed the facial affect recognition task based on guidelines set by previous literature. Specifically, an equal number of male and female faces were presented (Gery et al., 2009; Babcock et al., 2008), the percentage of facial blends was set at 30.0%, 40.0%, 60.0%, 70.0%, and 100.0% (Tottenham, et al. 2009; Gery et al., 2009), and the specific emotions included in the task were sadness, anger, surprise, fear, disgust, and happiness (Babcock et al., 2008; Marsh & Blair, 2008).

Six Caucasian faces from the standardized Nimstim prototypic facial expressions were used. The faces were blended using six universal emotions (happiness, sadness, anger, disgust, fear, and surprise) to 30.0%, 40.0%, 60.0%, 70.0%, and 100.0% intensity (Tottenham et al., 2009). Based on the neutral face (0.0% of emotional intensity) and the full emotional facial expression (100.0% emotional intensity) of the same actor, the computer program E-Prime (<http://www.pstnet.com/eprime.cfm>) was used to construct blends of each emotion at the increments mentioned above. The different intensity of emotions was modeled from Pham and Philippot (2010) who indicated, “. . . Such full-

blown displays have little ecological validity” because they are easy to decode and are likely to produce ceiling effects and leave little room for individual variance (p. 448). The images were also masked by Peterson and Peake with a dark oval around the face to control for the possible distraction of jewelry, hair, or other factors not directly related to the facial affect. Each emotion (anger, fear, disgust, surprise, sadness, and happiness) at each level of emotional intensity (30.0%, 40.0%, 60.0%, 70.0%, and 100.0%) were shown six times using an equal number of male and female models (3 male, 3 female) for a total of 180 images.

Procedure

Domestic violence offender participants were recruited through Domestic Violence Offender Management Board (DVOMB) approved treatment providers in the Rocky Mountain region. Agency directors of treatment agencies that provide domestic violence treatment were contacted directly and informed of the purpose of the study and of IRB approval. If granted approval, the primary researcher recruited directly from individual treatment groups. In each group, mandated domestic violence offenders were informed of the purpose of the study and asked to participate in the study. They were informed that their participation was completely voluntary and would not affect their treatment, parole, or probation. Control participants were recruited using a snowball sample from the lead researcher’s personal and professional contacts. Participants were informed of a five-dollar incentive and the opportunity to enter to win a twenty-five dollar gift card upon completion of their participation in the study. Control and domestic violence offender participants were asked to set up a participation time at the time of

recruitment and asked to leave their phone number and first name for a reminder phone call. The identifying information was destroyed upon data collection.

Before data collection, participants were given the informed consent and had any questions answered. Participants were given the Life Events Checklist (LEC-5) and demographic questionnaire. When they finished, they were given the Interpersonal Reactivity Index (IRI). After they completed the IRI, they were given the General Ability Index for Adults (GAMA). Once they finished the written measures, they were informed they would be shown a series of photographs on a laptop computer depicting men and women displaying various emotional expressions. Each participant sat in front of a laptop computer approximately two feet from the screen. They were asked to maintain that distance and continue to sit straight to maintain the integrity of the measure. A picture depicting a specific emotion was presented one at a time to each participant. Using a forced-choice response format, participants were asked to assess each emotion in the photograph concurrent to its presentation by pressing the button indicating the correct emotion. Each emotion corresponded with a number on the laptop keyboard. Once each participant identified the emotion, the screen transitioned to the next face. Each face was presented in random order for each participant. Each participant completed a practice task in which they were asked to identify 20 faces before the facial recognition task began to record results. During the practice task, the lead researcher stood next to participants and requested they identify the emotion out loud to ensure the emotion they identified corresponded with the correct number on the keyboard. Once the practice task was completed, participants were no longer asked to identify the emotion out loud and the lead researcher sat next to the participant. Upon task completion, participants were

debriefed regarding the purpose of the study, given their five-dollar incentive, and allowed to enter the twenty-five dollar raffle if they chose to do so.

Data Analysis

Multivariate analyses of variances (MANOVAs) were conducted comparing differences in facial emotion accuracy by emotion type and facial emotion intensity by violence status (domestically violent vs. nonviolent). Analyses of covariance (ANCOVA) were conducted comparing differences in emotion identification accuracy while controlling for cognitive differences as well as demographic differences. Finally, a 2x2 analyses of variance (ANOVA) was conducted to identify any differences in emotion identification accuracy by facial target (male or female).

Results

A total of 70 men completed all aspects of data collection and were included in the study. Half of the participants ($n = 35$) had been convicted of a domestic violence offense and were in mandated domestic violence treatment at the time of data collection. The other half of the participants ($n = 35$) were nonviolent controls obtained using a snowball sampling method.

Demographics

The average age for the domestic violence offender participants was 35.29 ($SD = 9.73$) while the average age for the nonviolent control participants was 37.37 ($SD = 15.7$). The majority of both groups were Caucasian with the domestic violence offender participants being 51.0% Caucasian and the control participants being 77.0% Caucasian. For the domestic violence offender participants, 37.0% identified as Hispanic or Latino, 9.0% identified as multiracial, and 3.0% identified as “other.” For the control

participants, 6.0% identified as Hispanic or Latino, 6.0% identified as African American, 3.0% identified as Asian, 3.0% identified as Native American, 3.0% identified as multiracial, and 3.0% identified as “other.” The majority (53.0%) of the control participants’ annual family income was greater than \$85,000 a year while the majority of the domestic violence offender’s annual income was in the \$10,000-24,999 range (32.0%) and the \$25,000-39,999 (32.0%) range. The majority of the domestic violence offender participants had some college education (37.0%) while all of the control participants had some college education (43.0%) or a college degree (57.0%). Lastly, 57.0% of the domestic violence participants reported a history of chemical dependence while 7.0% of the control participants reported such a history.

Facial Emotion Identification

When a MANOVA was used to identify specific differences in facial emotion accuracy between the domestic violence offender participants and nonviolent control participants, it revealed the domestically violent participants were significantly less accurate in identifying the emotions of fear ($p = .02$) and sadness ($p = .02$). There was no significant difference in facial emotion recognition for the emotions of anger ($p = .47$), disgust ($p = .25$), surprise ($p = .49$), or happiness ($p = .16$). Participants were most accurate in identifying happiness (domestic violence participants mean = .83; control participants mean = .87) and least accurate in identifying fear (domestic violence participants mean = .38; control participants mean = .48). Emotion recognition accuracy broken down by emotion can be viewed in Figure 1.

A MANOVA was used to identify differences in emotional identification accuracy at the different levels of emotional intensity. There was no significant difference

in accuracy of emotion recognition at the highest (100.0%, $p = .309$) and lowest (30.0%, $p = .095$) levels of emotional intensity. There was also no significant difference between the groups at 70.0% emotional intensity ($p = .064$). The domestic violence offender participants were significantly less accurate than the nonviolent controls in identifying the emotions of others at 40.0% ($p = .006$) and 60% ($p = .009$) levels of intensity. Figure 2 shows 40.0% emotional intensity by emotion. Figure 3 shows 60.0% emotional intensity broken down by emotion.

A dependent t -test identified both the domestic violence offender participants and the nonviolent control participants as being more accurate in identifying emotions on male faces (mean correct = .67) compared to female faces (mean correct = .59; $p = .000$). A 2x2 ANOVA revealed an interaction between gender of the faces being identified and whether the participant was in the domestic violence offender group or the control group ($p = .042$). Figure 4 shows the interaction of emotion recognition accuracy by participant group and gender of emotion recognition target face.

Demographic Impact

It was hypothesized there would be significant demographic differences between the domestic violence offender participants and the nonviolent control participants and that demographic differences would impact the accuracy of facial emotion recognition. Control participants were significantly older than the domestic violence offender participants, as measured by an independent t -test ($p = .001$). The control participants also had a significantly higher annual family income ($p = .000$) than the domestic violence offender participants. When tested using a Chi-Square test, control participants had a significantly higher level of education attained compared to the domestic violence

offender participants ($p = .000$). There was a significantly greater chemical dependency history ($p = .000$) and a significant difference in ethnicity ($p = .021$) between the domestic violence offender participants and control participants as measured by a Chi-square test. There was no significant difference in trauma history as measured by the Life Events Checklist-5 (LEC-5; $p = .744$) when analyzed using an independent t-test (Weathers et al., 2013).

As mentioned above, there were significant demographic differences between the domestic violence participants and control participants in age, ethnicity, income, education, and chemical dependency history. These demographic factors were controlled for using the ANCOVA covariate method. Domestic violence participants were still significantly less accurate at identifying the emotions of others after adjusting for age ($p = .037$), race/ethnicity ($p = .008$) and chemical dependency history ($p = .034$). Significant differences in facial affect identification were no longer present when the ANCOVA method was used to adjust for group differences in income ($p = .253$) and education level ($p = .185$).

When mean GAMA scores were compared using a t-test, there was not a significant difference between the domestic violence perpetrator participants and control participants ($p = .111$). Domestic violence participants had mean scores in the Average range ($M = 103.86$) while the control participants had mean scores in the High Average range ($M = 112.97$). After controlling for GAMA scores using the ANCOVA covariate method, there were still significant differences between the domestic violence participants' and the control participants' overall ability to accurately identify the emotions of others ($p = .018$).

Self-Identified Empathy Measure

When using a 2x4 ANOVA to analyze the different scales of the IRI, there were no significant differences between the domestic violence perpetrator participants and non-violent controls on the three scales of Fantasy ($p = .141$), perspective taking ($p = .848$), and empathic concern ($p = .210$; Lauterbach & Hosser, 2007). There was a significant difference between the domestic violence participants and the control participants on the personal distress scale ($p = .025$) with domestic violence perpetrator participants acknowledging a higher rate of personal distress in stressful situations ($M = 10.26$) compared to the control participants ($M = 7.62$).

A Pearson Product Correlation was used to analyze the correlation between each of the IRI scales and the participants' overall ability to accurately identify facial emotions. In the domestic violence perpetrator group, there were no significant correlations between their facial emotion identification accuracy and any of their IRI scale scores. The only significant correlation was between the Perspective Taking scale and the empathic concern scale ($p = .570$). For the control participants, there were also no significant differences between facial emotion identification accuracy and any of the IRI scales. The only significant correlation was between the empathic concern scale and the personal distress scale ($p = .452$). Table 1 shows the correlations between each scale of the IRI and for overall emotion recognition accuracy as well as 40.0% and 60.0% emotional intensity, for which were significantly domestic violence offenders were significantly less accurate.

Discussion

The research questions and hypotheses in this study were supported in many areas. The domestic violence offender participants and the control participants significantly differed in several demographic areas with the control participants being significantly older, having a significantly higher annual family income, and a significantly higher level of education. The domestic violence offender participants were significantly more likely to be of a minority race or ethnicity and have a chemical dependence history.

The hypothesis that domestic violence offenders would be less accurate in identifying the emotions of others was supported. Domestic violence offenders were significantly less accurate in identifying the emotions of fear and sadness. They were also less accurate in identifying emotions at 40.0% and 60.0% emotional intensity when all emotions were combined. The hypothesis that domestic violence offenders would remain significantly less accurate in identifying the emotions of others after accounting for demographic and cognitive factors was partially supported. Significant differences remained after controlling for race and ethnicity, age, and chemical dependence history. Significant differences in ability to accurately identify the emotions of others were no longer present when annual income and highest level of education attained were accounted for, suggesting they have a significant impact on emotion recognition accuracy. There was no significant difference in cognitive ability between the groups as measured by the GAMA and domestic violence offender participants remained less able to accurately identify the emotions of others after GAMA scores were accounted for.

The hypothesis that there would be no significant difference between domestic violence offenders and nonviolent controls on the IRI empathy measure was partially supported. There were no significant differences on the subscales of empathic concern, perspective taking, or fantasy. The domestic violence offenders endorsed higher scores on the perceived distress subscale of the IRI. The hypothesis that domestically violent men would be less accurate in identifying the emotions of women compared to men was supported. Both groups of participants were significantly less accurate in identifying the emotions of women compared to men. The domestic offender participants were significantly more impaired in accurately identifying the emotions of women compared to the control participants.

The findings of the present study add to the current literature of domestic violence etiology and therapy in a number of ways. The present study added to the understanding of domestic violence offenders by identifying the deficits experienced by domestic violence offenders in accurately identifying the emotions of fear and sadness. In addition, they presented with deficits with more realistic emotional presentation at 40.0% and 60.0% intensity. Deficits in accuracy of emotion identification for domestic violence offenders were not influenced by cognitive deficits as previously thought (Babcock et al., 2008). The high emotional reactivity they reported experiencing in stressful situations influences domestic violence offenders' likelihood to react violently when misidentifying the emotional state of others. The current study's findings that domestically violent men demonstrated deficits in identifying sadness and fear, even when not in an emotionally aroused state, suggests they may be even less accurate in identifying sadness and fear when in an escalating argument with their partners, leading to a high likelihood of

violence. A violent reaction based on an inaccurate identification of her emotion as anger or disgust rather than fear or sadness breaks down the emotional communication between partners and, ultimately, harms the relationship.

Clinical Implications

Presently, the most popular models of domestic violence offender therapy focus on cognitive awareness but not applied ability to verbally or relationally assess one's partner's emotional state or how to effectively respond to the emotion once identified (Lehman & Simmons, 2009). A more traditional, "...rational approach designed to confront established norms and beliefs about the perceived benefits of crime versus the perceived costs of crime" is the most commonly used approach (Walters et al, 2007, p. 1425). In addition, current domestic violence therapy commonly focuses on identifying and disputing sexist views believed to be present with most domestic violence offenders. In the present study, the domestic violence offender group obtained a significantly higher score on the perceived distress scale of the IRI. A high perceived distress scale score indicates they self-identified as having a higher level of emotional distress or reactivity in stressful situations. This reactive distress pattern is a key trait in individuals who have been identified as reactive/affectively violent offenders in the literature (Hanlon et al., 2013). A rational approach may be effective in proactive criminal thinking but will likely have little impact on reactive criminal thinking because of the impulsive and irrational nature of the aggression in the latter group.

Counseling psychologists who work with domestic violence offenders can be more effective with reactive/affective type domestic violence offenders in a variety of ways. A heightened awareness by clinicians of the current study's findings, that

heterosexual male domestic violence offenders have a deficit in accurately identifying fear and sadness in female faces, can be beneficial in increasing the effectiveness of domestic violence offender therapy. A deficit in accurately identifying the emotions of others makes it difficult for one to respond with emotional regulation or in an appropriately empathic manner. An empathic connection with a potential victim motivates the offender to set in motion the mechanisms and tools he has learned to keep from offending (Grady & Rose, 2011).

A greater focus on active learning and enactment would be helpful to learn emotional information and emotion regulation application on a more visceral rather than cognitive level. Active learning does not necessarily mean only training the domestic violence offenders to more accurately identify fear and sadness in addition to the other core emotions, although it is believed that would be beneficial. Active learning could also involve informing domestic violence offenders of the emotion recognition deficits found in the literature to bring their possible limitations into their awareness. Active learning would then involve participation in an applied computer program or role playing in which the domestic violence offender communicates verbally with his partner to inform her of the emotion he believes she is feeling and to invite her to verbally share her feelings (Sygel & Kristiansson, 2014). This verbal communication may reduce some of the ambiguity in attempting to rely solely on emotion identification through facial expressions.

A reliance on only teaching accurate emotion identification to domestic violence offenders with the hope that they become as skilled as nonviolent controls is likely unrealistic. Given that child abuse and neglect is a common risk factor for future

domestic violence perpetration as well as difficulty with accurate emotion identification, it is likely the domestic violence offenders' emotion recognition deficits stem from childhood and may not be able to be brought back to the baseline of nonviolent controls, although it can be improved (Ardizzi et al., 2013; Luke & Banerjee, 2013).

Communication training can help fill the gap that may be left by emotion-identification training alone.

In addition, the strong own-gender bias in accurate facial emotion recognition held by the domestically violent men in the present sample may be the result of the need to strongly identify with one's own in-group. In addition it may be the result of spending more time in the presence of one's own gender group compared to the opposite gender. Domestically violent men may have spent more time in the presence of other males during childhood and may, therefore, be at a greater deficit in accurately identifying female faces compared to nonviolent controls. It could also be the result of the sexist views believed to be present by current domestic violence treatment models (Walters et al., 2007). If men who are domestically violent do hold sexist attitudes toward women, they may work harder to, and therefore be better at, identifying the emotions of men, whom they see as their equals, compared to women, whom they see as their inferiors. Therefore, common models of domestic violence therapy should not be completely disregarded. Instead, active learning should be incorporated as a part of current models of therapy rather than replacing them.

Methodological Implications

The methodological strengths of this study build upon gaps in previous literature. For example, including a facial emotion recognition task with several different emotional

intensities is a strength of the present study not addressed in previous literature. In addition, the present study addressed the hypotheses of previous studies that cognitive deficits may influence facial emotion recognition accuracy and it was not found to have a significant impact. Future studies would benefit from using a specific childhood trauma questionnaire to address trauma history as well as a more specific formal measure to differentiate between reactive/affective violent offenders and proactive/predatory violent offenders. Continued use of a cognitive measure to account for possible cognitive deficits is recommended.

Limitations and Future Directions

Similar to the majority of existing literature, this study was limited by the convenience sampling characteristics, thus influencing both internal and external validity. The control participant sample was significantly older, of a higher socioeconomic status, and more likely to be Caucasian than the domestic violence offender sample. Future studies would benefit from ensuring recruiting strategies to include a control sample matched to the domestic violence offender sample in the demographic factors of age, race, annual income, and highest level of education. In addition, due to the limited number of Nimstim faces to choose from, all faces in the facial emotion recognition task were Caucasian. This skews the data in that much like the own-gender bias, people demonstrate an own-racial bias as well and are better able to identify emotions in their own race (Scherf & Scott, 2012). Another limitation of this study was the use of the LEC-5, which does not specifically ask about repeated traumas or childhood trauma. The LEC-5 likely did not tap into the increased exposure to violence in childhood many of the domestic violence offender participants likely experienced (Murrell et al., 2007; Gardner

et al., 2014). A measure that focuses on childhood trauma specifically, and identifies repeated compared to one-time traumatic events, would give a clearer idea of what role childhood trauma may play in accuracy of emotion recognition.

One final future direction would be to include lesbian, gay, bisexual, and transgender (LGBT) and female domestic violence offenders in future research of empathy and facial emotion recognition tasks. Given the previous research regarding own-gender bias and women's higher scores on empathy tasks and accuracy in facial recognition, coupled with fewer LGBT and women being mandated to participate in domestic violence offender treatment, the present study included only heterosexual men as participants. Due to these differences, theoretical and clinical implications of this study cannot be generalized to treatment with LGBT and women domestic violence offenders.

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Table 1

Interpersonal Reactivity Index (IRI) and Facial Emotion Identification for the Domestic Violation (DV) Group

	Overall Accuracy	40.0%	60.0%	Perspective Taking	Fantasy Scale	Empathic Concern	Personal Distress
Overall Accuracy	1	.461	.523**	-.063	.158	-.125	.052
40.0%	.521**	1	.262	-.036	.044	-.060	.075
60.0%	.534**	.520**	1	.003	.263	.022	.114
Perspective Taking	.298	.220	.038	1	.223	.570**	-.076
Fantasy Scale	.018	.028	0.14	.193	1	.266	.104
Empathic Concern	.149	.307	.199	-.132	-.084	1	.015
Personal Distress	-.094	-.100	.127	-.169	-1.171	.452**	1

Note: Domestic Violation (DV) correlations are in the upper right half of the table. Control correlations are in the lower left hand of the table.

** Significant at the $p = .01$ level

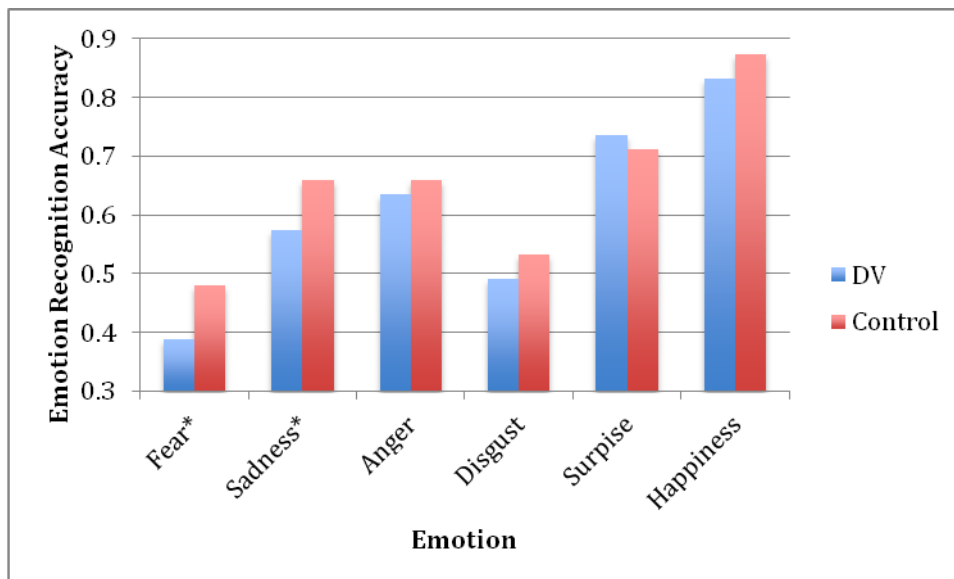


Figure 1. Accuracy Broken Down by Emotion. Note. * Indicates Significant Differences in Emotion Recognition Between DV and Control Groups

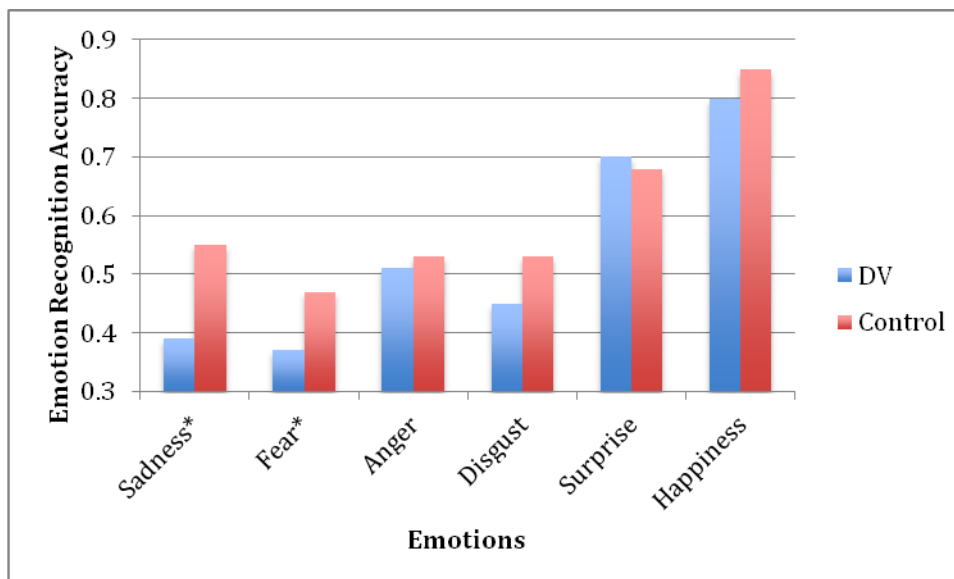


Figure 2. Accuracy by Emotion at 40.0% Intensity. Note. * Indicates Significant Differences in Emotion Recognition Between DV and Control Groups

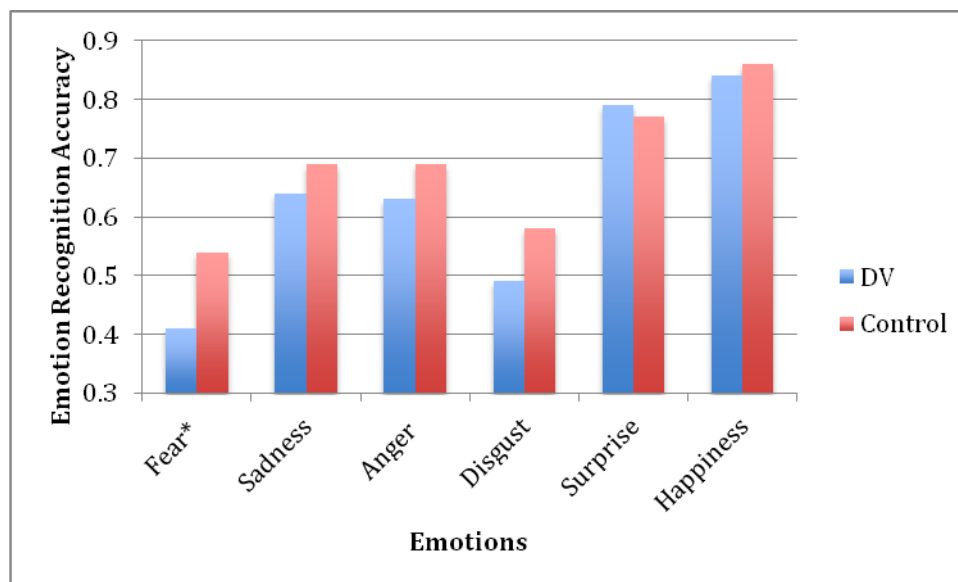


Figure 3. Accuracy by Emotion at 60.0% Intensity. Note. * Indicates Significant Differences in Emotion Recognition Between DV and Control Groups

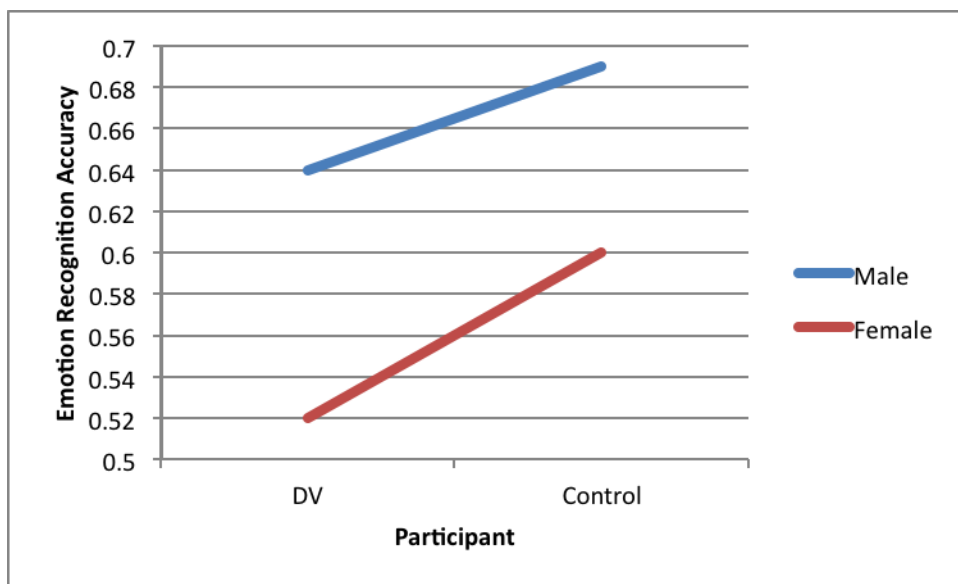


Figure 4. Emotion Recognition Accuracy by Participant Group and Gender.