



# Violent criminality and self-compassion



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## ABSTRACT

This paper reviews and discusses multiple sociological, psychological, and neurological risk factors associated with violent crime and proposes self-compassion, an indicator of positive mental health, as a common link among these variables. Cross-disciplinary findings have implicated neurological abnormalities resulting from exposure to violence, low self-control, lack of social bonds, and self-esteem to violent criminality. This paper contends that self-compassion is associated with each of these variables and discusses current findings that provide evidence for a link between self-compassion and violent crime. Furthermore, this paper discusses an example of an intervention that involves self-compassion. Finally, this paper discusses implications of the link between self-compassion to violent crime and risk factors associated with violent crime.

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## 1. Introduction

Crime is a concern for the general public, with violent crime being the most feared (Rader, May, & Goodrum, 2007). The United States surpasses the world in the number of people it incarcerates (Kurian, 1997; Liptak, 2008; Walmsley, 2012), with over 2,266,800 people imprisoned as of 2010 (Glaze & Parks, 2011). Though perpetrators of violent crimes

are arrested, convicted, and sent to prison, they usually return to society after they have served their sentence in prison. To understand this problem, researchers have unearthed numerous sociological, neurological, and psychological risk factors associated with criminality. Many researchers theorize that exposure to violence leads to changes in the neurological structures that increase the risk for developing antisocial disorder and engaging in criminal activity (De Bellis, 2005; Robins,

1966; Weiler & Wisdom, 1996; Yang & Raine, 2009). Further, researchers have theorized that violent criminals lack of self-control (Gottfredson & Hirschi, 1990), lack of social connectedness (Sampson & Laub, 1993), and have low self-esteem (Toch, 1969; Oser, 2006).

Antisocial Personality Disorder (APD) is a diagnosis often synonymous with aggression and violence (American Psychiatric Association, 2013). Researchers have recognized that long-term exposure to violence may lead to neurological changes producing symptoms characteristic of APD (Anderson & Bushman, 2001). These changes include both structural and functional abnormalities in the amygdala, insula cortex, striatum, and a variety of regions in the prefrontal cortex (Hart & Rubia, 2012; McCrory, De Brito, & Viding, 2010; Yang & Raine, 2009). Criminologists have identified a concept with significant overlap to APD called low self-control (Gottfredson & Hirschi, 1990). Gottfredson and Hirschi (1990) theorized that criminality is characterized by a lack of self-control. Since Gottfredson and Hirschi, researchers have confirmed that self-control has a negative correlation with: aggression (Netter, Hennig, Rohrmann, Wyhlidal, & Hain-Hermann, 1998), impaired ability to defer gratification (Nagin & Paternoster, 1993), and with violent reoffending among violent criminals (Grieger, Hosser, & Schmidt, 2012).

As for the second indicator of criminality that this review investigates, criminality is characterized as a form of antisocial behavior (Grasmick, Tittle, Bursik, & Arneklev, 1993), that is, criminal behavior may deter the ability to connect socially with others. Sampson and Laub (1993) found support for a negative relationship between the ability to form social bonds and criminality. Other researchers since Sampson and Laub have found similar results (Horney, Osgood, & Marshall, 1995; Laub, Nagin, & Sampson, 1998). In addition to self-control and social connectedness, research suggests that self-esteem has a negative relationship with violent criminality (Anderson, 1994; Long, 1990; Oser, 2006; Toch, 1969). Research supporting this relationship indicates that self-esteem has a negative relationship with aggression (Murphy, Stosny, & Morrel, 2005) and the number of violent offense committed by violent criminals. In addition, researchers have revealed that the construct of narcissism moderates the relationship between self-esteem and violent criminality (Bushman & Anderson, 2002; Papps & O'Carroll, 1998; Sullivan & Geaslin, 2001). More specifically, narcissists tend to aggress against others when their self-esteem is threatened (Bushman & Anderson, 2002; Kirkpatrick, Waugh, Valenia, & Webster, 2002; Papps & O'Carroll, 1998).

While research on criminality traditionally focuses on risk factors associated with crime, there are a growing number of researchers investigating how positive psychological states improve risk outcomes (Woldgabreal, Day, & Ward, 2014). One variable that shows potential, self-compassion has been conceptualized as a positive indicator of mental health (Neff, 2003b). Despite the lack of research investigating its relationship to violent criminality, self-compassion shows promise as a negative indicator of violent criminality. Research indicates that self-compassion has a negative relationship with anger (Neff & Vonk, 2009), and a positive one with self-esteem and social connectedness (Murphy et al., 2005; Neff, 2003b; Neff, Kirkpatrick, & Rude, 2007; Stosny, 1995). In addition, mindfulness, a component of self-compassion, has been shown to be a negative indicator of criminality (Rainforth, Alexander, & Cavanaugh, 2003). Furthermore, mindfulness appears related to self-control. (Bowlin & Baer, 2012; Masicampo & Baumeister, 2007). In addition, self-compassion may be associated with regions of the brain impaired by APD (Hölzel et al., 2011; Klimecki, Leiberg, Lamm, & Singer, 2013; Longe et al., 2010; Wang et al., 2011).

In this article, the sociological, criminological, psychological, and neurological literature is reviewed in order to evaluate self-compassion as a potential unifying link to many correlates of violent crime. Moreover, the following two sections of this report cover relevant definitions in criminology, provides an overview of research on violent criminals, demographics of perpetrators, investigate the role that poverty, and exposure to violence in eliciting violent crime. In section four, this review presents the link of neurological abnormalities

associated antisocial personality disorder, aggression, and exposure to violence. Section five covers the psychological predictors of criminality including self-control, social connectedness, and self-esteem. Finally, section six introduces self-compassion and discusses its connection to violent criminality.

## 2. Definitions relating to crime and criminality

Traditional definitions of crime define it as any behavior that is prohibited by a sovereign power (Gottfredson & Hirschi, 1990; Metfessel & Lovell, 1942; Michael & Adler, 1993). Traditional definitions are problematic in that sovereign powers vary in the behaviors that they prohibit and often change prohibitions. Further, sovereign powers have the propensity to commit acts described as criminal by other sovereign powers, such as war crimes or genocide (Baum, 2008). Citing the problematic nature of previous definitions of crime, Gottfredson and Hirschi (1990) defined crime as an “act of force or fraud undertaken in pursuits of self-interest” (p.15). Further, they described criminality as the “propensity to commit force or fraud” (p.4). Gottfredson and Hirschi's definition of crime differs from previous definitions in that it includes crimes that are *malum in se* or crimes against human beings or animals. In other words, Gottfredson and Hirschi's definition of crime involves aggressing against, stealing from, or deceiving others to part with their life, health, or property for the pursuit of individual gains. Although, Gottfredson and Hirschi's definition appears promising theoretically, practically the definition of crime is limited by a sovereign power's interpretation of crime. Specifically, research on criminality involves individuals labeled criminals by a sovereign power; in the case of my research interest, the sovereign power is the United States and the State of Texas. In order to satisfy the traditional definition and to consider Gottfredson and Hirschi's theoretical views of crime, this review is focused on crimes that the United States considers the most serious acts of force against others in pursuit of self-interest, violent crimes. Violent crimes include robbery, murder, non-negligent manslaughter, aggravated assault, and forced rape (Reaves, 2006).

Another important issue to define what makes an individual a criminal is frequency. Some individuals commit multiple crimes. When such an individual recommit a crime after being released from custody of a criminal enforcement agency, such an individual is termed a *recidivist*. *Recidivism* is the tendency to relapse back into an undesirable behavior, specifically crime. An individual who continues to commit crimes over a life course is defined as a *persistor*, whereas a *desister* is one who discontinues criminal behavior at some point during the life course (Sampson & Laub, 1993).

Research indicates that previous criminal behavior is a positive predictor of future criminal behavior (Mossman, 1994; Shah, 1978; Wolfgang, 1978). Further, Mossman (1994) demonstrated that criminal history was a stronger predictor of future criminal behavior than clinical judgments. In addition, research suggests that the probability for re-arrest increases with each successive conviction (Shah, 1978; Wolfgang, 1978). Despite this evidence, many researchers have argued that criminal trajectories are not set and that criminal behavior may be discontinued at some point in a criminals' life course (Hollin, 1999; Losel, 1995; Nagin & Paternoster, 1993; Polaschek & Collie, 2004; Sampson & Laub, 2003).

When an individual recidivates, an important question is whether he/she is more likely to commit the same crime or a new one. This leads to the question of whether criminals specialize. Researchers have found that criminals generally do not specialize in the type of crime they commit (Gottfredson & Hirschi, 1990; Simon, 1998). Yet, violent crimes are predictive of recidivism, especially recidivism involving more violence (Caspi et al., 1994; Hall, 1982; Mandelzys, 1979). Violent criminals are likely also to engage in other antisocial or self-destructive behaviors such as alcohol abuse, smoking, sexual promiscuity, driving recklessly, or driving under the influence of drugs and alcohol (Grasmick et al., 1993).

### 3. Demographics of crime

Violent crime is generally male dominated (Hodgins, 1994; Moffitt, 1993; Reaves, 2006). It has been demonstrated that 91% of violent felons in the 75 largest counties in the United States are male, including 89% of criminals committing assault, 99% of rapists, 93% of robbers, and 91% of murderers (Reaves, 2006). Evidence reports that less than 5% of the male population is responsible for committing between 50% and 70% of all violent crimes in the United States (Hodgins, 1994; Moffitt, 1993).

In addition to being disproportionately male, among those who are imprisoned for violent crimes, there is an overrepresentation of certain minority groups, as well as persons of a lower socioeconomic status. (Fajnzlber, Lederman, & Loayza, 2002; Hsieh & Pugh, 1993; Kawachi, Kennedy, & Wilkinson, 1999; Kelly, 2000; McNulty & Bellair, 2003; Mitchell, 2005; Sampson & Wilson, 1995). More specifically, the United States Department of Criminal Justice Bureau of Statistics (2009) reports statistically significantly larger proportions of imprisonment for African American and Hispanics, estimated to be 16.6% and 7.7% respectively compared to 3.4% of white Americans.

Due to historical prejudice against minorities (Schoenfeld, 1988) and the overrepresentation of minority groups in prison, some researchers have investigated to what extent prejudice in the judicial system may impact the incarceration rate of minorities, especially African Americans (Gordon, Bindrim, McNicholas, & Walden, 1988; Kramer & Steffensmeier, 1993; Mitchell, 2005). Mitchell (2005) found that African Americans received significantly longer sentences compared to white Americans when controlling for the severity of offense and criminal history. However, the effect size was small, leading Mitchell to conclude that whereas African Americans are sentenced to longer prison sentences, prejudice in sentencing is not the primary cause for over representation of African Americans in prison. Despite evidence suggesting that prejudice affects the sentencing process, evidence also exists suggesting a link between certain minority groups and violent behavior that may be attributed to other sources than prejudice in the criminal justice system (McNulty & Bellair, 2003), as I explain next.

A possible mediator for the over-representation among minority groups in the criminal justice system might be socioeconomic status (Williams, Yu, Jackson, & Anderson, 1997). Indeed the link between social inequality and violent crime is well documented (Blau & Blau, 1982; Fajnzlber et al., 2002; Kawachi et al., 1999; Kelly, 2000; Williams, Yu, Jackson, & Anderson, 1997). Kawachi et al. (1999) reported a positive relationship between the rate at which violent crimes, such as rape, robbery, homicide, and aggravated assault, were committed and a measure of income inequality, the Robin Hood Index, in the U.S.A., an index of disparity in income between the upper portion of the population in a community and the lower. Fajnzlber et al. (2002) found similar results internationally; specifically, they found a positive correlation between homicide and robbery rates to income inequality, as measured by the Gini Coefficient in 37 countries. Further, previous research indicates that educational achievement is an indicator of socioeconomic status (Sirin, 2005; Winkleby, Jatulis, Frank, & Fortmann, 1992). Lochner and Moretti (2004) found that education inversely predicts the probability of arrest and incarceration. Furthermore, they found that graduating high school reduces incarceration rates for White Americans and African Americans alike.

Moreover, although research indicates that SES and violent crime are correlated, the relationship may be mediated by other variables (McNulty & Bellair, 2003; Neumayer, 2005). Specifically, McNulty and Bellair (2003) found that situational factors tied to impoverished communities such as exposure to violence may mediate socioeconomic status and violent crime. Indeed, research indicates a strong link between exposure to violence and violent crime, especially if this exposure occurs in childhood (Caspi et al., 2003; De Bellis, 2005; Lewis et al., 1988; Lewis, Shanok, Pincus, & Glaser, 1979; McNulty & Bellair, 2003; Rennison, 2001; Vissing, Straus, Gelles, & Harrop, 1991; Widom,

1989a). Specifically, exposure to physical abuse during childhood may predict future criminal behavior. More specifically, physical abuse during childhood predicts correctional staff rated violent behavior (Lewis et al., 1979), violent convictions compared to non-violent convictions among juveniles (Lewis et al., 1988), self-reported and officially reported violence (Weiler & Wisdom, 1996), frequency of violent offenses committed during adulthood (Widom, 1989a; McCord, 1991), and high scores on the Psychopathy Checklist-Revised (Weiler & Wisdom, 1996). Further, Widom (1989b) found that victims of physical abuse had more arrest for violent offenses compared to neglect or sexual abuse victims. Findings such as these have led researchers to theorize that child abuse increases the risk for developing conduct disorder in adolescence followed by antisocial personality disorder in adulthood (De Bellis, 2005; Robins, 1966; Weiler & Wisdom, 1996).

### 4. Antisocial personality disorder

According to the DSM V, antisocial personality disorder is characterized by a "Lack of concern for feelings, needs, or suffering of others; lack of remorse after hurting or mistreating another" (American Psychiatric Association, 2013). Individuals with this diagnosis are often called sociopaths and/or psychopaths, with many researchers arguing that psychopaths are more extreme cases of antisocial personality disorder (American Psychiatric Association, 1994; Blair, Mitchell, & Blair, 2005; Hart & Hare, 1996). Individuals suffering from antisocial personality disorder display patterns of delinquency, substance abuse, and legal problems (Robins, 1966). This disorder afflicts significantly more men than women; Black (1956) estimated that 80% of cases of antisocial personality disorder are men. Goldstein et al. (1996) estimated that 50% to 100% of incarcerated men have antisocial personality disorder. Considering that having a criminal history is a diagnosis criterion for this disorder, it is not surprising that most violent criminals will fit the description of this diagnosis.

Symptoms tied to an antisocial personality disorder include impulsivity, reckless regard for the safety of others, failure to plan ahead, aggression, and a lack of remorse (American Psychiatric Association, 2000). Moffitt demonstrated in a longitudinal study of a cohort of 1037 three-year-old children followed to the age of 18 that antisocial behavior correlated negatively with self-control and negative emotionality, including anger and aggression. Siever and Davis (1991) described the trait underlying an antisocial personality disorder as impulsive aggression. Blair et al. (2005) conducted a review of the literature, concluding that an antisocial personality disorder is characterized by instrumental aggression that can be traced to an abnormal amygdala and reactive aggression that can be traced to abnormalities in the orbitofrontal cortex.

Overall, antisocial personality disorder is highly prevalent among violent offenders. Further, antisocial personality disorder is characterized by a lack of self-control, lack of empathy, elevated levels of reactive aggression, and elevated levels of instrumental aggression (Blair et al., 2005; Siever & Davis, 1991). Although antisocial personality disorder is prevalent among violent criminals, this is not surprising as the diagnostic criteria for this disorder often includes having a criminal history, making a conviction of a violent crime synonymous with the disorder diagnosis. Thus, although this diagnosis may be useful for clinical applications, it has limitations when used as a predictor for criminality. Because of this limitation, this review investigates neurological structures and psychological traits that underlie violent criminality and antisocial personality disorder.

#### 4.1. Antisocial personality disorder and the brain

Research has linked violent crime and antisocial behavior to abnormalities among multiple structures in the brain (Aoki, Inokuchi, Nakao, & Yamasue, 2013; Damasio, Grabowski, Frank, Galaburda, & Damasio, 1994; Moffitt, 1993; Schiffer et al., 2014). Structural areas

associated with violence, crime, and psychopathy include the amygdala, the striatum, the insular cortex, many areas of the prefrontal cortex including the orbitofrontal (OFC) (Damasio et al., 1994; Ducharme et al., 2011), and the anterior cingulate (Ducharme et al., 2011). Specifically, research has found structural and functional abnormalities in these areas (Aoki et al., 2013; Laakso et al., 2002; Schiffer et al., 2014; Yang, Raine, Narr, Colletti, & Toga, 2009b,c). These areas have been associated with psychopathy scores on the PCL-R (Decety, Chen, Harenski, & Kiehl, 2013), instrumental aggression (Blair, Colledge, Murray, & Mitchell, 2001; Marsh et al., 2008), reactive aggression (Damasio et al., 1994; Ducharme et al., 2011), moral judgments (Greene, Sommerville, Nystrom, Darley, & Cohen, 2001), impulsivity (Ducharme et al., 2011; Tow & Whitty, 1953), recognizing anger (Calder, Keane, Lawrence, & Manes, 2004), and empathy (Blair, 2007).

One of the regions that have received a significant amount of attention is the amygdala. Research indicates that the amygdala is tied to the formation of emotions (Phillips, Drevets, Rauch, & Lane, 2003), recognizing facial expressions (Adolphs et al., 1999), moral judgments (Greene, Nystrom, Engell, Darley, & Cohen, 2004), and recognizing threatening cues (Davis & Whalen, 2001). In terms of aggression, electrical stimulation to the amygdala of cats provoked an aggressive response (Brutus, Shaikh, Edinger, & Siegel, 1986). Lesions in the amygdala of cats have been linked to a reduction in aggressive behavior (Maeda & Hirata, 1978). Furthermore, Ermer, Cope, Nyalakanti, Calhoun, and Kiehl (2012) demonstrated that incarcerated participants had a reduction in the amygdala volume. In violent offenders, Boccardi et al. (2011) found a 30% tissue reduction in the basolateral nuclei, a specific cluster of neurons in the amygdala that share connections to the OFC. Moreover, Boccardi et al. found that violent offenders displayed 10 to 30% increases in tissue within the central nuclei, which are nuclei within the amygdala that are connected to the striatum. In addition to structural differences, studies have linked psychopathy with reduced neural activity in the amygdala in response to adverse stimuli (Kiehl et al., 2005) while viewing pictures displaying moral reasoning (Harenski, Hare, & Kiehl, 2010; Harenski, Harenski, Shane, & Kiehl, 2010), observing fearful faces (Dolan & Fullam, 2009), and images others in pain (Marsh et al., 2013).

In addition to the amygdala, research has linked abnormalities in the insular cortex to violent crime. The insular cortex plays a role in emotional processing and empathy (Singer, 2006; de Vignemont & Singer, 2006; Fan, Duncan, de Greck, & Northoff, 2011). Considering that the insula is connected to empathy, researchers have hypothesized and found evidence of a link between abnormalities in the insular cortex and psychopathy (Ly et al., 2012). In terms of structure, Ly et al. (2012) found a volumetric reduction in gray matter of the insula. Another study found that psychopathic inmates possessed thinner insular cortex compared to non-psychopathic inmates. In terms of functional differences, Sadeh et al. (2013) found a reduction in neurological activity within the insula during emotional processing task. In addition, Marsh et al. (2013) found less neurological activity within the insula while psychopathic participants imagined the pain of other. However, they found normal activity when these participants imagined themselves in pain.

One region of the basal ganglia associated with violence is the striatum (Ducharme et al., 2011). Research indicates that the striatum is associated with interpreting unconscious stimuli (Doyon et al., 1998; Molinari et al., 1997; Pascual-Leone et al., 1993) and impulsivity (Hariri et al., 2006). In terms of violence, lesions studies reveal striatal involvement in recognizing hostile stimuli (Calder et al., 2004). Furthermore, Ducharme et al. (2011) found that the striatal volume is associated with impulsive aggression. In addition, evidence suggests striatal volumetric (Amen, Stubblefield, Carmichael, & Thisted, 1996; Barkataki, Kumari, Das, Taylor, & Sharma, 2006; Glenn, Raine, Yalilian, & Yang, 2010) and functional abnormalities are involved in antisocial behavior and violence. Specifically, Barkataki et al. found that men with antisocial personality disorder have attenuated volumes in the striatum (Barkataki et al., 2006). Additionally, Decety et al. found that inmates

with high scores in psychopathy displayed increased neurological activity in the striatum while they viewed pictures of persons in pain (Decety et al., 2013). Consequently, striatal activity is correlated with psychopathy scores.

In addition to the amygdala, insular cortex, and striatum, research studies have linked abnormalities in the prefrontal cortex to violent criminality. The prefrontal cortex is important for a variety of cognitive functions including decision making, regulating emotions, and moral judgments (Anderson, Damasio, Tranel, & Damasio, 2000; Duncan & Owen, 2000; Koenigs et al., 2007; Salzman & Fusi, 2010). Specific structures in the prefrontal cortex that receive much attention include the OFC and the anterior cingulate. Evidence suggests that violent individuals display a reduction in gray matter in the OFC and the anterior cingulate (Boccardi et al., 2011; Cavanna & Trimble, 2006; Müller et al., 2008; Müller et al., 2008). In terms of psychopathic behavior and aggression, the OFC is the most commonly implicated structure (Boccardi et al., 2011; de Oliveira-Souza et al., 2008; Tiuhonen et al., 2008). Empirical studies suggest that lesions to the OFC lead to extreme reactive aggression in response to social provocations (Bufkin & Luttrell, 2005; Damasio et al., 1994; Davidson, Putnam, & Larson, 2000; Koenigs & Tranel, 2007; Strüber, Lück, & Roth, 2008). In addition, neurological activity was negatively associated with reactive aggression after an unfair offer in the ultimatum game (Mehta & Beer, 2010).

Another region connected to the prefrontal cortex that researchers have associated with violence and antisocial behavior is the anterior cingulate. The anterior cingulate is a structure involved in attention, emotional regulation, managing behavior, and empathy (Bush, Luu, & Posner, 2000; Decety et al., 2013). Lesion to this structure can lead to impulsivity, apathy, aggression, and emotional instability (Gabriel, Sparenborg, & Kubota, 1989; Tow & Whitty, 1953; Vogt, Nimchinsky, Vogt, & Hof, 1995). Imaging studies reveal that the anterior cingulate is involved in criminality, violence, and antisocial behavior. Research suggests that neurological activity in the anterior cingulate has a negative relationship with pathological aggression (Ducharme et al., 2011). Researchers found that violent offenders' display weaker neurological activity in the anterior cingulate compared to non-offenders (Schiffer et al., 2014). Additionally, Aharoni et al. (2013) found that the neurological activity is negatively correlated with recidivism.

In addition to investigating localized brain regions, brain researchers explore the neurological connections between these regions. Considering the evidence linking violent criminality to abnormalities in specific structures in the brain, researchers' investigations have found indications that the neurological connections among these regions are, likewise, abnormal (Decety et al., 2013; Hoppenbrouwers et al., 2013). For example, Hoppenbrouwers et al. (2013) conducted a study using diffusion tensor imaging and found reductions in white matter tracts connecting the striatum to the amygdala, the amygdala to the prefrontal cortex, and the striatum to the prefrontal cortex. Evidence, also, suggests that dysfunctional connectivity present in violent criminals plays a role in empathy. Decety et al. (2013) found that psychopaths display reductions in effective connectivity among the amygdala, insula, and orbitofrontal cortex while imaging others in pain. The decrease in connectivity was negatively correlated with psychopathy scores and neurological activity in the striatum.

Taken together, research findings suggest that violent criminals suffer from a neurological dysfunction involving several regions associated with impulsivity, empathy, aggression, and emotional regulation. The evidence, also, indicates that the connections between these structures are impaired. While evidence indicates that antisocial personality disorder has biological components, many researchers have considered the degree to which environmental influences may alter neurological structures and networks (Hart & Rubia, 2012; McCrory et al., 2010). In the next section, this review discusses empirical findings linking environmental exposure to violence to changes in the same structures that are also linked to antisocial personality disorder.

#### 4.2. The impact of exposure to violence on the brain

Many empirical studies have investigated the relationship between exposure to violence and the structural and functional changes in the brain. Research findings have found evidence that exposure to media violence (McCrorry et al., 2010), abuse (Hart & Rubia, 2012; McCrorry et al., 2010), and the condition of conduct disorder (Yang & Raine, 2009) collectively impact similar areas of the brain among children and adolescents. Evidence links exposure to violence with the development of abnormalities in the amygdala, prefrontal cortex, and striatum (Hart & Rubia, 2012; McCrorry et al., 2010; Yang & Raine, 2009). When considering that these structures are theorized to be involved in empathy, emotional regulation, decision-making, and aggression, evidence suggests a link between exposure to violence, neurological correlates of violence, and antisocial behavior (Mehta, Goetz, & Carré, 2013). Moreover, these areas are analogous to those areas tied to aggression in adults (Portnoy, Chen, & Raine, 2013).

A large body of research indicates that there is a significant relationship between exposure to violent media, such as television or video games, and engaging in subsequent aggressive behavior (Anderson & Murphy, 2003; Bartholow & Anderson, 2002; Bartholow, Sestir, & Davis, 2005; Hogben, 1998; Huesmann, Eron, Lefkowitz, & Walder, 1973; Huesmann, Moise-Titus, Podolski, & Eron, 2003; Uhlmann & Swanson, 2004). Leading researchers theorize that violent behavior may stem from violent acts that an individual witnesses and that long-term exposure to violence may increase the propensity to commit violent acts (Anderson & Bushman, 2001). Evidence shows that subjects who were exposed to violent video games display more aggression when provoked by confederates (Anderson & Murphy, 2003; Bartholow & Anderson, 2002; Bartholow et al., 2005). Moreover, the subjects were more likely to identify themselves as aggressive after they were exposed to violent video games (Uhlmann & Swanson, 2004). Similar findings were found among participants exposed to violence in television (Hogben, 1998; Huesmann et al., 1973; Huesmann et al., 2003). Evidence indicates that exposure to violent media impacts internal states and brain function that are associated with aggression (Anderson & Bushman, 2001; Hummer et al., 2010; Kronenberger et al., 2005; Mathews et al., 2005; Mathiak & Weber, 2006).

With the use of neuroimaging technology, researchers have been able to investigate the link between exposure to media violence and brain functioning (Hummer et al., 2010; Mathews et al., 2005; Mathiak & Weber, 2006; Wang, Modvig, & Montgomery, 2009). Brain activation and connectivity while watching violent television or engaging in a violent game both influence similar regions of the brain such as the amygdala and many regions of the prefrontal cortex including the anterior cingulate, orbitofrontal cortex, and dorsal lateral prefrontal cortex (DLPFC) (Mathiak & Weber, 2006; Wang et al., 2009; Weber, Ritterfeld, & Mathiak, 2006). For example, Weber, Behr, Tamborini, Ritterfeld, and Mathiak (2009) demonstrated a decrease in neurological activity in the anterior cingulate, orbitofrontal cortex, and amygdala during a violent event compared to a passive event within a first person violent video game. Another research study found evidence that linked the suppression of neurological activity within the anterior cingulate, and the amygdala to violent behavior (Weber et al., 2006). Weber et al. (2009) conducted an fMRI study comparing 13 males playing a violent video game to 11 males engaging in a nonviolent video game. While the non-violent control displayed increased neurological activity within the rostral anterior cingulate, the dorsal anterior cingulate, and the amygdala, the violent group only showed neurological activity within the dorsal anterior cingulate. Moreover, the rostral anterior cingulate and the amygdala displayed a negative correlation with virtual violence rated by an observer. Neurological activity within the dorsal anterior cingulate demonstrated a positive correlation with observer rated violence.

While these findings link exposure to violence with suppressed anterior cingulate, orbitofrontal, and amygdala activation during the

exposure, other findings indicate short-term suppression after the violent stimuli. Specifically Wang et al. (2009) investigated this neuronal suppression by comparing a group of participants recently engaged in a non-violent video game to subjects that recently engaged in a violent video game using fMRI. The violent group demonstrated decreased neurological activity in the left dorsal lateral prefrontal, with increased activity of the right dorsal lateral prefrontal cortex and the amygdala. This change in activity was observed while engaging in a counting stroop tasks that involves subsequent presentation of violent words right after the participants disengaged in the video games. Moreover, the non-violent group demonstrated more connectivity among the anterior cingulate, L DLPFC, and amygdala while the violent video game group demonstrated more connectivity between the L DLPFC and the left striatum (Wang et al., 2009). Another study found similar results. Specifically, Hummer et al. (2010) conducted fMRI analysis involving 45 adolescents engaged in a go/no-go task (task involving executive function) after they were randomly assigned to either a violent or to a non-violent video game. Participants that engaged in the violent video games demonstrate less neurological activity in the right dorsolateral prefrontal cortex while the nonviolent group displayed increase inverse connectivity with the precuneus (a region that has been tied to attention, motor responses, and self awareness) (Cavanna & Trimble, 2006; Kjaer, Nowak, & Lou, 2002). These findings suggest that exposure to violence leads to short-term changes in brain activity and connectivity.

While these findings only demonstrate the short-term effects of exposure to violence, long-term changes may be possible because of the dynamic property of the brain called synaptic plasticity. This property describes changes in the strength of neural pathways due to their neurological activation. Based off this property, repeated suppression of certain areas of the brain due to exposure to violence may desensitize the individual to future violence. Indeed, evidence seems to indicate this when investigating the impact of exposure to media violence on adolescents prone to aggression (Bushman, 1995). For instance, researchers suggest that the long-term suppression of the prefrontal cortex would lead to impaired executive function with an increase in violent behavior (Bushman & Anderson, 2002; Kronenberger et al., 2005). Kronenberger et al. (2005) found that higher violent media exposure was associated with impaired performance on self-reported, parent-reported, and laboratory-based tests of executive function. Results indicated that the impact was more profound among adolescents with disruptive behavior disorder, a diagnosis that can eventually lead to a diagnosis of antisocial personality disorder. Evidence also suggests an overlap between brain regions associated with disruptive disorder (DPD) and a person exposed to media violence (Mathews et al., 2005). Mathews et al. (2005) investigated the relationship of exposure to violence on neurological activity using participants with a history of violence. Mathews et al. employed a counting stroop task. Both the DPD with aggression and the high exposure to media violence group displayed less neurological activity within the prefrontal cortex including the anterior cingulate and orbitofrontal cortex when compared to the low exposure to violent media control group. These findings support a parallel in regional activation for groups exposed to violence and groups that are characterized as violent.

Another potential link between exposure to violence and the impact of the brain involves a vulnerable subpopulation, those children with a history of abuse. Research indicates a link between maltreatment to abnormalities within the anterior cingulate (Mueller et al., 2010), amygdala (Tottenham et al., 2011; Tottenham et al., 2010), and the cingulum bundle, which includes white matter tracts that connect these regions (Daniels, Lamke, Gaebler, Walter, & Scheel, 2013). Moreover, research found maltreatment related abnormalities within the cerebellum (BJS, 2009), striatum (Mueller et al., 2010), and the uncinate fasciculus tract (Govindan, Behen, Helder, Makki, & Chugani, 2010), which connects the orbitofrontal cortex and the amygdala. Finally, ERP research indicates that the brains of institutionalized children display hypersensitivity towards aggressive faces (Pollak & Tolley-Schell, 2003) and a

decreased sensitivity to nonthreatening familiar and unfamiliar faces (Parker & Nelson, 2005).

The link between structural differences and maltreatment indicates a reduction of white matter among several structures that involve emotional regulation, decision-making, and attention. The amygdala is a structure that is key to evaluating threatening information (Lupien, McEwen, Gunnar, & Heim, 2009; McCrory et al., 2010). Evidence indicates that victims of maltreatment display increases in amygdala volume (Pechtel & Pizzagalli, 2011; Tottenham et al., 2010.). Tottenham et al. (2010) compared a sample of formerly institutionalized children to a control group while performing an emotional go/ no-go task. Tottenham et al. found that the increased amygdala volumes among the abused institutionalized children were associated with an accelerated reaction time response to negative faces. Research suggests that maltreatment impact white matter tracts that connect the amygdala to other regions involved in emotional regulation and decision-making (Daniels et al., 2013; Govindan et al., 2010). Daniels et al. (2013) conducted a meta-analysis that revealed a reduction in white matter densities within the cingulum bundle. Another recent study conducted by Govindan et al. (2010) demonstrated that previously institutionalized adolescents had lower white matter densities compared to a control group.

These findings indicate a reduction in connectivity among the amygdala, the orbitofrontal, and anterior cingulate of children exposed to abuse. Disruptions in connectivity among these regions could impact the neurological activity. Research indicates abnormal activity within these regions and others. Mueller et al. (2010) found that abused adolescents display increased activation in the anterior cingulate and the insula. Tottenham et al. (2011) found institutionalized children display increased neurological activity within the amygdala when compared to a control group during an emotional go/no go task. In addition, they found that the performance on this task was negatively correlated with the activity in the amygdala.

In addition to the amygdala and the anterior cingulate, evidence suggests a link between the abnormalities in the cerebellum (BJS, 2009) and striatum (Tottenham et al., 2011). The cerebellum has been tied to decision-making and emotional regulation (Schmahmann & Sherman, 1998). BJS (2009) found that institutionalized children have smaller right cerebellum compared to the control group. If the reduction of cerebellar size is due to Purkinje cells and considering that the cerebellum has a bi-synaptic anatomical connection with the striatum, a reduction in Purkinje cells could lead to an increase in excitatory connections to the striatum (Allen, 2006; Morley, 2012). Similar findings have been linked to autism spectrum disorder (Allen, 2006; Morley, 2012), which display deficits in social interactions, emotional regulation, and a reduction of empathy (Weiss & Harris, 2001). Assuming that a reduction in Purkinje cells is involved and considering the cerebellar striatal connections are contralateral, one would expect striatal abnormalities on the left striatum. Indeed Mueller et al. (2010) found increases in left striatal activation among children exposed to abuse in response to an emotional go/ no-go task. While Mueller et al. findings are not direct evidence of a disruption in cerebellar/striatal connectivity; such a disruption would explain these abnormalities.

Another finding that connects maltreatment to neuronal function involves event related potential (ERP), which measures electrophysiological responses to stimuli. ERP findings suggest that abused children are sensitive to threatening faces yet display a lack of sensitivity non-threatening faces (McCrory et al., 2010; Parker & Nelson, 2005). Specifically, Pollak and Tolley-Schell (2003) compared abused children to non-abused children and found that the abused children displayed a larger evoke potential and required more attention resources to disengage from angry faces compared to happy faces. Conversely Parker and Nelson (2005) compared Romanian institutionalized children to Romanian non-institutionalized children and found decreased ERPs among the institutionalized group when viewing both familiar and unfamiliar faces.

Evidence concerning media violence and child maltreatment supports a link between abnormalities in the prefrontal cortex, the amygdala, the striatum and a hypersensitivity to a potential threat. Brain imaging research conducted on children that are prone to aggression and antisocial behaviors have similar neurological abnormalities as those exposed to violence (Decety, Michalska, Akitsuki, & Lahey, 2009). As with findings associated with abuse and exposure to violence, empirical studies have linked structural and functional neurological abnormalities with the prefrontal (Mehta et al., 2013). Evidence demonstrates structural differences and abnormalities in neurological activity.

In reference to structural differences, research has revealed volumetric reductions in gray matter associated with conduct disorder in the amygdala (Huebner et al., 2008; Li, Mathews, Wang, Dunn, & Kronenberger, 2005; Sterzer, Stadler, Poustka, & Kleinschmidt, 2007), anterior cingulate (Boes, Tranel, Anderson, & Nopoulos, 2008), dorsolateral prefrontal cortex (Dalwani et al., 2011), and orbitofrontal cortex (Huebner et al., 2008). Furthermore, researchers have found that conduct disorder is associated with a reduction in connectivity along the left uncinate fasciculus tract. Specifically, Li et al. (2005) used DTI and demonstrated a reduction in white matter connections among the uncinate fasciculus tract, which interconnects the orbitofrontal cortex and the amygdala.

Reductions in connections can lead to abnormal neurological activity within those regions. Functional MRI, indeed, demonstrates evidence for this abnormal activity associated with conduct disorder. Specifically, research supports a link between conduct disorder and abnormal activity in amygdala (Decety et al., 2009; Herpertz et al., 2001; Jones, Laurens, Herba, Barker, & Viding, 2009; Marsh et al., 2008; Passamonti et al., 2012; Sterzer, Stadler, Krebs, Kleinschmidt, & Poustka, 2005). Moreover, research indicates abnormalities in the anterior cingulate, insula, ventral medial prefrontal cortex, orbitofrontal, and caudate (Decety et al., 2009; Finger et al., 2011; Passamonti et al., 2012; Rubia et al., 2009). In addition, evidence suggests that a reduction in connectivity between the ventral medial cortex and the amygdala have been linked to psychotic behavior among youths with conduct disorder.

A significant portion of these findings investigated the link between the activities in the neurological structures tied to empathy while viewing faces displaying different types of emotion. Many studies found a link between viewing faces and reduced neurological activity in the amygdala. Sterzer et al. (2005) found that children with conduct disorder had a reduced neurological activity in the amygdala while viewing negative faces compared to a control group. Marsh et al. (2008) found that children with the callous emotional trait compared to the control group displayed a reduction in neurological activity, in the amygdala while viewing fearful face but not angry faces or neutral faces. Jones et al. (2009) found a similar result. Decety et al. (2009) found that youths with conduct disorder display increased neurological activity in the amygdala compared to the control while watching scenes of pain being intentionally inflicted on others. Moreover, they hypothesized that the increased amygdala activity was from the enjoyment of watching pain, which is characteristic of the disorder.

In summary, researchers have linked antisocial personality disorder to neurological abnormalities and violent crime. Research findings, also, corroborate that violent criminality is linked to structural and functional abnormalities in the amygdala, the striatum, and several structures in the prefrontal cortex. Evidence shows that exposure to violence facilitates structural and functional changes in these same regions. Long-term exposure leads to a reduction in gray matter within the involved structures and a reduction in white matter connecting different structures within the prefrontal cortex and the amygdala. Similar to individuals with antisocial personality disorder, exposure to violence is associated with an abnormal electrophysiological response to faces. Exposure to violence is also associated with abnormal neurological activity within various prefrontal structures and the amygdala, which are associated with decision-making, empathy, and emotional

regulation. Evidence, also, links exposure to violence to the implicated neural structures found in children with conduct disorder. Conduct disorder has been characterized as antisocial and aggressive. Children with conduct disorder and persons exposed to violence exhibit similar reductions in gray matter in the prefrontal cortex, amygdala, and striatum. Likewise, a similar reduction in white matter connecting the prefrontal cortex to the amygdala is found among both children with conduct disorder and persons exposed to violence. Finally, research has found that individuals with conduct disorder display increased neurological activity in the amygdala while watching pain being inflicted on others.

While neurological findings provide many intriguing findings concerning the origins of violent crime, imaging research has many limitations such as cost, sample size restrictions, and mobility. Each imaging tool has specific limitations in terms of temporal, spatial, and generalizability to psychological states. Due to these limitations, there are many findings investigating the psychological traits correlated of violence that provide a more comprehensive picture of violent crimes and those who perpetrate them.

## 5. Psychological predictors of violent criminality

Thus far, research has revealed sparse amounts of psychological information about violent offenders (Polaschek & Collie, 2004). One purpose of this review is to contribute to the literature about the mental health of criminal offenders. In this section, I review the research connecting criminality to issues with self-control, social connectedness, and self-esteem.

### 5.1. Low self-control and crime

One psychological characteristic that seems to underlie violent criminality is low self-control. Gottfredson and Hirschi (1990) theorized that a lack of self-control engenders criminality. Specifically, Gottfredson and Hirschi (1990) argued that attachment and supervision between parent and child is related to the development of self-control. They argued that a lack of self-control makes the individual more prone to a host of behaviors that are not in the individual's long-term interest, including crime. Further, Gottfredson and Hirschi theorized that self-control was invariant across a life course. If an individual develops self-control, he or she is unlikely to engage in criminal actions at any stage of life (Gottfredson & Hirschi, 1990). Gottfredson and Hirschi stated that low self-control is characterized by six elements. These elements include a lack of future orientation, self-centeredness, proneness to anger, a lack of diligence, an orientation towards physical activities as compared to mental activities, and a preference for risk taking (Gottfredson & Hirschi, 1990). This theory has been interpreted to suggest that a lack of self-control creates an inability to defer gratification (Nagin & Paternoster, 1993).

Evidence suggests that low self-control is related to crime. Netter et al. (1998) indicated that participants who scored low on impulse control as measured by the EASI Temperament Inventory applied more intense shock to a confederate when provoked, compared to participants with high impulse control after both groups of participants received a chemical induction for aggression. Piquero, MacDonald, Dobrin, Daigle, and Cullen (2005) conducted logistic regression on 3995 juvenile parolees over a 5-year period and reported a negative relationship between self-control and violent offending. In a meta-analysis of 21 studies, Pratt and Cullen (2000) found that self-control had a strong effect size and was a strong predictor of crime. They concluded there was "impressive empirical support" for Gottfredson and Hirschi's theory (p. 951), even though their view of the invariant nature of self-control was showing that self-control had a weaker effect size in longitudinal studies. Another problem with the construct self-control relates to gender differences in reliability. Specifically, although the self-control scale has demonstrated good reliability for male inmates,

it lacks reliability when used with female inmates (Gibson, 2005). Despite the lack of reliability for female criminals, when considering the high proportion of men convicted of violent crime, this scale is still valuable for predicting criminal behavior.

Other evidence links self-control to criminality. Self-control is negatively correlated to psychopathy in juveniles (Vaughn, DeLisi, Beaver, Wright, & Howard, 2007). Further, impulsivity, a component of self-control, has been shown to predict crime (Pratt & Cullen, 2000).

### 5.2. Social bonds and crime

Research seems to indicate that the ability to form social connections may be related to criminal desistance (Horney et al., 1995; Laub et al., 1998; Sampson & Laub, 1993). A theory of criminality was proposed by Sampson and Laub (1993) who undertook a 35-year follow-up study of Glueck and Glueck (1950) with 510 young men ages 10–17, of whom some were delinquent inmates at a reformatory and some were non-delinquents. In this study, Sampson and Laub tracked down the 480 inmates from the original study as they approached age 70. The authors found that most men had given up crime; desistance was the most common outcome. They found that offenders had peaked in terms of their commission of crimes around the age of 20 and remained high till after 40, then desisted around their late 40s. Sampson and Laub also discovered that chronic offenders seemed impossible to identify based on childhood risks factors, but that life circumstances like marriage and employment played a significant role in desistance. This led to Sampson and Laub's theory that social bonds, along with purposeful human agency, are responsible for desistance, with social connections associated with employment and marriage effective in this process. Other studies have supported the findings that social bonds are negatively related to re-offending (Horney et al., 1995; Laub et al., 1998).

Another study suggests that developing social connections may reduce aggression provoked from social rejection. Specifically, Tweng et al. (2007) conducted a study with 54 undergraduates who were asked to nominate two other students with whom they had previously interacted. Half the students were told that all the other participants did not want to work with them, whereas the other half were told that everyone wanted to work with them. Half of the socially rejected and half of the socially accepted students were thanked by the experimenter and given a bag of candy. The other half had a neutral response. Results indicated that among the socially rejected group, the students who received a neutral response displayed more intense shock subsequently against a confederate compared to students for whom the experimenter had established social connections. Students in the socially accepted category did not vary in intensity of aggression. Altogether, this study seems to indicate that social connections may buffer aggressive behavior.

Finally, individuals diagnosed with antisocial personality disorder, as the name would imply, tend to lack social connectedness. Taylor, Loney, Bobadilla, Iacono, and McGue (2003) found that the antisocial and social detached subscales of the Minnesota Temperament Inventory were positively associated in 508 boys aged 16 to 18 years.

### 5.3. Self-esteem and violent crime

The nexus between self-esteem and criminality has been explored in the criminological and psychological literature (Oser, 2006). The significance of self-esteem was first appreciated by William James in his 1890 writings titled the Principles of Psychology. In these writings, James stated self-esteem was a "ratio of our actualities to our supposed potentialities" (p. 311). Since the time of James, a consensus on the definition of self-esteem has not been reached (Robins, Hendin, & Trzesniewski, 2001). Some have proposed a multifaceted model (Fleming & Courtney, 1984), whereas others have proposed a global

concept (Rosenberg, 1965). Positive self-esteem is generally thought of as desirable and low self-esteem as problematic (Baumeister, Smart, & Boden, 1996). Self-esteem research has linked low self-esteem to many psychological difficulties (Murphy et al., 2005), including criminal activity and violence. Empirical studies of self-esteem as a correlate of violent crime go back as far as Toch in 1969. Since Toch, there have been further investigations into the relationship of self-esteem and crime. All types of violent crime, from gang-related crime (Anderson, 1994), to domestic violence (Renzetti, 1992), to terrorism (Long, 1990), to murders (Kirschner, 1992), to hate crimes (Levin & McDevitt, 1993) have been linked to low self-esteem (Baumeister et al., 1996). More recently, Murphy et al. (2005) investigated the relationship of self-esteem changes and aggression in domestic violence abusers seeking treatment. Specifically, they compared pretreatment self-esteem and post treatment self-esteem as well as pre and post treatment aggression. They found that a significant increase in self-esteem was associated with a significant decrease in aggression. Moreover, Oser (2006) found a negative relationship between self-esteem and the number of violent offenses, compared to non-violent offenses, committed by released offenders. In addition, Donnellan, Trzesniewski, Robins, Moffitt, and Caspi (2005) found that low self-esteem had a relationship with self-reported, teacher-reported, and parent-reported displays of aggression and antisocial behavior in both adolescents and college students from the United States and New Zealand that was independent of narcissism.

Some researchers have rejected the notion linking low self-esteem to violent crime, suggesting instead that high self-esteem is related to violent crime (Baumeister et al., 1996; Kernis, Grannemann, & Barclay, 1989; Myers, 1980). Specifically, several studies indicated that the construct of *narcissism*, which is characterized by an exaggerated sense of self-importance (American Psychiatric Association, 2000), is positively associated with both self-esteem (Raskin, Novacek, & Hogan, 1991) and violent crime (Bushman & Baumeister, 1998; Papps & O'Carroll, 1998; Sullivan & Geaslin, 2001). To make sense of these contradictions, Papps and O'Carroll (1998) investigated the relations among narcissism, low self-esteem, and aggression. Papps and O'Carroll found that individuals with high self-esteem and high narcissism, or individuals with low self-esteem, were more likely to exhibit elevated levels of aggression. Thus, it is when narcissism coincides with high self-esteem that aggression increases.

Other studies investigated the role that narcissism plays in violence. As characterized by the American Psychiatric Association (2000), narcissists have an exaggerated sense of self-importance and often expect to be treated superior to others. Kirkpatrick et al. (2002) found that feelings of superiority show a positive correlation to provoked aggression.

Bushman and Baumeister (1998) conducted a series of studies investigating the relationship between narcissism and aggression. They found that a negative evaluation was associated with displays of aggression against an evaluator. These displays of aggression, however, were not found against a third party. Violent offenders, also, display higher narcissism scores than non-violent offenders (Bushman & Baumeister, 1998). In addition, Kernis et al. (1989) found evidence suggesting that people with high but unstable self-esteem have positive self-views that are easily threatened, which makes them prone to anger as a way to preserve their self-view. Coinciding with these findings, evidence indicates that narcissists tend to become aggressive in response to a threatened egoism (Baumeister et al., 1996; Bushman & Baumeister, 1998).

To summarize this section, research has linked violent crime to self-control, social connectedness, and self-esteem. Persons with low self-control tend to act impulsively, are less likely to assess risk, and thus are more prone to engage in violent behavior when there is an opportunity. Similarly, people with a narcissistically high self-esteem and people with low self-esteem display an increased probability to act aggressively when provoked. In addition, the ability to develop social bonds tends to decrease violent criminality.

## 6. Self-compassion

Self-compassion has been proposed as an alternative way to conceptualize healthy self-attitudes (Neff, 2003b). Self-compassion is a construct derived from eastern Buddhist philosophy, though Amram (2007) suggested that self-compassion is a theme common to many religions. Stosny (1995) described self-compassion as having four dimensions including: (1) a deep understanding of the cognitive, affective, and behavioral dimensions of an experience; (2) validation of that experience; (3) a motivation to enhance the positive dimensions of the experience and changing the negative aspects of an experience; (4) the motivation to apply the three previously mentioned dimensions to enhance the self. According to Stosny, self-compassion provides internal regulation of how one perceives an experience that then enhances compassion for others and social relatedness, while allowing for individuation. Stosny described self-compassion as being “incompatible with antisocial behavior” (p. 82) and antagonistic to narcissism.

### 6.1. Components of self-compassion

Neff (2003b) conceptualized self-compassion as a nonjudgmental internal awareness of one's emotional pain and a feeling of positive affect towards that pain. Further, Neff described self-compassion as being “touched by” personal suffering without being “disconnected from it” (p. 87). Neff (2003a), also, described self-compassion as being related to “compassion and concern for others” (p. 141). Self-compassion, according to Neff, involves the realization that all humans suffer and all humanity is “worthy of compassion” (p. 141). Neff, further, stated that self-compassion is comprised of three interrelated components including self-kindness, mindfulness, and awareness of a common humanity. Self-kindness is defined as the tendency of people to show kindness and be non-judgmental to themselves (Neff, 2003b). Self-kindness involves showing positive affect towards the self rather than criticizing the self (Neff, Rude, & Kirkpatrick, 2007). A second component of self-compassion is mindfulness; mindfulness is the practice whereby people are nonjudgmentally and intentionally aware of their thoughts and actions in the present moment (Grossman, Niemann, Schmidt, & Walach, 2004; Neff, Hsieh, & DeJitterat, 2005). Because mindfulness involves an intentional awareness of thoughts and actions, mindfulness involves self-control. In fact, mindfulness has been described as a “precursor to choice” (Hirst, 2003, pg 365). Mindfulness relates directly to the practice of meditation with applications that can be used while conducting routine daily activities (Baer, 2003). In other words, mindfulness can be developed through meditation, though meditation is not required to be mindful. The third and final component of self-compassion involves a balanced integration between self and other (Neff, 2003b). This component is the recognition of the related experience of self and other, the shared common humanity we all experience. The common humanity component involves recognizing that suffering and personal inadequacy is part of the shared human experience (Neff et al., 2007).

Although Neff (2003b) and Stosny (1995) conceptualized self-compassion not exactly in the same way, the two views do not contradict one another. Specifically, both versions of self-compassion identify the core needs for self-awareness of thoughts, feelings, and actions. In addition, both versions of self-compassion involve using positive emotions and self-awareness to buffer against negative experiences. Further, both versions of self-compassion are described to be positively associated with compassion and a balanced integration of self in relation to other. Finally, both versions describe self-compassion as an awareness of personal suffering and a motivation to alleviate this suffering.

### 6.2. Self-compassion compared to self-esteem

At first glance, self-compassion and self-esteem may seem very similar. Both constructs reflect views of the self that are associated



with positive affect and mental health (Neff & Vonk, 2009). Research by Neff (2003a) has shown that self-esteem and self-compassion are moderately correlated, but unlike self-esteem, self-compassion is not correlated with narcissism. Further, self-compassion has been found to have a stronger negative relationship with anger compared to self-esteem (Neff & Vonk, 2009). Specifically, Neff and Vonk (2009) found in a study of 4202 individuals who completed an online survey that self-compassion was a stronger negative predictor of scores obtained on the Anger Response Inventory than was self-esteem. Self-esteem is based upon a positive self-evaluation, whereas self-compassion is not a self-evaluation but rather it is an “open hearted awareness which embraces all aspects of personal experience” (Neff & Vonk, 2009, p. 7). Another difference is that self-compassion highlights similarities of others whereas self-esteem seems to arise from a feeling of distinction relative to others (Neff & Vonk, 2009). Studies comparing self-esteem to self-compassion have found that people with high levels of self-compassion showed fewer negative emotions when receiving unflattering feedback than people with low levels of self-compassion compared to people with high level of self-esteem (Leary, Tate, Adams, Allen, & Hancock, 2007; Neff & Vonk, 2009).

Empirical inquiries have demonstrated that self-compassion negatively predicts unique variance beyond self-esteem across many variables associated with mental health (Neff & Vonk, 2009). These include variables related to ego reactivity such as self-rumination, self-worth instability, anger, the need for cognitive closure, social comparison (Neff & Vonk, 2009), and negative mental states which include depression and anxiety (Neff, 2003b). In terms of positive emotions, self-compassion positively predicts unique variance in positive emotions including happiness and optimism (Neff & Vonk, 2009).

### 6.3. *Self-compassion and violent criminality*

Very little research has been conducted on self-compassion and its relationship to criminality, but what has been done seems promising. As previously stated, negative emotions have been linked to violent criminals. Also, as reported above, Neff and Vonk (2009) found that self-compassion was a negative predictor of anger, and anger is considered to be connected to violence. By having less anger, individuals are less likely to aggress against others. Self-compassion, as compared to self-esteem, was shown to be a stronger negative predictor of personal distress and shame, and a stronger positive predictor of social functioning in sex offenders (Lo, 2007).

Other possible links relate to the ability to form social connections. Previous research indicates a link between the ability to make social connections and criminal desistance (Horney et al., 1995; Laub et al., 1998; Sampson & Laub, 1993; Thornberry, 1987), and research supports a link between self-compassion and social connectedness (Neff, 2003b; Neff et al., 2007). Neff (2003b) found a correlation between her self-compassion scale and the social connectedness scale. Furthermore, Neff et al. (2007) conducted an investigation into the relationship of self-compassion and social connectedness using the “Gestalt two step exercise.” This exercise involves increasing clients’ self-awareness and self-acceptance as a way to challenge maladaptive beliefs (Safran, 1998). The Gestalt two-chair exercise was not originally designed to increase self-compassion, but instead to reduce self-criticism and increase empathy towards the self. Self-compassion and social connectedness scores were obtained one week prior to as well as two weeks after students took part in this exercise. Neff et al. (2007) found that among undergraduates who participated in the two-chair exercise, increases in self-compassion were correlated to increases in social connectedness. Although the participants in this study were college students, the same results may be found among criminals. By seeing oneself objectively and opening oneself to the suffering of others, offenders may be less likely to aggress against others.

Another possible link relates to the mindfulness component of self-compassion. Mindfulness is positively associated with the practice of

meditation (Grossman et al., 2004). Neff (2003b) found that self-compassion scores are correlated with years of practice in meditation. The practice of meditation was shown to have reduced the rate of re-arrest followed by conviction by 43% in a 15-year study at Folsom Prison (Rainforth et al., 2003).

Furthermore, empirical evidence links constructs relating to self-compassion and criminal desistance. As stated above, self-compassion enhances one’s feelings of concern for others (Neff, 2003a). Concern for others has been shown to be a negative predictor of felony re-arrest and re-incarceration, as well as a positive predictor for employment outcomes (Daugherty, Murphy, & Paugh, 2001). Self-compassion involves being touched by the suffering of others (Neff, 2003a). This is related to empathy, which has been described as the “tendency to apprehend another person’s condition or state of mind” (Johnson, Cheek, & Smither, 1983, p. 1299). Aggressive and antisocial individuals often display a lack of empathy (Cohen & Strayer, 1996; Hare & Schalling, 1978).

### 6.4. *Self-compassion and neurological correlates of violence*

While currently researchers have not established a neurological model for self-compassion, it is likely to involve structures related to emotional regulation such as the anterior cingulate, the insula, and the amygdala (Hölzel et al., 2011). Moreover, neurological studies have uncovered a link between various related constructs. One study in particular investigated the impact of self-assurance versus self-criticism (Longe et al., 2010). Longe et al. conducted a study where participants were presented with a scenario focused on a failure and a neutral scenario. Participants were instructed to either imagine themselves being self-critical or self-reassuring. They found increases in neurological activity within the insula during the self-reassurance scenario while the self-criticism scenario was related to increased activity in the striatum (Longe et al., 2010). Another study compared participants’ responses to a video depicting others in distress before and after a training, which was intended to increase compassion for self and others (Klimecki et al., 2013). They found that participants displayed greater neurological activity in the orbitofrontal cortex in response to the video after the compassion-based training (Klimecki et al., 2013). Desbordes et al. (2012) conducted a similar study-training program targeting compassion for self and others. They found an increase in neurological activity within the amygdala that was negatively correlated with depression scores. Engström and Söderfeldt (2010) conducted a case study in which they monitored a subject using compassion-based meditation and found strengthened neurological activity in the cingulate, striatum, and insula.

Another area of research related to self-compassion involves mindfulness-based meditation. As stated previously, mindfulness involves a state of non-judgmental self-awareness of a person’s thoughts and behaviors, making it conceptually related to self-compassion (Neff & Dahm, in press). As discussed by Neff and Dahm (in press), these concepts, however, are distinct. Mindfulness involves a balanced awareness of all experiences while self-compassion and its subscale, mindfulness, relate specifically to emotional feelings arising from a negative experience. Self-compassion involves positive self-affective elements, such as self-kindness and feelings of common humanity. Self-compassion involves emotional networks such as the limbic system while compared to mindfulness is related mostly to the middle prefrontal cortex (Gilbert, 2009; Neff & Dahm, in press). Even though they do not address self-compassion directly, mindfulness-based interventions tend to increase self-compassion (Birnie, Speca, & Carlson, 2010; Kuyken et al., 2010; Neff & Dahm, in press; Rimes & Wingrove, 2011; Shapiro, Brown, & Biegel, 2007). Considering that mindfulness is more specific to structures in middle prefrontal cortex such as those involved in attention (Neff & Dahm, in press; Siegel, 2007), changes in regions associated with positive affect are likely to be associated with changes in self-compassion rather than mindfulness. With this in mind, research

indicates that mindfulness-based meditation is associated with increased activity in the anterior cingulate, OFC, and insula (Baerentsen, Hartvig, Stødkilde-Jørgensen, & Mammen, 2001; Cahn & Polich, 2006; Hölzel et al., 2007; Lazar et al., 2003; Wang et al., 2011). Moreover, evidence suggests that the neurological activity in these areas may lead to volumetric and connectivity changes. In terms of volumetric changes, Hölzel et al. (2010) found that an 8-week meditation participation led to decreases in gray matter concentrations in the right amygdala. In addition, this decrease was correlated with perceived stress score. Luders, Toga, Lepore, and Gaser (2009) found increased gray matter densities in the right orbitofrontal cortex among meditators. Hölzel et al. (2008) found increased gray matter concentrations in the insula among meditators. Moreover, they found a positive correlation between gray matter concentrations in the OFC and hours meditating (Hölzel et al., 2008). Another finding related to neurological correlates of exposure to violence involved the link between meditation and increased gray matter densities in the cerebellum. In addition, DTI research results have indicated increased white matter tracts among various connections associated with violence. Specifically, evidence suggests that mediators have greater structural connectivity in the uncinate fasciculus (Luders, Clark, Narr, & Toga, 2011).

#### 6.5. Compassion workshop: self-compassion as an intervention

The above section described research that suggests a negative relationship between self-compassion and violent criminality. An example of an intervention that implements self-compassion as a treatment for violent offenders is the Compassion Workshop. Stosny (1995) designed the Compassion Workshop to increase self-compassion in violent criminals, specifically targeted for those who had committed domestic violence against their partner, as well as for victims of domestic violence. The compassion workshop relies on the assumption that abusers and abused alike have a wounded sense of self. Specifically, the abuser externalizes blame for his or her mistakes onto victims whereas victims of domestic violence often internalize the blame placed on them by the abusers (Stosny, 1995). The compassion workshop seeks to help the abuser and the abused “internalize responsibility for their own experience” (p. 94). The goal of the compassion workshop is to alleviate feelings of inferiority that are associated with a wounded sense of self through use of self-compassion and compassion for others (Stosny, 1995).

Research has linked the compassion workshop with increases in self-esteem. Murphy et al. (2005) compared results for individuals taking part in the compassion workshop with a cognitive behavioral treatment focused on male domestic violence partner abusers. They found a larger decrease in posttest mean scores compared to pre-test mean scores on the Conflict Tactics Scale (which is a scale designed to measure aggression) and on self-esteem for men who completed the compassion based treatment program compared to the cognitive behavioral program.

Stosny (1995) found similar results in a pilot study comparing 50 participants engaged in the compassion workshop to a cognitive-behavioral intervention. Stosny found that partners of those who completed the compassion workshop reported less violence and verbal aggression compared to partners who completed the cognitive behavioral program. Furthermore, these participants demonstrated higher levels of self-esteem, as measured by Rosenberg's scale, and higher levels of compassion for one's spouse as measured by the attachment compassion scale (Stosny, 1995). The compassion workshop was shown to be successful as an intervention for domestic violence abusers. Further, the compassion workshop was also designed to treat victims of domestic violence (Stosny, 1995). Considering that criminals tend to be generalists (Simon, 1998; Gotfredson & Hirschi, 1990) and that most violent offenders are victims of domestic violence (Caspi et al., 2003; De Bellis, 2005; Lewis et al., 1988; Lewis et al., 1979; McNulty & Bellair, 2003; Rennison, 2001; Vissing et al., 1991; Widom, 1989c),

this self-compassion based program may show similar results for other types of violent offenders. While the compassion workshop is the only program that specifically targets self-compassion among violent offenders, there are other self-compassion based interventions that might prove useful among this population.

## 7. Conclusions and implication

Cross-disciplinary research has uncovered multiple criminogenic risk factors associated with violence and self-compassion can be linked to multiple risk factors. Specifically, researchers indicate that self-compassion is associated with increases in social connectedness, self-esteem, emotional regulation, and decreases in aggression. Moreover, research seems to implicate that self-compassion is positively related to self-control, as well as areas of the brain associated with this neurological regions related to exposure to violence, antisocial behavior and deficit violent criminals. In addition, empirical studies have demonstrated that an intervention focusing on increases in self-compassion leads to decreases in aggression among specific types of violent offenders. Considering that these criminogenic variables are interrelated and that criminals are generalist, this review proposes that self-compassion provides a buffer against exposure to violence, is antagonistic to antisocial behavior, will be linked to increases in self-control, and leads to criminal desistance.

The literature discussed in this review provides support for the theory that exposure to violence engenders neurological changes that can lead to deficits associated with antisocial behavior. Moreover, self-compassion may protect the brain against environmental exposure to violence. Specifically, self-compassion involves self-assurance, self-regulation, attention, and emotional regulation. Moreover, increases in self-compassion have been tied to increases in empathy, social functioning, and concern for others. Likewise, the regions that are impaired by exposure to violence are associated with self-assurance, self-regulation, attention, empathy, emotional regulation and social functioning. Considering these associations and neural plasticity, findings in this review suggest that practicing self-compassion may activate certain areas of the brain associated with exposure to violence and aggression. Future studies should test this hypothesis to by determining whether (1) increases in self-compassion lead to larger activation and volumetric increases in these regions and (2) self-compassion moderates neurological changes occurring during exposure to media violence.

Another implication of this study involves the association of self-compassion and self-control theory. While research has yet to directly investigate the link between self-control and self-compassion, evidence from this review implies that these variables be correlated. Moreover, there remains the potential for a causal relationship among these variables. Specifically, self-compassion may provide a tool to overcome the unpleasantness of self-awareness, which has been shown to reduce impulsivity (Heatherington & Baumeister, 1991). Indeed researchers found that increases self-compassion lead to decreases in impulsivity among female college students (Adams & Leary, 2007; Webb & Forman, 2013). Future studies will need to determine if (1) self-compassion is associated with self-control and (2) if interventions that target self-compassion impacts self-control.

As previously noted, evidence suggests that self-compassion impacts social connectedness and self-esteem among non-inmate and perpetrators of domestic violence. There is still a question of this finding can be cross-validated among other types of violent criminal sample. Future studies will have to determine if this relationship can be cross-validated and if this impacts violence or aggression among that population.

While this review shows that self-compassion may have a relationship with violent crime, there hasn't been any study that links increases to increases in provoked hostility, reductions in violent behavior, or criminal recidivism. Future studies will need to explore this area. Over all this review makes the recommendation for researchers to investigate

the role those self-compassion plays in criminal desistance, antisocial behavior, correlates of criminality, and violence.

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