

We are IntechOpen, the world's leading publisher of Open Access books Built by scientists, for scientists

6,900

Open access books available

186,000

International authors and editors

200M

Downloads

Our authors are among the

154

Countries delivered to

TOP 1%

most cited scientists

12.2%

Contributors from top 500 universities



WEB OF SCIENCE™

Selection of our books indexed in the Book Citation Index
in Web of Science™ Core Collection (BKCI)

Interested in publishing with us?
Contact book.department@intechopen.com

Numbers displayed above are based on latest data collected.
For more information visit www.intechopen.com



Psychopathy: A Behavioral Systems Approach

Liane J. Leedom

Additional information is available at the end of the chapter

<http://dx.doi.org/10.5772/intechopen.69488>

Abstract

Why do they do that? is the question theories of psychopathy should answer. Current theories of psychopathy fail to answer this question because they focus on affective and inhibitory deficits rather than on motivation. Antisocial behavior is appetitive and therefore can only be explained with a motivational theory. This chapter presents a motivational theory of psychopathy that draws on the ethological framework. The chapter answers all four questions of ethology as applied to psychopathy.

Keywords: psychopathy, love, attachment, caregiving, dominance, behavioral systems

1. Introduction

Why do they do that? is the question most frequently asked by those whose lives have been touched by someone with psychopathy. The “that” in the question refers to a myriad of harm inflicting and gratuitously destructive behaviors such as: pathological lying; conning; manipulation; psychological, social, financial, physical and sexual abuse; thievery; and squandering of financial resources and possessions. Although those without psychopathy also sporadically engage in harmful behaviors, these behaviors constitute *raison d'être* for the psychopathic. To date theories of psychopathy that focus on deficits in social emotions and impulse control have failed to explain “why they do that” [1–3]. The fallacious assumption of “deficit” theories is that were it not for inhibitory mechanisms, all people would be antisocial. As a psychiatrist trained in the methods of ethology, I reject: (1) the idea that deficits “cause” behavior and (2) that all people are motivated to be antisocial. Instead, I propose that specific motivational systems are affected by psychopathy and that these affected systems cause antisocial behavior at all levels of the disorder. While I do not dispute that dysregulation of motives is part of psychopathy, lack of inhibition alone does not explain the behavioral syndrome. Understanding

“why they do that” begins with understanding motives and motivational systems. As psychologist Partridge [4], said nearly 90 years ago, “These persons display, first of all, persistent and chronic sociopathic behavior. This chronic behavior, to be regarded as essentially sociopathic, is to be understandably related in some way to their motivations with respect to their major interests and urges.” This chapter presents an ethologically-based motivational theory of psychopathy that explains the manifest behavior of psychopathic individuals and addresses all four of the central questions of ethology. The theory is ethologically based due to my early training and because the discipline of ethology seeks to answer the “why, what and how questions” of behavior. I begin by briefly outlining the four questions and epistemic roots of ethology.

2. The ethological approach¹

The first question of ethology is “why do these animals behave as they do [8]?” To explore this first question ethologists make extensive naturalistic observations and create thorough descriptions of behavior prior to any experimental study. In ethology, induction precedes deduction. Ethologists also place observational and experimental data into a developmental and an evolutionary framework. How did the behavior develop? What is its function? and What is its phylogeny? are questions 2–4 of ethology [8, 9]. In asking these questions ethologists maintain that any complete explanation of behavior should address proximate causation in terms of stimulus response mechanisms and development, and ultimate causation in terms of function and phylogeny [8]. Extensive observations of the naturalistic behavior of vertebrates including primates led to the discovery of behavioral systems that operate similarly to other biological adaptive control systems. Behavioral systems govern “the motivation and control of a group of behavior patterns that are closely and more or less causally (and often also functionally) related to each other [10].” Hence, goal directed behaviors important to survival and reproduction are the output of particular adaptive control systems. The existence of behavioral systems may be inferred from output behaviors and then the physiological mechanisms that comprise the system may be studied. Three processes define adaptive control systems: continuous monitoring (by sensors), comparison between actual state and desired state (by comparators), and output to achieve the desired state (by enactors). Studies of behavioral systems determine salient stimuli, examine correlates of goal states (in terms of internal working models), and describe physiological and behavioral outputs of the system. It is behavioral systems that organize information processing, and govern the choice, activation and termination of behavioral sequences.

¹Why do not motives figure more prominently in theories of psychopathy? In 1973 the Nobel Prize in Physiology or Medicine was awarded jointly to ethologists Karl von Frisch, Konrad Lorenz and Nikolaas Tinbergen “for their discoveries concerning organization and elicitation of individual and social behavior patterns [5].” Subsequently, sociological forces led to the decline of the influence of ethology on clinicians and researchers. In the decades that followed, the Nazi past of Lorenz was exposed, and sociobiology and comparative psychology arose as replacements for the discipline forever tainted by one of its founders [6]. The science of motivation also waned due to the demise of drive theory as conceived of by Freud and Lorenz [7]. Although there were good reasons for the demise of ethology; loss of the methods and ideas of this discipline has negatively impacted understanding of both normative and pathological human behavior.

2.1. Four human social behavioral systems

In humans, social behavior and the learning of social behavior is mediated through four innate behavioral systems: the attachment/affiliation, care-giving, dominance and sexual systems. These systems serve the adaptive goals of: safety through affiliation, parental care, competition (dominance/resource control) and mating. These systems are innate but important maturational experiences guide their normative development. (For a complete discussion of human social behavioral systems see Ref. [11].) Although all four human social behavioral systems contribute to behavioral disorders [11–13] only the attachment/affiliation system is recognized widely by clinicians due to the work of Bowlby [14, 15]. Bowlby, a psychoanalyst was strongly influenced by ethologist Robert Hinde [16].

2.1.1. *Significance and salience acquisition and salience attribution to others*

Reinforcement processes operate through the brain reward system to reify the behavioral strategies of the social behavioral systems [11]. Research on addiction has provided much insight into the psychobiology of reward and therefore social behavioral systems. Behaviors enacted in goal acquisition are reinforced, and rewarding stimuli are primary reinforcers. Just as tasty food is reinforcing through the feeding system, contact comfort, dependent stimuli, others' submissive responses and sexual contact are reinforcing through the attachment, care-giving, dominance and sexual systems. Situational stimuli signal the presence of primary rewards and these stimuli acquire incentive salience. Attribution of incentive salience differs between individuals and this individual difference confers risk for addictive disorders [17]. Furthermore salience attribution is impaired by addiction [18].

The process of special significance and salience acquisition and subsequent attribution of salience to others within the social behavioral systems is called "bonding" [19]. Individuals who are the source of attachment reward acquire special significance and are attributed salience in development [19]. Similarly salience is attributed to individuals who are the objects of care [20], and to mates [21]. Whether individuals associated with dominance reward acquire special significance and salience has not been investigated (though the existence of slavery suggests some form of social tie to the subjugated). Bonding to a caregiver early in life appears to affect the process of special significance and salience acquisition such that failure to establish an attachment bond is associated with failure to give care to offspring, failure to bond to mates and to risk for addiction (for detailed discussion see Ref. [11]).

2.1.2. *Love*

The terms bond, attachment and love have been used interchangeably in the literature however, I contend that the word "love" should be used to only to signify an affiliative bond that also involves caregiving. The term attachment should be used to reflect the tendency to seek proximity to another in times of need (for security). According to Shaver and Mikulincer [22] romantic love should be conceptualized in terms of the activity of three interdependent behavioral systems—attachment, caregiving and sex. This definition provides a framework for investigating love in those with high levels of psychopathic traits as the attachment (ABS),

caregiving (CGS) and sexual (SBS) behavioral systems, as well as the interrelationships them can be examined. Inherent within this framework is the idea that behavioral systems are subject to activation and deactivation and may inhibit or stimulate one another as neural networks are simultaneously activated or deactivated.

The behavioral and neurobiological integration of the social behavioral systems is complex and therefore subject to individual variation and disorder. One developmental task of childhood is to integrate the attachment, dominance and caregiving systems, with the integration of the sexual system occurring in adolescence [11]. Successful development and integration of the attachment, caregiving and sexual systems determines an individual's capacity for deep intimate relationships and committed romantic love. This integration occurs at both a neurophysiological and a behavioral level. When a man or woman "falls in love" with a romantic partner, sexual arousal and the resultant neuroendocrine sequelae give rise to a love bond. The caregiving behavioral system is subsequently activated by communications of need by the loved one. Capacity for love is linked to the effective functioning of the caregiving behavioral system and the degree to which the three systems integrate. Other love relationships are likened to romantic love as they share a common neurobiological mechanism—the activity of the attachment and caregiving behavioral systems.

3. Psychopathy and love

Maslow in his classic paper, A theory of human motivation, declared, "The so-called 'psychopathic personality' is another example of permanent loss of the love needs. These are people who, according to the best data available, have been starved for love in the earliest months of their lives and have simply lost forever the desire and the ability to give and to receive affection (as animals lose sucking or pecking reflexes that are not exercised soon enough after birth) [23]." (Note that this loss of the capacity for love was theoretically linked to early developmental experiences and love is equated with affection.) Contemporaneously with Maslow, Cleckley described psychopathic individuals in *The Mask of Sanity* and developed a set of criteria for their identification. According to Cleckley (criteria #9), psychopathy is associated with "pathological egocentricity and incapacity for love." He stated (p. 347), "The psychopath [sic]² seldom shows anything that, **if the chief facts were known**, would pass even in the eyes of lay observers as object love (emphasis added)." Why Cleckley connected pathological egocentricity with incapacity for love is not explained in his writing. It is also not immediately apparent what Cleckley meant when he used the word "love" in his criteria. It seems that even he struggled with its definition:

In a sense, it is absurd to maintain that the psychopath's [sic] incapacity for object love is absolute, that is, to say he is (in)capable of affection for another ... He is plainly capable of casual fondness, of likes and dislikes, and of reactions that, one might say, cause others to matter to him. These affective reactions

²It is against ethical guidelines to refer to a person by his/her diagnosis. The author hopes that others will join in not using the term "psychopath" in scientific discourse. This term is also misleading in that it implies categorical status for this construct.

are, however, always strictly limited in degree. In durability they also vary greatly from what is normal in mankind. The term absolute is, I believe, appropriate if we apply it to any affective attitude strong and meaningful enough to be called love, that is, anything that prevails in sufficient degree and over sufficient periods to exert a major influence on behavior (p. 347).

Important to dimensional diagnosis, Cleckley also maintained that an “absolute” incapacity for love is found even in those with an “incomplete manifestation” of psychopathy, who lack the full disorder. Kernberg [24] connected incapacity for love to egocentricity by suggesting that pathological narcissism is the foundation or core of psychopathy. Indeed, many characteristics of pathological narcissism are features of psychopathy, including egocentricity, grandiosity, low empathy, a sense of entitlement, interpersonal exploitativeness, dominance and aggression, hostility and antagonism. Writing in 1956, McCord and McCord disagreed with Cleckley and Maslow. They described psychopathic persons as having “a warped capacity for love” stating, “there are indications that the capacity, however under developed, still exists [25].”

Today many still assume, “psychopaths [sic] are characterized by an inability to form lasting bonds [26].” Lack of bonds is thought to be connected to lack of love, or deficient social emotions. The DSM 5 committee proposed the following prototype description for antisocial/psychopathic personality disorder: “Their emotional expression is mostly limited to irritability, anger, and hostility; *acknowledgement and articulation of other emotions, such as love or anxiety, are rare* (italics added) [27].” Although withdrawn, this prototype description reflects both historical perspectives and a failure to give credence to the many naturalistic observations of psychopathic individuals that appear in the literature. A review of case histories [28–31], research accounts of family members [30], and journalist biographies [32] reveals that many psychopathic individuals do in fact maintain social ties³ over extended years. They often profess love for children and other family members. It is therefore imperative to explain rather than deny social ties, and expressions of affection in psychopathic individuals.

In a unique study, Gawda [33] examined “love scripts” in prisoners with and without the diagnosis of antisocial personality disorder (ASPD). She asked subjects to look at a photograph of a couple hugging each other and to “Imagine you are one of the people in the photograph. Try to identify with your role. Write a story about it.” Those diagnosed with ASPD wrote significantly longer stories than prisoners not diagnosed, but their stories were similar in length to those of non-prisoners. Their stories also described more actors’ traits, strong emotions, presumptions, wishes and self-concentration. Contrary to the proposed DSM prototype, prisoners with ASPD were able to acknowledge and articulate “love” when asked to. This data is consistent with the glibness and superficial charm that may characterize these individuals. It also shows that this group possesses cognitive schema for “love.” Other evidence that antisocial individuals possess knowledge of and articulate love comes from our internet survey of spouses, romantic partners and family member of putative psychopathic individuals. Only a minority of those surveyed reported the individual rarely articulated

³I agree that highly psychopathic individuals are incapable of love; the term “bond” is associated with the term love. Therefore I use the phrase “social ties” to describe the social bonds psychopathic individuals have with family members and friends. The loss of significant relationships may evoke distress in psychopathic persons.

love. When asked to describe in an open ended format the love behavior, many spouses and romantic partners reported being “love bombed” or lavished with attention, affirmations of love and gifts early in the relationship [34].

In a recent paper, myself and colleagues [30] detailed (among other cases) the case of German national Christian Karl Gerhartsreiter, AKA “Clark Rockefeller,” a psychopathic (traits described by forensic evaluators) con artist and convicted murderer who charmed financial executive Sandra Boss. They married and resided together for 12 years. He fathered then kidnapped their 9 year old child when Ms. Boss divorced him (after discovering the deception). While on trial for kidnapping he stated, regarding Ms. Boss, “I absolutely love her; I wish she hadn’t walked out on me.” Regarding their daughter he stated, “I just want to be a father. I just want to be with her, I want to get her up in the morning, send her off to school, walk her to the bus, wait when she comes back and give her something to eat at night and put her back to bed then the same again.” These statements made in court were so convincing that the judge said, “The defendant was by all accounts a loving and devoted father to his daughter.” I mention this case as an example of the many observations that refute the notion that psychopathic individuals (as defined by DSM, Cleckley and PCL-R criteria) do not form lasting social ties or “articulate love.” According to romantic partner and family member accounts, psychopathic individuals often vociferously proclaim love for family members; and as in the case above, psychopathic individuals may display caring behaviors (possibly as part of a presentation management strategy) and so appear loving [34].

The misconception that psychopathic individuals do not express love or form lasting social ties could result in inexperienced clinicians or those trying to strictly apply an erroneous prototype, being misled and missing the diagnosis of psychopathic personality. Because of the high prevalence of this personality type in domestic violence cases [35] and the problems partners have had protecting children from psychopathic parents [30], it is imperative that this misconception be addressed and the nature of social ties in psychopathic persons clarified. While I do agree that psychopathy is connected to an incapacity for love, determining this incapacity may be practically difficult due to behaviors associated with the dominance behavioral system (see below). Inasmuch as capacity for love depends on the attachment and caregiving behavioral systems, it follows that either one or both of these is affected by psychopathy.

3.1. Psychopathy and the attachment behavioral system

A number of recent studies have examined the construct of psychopathy from the perspective of the Five Factor Model. Psychopathy entails reduced scores in five facets of agreeableness (straightforwardness, altruism, compliance, modesty, tender mindedness; three facets of conscientiousness (dutifulness, self-discipline, and deliberation); and one facet each of neuroticism (self-consciousness) and extraversion (warmth); and elevated scores in impulsiveness from neuroticism and excitement seeking from extraversion [36]. There exists considerable data regarding the relationship between these traits and aspects of the scientifically validated working definition of love described herein. The Five Factor Model thus generates predicted relationships between attachment and the psychopathic personality pattern. Given

their characteristically low levels of agreeableness and high levels of interpersonal antagonism such adults would be expected to display a dismissive or avoidant attachment style and obtain low pleasure from closeness. However, some psychopathic individuals characteristically have positive emotions, low anxiety and are prone to excitement seeking (activation of the exploration system), all these features are associated with secure attachment in adults. Psychopathic individuals may also be quite sociable related to agenic extraversion and dominance, again traits statistically linked to secure attachment. Therefore, lack of pleasure in closeness or the dismissive/avoidant style may not be apparent on casual observation or self-report. Psychopathic individuals who enjoy dominating and manipulating others may even find social interactions quite enjoyable and therefore display charm and positive affect. Relationships based on sexual gratification may also bring them pleasure. There is a subset of psychopathic individuals who are particularly prone to the negative emotions anger and anxiety [37]. These individuals may display insecure forms of attachment. Although statistically lack of secure attachment is associated with low self-esteem and low social self-efficacy, "insecurity" in psychopathic individuals has different correlates. It links to egocentrism, unstable self-esteem, entitlement and a desire to maintain power and status in the face of uncertainty in being able to do so [38].

Temperament and Character Inventory (TCI) Novelty Seeking is related to Big Five excitement seeking and tends to be elevated in antisocial individuals; this trait has a weak relationship to attachment anxiety and no relationship to avoidant attachment. TCI Reward Dependence is a measure of the rewarding properties of relationships. Reward Dependence is low in antisocial individuals; and low reward dependence, like low agreeableness is weakly related to avoidant attachment. TCI harm avoidance is low in antisocial individuals and high in anxious individuals, and is moderately strongly related to anxious attachment [39]. In summary, personality traits studies suggest that psychopathic personality may not be strongly associated with any particular attachment style.

Interestingly, some psychopathic people are classified as attachment secure in their romantic relationships. Using the Levenson Self-Report Psychopathy Scale, one study found that primary psychopathy positively predicted greater intimacy, passion and commitment as measured by the Triangular Love Scale [40]. In this and other studies, secondary psychopathy (equivalent to high PCL-R Factor 2 scores) predicted abusive behavior and relationship dissatisfaction [41]. Using the self-report Psychopathic Personality Inventory (PPI), Dindo and Fowles found primary psychopathy to be significantly positively associated with the "social closeness" component of the Multidimensional Personality Questionnaire (MPQ) [41]. High scorers on this scale describe themselves as: sociable, liking to be with people; taking pleasure in and valuing close personal ties; warm and affectionate; turning to others for comfort and help. In contrast to PPI Factor 1, PPI Factor 2 was negatively associated with "social closeness." Another study also found PPI total scores to be unrelated to attachment insecurity [42].

Psychopathic individuals can differ with respect to PCL-R Factor 1 and Factor 2 symptoms, individuals with more Factor 1 and fewer Factor 2 symptoms may appear "securely attached" due to the presence of charm, positive emotions and social skills. One study examined the four PCL-R interpersonal/affective features most predictive of psychopathy (callousness/lack

of empathy, glibness/superficial charm, lack of remorse/guilt and shallow affect) as correlated with self-reported interpersonal behavior. Psychopathic individuals reported less self-directed hostility (less harsh introjects) and perceived significant others to withdraw less even during arguments [43]. In support of a lack of association between psychopathy and insecure attachment, Brennen and Shaver found a lack of association between self-reported attachment style and a Personality Disorder Questionnaire Factor they labeled “psychopathy” [44].

Consistent with the importance of high Factor 2 scores in predicting attachment insecurity, psychopathic personality is more clearly associated with avoidant or dismissive attachment in criminal populations. Offenders, irrespective of the degree of psychopathy are likely to show less secure attachment, report more instability in relationships, less emotional attachment to others, and a strong wish for personal autonomy. Violent offenders are by no means all insecurely attached [45]. Both Frodi et al. [46] and van IJzendoorn et al. [47] found that secure attachment (assessed by the Adult Attachment Interview [AAI]) did exist but was uncommon among personality disordered criminal offenders. These studies in addition to that of Rosenstein and Horowitz [48] point to an overrepresentation of avoidant attachment representations among individuals with ‘externalizing’ problems (again consistent with an association between Factor 2 and insecure attachment). Brody and Rosenfeld [26] examined object relations in psychopathic offenders also finding that insecure attachment was significantly correlated with Total PCL:SV and Factor 2 scores but not with scores on Factor 1.

Given that the research linking attachment with antisocial/psychopathic personality seems inconsistent, it is curious that the disorder has been so strongly connected to a lack of love [49, 50]. According to behavioral systems theory, love involves caregiving (and sometimes sex) in addition to attachment. Furthermore, social reward and resultant positive affect may also be obtained from dominating others. The next sections reveal that the data regarding the involvement of the caregiving, dominance and sexual systems in psychopathy is stronger than that implicating the attachment system. That a “parasitic lifestyle” is a symptom of psychopathy speaks against psychopathy being associated with an inability to get material needs met through relationships (the goal of the attachment behavioral system). Clearly psychopathic individuals do seek social ties for that purpose.

3.2. Psychopathy and the caregiving behavioral system

There is strong support for the idea that psychopathy is associated with impairment in the caregiving behavioral system (CGS). Empathy, which is critical to CGS working models is impaired by psychopathy [51]. Impaired empathy (callousness) is diagnostic of psychopathy and failure to care for children is a DSM III-R diagnostic criteria for antisocial personality disorder [52]. The Big Five personality traits associated with psychopathy are those associated with low warmth toward children, authoritarian (dominating) and neglectful parenting. One study assessed mothering by interview and observation in a group of women diagnosed as antisocial through Minnesota Multiphasic Personality Inventory-2 (MMPI-2) profiles [53]. Antisocial mothers showed lack of warmth, passivity/neglect, harsh/abusive discipline, inconsistent/ineffective discipline, poor monitoring and supervision, and possessed aggressive values. Another study assessed psychopathy and attachment patterns in relation to maternal behavior in incarcerated female offenders. Psychopathy correlated with dismissive attachment patterns

in women and higher rates of voluntary relinquishment of young children [54]. With respect to fathers, Kirkman [55] interviewed partners of psychopathic men. These partners reported the men psychologically abused children by: “(1) lying to them; (2) ignoring them; (3) failing to provide for them; (4) bullying and terrifying them; (5) breaking promises to them; and (6) destroying their toys.” I have found that psychopathic parents do give care to children and support them financially; however, this care is often inconsistent and out of sink with the needs of the child [30]. Psychopathic parents do seek custody of children through the family courts often to exact revenge on a former partner or to avoid financial loss or responsibility. Psychopathic parents may also choose “favorites” and “targets” from among the children of the family; targets are rejected and abused while favorites are overindulged in a manner that serves the needs of the psychopathic parent. These aberrant parenting behaviors reflect lack of caregiving internal working models, low sensitivity and responsiveness derived from lack of empathy, as well as low warmth which may be associated with little pleasure in intimacy. Given the deficits in the CGS, it is remarkable that psychopathic persons function as parents at all. As discussed below, caregiving behaviors may serve power goals and so also reflect dominance motives. The dominance behavioral system enacts coercive control, harsh/abusive discipline, aggressive values, lying, and other aggressive acts.

One recent study examined impaired empathy in male perpetrators of intimate partner violence and its relationship to psychopathic traits as measured by the Self-Report Psychopathy Scale [56]. Psychopathy scores were significantly correlated with impaired perceptions of wife and other female expressions of both happiness and fear. Expressions of happiness may actually trigger aggression due to happiness being misinterpreted as disgust. There was a positive relationship between psychopathy and the perpetration of intimate partner violence; however this relationship was only weakly mediated by impaired emotion recognition. These results support the contention that impaired empathy alone does not explain aggression. Impaired empathy is not specific to antisocial disorders. The apathetic responses toward others’ distress in individuals with autism spectrum disorders (ASDs) contrast with the aggressive responses toward others’ distress seen in those with antisocial disorders. Hence, it appears that both ASDs and antisocial disorders involve disruption in social reward, empathy and the CGS. However, only antisocial individuals are characteristically manipulative and instrumentally aggressive. These observations speak against deficits in empathy as directly causal to aggressive interpersonal behavior. Instead a specific motive linked to activation of the dominance system is likely causal to antisocial behavior [57] as discussed in the following section.

4. Psychopathy and the dominance behavioral system

Clinical observations and numerous studies link DBS functioning to psychopathy. Non-verbal dominance behavior including making eye contact with the interviewer, using hand gestures, leaning forward and diminished smiling is common in psychopathic individuals [58, 59]. Bursten [60] described the power motivation of the psychopathic individuals in his clinical practice as follows: “the intention to *influence the other* by employing a deception of some sort, and the *feeling of exhilaration* at having put something over on the other person if the deception is successful...The manipulative personality.....is driven to manipulate primarily by his

inner dynamic position...He will *seek out situations* where he can manipulate and will tend to provoke conflict in goals in order to set the stage for his manipulation [60].” In the only empirical study of power motivation, delinquent girls were found to have elevated levels [61].

In a study examining responses to the semi-projective interviewer administered Sentence Completion Test (SCT) in a group of offenders, PCL-R psychopathy correlated with an ego-centric, manipulative interpersonal orientation, increased ideation regarding possessing power and dominating others, and reactance. Power concern and the use of profanity formed a factor which was not specific for high PCL-R scores. However, the factor was very *sensitive for the absence of PCL-R psychopathy* in that “if a subject did not manifest the indicators of psychopathy in the SCT, he was almost certainly not a psychopath [sic] [62].”

Dominance behavior is diagnostic of psychopathy. The interpersonal facet items of the PCL-R: glibness and superficial charm, grandiose sense of self-worth, pathological lying, and cunning/manipulative behavior comprise a dominance style that is typical of psychopathy. This psychopathy-related bi-strategic dominance style is adaptive in that it enables individuals to attract and extract positive investment from others including friends, extended family, children and potential mates [28, 31, 31, 34]. Klein [63] explained why pathological lying signals dominance motivation stating, “Above all every deception, every imposture is an assumption of power. The person deceived is reduced in stature, symbolically nullified, while the imposture is temporarily powerful, even greater than if he were the real thing.” At least three Comprehensive Assessment of Psychopathic Personality-Institutional Rating Scale (CAPP-IRS) domains index the DBS: the dominance domain (domineering, deceitful, manipulative, insincere, garrulous), the self-domain (self-centered, self-aggrandizing, sense of uniqueness, sense of entitlement, sense of invulnerability, self-justify) and the behavioral domain (aggressive, disruptive). In answering the question, “What is a Psychopath [sic]?” experts and lay people in the United States and Europe [64–67] consistently rate the self and dominance domains as prototypical of psychopathy.

The Interpersonal Measure of Psychopathy developed by Kosson and colleagues [68] assesses, alliance seeking, expressed narcissism, showmanship and the degree to which the subject incorporates the interviewer into stories. Each of these reflects ingratiating or relatively “prosocial” dominance strategies. IM-P total scores correlate significantly with PCL-R total, Factor 1, and Factor 2 [68–70]. IM-P total scores also correlate with IASR-B5 observer-rated and self-rated dominance [68, 70]. Due to dominant interpersonal behavior, psychopathy maps into quadrant 2 of interpersonal circumplex space as assessed by both observational (CIRCLE) and self-report measures (IAS, IASR-B5 and IIP). Individuals placed in the mid-section of quadrant 2 are: arrogant, manipulative, cynical, exhibitionistic, sensation-seeking, Machiavellian, and vindictive [71].

Instrumental aggression is hurtful behavior directed toward achieving power through intimidation and subjugation. In an extensive literature, psychopathy, is associated with instrumental, reactive, relational and laboratory aggression [72–75]. Factor 1 correlates with these more than does Factor 2, except for reactive aggression [74]. Instrumental aggression is more strongly associated with psychopathy than is reactive aggression [75]. Psychopathy also predicts the use of social aggression in mating competition [76]. The next section describes the sexual behavioral system and link this system to manifestations of psychopathy.

5. Psychopathy and the sexual behavioral system

A discussion of the relationship between sociosexuality⁴ and individual differences in general personality traits is pertinent to this discussion as is the relationship between psychopathy and sociosexual orientation. Sensation seeking, low agreeableness and low conscientiousness are linked to psychopathic personality and these traits are associated with less restricted sociosexual orientation. As part of the International Sexuality Description Project, 13,243 participants from 46 nations responded to self-report measures of personality and sexuality [77]. Several traits showed consistent links with unrestricted sociosexuality. Extraversion was universally associated with unrestricted sociosexuality, having engaged in short-term mate poaching attempts, having succumbed to short-term poaching attempts, and lacking relationship exclusivity. Studies have also linked impulsive sensation-seeking to short-term mating [78], including men's patronage of prostitutes [79]. Impulsive sensation-seeking is closely associated with the Big Five dimensions of low agreeableness and low conscientiousness [80, 81]. Not surprisingly, low agreeableness and low conscientiousness have been linked directly short-term mating, especially with measures of extra-pair mating (i.e., succumbing to short-term poaching attempts) [82].

Self-Reported Psychopathy Scale scores significantly correlate with the adoption of a ludus or game playing love style, with participants endorsing items such as "I enjoy playing the 'game of love' with a number of different partners." [83, 84]. Outcalt [85] examined the relationship between ludus love style, attachment (as rated by the Experiences in Close Relationship Scale [ECR]), psychopathy (as rated by the PPI), impulsivity (as measured by the Barratt Impulsiveness Scale) and the tendency to seek social reward (as measured by the Social Errors Scale). The relationship between ludus love and psychopathy was mediated by both attachment avoidance and the tendency to seek social reward. Harris et al. [86] have identified five variables reflecting early, frequent, and coercive sex that associate strongly with psychopathy. Promiscuous sex is also a symptom of psychopathy on the PCL-R, thus research clearly links psychopathy with impersonal sexual behavior. When this approach to sex is combined with aberrant dominance motives, sexual coercion may result.

6. Why do they do that?

Cleckley [28] observed that indeed psychopathic individuals do articulate love in the service of the relationships that meet their needs. He also emphasized the lack of caregiving in psychopathic individuals pointing to an "absolute indifference to the financial, social, emotional, physical, and other hardships which he brings on those for whom he professes love." That these relationships can last over periods of years supports the idea that caregiving rather than "attachment" is primarily affected by psychopathy. This might partly explain why psychopathic individuals possess love schema and can discuss the emotion convincingly—although they do not take care of others, many have been cared for and so understand the concept.

⁴Sociosexuality indexes a person's willingness to engage in uncommitted sex.

Psychopathic individuals do rely on their social ties for at least material support, as evidenced by their parasitic lifestyles; however they are not characteristically the passive, submissive, recipients of care described in reference to attachment and the emotion Japanese label *amae* [87]. Since affective labels may correspond to the activity of neuronal networks, it follows that psychopathic individuals may label their hedonic experience of getting what they want (successful domination), receiving care, or sexual arousal, “love.” It is reasonable to investigate this possibility rather than to assume that psychopathic individuals lack feelings and are lying or confabulating when they use the word love.

The interpersonal symptoms of psychopathy connect to the bi-strategic dominance strategies psychopathic persons employ. Superficial charm, grandiosity, pathological lying, manipulation and abuse are caused by dominance motives and an excessive need for power. The lack of a functioning caregiving system may contribute to this excessive dominance. Psychopathic individuals who lack caring motives only experience arousal of neediness (attachment), dominance (power) and/or sexual motives in the presence of others. Neediness results in parasitism; dominance and sexual motives ultimately result in abusive behavior.

Examination of the normative human personality traits connected to the social behavioral systems reveals a consistent pattern that explains the phenomenology of psychopathic personality. Individuals who are low in agreeableness (high in antagonism) and high in dysinhibition tend to have insecure attachment, deficient caregiving, high dominance and unrestricted sociosexual orientation. It is important to note that psychopathic individuals do have social motivation and may also delight in interacting with others. However, this delight stems from dominance and/or sexual reward as opposed to “love” as defined herein. Although attachment patterns are not uniform in those affected with psychopathy, when the behavioral systems definition of love is applied, psychopathy is associated with profound deficits in ability to love. These deficits stem from self-focus and what appears to be an absence of the caregiving system.

Although psychopathic individuals maintain social ties over periods of years, bonding is clearly impaired in psychopathy. Defects in significance and salience acquisition and salience attribution may causally relate to lack of bonding. These defects may link psychopathy to the addictive disorders which are prevalent in this population. Impaired salience attribution in psychopathy may also explain another curious finding—the gratuitous squandering of possessions and resources. Cleckley puzzled over this self-destructive behavior, “the psychopath [sic] often makes little or no use of what he attains as a result of deeds that eventually bring him to disaster (p. 320) (see also van den Bos et al. [88]).” Psychopathy appears to impair both caring for other people and caring for possessions.

7. How does psychopathy develop?

The ethological framework allows for generation of hypotheses regarding the development of psychopathy. All four social behavioral systems are inborn; however their maturation depends on developmental experiences. The ABS begins to develop in the first year of life in a manner dependent on responsive caregiving. The CGS and empathy begin to develop

shortly after the first year of life. The DBS does not normatively develop until after the second year of life. This important development sequence first noted by Harlow allows for attachment and caregiving bonds to regulate the DBS. Inhibition of dominance motivation, behavior and endocrine responses is one of the functions of love [89]. If either genetic endowment or maturational experiences affect the development of the ABS and CGS, then the result will be excessive dominance motivation and aberrant development of the DBS and SBS. Children incapable of love will be unmotivated to regulate dominance strivings and develop aggressive dominance strategies and perhaps endocrine responses that promote aggression [12] and unrestricted sociosexual orientation. Genetic endowment may also directly increase dominance motivation. An excessive need for power may subsequently erode the CGS caregiving behavioral and physiological responses.

8. What is the (adaptive) function of psychopathy?

Psychopathy may be an adaptive life-strategy of short-term mating and cheating [90, 91]. This strategy entails conceiving or birthing offspring that others care for. Psychopathic individuals thus invest energy in mating effort rather than in nurturing offspring. This strategy is only viable because most other humans are strongly motivated to care for young, even those who are not their own. Psychopathy then can be conceptualized as resulting from human cooperative breeding [92]. In cooperatively breeding species, dominant members of the group produce offspring that are cared for by other group members. Caregiving motivation is high in all non-dominant members of the group. That this strategy is more viable for men than women may account for the higher prevalence of psychopathy in men.

Another possibility is that psychopathy is not an adaptation and actually has no function and is maladaptive [93]. Psychopathy may simply be a bi-product of strong selection for social dominance [94] or lack of caregiving adaptations in some humans (see next section). Selection for social dominance would also account for higher prevalence of psychopathy in men. Across vertebrates, there is a trade-off between mating effort and caregiving such that the physiological responses that favor dominance and mating effort, suppress caregiving [95]. That psychopathy is commonly found in political leaders is evidence for the bi-product of dominance theory. Most psychopathic individuals are excessively destructive to their own families and to society; their aggression is greater than that required to ensure parasitism and that others care for their offspring. These observations suggest that while dominant behavior is an adaptation, psychopathy itself is a disorder and not an adaptation. If psychopathy is the result of cooperative breeding, and it is a disorder, it is a disorder of human society and not only of individuals.

9. What is the phylogeny of psychopathy?

Although other Hominoidea pair-bond, humans are the only cooperatively breeding species. The monogamous apes live as pairs with juvenile offspring and not in a multi-male, multi-female

society. Chimpanzee society is promiscuous multi-male, multi-female and is shaped by attachment and dominance relations but not by caregiving relationships. Chimpanzees are highly aggressive and can be infanticidal [96]. Males have been observed to kill both alliance partners and members of other groups [97, 98]. Chimpanzee males could be described as “psychopathic” due to high levels of sexual promiscuity and sexual coercion, impulsivity, and aggression, but they do not engage in parasitism. “Altruism” in chimpanzee society is reciprocal in nature and chimpanzees have exquisite memory for exchange partners and cheaters [97]. Chimpanzees do not provision one another with food as humans do [99]. Chimpanzee young are not fed by their mothers following weaning. Mothers allow young to feed beside them and to take food from them; however, they do not give food to their young. Juvenile chimpanzees assist their mothers by protecting and entertaining siblings; non-siblings do not practice alloparenting. Hence, the nature of chimpanzee society does not allow for the full expression of psychopathy.

Cooperative breeding in humans likely evolved out of a social structure similar to that of chimpanzees [92]. Attachment and competition thus shaped human society prior to the current social structure in which caregiving figures so prominently. Due to sexual conflict⁵ the presence of alloparenting in females of a primate species tempers the dominance relations among males [100]. Recent evolution of the caregiving system may explain its absence in the percentage of the human population that is psychopathic. Anthropologists still do not agree as to when extended caregiving in humans evolved, but alloparenting may have begun with *Homo erectus* [101]. The invention of farming increased the rewards of parasitism (living off the labor of others). If psychopathy began with farming, it is a recently evolved human condition (10–15,000 years old).

10. Conclusions

The emotional and self-regulatory deficits of psychopathic personality have received much research attention with neglect of research into the motivational aspects of the disorder. The ethological framework provides a scaffold for a coherent motivational theory of psychopathy (**Table 1**). This theory proposes that the behaviors manifested by psychopathic individuals are caused by excessive and aberrant dominance responses and impaired salience attribution. The caregiving behavioral system and caring motivation is absent or highly disordered in psychopathic individuals. The sexual behavioral system of psychopathic individuals does not bond them with partners, and lack of bonding leads to sexual promiscuity and sexual coercion. Social ties are a “resource control strategy” for psychopathic individuals. Many maintain long-term social ties and show caregiving behaviors in the service of these ties which meet their material needs and power goals. It should be noted that without social ties, individuals who enjoy dominance, lack other individuals to dominate. Without willing helpers psychopathic persons could not survive or reproduce. Psychopathy is thus also a social disorder. Phylogenetic analysis reveals that chimpanzees (humans’ closest extant related species) do not engage in caregiving; there are therefore no parasitic chimpanzees. Chimpanzees are however, highly aggressive and do kill conspecifics, even alliance partners.

⁵Sexual conflict occurs when adaptation in one sex limit the expression of adaptations in the opposite sex.

Behavioral systems and motivation in psychopathy			
Behavioral system and associated goal	Psychopathy and system internal working model	Psychopathy and system behaviors	Psychopathy and system social bonds
Attachment system Goal: safety, security, physical needs met through others	Although psychopathic individuals are said not to “trust” others, family members and associates are viewed as sources of material sustenance and as sources of positive mirroring of self	Psychopathic individuals obtain material resources and positive self-mirroring from others through direct requests, conning and manipulation. Many adopt a parasitic lifestyle and are thus “dependent” on family members and associates	Attachment bonds serve the material and psychological needs of the psychopathic individual
Caregiving system Goal: to foster the well-being and growth of others	Psychopathic individuals appear to view themselves as the recipients of care from others. Their internal working models do not include the care of others. The common term for this internal working model is “sense of entitlement”	Deficits in emotional empathy prevent the assessment of and motivation to attend to the needs of others. Psychopathic individuals show profound deficits in caring behavior toward children, romantic partners, family members and associates	Caregiving bonds appear not to exist or to be very weak in psychopathic individuals
Sexual system Goal: mating and other sexual activities	Others are viewed as objects for sexual gratification	Precocious and promiscuous sexual activity may be central to psychopathy	Unrestricted sociosexuality with a failure to form sexual bonds with partners
Dominance system Goal: control over social and material resources	The presence of others activates the dominance system of psychopathic individuals. Others are viewed as objects to be controlled. Control by others is highly aversive to psychopathic individuals and is thus viewed negatively. Social hierarchies are salient	Interpersonal dominance through “prosocial” and coercive behaviors. Reciprocity and “charity” in the service of power goals. Psychopathic individuals seek attention and positive mirroring from others as feedback regarding superior status	Dominance bonds may exist. Psychopathic individuals behave as though they “own” others. They defend social connections with those they own to ensure physical and psychological needs are met

Table 1. Summary of human social behavioral systems as impacted by psychopathy.

Author details

Liane J. Leedom
Address all correspondence to: lleedom@bridgeport.edu
University of Bridgeport, Bridgeport, CT, USA

References

- [1] Arnett PA. Autonomic responsivity in psychopaths: A critical review and theoretical proposal. *Clinical Psychology Review*. 1997 Dec;**17**(8):903-936
- [2] Blair J, Mitchell D, Blair K. *The Psychopath: Emotion and the Brain*. Malden, MA: Blackwell; 2005. p. 212
- [3] Hare RD, Neumann CS. Psychopathy. In: *Oxford Textbook of Psychopathology*. 2nd ed. [Internet]. New York, NY, US: Oxford University Press; 2009. pp. 622-650
- [4] Partridge GE. Current conceptions of psychopathic personality. *The American Journal of Psychiatry*. 1930 Jul 1;**87**(1):53-99
- [5] Nobel Media AB. The Nobel Prize in Physiology or Medicine 1973 [Internet]. NobelPrize.org. 2014 [cited 2017 Mar 12]. Available from: http://www.nobelprize.org/nobel_prizes/medicine/laureates/1973/
- [6] Burkhardt RW. *Patterns of Behavior: Konrad Lorenz, Niko Tinbergen, and the Founding of Ethology*. Chicago, IL, US: University of Chicago Press; 2005. p. 649
- [7] Baerends GP. Functional organization of behavior. In: Corner MA, Swaab DF, editors. *Perspectives in Brain Research*. New York, NY, US: Elsevier Biomedical Press; 2011. p. 427. (Progress in Brain Research; vol. 45)
- [8] Tinbergen N. On aims and methods of ethology. *Zeitschrift für Tierpsychologie*. 1963; **20**(4):410-433
- [9] Barlow, George W. Bateson, Peter P. G. (Ed); Klopfer, Peter H. (Ed). Has sociobiology killed ethology or revitalized it?. *Perspectives in ethology*, Vol. 8: Whither ethology?, (pp. 1-45). New York, NY, US: Plenum Press, xiv; 1989, 278 pp.
- [10] Hinde RA, Grossmann KE, Grossmann K, Waters E. Ethology and attachment theory. In: *Attachment for Infancy to Adulthood: The Major Longitudinal Studies*. New York, NY, US: Guilford Press; 2005. pp. 1-12
- [11] Leedom LJ. Human Social Behavioral Systems: Ethological framework for a unified theory. *Human Ethology Bulletin*. 2014;**29**:39-65
- [12] Johnson SL, Leedom LJ, Muhtadie L. The dominance behavioral system and psychopathology: Evidence from self-report, observational, and biological studies. *Psychological Bulletin*. 2012 Apr 16;**138**(4):692-743
- [13] Preston SD. The origins of altruism in offspring care. *Psychological bulletin*. 2013;**139**.6: 1305-1321
- [14] Bowlby J. (1944). Forty-four juvenile thieves: Their characters and home life. *International Journal of Psycho-Analysis*, 25, 19-52
- [15] Bowlby J. *Attachment and Loss: Volume 2. Separation*. New York, NY, US: Basic Books; 1973

- [16] Bowlby J. By ethology out of psycho-analysis: An experiment in interbreeding. *Animal Behaviour*. 1980;**28**(3):649-656
- [17] Fligel SB, Akil H, Robinson TE. Individual differences in the attribution of incentive salience to reward-related cues: Implications for addiction. *Neuropharmacology*. 2009;**56**(Suppl 1):139-148
- [18] Goldstein RZ, Volkow ND. Drug addiction and its underlying neurobiological basis: Neuroimaging evidence for the involvement of the frontal cortex. *The American Journal of Psychiatry*. 2002 Oct 1;**159**(10):1642-1652
- [19] Depue RA, Morrone-Strupinsky JV. A neurobehavioral model of affiliative bonding: Implications for conceptualizing a human trait of affiliation. *Behavioral and Brain Sciences*. 2005 Jun;**28**(3):313-395
- [20] Feldman R, Weller A, Zagoory-Sharon O, Levine A. Evidence for a neuroendocrinological foundation of human affiliation: Plasma oxytocin levels across pregnancy and the postpartum period predict mother-infant bonding. *Psychological Science*. 2007;**18**(11):965-970
- [21] Fuentes A. Patterns and trends in primate pair bonds. *International Journal of Primatology*. 2002 Oct;**23**(5):953-978
- [22] Shaver PR, Mikulincer M. A behavioral systems approach to romantic love relationships: Attachment, caregiving, and sex. In: Sternberg RJ, Weis K, editors. *The New Psychology of Love*. New Haven, CT, US: Yale University Press; 2006. pp. 35-64
- [23] Maslow AH. A theory of human motivation. *Psychological Review*. 1943 Jul;**50**(4): 370-396
- [24] Kernberg OF. Pathological narcissism and narcissistic personality disorder: Theoretical background and diagnostic classification. In: Ronningstam EF, editor. *Disorders of Narcissism: Diagnostic, Clinical, and Empirical Implications*. Washington, DC, US: American Psychiatric Association; 1998. pp. 29-51
- [25] McCord W, McCord J. *Psychopathy and Delinquency*. [Internet]. Oxford, England: Grune and Stratton; 1956
- [26] Brody Y, Rosenfeld B. Object relations in criminal psychopaths. *International Journal of Offender Therapy and Comparative Criminology*. 2002 Aug;**46**(4):400-411
- [27] American Psychiatric Association DSM-5 Personality Disorders Work Group. Proposed Revision | APA DSM-5 [Internet]. 2010 [cited 2010 Feb 10]. Available from: <http://www.dsm5.org/ProposedRevisions/Pages/proposedrevision.aspx?rid=16#>
- [28] Cleckley HM. *The Mask of Sanity: An Attempt to Clarify Some Issues about the So-called Psychopathic Personality*. St. Louis, MO: C. V. Mosby Co.; 1964. p. 520
- [29] Fersch E. *Thinking About Psychopaths and Psychopathy: Answers to Frequently Asked Questions With Case Examples*. iUniverse, Inc.; Lincoln, NE USA. 2006

- [30] Leedom LJ, Bass A, Almas LH. The problem of parental psychopathy. *Journal of Child Custody*. 2013;**10**(2):154-184
- [31] Leedom LJ, Geislin E, Hartoonian Almas L. "Did he ever love me?" A qualitative study of life with a psychopathic husband. *Family & Intimate Partner Violence Quarterly*. 2013;**5**(2):103-135
- [32] Morehead P. *Green River Serial Killer—Biography of an Unsuspecting Wife*. 1st ed. Wellesley, MA: Branden Books; 2007
- [33] Gawda B. Syntax of emotional narratives of persons diagnosed with antisocial personality. *Journal of Psycholinguistic Research*. 2010;**39**(4):273-283
- [34] Leedom LJ, Andersen D. *Antisocial/psychopathic personality: What do family members, romantic partners and friends report?* Society for the Scientific Study of Psychopathy Montreal, Canada; 2011
- [35] Dutton DG, Golant SK. *The Batterer: A Psychological Profile*. New York, NY, US: Basic Books; 1997. p. 230
- [36] Lynam DR, Widiger TA. Using a general model of personality to identify the basic elements of psychopathy. *Journal of Personality Disorders*. 2007 Apr;**21**(2):160-178
- [37] Skeem J, Johansson P, Andershed H, Kerr M, Louden JE. Two subtypes of psychopathic violent offenders that parallel primary and secondary variants. *Journal of Abnormal Psychology*. 2007 May;**116**(2):395-409
- [38] Cale EM, Lilienfeld SO. Psychopathy factors and risk for aggressive behavior: A test of the "threatened egotism" hypothesis. *Law and Human Behavior*. 2006 Feb;**30**(1):51-74
- [39] Picardi A, Caroppo E, Toni A, Bitetti D, Di Maria G. Stability of attachment-related anxiety and avoidance and their relationships with the five-factor model and the psychological model of personality. *Psychology and Psychotherapy: Theory, Research and Practice*. 2005;**78**(3):327-345
- [40] Ali F, Chamorro-Premuzic T. The dark side of love and life satisfaction: Associations with intimate relationships, psychopathy and Machiavellianism. *Personality and Individual Differences*. 2010 Jan;**48**(2):228-233
- [41] Savard C, Sabourin S, Lussier Y. Male sub-threshold psychopathic traits and couple distress. *Personality and Individual Differences*. 2006 Apr;**40**(5):931-942
- [42] Russell LA. Examination of the Psychopathic Personality Inventory-revised and the Psychopathy Construct in a College Sample. [Internet]. [US]: ProQuest Information & Learning; 2005
- [43] Dillinger RJ. An Exploration of the Interpersonal Features of Psychopathy. [Internet]. [US]: ProQuest Information & Learning; 2008
- [44] Brennan KA, Shaver PR. Attachment styles and personality disorders: Their connections to each other and to parental divorce, parental death, and perceptions of parental caregiving. *Journal of Personality*. 1998 Oct;**66**(5):835-878

- [45] Ross T, Pfäfflin F. Attachment and interpersonal problems in a prison environment. *Journal of Forensic Psychiatry & Psychology*. 2007 Mar;**18**(1):90-98
- [46] Frodi A, Dernevik M, Sepa A, Philipson J, Bragesjö M. Current attachment representations of incarcerated offenders varying in degree of psychopathy. *Attachment & Human Development*. 2001 Dec;**3**(3):269-283
- [47] van IJzendoorn MH, Feldbrugge JTTM, Derks FCH, de Ruiter C, Verhagen MFM, Philipse MWG, et al. Attachment representations of personality-disordered criminal offenders. *American Journal of Orthopsychiatry*. 1997 Jul;**67**(3):449-459
- [48] Rosenstein DS, Horowitz HA. Attachment, personality, and psychopathology: Relationship as a regulatory context in adolescence. *Adolescent Psychiatry*. 1993;**19**:150-176
- [49] Blackburn R, Maybury C. Identifying the psychopath: The relation of Cleckley's criteria to the interpersonal domain. *Personality and Individual Differences*. 1985;**6**(3):375-386
- [50] Colwell JT. An interpersonal method for scoring the tat: Implications for distinguishing individuals with psychopathic symptomatology using Leary's circumplex model. [doctoral dissertation]. [US]: Rosalind Franklin University; 1998
- [51] Decety J, Skelly LR, Kiehl KA. Brain response to empathy-eliciting scenarios involving pain in incarcerated individuals with psychopathy. *JAMA Psychiatry*. 2013 Jun 1;**70**(6):638
- [52] American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*. 3rd ed., text rev. American Psychiatric Association Press; Washington, DC, US; 1987
- [53] Bosquet M, Egeland B. Predicting parenting behaviors from Antisocial Practices content scale scores of the MMPI-2 administered during pregnancy. *Journal of Personality Assessment*. 2000 Feb;**74**(1):146-162
- [54] Taylor MC. *Psychopathy and Attachment in a Group of Incarcerated Females*. [Internet]. [US]: ProQuest Information & Learning; 1998
- [55] Kirkman CA. From soap opera to science: Towards gaining access to the psychopaths who live amongst us. *Psychology and Psychotherapy*. 2005 Sep;**78**(Pt 3):379-396
- [56] Marshall AD, Holtzworth-Munroe A. Recognition of wives' emotional expressions: A mechanism in the relationship between psychopathology and intimate partner violence perpetration. *Journal of Family Psychology*. 2010 Feb;**24**(1):21-30
- [57] Decety J, Michalska KJ, Akitsuki Y, Lahey BB. Atypical empathic responses in adolescents with aggressive conduct disorder: A functional MRI investigation. *Biological Psychology*. 2009 Feb;**80**(2):203-211
- [58] Gillstrom BJ, Hare RD. Language-related hand gestures in psychopaths. *Journal of Personality Disorders*. 1988;**2**(1):21-27
- [59] Rimé B, Bouvy H, Leborgne B, Rouillon F. Psychopathy and nonverbal behavior in an interpersonal situation. *Journal of Abnormal Psychology*. 1978 Dec;**87**(6):636-643

- [60] Bursten B. The manipulative personality. *Archives of General Psychiatry*. 1972 Apr;**26**(4): 318-321
- [61] Widom CS, Katkin FS, Stewart AJ, Fondacaro M. Multivariate analysis of personality and motivation in female delinquents. *Journal of Research in Crime and Delinquency*. 1983 Jul;**20**(2):277-290
- [62] Endres J. The language of the psychopath: Characteristics of prisoners' performance in a sentence completion test. *Criminal Behaviour and Mental Health*. 2004;**14**(3):214-226
- [63] Klein A. *Grand Deception the World's Most Spectacular and Successful Haxes, Impostures, Ruses and Frauds*. New York, NY, US: J B Lippincott Co; 1955
- [64] Hoff HA, Rypdal K, Hystad SW, Hart SD, Mykletun A, Kreis MKF, et al. Cross-language consistency of the Comprehensive Assessment of Psychopathic Personality (CAPP) model. *Personality Disorders: Theory, Research, and Treatment*. 2014 Oct;**5**(4):356-368
- [65] Hoff HA, Rypdal K, Mykletun A, Cooke DJ. A prototypicality validation of the Comprehensive Assessment of Psychopathic Personality (CAPP). *Journal of Personality Disorders*. 2012 Jun;**26**(3):414-427
- [66] Smith ST, Edens JF, Clark J, Rulseh A. "So, what is a psychopath?" Venireperson perceptions, beliefs, and attitudes about psychopathic personality. *Law and Human Behavior*. 2014 Oct;**38**(5):490-500
- [67] Sörman K, Edens JF, Smith ST, Svensson O, Howner K, Kristiansson M, et al. Forensic mental health professionals' perceptions of psychopathy: A prototypicality analysis of the Comprehensive Assessment of Psychopathic Personality in Sweden. *Law and Human Behavior*. 2014 Oct;**38**(5):405-417
- [68] Kosson DS, Steuerwald BL, Forth AE, Kirkhart KJ. A new method for assessing the interpersonal behavior of psychopathic individuals: Preliminary validation studies. *Psychological Assessment*. 1997 Jun;**9**(2):89-101
- [69] Schenley A. *Correlational Analysis of Psychopathic Personality Traits in Male and Female Offenders: A Multitrait-multimethod Approach*. [US]: ProQuest Information & Learning; 2003
- [70] Zolondek S, Lilienfeld SO, Patrick CJ, Fowler KA. The interpersonal measure of psychopathy: Construct and incremental validity in male prisoners. *Assessment*. 2006 Dec;**13**(4):470-482
- [71] Salekin RT, Trobst KK, Krioukova M. Construct validity of psychopathy in a community sample: A nomological net approach. *Journal of Personality Disorders*. 2001 Oct;**15**(5):425-441
- [72] Reidy DE, Wilson LF, Sloan CA, Cohn AM, Smart LM, Zeichner A. Psychopathic traits and men's anger response to interpersonal conflict: A pilot study. *Personality and Individual Differences*. 2013 Nov;**55**(8):957-961
- [73] Reidy DE, Zeichner A, Martinez MA. Effects of psychopathy traits on unprovoked aggression. *Aggressive Behavior*. 2008 Jun 5;**34**(3):319-328

- [74] Seibert LA, Miller JD, Few LR, Zeichner A, Lynam DR. An examination of the structure of self-report psychopathy measures and their relations with general traits and externalizing behaviors. *Personality Disorders: Theory, Research, and Treatment*. 2011 Jul;**2**(3):193-208
- [75] Reidy DE, Shelley-Tremblay JF, Lilienfeld SO. Psychopathy, reactive aggression, and precarious proclamations: A review of behavioral, cognitive, and biological research. *Aggression and Violent Behavior*. 2011 Nov;**16**(6):512-524
- [76] Goncalves MK, Campbell L. The Dark Triad and the derogation of mating competitors. *Personality and Individual Differences*. 2014 Sep;**67**:42-46
- [77] Schmitt DP, Shackelford TK. Big Five traits related to short-term mating: From personality to promiscuity across 46 nations. *Evolutionary Psychology*. 2008;**6**(2):246-282
- [78] Linton DK, Wiener NI. Personality and potential conceptions: Mating success in a modern Western male sample. *Personality and Individual Differences*. 2001 Oct;**31**(5):675-688
- [79] Wilson D, Manual A, Lavelle S. Personality characteristics of Zimbabwean men who visit prostitutes: Implications for AIDS prevention programmes. *Personality and Individual Differences*. 1992 Mar;**13**(3):275-279
- [80] Zuckerman M. The neurobiology of impulsive sensation seeking: Genetics, brain physiology, biochemistry, and neurology. In: *Neurobiology of Exceptionality* [Internet]. New York, NY, US: Kluwer Academic/Plenum Publishers; 2005. pp. 31-52. Available from: <http://search.ebscohost.com/login.aspx?direct=true&db=psyh&AN=2005-04213-002&site=ehost-live>
- [81] Zuckerman M, Kuhlman DM, Joireman J, Teta P, Kraft M. A comparison of three structural models for personality: The Big Three, the Big Five, and the Alternative Five. *Journal of Personality and Social Psychology*. 1993 Oct;**65**(4):757-768
- [82] Barta WD, Kiene SM. Motivations for infidelity in heterosexual dating couples: The roles of gender, personality differences, and sociosexual orientation. *Journal of Social and Personal Relationships*. 2005 Jun;**22**(3):339-360
- [83] Jonason PK, Kavanagh P. The dark side of love: Love styles and the Dark Triad. *Personality and Individual Differences*. 2010 Oct;**49**(6):606-610
- [84] Miller JD, Jones SE, Lynam DR. Psychopathic traits from the perspective of self and informant reports: Is there evidence for a lack of insight? *Journal of Abnormal Psychology*. 2011 Aug;**120**(3):758-764
- [85] Outcalt J. *The Romantic Relationships Associated with Psychopathy: Approach or Avoidance?* [Internet]. [US]: ProQuest Information & Learning; 2008
- [86] Harris GT, Rice ME, Hilton NZ, Lalumière ML, Quinsey VL. Coercive and precocious sexuality as a fundamental aspect of psychopathy. *Journal of Personality Disorders*. 2007 Feb;**21**(1):1-27

- [87] Shiota MN, Keltner D, John OP. Positive emotion dispositions differentially associated with Big Five personality and attachment style. *The Journal of Positive Psychology*. 2006 Apr;**1**(2):61-71
- [88] van den Bos W, Golka PJM, Effelsberg D, McClure SM. Pyrrhic victories: The need for social status drives costly competitive behavior. *Frontiers in Neuroscience* [Internet]. 2013 Oct 23 [cited 2014 Dec 20];**7**:1-11. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3805938/>
- [89] Harlow HF. *Learning to Love*. Oxford, England: Ballantine; 1973
- [90] Coyne SM, Thomas TJ. Psychopathy, aggression, and cheating behavior: A test of the Cheater-Hawk hypothesis. *Personality and Individual Differences*. 2008 Apr;**44**(5):1105-1115
- [91] Mealey L. The sociobiology of sociopathy: An integrated evolutionary model. *Behavioral and Brain Sciences*. 1995;**18**(3):523-599
- [92] Van Schaik CP, Burkart J. Mind the gap: Cooperative breeding and the evolution of our unique features. In: *Mind the Gap: Tracing the Origins of Human Universals*. New York, NY, US: Springer; 2010. pp. 477-497
- [93] Buss DM, Haselton MG, Shackelford TK, Bleske AL, Wakefield JC. Adaptations, exaptations, and spandrels. *American Psychologist*. 1998;**53**(5):533-548
- [94] Leedom LJ. Is psychopathy a disorder or an adaptation?. *Frontiers in Evolutionary Psychology*. 2012;**549**:549-550
- [95] Archer J. Testosterone and human aggression: An evaluation of the challenge hypothesis. *Neuroscience & Biobehavioral Reviews*. 2006;**30**(3):319-345
- [96] Goodall J. Infant killing and cannibalism in free-living chimpanzees. *Folia Primatologica*. 1977;**28**(4):259-289
- [97] de Waal FB. *Chimpanzee Politics: Power and Sex Among the Apes*. Revised Edition. Baltimore, MD, USA: The John Hopkins University Press; 1998. p. 235
- [98] Watts DP, Muller M, Amsler SJ, Mbabazi G, Mitani JC. Lethal intergroup aggression by chimpanzees in Kibale National Park, Uganda. *American Journal of Primatology*. 2006 Feb;**68**(2):161-180
- [99] Jaeggi AV, Stevens JMG, Van Schaik CP. Tolerant food sharing and reciprocity is precluded by despotism among bonobos but not chimpanzees. *American Journal of Physical Anthropology*. 2010 Sep;**143**(1):41-51
- [100] Thierry B, Iwaniuk AN, Pellis SM. The influence of phylogeny on the social behaviour of macaques (Primates: Cercopithecidae, genus *Macaca*). *Ethology*. 2000 Aug **1**;**106**(8):713-728
- [101] O'connell JF, Hawkes K, Blurton Jones NG. Grandmothering and the evolution of *Homo erectus*. *Journal of Human Evolution*. 1999 May;**36**(5):461-485