INVESTIGATING THE ROLE OF PSYCHOPATHIC CHARACTERISTICS IN DECEPTIVE BEHAVIOR

by

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Abstract

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This study investigated the impact of psychopathic characteristics on cues to deception and the ability of targets to successfully deceive. A sample of 80 male community members with a documented history of at least one felony conviction was recruited through an online advertisement to participate in a study of "interpersonal behavior." Participants were administered the Psychopathic Personality Inventory (PPI; Lilienfeld & Andrews, 1996), Hare Self-Report Psychopathy Scale (Hare SRP; Paulhus, Neuman, & Hare, in press), Triarchic Inventory (Patrick, 2008), and a series of questions regarding their lying behaviors and beliefs before being randomly assigned to either a truthful or deceptive condition as part of a mock theft paradigm. Participants subsequently took part in a videotaped interview during which they were instructed to convince the interviewer that they were innocent of the mock theft. The interviews were shown to a sample of 80 undergraduate psychology students who attempted to determine the target's veracity. Finally, videotapes were coded for nonverbal and verbal cues to deception. Results indicate that a variety of psychopathic characteristics are related to overall accuracy of lie-truth judgments by receivers and the manifestation of both nonverbal and verbal cues. Results are discussed in terms of the theoretical relationship between underlying traits associated with psychopathy and deceptive presentations.

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Chapter 1

Lie Detection

The social psychology of deception. For one reason or another, everyone lies. Research conducted by DePaulo and her colleagues (i.e., DePaulo & Bell, 1996; DePaulo & Kashy, 1998; DePaulo, Kashy, Kirkendol, Wyer, and Epstein, 1996; Kashy & DePaulo, 1996) suggests that people lie on average one to two times each day for a variety of prosocial and self-centered reasons (e.g., DePaulo et al., 1996). Developmental research suggests that children begin to understand the minds of others at the age of four, and with this understanding comes the ability to intentionally deceive (Newton, Reddy, & Bull, 2000). While many authors have proposed various definitions of deception (see Burgoon & Buller, 1994; Krauss, 1981; and Mitchell, 1986 to name a few), here we adopt the definition used by Vrij (2008), which requires a degree of intentionality. Vrij (2008) defines deception as "a successful or unsuccessful deliberate attempt, without forewarning, to create in another a belief which the communicator considers to be untrue" (p. 15).

Even though it seems that the typical attitude toward lying is that it is "bad" (Backbier, Hoogstraten, &Meerum Terwogt-Kouwenhoven, 1997; Bok, 1978; DePaulo, 2004; Kowalski, Walker, Wilkinson, Queen, & Sharpe, 2003; Robinson, 1994; Schweitzer, Hershey, & Bradlow, 2006), deception is often thought of as a social skill (DePaulo, Jordan, Irvine, & Laser, 1982) that can be both prosocial (e.g., to reassure and support others; Ennis, Vrij & Chance, 2008) and antisocial (e.g., lying to avoid negative consequences) in nature. When people lie for material gain, or to avoid punishment, their lies are often seen as selfish and disruptive of social rules. However, people may also lie for prosocial purposes. Reasons for lying generally fall along three dimensions (e.g., DePaulo & Kashy, 1998; Ennis et al.,

2008; Vrij, 2008): (1) to benefit oneself (self-oriented) or to benefit another (other-oriented); (2) to gain advantages or avoid costs; and (3) for materialistic or psychological reasons. Serious lies that would be viewed as selfish and/or disruptive of social rules are generally self-oriented lies for material gain, to gain other advantages, or to avoid costs. For example, the suspected thief who lies about his whereabouts the night of a robbery tells a self-oriented lie meant to avoid warranted costs. An example of an other-oriented lie might include a father telling his young son that he played a terrific soccer game, even when he feels that his son played terribly. This lie is meant to increase the child's esteem and maintain the social connection that exists between the father and son. These types of lies are pervasive, but typically have little to no consequence to those outside of the individual relationship.

In an investigation of college students' lying behaviors, DePaulo and her colleagues (1996) found that most people do not regard their lies as serious, and do not plan them or fear being caught. However, self-reported lies told to close friends are disproportionately other-oriented/altruistic in nature, leading some authors to conclude that people communicate love and support by lying to each other (Ennis et al., 2008). Like many social behaviors, the context in which the behavior of lying is performed often dictates the seriousness of the behavior and the consequences associated with being caught.

It is important that in serious situations where the stakes are high, receivers (those who receive possibly truthful or deceptive messages) are able to differentiate between those who lie and those who are truthful. For example, in situations such as police investigations, police officers are faced with the task of discriminating between individuals who are truthful and innocent, and those who are guilty and lying. Jurors are also often asked to decide whether a defendant or other witnesses are being truthful during the course of a criminal trial.

In legal settings, the erroneous identification of a suspect as either lying or truthful could have serious consequences for the administration of justice.

Cues to deception. While physiological and neurological tools for detecting deception allow lie detectors to investigate internal reactions to telling lies (e.g., electrical signals in the brain, blood pressure, galvanic skin response, etc.), human lie detectors rely on what they believe to be overt verbal and nonverbal indications of deception. These potential veracity markers are known as cues to deception. For decades, researchers have attempted to identify truly valid and reliable, diagnostic cues to deception.

Research analyzing verbal and nonverbal cues to deception typically takes one of two forms. Field studies examine lies that occur in real life, such as press conferences, police interrogations, or similar interviews, and attempt to identify verbal and nonverbal behaviors that appear more often in liars than truth-tellers (e.g., Mann, Vrij, & Bull, 2002). In contrast, controlled experimental designs randomly assign research participants to groups in which they are instructed to lie or tell the truth. Lies in controlled experiments range from lies about personal beliefs or emotions, to lies about staged transgressions or mock crimes (e.g., Hartwig, Granhag, Strömwall, & Kronkvist, 2006; Leal & Vrij, 2010).

Theories of how cues emerge. Ekman and Friesen (1969) published one of the first influential theories of cues to deception, and how they emerge. The authors identified two broad categories of cues. *Leakage cues* emerge when a liar attempts to hide something – typically an emotion. For example, when an individual attempts to suppress a facial expression that accompanies an emotion, an identifiable "micro affect display" (displays of

affect that are so brief that they are only at the threshold of recognition) may leak out and betray the liars efforts to conceal (Ekman & Friesen, 1969). The authors define *deception cues* as any display indicating that deception may be occurring, without signifying the nature of the information being concealed (DePaulo et al., 2003).

Zuckerman, DePaulo, & Rosenthal (1981)later proposed three pathways through which cues to deception may emerge: the emotional approach, the cognitive load approach, and the attempted behavioral control approach. None of these perspectives predict that peoples' behavior will automatically change merely because they lie, or that perceived cues only occur when people are lying (Vrij, 2008). Rather, the authors suggest that the more liars experience one of the three factors (i.e., emotion, cognitive load, or attempted control), the more likely they are to exhibit cues to deception. Additionally, the authors point out that these approaches rarely operate independently. It is likely that all three approaches operate simultaneously at various times and in various combinations.

The *emotional approach* to understanding cues to deception is based on the assumption that the act of lying is associated with emotions such as guilt, fear and excitement/delight. It is proposed that experiencing any of these emotions during the act of telling a lie could lead to changes in outward behavior. For example, the liar who experiences fear or guilt may show increased arousal responses such as fidgeting or vocal tremors, or they may withdraw. Similarly, the liar who experiences excitement may display behavioral signs of joy, such as smiling. However, certain interpersonal factors may influence both the frequency and intensity of these emotional responses. A specific discussion of the relationship between psychopathic personality and emotion follows below.

While it is occasionally easier to lie than tell the truth (e.g., when someone's feelings are at stake), the *cognitive load approach* predicts that lies often require more mental resources. For example, liars often need to monitor their own behavior and the behavior of those who they are attempting to deceive. Additionally, liars must simultaneously be careful to maintain consistency in their statements. Indeed, simply formulating a lie may be cognitively demanding. Not only must liars determine whether their stories are plausible, but they must also adhere to what the receiver already knows or may find out (Zuckerman et al., 1981). From a legal perspective, this approach would predict that in an interrogation setting, liars might exhibit signs of increased cognitive load(e.g., stammering, reporting inconsistently, etc.) as they attempt to deliver stories that are consistent with the information and evidence that an interrogator may have, while simultaneously attempting to avoid giving the interrogators new leads (Vrij, 2008).

A second aspect that is likely to affect cognitive load is the notion that liars are less likely to take their credibility for granted (DePaulo et al., 2003; Kassin, 2005; Kassin & Gudjonsson, 2004; Kassin & Norwick, 2004). More specifically, when truth-tellers are questioned about potential indiscretions, they are more likely to harbor an attitude in which they assume their innocence will be obvious. Gilovich, Savitsky, & Medvec (1998) describe this tendency as the *illusion of transparency*, or the belief that one's inner feelings will be outwardly visible. Similarly, Lerner (1980) has described the concept of a *belief in a just world*, whereby people generally believe that people get what they deserve. When truth-telling individuals harbor these types of beliefs, they may be less likely to closely monitor their behavior. More specifically, if an individual who is telling the truth believes that they are plainly visible to receivers as an honest and truthful individual, and that honest people are

treated fairly, they are likely to be less concerned about how their behavior may influence the receiver's opinion.

In addition to the cognitive load required by liars to fabricate lies and monitor their behavior and demeanor, a number of other mental tasks may be required. For example, liars need to monitor the reactions and behaviors of the receiver in order to assess whether they are being believed (Buller & Burgoon, 1996; Schweitzer, Brodt, & Croson, 2002), constantly remind themselves to act and role-play (DePaulo et al., 2003), and suppress the truth while lying (Spence et al., 2001). Finally, while producing truthful responses is often automatic, telling a lie requires intentional activation, which also requires greater cognitive load (Gilbert, 1991; Walczyk et al., 2005).

The literature on the neurological correlates of deception provides some support for the cognitive load approach. Research utilizing functional magnetic resonance imaging (fMRI) and electroencephalography (EEG) has identified numerous brain areas that are activated when an individual is lying. For example, multiple studies have identified increased prefronto-parietal activation during deception (e.g., Kozel et al., 2005). The prefronto-parietal region of the brain is largely associated with tasks such as maintaining attentional focus, suggesting that when individuals attempt to deceive, they are required to exert greater cognitive load through attention. Additionally, other fMRI studies have identified significant activation in the right inferior frontal gyrus (Konishi, et al., 1999) associated with response inhibition, and the left inferior frontal cortex (Langleben et al., 2005), which has been identified as the premier locus of behavioral control. These findings present empirical support for the notion that a significant amount of cognitive activity is required by liars who

need to simultaneously attend to their presentation, inhibit responses, and control their behavior.

A recent study by Verschuere, Spruyt, Meijer, and Otgaar (2011) investigated the overall difficulty of lying by asking participants to respond truthfully and deceptively to a series of basic "yes or no" questions. The study found that in general, participants took longer to respond deceptively than truthfully, and that repeated truthful responses further increased the time it took to respond deceptively. The authors interpreted these results as a further indication that lying is generally more difficult/cognitively demanding than telling the truth. Interestingly, the authors found that when participants spent time practicing responding deceptively, their deceptive response times significantly decreased. The ability of participants to reduce their deceptive response times through practice suggests that individuals who are predisposed to lying may find the task less cognitively demanding, resulting in a diminished likelihood of displaying cues related to cognitive demand.

Other studies have investigated the impact of cognitive load on overt behaviors while lying. For example, Bagley and Manelis (1979) found that when participants are presented with cognitively demanding tasks, they tend to blink less than controls. Additionally, others have found that when participants were asked to perform complex tasks, they made more speech hesitations and speech errors, spoke slower, paused more, waited longer before giving answers (Goldman-Eisler, 1968), made fewer hand and arm movements and displayed more gaze aversion (Ekman, 1997; Ekman & Friesen, 1972). Vrij (2008) suggests these phenomena may occur due to cognitive demand reducing overall animation. Interestingly, studies on forensically relevant populations (i.e., psychopaths) have uncovered some

conflicting results regarding various manifestations of behavioral animation while lying. An in depth discussion of these results and related theoretical issues follows later.

The *attempted behavioral control approach* suggests that since liars may be aware of the fact that others are paying attention to their reactions, they may attempt to control their behavior (e.g., Buller & Burgoon, 1996; Burgoon & Buller, 1994; Burgoon, Buller, Floyd, & Grandpre, 1996). For example, liars may attempt to control behaviors that they believe make them appear less honest, while attempting to show behaviors that they believe appear credible (Vrij, 2008). However, liars are only able to control their behavior to a certain extent. For example, due to the fact that they are paying close attention to their reactions, liars may appear rigid and over-controlled (Gozna, Vrij, & Bull, 2001). Additionally, some behaviors are beyond the control of the liar (e.g., strongly experienced emotions and tone of voice; Vrij, 2008). The attempted behavioral control approach predicts that those behaviors that are most difficult to control will give the lie away (Ekman & Friesen, 1974).

As with the emotional approach and the cognitive load approach, there are a number of factors that may influence the likelihood that cues emerge via the attempted behavioral control approach. Certain personality characteristics may affect the likelihood that an individual scrutinizes their own behavior. For example, the degree to which an individual is sensitive to perceived scrutiny may be affected by their level of self-consciousness, or self-esteem (Mor & Winquist, 2002). Conversely, those who exhibit personality styles with lower levels of self-consciousness may be less likely to be sensitive to scrutiny, and therefore less likely to monitor their behavior (see discussion of psychopathy below).

Finally, the *self-presentational perspective* (DePaulo, 1992; DePaulo et al., 2003) argues that liars and truth-tellers share the common goal of convincing a receiver that they

are being honest. Liars and truth-tellers may also be alike in that when they attempt to convince another that they are being truthful, both may attempt to control the impressions that are formed of them, and both may experience heightened emotions and cognitive load. DePaulo and her colleagues proposed that the major difference between liars' and truth tellers' claim of honesty is that truth-tellers' claims are legitimate, while liars' claims are not. Because of this so-called *deception discrepancy*, deceptive statements may be less convincingly embraced than truthful statements, and liars may experience a heightened sense of deliberateness (DePaulo et al., 2003). For these reasons, liars may appear less pleasant, or tense, and may appear to control their behaviors and feelings of deliberateness (DePaulo et al., 2003).

Assessing verbal cues and the Indirect Pathway. Often, researchers focus on various body and facial movements when investigating cues to deception. However, many studies have also investigated the content and structure of verbal statements in order to determine whether verbal cues to deception exist. A number of techniques have been developed in order to determine how deceptive statements might differ from truthful statements. The most frequently used verbal coding systems in the deception detection literature include the criteria-based content analysis (CBCA) portion of the Statement Validity Assessment (SVA; Köhnken & Steller, 1988) tool, and coding systems derived from the literature on Reality Monitoring (RM; Johnson & Raye, 1981). While SVA was originally developed in Sweden (Trankell, 1963) and Germany (Undeutsch, 1967; Arntzen, 1970) for use in determining the credibility of child witnesses' statements in sexual offense trials, Köhnken and Steller (1988) later refined SVA into a formal assessment procedure.

Others have since advocated for the use of SVA to evaluate the testimonies of adults in cases other than sexual offenses (e.g., Köhnken, 2004). The utility of CBCA as a means of differentiating between truthful and deceptive statements is based on Undeutsch's (1967) hypothesis that fabricated statements should differ in certain content features from actual memories based on self-experienced events. While Köhnken (2004) notes that SVA is widely accepted in many Western European countries, Vrij's (2005) analysis of the empirical literature utilizing CBCA in detecting deception suggests the procedure does not meet the guidelines proposed by the Supreme Court of the United States for admissibility of expert scientific evidence set forth in *Daubert v. Merrel Dow Pharmaceuticals Inc.* (1993; see Vrij (2008) for a more in-depth analysis). Additionally, some authors remark that the required training procedures for expertise in SVA are relatively unknown, and the rigor of SVA training varies widely in the empirical literature (Vrij, 2008). Finally, Vrij (2005) also notes that much of the theorizing regarding the underlying mechanisms of CBCA has been conducted *post hoc*, leaving questions about the general strength of the theory underlying its use.

A second approach to identifying verbal cues involves Johnson and Raye's (1981) reality monitoring (RM) model, which is based on research of human memory. The RM model was proposed as a means of distinguishing between memories of externally derived experiences based on perception, and memories derived from internal sources such as reasoning, imagination and thought (Johnson &Raye, 1981). According to RM theory, internally generated memories may differ from externally generated memories in a number of ways. First, externally generated memories should contain more details related to when (temporal details) and where (spatial details) an event took place. Second, externally

generated memories should contain greater references to sensory attributes such as what was seen (visual details) and what was heard (auditory details). Third, externally generated memories should contain more specific information. Finally, internally generated memories should contain more cognitive operational attributes, such as references to one's thoughts and reasoning. Research investigating false memories has found support for RM criteria in differentiating true from false memories (e.g., Schooler, Clark, &Loftus, 1988; Schooler, Gerhard, &Loftus, 1986). Because of the clear parallel between externally derived memories and truthful statements, and internally derived memories and deceptive statements, as well as its strong underlying theoretical support, a number of authors have investigated the utility of RM criteria in differentiating between truthful and deceptive statements (e.g., Alonso-Quecuty, 1992, 1993, 1995; Alonso-Quecuty and Hernandez-Fernaud, 1997; Hernandez-Fernaud and Alonso-Quecuty; Memon, Fraser, Colwell, Odinot, and Masteroberardino, 2010).While Masip et al. (2005) located some contradictory evidence for the utility of RM in deception detection studies, they noted that the most recent research has been promising, and finds that RM approaches appear to discriminate truthful from deceptive statements at above chance levels.

A number of studies have also investigated the utility of the type-token-ratio (TTR) in differentiating truthful from deceptive statements (e.g., Colwell, Hiscock, &Memon, 2002; Dulaney, 1982; Suckle-Nelson, Colwell, Hiscock-Anisman, Florence, Youschak, & Duarte, 2010). The TTR is a lexical tool used to identify the ratio of different words, or types, to the total words used, or tokens, in a particular statement. It has been hypothesized that deceptive statements often become more stereotypical, thereby leading to a decrease in lexical diversity as measured by the TTR (Colwell et al., 2002). In an investigation of truthful and deceptive

statements, Dulaney (1982) found that when participants produced deceptive statements, they used fewer words overall and specifically fewer unique words, resulting in larger TTRs. Colwell et al. (2002) also found that deceptive statement contained greater lexical diversity, leading to larger TTRs. Further research is needed to determine the conditions under which the TTR is most reliable as a means of differentiating between truthful and deceptive statements. Relevant to the discussion below on individual characteristics and psychopathy, other studies suggest a negative correlation between anxiety and TTR such that low anxiety should lead to a higher TTR, while high anxiety should lead to a lower TTR (Porter & Yuille, 1995; Carpenter, 1990). This final point may be important when considering the impact of psychopathic traits related to low anxiety on deception discussed later.

Finally, there is evidence to suggest that lie-catchers can identify subtle differences between liars and truth tellers by relying on less direct means of differentiating the two (e.g., DePaulo, 1994, DePaulo & Morris, 2004). For example, an early study by Hurd and Noller (1988) found that when asked to present their lie detection thought process out loud, lie-catchers appeared less confident when judging deceptive targets. A variety of other indirect techniques have also been utilized as possible means for detecting deception without directly seeking dichotomous veracity judgments. Vrij et al. (2001) found that lie-catchers were better able to differentiate liars from truth-tellers when asked to judge how hard a target appeared to be thinking. Studies have also detected improvements in veracity judgments through the use of indirect measures such as perceived ambivalence (DePaulo, Jordan, Irvine. & Laser, 1982) and subjective ratings of perceived immediacy, eye contact and facial pleasantness (DePaulo et al., 2003).

Do beliefs about cues comport with reality? Research investigating the accuracy rates of human lie detectors has typically found that both laypeople and presumed lie experts such as police officers are poor lie detectors (Ekman & O'Sullivan, 1991; Ekman, O'Sullivan& Frank, 1999; Vrij, 2000; Vrij, 2004; Bond &DePaulo, 2006). The most commonly proposed reason for poor accuracy is that there is a discrepancy between what people believe to be cues to deception (subjective cues), and the cues that are supported in the empirical literature (objective cues; Strömwall, Granhag, & Hartwig, 2004). Strömwall et al. (2004) describe four ways through which beliefs about cues to deception are generally assessed. Most commonly, surveys are conducted to assess layperson and law enforcement officials' beliefs about cues to deception (e.g., Akehurst, Köhnken, Vrij, & Bull, 1996; Granhag, Andersson, Strömwall, & Hartwig, 2004, Vrij, Akenhurst, & Knight, 2006). Closed-ended surveys provide participants with a list of verbal and nonverbal behaviors, and ask whether the listed behaviors are indicative of deceptive behavior and in what way. Open-ended surveys ask participants to list those verbal and nonverbal behaviors they believe to be indicative of deception. Alternatively, some studies ask lie-catchers to self-report on their reasoning in relation to making a judgment about truth and deception, often after watching videotaped interviews (e.g., Forrest, Feldman, & Tyler, 2004; Mann, Vrij, & Bull, 2004). Finally, researchers can assess beliefs about cues to deception by coding videotaped interviews for verbal and nonverbal cues, and then correlating these cues with receivers' veracity judgments (Vrij, 1993). Regardless of the approach used to determine beliefs about cues, research shows that laypeople and presumed lie experts hold remarkably similar beliefs about behaviors indicative of deception (see Table 1). The majority of the behaviors that people connected with deception appear to be associated with stereotypically nervous

behaviors. The most commonly reported belief is that liars are gaze aversive (Strömwall et al., 2004). This belief appears to be universal. Indeed, the Global Deception Research Team (2006) conducted a survey of beliefs about cues to deception in 58 countries and found that in 51 of these,gaze aversion was the most frequently endorsed cue.

Insert Table 1 Here

The empirical research on objective cues to deception has found that very few cues consistently differentiate liars from truth-tellers (DePaulo et al., 2003). DePaulo and her colleagues (2003) conducted a comprehensive meta-analysis of the literature on cues to deception by investigating a combination of 158 verbal and nonverbal cues and 120 participant samples from 11 countries, for a total of 1,338 estimates of the link between telling a lie and a cue. The authors found that while some cues were significantly different for liars and truth-tellers (e.g., pupil dilation, vocal tension and pitch, level of cooperation, talking time, number of details, number of discrepancies, verbal and vocal immediacy, uncertainty, admitted lack of memory, spontaneous corrections, and related external associations), these cues varied in terms of their strength, and the conditions under which they were likely to be present. For example, the authors found that when the motivation to deceive was high, cues such as vocal pitch and nervous appearance were substantially more apparent. While motivation and the presence of a transgression (specifically serious transgressions) are highly forensically relevant, it is noteworthy that the effect sizes for many of these cues were significant, but small (e.g., foot and leg movements, eye contact). This point is important because it highlights the fact that while some cues may be more likely to appear in liars under certain conditions, the presence of any given cue is not necessarily diagnostic of deception.

According to Vrij (2008), there are two explanations for high rates of lie detection error. First, it has been proposed that lie detection is frequently inaccurate due to false stereotypes of deceptive behavior (*the wrong subjective cue hypothesis*). Second, as previously mentioned, meta-analyses suggest that cues to deception are scarce and weak. Consequently, receivers are left with undiagnostic information (*the weak objective cue hypothesis*). Utilizing Brunswik's lens model (Brunswik, 1952), Hartwig and Bond (2011) conducted a series of meta-analyses to investigate the extent to which the wrong subjective cue and weak objective cue hypotheses are supported in the literature. The authors were able to distinguish between the validity of any given cue in terms of the cue's association with actual deception (represented by a *validity coefficient*), and the association between a given cue and a lie-catcher's judgment of deception (represented by a *utilization coefficient*). If the wrong subjective cue hypothesis were true, a discrepancy would exist between validity and utilization coefficients. However, the authors found little support for the wrong subjective cue hypothesis. In general, observers seemed to rely on the most valid cues. Rather, the true discrepancy exists between what naïve lie-catchers report as useful indications of deception, and what they actually use to make deception judgments. For example, as previously mentioned, numerous studies have shown that people report the belief that liars are gaze aversive. However, Hartwig and Bond (2011) found that not only is the validity coefficient for gaze aversion weak, but so is the utilization coefficient, suggesting that while people self-report using gaze aversion as a cue to deception, they don't actually rely on the behavior when making judgments.

The Human Ability to Detect Deception. A large body of work has examined human lie detection accuracy. The majority of this research has found that people are only slightly more accurate than they would be had they simply flipped a coin; a finding that holds true for presumed lie experts such as police officers (Ekman & O'Sullivan, 1991; Ekman, O'Sullivan& Frank, 1999; Vrij, 2000; Vrij, 2004; Bond &DePaulo, 2006). Bond and DePaulo (2006) conducted a meta-analysis of the literature on lie detection accuracy. They analyzed 206 studies and 24,483 judges along with potential moderators to lie detection accuracy, including the motivation of the sender and the receiver, the preparation of the sender, the interaction between the sender and receiver, the expertise of the receiver, the judgment medium, and baseline exposure of the sender prior to questioning. Overall, the authors found a range of correct classifications from 31% to 73%, with a mean classification accuracy of 54% correct lie-truth judgments. The authors also found that receivers are more likely to judge senders' messages as true (weighted mean of 55.23%), and achieve significantly higher accuracy rates when judging truthful statements (61.34% correct) than when judging deceptive statements (47.55% correct). Though the results of this meta-analysis suggest that variables such as the motivation of the sender to be believed, ability to prepare statements, baseline exposure to sender, and mode of presentation of messages to receiver (i.e., audible versus visible) have significant effects on receivers' abilities to detect deceptive participants, it is important to note that these moderating variables failed to elevate the average correct identifications to a level substantially departing from chance. The most important finding from this study is thus that lie-detection in general is a difficult task, and that gathering information outside of the moment of the attempted deception is an important aspect of lie detection.

Lay vs. Law Enforcement Accuracy and Individual Differences. The research investigating whether more externally valid (from a legal perspective) lie-catcher populations (e.g., law enforcement officials) are better at detecting deception has relied on the common sense notion that police officers are more adept at detecting deception because they are more likely to encounter deceptive individuals on a routine basis (Bradford & Goodman-Delahunty, 2008). However, meta-analytic reviews by Aamodt and Custer (2006) and Bond and DePaulo (2006) found that, overall, law enforcement officials' accuracy rates do not exceed those of laypersons. For example, Bond &DePaulo (2008) conducted a meta-analysis of 142 studies that collectively investigated the abilities of 19,801 receivers. The authors concluded that individual differences in lie detection accuracy are miniscule and that when random error is controlled for, even the best judges accuracy ratings are on average no better than chance.

In spite of the general consensus that people are not very accurate at detecting deception, some studies have claimed to identify deception detection "wizards" (O'Sullivan & Ekman, 2004) who are consistently able to accurately detect deception with high accuracy. Ekman and O'Sullivan (1991) evaluated a sample of 509 law enforcement officials from multiple legal agencies as well as judges, psychiatrists, students and lay adults to determine whether certain groups possessed greater accuracy in detecting deception. The participants were all shown one of ten videotapes that contained nurses instructed to lie about their feelings. The authors concluded that while the majority of participants were unable to detect deception above chance levels, U.S. Secret service agents were significantly more accurate than other groups. However, it is noteworthy that the average accuracy rate of Secret Service

agents was approximately 64%, and only 16 of the 34 agents achieved accuracy ratings greater than 60%. Furthermore, Bond (2008) discovered that participants in Ekman and O'Sullivan's (1991) study scored their own tests of lie detection accuracy. Ekman and O'Sullivan did not mention this fact, calling into question the validity of their results. Additionally, other researchers have questioned the ecological validity of studies that ask senders to lie about internal emotions. Köhnken (1987) has questioned whether lying about internal emotions may be an inherently different task as it does not require the sender to fit statements into a scenario. More specifically, in real world investigations, it is typically factual statements that are the focus of inquiry when assessing a witness's credibility. For example, police investigators often have a significant amount of information collected before they interview a suspect. It then becomes the job of the sender to fit the factual information they provide into information the police already have (Bull, 2004).

More recently, Bond (2008) presented 112 law enforcement officials with videotapes of inmates making true and false statements. After conducting two experiments, the authors concluded that two of the 112 law enforcement officials consistently achieved accuracy rates between 80% and 90%. While it would appear that these studies have successfully identified individuals who are experts in detecting deception, the authors' conclusions have been criticized as artifacts of random measurement error (Bond & DePaulo, 2008).

In addition to generally poor accuracy rates, many studies also suggest that law enforcement officials tend to display a deceptive or guilty judgment bias (Ekman et al., 1999; Kassin & Fong, 1999; Porter, Woodworth & Birt, 2000; Meissner & Kassin, 2002; Elaad, 2003; Garrido, Masip, & Herrero, 2004; Kassin, Meissner, & Norwick 2005). Meissner and Kassin (2002) coined the term "investigator bias" or "lie bias" to describe the tendency for

investigators to be more likely to classify messages as deceptive. Indeed, one of the primary dangers for innocent suspects is that the police interrogation process is a persuasive and guilt presumptive process (Meissner & Kassin, 2002). In their study, Meissner and Kassin (2002) incorporated an approach using signal detection theory (SDT) to determine the direction of errors in attempts to identify truthful and deceptive participants. Through their analysis, the authors discovered a relationship between training/experience and the tendency to identify participants as deceptive such that police with more training/experience were more likely to identify participants as deceptive as opposed to truthful. A later study by Kassin, Meissner and Norwick (2005) suggests that this investigator bias may be better described as a tendency by investigators to infer guilt, rather than deception specifically. In their study, the authors presented police investigators with videotapes of inmates confessing to crimes (half were true confessions, half were false). It was found that investigators were more likely to identify confessions as true, leading the authors to believe that the investigator bias is more likely due to assumptions of guilt, rather than assumptions of deceit. It is clear that a tendency by police officers to infer guilt has serious consequences for innocent suspects in police interrogations (Meissner & Kassin, 2002). Many authors suggest that the poor accuracy and guilt-biased tendencies on the part of law enforcement officials are a consequence of inadequate and inconsistent feedback (Vrij, 2008).

Individual Differences in Deceptive Behavior. While a great deal of research has focused on the ability of individuals to detect deception, fewer studies have attempted to investigate the influence of individual characteristics on the ability to successfully deceive. It is possible that the ability to consistently identify deceptive presentations is hindered by the

fact that different individuals lie in different ways, and that individual deceptive presentations are a function of a variety of individual characteristics. In a recent meta-analysis investigating individual differences in lie detection accuracy, Bond and DePaulo (2008) analyzed the characteristics of senders to determine the degree to which accuracy in deception judgments depends on the liar, rather than the lie detector. The authors assessed differences among senders along two dimensions: transparency and credibility (Bond & DePaulo, 2008). Transparency refers to whether individuals are always judged to be lying when telling a lie, and honest when telling the truth. Credibility refers to the frequency with which an individual is judged to be truthful, whether they are lying or not. In order to assess the impact of detectability on veracity judgments Bond and DePaulo (2008) investigated 54 samples in which data was available on the percentage of times that judges correctly detected individual senders' lies and truths. The authors found that some liars are more transparent than others, and therefore less likely to lie successfully. In order to assess individual differences in credibility, the authors investigated 45 samples that contained data on the percentage of times individual senders were judged as truthful. The authors found that individuals vary even more in credibility than transparency. Bond and DePaulo (2008) propose a number of hypotheses regarding why some individuals are more transparent than others, including varying ability to regulate deception-related emotions, variations in ability to mask deception-related emotions, and differences in cognitive ability to concoct plausible tales. Ultimately, more research is needed to explain why some people are more or less transparent than others.

One area of individual differences that has received a fair amount of focus is underlying personality traits, particularly Machiavellianism. The Machiavellian personality is

described as a tendency to be conning and manipulative, with a lack of regard for morality and the interest of others (Paulhus & Williams, 2002). People who possess a high degree of Machiavellian traits show little concern for conventional morality, and will readily lie and cheat in order to get what they want (Vrij, 2008). Machiavellianism is related to both narcissism and psychopathy (discussed later), the three personality types comprising what has been referred to as "the dark triad" (Paulhus & Williams, 2002).A number of studies have found that individuals high in Machiavellianism find lying to be less cognitively demanding, see lying as an acceptable means of achieving their goals, and do not feel uncomfortable or guilty when deceiving others (Kashy &DePaulo, 1996; Gonza, Vrij, & Bull, 2001). Some studies have found that individuals high in Machiavellianism maintained more eye contact while lying (e.g., Exline, Thibaut, Hickey, & Gumpert, 1970). However, other studies have failed to replicate this finding (Knapp, Hart, & Dennis, 1974; O'Hair, Cody, & McLaughlin, 1981). Fewer studies have investigated the relationship between psychopathy and successful deception. While some police manuals (e.g., Inbau et al., 2001) contain statements regarding the behavior of psychopaths in interrogations, many of their statements lack empirical support. Rather, the statements made by these authors appear to be based on personal experience and intuition. In order to better understand the relationship between psychopathy and deceptive behavior, a deeper explanation of the construct is needed. I will now turn to a discussion of the construct of psychopathy and relevant research on characteristics associated with deception.

Chapter 2

Psychopathy

Origins of the Disorder. The clinical origins of psychopathy can be traced back as far as the early 1800s. Well known physicians and theorists such as Philippe Pinel (1801) and J.C. Pritchard (1835) utilized the term "manie sans delire," or "moral insanity" in order to describe psychiatric patients who showed no typical signs of psychopathology, but who appeared to eschew social norms and engage in repeated antisocial acts. It was not until the late 19th century that the term *psychopathic inferiority* was first used by Koch (1891), and the middle of the 20thcentury that the foundations of the "personality-based" conceptualization of psychopathy began to take shape (Billings, 2004).

The classic manuscript, *The Mask of Sanity* by Hervey Cleckley (1941) contains the first comprehensive clinical description of the psychopathic personality. Cleckley's book begins with a discussion of what he believed to be a unique disorder that is marked by 16 specific characteristics encompassing a range of interpersonal, affective, and behavioral traits (see Table 2). One of the proposed core aspects of psychopathy is a profound deficiency in normal affective experience. Cleckley (1955) originally drew an analogy between the psychopath's emotional experience and the neurological condition "semantic aphasia." Semantic aphasia is a condition that involves a deficiency in the ability to form logical meaning of speech, while the outward production of speech appears normal. The term was used by Cleckley (1955), not as a proposed symptom of psychopathy, but rather as a means to illustrate his point regarding the psychopath's underlying emotional deficiency, masked by an outward appearance of normality. Cleckley (1955) wrote:

> Just as meaning and the adequate sense of things as a whole are lost with semantic aphasia in the circumscribed field of speech although the technical mimicry of language remains intact, so in most psychopaths the purposiveness and the significance of all life-striving and of all subjective experience are affected without obvious damage to the outer appearance or superficial reactions of the personality. (p. 438)

For Cleckley, the key feature of psychopathy was the paradoxical ability to appear to have a range of emotional experience, while simultaneously possessing a clearly deficient ability to experience the same depth of emotion as the average human being. In describing the typical psychopath, Cleckley (1955) wrote, "we are dealing here not with a complete man at all but with something that suggests a subtly constructed reflex machine which can mimic the human personality perfectly" (p. 424).

Insert Table 2 Here

The study of psychopathic personality continued throughout the twentieth century, but the diagnosis remained fairly impressionistic with seasoned practitioners routinely disagreeing on the key characteristics of the disorder (Lykken, 2006). It was not until 1968 when antisocial personality disorder (APD) was added to the Diagnostic and Statistical Manual of Mental Disorders, Second Edition (DSM-II; APA, 1968), that some level of diagnostic stability was achieved. The DSM-II presentation of APD was consistent with a personality-based approach to conceptualizing the construct. The DSM-II was clear in stating, "a mere history of repeated legal or social offenses is not sufficient to justify this diagnosis" (p. 43). Currently, the DSM-IV-TR (APA, 2000) describes APD in the following way:

A. There is a pervasive pattern of disregard for and violation of the rights of others occurring since age 15 years, as indicated by three (or more) of the following:

1. failure to conform to social norms with respect to lawful behaviors as indicated by repeatedly performing acts that are grounds for arrest
2. deceitfulness, as indicated by repeated lying, use of aliases, or conning others for personal profit or pleasure
3. impulsivity or failure to plan ahead
4. irritability and aggressiveness, as indicated by repeated physical fights or assaults
5. reckless disregard for safety of self or others
6. consistent irresponsibility, as indicated by repeated failure to sustain consistent work behavior or honor financial obligations
7. lack of remorse, as indicated by being indifferent to or rationalizing having hurt, mistreated, or stolen from another.

B. The individual is at least age 18 years.

C. There is evidence of conduct disorder with onset before age 15 years.

D. The occurrence of antisocial behavior is not exclusively during the course of schizophrenia or a manic episode. (p. 706)

While the conception of APD was derived from early definitions of psychopathy, there have been concerns that the diagnosis provides an inadequate representation of psychopathy (e.g., Widiger, 2006). Research investigating the co-occurrence of psychopathy and APD suggests that most individuals in forensic settings diagnosed with psychopathy will also meet the criteria for APD, but as few as half of those meeting the DSM-IV-TR criteria for APD will meet criteria for psychopathy (Hare, 1996, 2003; Widiger, Corbitt, & Millon, 1992). Currently, proposed changes to APD in the DSM-V appear to signal a return to many of the core affective and interpersonal features of psychopathy (http://www.dsm5.org/ProposedRevision/Pages/proposedrevision.aspx?rid=16).

Modern Conceptualizations: Taxon or Dimensional Construct. The first formalized measure for assessing psychopathy was the Psychopathy Checklist (PCL; Harpur,

Hakstian, & Hare, 1988) and its revised version (PCL-R; Hare, 1991/2003). In an effort to develop a valid and reliable measure for identifying the psychopathic personality, Hare (1980) analyzed the literature on the construct and composed a list of 100 traits. After eliminating items with high correlations and redundancy between items, Hare (1980) identified 22 items that appeared to be the most relevant to the construct of psychopathy (Andrade, 2008). Two items were eliminated for the revised PCL-R, leaving the following 20 items:

1. Glibness/Superficial Charm*
2. Grandiose Sense of Self worth*
3. Need for Stimulation/Proneness to Boredom+
4. Pathological Lying*
5. Conning/Manipulative*
6. Lack of Remorse of Guilt*
7. Shallow Affect*
8. Callous/Lack of Empathy*
9. Parasitic Lifestyle+
10. Poor Behavioral Controls+
11. Promiscuous Sexual Behavior-
12. Early Behavioral Problems+
13. Lack of Realistic, Long-Term Goals+
14. Impulsivity+
15. Irresponsibility+
16. Failure to Accept Responsibility for Own Actions*
17. Many Short-Term Marital Relationships-
18. Juvenile Delinquency+
19. Revocation of Conditional Release+
20. Criminal Versatility- (Hare, 2003)[1]

The presence of psychopathy is determined by scoring each item on a three-point scale (0 = *item does not apply*, 1 = *item applies to a certain extent*, and 2 = *item applies*), then adding each item to determine a total score. A cutoff of 30 has been suggested in order to determine the presence of psychopathy (Hare, 2003). However, Hare has also recognized

[1] Note. * = item associated with PCL-R factor 1, + = item associated with PCL-R factor 2; - = item not associated with factor 1 or factor 2.

arguments for the use of the PCL-R to obtain dimensional scores (Guay, Ruscio, Knight, & Hare, 2007).

The PCL-R has long been conceptualized as possessing an internal structure comprised of two factors (Hare, 1991/2003). Factor 1 represents the selfish, callous, and remorseless use of others, or the interpersonal and affective based items that most closely resemble the more historical views (i.e., Cleckley, 1941) of psychopathic characteristics. Factor 2 represents a chronically unstable, antisocial, and socially deviant lifestyle and is composed of items that bear resemblance to characteristics of APD. Additional factor analytic studies have found evidence for a four-facet model (Hare, 2003) with factor 1 being broken down into an interpersonal facet (facet1) and an affective facet (facet 2), and factor 2 being broken down into an antisocial lifestyle (facet 3) and an antisocial behavior facet (facet 4). Other factor analytic research (i.e., Cooke & Michie, 2001) has suggested that the PCL-R is better conceptualized as a three-factor model with factors representing an arrogant and deceitful interpersonal style (factor 1), deficient affective experience (factor 2), and an impulsive and irresponsible behavioral style (factor 3). Cooke and Michie (2001) concluded that the first two factors of the three-factor model (arrogant and deceitful interpersonal style, deficient affective experience) were subdivisions of the original factor 1, and that the third factor contained noncriminal items from the original factor 2. Based on this analysis the authors suggested that items representing criminality be dropped from the PCL-R as they did not represent core features of psychopathy (Cooke & Michie, 2001). The authors reasoning represents a call for a return to the more affective/interpersonally laden construct proposed by Cleckley (1941).Finally, other authors have called for a four-factor model, with the fourth factor representing antisocial and criminal items (Neumann, Kosson, & Salekin, 2007).

While psychopathy has generally been viewed as a unitary construct (Hare & Neumann, 2008), there has been a growing argument that the two factor model is representative of specific primary and secondary variants of psychopathy (Skeem, Poythress, Edens, Lilienfeld, & Cale, 2003).

Alternative Methods for Assessing Psychopathy. The PCL-R is an interview-based method for identifying psychopathy that involves conducting a thorough clinical interview, investigating file information, and speaking with collateral sources (Hare, 2003). In spite of a vast body of empirical support for the utility of the PCL-R in measuring psychopathic characteristics, and the measure's well-known tag as the "gold standard" for measuring psychopathy, concerns have been raised regarding the time and resources required to administer and interpret the measure, as well as its applicability to non-criminal populations. Although the measure has been adapted for use with populations outside of prison settings (i.e., the PSL-SV; Hart, Cox, & Hare, 1995), some continue to question the validity of these measures outside of a non-criminal population (Alterman, Cacciola, & Rutherford, 1993). These concerns have inspired attempts to develop and validate self-report measures of psychopathic characteristics.

The Self-Report Psychopathy Scale (SRP) was developed by Hare (1985) as a means to assess the aspects of psychopathy measured by the original PCL. It was later revised in order to increase its correlation with the PCL, and more comprehensively cover the core aspects of psychopathy (SRP-II; Hare, Hemphill, & Paulhus, 2002). Similar to the PCL-R, the SRP-II contains two factors assessing the interpersonal and affective features of psychopathy, and the antisocial/impulsive lifestyle features, respectively. Research

investigating the validity of the SRP-II has found expected correlations with other self-report measures of psychopathy in prison (Hare, 1985) and undergraduate (Lilienfeld & Andrews, 1996) samples, DSM-IV diagnoses of antisocial personality disorder (APD) in prison and psychiatric samples (Widiger et al., 1996), and self-report measures of Narcissistic Personality, trait anxiety, and empathy in a sample of undergraduates (Zagon & Jackson, 1994). Paulhus and Williams (2002) examined the latest version of the SRP, the SRP-III[2], in a sample of undergraduates and found significant correlations with measures of narcissistic personality, Machiavellianism, and all five dimensions of the five-factor model of personality as measured by the BFI (John & Srivastava, 1999). In spite of the positive findings regarding the construct validity of the SRP-II and SRP-III, further research is needed in order to investigate the validity of this measure across other theoretically important domains.

Lilienfeld and Andrews (1996) developed the Psychopathic Personality Inventory (PPI) in order to assess the core personality traits of psychopathy in a noncriminal population. The authors noted that a great deal of controversy existed (and continues to exist) regarding the relevance of certain personality traits to psychopathy, and questioned the extent to which existing self-report inventories were measuring features of the disorder outside of antisocial acts. For example, Lilienfeld and Andrews (1996) remarked that while "Cleckley (1941/1955) contended that low anxiety is one of the cardinal features of psychopathy…Hare's (1991) Psychopathy Checklist – Revised (PCL-R), contains no items assessing the absence of anxiety" (p. 489). Consequently, the authors developed the PPI in order to assess aspects of psychopathic personality originally proposed by Cleckley and others. Factor analyses of the PPI item pool have revealed eight lower order facets that

[2] The latest version of the Self-Report Psychopathy Scale has since been labeled the Hare Self-Report Psychopathy Scale (Hare SRP; see Neal & Sellbom, 2012).

include Machiavellian Egocentricity (a ruthless willingness to manipulate and take advantage of others), Social Potency (interpersonal impact and skill at influencing others), Fearlessness (a willingness to take physical risks and an absence of anticipatory anxiety), Coldheartedness (callousness, guiltlessness and lack of empathy), Impulsive Nonconformity (a flagrant disregard for tradition), Blame Externalization (a tendency to attribute responsibility for one's mistakes to others), Carefree Nonplanfulness (an insouciant attitude toward the future), and Stress Immunity (sangfroid and absence of tension in anxiety provoking situations; Lilienfeld and Andrews, 1996). Factor analytic studies of the PPI facets suggest the PPI is comprised of two orthogonal higher order factors measuring interpersonal and affective features (PPI-I, also known as Fearless dominance or FD), and social deviance (PPI-II, also known as Self-Centered Impulsivity or SCI), with the Coldheartedness scale (CH) not loading on either factor (Benning, Patrick, Hicks, Blonigen, & Krueger, 2003; Berardino, Meloy, Sherman, & Jacobs, 2005; Lilienfeld& Widows, 2005; Patrick, Edens, Poythress, Lilienfeld, & Benning, 2006; Ross, Benning, Patrick, Thompson, & Thurston, 2009; Uzieblo, Verschuere, & Crombez, 2007; Witt, Donnellan, Blonigen, Krueger, & Conger, 2009). However, an attempt by Neumann, Malterer and Newman (2008) to replicate the two-factor model with a large incarcerated sample failed. The authors suggested a three-factor solution might be more appropriate, with the third factor representing callous indifference.

Since the development of the PPI, it has been studied extensively across multiple incarcerated, community, and undergraduate samples. Research investigating the construct validity of the PPI has found that PPI-I correlates in expected directions with narcissism and social phobia (Benning et al., 2005), anxiety disorders and social dominance (Patrick et al., 2006), and with factor 1 scores on the SRP-II and PCL-R (Bernadino et al.,

2005).Additionally, PPI-II has been found to correlate with conduct disorder, adult antisocial behavior, and substance dependence (Benning et al., 2005), as well as aggressive and nonaggressive infractions in prisoners (Edens, Poythress, Lilienfeld, Patrick, & Test, 2008). Finally, in a mixed-gender sample of undergraduates and prisoners, Ross et al. (2009) found that PPI-I was related to low Behavioral Inhibition System (BIS) activity, high Behavioral Activation System (BAS) activity, expert prototype psychopathy scores, and primary psychopathy. Scores on PPI-II were also related to high BAS activity. The authors also found that both PPI-I and PPI-II correlated in expected directions with the five-factor model as measured by the NEO Personality Inventory – Revised (NEO-PI-R; Costa & McCrae, 1992). More specifically, high Extraversion and Openness and low Neuroticism and Agreeableness predicted PPI-I, whereas high Neuroticism and low Agreeableness and Conscientiousness predicted PPI-II.

A recent meta-analysis by Marcus, Fulton and Edens (2011) compiled the results of 45 studies, involving 14,517 participants, in order to investigate the correlation between the SCI, FD, and CH, as well as the correlation between the PPI scales and other measures associated with the psychopathy construct. The authors found that, in accordance with much of the extant literature FD, SCI, and CH are orthogonal or weakly correlated with each other. Marcus et al. (2011) also found that the FD factor of the PPI showed a significantly weaker pattern of correlation than SCI and CH with other well-known measures of psychopathic characteristics. The original PPI has since been revised (PPI-R; Lilienfeld & Widows, 2005).

After conducting an extensive review of the historical and contemporary efforts to conceptualize psychopathy, Patrick, Fowles, and Krueger (2009) proposed a triarchic model that conceptualizes the disorder as a representation of three distinct phenotypes: disinhibition,

meanness, and boldness. The disinhibition aspect of the triarchic model is defined as "a general phenotypic propensity toward impulse control problems entailing a lack of planfulness and foresight, impaired regulation of affect and urges, insistence on immediate gratification, and deficient behavioral restraint" (Patrick et al., 2009, p. 925). This aspect is represented to varying extents in the PCL-R factor 2, and PPI-II (Patrick et al., 2009). Boldness refers to "a phenotypic style entailing a capacity to remain calm and focused in situations involving pressure or threat, an ability to recover quickly from stressful events, high self-assurance and social efficacy, and a tolerance for unfamiliarity and danger" (p. 926). The authors propose that boldness is broadly represented by the fearless dominance factor of the PPI (i.e., PPI-I), and to a lesser extent by PCL-R factor 1. Finally, meanness is described as "a constellation of phenotypic attributes including deficient empathy, disdain for and lack of close attachments with others, rebelliousness, excitement seeking, exploitativeness, and empowerment through cruelty" (p. 927). Variants of meanness are captured by the coldheartedness scale of the PPI, and items of the PCL-R measuring shallow affect, callous lack of empathy, lack of remorse or guilt, and failure to accept responsibility for one's own actions (Patrick et al., 2009). To date, the relationship between the three characteristics proposed by the triarchic model have only been measured indirectly through scales and inventories held within other measures. However, research has begun to investigate the utility of the Triarchic Inventory in assessing behavioral and personality correlates of psychopathy (e.g., Sellbom & Phillips, 2011).

Proponents of an interview-based technique for assessing psychopathy suggest that self-report approaches cannot accurately assess the core affective aspects of the disorder for various reasons. For example, Lilienfeld and Fowler (2006) summarized the concerns of

many researchers when he asked, “why would one attempt to identify a condition marked by dishonesty by asking individuals to respond honestly to questions regarding this condition” (p. 107)? Another potential disadvantage to utilizing self-report measures in the assessment of psychopathy involves concerns regarding psychopaths’ typical lack of insight and potential inability to report on the absence of emotions they have never experienced (e.g., semantic aphasia; Cleckley, 1941/1955 and Hare, 1993). Many of these concerns are superficially supported by numerous studies which suggest self-report measures of psychopathic characteristics correlate only moderately with PCL-R Factor 2 scores, and weakly with Factor 1 scores (see Lilienfeld & Fowler, 2006 for a review). However, Lilienfeld and Andrews (1996) have proposed that the low correlations among most indices of psychopathy suggest, “that they are assessing only partly overlapping aspects of the same construct” (p. 489). In spite of the apparent disadvantages inherent to self-report assessments, some authors have proposed that the approach to defining personality disorders should incorporate both self-report and observer-rating measures (Grove & Tellegen, 1991). Lilienfeld and Fowler (2006) suggest it is possible that the large amount of nonshared variance between these different methods “introduces the possibility that each information source possesses incremental validity above and beyond the other for predicting psychologically important variables” (p. 108). Additionally, the utilization of self-report measures allows for more economical and reliable measurement, and the assessment of response styles (Lilienfeld & Fowler, 2006).

Psychopathy and Deception

> Given their glibness and the facility with which they lie, it is not surprising that psychopaths successfully cheat, bilk, defraud, con, and

> manipulate people and have not the slightest compunction about doing so…The capacity to con friend and foe alike makes it a simple matter for psychopaths to perpetrate fraud, embezzlement, and impersonation, to promote phony stocks and worthless property, and to carry out swindles of all sorts, large and small. (Hare, 1993, p. 49-50)

In writing about the development and characteristics of psychopathic individuals, both Hare (1993, 2003) and Cleckley (1941/1955) have identified psychopaths as having unique affective and behavioral characteristics that make them naturally talented liars who display a propensity for insincerity and untruthfulness. Indeed, several items on the PCL-R (Hare, 2003), measure characteristics such as pathological lying and the tendency to con and manipulate. Others have also posited that psychopaths enjoy deceiving others and experience "duping delight" (Ekman, 2001). In clinical settings psychopaths are often described as superficially charming, pathological liars, and manipulators. Furthermore, some studies have suggested a link between psychopathy and deceptive presentation styles such as denial (Rogers & Cruise, 2000).Seto, Khattar, Lalumiere, and Quinsey (1997) have also found that higher PCL-R scores were significantly correlated with both general and sexual deceptiveness.

There is a great deal of anecdotal and indirect evidence suggesting that psychopaths might be more adept at lying than non-psychopaths. However, lying frequently is not to be confused with lying convincingly (Cooper & Yuille, 2007). Simply investigating the items of the PCL-R reveals a number of characteristics that, again, should be theoretically associated with some level of increased skill in deceiving others. For example, characteristics such as pathological lying, and a tendency to be conning or manipulative seem to be ideal means of building a strong deceptive routine through practice. Additionally, characteristics such as

lack of remorse or guilt, and callousness seem ideal characteristics for engaging in deceptive behavior more readily and without shame.

Affective Factors. Regarding proneness to fear, one of the earliest studies of the influence of psychopathic characteristics on learned behavior found that individuals who met Cleckley's (1941) original criteria displayed "poor fear conditioning" (Lykken, 1957). More specifically, Lykken tested for avoidance learning by giving participants 20 trials to learn a mental maze in which participants were administered shocks when they chose erroneous alternatives at various points throughout the maze. The author found that the "primary sociopathic" (i.e. those who most closely met Cleckley's criteria) group showed poorer avoidance learning when compared to controls. Lykken (1957) concluded that those individuals who met Cleckley's criteria were deficient in their ability to develop anxiety responses. Lykken's study has been replicated dozens of times across a variety of paradigms, and each has found similar EDR hyporeactivity manifested by psychopathic participants (Fowles & Dindo, 2006). The implications of these studies for understanding the relationship between psychopathy and deception are clear. When one is caught in a lie, it is typically an uncomfortable position that may foster the experience of fear and anxiety. If one were to possess an innate deficiency in developing an association between negative consequences and fear or anxiety, they may be prone to repeating behaviors such as lying with little internal motivation to desist. A small body of research further suggests that psychopathic individuals are rarely motivated in general by the need to avoid punishment (described below), and more frequently engage in behaviors to achieve reward (a pattern fitting of the relationship described above between psychopathy and BAS/BIS activity). The apparent physiological

propensity toward award-oriented action and combined deficiency in inhibitory processesand poor fear conditioning likely explains the psychopath's general inclination to be deceptive.

Neuropsychological research has also shed some light on the biological origins of poor fear conditioning and has often shown that psychopaths display significant deficits in areas of the brain associated with emotional responsivity (e.g., Tiihonen, et al., 2000; Kiehl, et al., 2001). Neuroimaging studies have shown a negative correlation between PCL-R scores and amygdaloid volume (Tiihonen, et al., 2000) and amygdala response during an emotional memory task (Kiehl, et al., 2001). The amygdala is an area of the limbic system associated with emotional learning. Findings such as these also have direct implications for determining cues to deception that are likely to arise under conditions which should theoretically elicit an emotional response. As most lie detection techniques rely on the emergence of cues in some form or another, a diminished pathway for cue production would likely make the task of identifying deceptive presentations more difficult.

As an example, a popular police interrogation manual authored byInbau et al. (2001) suggests that emotional states such as fear, guilt, apprehension, and emotional conflict are closely associated with deception. The authors state, "Whatever the source, during an interview lies result in anxiety, and many of the behavior symptoms revealed by a deceptive suspect represent his conscious, or preconscious, efforts to reduce this internal anxiety" (p. 130).As previously mentioned, one of the most identifiable characteristics of the psychopathic individual is diminished anxiety and related emotional states (Cleckley, 1941/1955). Findings such as these may suggest that psychopathic individuals display behavioral patterns that do not comport with the strategies espoused by popular police interrogation manuals.

Cognitive and Behavioral Factors. Research focused on attentional functioning in individuals with high levels of psychopathic characteristics has also been informative. Numerous studies suggest that individuals who possess elevated levels of psychopathic characteristics allocate a relatively large portion of their attentional resources to events of immediate interest, and ignore other stimuli (Jutai & Hare, 1983). For example, Jutai and Hare (1983) found that when psychopathic individuals were engaged in a videogame, they showed reduced responses to irrelevant auditory stimuli compared to controls. However, when not engaged in the videogame, psychopath's responses to auditory tones resembled those of controls. Bernstein, Newman, and Wallace (2000) also found that when psychopaths and controls were asked to memorize a series of words presented in varying corners of a computer screen, psychopaths recalled the word list with equal accuracy to controls, but had greater difficulty recalling the locations in which words were presented. The authors interpreted this result in terms of the difficulty psychopaths may have in processing multiple dimensions of a stimulus that is the primary focus of attention.

The research highlighting the difficulties psychopaths have with attending to multiple dimensions of a stimulus, as well as their apparent low distractibility, may have implications for their behavior while being deceptive. For example, individuals who possess higher levels of psychopathic characteristics may be less likely to notice secondary cues (e.g., facial expressions denoting doubt) on the part of the interviewer that signal a need to monitor their story or behavior. As mentioned previously, the act of lying is often a cognitively complex task that requires a significant amount of mental effort. The combination of focusing a great deal of mental faculties on escaping detection, while simultaneously monitoring one's own behavior and the behavior of the receiver, should theoretically lead to a reduction in

animation (Vrij, 2008). However, it appears that this is not the case with psychopaths. It is possible that as a consequence of limited attentional capacities, and general practice, psychopaths do not experience the act of lying as highly cognitively demanding. Consequently, psychopaths may not manifest the typical reduction in animation suggested by Vrij (2008).

Morgan and Lilienfeld's (2000) meta-analysis of neurological findings associated with psychopathy supports the notion that frontal lobe dysfunction is associated with antisocial behavior generally, and psychopathy in particular. Additionally, other neuropsychological studies have found that psychopaths show decreased physiological responses to verbal and physical punishment (Lykken, 1957; Newman & Kosson, 1986; Newman, Patterson, & Kosson, 1987; Schmauk, 1970; Siegel, 1978), suggesting that while they may be aware of the risks involved in divulging information, they may not experience significant physiological arousal in response to the prospect of being caught lying. These findings suggest that individuals with high psychopathic characteristics are likely more behaviorally disinhibited and less likely to pay attention to, and attempt to control, their behavioral responses. Regarding specific deceptive presentations, early studies by Rimé, Bouvy, Leborgne, and Rouillon (1978) found that psychopathic participants were more intrusive during interviews (i.e., leaned forward more and looked at the interviewer longer) and spoke less when interacting with other psychopaths.

Empirical Studies of Psychopathy and Deception. While there is evidence that psychopaths use deception to exploit others (Book, Holden, Starzyk, Wasylkiw, & Edwards, 2006; Seto, Khattar, Lalumiere, & Quinsey, 1997), and that psychopaths lie more frequently

and blatantly (Hare, Forth, & Hart, 1989; Porter & Woodworth, 2007), there is very little empirical research examining psychopaths' ability to lie successfully. The first empirical investigation of psychopaths' lying proficiency focused on their performance on the polygraph. Raskin and Hare (1978) identified a sample of 24 psychopathic and 24 non-psychopathic inmates, and randomly assigned them to innocent and guilty conditions of a mock crime scenario. Participants in the guilty condition were instructed to enter a nearby office, remove $20 from an envelope, place it in their pocket, and then attempt to convince a polygrapher that they had not stolen the money. Participants in the innocent condition were informed of a theft that had occurred, and instructed to truthfully deny their involvement. The authors found that the psychopathic group was no more successful at evading polygraph detection than the non-psychopathic group. A number of critiques arose following the publication of Raskin and Hare's (1978) study. For example, Lykken (1978, 1981) argued that the study was methodologically flawed in that the authors did not use a blind scoring procedure when determining guilt and innocence, potentially leading to inflated polygraph hit rates. This study also did not investigate the relationship between PCL-R factor scores and successful deception.

Patrick and Iacono (1989) attempted to further investigate the ability of psychopaths to evade polygraph detection by incorporating a group contingency threat into their experimental design. More specifically, Patrick and Iacono (1989) also utilized a mock crime scenario, but instructed the participants that failing the polygraph would result in consequences for the whole sample. It was the authors' expectation that due in part to the culture of strength, courage and solidarity amongst incarcerated men; the threat of group disapproval would act as a more ecologically valid stressor. While overall polygraph hitrates

were somewhat lower than those found by Raskin and Hare (1978), the authors also found that psychopaths were no better than non-psychopaths in their ability to "beat" the polygraph (Patrick & Iacono, 1989). While the findings of these two studies may initially appear surprising, research focusing on the physiological responses of psychopaths to various anxiety and fear inducing stimuli may help to explain the results. A meta-analysis by Lorber (2004) investigating (in part) the association between heart rate (HR) and electrodermal activity (EDA) found that while a significant negative relationship exists between psychopathy and EDA, no such relationship exists between psychopathy and HR. Since the polygraph measures both HR and EDA, it is not necessarily surprising that psychopaths' deceptions became apparent when using this multi-method approach.

Also relevant to the above findings is a discussion of the relationship between psychopathy and varying sources of motivation. Patrick and Iacono (1989) assumed that the motivation to avoid group disapproval would motivate psychopaths in such a way as to modify their behavior while being deceptive. While the overall relationship between motivation to be believed and successful deception was discussed previously, a body of research investigating the relationship between psychopathy and motivation suggests that those who possess higher levels of psychopathic traits may not be motivated by the same factors as those possessing lower levels of psychopathic traits (e.g., Rogers & Cruise, 2000; Spidel, Herve, Greaves, & Yuille, 2011). For example, Rogers and Cruise (2000) found that psychopathic offenders were more likely to lie in order to create an implausible presentation, to con and manipulate a target, and to deny criminality. Similarly, Spidel et al. (2011) found that young offenders with high psychopathic traits were more likely to lie for the purposes of duping delight (mentioned above), heightening self-presentation, and to obtain a reward.

Results such as these suggest that typical simulation research designs may be poorly suited to capture the typical psychopathic motivation to deceive. While Spidel et al. (2011) postulate that simulation designs are not suited to capture the form and degree of motivation most likely to drive high psychopathic individuals, it is conceivable that studies simulating reward contingencies and opportunity for heightened self-presentation could be carried out ethically. However, no such studies have been attempted.

There is also a growing body of research investigating the association between psychopathy and the false presentation of psychological symptoms in legal settings (i.e., malingering). For example, Gacono, Meloy, Sheppard, Speth, and Roske (1995) investigated a sample of criminal defendants found not guilty by reason of insanity (NGRI) and discovered that those who subsequently admitted to feigning mental illness possessed significantly higher scores on the PCL-R. While these findings may suggest a higher tendency for psychopaths to feign mental illness, it only logically suggests that those who score higher on the PCL-R are more likely to admit to feigning after having already been found NGRI. Indeed, the tendency to reveal their deception after successfully deceiving would be in accord with the idea that psychopaths take pleasure in successfully deceiving others, and only admit to their deception after they have avoided the consequences involved with their detection. In a subsequent effort to determine whether psychopaths are more adept at malingering successfully, Poythress, Edens and Watkins (2001) investigated a sample of 55 male prison inmates who had either been diagnosed as malingering, or were instructed to feign mental illness. When compared to a sample of inmates with confirmed mental illness, malingerers with high scores on a self-report measure of psychopathy were no more adept at malingering than inmates with low scores. Studies by Clark (1997) and Rogers and Cruise

(2000) have also concluded that the presence of psychopathy or antisocial behavior does not afford any advantages in malingering successfully. Kucharski, Duncan, Egan, and Falkenbach (2006) investigated 280 criminal defendants who were referred for psychological testing in the context of federal competency to stand trial and criminal responsibility evaluations. The authors found that while those defendants with high scores on the PCL-R were more likely to feign mental illness on multiple psychological measures, logistic regression analyses revealed that simply obtaining a high score on the PCL-R was not a sensitive or specific enough predictor of future malingering. More specifically, approximately 40% of the psychopathic sample did not attempt to feign mental illness. While these studies provide some information about the general tendency of psychopaths to engage in deceptive behaviors, they also provide some indication of whether this tendency yields improvements in their ability to successfully deceive. In the case of feigning mental illness, it would appear that psychopaths possess no distinct advantage over non-psychopaths.

Cogburn (1993) examined the relationship between psychopathy and deceptive presentations in a sample of 29 incarcerated males. Individuals took part in a simulated job interview, during which they were instructed to admit or deny having taken part in a series of desirable and undesirable acts. Participants both admitted to, and denied having participated in a transgression previously committed, and a good deed they had not actually done. They were also instructed to truthfully admit to previous transgressions, and truthfully take credit for a socially desirable act. Cogburn (1993) found that individuals who produced higher scores on the PCL were no more skillful at deceiving than participants with lower scores. However, the author found that higher factor 2 PCL scores were associated with an increased likelihood of being perceived as dishonest. Unfortunately, Cogburn's (1993) study was

plagued by poor inter-rater reliability, a small sample size, and failure of participants to follow instructions. Consequently, it is difficult to draw strong conclusions from these results.

Billings (2004) conducted a three-phase study to investigate the role of psychopathic characteristics in deceptive presentations. At each phase of the study, the author utilized a sample of male and female undergraduate students from introductory psychology courses. During the first phase, 77 participants were administered three measures of psychopathic traits and asked to provide their opinions regarding a series of current volatile topics. The participants were videotaped providing both true and false accounts of their opinions. During phase two, observers viewed the videotapes of participants from phase one and ranked the believability of the talks on a 4-point scale. Finally, in phase three the videotapes were coded for verbal and nonverbal cues to deception. Billings (2004) found that individuals with high PCL-SV factor 1 scores, high PPI-I scores, and high scores on a collateral rating of psychopathy were more successful at deceiving than those who scored lower on these measures. It was also found that higher factor one scores on both the PCL-SV and PPI were associated with increases in adaptor cues (e.g., touching the face, rubbing the arm or leg) when being deceptive, and fidgeting in both truthful and deceptive presentations. Overall, the results of Billings' (2004) study suggest that successful deception was related to interpersonal/affective characteristics of psychopathy, but not behavioral characteristics. Interpretations of these results are limited by the external validity of the sender sample (i.e., undergraduate students), as well as the fact that senders were not interviewed but were merely asked to produce a free narrative regarding their opinions.

More recently, Klaver, Lee and Hart (2007) found that across veracity conditions, interpersonal features of psychopathy were related to increased use of illustrators (i.e., hand movements to illustrate/support speech), and increases in verbosity, blinking and speech hesitations. Additionally, while lying, more psychopathic offenders demonstrated increases in head movements and blinking, and spoke faster. The authors also found that higher scores on ratings of affective/interpersonal aspects of psychopathy (i.e., PCL-R Factor 1) were associated with a belief in superior lying ability, and that psychopathic participants were less likely to report feeling anxious/nervous after successfully lying. The finding that psychopathic participants displayed increases in rate of speech, blinking and body movements while lying appears to be at odds with the cognitive load approach to deception. As mentioned previously, the act of lying is often a cognitively complex task that requires a significant amount of mental effort. As a consequence of focusing the majority of their mental faculties on escaping detection, while simultaneously monitoring their own behavior and the behavior of the receiver, should theoretically lead to a reduction in animation (Vrij, 2008). However, it appears that this is not the case with psychopaths. It is possible that as a consequence of impulsivity/decreased behavioral inhibitions, and general practice, psychopaths do not experience the act of lying as highly cognitively demanding.

Regarding verbal cues, studies have found that psychopaths tend to offer less coherent and cohesive narratives when interviewed (Brinkley, Bernstein, & Newman, 1999; Brinkley, Newman, Harper, & Johnson, 1999). These findings are not surprising considering the neuropsychological literature that suggests psychopaths have difficulty using emotional connotation in language, difficulty with abstract concepts, and difficulty with global cohesion (Hiatt & Newman, 2006). Finally, Lee, Klaver & Hart (2008) found that psychopathic

offenders provided more spontaneous corrections and appropriate details while lying, and also found an association between interpersonal psychopathic symptoms and perceived credibility of lies. More specifically, the authors found that participants who produced higher scores on characteristics such as superficial charm, grandiosity, manipulation, callousness, lack of empathy and guilt, and lack of remorse were seven times less likely to be judged as credible when lying. The fact that highly psychopathic individuals were less likely to be seen as credible brings in to question how they are able to successfully deceive others. The authors suggest that psychopaths may use other behaviors to distract the listener from the verbal content of their statements. The finding that psychopaths provide more spontaneous corrections and appropriate details while lying directly contradicts the assertion by Inbau et al. (2001) that "The deceptive subject may offer short responses containing only minimal information" (p. 129) and "Truthful subjects will offer spontaneous responses; deceptive subjects may offer rehearsed responses" (p. 137). This tendency for psychopathic participants to provide more appropriate details is also at odds with the extant literature showing that liars tend to provide brief stories with fewer details (DePaulo et al., 2003). It is possible that the tendency by the psychopath to be more verbally forthcoming and generally loquacious may be a consequence of diminished behavioral control.

The finding that psychopathic participants provide more appropriate detail while lying may also have implications for the use of strategies that rely on disclosing evidence late in interviews in order to uncover or highlight contradictions (e.g., Hartwig, Granhag, Stromwall, & Kronkvist, 2006). When a psychopathic suspect provides more spontaneous information early in an interview, they effectively disarm the interrogator who is trained to believe that deceptive suspects provide fewer appropriate details. However, this ability is

clearly contingent upon the truthfulness of the details provided, and the degree to which the information comports with what the interrogator may already know. Indeed, if the detail provided by the psychopath contradicts evidence in the possession of the interrogator, they will likely still be identified as deceptive.

In contrast to recent studies that have identified some significant differences in verbal and nonverbal cues, Klaver et al. (2009) found no significant differences between psychopaths and non-psychopaths with regards to indirect cues to deception proposed by Vrij (2000).When undergraduate students were asked to view videotapes of inmates either telling a story about a crime they did commit, or a crime they did not, no significant differences were found in ratings of how hard participants believed the inmate was thinking, how nervous they appeared, their observed level of emotional arousal, their observed attempts to control behavior, or the inmate's credibility. Furthermore, students displayed lie-truth detection accuracy levels that were not statistically better than chance. The authors list a number of potential reasons why no significant differences in indirect measures was observed, as well as why the use of these indirect measures did not improve accuracy in lie-truth decisions.

The first and most general reason why the authors believe differences were not found comes from the assumption that most studies investigating indirect measures have not utilized a criminal population. The authors speculate that the criminal population in general may be more adept at lying, making this skill a function of criminality rather than psychopathy per se. However, it is important to note that in the literature cited by Klaver et al. (2009; i.e., Anderson, DePaulo, & Ansfield, 2002; Anderson, DePaulo, Ansfield, Tickle, & Green, 1999) deception decisions based on indirect cues were made between pairs of

friends who had significant baseline exposure (up to 6 months). In their meta-analysis of the deception detection literature, Bond and DePaulo (2006) noted that in studies that measured baseline exposure, lie-truth accuracy was improved significantly (albeit not improving significantly above chance) by exposing the receiver to the sender before the deception detection task. It is possible that the improved ability of the receivers in these studies to detect deception was largely a function of baseline exposure.

In a more externally and ecologically valid experiment performed by Vrij, Edward and Bull (2001), police officers utilized indirect measures to make lie-truth decisions while watching video taped interviews. The authors found that by using indirect measures such as thinking hard, police officers were better able to distinguish between truthful and deceptive participants. This study differs from Klaver et al. (2008) in one particularly important way. Generally speaking, the focus of the forensic lie detection literature lies in the determination of veracity during interrogations or similarly structured paradigms. When senders are asked to simply tell a story, the cognitive task is less taxing in comparison to interview or accusatory interrogation settings in which the suspect is asked a series of questions for which they may or may not be prepared. The latter task is more likely to elicit a response in which the sender needs to think hard in order to come up with an answer to satisfy the receiver.

In order for a body of empirical work to be externally valid, it needs to capture the central variables at play in the setting it attempts to offer generalizability to. Research on veracity assessments in investigative settings must thus include samples possessing relevant characteristics. The proposed research aims to further investigate the potential impact of psychopathic characteristics on cues to deception by investigating characteristics assessed through self-report measures that have not been investigated in this context, and an analogue

scenario which mimics a real world setting, that being a criminal interrogation. The present study differs from prior studies in that in lieu of the PCL-R,or a single measure of psychopathy, this study is the first to utilize three self-report measures of psychopathic characteristics (described above and below). While all three measures purport to assess psychopathic traits, as mentioned above, each was developed using very different methods. The inclusion of all three measures allowed for a more comprehensive assessment of the various content domains of the psychopathy construct. Additionally, instead of attempting to elicit cues to deception using a free recall scenario (e.g., Kassin, et al., 2005; Klaver, Lee & Hart, 2007; Lee, Klaver, & Hart, 2008), participants will be subjected to a structured interview. The sender sample will also be comprised of community members with a verified history of at least one felony criminal conviction. Finally, trained raters will code videotapes of these structured interviews for verbal and nonverbal cues to deception.

CHAPTER 3

Method of Study

The main goals of the present study were to determine the impact of psychopathic characteristics on deceptive presentations, and on lie-catchers' abilities to detect deception. Given the descriptions of general research focused on deception detection, and the connection between psychopathy and deceptive behavior, it is hypothesized that specific psychopathic characteristics will impact deceptive presentation differently. It is believed that by using three measures of psychopathic personality traits, a clearer picture of the relationship between psychopathy and deceptive behavior will emerge. I begin with a general overview of the study's methods, followed by detailed descriptions of the individual experiments and hypotheses.

Overview

This study was divided into two phases. Experiment one involved recruiting community members who had been previously convicted of a felony to participate in a mock crime scenario resembling that used by Vrij et al. (2006, 2007, 2008). Prior to participation, community members were administered a brief questionnaire and three measures to assess relevant deceptive behaviors and psychopathic character traits. After participating in the mock crime scenario, community members were interviewed about the event and either lied or told the truth about their involvement in the mock crime. Following the interview, the community members were given a questionnaire that assessed their thoughts and emotions during the scenario and interview. Finally, the videotaped interviews were coded for verbal and nonverbal cues to deception.

In experiment 2, the videotaped interviews were shown to undergraduate participants who were asked a series of questions about their impressions of the person being interviewed, and finally to make a dichotomous veracity judgment.

Experiment 1

Method

Participants. Eighty male community members were recruited using an advertisement on www.craigslist.org (appendix A), and offered $20 for their participation in a research study. Upon arrival at the university, community members were presented with an informed consent form (appendix B) that described the purpose of the study and activities they would be participating in. They were informed that participation was voluntary and that they could refuse to participate, or terminate their participation at any point during the study. This study was approved by the John Jay College Institutional Review Board, and funded by the National Science Foundation (NSF) through a Dissertation Improvement Grant (appendix C). The participants were all males who ranged in age from 21 to 58 with an average age of 38.6 years (*SD* = 9.6), and a self-reported average of 12.7 years of education (*SD* = 2.2). They were predominantly African American (57.6%), while 19.7% were Caucasian, 10.6% were Hispanic, and 12.1% reported Asian or Other. Before participating, each participant's history of a felony conviction was verified through a criminal records search, search of the Department of Correction's public database, or verification of official documentation. The majority of the participants were convicted of crimes related to theft (36%) or drug related charges (26%), while 18% had histories of violent offenses (i.e., assault, attempted murder,

and rape). The remaining 20% of participants had a variety of convictions, ranging from credit card fraud to lying to a federal judge.

Interviewer. One experimenter, blind to veracity, acted as the interviewer during the study. For the purpose of experimental control, the interviewer was provided with a script for the interview (appendix D).

Measures (Appendix I)

Descriptive data for the three psychopathy measures, including internal reliability coefficients is contained in table 3.

Psychopathic Personality Inventory (PPI; Lilienfeld & Andrews, 1996). The PPI contains 187-items rated on a 4-point likert scale (1 = *False*, 2 = *Mostly False*, 3 = *Mostly True*, and 4 = *True*). The PPI contains eight subscales measuring lower order facets of psychopathic characteristics (i.e., Social Potency, Stress Immunity, Fearlessness, Machiavellian Egocentricity, Impulsive Nonconformity, Carefree Nonplanfulness, Blame Externalization, and Coldheartedness). Factor analytic studies suggest that these scales comprise two orthogonal dimensions measuring both the affective/interpersonal aspects of psychopathy (PPI-I; Fearless Dominance) and the social deviance aspects of psychopathy (PPI-II; Impulsive Antisociality). In the present sample, the PPI scales showed good internal reliability with alphas ranging from a high of .93 (PPI Factor II) to .75 (Coldheartedness), with an average reliability coefficient of .84. These reliability coefficients are largely in line with internal reliabilities reported by Lilienfeld and Andrews (1996) in the initial validation of the PPI.

Hare Self-Report Psychopathy Scale (Hare SRP; Paulhus, Neumann, & Hare, in press). The Hare SRP is the most recently updated version of the Self-Report Psychopathy Scale (SRP) which was developed using a pool of 75 items that were found to distinguish high from low scores on the PCL (Hare, 1985). The original SRP correlated only modestly with the PCL; however, the revised SRP-II (Hare, Hemphill, & Paulus, 2002) correlates highly with other self-report measures of psychopathic characteristics (Lilienfeld&Fowleer, 2006). The Hare SRP contains 64 items comprising four factors (Interpersonal Manipulation, Callous Affect, Anti-Social Behavior, and Erratic Life Style). The four-factor model was recently validated through confirmatory factor analysis (CFA) using a large undergraduate sample (Neal & Sellbom, 2012). Each item is scored using a 5-point likert scale (1 = *strongly disagree* – 5 = *strongly agree*).In the present sample, the Hare SRP scales showed good internal reliability with alphas ranging from a high of .91 (SRP-III Total Score) to .69 (Erratic Lifestyle), with an average reliability coefficient of .79.

Triarchic Inventory (Patrick, 2008). The Triarchic Inventory is a 58-item scale developed to measure three distinct phenotypic constructs that are believed to encompass psychopathy (i.e., Disinhibition, Boldness, and Meanness). According to Patrick et al. (2009), *disinhibition*reflects a general proclivity toward problems of impulse control, *boldness* is defined as the nexus of social dominance, emotional resiliency, and "venturesomeness," and *meanness* is defined as aggressive resource seeking without regard for others. Each item is answered on a four-alternative scale: *false, mostly false, mostly true,* or *true*. In the present sample, the Triarchic Inventory scales showed good internal reliability with alphas ranging from as high of .93 (Meanness) to .74 (Boldness), with an average reliability coefficient of .84.

Insert Table 3 Here

Lying Behavior Questionnaire. Mock Suspects completed a series of questions previously utilized by Klaver, Lee and Hart (2007) concerning their lying behavior. Self-perceived lying ability was assessed by asking "Compared to others, how good are you at lying?" with responses on a 9-point Likert scale (1 = *poor* to 9 = *excellent*). Frequency of lying behavior was assessed by asking, "In general, how often to you lie?" with responses on a 9-point Likert scale (1 = *never* to 9 = *always*). Finally, mock suspects were asked to predict their affective responses to successful deception by endorsing one or more of the following emotions related to successful deception: "excited," "nervous/anxious," "scared/worried," "guilty," or "other." If "other" is endorsed, the participant will be instructed to specify an alternative emotion.

Post-interview Questionnaire. Mock suspects completed a series of questions after completing the interview (appendix J). These questions were meant to determine the mock suspects' level of motivation to give a credible impression, their level of comfort during the task (or theft) and interview, their level of planning both verbal and nonverbal behavior, as well as to determine whether they were following the instructions they received when they were assigned to either the truthful or deceptive conditions. Each of the questions on the post-interview questionnaire was rated on a 10-point likert scale.

Procedure

Videotaped Interviews. The paradigm used to create the stimulus tapes borrowed from paradigms utilized by Vrij et al. (2006, 2007, 2008). Upon arrival, each participant (hereon referred to as mock suspect) was seated at a table and introduced to an experimenter

who explained that the mock suspects were to participate in a task that will assist the researchers in developing a better understanding of lie detection. They were then presented with a written consent form for a signature. The form advised the mock suspect that participation is anonymous ("that my name will not be associated with the results in any way"), that the information they provide is confidential ("to be shared only with others involved in the research project"), that they will be given $20, and that they may withdraw their consent and discontinue at any time.

Prior to their participation in the research paradigm, mock suspects were administered the self-report measures described above and chosen to assess relevant affective, interpersonal, and behavioral characteristics of psychopathy, and a questionnaire assessing their belief about their lying ability, their frequency of lying, and their impression of how lying about a serious transgression would make them feel. Mock suspects were then randomly assigned to either the deceptive or truth telling condition.

Mock suspects in the truth telling condition were asked to participate in a task similar to that utilized by Vrij et al. (2006, 2007, 2008; appendix E). Truth-tellers were told to enter a room where a confederate was already seated. The mock suspect was asked to open a briefcase on a second chair in order to remove a stapler from inside. They were then asked to assist the confederate in sorting stacks of papers into stapled packets. Approximately 2 minutes after the experimenter left, the confederate's cell phone rang and they left the room for approximately one minute. After one minute, the confederate returned with the experimenter who asked how many packets had been completed. After collecting the completed packets, the experimenter removed the briefcase and left the room. After an additional two minutes, the experimenter returned and claimed that a wallet was missing

from the briefcase. The truth-tellers were then told that they would be interviewed about the missing wallet and asked to answer all questions truthfully.

Mock suspects in the deceptive condition were first asked to enter the same research room where truth-tellers were to perform the paper-sorting task and steal a wallet from inside a briefcase located on a chair. They were then given a written description of the activity that would be taking place in the task room and given 5 minutes to read and remember their story (appendix F). They were then told that an investigator would be interviewing them about the missing wallet and they must convince the investigator that they were one of the two individuals participating in the paper-sorting task, and could not have stolen the wallet. The mock suspects in both the deceptive and truth-telling conditions were told that if they were able to successfully convince the investigator that they were innocent, they would be entered into a raffle for a $100 prize.

All sessions were videotaped from a camcorder mounted on a tripod behind the interviewer, six feet in front of the target. The videotaped interviews ranged in time from 2.3 minutes to 9.6 minutes with an average time of 4.6 minutes (*SD* = 1.5 minutes).

Coding of Verbal and Nonverbal Cues

Once the videotaped interviews were collected, two research assistants were trained to code the videotapes for nonverbal cues (appendix G). The nonverbal cues were selected based upon prior empirical research on subjective and objective nonverbal cues. The nonverbal cues coded for this study included: blinks, head movements, self-manipulations, smiles, illustrators, hand movements, pauses, shifts, speech rate, speech hesitations, arm movements, gaze aversions, and speech errors. In order to establish inter-rater reliability, 17

of the 80 (21.2%) interviews were coded by both coders. Agreement was determined by calculating the correlation between the two coders' ratings. Reliability coefficients ranged from a high of .98 to .65, with an average reliability coefficient of .87 for 13 cues.
The interviews were also transcribed, and two additional research assistants were trained to code the transcriptions for verbal cues (appendix H). The verbal cues were selected using the research on reality monitoring (RM) criteria. Agreement was again determined by calculating the correlation between the two coders' ratings of 17 of the 80 transcribed interviews. Reliability coefficients ranged from a high of .98 to .59, with an average reliability coefficient of .80 for 5 RM cues. Response Latency (IRR = .83) and the Type Token Ratio (TTR) were also coded for each video. The TTR was calculated using WordScan (Colwell et al., 2002).

Experiment 2

Lie-catchers. Eighty undergraduate psychology students (67.8% female, 32.2% male) ranging in age from 18 to 30 years old (M= 19.2, SD = 2.02) received course credit for participating in the proposed research. The lie-catchers were 52.5% Hispanic, 15.3% African American, 8.5% Caucasian, and 23.7% Asian or other ethnicities.

Procedure

Lie-catchers were provided with an informed consent form (appendix K) and then randomly assigned to view one of 80 possible tapes of targets being interviewed regarding a crime they did or did not commit. Lie-catchers watching the videos were asked to rate the veracity of the target's statement on a 9-point likert scale (1 = *not at all truthful, 9* =

completely truthful). Lie-catchers were also asked to make a dichotomous judgment of whether the target is being truthful when denying their involvement in the crime being presented, as well as how confident they were in their judgment based on a 9-point Likert scale (1 = *not at all confident*, 9 = *completely confident*). Finally, lie-catchers were asked to self-report their reasons for their veracity judgments (appendix L). After completing the task, the lie-catchers were informed that the interview was for a mock crime.

Hypotheses

H1: Consistent with previous empirical findings (i.e., Klaver et al., 2007) it is hypothesized that interpersonal measures of psychopathy (i.e., Machiavellian Egocentricity, Social Potency, and Stress Immunity within the PPI; Interpersonal Manipulation within the Hare SRP; Boldness and Meanness of the Triarchic Inventory) will be positively correlated with targets' assessments of their own lying abilities and frequency of their lying behavior, and negatively correlated with targets' assessments of how anxious the act of lying made them feel.

H2: The correlation between psychopathic characteristics and cues to deception (verbal and nonverbal) will be explored. Theoretically (see above), higher scores on measures of psychopathic characteristics should be associated with a decrease in cues associated with anxious responding, cognitive load, and behavioral control. More specifically, body, head, and facial movements should be more prevalent in individuals with higher overall scores on measures of psychopathic traits (e.g., Klaver, Lee, and Hart, 2007). Individuals with higher overall scores on ratings of psychopathic characteristics should also appear less tense, or

nervous, and more verbally productive. Finally, individuals who produce elevated scores on psychopathy scales associated with diminished affective experience (i.e., PPI-I, Callous Affect within the Hare SRP; Meanness within the Triarchic Inventory) should exhibit more lexical diversity (e.g., higher TTRs).

H3: Psychopathic characteristics will have a moderating effect on undergraduate participant's veracity judgments such that individuals who score higher on interpersonal measures of psychopathy (i.e., Machiavellian Egocentricity, Social Potency, within the PPI; Interpersonal Manipulation within the Hare SRP; Boldness within the Triarchic Inventory) will be more likely to be judged as credible and truthful.

Chapter 4

Results

Experiment 1

Manipulation Check. In order to determine whether the mock suspects complied with the instructions to lie or tell the truth, participants' responses to the post-interview questionnaire were analyzed. The analysis revealed, not surprisingly, that there was a significant difference between truthful and deceptive participants' responses, $F(1, 79) = 265.5$, $p < .001$, $\eta^2 = .78$. Participants in the truthful condition rated their statements as more truthful ($M = 9.8$, $SD = 0.7$) than deceptive participants ($M = 2.9$, $SD = 2.4$).

The analysis of questions designed to determine the realism of the mock theft scenario and interview, as well as the participants' overall motivation to give a credible impression during the course of the interview revealed a significant difference in feelings of nervousness, $F(1, 77) = 17.2$, $p < .001$, $\eta^2 = .19$, between participants who were asked to steal a wallet from a briefcase ($M = 4.4$, $SD = 3.3$) and those who were participating in the paper-sorting task ($M = 1.8$, $SD = 1.7$). There was also a significant difference in self-reported nervousness during the interview, $F(1, 78) = 14.7$, $p < .001$, $\eta^2 = .17$, with deceptive participants ($M = 5.4$, $SD = 3.1$) reporting being more nervous than truthful participants ($M = 2.9$, $SD = 2.3$). Finally, when asked to report how motivated they were to give a credible impression during the interview, the participants reported a mean motivation score of 7.7 ($SD = 2.4$) on a scale of 1 to 10. There was no significant difference between truthful and deceptive participants in terms of their self-reported level of motivation.

Regarding their level of planning before being interviewed, there was a significant difference between liars and truth-tellers in terms of the extent to which they tried to control

their body language during the interview, $F(1, 79) = 8.1$, $p < .01$, $\eta^2 = .10$, such that liars ($M = 6.7$, $SD = 2.8$) reported controlling their body language to a greater extent than truth-tellers ($M = 4.9$, $SD = 2.5$), and a significant difference between liars and truth-tellers in terms of the extent to which they planned their verbal statements, $F(1, 78) = 7.2$, $p < .05$, $\eta^2 = .09$, such that liars ($M = 5.1$, $SD = 2.7$) reported planning their verbal statement to a greater extent than truth-tellers ($M = 3.4$, $SD = 2.6$). Finally, there was a significant difference between liars and truth-tellers in terms of their belief regarding how difficult it would be for someone viewing their videotaped interview to judge their veracity, $F(1, 78) = 9$, $p < .005$, $\eta^2 = .11$, such that liars ($M = 6.2$, $SD = 2.8$) believed it would be more difficult to judge their veracity than did truth-tellers ($M = 4.3$, $SD = 2.5$).

Influence of Psychopathic Traits on Self-reports

To test the hypothesis that psychopathic traits would be correlated with self-reports of lying frequency, lying ability, and nervousness (H1), the correlation between the scales contained within the psychopathy measures and mock suspects' reports of their typical lying behavior, as well as their responses to being interviewed was investigated. Participants were first screened to determine whether they completed the psychopathy questionnaires in a random fashion. Participants were removed from the analysis if they produced a score greater than three standard deviations higher than the mean Variable Response Inconsistency (VRIN; $M = 31.4$, SD = 8.7) score on the PPI. One borderline participant was removed from the analysis (i.e., VRIN score 2.7 standard deviations above the mean). Significant correlations are listed in tables 4, 5 and 6.

Zero Order Correlations

The results of the analyses suggest that a number of characteristics associated with psychopathy were correlated in theoretically meaningful ways with self-reports of lying behaviors and impressions of interviews.

Psychopathic Personality Inventory (PPI). Numerous PPI scales were positively associated with mock suspects' beliefs regarding their ability to lie successfully. Individuals who indicated higher scores on the question "Compared to others, how good are you at lying?" also produced higher score for PPI Total ($r = .52$, $p < .001$), Machiavellian Egocentricity ($r = .55$, $p < .001$), Social Potency ($r = .27$, $p < .05$), Fearlessness ($r = .29$, $p < .05$), Coldheartedness ($r = .30$, $p < .01$), PPI-I ($r = .24$;$p < .05$), and PPI-II ($r = .34$; $p < .005$).

Numerous PPI scales were also associated with mock suspects' reports of how often they lie. Individuals who reported lying more frequently produced higher scores for PPI Total ($r = .41$, $p < .001$), Machiavellian Egocentricity ($r = .51$, $p < .001$), Coldheartedness ($r = .25$, $p < .05$), Impulsive Nonconformity ($r = .21$, $p = .058$), Carefree Nonplanfulness ($r = .47$, $p < .001$), and PPI-II ($r = .45$; $p < .001$).

Finally, numerous PPI scales were associated with mock suspects' level of nervousness and discomfort both while acting out the experimental scenario, and while being interviewed. Higher levels of self-reported nervousness/discomfort during the experimental scenario were associated with lower scores on PPI Total ($r = -.24$, $p < .05$), Machiavellian Egocentricity ($r = -.24$, $p < .05$), Coldheartedness ($r = -.28$, $p < .05$), and Carefree Nonplanfulness ($r = -.23$, $p < .05$ – nervous; r = -.29). Higher levels of self-reported

nervousness/discomfort during the interview were associated with lower scores on Coldheartedness (r = -.24, p < .10). Finally, individuals who reported finding the interview to be more difficult produced lower scores on PPI Total Score (r = -.24, p < .05), Social Potency (r = -.25, p < .05), Impulsive Nonconformity (r = -.25, p < .05), and PPI-I (r = -.26; p < .05).

Insert Table 4 Here

Hare Self-Report Psychopathy Scale (Hare SRP). Each of the Hare SRP scales was significantly correlated with self-reports of lying frequency and ability (see table 5). Two of the Hare SRP scales were associated with mock suspects' level of nervousness and discomfort while engaging in the experimental scenario. Higher levels of self-reported nervousness/discomfort during the experimental scenario were associated with lower scores on Hare SRP Total Score (r = -.23; p < .05) and Interpersonal Manipulation (r = -.25; p < .05). There were no significant correlations between the Hare SRP scales and self-reported feelings of nervousness/discomfort during the experimental scenario or interview.

Insert Table 5 Here

Triarchic Inventory. Similar to the results for the Hare SRP, each of the Triarchic Inventory scales were significantly correlated with self-reports of lying ability (see Table 6). Triarchic Inventory Total Score (r = .44, p < .001), Meanness (r = .44, p < .001), and Disinhibition (r = .40, p < .001), but not Boldness (r = .07, p = .55) was each significantly correlated with self-reports of lying frequency. While correlations between self-reports of nervousness/discomfort during the scenario and Triarchic Total Score (r = -.20; p = .08) and Meanness (r = -.21; p= .07) approached significance, none of the Triarchic Inventory scales were significantly correlated with self-reports of nervousness/discomfort.

Insert Table 6 Here

Differences between liars and Truth-Tellers: Nonverbal and Verbal Cues

Nonverbal Cues. A MANOVA was conducted to determine whether liars and truth-tellers differed in terms of nonverbal cues. The MANOVA and subsequent individual ANOVAs were not significant. Table 7 displays the results of the individual ANOVAs as well as interrater reliability coefficients.

Insert Table 7 Here

Verbal Cues. A MANOVA was conducted to determine whether liars and truth-tellers differed in terms of nonverbal cues. The MANOVA was not significant. However, univariate ANOVAs revealed a significant difference between liars and truth-tellers with regards to auditory details ($F(1, 79) = 8.02$; $p < .01$, $\eta^2 = .09$), such that liars ($M = 2.1$, $SD = 2.6$) produced significantly fewer auditory details than truth-tellers ($M = 5$, $SD = 6$). Table 8 displays the results of the individual ANOVAs as well as interrater reliability coefficients. There were no significant differences found for response length in time or words.

Insert Table 8 Here

Influence of Psychopathic Characteristics on Cues to Deception

In order to test the hypothesis that psychopathic characteristics would affect the expression of nonverbal cues (H2), zero order correlations were calculated between the various psychopathy scales and the verbal and nonverbal cues across conditions and for the deceptive condition.

Nonverbal Cues. A number of nonverbal cues were correlated across veracity conditions with PPI Total Score and scales of the PPI associated with the social deviance (PPI-II) factor. Total number of Head Movements was negatively correlated with PPI Total Score (r = -.24; p < .05) and Machiavellian Egocentricity (r = -.29; p = .01). Total number of Illustrators was negatively correlated with PPI-II (r = -.22; p < .05). Total Number of Hand Movements was negatively correlated with PPI Total Score (r = -.30; p < .01), Machiavellian Egocentricity (r = -.33; p < .005), and PPI-II (r = -.28; p < .05). Total number of Speech Hesitations was negatively correlated with PPI Total Score (r = -.23; p < .05), and Machiavellian Egocentricity (r = -.25; p < .05). Finally, total number of blinks was negatively correlated with Coldheartedness (r = -.23; p < .05).

For the deceptive condition, total number of illustrators was positively correlated with Social Potency (r = .46, p< .005). Total number of hand movements was negatively correlated with PPI Total score (r = -.35, p < .05), Machiavellian Egocentricity (r = -.32, p < .05), Impulsive Nonconformity (r = -.34, p < .05), and PPI-II (r = .46, p < .01). Total number of pauses was negatively correlated with Social Potency (r = -.37, p < .05), Fearlessness (r = -.35, p < .05), and PPI-I (r = -.43, p < .01). Total number of speech hesitations was negatively correlated with PPI-II (r = -.36, p< .05). Total number of gaze aversions was negatively correlated with PPI-II (r = -.32, p< .05).

A number of nonverbal cues were also associated with the Hare SRP across conditions. Number of head movements was negatively correlated with Erratic Lifestyle (r = -.29; p < .01). Illustrators were also negatively correlated with Erratic Lifestyle (r = -.24; p < .05). Hand movements were negatively correlated with Callousness (r = -.32; p < .005), Erratic Lifestyle (r = -.25; p < .05), and Hare SRP Total Score (r = -.26; p < .05). Speech

hesitations were negatively correlated with Antisocial Behavior (r = -.24; p < .05). Gaze aversion was negatively correlated with Erratic Lifestyle (r = -.23; p < .05), and number of speech errors was negatively correlated with Antisocial Behavior (r = -.23; p < .05).

During the deceptive condition, total number of blinks was negatively correlated with Callousness (r = -.32, p< .05). Total number of head movements was negatively correlated with Erratic Lifestyle (r = -.32, p< .05). Total number of hand movements was negatively correlated with Erratic Lifestyle (r = -.46, p< .005), Callousness (r = -.39, p< .05), and Hare SRP Total Score (r = -.41, p< .05). Total number of gaze aversions was correlated with Erratic Lifestyle (r = -.38, p< .05), and Callousness (r = -.34, p< .05).

Across conditions, only the Meanness scale of the Triarchic Inventory was negatively correlated with hand movements (r = -.25; p < .05). However, during the deceptive condition, total number of illustrators was positively correlated with Boldness (r = .36, p< .05). Total number of hand movements was negatively correlated with Meanness (r = -.36, p< .05), as were total number of gaze aversions (r = -.32, p< .05), and total number of speech errors (r = -.33, p< .05).

Verbal Cues. Regarding the PPI, zero order correlations across conditions revealed a significant negative correlation between visual details and Carefree Nonplanfulness (r = -.25; p <.05) and PPI-II (r = -.23; p < .05), and a significant positive correlation between visual details and Stress Immunity (r = .24; p < .05). There were also significant positive correlations between the TTR and Machiavellian Egocentricity (r = .24; p < .05) and PPI-II (r = .23; p < .05).

During the deceptive condition, response latency was negatively correlated with response latency (r = -.38, p < .05), and the TTR was positively correlated with PPI-II (r = .33, p < .05) and Carefree Nonplanfulness (r = .32, p < .05).

Regarding the Hare SRP, across conditions visual details were negatively correlated with Erratic Lifestyle (r = -.28; p < .05), and temporal details were also negatively correlated with Erratic Lifestyle (r = -.29; p = .01). Erratic Lifestyle was also negatively correlated with response latency (r = -.23, p <.05). The TTR was positively correlated with Erratic Lifestyle (r = .30; p <.01), and Antisocial Behaviors (r = .25; p <.05).

During the deceptive condition, response latency was negatively correlated with Erratic Lifestyle (r = -.41, p < .01), Callousness (r = -.32, p < .05), and Hare SRP Total score (r = -.33, p < .05). The TTR was positively correlated with Erratic Lifestyle (r = .36, p < .05).

Regarding the Triarchic Inventory, across conditions visual details was negatively correlated with Disconstraint (r = -.24; p < .05), and the TTR was positively correlated with Meanness (r = .22; p = .05) and Discontraint (r = .25; p <.05). During the deceptive condition, the TTR was positively correlated with Meanness (r = .34, p < .05).

In order to further test the moderating effect of psychopathy on nonverbal cues, a two (veracity) by two (psychopathy) MANOVA was conducted in order to test a possible interaction effect between psychopathy and veracity on the emergence of nonverbal cues. In order to conduct this analysis, participants were divided into two groups to represent those who produced total psychopathy scores in the top third of a range of scores comprised of the total scores of all three psychopathy measures, and those who fell in the bottom two thirds. This division resulted in a sample of 53 participants in the high psychopathy group, and the

remaining 27 participants in the moderate to low psychopathy group. The MANOVA revealed no overall main effect for psychopathy or veracity, and no interaction effect.

Experiment 2

In experiment two, the videotaped interviews from experiment one were shown to 80 undergraduates serving as lie-catchers.

Lie detection accuracy. Overall, the observers were correct in their veracity judgments 48.8% of the time, a rate that did not significantly differ from chance ($p = .74$). When observers judged senders as lying, they also reported believing that those senders provided less truthful information ($F(1, 79) = 58.1$, $p < .001$, $\eta^2 = .43$), and that those judged to be liars were also hiding more information ($F(1, 79) = 66.4$, $p < .001$, $\eta^2 = .46$). There were no significant differences in the observers' beliefs when actual veracity was considered. It is noteworthy that the observers displayed a pronounced truth bias, stating suspects were truthful/innocent 62.5% of the time ($p = .03$).

Insert Table 9 Here

Influence of Psychopathic Characteristics on Veracity Judgments. In order to test the hypothesis that interpersonal measures of psychopathy would be associated with a higher degree of perceived credibility (H3), a series of ANOVAs was conducted to determine whether the various psychopathic characteristics influenced the observers' veracity judgments. There were no significant differences between suspects who were seen as honest and those who were judged to be dishonest on any of the psychopathy measures.

However, a number of psychopathy traits influenced the ability of lie-catchers to accurately judge veracity. In order to create a continuous measure of accuracy, a scale measuring lie-catchers' impressions of the extent to which they believed the mock suspect was guilty (*1 = definitely innocent; 9 = definitely guilty*) was recoded to measure accuracy. More specifically, for those who viewed deceptive senders, higher values represented greater accuracy, while lower values represented greater accuracy for those viewing truthful senders. Said another way, the scale was reverse coded for lie-catchers viewing truthful senders. Zero-order correlations were then calculated in order to determine the relationship between the psychopathy traits and accuracy. There was a significant positive correlation between accuracy and PPI scales associated with the social deviance component (PPI-II). More specifically, accuracy was positively correlated with Blame Externalization/Alienation (r = .30; $p < .01$) and PPI-II (r = .25; $p < .05$). There was also a significant negative correlation between accuracy and PPI scales associated with the interpersonal and affective component (PPI-I). More specifically, accuracy was negatively correlated with Stress Immunity (r = -.26; $p < .05$) and PPI-I (r = -.24; $p < .05$).

Accuracy was not significantly correlated with any of the Hare SRP scales. However, there was a significant positive correlation between accuracy and the Disconstraint scale of the Triarchic Inventory (r = .27; $p < .05$).

To further investigate the effect of psychopathy scores on successful deception, a series of 2 (veracity condition – deceptive v. truthful) by 2 (veracity judgment – judged deceptive v. judged truthful) ANOVAs were conducted with the various psychopathy scales as the dependent variable. The series of analyses yielded no significant main effects for any of the scales within the three measures. However, the interaction effect was significant for

the PPI Fearlessness scale, $F(1, 80) = 4.02$, $p = .049$, $\eta^2 = .05$, indicating that Fearlessness scores were higher in the condition where deceptive senders were judged to be truthful. The interaction effect was also significant for the PPI Blame Externalization scale, $F(1, 80) = 4.06$, $p = .047$, $\eta^2 = .05$, indicating that Blame Externalization scores were higher in the condition where receivers identified deceptive senders as lying. There were no significant interaction effects for any of the remaining psychopathy scales.

Chapter 5

Discussion

This study set out to determine the extent to which psychopathic characteristics influence deceptive behaviors and the ability to successfully deceive. The most notable results found here include the impact of both behavioral/externalizing characteristics and affective/interpersonal characteristics of psychopathy on phenomena associated with deception, as well as the influence psychopathic characteristics have on receivers' abilities to accurately distinguish truthful from deceptive interviews. As the results from this study have implications for both the deception literature more globally, as well as the influence of psychopathy on deceptive behavior, I will address these implications separately.

Deception Detection

As previously discussed, extensive research on the human ability to detect deception has found that laypersons and professionals alike are poor lie-catchers. However, it is also clear that lie detection rates depend, to an extent, on various characteristics of the research paradigm (e.g., interview vs. narratives, exposure to sender, etc.), as well as sender characteristics (e.g., undergraduates vs. offenders or community members; level of transparency or credibility). The present study attempted to maintain external validity by utilizing a sample of community members who had previously been convicted of a felony, and a paradigm resembling a crime and police interview. In accordance with previous findings, receivers were no better than chance at detecting lies. Moreover, as has been found elsewhere, receivers displayed a tendency to more often characterize senders as truthful (i.e., truth-bias), rather than deceptive.

Regarding nonverbal cues to deception, not a single nonverbal cue was significantly associated with deceptive behavior. This finding was somewhat surprising given the meta-analytic literature suggesting that a small number of cues are significantly, though weakly, correlated with deceptive presentations. As there is considerable variability across studies of nonverbal cues, it is possible that factors germane to the population used for this particular study moderated the impact of deception on eliciting such cues. For example, the present study used a quasi-random sampling procedure wherein the present sample shared the common characteristic of a felony conviction. It is possible that this common factor constricted the variance within this sample. However, it is more likely that the ability to detect small effects was attenuated by a relatively small sample size. Future studies investigating nonverbal cues in forensic populations with larger sample sizes may succeed in detecting these effects.

Regarding verbal cues, the present study utilized the literature on Reality Monitoring (RM) criteria to investigate verbal cues to deception. It is the first study to investigate the role of psychopathy in moderating RM criteria. The results indicated that liars were significantly less likely to include auditory cues (e.g., descriptions of things they heard). Generally, the RM literature has found that liars display a reduction in all measured RM details (i.e., visual, auditory, spatial, and temporal). Considering the efforts that were made to maintain internal validity in this particular study, it is not surprising that visual, spatial, and temporal details were invariant across liars and truth-tellers. Additionally, liars were provided with a written description of the truthful event to use in formulating their deceptive statements; this also may have reduced the likelihood of finding verbal differences between liars and truth-tellers. In this study, efforts were made to ensure that differences would be

constricted to the variable of deception. For the most part, all other activities were nearly identical for both liars and truth tellers. While being interviewed, senders were instructed to recount their experiences since entering the building to participate in the study. All participants took the same route to the experimenter's office and took roughly the same amount of time to complete the psychopathy measures before being assigned to the experimental condition. Both liars and truth-tellers then spent approximately the same amount of time completing their assigned task. The clearest difference between the liars and truth-tellers was the presence of the confederate in the truthful condition. While the confederate was instructed to complete the experimental task quietly, many of the participants in the truthful condition struck up a conversation, and referred to these conversations during the subsequent interview. These auditory details about conversations were absent in the deceptive condition because liars were not exposed to the confederate. These findings have important implications for the utility of investigative techniques that focus on using evidence strategically. Generally, investigative practices that focus on using evidence strategically involve utilizing known facts to contradict statements made by suspects. For example, instead of beginning an interview by revealing that police are in possession of a video showing the suspect entering a room where a wallet was stolen, the investigator may withhold that information and only use it to contradict a suspect's denial of being in the area. If an investigator were to know that the guilty suspect could not possibly have certain information, that information could also be used strategically to assist in differentiating between truthful and deceptive statements.

Finally, a growing body of research has identified the importance of interviewing strategies in increasing the likelihood that both verbal and nonverbal cues to deception

emerge (Colwell, Hiscock-Anisman & Fede, 2013). For example, Colwell et al (2013) suggest that differences between liars and truth-tellers are most evident in interviewing situations that assist truth-tellers in providing accurate information, while simultaneously making the task of deception more difficult. The present study did not incorporate such an optimal approach, leading to the likely possibility that conditions for the optimal differentiation between liars and truth-tellers were not present.

Influence of psychopathic traits on deception

A number of psychopathic traits were associated with behaviors and beliefs relevant to deceptive behavior. For example, higher scores on scales tapping into affective, interpersonal and behavioral components of psychopathy were positively associated with participants' beliefs in their ability to lie successfully. This finding comports with theories of psychopathy suggesting that psychopathic traits are associated with an inflated sense of personal abilities, or grandiosity (e.g., Cleckley, 1941, 1955; Hare, 1991, 1993, 2003). If individuals believe they are skillful liars, they may lie more frequently. Indeed the results here indicate that higher scores on measures of psychopathic traits were also positively associated with participants' reports of how frequently they lie. This is also consistent with items associated with the PCL-R (i.e., pathological lying, conning/manipulative and superficial charm), as well as scales of the PPI (i.e., Machiavellian Egocentricity and Social Potency) and Hare-SRP (Interpersonal Manipulation). Finally, higher scores on both affective and behavioral indicators of psychopathy measured by the PPI and Hare SRP were associated with decreased levels of nervousness and discomfort during both the mock theft scenario and the subsequent interview. While the emotional approach to cues to deception

would suggest that levels of reported nervousness and discomfort should be associated with the appearance of being truthful, that was not the case in this study.

While anecdotal evidence suggests that psychopaths lie more successfully than non-psychopaths, there is very little systematic empirical support for these claims. In this study, the role of individual psychopathic characteristics was examined to determine the extent to which the components that make up the psychopathic personality moderate deceptive behavior and successful deception. The results indicate that senders who possess higher Fearlessness scores were more successful in their deception, while those possessing higher scores on a scale measuring cynicism and a tendency to blame others (PPI Blame Externalization) were significantly less successful in their deception. These results lend some credence to the perspective that individuals possessing characteristics associated with decreased fear are less likely to experience the fear of being caught or punished for a transgression such as a lie (Rogers & Cruise, 2000; Spidel, Herve, Greaves, & Yuille, 2011), and therefore less likely to appear deceptive. The results also comport with the findings by Billings (2004) that those who possessed higher PCL-SV factor 1 and PPI-I scores were more successful in their deceptions. Conversely, when possessing traits related to hostility and cynicism, senders' hostility may be perceived as defensive and indicative of deception. The results finding that behavioral components of psychopathy are related to higher rates of being caught in a lie also comport with findings by Cogburn (1993). Future studies could benefit from investigating the impressions receivers develop in response to senders with varying levels of these psychopathic traits.

Certain psychopathic traits were also associated with transparency, or a tendency for senders to appear truthful when telling the truth, and deceptive when telling a lie. More

specifically, lie-catchers were more accurate when viewing individuals who possessed higher levels of psychopathic traits associated with social deviance or antisocial behavior. Conversely, lie-catchers were less accurate when viewing individuals who possess higher levels of psychopathic traits associated with the interpersonal and affective components of psychopathy. These results suggest that while individuals who possess higher levels of core psychopathic traits (i.e., interpersonal and affective traits) are overall more difficult to judge. When this notion is combined with the tendency for the average individual to perceive messages as truthful (e.g., Vrij, 2000; Zuckerman et al., 1981), it creates an opening for individuals with core features of psychopathy to deceive undetected. For example, if the average individual is more likely to judge messages as truthful, and psychopathic individuals are predisposed to mendacity and to narratives that are generally more difficult to discern, it would stand to reason that psychopaths would lie successfully at higher rates as a result of the frequency with which they lie.

This study also attempted to build upon previous findings by Klaver et al. (2007) and Lee et al. (2008) by investigating whether psychopathic traits are associated with nonverbal and verbal cues to deception. The results indicated that a number of traits across all three measures were associated with certain nonverbal and verbal cues across veracity conditions, as well as during the deceptive condition. Klaver et al. (2007) found that interpersonal aspects of psychopathy were associated with increased illustrator use, blinking, verbosity and speech hesitations. While lying, psychopathy was associated with increased speech rate, blinking and head movements. In this study, across conditions, overall psychopathic traits and traits related to social deviance and antisocial behavior were associated with a decrease in head movements, hand movements, speech hesitations, gaze aversions, and speech errors.

Interpersonal/affective aspects of psychopathy measured by the Coldheartedness scale of the PPI and Callousness scale of the Hare SRP were also negatively associated with total number of blinks. Essentially, all of these results were in the opposite direction of what was found by Klaver et al. (2007). Klaver et al. interpret their finding of a positive relationship between the interpersonal aspects of psychopathy and increased speech hesitations as in line with the literature finding poor organization and reduced cohesion in psychopathic narratives. However, a decrease in speech hesitations could also be related to general impulsivity. It is possible that individuals who possess increased levels of antisocial/behavioral psychopathic traits measured by the PPI were more likely to respond impulsively during interviews, leading to a decrease in speech hesitations. This would also be in line with research finding an association between psychopathy and decreased BIS activity (e.g., Ross et al., 2009).

It is also possible that both interpretations are correct. In the study conducted by Klaver and her colleagues (2007), participants were asked to provide a truthful or deceptive narrative in which being organized and cohesive is a pertinent task. However, in the present study, participants were interviewed about their activities over the course of time they spent participating in the experiment. In the latter condition, there was less of an opportunity to provide narrative accounts; rather, it was important for participants to provide convincing information when asked. As previously mentioned, research lie detection research has begun to focus on the importance of focusing on specific interview techniques that simultaneously allow for the elicitation of more truthful information from honest senders, while making the task of deception more difficult for liars. While the present scenario did not provide an optimal environment for the elicitation of cues, the differences in methods between this study

and those employed by Klaver et al (2007) likely had an impact on how, and which cues emerged.

Regarding differences in the relationship between psychopathy and various body and facial movements, it is again possible that the scenario impacted how these cues were likely to emerge. In the narrative condition, psychopaths may have been less likely to monitor their behavior as they considered providing the narrative to be their primary task, while in the interview condition here, those possessing higher psychopathic traits may have considered convincing the interviewer of their veracity to be their primary task and therefore focused their efforts on monitoring their presentation and controlling any signs they believed may be construed as indications of deception. This interpretation would be in line with the research suggesting a relationship between psychopathy and diminished attentional capacities or low distractibility (e.g., Bernstein et al., 2000; Jutai & Hare, 1983).

Another key difference between the results found here and those of Klaver et al. (2007) is that a number of correlations between nonverbal cues and psychopathy scores persisted, or became apparent during the deceptive condition. For example, while lying, scales associated with the callous unemotional aspects of psychopathy (i.e., Fearlessness, Social Potency, Stress Immunity, Callousness, Meanness, and Boldness) were associated with decreased blinking, hand movements, pauses, gaze aversions and speech errors, and increased use of illustrators. Similarly, scales associated with the social deviance aspects of psychopathy (i.e., Machiavellian Egocentricity, Impulsive Nonconformity, Carefree Nonplanfulness, Blame Externalization, Erratic Lifestyle, Antisocial Behavior, and Disinhibition) were associated with decreased head and hand movements, speech hesitations, and gaze aversions. It is possible that the use of a narrative format as the means of delivering

truthful and deceptive messages in the Klaver et al. study did not provide the optimal atmosphere for these cues to emerge, while the current use of an interview allowed for these cues to become more prominent. These associations appear to suggest that individuals possessing higher levels of psychopathic traits appear to be more deliberate in their movements and verbal delivery while lying. This is largely true of individuals possessing both affective and behavioral traits.

Regarding verbal cues, higher scores on the PPI scale measuring stress immunity were positively correlated with total number of visual details, while measures of behavioral and interpersonal components of psychopathy measured by the PPI and Hare SRP were negatively associated with visual and temporal details. These findings suggest that the verbal presentation of individuals with higher levels of psychopathic traits may be affected in differing ways by the extent to which they display more prominent affective or behavioral traits. It is possible that those individuals who are more representative of low anxious, callous psychopaths are more thorough in their verbal presentations and more likely to spontaneously produce detailed responses, and are not hindered by anxiety when speaking. This interpretation would comport with previous findings by Lee and colleagues (2008) that psychopaths produce more spontaneous corrections and appropriate details while lying. Conversely, individuals who resemble more behaviorally driven presentations akin to the antisocial personality may be more impulsive and less considerate of their responses, leading to overall decreases in detail. These associations were no longer parent during the deceptive condition.

The one consistent finding across all three measures of psychopathy was the positive correlation between the TTR and behavioral psychopathic traits. As mentioned previously,

research has indicated a negative relationship between anxiety and the TTR (i.e., Porter & Yuille, 1995; Carpenter, 1990). While interpersonal and affective components of psychopathy are known to correlate with lower levels of anxiety, some find that higher behavioral traits are often associated with increased levels of negative affect, including anxiety (Lynam & Derefinko, 2006). Consequently, the findings here may not be in line with the expected relationship between anxiety and the TTR. However, the proposed link between the TTR and anxiety is a function of increased drive and motivation leading to more stereotyped language production (Osgood, 1960). As previously discussed, highly psychopathic individuals are less motivated by the threat of punishment that may result from being caught in a lie. For this reason, the association between the increased lexical diversity and behavioral indicators of psychopathy may be unrelated to the anxiety response per se. Rather, increased lexical diversity may be related to less planned and, therefore, less stereotypical language use as a function of impulsivity/decreased inhibition. Considering previous findings that have found an association between deception and increased lexical diversity, it seems likely that the presence of psychopathic traits may obfuscate this association.

Taken together, the findings regarding the relationship between psychopathy and cues to deception comport with the literature in some ways (i.e., relationship between psychopathy and lying frequency/perceived skill, decreased reports of nervousness/anxiety, as well as the relationship between psychopathy and specific verbal and nonverbal cues), but not in others (i.e., reversed direction of relationship between psychopathy and certain nonverbal cues). These findings help to provide further insight into the importance of utilizing a broad range of measures to identify the various content areas of psychopathy, as well as the likely impact

of the means through which experimenters elicit deception. While some of the scales within measures used here overlap with varying aspects of psychopathy measured by the PCL-R (particularly scales associated with Factor 2, or behavioral aspects of psychopathy), other scales represent content areas that are theoretically associated with psychopathy, but not fully measured by the PCL-R (e.g., the absence of anxiety). The inclusion of these scales allows for a better understanding of the relationship between psychopathy and deception through a more comprehensive accounting of the construct.

The present findings also have implications for the understanding of psychopathy subtypes. While there is some evidence to suggest that psychopathy is best understood as a taxon (i.e., Harris, Rice, Quinsey, 1994), numerous other researchers suggest that psychopathy is best understood as a dimensional construct (e.g., Edens, Marcus, Lilienfeld, & Poythress, 2006; Guay et al., 2007), or a condition represented by "prototypic psychopath" (Hare, 1991) and numerous variants (e.g., Skeem et al., 2003). The findings here may provide some support for this perspective as various psychopathy traits were correlated with deceptive behavior in differing ways. For example, the results here suggest that individuals who possess high levels of affective psychopathic traits such as fearlessness are more adept at evading detection while being deceptive, while those who possess characteristics associated with hostility and a tendency to blame others for their misfortunes are less adept at deceiving. These results may provide some insight into an understanding of the overall differences between psychopathic individuals with primarily cold and callous affective traits, and psychopathic individuals with primarily antisocial/behavioral traits and traits associated with negative affect.

Limitations and Future Directions

The present study was not without limitations. While the present sample is the largest used to investigate the relationship between psychopathy and deception in a criminal population, it was likely too small to detect certain historically small effects. For example, effect sizes for nonverbal and verbal cues to deception tend to be small to moderate. Consequently, it is possible this study did not possess adequate power to detect these effects. Statistical power was also a consideration in many of the analyses that were conducted, as well as those that were not conducted. For example, it would be useful to conduct a study that possessed sufficient power to identify possible clusters associated with psychopathy and cues to deception. Considering the number of cues and variety or individual scales contained within the measures of psychopathy used in this study, the current sample size was insufficient to conduct such an analysis. Future studies would benefit from acquiring a larger sample to test these questions.

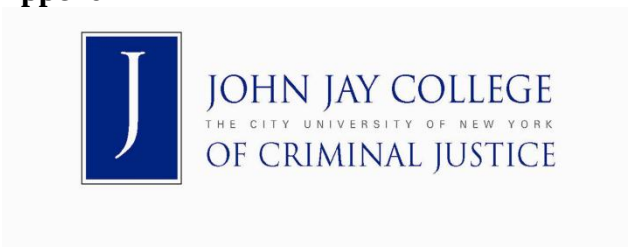
While the scales used to measure psychopathic traits have each been extensively studied and found to have sufficient validity and reliability, they were each self-report measures. Self-report measures of psychopathic traits have been criticized as being incapable of tapping into affective deficits, and are also prone to response bias. Given the context of this study, participants had less of an incentive to dissimulate while responding to the measures, and the PPI validity scales allowed for some measure of security against including those individuals who answered inquiries haphazardly. Regardless, future studies would benefit from a multi-method approach to assessing psychopathic traits in order to gain more thorough insight into the full range of the construct. Finally, the present study utilized a sample of undergraduate students as lie-catchers. While meta-analytic research suggests that

law enforcement officials are no better than laypersons at detecting deception, the manner in which law enforcement agents respond to deceptive presentations, and the influence of psychopathic traits on their responses is relevant to a better understanding of the investigative process. Future studies would benefit from utilizing a more externally valid lie-catcher sample.

Conclusion

The present study attempted to address various weaknesses that have been found in other studies investigating the relationship between psychopathy and deception. In order to address concerns regarding external validity, a sample of individuals who had previously been convicted of a felony was used. To my knowledge, no other published studies have utilized this population to address this specific question. Investigating a sample of individuals who were previously, but are no longer incarcerated for criminal behavior may offer a more precise analogue to police investigations that often involve questioning individuals in the community with a criminal history for comparable offenses. Additionally, this study utilized a paradigm that incorporated an interview rather than instructions for participants to present truthful and deceptive narratives. This approach also provides a more comparable analogue to police investigations that involve questioning of suspects. Finally, the present study utilized multiple measures of psychopathic personality traits. Utilizing three measures with varying origins allowed for a more comprehensive comparison between deceptive behaviors and a variety of traits that are known to correlate with the psychopathy construct.

Appendix A



PAID RESEARCH STUDY: $20

Researchers at John Jay College of Criminal Justice are conducting a study on Interpersonal Behavior. The study lasts approximately ONE HOUR and pays $20 cash on site. We are located in Manhattan (Midtown West).

If you are a MALE, at least 18 years old, HAVE A HISTORY OF AT LEAST ONE FELONY CONVICTION, and are interested in participating, please send an email to **jtoomey@gc.cuny.edu**and list Behavior Research Study as the subject heading. You may also call 212-237-800, extension 2688. Please provide your name, date of birth, a valid email address, and phone number. We will contact you with further information and to schedule a time to participate. Thank you.

jtoomey@gc.cuny.edu
212-237-800, extension 2688

Appendix B

Informed Consent

You are invited to participate in a research study entitled "**Improving Lie Detection Accuracy**." The purpose of this research is to determine whether it is possible to accurately identify suspects who are not being truthful. We plan to enroll approximately 100 participants into this study. If you decide to participate, you will be administered a personality measure and asked to participate in a mock crime or paper sorting task, followed by a videotaped mock interrogation. During this mock interrogation you will be questioned about a make believe crime you either did or did not commit (depending on the group you are assigned to). You will be asked to deny having been involved in this make believe crime. The information obtained in these videos will not be used against you in a legal context, and mock crimes will not be considered actual crimes. The videotape will be shown to an undergraduate participant who will attempt to determine whether you are being truthful when making various types of statements. If the interviewer or an individual viewing your videotaped interview at a later date is convinced that you are being truthful, you will be entered into a raffle to win $100. The videos will also be analyzed by the researchers to identify differences between truthful and untruthful statements. Participation should take about 75 minutes and you will receive $20 for your participation.

The foreseeable risks of participation in this study are minimal. You may choose to terminate your involvement in this study without any repercussions. You will be provided with a list of counseling referrals in the event that your participation is stressful to you. There are no direct benefits to you for your participation. The potential benefits to society are an improved understanding of police interrogation tactics, suspect behavior, and cues to deception.

Your participation in this study is completely voluntary. If you decide to participate you may discontinue participation at any time. You may refuse to answer any specific questions or refuse to engage in any task at any time during the study. Withdrawal or refusing to answer specific questions or engage in specific tasks will not result in any consequences to you and will not affect your relationship with John Jay College. Information gathered from you will be anonymous and all data will be kept in an electronic file in the possession of the principal researcher and destroyed within five years of

completing the study. The videotapes may be used in future studies, but your identifying information will not be shared. The videos will also be kept in a secure locked cabinet in the office of the principal investigator and destroyed within five years of completing the study.

Your signature below means that you have read this consent form, that you fully understand the nature and consequences of participation and that you have had all questions regarding participation in this study answered satisfactorily. If you have further questions about this research please feel free to contact the Principle Investigator, Joseph Toomey at jtoomey@gc.cuny.edu.

If you have any questions regarding your rights as a research participant please feel free to contact the John Jay Institutional Review Board Office at jj-irb@jjay.cuny.edu, or (212) 237-8961.

_____ _____

Participant Name Participant Signature

_____ _____

Principal Investigator/Research Staff Date

Appendix C

Project Description

Proposal Objectives

Although available field studies on police interrogation practice are not only scarce in number but problematic in their execution (e.g., Leo, 1996), evidence from different sources point clearly to the typical American suspect interrogation as a guilt-presumptive and psychologically coercive process (Gudjonsson, 2003). Additionally, such processes put innocent people at risk for confessing falsely, both as a function of the situational pressure (Kassin & Kiechel, 1996) and of individual vulnerability (such as suggestibility, see Gudjonsson, 2003). There are several sources of evidence indicating that such false confessions contribute to false convictions (www.innocenceproject.org). Despite the problematic nature of confessions, and their limited diagnostic values, the Supreme Court ruled in Arizona v. Fulminante (1991) that an improperly admitted coerced confession may be considered upon appeal to have been nonprejudicial, or "harmless error."

The finding that false confessions can pass through the justice system unnoticed by fact-finders (Kassin, Meisner & Norwick, 2005) is mirrored by the vast scientific study of true and false statements. The body of work on human interpersonal deception has shown that cues to deception are scarce and weak (DePaulo et al., 2003), and that both lay people and presumed lie experts (e.g., police officers) achieve deception detection hit rates only marginally higher than chance (Bond &DePaulo, 2006; Ekman & O'Sullivan, 1991; Ekman, O'sullivan & Frank, 1999; Köhnken, 1987; Vrij, 2004). Relatively few studies have focused on cues to deception and truth in samples that are possibly more relevant for legal processes, such as psychopathic forensic populations (Klaver, Lee, & Hart, 2007; Lee, Klaver, & Hart, 2008). However, such research has indicated that drawing conclusions about criminal deception from deception offered by lay people might be premature, in that the psychopathic populations seem to deviate behaviorally from non-psychopaths when deceiving.

In this proposal for an NSF dissertation improvement grant, we propose a more externally valid design for studying interviewing and interrogations of suspects. The intellectual merit of this proposal comes from a novel attempt to investigate cues to guilt and innocence, and cues to deception and truth, in a psychopathic sample. This study will also experimentally manipulate interview techniques, with the aim of examining techniques which have been shown to elicit diagnostic cues to guilt and deception (Hartwig et al., 2005; 2006). In each phase of the study, attempts will be made to maximize external validity (hence the practical value of the findings for criminal investigations), while maintaining internal validity. First, we attempt to maximize external validity in the target deception, by generating true and false statements about criminal transgressions, while maintaining internal validity through indisputable ground truth criteria. Second, the target statements will be elicited in a forensically relevant interactive setting, that of an investigative interview. Dependent measures will include various behavioral measures of the targets, coding of verbal content, and nonverbal behavior, as well as the ability of jury eligible participants to correctly distinguish between true and false statements given by the targets. The broader impact of this study lies in its potential to offer much-needed scientifically anchored advice on investigative

interviewing and interrogating of suspects by expanding the body of evidence to include a highly relevant sample, and by employing empirically supported models of veracity assessments.

Relation of the Proposed Work to the State of the Field

Police Interrogations and False Confessions

In 1984 Eddie Joe Lloyd was convicted for the murder of a 16-year-old girl in Detroit, Michigan. Mr. Lloyd was mentally ill and had previously contacted the Detroit police stating he could help them solve a number of recent crimes. After spending numerous interviews feeding Mr. Lloyd information about the case, police convinced him that by confessing he would assist in "smoking out" the real perpetrator. After hearing his tape recorded confession, a jury convicted Mr. Lloyd of first degree murder. Eighteen years later, Mr. Lloyd was exonerated when DNA evidence showed he could not possibly have committed the crime. This is only one of nearly 50 cases reported by The Innocence Project (www.innocenceproject.org) in which an innocent individual provided a false statements which led to their conviction, and was later exonerated by DNA evidence (approximately 25% of all death row DNA exonerations).

Because a confession is considered highly convincing evidence of guilt, it can often dominate all other evidence in a case (Leo & Ofshe, 1998). Kassin and Wrightsman (1980) cite the classic work by Wigmore (1970) who polled legal scholars and found confessions to rank highest on the evidence scale. Indeed, in spite of the Supreme Court ruling in Arizona v. Fulminante (1991) that confessions are not fundamentally different from other types of evidence, and an improperly admitted coerced confession may be considered upon appeal to have been nonprejudicial, or "harmless error," research has found that mock juries find it hard to believe that anyone would confess to a crime they did not commit (Kassin & Wrightsman, 1980, 1981; Kassin & Sukel, 1997). The Court's decisions in Fulminante was largely based on the assumption that juries can correctly attach zero weight, in their decision making, to a confession which was determined to be false (Kassin & Neuman, 1997). However, Kassin and Sukel (1997) found in an experimental design that the mere presence of a confession "increased the conviction rate—even when it was seen as coerced, even when it was stricken from the record, and even when jurors said it had no influence" (p. 27), suggesting confession evidence is inherently prejudicial, and people do not discount it even when it is logically and legally appropriate to do so. Kassin and Neuman (1997) also found that when compared to eyewitness identification and character testimony, confessions produced significantly higher conviction rates in an experimental design. Although guidelines have been instituted which protect suspects against violations of due process including physical violence, threats of harm, and promises of leniency (Kassin & Kiechel, 1996), self incriminating false statements are still elicited with unacceptable regularity. For example, Bedau and Radelet (1987) examined 350 miscarriages of justice and found that false confessions played a crucial role in 10% of the cases. Furthermore, Kassin (2006) has noted that when individuals who produce false confessions plead not guilty and go to trial, 81% are ultimately convicted by juries.

Stages of the Interrogation Process

Empirical data on actual police interrogation practice is scarce. Some evidence comes from the police interrogation manuals (Inbau et al., 2001), and experimental designs based on these published tactics. Before potential suspects are interrogated, an unstructured, nonaccusatory information gathering phase known as the pre-interrogation interview is performed (Inbau et al., 2001). The goals are establishing rapport, collecting information about the suspect and their background to use later on in the interrogation, and making a determination of the suspect's guilt. To aid such determinations, police interrogation manuals offer an array of claimed cues to deception (Inbau et al., 2001). However, the experimental literature shows conclusively that these cues are a) typically cues to anxiety and stress in response to the police interview situation and b) undiagnostic of deception and guilt (DePaulo et al., 2003). In essence, relying upon such cues will lead to misclassifications of guilty and innocent suspects. The cues to deception offered in police interrogation manuals largely correspond to the stereotypical and empirically unsupported beliefs about cues to deception held by both lay people and presumed deception detection experts such as police officers (Strömwall, Granhag & Hartwig, 2004). Research has also consistently shown that law enforcement officials and laypersons are poor at distinguishing between true and false statements, and typically only marginally outperform chance (Vrij, 2000; Ekman & O'Sullivan, 1991; Ekman, O'sullivan & Frank, 1999; Köhnken, 1987; Vrij, 2004).

After making a determination of whether they believe the suspect is guilty, police enter the interrogation phase in which interrogators attempt to elicit a confession. Interrogation manuals offer a multitude of techniques (Aubry & Caputo, 1965; O'Hara & O'Hara, 1981, Inbau et al., 2001) including but not limited to introduction of false evidence (finger prints, DNA, staged eyewitness identifications, etc.), feigned friendship, and the use of prison informants (Kassin & Kiechel, 1996). Inbau and colleagues (2001) recommend secluding suspects in sound proof rooms before engaging in a nine-step procedure which incorporates a number of specific ploys. The most identifiable of these ploys are social influence devices referred to as minimization or maximization (Kassin, 2005). Through minimization, interrogators attempt to "reduce the suspect's feelings of guilt by minimizing the moral seriousness of the offence" (Inbau et al., 2001, p. 244). Maximization involves exaggerating the seriousness of the offense and charges, or pointing out the grave consequences of their actions. Inbau et al. (2001) state, "none of the steps is apt to make an innocent person confess…" (p. 212). However, experimental research has uncovered ample evidence to the contrary.

False Confession Research

The experimental approach to false confessions was pioneered by Kassin and Kiechel (1996). In their seminal study, participants were led to believe they were participating in a reaction time task using a computer keyboard, and were told that if they pressed the "Alt" key it would cause the computer to crash. Once the procedure began, the computer would inevitably crash and the participant would be accused of pressing the forbidden key. Kassin and Kiechel (1996) found that not only did a significant portion of participants falsely admit to pressing the forbidden key (up to 100%), but a number of them also internalized guilt and confabulated memories consistent with guilt. This was the first study to elicit false confessions using situational pressure. This phenomenon has been replicated repeatedly, and fits with general social influence and compliance research emphasizing the power of the

situation to affect behavior (Forrest, Wadkins, & Miller, 2002; Klaver, Rose, & Lee, 2003; Abboud, Wadkins, Forrest, Lange, & Alavi, 2002; Forrest, Wadkins, & Larson, 2006).

Russano, Meissner, Narchet, and Kassin (2005) attempted to improve the validity of the alt-key paradigm, and instituted a new paradigm in which participants were asked to solve a series of logic problems. Participants were accompanied by a confederate and told that they could only work together on certain problems. The confederates asked a number of the participants for help on problems which were designated as "individual" problems, and most participants obliged in helping (i.e. cheating). The remaining participants were not asked for help, but all participants were subsequently accused of cheating by the experimenter. This allowed the authors to investigate the differences in confession rates between those who had and had not actually cheated. The authors found that the use of common police interrogation tactics (i.e. minimization), significantly increased the likelihood that innocent participants would confess to cheating.

Kassin, Meissner and Norwick (2005) recently attempted to investigate the confidence and accuracy of interrogators in identifying false confessions using a forensic sample. For this experiment, police detectives and jury eligible participants viewed tapes of 10 prisoners confessing to either a crime they had committed or a crime committed by another inmate. When police detectives and college undergraduates were asked to view the tapes and make determinations of the veracity of the confessions, overall accuracy rates were at chance levels (53.9%), with college undergraduates performing slightly better than police (though police were significantly more confident in their judgments). The authors also found that police participants displayed a guilty response bias, meaning they were significantly more likely to identify confessions as true and suspects as guilty. The current proposal draws on the methodology employed by Kassin et al. (2005) in the elicitation of the target statements.

Detection of Deception

The elicitation of self incriminating false statements from innocent suspects which arise from interrogators erroneously identifying innocent suspects as lying and guilty can lead to serious consequences for the innocent suspect. Before suspects can provide false confessions, a determination must be made during the pre-interrogation phase of the suspect's credibility as well as a determination of whether the suspect is being truthful when they deny involvement in a crime during the interrogation. Inbau et al. (2001) state that the interrogation phase is accusatory in nature and should only be conducted on "suspects whose guilt seems definite or reasonably certain" (p. 212). Though police investigators claim a 77% accuracy rate in detecting deception (Kassin et al., 2007), it has been previously stated here that the majority of the research on detecting mendacity has shown rates of correct identification closer to chance. Bond and DePaulo (2006) recently performed an extensive review of the research literature on lie detection and synthesized research results in order to analyze the accuracy of deception judgments. This study highlighted and analyzed the effects of variables that have been investigated as potential moderators to veracity judgment accuracy including the motivation of the potential deceiver, the motivation of the truth seeker, the preparation of the potential deceiver, the interaction between the potential deceiver and the truth seeker, the expertise of the truth seeker, the judgment medium, and the baseline exposure of the truth seeker to the potential deceiver prior to questioning. These variables differ across studies and

can often have effects on the accuracy of truth seekers. The most important finding from this study is thus that lie-detection in general is a difficult task, and that correct judgments hinge upon the diagnosticity of the cues to deception available in any given setting.

Although many important deception and truth judgments are made in the context of an interview or interrogation, few studies have captured this aspect of criminal lie detection. Moreover, few studies have attempted to offer constructive guidelines on how to carry out interviews with the aim of making correct veracity assessments. One group of researchers with such an aim (Hartwig, Granhag, Stromwall, and Kronkvist, 2006) was able to produce unprecedented levels of lie detection accuracy (85.4% accurate veracity judgments) with police trainees using an interrogation technique that allows suspects to describe the events of a given context while interrogators strategically withhold knowledge of pertinent evidence until the end of the suspect's free recall. It was found that liars interviewed by trained interviewers were significantly more inconsistent with the evidence than liars interviewed by untrained interviewers who disclosed evidence early in the interview. This suggests that truth tellers are more likely to spontaneously reveal information that corroborates with the evidence, and hints to a general tendency in innocent people to be forthcoming, which has been found in other studies on suspects' behavior (Kassin & Norwick, 2004).

In order for a body of empirical work to be externally valid, it needs to capture the central variables at play in the setting it attempts to offer generalizability to. Research on veracity assessments in investigative settings must thus include samples from relevant populations. This study is an attempt to add empirical knowledge about one such sample. The proposed research will allow for an investigation of the moderating effect of psychopathy on veracity judgments using actual former criminal suspects and actual case information.

Psychopathy and Deception

In writing about the development and characteristics of psychopathic individuals, both Hare (1993, 2003) and Cleckley (1976) have identified psychopaths as having unique affective and behavioral characteristics which make them naturally talented liars who display a propensity for insincerity and untruthfulness. Indeed, several items on the Psychopathy Checklist-Revised (PCL-R; Hare, 2003), the "gold standard" in identifying psychopathy, measure characteristics such as Pathological Lying and Conning/Manipulative tendencies. Others have also posited that psychopaths enjoy deceiving others and experience "duping delight" (Hare, 1993). In clinical settings psychopaths are often described as superficially charming, pathological liars, and manipulators. Furthermore, studies have linked psychopathy with malingering of mental illness (Gacono, Meloy, Sheppard, Speth, & Roske, 1995) and deceptive presentation styles such as denial (Rogers & Cruise, 2000) and social desirability (Rogers et al., 2002). Seto, Khattar, Lalumiere, and Quinsey (1997) have also found that higher PCL-R scores were significantly correlated with both general and sexual deceptiveness. However, others have found little or no association between psychopathy and these factors (e.g. Clark, 1997; Edens, Buffington, and Tomicic, 2000; Poythress, Edens, & Lilienfeld, 1998; Poythress, Edens, & Watkins, 2001).

Regarding specific deceptive presentations, early studies by Rimé, Bouvy, Leborgne, and Rouillon (1978) found psychopathic participants were more intrusive during interviews (i.e.

leaned forward more and looked at the interviewer longer) and spoke less when interacting with other psychopaths. More recently, Klaver, Lee and Hart (2007) found that when compared to nonpsychopathic participants, psychopathic participants spoke faster while lying, and demonstrated increases in blinking and head movements. Regarding verbal cues, studies have found that psychopaths tend to present with less coherent and cohesive narratives when interviewed (Brinkley, Bernstein, & Newman, 1999; Brinkley, Newman, Harper, & Johnson, 1999). Finally, Lee, Klaver & Hart (2008), found that psychopathic offenders provided more spontaneous corrections and appropriate detail while lying, and also found an association between interpersonal psychopathic symptoms and perceived credibility of lies. The finding that psychopath's provide more spontaneous corrections and appropriate detail while lying contradicts the assertion by Inbau et al. (2001) that "The deceptive subject may offer short responses containing only minimal information" (p. 129). Inbau et al. (2001) also suggest that emotional states such as fear, guilt, apprehension, and conflict are closely associated with deception. Indeed, the authors suggest "Whatever the source, during an interview lies result in anxiety, and many of the behavior symptoms revealed by a deceptive suspect represent his conscious, or preconscious, efforts to reduce this internal anxiety" (p. 130). However, one of the most identifiable characteristics of the psychopathic individual is diminished anxiety and related emotional states (Hare, 2003).

The psychopath is known to be impulsive and fearless during the commission of criminal acts, and void of guilt or conflict regarding their victims. Neuropsychological research has often shown that psychopaths show significant deficits in areas of the brain associated with emotional responsivity. Indeed, neuroimaging studies have shown a negative correlation between PCL-R scores and amygdaloid volume (Tiihonen, et al., 2000) and amygdala response during an emotional memory task (Kiehl, et al., 2001). These findings are seen as further evidence to support the hypothesis that psychopathic individuals are likely to display behavioral patterns which do not comport with the strategies espoused by Inbau and colleagues (2001). The proposed research aims to further investigate the potential differences in cues to deception which exist between psychopathic and nonpsychopathic populations by investigating an analogue scenario which mimics a real world setting, that being a criminal interrogation. The present study will differ from prior studies in that actual criminal defendants will be utilized along with actual case information allowing for a higher degree of mundane realism. Finally, verbal and nonverbal behaviors will be scrutinized across multiple stages of the interrogation process allowing for a larger and more diverse data set.

General Plan of Work

We propose a multi-phase study which will investigate jury eligible participants' opinions regarding the credibility of suspects' accounts during pre-interrogation interviews, the veracity of statements provided during interrogations, the veracity of confessions, and potential differences in verbal and nonverbal cues to deception between psychopathic and nonpsychopathic suspects. To accomplish this goal, we will select former criminal defendants previously convicted of criminal acts to participate in this research. Half of the suspects will be selected based on a diagnosis of psychopathy as indicated by the PCL-R (Hare, 2003), while the remaining half will be nonpsychopaths. Experienced police detectives will be recruited to perform pre-interrogation interviews and interrogations on mock-suspects, with the explicitly understood goal of eliciting confessions. Suspects will be

instructed to deny involvement in the crime for which they are being questioned during interrogations, and later instructed to confess to both crimes they have and have not committed. We will present jury eligible participants with videotaped pre-interrogation interviews, interrogations, or confessions of the former criminal suspects. The jury eligible participants will be asked to watch the videos of one of the three components of the interrogation process, and make judgments regarding the credibility of the suspects' stories during the pre-interrogation interview or the veracity of their statements during the interrogation or confession phase. The participants will also be asked to provide ratings of their confidence in these judgments. Finally, research assistants will code videotapes of lying and truthful suspects in order to determine whether differences exist between psychopaths and nonpsychopaths with regards to verbal and nonverbal cues to deception.

Design: A 2 (Defendant Guilt: guilty vs. not guilty) X 2(Presence of Psychopathy: psychopathic vs. nonpsychopathic) X 3 (pre-interrogation interview, interrogation, and confession).

Suspects

Ten former criminal defendants will be selected from the local sex offender registry to act as suspects during all phases of the proposed research. Suspects will be contacted by telephone and offered monetary compensation for their participation in a research study. Suspects will be preliminarily screened for psychopathy over the phone before being invited for a more in depth interview. If selected for participation, suspects will also be asked to provide written consent to utilize case information and personal background information in the possession of their parole and/or probation officer(s). The collateral information obtained will be used in the description of the criminal conduct, as well as in assisting the determination of psychopathy.

Interrogators

Two police detectives will act as the interrogators during all phases of the proposed research study. The interrogators will be provided with monetary incentives for their role in the study. The detectives will assist in developing scripts for the interview and interrogation in order to control for potential differences between interrogator styles and suspect influence.

Participants

Four hundred undergraduate psychology students will receive course credit to participate in the proposed research. The participants will be randomly assigned to one of the 12 conditions of the design.

Materials

Stimulus Tape. The stimulus tape will be collected in a style which borrows heavily from Kassin et al. (2005). Upon arrival, each suspect will be seated at a table and introduced to the interrogator and a technical assistant who will operate the audiovisual equipment. After explaining the task, the interviewer will present the participant with a written consent form for a signature and read it aloud. This form will advise the suspect that participants are anonymous ("that my name will not be associated with the results in any way"), that the information they provide is confidential ("to be shared only with others involved in the

research project"), that they will be paid $100, and that they may withdraw their consent and discontinue at any time.

Suspects who sign the consent form will be asked to deny having committed the crime for which they were convicted during the pre-interrogation interview and interrogation, but not to talk about their arrest, conviction, or incarceration, or other aspects of their recent lives. Specifically, as in Kassin et al. (2005) they will be instructed: "At this time you are going to be questioned about your involvement in the crime for which you were recently incarcerated. You are to deny all involvement in the crime and attempt to convince the interrogator that you are innocent. Please do not speak about your arrest, conviction, incarceration or other aspects of your recent life." To ensure that all stimulus interrogations contain the same basic ingredients, each free narrative will be followed by a standardized set of 10 questions that probe for specific details, such as: "Where were you at the time of the offense?" "Can anyone attest to your whereabouts?" All sessions will be videotaped from a camcorder mounted on a tripod behind the interviewer, five feet in front of the inmate, and a camcorder positioned to capture both the suspect and interrogator. The sessions will also be recorded by an audiotape recorder placed on the table.

For a second videotaped interview, each suspect will be instructed to deny involvement in a crime which a companion suspect committed. As in Kassin et al. (2005) the suspect will be instructed: "At this time you are going to be questioned about a crime which another individual committed. You are to answer all questions truthfully to the best of your ability. Please do not speak about your arrest, conviction, incarceration or other aspects of your recent life." Again, each free narrative will be followed by standardized interview questions. Using the yoked design utilized by Kassin et al. (2005), the first suspect's actual crime will become the basis of the second inmate's true denial; the second's crime will become the basis of the third's true denial, and so on. The order in which the participants provide true and false denials will be counterbalanced across sessions.

Finally, the confession phase of the experiment will replicate the study performed by Kassin et al. (2005). Suspects will be asked to provide a full confession to the crime for which they were in prison, but not to talk about their arrest, conviction, or incarceration, or other aspects of their recent lives. Specifically, they will be instructed: "Tell me about what you did, the crime you committed, that brought you here. Try to give me as much detail as you can about what happened, when, where, who you were with, and so on." Once again, to ensure that all confessions contain the same basic ingredients, each free narrative will be followed by a standardized set of 10 questions that probe for specific details, such as: "Had you planned to do it?" "Did anyone see you?" "Afterward, what did you do and where did you go?" "Did you tell anyone about it?" All confessions will be videotaped from a camcorder mounted on a tripod behind the interviewer, five feet in front of the inmate, and a camcorder positioned to capture both the suspect and interrogator. The confessions will also be recorded by an audiotape recorder placed on the table.

For the second videotaped confession, each suspect will be instructed that, "I'm going to tell you about a crime that you were not involved in. I'd like you to lie about it and make up a confession as if you did it. Try to imagine the crime and imagine yourself doing it. Then

make up a story filled with details of what happened, what you did, when, where, who you were with, and so on." Each inmate will then be given a skeletal, one- or two-sentence description of the true crime described by the preceding participant and offered a couple of minutes to concoct a false confession. As with the true statements, each free narrative will be followed by standardized interview questions. This phase will again use the yoked design described above. The order in which the participants give true and false accounts will be counterbalanced across sessions.

Psychopathy Checklist - Revised, 2nd Edition (PCL-R; Hare, 2003). The PCL-R is a 20-item scale with each item scored on a three point scale (*0 = item does not apply, 1 = item may apply in some respects, and 2 = item definitely applies*). It was designed to measure the concept of psychopathy in research, clinical, and forensic settings (Hare, 2003). The PCL-R utilizes a semi-structured interview format along with the gathering of file and collateral information to measure personality traits and behaviors related to psychopathy. The PCL-R is widely renowned as the "gold standard" in the assessment of psychopathy, and has been found to have good overall reliability and validity (Hare, 2003). A generally accepted cut off score for psychopathy is a total PCL-R score of 30 or above, which has been confirmed by Item Response Theory (IRT) Analyses (Hare, 2003).

The PCL-R's 20-items consist of: Glibness/Superficial Charm, Grandiose Sense of Self Worth, Need for Stimulation/Proneness to Boredom, Pathological Lying, Conning/Manipulative, Lack of Remorse of Guilt, Shallow Affect, Callous/Lack of Empathy, Parasitic Lifestyle, Poor Behavioral Controls, Promiscuous Sexual Behavior, Early Behavioral Problems, Lack of Realistic/Long-Term Goals, Impulsivity, Irresponsibility, Failure to Accept Responsibility for Own Actions, Many Short-Term Marital Relationships, Juvenile Delinquency, Revocation of Conditional Release, and Criminal Versatility. The PCL-R is generally seen as being comprised of two correlated factors which are both parts of the higher-order construct of psychopathy. Factor 1 of the PCL-R reflects a combination of the interpersonal and affective features of the psychopath, while Factor 2 reflects a chronically unstable, antisocial, and socially deviant lifestyle. The PCL-R is further broken down into underlying facets of the original factors, with Facet 1 representing Interpersonal features, Facet 2 affective features, Facet 3 Lifestyle, and Facet 4 antisocial behavior. Potential Suspects will be administered the PCL-R in order to secure a sample in which 50% are individuals who score at or above a PCL-R total score of 30.

Procedure

Participants will be randomly assigned to view one of twelve possible tapes which include psychopathic or nonpsychopathic suspects being interviewed regarding crimes they have or have not committed in a pre-interrogation interview, interrogation, or confession setting. The participants will be told they are watching videotapes of actual criminals being interviewed regarding a crime which they may or may not have committed. Participants watching the pre-interrogation interview will be asked to rate the credibility of the suspect on a 10-point likert scale (1 = not at all credible, 10 = very credible). Participants will also be asked to rate their confidence in their judgments of the suspects credibility, also on a 10-point likert scale (1 = not at all confident, 10 = very confident). Participants watching videos of the interrogations will be asked to make a simple (yes or no) determination of whether the suspect is being

truthful when denying their involvement in the crime being presented. Participants will also be asked to rate their confidence in their judgments of the suspects veracity, also on a 10-point likert scale (1 = not at all confident, 10 = very confident). Finally, participants watching videos of the confessions will follow the same procedures as performed by Kassin et al. (2005). Specifically, participants will be asked to circle their judgment: "In your opinion, is this individual guilty of the crime to which he has confessed, or is he innocent of it and telling a false story?" Participants will also be asked to rate their confidence in their judgments on a 10-point likert scale. At the end of each session participants will be debriefed and given forms to present to their professors for course credit.

Hypotheses

H1: Psychopathic individuals will display verbal and nonverbal cues while lying which differ from nonpsychopathic individuals.

H1a: Specifically, we predict psychopathic participants will display significantly fewer symptoms of anxiety while providing deceptive confessions and while lying during interrogation.

H1b: In accordance with results found by Lee, Klaver, and Hart (2008), we predict psychopathic individuals will provide more spontaneous corrections and appropriate detailed information while lying compared to nonpsychopathic individuals.

H2: Psychopathy will have a moderating effect on jury eligible participant's veracity judgments such that psychopathic individuals will more often be judged as truthful when denying involvement in the crimes they committed.

H3: Psychopathy will moderate jury eligible participant's veracity judgments such that the false confessions provided by psychopathic individuals will be seen as more believable than false confessions provided by nonpsychopathic individuals.

Broader Impact of the Proposed Activities

Though Inbau et al. (2001) suggest that false confessions are elicited with insignificant regularity and that experimental research lacks mundane realism and external validity, both investigations of real world cases (only a select few of which are highlighted by theinnocenceproject.org) and experimental research provide essential information which cannot be eschewed so easily. The increasing numbers of DNA exonerations involving defendants who have provided false confessions, combined with the experimental research which suggests people will confess to acts they have not committed in differing paradigms should eliminate all doubt that false confessions, however rare, occur with unacceptable regularity. We suggest that future research should focus on what elements place people in danger of confessing to crimes they did not commit, as well as what techniques improve and diminish interrogators abilities to recognize innocent suspects during interrogation. We propose that the greatest danger lies in interrogators erroneously identifying innocent suspects as mendacious by utilizing cues to deception which are unreliable, as well as potentially identifying guilty suspects as innocent due to personality characteristics which act as protective factors during the interrogation process (i.e. diminished affective capacity).

The proposed research will add to the field's theoretical knowledge of false confessions by replicating prior research on jury eligible participants' abilities to distinguish true from false confessions. It will also be the first to examine participant's abilities to determine the veracity and credibility of actual criminal suspects across multiple phases of the interrogation process. As the majority of the extant literature involves confederates acting as suspects, or mock crime scenarios, the proposed research will add to the fields understanding of the influence of utilizing more ecologically valid experimental designs when investigating false confessions and deception detection. Studies which have attempted to investigate the influence of psychopathy on cues to deception have also utilized scenarios which lack mundane realism. The proposed research aims to utilize a scenario which has significant real world relevance, that being the behavior of psychopathic individuals who lie during interrogation. Finally, the proposed research will be the first to examine the role of psychopathic personality in moderating people's perceptions of veracity during multiple phases of the interrogation process. These findings will be useful in identifying potential roadblocks to generalizing the findings of previous research across multiple populations by examining the influence of viewing criminal suspects with contrasting levels of psychopathic personality.

The funds obtained for this proposal will assist the Co-PI in completing his dissertation. Funding this proposal will also help achieve NSF's goals of adding diversity to the field of scientific research. Specifically, the participants who will take part in this research come from an extraordinarily diverse urban population. Participation in this research will provide these individuals with the opportunity to become familiar with and excited about psychological and legal research. This would not only increase public knowledge about issues in the legal system, it would give many community members the opportunity to learn about research methods in the social sciences. In addition, several of the research assistants working in the PIs research lab are members of under-represented minority groups (Latinas, African-American) and by helping with the coding of the videotapes and data collection, they will also gain valuable research experience.

Letter to NSF Proposing Changes in Methodology

Dr. Martinek,

Pursuant to the Awards and Administration Guide policy regarding Changes in Project Direction or Management, I wanted to inform you of some methodological changes we are considering enacting regarding NSF Project Number 0850476. In February we were granted a one year no cost extension in order to complete our study after we encountered an unexpected set back. It has become clear that our solution to the setback has been inadequate. We initially lost the ability to utilize our primary sample, and have learned that our backup sample is largely unwilling to participate. In light of these setbacks, we propose the following changes to the methodology of our study in order to achieve the objectives of this project.

More specifically, we propose an experimental design that involves a sample of community members participating in a mock crime scenario. We propose administering a self-report measure of psychopathic characteristics to these participants in order to address our hypotheses regarding the impact of psychopathy on our outcome variables (e.g., the ability to avoid detection while being deceptive). The self-report measure we plan to incorporate has been widely researched and has been found to correlate in expected ways with external variables. Additionally, this measure does not require substantial file review or collateral information (an issue that could not be resolved with our backup sample mentioned above). We would next conduct videotaped interrogations of those involved in the mock crimes, followed by a confession phase.

We believe that by using such a population, we will be able to acquire a substantially larger sample size, and have the means to conduct more sensitive analyses using a continuous measure. Both of these final points would address concerns that were previously raised by the reviewers of our initial grant application. Finally, by utilizing this design, we would likely consume a much smaller portion of our allotted budget.

Do you anticipate that the changes we propose are too drastic? We believe that we still have the opportunity to meet our objectives, and establish a theoretical contribution to the literature. Thank you for any thoughts you may have.

Joseph Toomey and Maria Hartwig

Appendix D
Interview script

1. We are investigating a theft that occurred over the course of the last 30 minutes. A student's wallet was stolen and we want to question you at this time to determine whether you were involved with this incident. Do you understand?

2. Please tell me, in as much detail as possible, what you have been doing for the last 30 minutes. Mention all details, all conversations that took place, and give as much information as you can about everyone who you encountered, however irrelevant it may seem.

3. Is there anything you would like to add about what you did today?

4. I will ask you a number of questions. Even if you have already addressed this information previously, I would like you to answer.

a) Where in the building have you been today?

b) Were you in this room at all today?

c) What did you do while you were in this room?

d) Did you see a stack of paper in the room? If yes, where was it?

e) Did you see what was on the papers?

If yes, What was on them?

f) Did you do anything with the papers?

If yes, What did you do with them?

f) Did you see other objects on the table with the papers? (if does not describe, ask what objects)

g) Did you see a briefcase? If yes, where was it?

h) Did you see if the briefcase was open or closed?

i) Did you look inside the briefcase?

j) Did you take anything from the briefcase?

k) Did you steal a wallet from the briefcase?

5. Thank you. Now, I want you to tell me everything that happened in this room today, but in reverse order. Therefore, you should start your story with entering this room to speak with me, and end it with how you originally came to this room today.

Appendix E
Truthful Instructions

Next, you will be helping a student sort and staple some paper packets. Enter room 2422 and retrieve a stapler from the briefcase on your chair. Continue helping the student until the experimenter requests that you stop.

Afterwards you will be meeting with an interviewer. Please answer all of the interviewer's questions truthfully. If an individual viewing your videotaped interview at a later date is convinced that you are being truthful, you will be entered into a raffle to win $100.

Now, enter room 2422 and remove the stapler from the briefcase on your chair so that you can begin the task.

Appendix F
Deceptive Instructions

Instructions

1.) You are to enter room 2422, open the briefcase on the chair, and remove the wallet from inside. Next, bring the wallet to the experimenter. Once you have done so, return to the room where you found the wallet and read the paragraph below. Make sure you read the information carefully because someone will be interviewing you about it. Take your time.

Your Story

You entered the room to find a woman named "Sam," and the two of you began sorting and stapling papers alone together for a while. You sat where you are sitting now and the other participant sat opposite you. You had a general conversation with the other participant as you sorted and stapled, until Sam's cell phone rang and she excused herself and left the room, leaving you alone for a minute or so. When she returned you continued sorting and stapling. Then someone else entered the room, asked how many packets had been finished, removed the stack of papers that you had sorted from the table, and a briefcase, then left. You continued your task when the experimenter came back in and informed you both that a wallet had gone missing from the briefcase and you are both to be interviewed.

2.) Your next task is to convince an interviewer that you did not steal the wallet from inside the briefcase. You have 5 minutes to prepare your story. If an individual viewing your videotaped interview at a later date is convinced that you are being truthful, you will be entered into a raffle to win $100.

Appendix G
Nonverbal Behavior Coding Descriptions

Cues	**Description**
1. Blinks	1. Frequency of eye blinks (average of two ratings)
2. Head movements	2. Upward and downward head nods counted separately
3. Self-manipulations	3. Scratching the head, wrists, etc
4. Smiles	4. Smiles and laughs
5. Illustrators	5. Arm or hand movements that modify or supplement speech
6. Hand movements	6. Movements of the hands or fingers ignoring arm movement
7. Pauses	8. Noticeable pause in speech
8. Shifts	9. Clearly visible trunk movements or position adjustments
9. Speech rate	10. Number of words spoken per second
10. Speech hesitations	11. Saying “ah” or “mm” between words
11. Arm movements	12. Clear movements of the arm away from or toward the body
12. Gaze aversions	13. How often sender looks away from interviewer
13. Speech Errors	14. Word/sentence repetition, sentence change, sentence incompletion, or slips of the tongue

Appendix H
Verbal Cues and descriptions

Cues	**Description**
1. Perceptual Information (visual) 2. Perceptual Information (auditory) 3. Spatial Information 4. Temporal Information 5. Cognitive Operations 6. Type/token ratio 7. Response latency	1. Details about what was seen 2. Details about what was heard 3. Details about where things took place 4. Details about when things too place 5. Thoughts and reasonings 6. Total number of unique words used 7. Amount of time between question and answer

Visual Perceptual Information: Details about things that were seen.

- Any physical objects reported would be counted as 1 detail.
  - Further descriptions of those objects would be additional details.
    - Example: I came the *room(1)* and met a *young(1) lady(1)* with *red(1) hair(1).*

There were *two(1) students(1).*

Auditory Perceptual Information

- Any information that was heard would be counted as 1 detail
  - Example: The woman *told me to fill out the paperwork (1)*

The woman *said a wallet was missing (1)*

Spatial Information

- Any information about location, or where things took place would be counted as 1 detail.
  - Example: I came *here(1)* from *downstairs(1).*

The papers were *here(1)* and *here(1).*

Temporal Information

- Any information about when things took place counted as 1 detail.
  - Example: *Thirty minutes ago(1)* I was working on some papers.

Ten minutes later(1) I came in here.

Cognitive Operations

- Any indication of thoughts or inferences are coded as 1 detail
  - Example: The girl was young so she must have been a student*(1)*

I thought it was odd that there was a wallet in the briefcase*(1)*

Appendix I
Psychopathy Measures and Lying Behavior Questionnaire

Psychopathic Personality Inventory (PPI; Lilienfeld & Andrews, 1996)
This test measures differences in personality characteristics among people – that is, how people differ from each other in their personality styles. Beginning on the next page, read each item carefully, and decide to what extent it is false or true as applied to you. Then circle your answer using the scale below.

1) False 2) Mostly False 3) Mostly True 4) True

Even if you feel that an item is neither false nor true as applied to you, or if you are unsure about what response to make, try to make some response in every case. If you cannot make up your mind about an item, select the choice that is closest to your opinion about whether it is false or true as applied to you.

With one smile, I can often make someone I just met interested in getting to know me better.	1	2	3	4
I like my life to be unpredictable, even a little surprising	1	2	3	4
Members of the opposite sex find me "sexy" and appealing.	1	2	3	4
I am very careful and cautious when doing work involving detail.	1	2	3	4
Physically dangerous activities, such as sky-diving or climbing atop high places, frighten me more than they do most people.	1	2	3	4
I tend to have a short temper when I am under stress.	1	2	3	4
Even when others are upset with me, I can usually win them over with my charm.	1	2	3	4
My table manners are not always perfect.	1	2	3	4
If I'm at a dull party or social gathering, I like to stir things up.	1	2	3	4
I weigh the pros and cons of major decisions carefully before making them.	1	2	3	4
Being rich is much less important to me that enjoying the work that I do.	1	2	3	4
I have always considered myself to be something of a rebel.	1	2	3	4
I sometimes worry about whether I might have accidentally hurt someone's feelings.	1	2	3	4
I find it difficult to make small talk with people I don't know well.	1	2	3	4
I think a fair amount about my long-term career goals.	1	2	3	4
I would not mind wearing my hair in a "Mohawk."	1	2	3	4

I occasionally forget my name.	1	2	3	4
I rarely find myself being the center of attention in social situations.	1	2	3	4
It might be fun to belong to a group of "bikers" (motorcyclists) who travel around the country and raise some hell.	1	2	3	4
I tell many "white lies."	1	2	3	4
I often hold on to old objects or letters just for their sentimental value.	1	2	3	4
I am a good conversationalist.	1	2	3	4
A lot of people in my life have tried to stab me in the back.	1	2	3	4
I am so moved by certain experiences (e.g., watching a beautiful sunset, listening to a favorite piece of music) that I feel emotions that are beyond words.	1	2	3	4
I often find myself resenting people who give me orders.	1	2	3	4
I would find the job of a movie stunt person exciting.	1	2	3	4
I have always been extremely courageous in facing difficult situations.	1	2	3	4
I hate having to tell people bad news.	1	2	3	4
I think it should be against the law to seriously injure another person intentionally.	1	2	3	4
I would be more successful in life had I not received so many bad breaks.	1	2	3	4
It bothers me (or it would bother me) quite a bit to speak in front of a large group of strangers.	1	2	3	4
When I am faced with a decision involving moral matters, I often ask myself, "Am I doing the right thing?"	1	2	3	4
From time to time I really "blow up" at other people.	1	2	3	4
Many people think of me as a daredevil.	1	2	3	4
It takes me a long time to get over embarrassing or humiliating experiences.	1	2	3	4
I usually feel that people give me the credit I deserve.	1	2	3	4
I've never really cared much about society's so-called "values of right and wrong."	1	2	3	4
If someone mistreats me, I'd rather try to forgive him or her than to get even.	1	2	3	4
It would bother me to cheat on an examination or assignment even if no one got hurt in the process.	1	2	3	4

I become deeply upset when I see photographs of starving people in Africa.	1	2	3	4
I rarely monopolize conversations.	1	2	3	4
Making a parachute jump would really frighten me.	1	2	3	4
At times I have been very envious of someone.	1	2	3	4
I become very angry if I do not receive special favors or privileges that I feel I deserve.	1	2	3	4
I often find myself worrying when a friend is having serious personal problems.	1	2	3	4
I pride myself on being offbeat and unconventional.	1	2	3	4
Keeping in touch with old friends is very important to me.	1	2	3	4
I usually strive to be the best at whatever I do.	1	2	3	4
I almost always feel very sure of myself when I am around other people.	1	2	3	4
I look down at the ground whenever I hear an airplane flying above my head.	1	2	3	4
I could make an effective “con artist” if the situation required it.	1	2	3	4
I wouldn’t mind spending my life in a commune and writing poetry.	1	2	3	4
I have had “crushes” that were so intense that they were painful.	1	2	3	4
I like to stand out in a crowd.	1	2	3	4
I’m not intimidated by anyone.	1	2	3	4
Before I say something, I first think about it for a while.	1	2	3	4
I would enjoy hitch-hiking my way across the United States with no pre-arranged plans.	1	2	3	4
I am a guilt-prone person.	1	2	3	4
I bet that it would be fun to pilot a small airplane alone.	1	2	3	4
When I want to, I can usually put fears and worries out of my mind.	1	2	3	4
Never in my whole life have I wished for anything that I wasn’t entitled to.	1	2	3	4
I generally prefer to act first and think later.	1	2	3	4
I am easily flustered in pressured situations.	1	2	3	4
I often make the same errors in judgment over and over again.	1	2	3	4

I always look out for my own interests before worrying about those of the other guy.	1	2	3	4
I smile at a funny joke at least once in a while.	1	2	3	4
People have often criticized me unjustly (unfairly).	1	2	3	4
I almost always promptly return items that I have borrowed from others.	1	2	3	4
I sometimes have difficulty standing up for my rights in social situations.	1	2	3	4
If I want to, I can influence other people without their realizing they are being manipulated.	1	2	3	4
My opinions are always completely reasonable.	1	2	3	4
I become embarrassed more easily that most people.	1	2	3	4
When I'm in a frightening situation, I can "turn off" my fear almost at will.	1	2	3	4
It bothers me greatly when I see someone crying.	1	2	3	4
Frankly, I believe that I am more important than most people.	1	2	3	4
In frequently have disturbing thoughts that become so intense and overpowering that I think I can hear claps of thunder or crashes of cymbals inside my head.	1	2	3	4
If I do something that causes me trouble, I'm sure to avoid doing it again.	1	2	3	4
I often place my friends' needs above my own.	1	2	3	4
I like having my vacations carefully planned out.	1	2	3	4
People whom I have trusted have often ended up "double-crossing" me.	1	2	3	4
I often become deeply attached to people I like.	1	2	3	4
I've been the victim of a lot of bad luck in my life.	1	2	3	4
I have at times eaten too much.	1	2	3	4
I sometimes question authority figures "just for the hell of it."	1	2	3	4
When my life becomes boring, I like to take some chances to make things interesting.	1	2	3	4
I tend to be "thin-skinned" and overly sensitive to criticism.	1	2	3	4
I've quickly learned from my major mistakes in life.	1	2	3	4
When someone is hurt by something I say or do, I usually	1	2	3	4

consider that to be their problem.				
I like to dress differently from other people.	1	2	3	4
If I really wanted to, I could convince most people of just about anything.	1	2	3	4
I get restless and dissatisfied if my life becomes too routine.	1	2	3	4
I generally feel that life has treated me fairly.	1	2	3	4
Ending a friendship is (or would be) very painful for me.	1	2	3	4
When I am under a lot of stress, I often see large, red, rectangular shapes moving in front of my eyes.	1	2	3	4
I often do favors for people even when I know that I will probably never see them again.	1	2	3	4
I have sometimes "stood up" a date or a friend because something that sounded more fun came up.	1	2	3	4
I haven't thought through much about what I want to do with my life.	1	2	3	4
Looking down from a high place gives me "the jitters."	1	2	3	4
I feel that few people in my life have taken advantage of me.	1	2	3	4
I can't imagine being sexually involved with more than one person at the same time.	1	2	3	4
I'm never concerned about whether I'm following the "rules" in social situations; I just make my own rules.	1	2	3	4
I find it easy to go up to someone I've never met and introduce myself.	1	2	3	4
I often feel very nostalgic when I think back to peaceful moments in my childhood.	1	2	3	4
When I go to a restaurant, I carefully look over the menu before deciding what to order.	1	2	3	4
Some people seem to have gone out of their way to make life difficult for me.	1	2	3	4
I have always been completely fair to others.	1	2	3	4
I get a kick out of startling or scaring other people.	1	2	3	4
I generally try to pay attention when someone important speaks to me directly.	1	2	3	4
I feel very bad about myself after telling a lie.	1	2	3	4
I enjoy watching violent scenes in movies.	1	2	3	4
I would not enjoy being a race car driver.	1	2	3	4
I am very careful about my manner when other people are around.	1	2	3	4

I feel that very few people ever understood me.	1	2	3	4
I'm hardly ever the "life of the party."	1	2	3	4
I have occasionally felt discouraged about something.	1	2	3	4
I agree with the motto, "If you are bored with life, risk it."	1	2	3	4
I am a squeamish person.	1	2	3	4
I enjoy (or would enjoy) participating in sports involving a lot of physical contact (e.g., football, wrestling).	1	2	3	4
I do not enjoy loud, wild parties and get-togethers.	1	2	3	4
I often push myself to my limits in my work.	1	2	3	4
I am easily "rattled" at critical moments.	1	2	3	4
In school or at work, I sometimes try to "stretch" the rules a little bit just to see how much I can get away with.	1	2	3	4
On occasion, I've had to restrain myself from punching somebody.	1	2	3	4
I wouldn't mind belonging to a group of people whom "drift" from city to city, with no permanent home.	1	2	3	4
I have at times been angry with someone.	1	2	3	4
If I grew up during the 1960's, I probably would have been a "hippie" (or I was a "hippie" during the 1960's).	1	2	3	4
When a friend says hello to me, I generally either wave or say something back.	1	2	3	4
While watching a sporting even on TV, I sometimes wince when I see an athlete get badly injured.	1	2	3	4
I'm good at flattering important people when it's useful to do so.	1	2	3	4
I sometimes become deeply angry when I hear about some of the injustices going on in the world.	1	2	3	4
I'm not very good at talking people into doing favors for me.	1	2	3	4
Seeing a poor or homeless person walking the streets at night would really break my heart.	1	2	3	4
When someone tells me what do to, I often feel like doing exactly the opposite just to spite them.	1	2	3	4
I always tell the entire truth.	1	2	3	4
I prefer rude, but exciting people to nice, but boring people.	1	2	3	4
I can remain calm in situations that would make many other people panic.	1	2	3	4

I usually enjoy seeing someone I don't like getting into trouble.	1	2	3	4
When I'm in a group of people who do something wrong, somehow it seems that I'm usually the one who ends up getting blamed.	1	2	3	4
People are almost always impressed with me after they first meet me.	1	2	3	4
I like to (or would like to) wear expensive, "showy" clothing.	1	2	3	4
In the past, people who were supposed to be my "friends" ended up getting me into trouble.	1	2	3	4
I might enjoy flying across the Atlantic in a hot-air balloon.	1	2	3	4
I don't take advantage of other people even when it's clearly to my benefit.	1	2	3	4
I'm the kind of person who gets "stressed out" pretty easily.	1	2	3	4
Sometimes I'm a bit lazy.	1	2	3	4
I sometimes like to "thumb my nose" at established traditions.	1	2	3	4
During the day, I generally see the world in color rather than in black-and-white.	1	2	3	4
When I am doing something important (e.g., taking a test, doing my taxes) I usually check it over at least once or twice to make sure it is correct.	1	2	3	4
When I'm among a group of people, I rarely end up being the leader.	1	2	3	4
To be perfectly honest, I usually try not to help people unless I think there is some way that they can help me later.	1	2	3	4
Many people probably think of my political beliefs as "radical."	1	2	3	4
I sometimes lie just to see if I can get someone to believe me.	1	2	3	4
I have to admit that I'm a bit of a materialist.	1	2	3	4
I think there might almost be exciting to be a passenger on a plane that appeared certain to crash, yet somehow managed to land safely.	1	2	3	4
In social situations, I sometimes act the same way everyone else does because I don't want to appear too different.	1	2	3	4
Never in my whole life have I taken advantage of anyone.	1	2	3	4
I can hold up my end of a conversation even if the topic is something I know almost nothing about.	1	2	3	4
I often tell people only the part of the truth they want to hear.	1	2	3	4
When I'm with a group of people who are having a serious conversation, I occasionally like to say something wild or outrageous just to be noticed.	1	2	3	4
I tend to get crabby and irritable when I have too many things to do.	1	2	3	4
I'm sure that some people would be pleased to see me fail in	1	2	3	4

life.				
I frequently find that the way others react to my behavior if very different from what I had expected.	1	2	3	4
Some people probably think of me as a "hopeless romantic."	1	2	3	4
When a task gets too difficult, I don't mind dropping it and moving on to something else.	1	2	3	4
I often get blamed for things that aren't my fault.	1	2	3	4
I often lose my patience with people to whom I have to keep explaining things.	1	2	3	4
Some people have made up stories about me to get me in trouble.	1	2	3	4
I occasionally have periods of several days or more during which I am uncertain whether I am awake or asleep.	1	2	3	4
I sometimes get myself into a state of tension and turmoil as I think of the day's events.	1	2	3	4
To be honest, how much I like someone depends a lot on how useful that person is to me.	1	2	3	4
I have sometimes felt slightly hesitant about helping someone who asked me to.	1	2	3	4
I occasionally do something dangerous because someone has dared me to it.	1	2	3	4
I sometimes try to get others to "bend the rules" for me if I can't change them any other way.	1	2	3	4
I am a "freewheeling," spontaneous person.	1	2	3	4
I sometimes become so involved in my daydreams or fantasies that I momentarily forget about everything else.	1	2	3	4
Some people have told me that I make too many excuses for myself.	1	2	3	4
I am an ambitious person.	1	2	3	4
Fitting in and having things in common with other people my age has always been important to me.	1	2	3	4
I quickly become very annoyed at people who do not gave me what I want.	1	2	3	4
I have never felt that I was better than someone else.	1	2	3	4
If I were a firefighter, I think that I might actually enjoy the excitement of trying to rescue someone from the top floor of a burning building.	1	2	3	4
I will sometimes break a promise if it turns out to be inconvenient to keep.	1	2	3	4
People who know me well regard me as reliable, dependable, and trustworthy.	1	2	3	4

I watch my finances very closely.	1	2	3	4
I think that I would make a very good actor.	1	2	3	4
I often put off doing fun things so that I can finish my work.	1	2	3	4
I think that holding the same job for most of my life would be dull.	1	2	3	4

Hare Self-Report Psychopathy Scale (Hare SRP; Paulhus, Neumann, & Hare, in press)
Authors contacted for permission to utilize this measure.

Triarchic Inventory (Patrick, 2008)
Authors contacted for permission to utilize this measure.

Lying Behavior Questionnaire

1. Compared to others, how good are you at lying?"

1	2	3	4	5	6	7	8	9
	Poor							**Excellent**

2. In general, how often do you lie?

1	2	3	4	5	6	7	8	9
	Never							**Always**

3. How do you think the act of lying about a serious wrongdoing would make you feel? (Circle One)

Excited **Nervous/anxious** **Scared/worried** **Guilty**

Other:_____

Please indicate your age: _____

Ethnicity: **African American** **Caucasian** **Hispanic** **Asian** **Other**

Years of education: _____

Appendix J
Post-Interview Questionnaire

Post-Interview Questionnaire **Initials: _____** Guilty

The statement I gave during the interview was

Completely deceptive Completely truthful
1 2 3 4 5 6 7 8 9 10

Circle the alternative that fits best.

The questions below concern the event when you took the wallet.

Did you feel *nervous* when you took the wallet?

No, not at all Yes, extremely
1 2 3 4 5 6 7 8 9 10

Did you feel *uncomfortable* when you took the wallet?

No, not at all Yes, extremely
1 2 3 4 5 6 7 8 9 10

The questions below concern when you were interviewed.

Did you feel *nervous* when you were interviewed?

No, not at all Yes, extremely

1 2 3 4 5 6 7 8 9 10

Did you feel *uncomfortable* when you were interviewed?

No, not at all Yes, extremely

1 2 3 4 5 6 7 8 9 10

Was it *difficult* to be interviewed?

No, not at all Yes, extremely

1 2 3 4 5 6 7 8 9 10

Was it *difficult* to tell your story in reverse order?

No, not at all Yes, extremely

1 2 3 4 5 6 7 8 9 10

What did you feel during the interview?

_____

_____

_____

_____

To what extent had you planned the *verbal content* of your statement?

Very low extent Very high extent

1 2 3 4 5 6 7 8 9 10

To what did you try to control your *body language* (including facial expressions)?

Very low extent Very high extent

1 2 3 4 5 6 7 8 9 10

To what extent were you motivated to give a credible impression during the interview?

Very low extent Very high extent

1 2 3 4 5 6 7 8 9 10

Do you think that the person who interviewed you thought that you were innocent or guilty?

Innocent ☐

Guilty ☐

In a later stage of the study, a person might watch the videotaped interview with you. How difficult do you think it will be for that person to determine whether you are lying or telling the truth?

Extremely easy Extremely difficult

1 2 3 4 5 6 7 8 9 10

Do you think that the person who will watch the videotaped interview with you will think that you were lying or telling the truth?

Lying ☐

Telling the truth ☐

Why?

_____

_____

_____

_____

_____

_____

_____

Post-interview questionnaire **Initials:_____** Innocent

The statement I gave during the interview was

Completely deceptive Completely truthful

1 2 3 4 5 6 7 8 9 10

Circle the alternative that fits best.

The questions below are about the Paper Sorting task you did

Did you feel *nervous* when you were doing the paper-sorting task?

No, not at all Yes, extremely

1 2 3 4 5 6 7 8 9 10

Did you feel *uncomfortable* when you were doing the paper-sorting task?

No, not at all Yes, extremely

1 2 3 4 5 6 7 8 9 10

The questions below concern when you were interviewed.

Did you feel *nervous* when you were interviewed?

No, not at all Yes, extremely

1 2 3 4 5 6 7 8 9 10

Did you feel *uncomfortable* when you were interviewed?

No, not at all Yes, extremely

1 2 3 4 5 6 7 8 9 10

Was it *difficult* to be interviewed?

No, not at all Yes, extremely

1 2 3 4 5 6 7 8 9 10

Was it *difficult* to tell your story in reverse order?

No, not at all Yes, extremely

1 2 3 4 5 6 7 8 9 10

What did you feel during the interview?

_____

_____

_____

_____

To what extent had you planned the *verbal content* of your statement?

Very low extent Very high extent

1 2 3 4 5 6 7 8 9 10

To what extent did you try to control your *body language* (including facial expressions)?

Very low extent Very high extent

1 2 3 4 5 6 7 8 9 10

To what extent were you motivated to give a credible impression during the interview?

Very low extent Very high extent

1 2 3 4 5 6 7 8 9 10

Do you think that the person who interviewed you thought that you were innocent or guilty?

Innocent ☐

Guilty ☐

How difficult do you think it will be for a person watching the videotaped interview with you to determine whether you are lying or telling the truth?

Extremely easy Extremely difficult

1 2 3 4 5 6 7 8 9 10

Do you think that a person who will watch the videotaped interview with you will think that you were lying or telling the truth?

☐ Lying

☐ Telling the truth

Why?

_____

_____

_____

_____

_____

_____

_____

Appendix K

Informed Consent

You are invited to participate in a research study entitled "Interrogating Psychopathic Suspects: Confessions, Deception and Cues to Guilt." The purpose of this research is to determine whether participants can accurately identify suspects who are lying, or telling the truth, during an interview about a mock theft. We plan to enroll approximately 100 participants into this study. If you decide to participate, you will be asked to watch a videotape of an interview. The individuals in the video you are about to watch were recruited to participate in a research study. Some of these people were instructed to carry out a mock theft of a wallet; others were instructed to do something else, not involving a mock crime. After watching the video you will be asked to fill in an anonymous response sheet asking you a number of questions regarding the interview. Participation should take about 10 to 15 minutes and you will receive credit from your Introductory Psychology course. If you accurately identify the suspect as truthful, or lying you will also be entered into a raffle to win $100.

The foreseeable risks of participation in this study are minimal. You may choose to terminate your involvement in this study without any repercussions. The potential benefit to you is the acquisition of important knowledge regarding research methods and design. The potential benefits to society are an improved understanding of police interrogation tactics, suspect behavior, and cues to deception.

Your participation in this study is completely voluntary. You have a right to refuse to participate without consequences. If you decide not to participate your decision will not affect your relationship with John Jay College.

If you decide to participate you may discontinue participation at any time. You may refuse to answer any specific questions or refuse to engage in any task at any time during the study. Withdrawal or refusing to answer specific questions or engage in specific tasks will not result in any consequences to you and will not affect your relationship with John Jay College.

Information gathered from you will be anonymous and all data will be kept in an electronic file and destroyed within five years of completing the study.

Your signature below means that you have read this consent form, that you fully understand the nature and consequences of participation and that you have had all questions regarding participation in this study answered satisfactorily. If you have further questions about this research please feel free to contact the Principle Investigator, Joseph Toomey at jtoomey@gc.cuny.edu.

If you have any questions regarding your rights as a research participant please feel free to contact the John Jay Institutional Review Board Office at jj-irb@jjay.cuny.edu, or (212) 237-8961.

_____ _____

Participant Name Participant Signature

_____ _____

Principle Investigator/Research Staff Witness Signature Date

Appendix L

Please indicate your age: _____
Gender: **M** **F**
Ethnicity: **African American** **Caucasian** **Hispanic** **Asian** **Other**

1. What was your impression of the suspect's innocence/guilt?

1 2 3 4 5 6 7 8 9
Definitely Innocent **Definitely Guilty**

2. Of the information that the suspect provided, how much do you think was truthful?

1 2 3 4 5 6 7 8 9
None **All Truthful**

3. How much information do you think the suspect was hiding?

1 2 3 4 5 6 7 8 9
None **Everything**

4. Do you believe the suspect was telling the truth when they said they did not steal a wallet?

YES **NO**

How confident are you in your answer?

50% 60% 70% 80% 90% 100%
Not at all **Completely**

5. How difficult was it to judge whether the suspect was truthful or lying?

1 2 3 4 5 6 7 8 9
Not at all **Very Difficult**

6. To what extent did the suspect's body language (including facial expressions) influence your impression of truth/lying?

1 2 3 4 5 6 7 8 9
Not at all **Completely**

7. To what extent did the suspect's verbal statement influence your impression of truth/lying?

1 2 3 4 5 6 7 8 9
Not at all **Completely**

Briefly describe the main reasons why you think the interviewee was innocent/guilty.

_____
_____
_____
_____
_____
_____
_____
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_____
_____
_____
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_____
_____

Tables

Table 1
Layperson and Professional Beliefs Regarding Cues to Deception

Liars are more gaze aversive (L, P)	Liars fidget more (P)
Liars make more self-manipulations (L, P)	Liars have a higher pitched voice (L)
Liars make more illustrators (L)	Liars make more speech disturbances (L)
Liars make more head movements/nods (P)	Liars shift position more (L, P)
Liars blink more often (L)	Liars make more body movements in general (P)
Liars' speech is less fluent (P)	Lies are less consistent (L, P)
Liars make more hand/arm movements (L, P)	Liars' stories are less plausible (L, P)
Liars make more foot/leg movements (L, P)	Lies contain fewer details (L, P)
Liars have a slower speech rate (L)	Liars give more indirect answers (L)
Liars have a longer latency period (L)	Liars make fewer self-references (L)
Liars take more and longer pauses (L)	Lies are shorter (L)
	Lies contain more negative statements (L)
	Lies contain more irrelevant information (L)

Note. L = Laypersons; P = Professionals/Practitioners

Table 2
Psychopathy Criteria Proposed by Cleckley

Criteria	Description
1. Superficial charm and good "intelligence"	- Appears agreeable, friendly, well-adjusted - Achieves high scores on measures of intelligence
2. Absence of delusions and other signs of irrational thinking	- No evidence of psychosis - Has the ability to reason rationally and logically
3. Absence of "nervousness" or psychoneurotic manifestations	- Shows no signs of abnormal anxiety - Appears immune to otherwise appropriate worry or anxiety arising from disturbing situations
4. Unreliability	- Marked inconsistency in fulfilling responsibilities - Disregard for obligations and consequences - Not improved through confrontation
5. Untruthfulness and insincerity	- Displays total disregard for the truth - At ease in being dishonest and does not exhibit typical cues of deception - Unaffected by the possibility of being caught in a lie
6. Lack of remorse or shame	- Cannot accept blame for own misfortunes or hardships he has imposed on others - Shows no signs of humiliation or regret
7. Inadequately motivated antisocial behavior	- Will commit a variety of antisocial acts for small rewards and under high risk, or in the absence of any apparent goal
8. Poor judgment and failure to learn from experience	- Displays poor judgment in own behaviors, but unimpaired judgment in appraising theoretical situations - Judgment does not improve through punishment or other experience
9. Pathologic egocentricity and incapacity for love	- Unmodifiable self-centeredness and absolute incapacity for object-love
10.General poverty in major affective reactions	- Affective reactions are labile, superficial and lack depth

11. Specific loss of insight	- Complete lack of ability to see himself as others see him - Absence of self-appraisal
12.Unresponsiveness in general interpersonal relations	- Signs of kindness, trust or appreciation are inconsistent and transparent - Any positive interpersonal reactions are only meant to suit his needs
13.Fantastic and uninviting behavior with drink and sometimes without	- Peculiar vulgarity and rudeness - Uniquely dramatic shifts between tearfully sentimental and boastful moods
14. Suicide rarely carried out	- Frequent, empty suicidal threats - Attempts are rarely serious, but often histrionic and premeditated
15.Sex life impersonal, trivial, and poorly integrated	- Sexually promiscuous, often sexually deviant - Often engages in impulsive and risky sexual behaviors - Sexual encounters lack emotion
16. Failure to follow any life plan	- Inability to follow a life plan or maintain effort towards a long-term goal

Table 3
Means, Standard Deviations, and Internal Reliability Coefficients for Measures of Psychopathy

Measure/Scale	Items	*M*	*SD*	Coefficient Alpha
Pychopathic Personality Inventory				
Total Score	163	385.8	41.1	.91
Machiavellian Egocentricity	30	67.8	16.1	.91
Social Potency	24	67	9.6	.80
Fearlessness	19	45.5	10.9	.84
Coldheartedness	21	47.4	8.7	.77
Impulsive Nonconformity	17	38.4	9.1	.82
Blame Externalization/Alienation	17	42	9.1	.81
Stress Immunity	11	33.7	5.3	.74
Carefree Nonplanfulness	20	37.7	8.2	.82
PPI – I	54	-.004	.71	.85
PPI – II	84	.007	.70	.92
Hare Self-Report Psychopathy Scale				
Total Score	64	2.8	.52	.91
Interpersonal Manipulation	16	2.8	.71	.86
Callous Affect	16	2.7	.63	.80
Erratic Lifestyle	16	3	.61	.68
Antisocial Behavior	16	2.7	.59	.70
Triarchic Inventory				
Total Score	58	139.3	21.7	.90
Boldness	19	53.2	7.3	.73
Meanness	19	36.8	11.4	.93
Disinhibition	20	49.3	10.4	.84

Table 4
Correlations between PPI Scores and Questionnaires

Questionnaire	PPI Scales										
	Total	Me	Sp	Fear	Cold	In	Aln	Cn	Si	PPI-I	PPI-II
Compared to others, how good are you at lying?	**.52****	**.55****	**.27***	**.29***	**.30****	**.19**$^{+}$	.10	.10	-.04	**.24***	**.34****
In general, how often do you lie?	**.41****	**.51****	-.10	.12	**.25***	**.21**$^{+}$	.06	**.47****	-.18	-.07	**.45****
Did you feel nervous/uncomfortable when you stole the wallet/did the paper sorting task?	**-.24***	**-.24***	.02	-.05	**-.28***	-.16	.17	**-.23***	-.09	-.04	**-.20**$^{+}$
Did you feel nervous/uncomfortable when you were interviewed?	-.10	-.06	**-.21**$^{+}$	.03	**-.23***	-.16	.19	-.06	-.14	-.15	-.04
Was it difficult to be interviewed?	**-.24***	-.11	**-.25***	-.10	-.18	**-.25***	.15	-.08	**-.19**$^{+}$	**-.26***	-.11

Note. PPI = Psychopathic Personality Inventory; Total = PPI Total Score; Me = Machiavellian Egocentricity; Sp = Social Potency; Fear = Fearlessness; Cold = Coldheartedness; In = Impulsive Nonconformity; Cn = Carefree Nonplanfulness; Aln = Blame Externalization/Alienation; Si = Stress Immunity
*$p < .05$, two tailed. **$p < .01$, two tailed. ; $^{+}p < .05$, one tailed.

Table 5
Correlations between Hare SRP Scores and Questionnaires

Questionnaire	Hare SRP				
	Total	IPM	CA	ASB	ELS
Compared to others, how good are you at lying?	**.61****	**.66****	**.50****	**.36****	**.46****
In general, how often do you lie?	**.54****	**.54****	**.47****	**.35****	**.41****
Did you feel nervous/uncomfortable when you took the wallet/did the paper-sorting task?	**-.23***	**-.25***	**-.22**$^{+}$	-.11	-.16
Did you feel nervous/uncomfortable when you were interviewed?	-.08	-.15	-.05	-.04	-.10
Was it difficult to be interviewed?	-.12	-.19	-.02	-.06	-.13

Note. Total = Hare SRP Total score, IPM = Interpersonal Manipulation, CA = Callous Affect, ASB = Antisocial Behavior, ELS = Erratic Lifestyle
*$p < .05$, two tailed. **$p < .005$, two tailed. ; $^{+}p < .05$, one tailed.

Table 6
Correlations between Triarchic Inventory Scores and Questionnaires

Questionnaire	Triarchic Inventory			
	Total	Boldness	Meanness	Disinhibition
Compared to others, how good are you at lying?	**.52****	**.31****	**.53****	**.30****
In general, how often do you lie?	**.45****	.07	**.46****	**.39****
Did you feel nervous/uncomfortable when you took the wallet/did the paper-sorting task?	**-.20**$^{+}$	-.07	**-.21**$^{+}$	-.15
Did you feel nervous/uncomfortable when you were interviewed?	-.12	-.12	-.14	-.03
Was it difficult to be interviewed?	-.17	**-.20**$^{+}$	-.14	-.07

Note. $*p < .05$, two tailed. $**p < .01$, two tailed. ; $^{+}p < .05$, one tailed.

Table 7
Nonverbal Cues Mean Frequencies, ANOVA Results, and Interrater Reliability Coefficients for Liars and Truth-Tellers

Cues	Liars	Truth-Tellers	*F*	*IRR*
Blinks	91.1 (53.2)	108.6 (54.1)	2.1	.92
Head movements	75.1 (34.3)	72.3 (35.8)	0.1	.94
Self-manipulations	1.6 (1.7)	2.6 (3.4)	3.1^{+}	.91
Smiles	2.4 (2.7)	3.2 (4.2)	1.2	.84
Illustrators	12.2 (12.8)	15.3 (16.6)	0.9	.81
Hand movements	43.7 (29.9)	42.7 (43.2)	0.01	.94
Pauses	1.4 (1.9)	1.7 (2.1)	0.5	.73
Shifts	1.2 (1.5)	1.7 (3.5)	0.7	.65
Speech hesitations	11.2 (8.9)	14.1 (14.5)	1.2	.96
Arm movements	12 (13.2)	8.8 (13.7)	1.1	.86
Gaze aversions	61 (37.1)	67.6 (33.6)	0.7	.98
Speech Rate	1.4 (0.4)	1.5 (.5)	0.1	-
Speech Errors	8.4 (6.8)	9.6 (13.6)	0.2	.88

Note. $^{+}p < .10$

Table 8
Verbal Cues Mean Frequencies, ANOVA Results, and Interrater Reliability Coefficients for Liars and Truth-Tellers

Cues	Liars	Truth-Tellers	*F*	*IRR*
Visual Details	48.6 (30)	61 (42.9)	2.2	.98
Auditory Details	2.1 (2.6)	5 (6)	8**	.82
Spatial Details	9 (5.6)	11.1 (7.3)	1.2	.65
Temporal Details	1.8 (2.2)	2.3 (2.3)	0.8	.97
Cognitive Operations	1 (1.2)	1 (1.5)	0.1	.59
Type Token Ratio (TTR)	0.9 (0.1)	0.9 (0.1)	0.01	-
Response Latency	0.9 (0.3)	0.9 (0.3)	0.03	.83

Note. ** $p < .01$

Table 9
Hit Rates

		Veracity Judgment: Truth	Veracity Judgment: Lie	Hit Rates
Actual Veracity	Truth	25	15	62.5%
	Lie	26	14	35%

Note. Overall Accuracy = 48.8%

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