

INVESTIGATION OF EMOTIONAL CONTAGION EXPERIENCED BY PEOPLE WITH
PSYCHOPATHIC PERSONALITIES

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ABSTRACT

This dissertation project explored the experience of emotional contagion (EC) by individuals with psychopathic personalities. EC is a three-step process that allows an observer to experience the feelings of another and thereby converge emotionally. Recent findings regarding mirror neurons provide complementary evidence for primitive contagion and support the three-step model proposed by Hatfield and her colleagues.

This study informs scientific understanding of the construct of emotional contagion, the abilities necessary for the EC response, and the circumstances under which EC occurs or fails. We know that contagion helps us to establish solidarity with the people in our own tribe as well as outsiders.

Many scholars assert that psychopaths are unable to deeply or genuinely connect with others. They probably feel no sense of camaraderie and therefore no sense of acceptance. By studying their emotional contagion process, we might better understand their thinking, their feelings, their instincts, and ultimately their behavior.

The study recruited participants using an online work platform hosted by Amazon called Mechanical Turk (MTurk). In addition to a psychopathy screener and a demographic profile, each participant completed two short surveys, one that measured propensity for emotional contagion and another that measured capacity for empathy. Resulting data showed that level of psychopathy correlated strongly and negatively with self-assessed capacities for both emotional contagion and empathy.

Participants also experienced the three steps of emotional contagion: mimicry, afferent response, and emotional convergence. All participants, when instructed, successfully completed each step. However, participants with psychopathy scores higher than one standard deviation above the mean did not *naturally* experience emotional contagion; when watching film clips of people in emotional situations, high-psychopathy participants did not share the feelings of the people in the films at the same rate as their

low-psychopathy peers. Possible explanations for these findings are discussed, and questions for further research are considered.

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CHAPTER 1. INTRODUCTION

Psychopathy

The media paints a titillating portrait of psychopaths. They are cunning. They are charming. They are remorseless. According to Robert Hare, they leave “a broad trail of broken hearts, shattered expectations, and empty wallets” (1999, p. xi). It is a riveting, but misleading, image. While these characteristics are true of a few, they are not true of the majority of psychopaths. Yet, the view of the psychopath as predatory, cold, and callous does not come solely from tabloid authors and crime show writers. It also comes from scholars.

Some scholars pique public curiosity by reporting the most extreme examples of anti-social behavior. A dozen or more books have been published on psychopathy and sociopathy in the last few years. For example:

- *How to spot a psychopath* (Navarro, 2011)
- *Working with monsters* (Clarke, 2010)
- *Women who love psychopaths* (Brown, 2010)
- *Danger has a face* (Pike, 2011)
- *Snakes in suits* (Babiak & Hare, 2007)
- *The sociopath next door* (Stout, 2006)

These are not “true crime” books, but books written by scholars for the general public.

Psychopathy as a Constellation of Traits

Modern scientific research reveals a more pedestrian portrait of the psychopath. Psychopathic personalities are simply extreme cases of everyday personalities—psychopaths possess a variant of normal personality that can be socially harmful. Although there is disagreement in the research community, the following traits are often identified with psychopathy:

- Superficial charm
- Egocentricity
- Manipulation, lying, conning
- Lack of guilt, remorse, shame
- Lack of insight / failure to learn from experience
- Impulsivity
- Incapacity for emotions, lack of empathy, callousness
- Irresponsibility
- Early behavioral problems / delinquency

While these characteristics of psychopathy may sound unpleasant, the intensity of the characteristics can vary from mild (near normal) to extreme. The personality profile of “a psychopath” could range from a socially awkward, self-absorbed individual to a ruthless self-gratifying predator. A frequency chart showing severities of psychopathic personalities would reveal a distribution skewed to the right of center--not a pool at the high end of the scale--indicating that most psychopaths do not possess the extreme traits that have been so well publicized (see Figure 1). Instead, they are grouped toward the normal end of the severity scale, with only a small percentage falling in the extreme tail of the distribution.

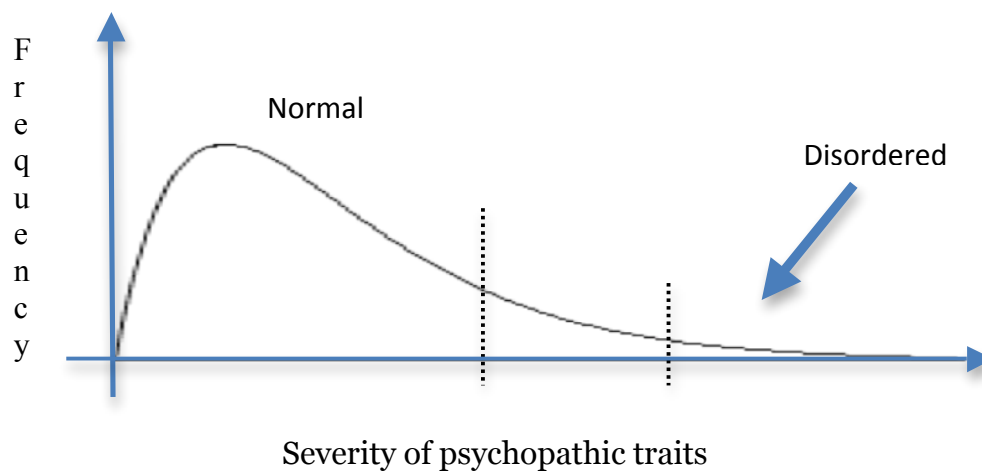


Figure 1. Estimated frequency distribution of psychopathic traits in the general population (Luckhurst).

Five Factor Model and Psychopathy

If most psychopaths do not exhibit extreme characteristics, what is psychopathy? Researchers Lynam (2002) and Widiger & Lynam (1998) have described psychopathic personality as a maladaptive variant of ordinary personality traits. To describe ordinary traits in healthy people, psychologists often refer to the Five-Factor Model (FFM) of Costa and McCrae (1992). This model describes five broad personality traits that are thought to be universal. The traits are agreeableness, extraversion, neuroticism, openness, and conscientiousness. According to the FFM, each of the five traits contributes to the individual’s aggregate personality according to its strength on the continuum.

Lynam and Widiger used the FFM as the foundation for their view of psychopathy. They mapped the association between each psychopathic trait and the domains and facets of the FFM. For example, one of the big five traits is agreeableness. Agreeableness includes behaviors such as selfishness and coldness on the low end of the scale, indifference in the middle, and friendliness and kindness on the high end of the scale. Because those with highly psychopathic personalities are characterized by their lack of compassion, their lack of emotion, and their focus on self at the expense of others, they would score on the low end of the agreeableness continuum. Widiger, Costa, and McCrae in 2002 described psychopathy as a particularly “virulent constellation of [FFM] traits” (pp. 448).

Characteristics of Psychopathy

In 1941, Hervey Cleckley described the psychopath in his book *The Mask of Sanity*. Cleckley, a clinical psychiatrist, had treated men who were institutionalized and labeled psychopathic. To dramatize the concept of the psychopathic personality, Cleckley created 13 fictional characters who embodied the traits of psychopathy. The colorful personalities drew attention to what Cleckley considered to be a dire social problem: the presence of people who outwardly appeared to be normal but internally had no respect for the rules or values of society. Although Cleckley’s book was based on observation, not experimentation, many of his conclusions about psychopaths are still popular. *The Mask of Sanity* has been re-written and re-published at least six times, most recently in 2011.

Since then, researchers have followed Cleckley’s lead in attempting to understand psychopathy and the anti-social, often harmful, behavior of psychopaths. His work set in motion research on psychopathy that continues to this day. In the fifth edition (1976) Cleckley reported 16 characteristics (the number varied across editions) that were recurrent in his clinical practice. Most of these are still considered central to the definition of psychopath. The traits were:

1. Superficial charm and good intelligence
2. Absence of delusions
3. Absence of nervousness
4. Unreliability
5. Untruthfulness / insincerity
6. Lack of remorse or shame
7. Antisocial behavior
9. Pathological egocentricity / incapacity for love
10. Poverty in affective reactions
11. Loss of insight
12. Unresponsiveness in interpersonal relations
13. Uninviting behavior
14. Suicide rarely carried out

8. Poor judgment/failure to learn from experience

15. Sexual life impersonal, trivial
16. Failure to follow any life plan
(paraphrased from p. 338-339)

Many researchers still refer to Cleckley's original list to verify the integrity of contemporary psychopathic constructs, whether for diagnostic purposes, modeling, or psychometrics. In fact, scientists are currently discussing "construct drift" as they evaluate psychopathy assessment tools. Some claim that modern measures are not true to the original construct; others argue that modern measures have improved upon the original construct.

Brief History of Psychopathy

Records of psychopathic traits originate well before Cleckley's time. Theodore Millon, in his 2002 book on psychopathy, notes that it was the first disorder to be recognized in psychiatry. Clinicians and scholars have identified its traits since ancient times. Theophrastus, a philosopher in fourth-century Greece, was known for his analyses of personality and morality. His profile of the "Unscrupulous Man" describes behavior similar to today's antisocial or dissocial personality:

The Unscrupulous Man will go and borrow more money from a creditor he has never paid.... When marketing, he reminds the butcher of some service he has rendered him and, standing near the scales, throws in some meat, if he can, and a soup-bone. If he succeeds, so much the better; if not, he will snatch a piece of tripe and go off laughing. (Quoted in Millon, Simonsen, Birket-Smith, 2002, p. 3)

The terminology associated with psychopathy has varied over the ages (including *moral insanity*, *degenerate constitution*, and *the manipulative personality*) but the characteristics described have been remarkably consistent over time.

In the late eighteenth century, French physician Philippe Pinel, consistent with other clinicians of that time, used the term "psychopathic personality" to describe patients who presented both affective dysfunction and antisocial dysfunction. He also described "*manie sans delire*," or *mania without mental confusion* in such patients who were also notable in their clarity of thought (Pinel, 1806/1962). In the early 20th century, Psychiatrist Kurt Schneider emphasized the diversity of "psychopathic personalities" in which the expression of traits ranged from mild ("emotional blunting") to extreme ("explosive" personalities) (1923/1958). At that time, the disorder of psychopathy was thought to consist of traits, each on a continuum, which in aggregate could form a volatile personality.

The American Psychiatric Association (APA) in 1932 published a manual on mental illnesses that listed characteristics of psychopathic personalities. Cleckley's book soon followed, expanding on these characteristics with case descriptions drawn from criminal psychopaths in his care. The first Diagnostic and Statistical Manual (DSM) was published in 1952 and listed a Personality Disorders category with a "Sociopathic Personality Disturbance" subcategory, which included Antisocial Reaction, code 61, and Dyssocial Reaction, code 62 (APA, 1952, p. 7). The Dyssocial Reaction is clarified thus:

This term applies to individuals who manifest disregard for the usual social codes, and often come in conflict with them, as the result of having lived all their lives in an abnormal moral environment. (p. 38)

This group includes "psychopathic personality with asocial and amoral trends." The first DSM, then, attempted to identify the cause of the Dyssocial Reaction in its definition, and described it as a disorder that was different from Antisocial Reaction.

The organization of disorders was updated in the second DSM, published in 1968. Antisocial Reaction was renamed Antisocial Disorder and listed under the category of Personality Disorders. The category was summarized as follows:

This group of disorders is characterized by deeply ingrained maladaptive patterns of behavior that are perceptibly different in quality from psychotic and neurotic symptoms. (p. 41)

Antisocial Disorder was detailed under code 301.7 with the following characteristics:

- Basically unsocialized – often in conflict with society
- Incapable of loyalty to groups, individuals, or social values
- Selfish
- Callous
- Irresponsible
- Impulsive
- Unable to feel guilt
- Unable to learn from experience or punishment
- Intolerant of frustration
- Blame others or offer plausible rationalizations for their behavior (p. 43)

Also in the second edition, Dyssocial Reaction was moved to a category called "Social maladjustments without manifest psychiatric disorder" and renamed Dyssocial *Behavior* (code 316.3). It was described this way:

This category is for individuals who are not classifiable as anti-social personalities, but who are predatory and follow more or less criminal pursuits, such as racketeers, dishonest gamblers, prostitutes, and dope peddlers. (APA, 1968, p. 52)

In summary, the second DSM continued to describe Dyssocial and Antisocial personality types as mutually exclusive. Dyssocial Behavior was a term for those *not classifiable* as anti-social—it was a category for those who were predatory and criminal. Antisocial was a category for those who were incapable of loyalty to a group, an individual, or a value system.

As the DSM has evolved and knowledge of mental disorders has grown, categories and classifications have shifted. Subsequent releases of the DSM did not include psychopathy or a psychopathic personality disorder, per se, but the antisocial disorder classification has persisted and is still used by clinicians. Dyssocial personality—the predatory aspect of psychopathy described earlier—was excluded from later editions of the DSM.

Current Definitions & Classifications

Psychopathy is not a diagnosis described in the DSM-IV-TR (2000), nor is it described in the main body of the recently published DSM-5 (2013). Likewise, the International Classification of Diseases (ICD) manual does not include psychopathy or psychopathic disorder in its classification system. The ICD, published by the World Health Organization and currently in its tenth edition, describes psychopathy and antisocial personality as variants of *Dissocial Personality Disorder* (F60.2; WHO, 2010). The DSM has recently been coordinated with the ICD in an effort to standardize definitions of mental disorders and make their codes consistent.

The term *psychopathy* has been used synonymously with *Antisocial Personality Disorder* as defined by the DSM and *Dissocial Personality* as defined by the ICD-10. However, the collection of characteristics that is recognized as psychopathy is not a perfect match for either the current DSM or ICD definitions. Antisocial PD (a DSM-IV-TR Axis II Cluster B disorder) emphasizes behaviors, most notably impulsivity, deception, delinquency, and disregard for social norms. These are behaviors that reflect or lead to criminality. The psychopathic person may demonstrate these behavioral characteristics, but he/she may also be recognized by personality traits. As a result, the diagnostic criteria for Antisocial PD capture a larger proportion of the population than does psychopathy. Hare found that in North American prisons, Antisocial PD is evident

in 50-80% of the population, while high-level psychopathy scores are manifest in 15-30% (2003). However, psychopathy is not a subset of Antisocial PD; psychopathy has additional characteristics that are not specified by the Antisocial PD criteria.

Similarly, the ICD-10's Dissocial Personality is partially congruent with the characteristics of psychopathy, but not wholly congruent. The Dissocial PD focuses on affective characteristics of dissociation, such as callous disregard for others' feelings and low tolerance for frustration. While emphasizing affect, the ICD description minimizes behaviors. So, the Dissocial PD does not wholly capture the construct of psychopathy as we know it. The Dissocial PD is much more common than the psychopathic personality in both the general population and the institutional one. Like the DSM, the ICD is also a weak match to the construct of psychopathy.

Some researchers have observed that psychopathic personality seems to overlap the characteristics of the DSM's Antisocial PD and Narcissistic PD, although findings are mixed. Others have found similarities between psychopathic traits and Borderline PD as defined by the DSM. In Europe, many clinicians have drifted away from the term

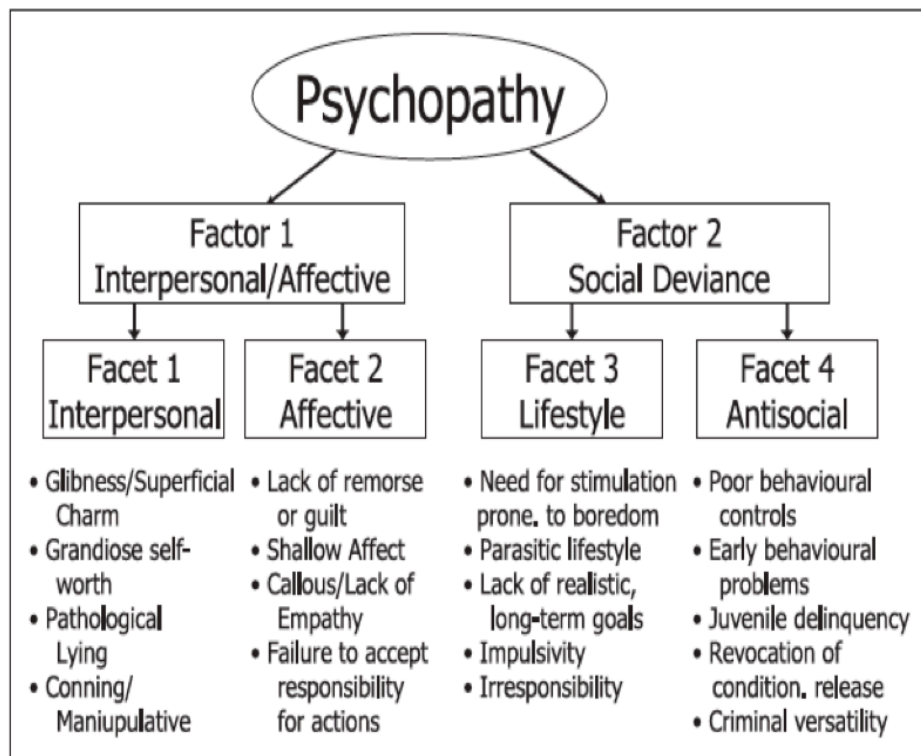


Figure 2. Scale structure of the PCL-R, 2nd ed. (Hare, 2003)

psychopathy, instead opting to assign Borderline Personality to their client's condition in diagnosis and treatment (Simonsen & Birket-Smith, 1998/2003).

Because neither the DSM nor the ICD directly address psychopathy, clinicians in many settings use the family of psychopathy checklists (PCLs) created by Robert Hare to describe psychopathic personality. The PCLs were the first instruments to include both behavioral indicators and personality characteristics. Traits known to be characteristic of narcissistic PD, borderline PD, antisocial PD, and dissocial PD are included in the Hare instruments. Results load on two factors, (1) Interpersonal-Affective factor and (2) Antisocial-Lifestyle factor (previously called the social deviance factor). See Figure 2 for Hare's conceptual structure. In rough terms, factor one contains some characteristics of narcissistic PD, such as deception, manipulation, and callousness. Factor two contains some elements of antisocial and dissocial PDs, as well as borderline personality (Huchzermeier et al., 2007) including irresponsibility, delinquency, and poor behavioral controls. Because the Hare checklists assess a broad set of psychopathy traits, they are commonly used in clinical, experimental, and forensic settings.

The DSM-5 & ASPD

A "hybrid dimensional-categorical model" for personality was proposed by the working group for the DSM-5. This model would have had diagnosticians continue to use categories and codes to classify disorders, but the intensity or severity of each personality type would have been gauged dimensionally as well. The draft text describes the model this way:

The personality domain in DSM-5 is intended to describe the personality characteristics of all patients, whether they have a personality disorder or not.

The assessment can "telescope" the clinician's attention from a global rating of the overall severity of impairment in personality functioning, through increasing degrees of detail and specificity.... (APA, 2012)

However, the APA did not adopt the hybrid model for the DSM-5. Instead, it is described outside the main body of the Manual, in Section III, as an alternate method for classification. With this inclusion of the hybrid dimensional-categorical model, the APA hopes to encourage further study and research (APA, 2013). Clinicians will continue to use the old (DSM IV-TR) approach to classifying personality disorders. The APA also rejected the working group's proposal to reduce the current ten types of personality disorders to six. The ten types are: antisocial, avoidant, borderline, dependent, histrionic, narcissistic, obsessive-compulsive, paranoid schizoid, and schizotypal.

Antisocial personality disorder (ASPD) in the working papers of the DSM-5 development group is defined in a manner that is synchronous with the traditional concept of psychopathy as defined by Cleckley. While the disorder is not called psychopathy, the development group's definition of ASPD and the parameters for its diagnosis reflect the construct of psychopathy as it has been used in the psychological research community. In the DSM-5 working group's proposed text, posted on May 4, 2012, the following criteria are required for a diagnosis of ASPD:

- A. Significant impairments in **personality functioning** manifest by [both]:
 - 1. Impairments in **self-functioning**, either (a) identity or (b) self-direction
 - 2. Impairments in **interpersonal functioning**, either (a) intimacy or (b) empathy
 - B. Pathological **personality traits** in the following domains:
 - 1. **Antagonism**, characterized by: manipulativeness, deceitfulness, callousness, & hostility
 - 2. **Disinhibition**, characterized by: irresponsibility, impulsivity, & risk taking
- (APA, 2012)

This text captures many traits of psychopathy. Rather than emphasize criminality, as we saw in the last DSM (IV-TR), this revision balances personality functioning with personality traits. Criminality is only included in criterion A.1.b self-direction, which is described in this way: "failure to conform to lawful or culturally normative ethical behavior." Thus, if clinicians accept this definition of psychopathy as ASPD, the criminality dimension will have been minimized.

Continuum or Taxon?

While psychopaths are described in the popular press as radically different from normal people, the vast body of current research contradicts this notion (Clark, 2007). Most analyses describe psychopathy in a manner that is consistent with general personality disorders—they are dimensional constructs that occur along a continuum (see, for example, the research of Hare & Neumann, 2008; Marcus, John, & Edens, 2004; Marcus, Lilienfield, Edens, & Poythress, 2006; Marcus, Ruscio, Lilienfield, & Hughes, 2008; Walters, Brinkley, Magaletta, & Diamond, 2008).

However, it is important to note that some scholars disagree and describe psychopathy as a discrete taxon. For example, Harris and colleagues purport that psychopathy factor two (the factor that includes anti-social traits and deviant lifestyle) is the single latent category of psychopathic disorder (Harris, Rice, & Quinsey, 1994; Harris, Skilling, & Rice, 2001) and is either present or absent in each individual.

Subsequent analyses disagree with Harris's findings, including a study in 2007 by Guay, Ruscio, Knight, and Hare, another in 2007 by Lilienfeld and Fowler, and a community study by Hare and Neumann (2006). The Hare Psychopathy Checklists (PCLs), which are the most frequently used instruments to assess psychopathy, measure psychopathic traits on a continuum, not discrete categories.

Etiology of Psychopathy

Scientists in many fields have gathered myriad data since the release of Cleckley's original book. Psychology researchers have considered developmental causes for psychopathy (such as poor nutrition or abuse) as well as neurological influences (such as a sluggish amygdala), biological effects (genetics, hormones), and social pressure (gang affiliation or religious rhetoric). Scholars in the fields of law, criminal justice, and forensic psychology also conduct research in an effort to understand criminal psychopaths. Such research revealed the remorselessness that psychopaths are known for, as well as their callous treatment of both victims and peers. Prison research has quantified psychopath recidivism (which is high) and success at rehabilitation (which is little). Recent research by Blair and Mitchell (2009) as well as others (for example Blair, Mitchell, & Blair, 2005; Burns et al., 2011; Munro et al., 2007) has shown consistently that psychopathic individuals process emotional information differently from non-psychopaths. Researchers have identified this deficit as a Factor 1-related characteristic. Poythress and colleagues (2010) found that Factor 1 characteristics are more resistant to treatment than Factor 2. Cognitive affective deficits have also been shown to be strongly associated with Factor 1 psychopathy (Casey, Rogers, Burns, & Yiend, 2013).

Recently, neurological researchers have begun to understand the parts of the brain that underperform in psychopaths compared to the brains of their non-psychopathic peers. Many researchers have reported the amygdala, in particular, shows low-levels of activity in some tasks (for example, Cima, Tonnaer, & Hauser, 2010). At this time, the significance of low-level activity is not understood. In addition, psychopaths show significant lateral processing differences when exposed to negative emotional language (Day & Wong, 1996). The brains of psychopaths often rely on a left hemisphere area that is known for linguistic-centered processes. Such reliance seems to cause a slowing in response time and a reduction of accuracy in interpreting emotional language. The brains of their normal counterparts favor a right hemisphere area that is known for emotion-centered processes; they are quicker and more precise in interpreting negative emotional language.

What do we know for certain about the causes of psychopathy? Not much. Several studies indicate that the major psychopathic traits are heritable. Twin studies with adolescents conducted by Blonigen and colleagues (2003) revealed that about 47% of psychopathy traits were heritable while the remaining 53% of traits appear to be environmentally determined. A second study confirmed the heritability of the major traits at a rate of 45–49%, depending on the trait (Blonigen, 2005). A study by Viding, Jones, Paul, Moffitt, and Plomin (2008) found callous-unemotional traits to be heritable at about 60% or higher. A few additional studies support these findings, again with samples of adolescents. It is not clear, however, if distinct gene pathways are responsible for psychopathic characteristics, or if environmental factors affect gene expression. In addition, little investigation has been conducted with adults. As a result, even Robert Hare (1999) is reticent on psychopathy's etiology, saying, "psychopathic attitudes and behaviors very likely are the result of a combination of biological factors and environmental forces" (p. 166).

Prevalence of Psychopathy

In most studies, psychopaths are recruited from prisons or jails, but they are sometimes sought in mental hospitals or juvenile detention facilities. These locations are rich in qualified participants; the incarcerated often have high scores on psychopathy measures, they bring detailed written histories, and they are readily accessible (Lynam, Whiteside, & Jones, 1999). In fact, jails and prisons often have psychopathic residents that approach 30% of the total population (Hare, 2003; Harpur & Hare, 1994).

However, the almost total reliance on such captive samples is problematic. Psychopathy research may be confounded with the innumerable effects of incarceration, including anxiety, drug treatment or abuse, scarcity of resources, fear, and prison cultural affiliations. No research has examined whether the brutality of incarceration can lead to psychopathic traits or to antisocial behavior as a cultural adaptation. I presume that psychopathic traits flourish in the prison environment—in fact, such traits may be important for survival. As a result, psychopathy of prisoners may be far different than that of free persons.

Occasionally, participants are sought in the community at large or in the university classroom in order to exclude the effects of incarceration. While community or classroom members may generalize to the population at large, individuals with psychopathy are rare in uncontrolled environments. According to several studies, people

with psychopathic personalities constitute less than 1% of the general population (see Coid, Yang, Ullrich, Roberts, & Hare, 2009).

“Successful” Psychopaths

Reports of ruthless businessmen or white-collar criminals make splashes in the media, which increase the illusion of frequency (Rupert Murdoch, Bernie Madoff, or Enron Corporation, for example). Contrary to perceptions that psychopathic businessmen are successful, they rarely achieve above average “professional, economic, or social status” (Skeem, Polaschek, Patrick, & Lilienfeld, 2011, p. 120). Further, psychopaths are often unpopular with their peers because, while they excel at strategic action, they do not practice accepted social behavior. Their business conduct often violates the spirit of the law, social norms, and the rights of associates, friends, and family (Hall & Benning, 2007). Research on “successful psychopaths” indicates no significant differences between their personality profiles and those of their “unsuccessful” incarcerated peers, including levels of intelligence, socioeconomic status, and psychopathology (Gao & Raine, 2010; Raine et al., 2004). In fact, the term “successful” in psychopathic research implies that criminality is part of the psychopathy construct and such individuals have simply eluded capture (Skeem & Cooke, 2010). Narcissists, however, have been shown to have above average life success (Ullrich, Farrington, Coid, 2008) although the two disorders share many (negative) characteristics in the area of interpersonal interaction. Those with psychopathic personalities are usually poorly adjusted to normal social life.

Crime

While high-level psychopathic personalities are rare in the general population, they account for a disproportionate amount of crime, especially violent crime. More than 50% of serious crimes are committed by psychopaths, according to work by Hare, Strachan, and Forth (1993). Prison researchers have tracked recidivism of psychopathic inmates and have found that they are much more likely to re-offend. In a study of Canadian inmates, 65.2% of prisoners with high levels of psychopathic traits were found to re-offend, as opposed to only 23.5% of those with low level (normal) psychopathic traits (Hart, Kropp, & Hare, 1988). In addition, those with high levels of psychopathy who re-offend often do so with higher levels of violence. In a study conducted in 2000 by Harris, Skilling, and Rice (2001) high-psychopathy prisoners in England were shown to reoffend with violence at a rate that was nine times as high as low-psychopathy prisoners.

Treatment of Psychopathy

Many believe that psychopathy is untreatable; this notion has been widely held since the time of Cleckley. Current research, however, shows small advances in treatments. Some treatments have reduced both violent and general reoffending (Skeem et al., 2011). Unfortunately, prison-based treatments are rarely conducted as randomized controlled trials, so results are rarely published and critics remain unconvinced of their success. In addition, a few well-publicized treatments have exacerbated the dysfunction of psychopathic personalities.

The most famous of these failed treatments caused increased levels of violent crimes by those who had been treated relative to those not treated (78% to 55%). However, the rate of recidivism was the same for both groups (Rice, Harris, & Cormier, 1992). In this case, the treatment was extreme and harmful to the offenders. Its aim was to strip patients of their psychological defenses. To accomplish this, inmates were forced to reside together in close quarters, 24 hours a day, with minimal supervision. They attended encounter groups for hours at a time, sometimes in the nude, and were administered drugs, including LSD. Harris, Rice, and Cormier (1994) reported that psychopathic offenders were disproportionately subjected to the most intrusive and punitive aspects of the treatment. Those with high indications of psychopathy often received disciplinary action, were sent to isolation, and were subjected to higher doses of drugs including LSD to “disrupt their glib, aloof, and hostile” styles of interaction (Skeem et al., 2011, p. 132). It is no surprise, then, that their post-release behavior may have reflected the extremity of this treatment. Skeem and colleagues (2011) cite Lilienfeld in concluding that “the end result was in keeping with the general literature, which suggests that punitive and some peer-oriented psychosocial treatments can have harmful effects” (p. 132).

Skeem and her colleagues (2011) believe that current treatment programs, in spite of their methodological limitations, *can* reduce criminality of psychopaths. Effective correctional treatments share a few broad characteristics: (1) they target the highest risk offenders with intensive services, (2) they focus on changing correlated risk factors, such as substance abuse and impulsivity, rather than the criminal behavior itself, and (3) they maximize positive participant engagement in the treatment process. This means that participation is voluntary and patients are treated with warmth and respect. Using all three principles has been shown to reduce reconviction rates by more than 35% (Andrews & Bonta, 2010). Although research on treatment methods is limited and does

not incorporate randomized control trials, Skeem and her colleagues (2011) insist that retrospective analyses show positive treatment outcomes. They believe that current treatment studies are “relatively rigorous, and their findings effectively challenge conventional wisdom that ‘treatment makes psychopaths worse’” (p. 132).

Facial Affect Recognition

Because scientists have little understanding of the causes of psychopathy and scant data on effective treatments for psychopathy, they often publish unexpected discoveries about the disorder in hopes that a full working understanding will eventually emerge. One such area currently receiving attention in psychology journals is facial affect recognition (FAR). Some researchers have found that individuals with high levels of psychopathy have problems recognizing emotions displayed on the face. However, the findings have been inconsistent, with some reporting deficits in recognition of fear, for example, while others report normal fear recognition but deficits in identifying sadness or anger. (See, for example Dolan & Fullam, 2006, on sad affect deficits; Marsh & Blair, 2008, in a meta-analysis of fear deficits; Glass & Newman, 2006, on normal fear recognition; Hastings, Tangney, & Stuewig, 2008, on deficits of recognition of both sadness and happiness.)

Methods vary in these FAR studies. Most protocols require that participants look at photos of faces expressing emotions (usually one of the six universal emotions identified by Ekman and Friesen in 1971). The faces are usually Caucasian, a quality that may introduce biases or ingroup/outgroup responses. (Many researchers study ingroup emotional recognition advantage. See Elfenbein & Ambady, 2002, for a meta-analysis.) In addition, some studies ask participants to choose from a list of the six universal emotions or an expanded list of eight emotions, while others allow participants to freely respond in naming emotions. Still others instruct participants to use a sliding device to indicate the strength of each emotion.

Particularly germane to my research is the length of time that participants are allowed to gaze at faces; gaze time varies widely from study to study. In some cases participants may have less than a second of exposure, while others may have 30 seconds or more. Researchers argue about the mechanisms at work in facial affect recognition—shorter exposures may draw on unconscious mechanisms while longer exposures might allow cognitive processes to override initial impressions. In researching the responses of psychopaths to facial expression, I would like to understand the source of possible deficits in their mental processing. It is important, then, to use protocols thoughtfully to

measure the desired phenomenon (in this dissertation study, unconscious contagion) and not something else (for example, cognitive decisions).

Measuring Psychopathy

Scientists have developed several scales for measuring psychopathy. The scales most frequently discussed in the literature are the Hare Psychopathy Checklist (PCL) and the Psychopathic Personality Inventory (PPI). Subscales of traditional personality inventories are occasionally used in research, such as the Minnesota Multiphasic Personality Inventory (MMPI) Psychopathic Deviate scale, and the Millon Clinical Multiaxial Inventory Antisocial Personality Disorder scale. However, researchers such as Harpur, Hare, and Hakstian (1989) have shown that these traditional inventories measure propensity for criminality rather than core characteristics of psychopathy. As described earlier in this paper, the Hare PCL scales are based on a model of two dimensions that are divided into four facets: interpersonal, affective, antisocial, and lifestyle. Hare based his original model on Cleckley's 16 characteristics. In doing so, he captured both the observable behaviors and the personality traits of the psychopathic personality.

The Psychopathic Personality Inventory (PPI) is a measure published by Lilienfeld and Andrews in 1996 and revised by Lilienfeld and Widows in 2005. This measure is also based on Cleckley's construct. However, it was designed to measure the personality characteristics of the psychopath and not the behavioral aspects. The PPI sorts characteristics into eight subscales, which include Machiavellian egocentricity, cold-heartedness, fearlessness, and stress immunity (see Appendix A for example questions from the PPI). Proponents claim that behavioral characteristics are explicitly excluded from the PPI to preserve integrity with Cleckley's original model (Maesschalck, Vertommen, & Hooghe, 2002). In addition, the PPI includes positive-adjustment indicators (for example fearlessness, social flair, verbal fluency) also in keeping with Cleckley's model. In a recent monograph, Skeem, Polaschek, Patrick, and Lilienfeld (2011) touch on the debate that surrounds the inclusion or exclusion of these adaptive psychological traits. The question at the core of the discussion is whether such characteristics are essential to the disorder, or whether they are merely affiliated with it.

Psychopathy scales are the source of much disagreement. Their validity and reliability have been assessed in journals from many fields, including law, psychiatry, neurology, and sociology. At the heart of the controversy is (1) the implications of Cleckley's original construct and how closely to adhere to it, and (2) the usefulness of an

instrument for working with a specific population. Several good scales exist; the proper scale must be chosen to fit the research topic and the population to be studied.

Most psychopathy research has been conducted with participants who are institutionalized, whether in prisons, mental health facilities, juvenile facilities, or other controlled environments. However, my dissertation project focuses on the psychopathic characteristics of people who function in society at large. The Hare measures have been extensively validated for use in many populations, and they have been scrutinized for decades to insure that their four-factor structure accurately measures the psychopathic construct that is loosely agreed upon by most researchers. In the next few paragraphs, I will carefully describe the fit of the Hare instruments for this dissertation project.

Gold Standard –The Hare Checklists. Robert Hare and his colleagues created a family of scales beginning with the Hare Psychopathy Checklist (PCL) in 1980. The original scale required a clinical evaluation of the inmate (by a professional psychiatrist or psychologist) that often lasted a few hours. The measure also required a professional examination of the subject’s mental health history and criminal background. These components made the PCL time-consuming and expensive to employ; its requirements were prohibitive outside of a controlled setting. Considering these limitations, the PCL was extensively tested and revised. This iterative work resulted in the PCL-R (Psychopathy Checklist–Revised) published in 1991 by Hare (see Appendix B for a list of critical traits and a description of evaluation process).

For criminal and clinical populations, the PCL-R is the most widely used tool (Hare & Neumann, 2008). This version has been established as valid and reliable by many researchers (see Bodholdt, Richards, & Gacono, 2000; Bolt, Hare, & Neumann, 2007; Hemphill & Hare, 2004) and has been shown to generalize well across a variety of populations and contexts. The *Buros Mental Measurements Yearbooks* describe the PCL-R as the standard tool for the assessment of psychopathy (for example, Spies & Plake, 2005). It is often called the “gold standard” (see for example Westen & Weinberger, 2004, p. 599).

Derivatives of the PCL-R were subsequently created to serve a variety of populations, including a scale for adolescents (PCL: YV), a screening version for criminals (PCL: SV), and the SRP, a self-report measure for use in the community at large. The creators assert that these derivative scales are based on the same conceptual framework as the PCL-R. (See Skeem et al., 2011, for a summary of perspectives on the construct validity of the family of Hare scales.)

However, the validity and generalizability of the Hare family of scales are frequently debated among scholars. The derivative scales have been in use for several years, but they are unpublished. The derivative scales (PCL: SV, PCL: YV, and SRP) are available only from the authors; these scales have been listed in reference lists for many years as “in press.” Other than excerpts, they have not been published in academic journals. The PCL-R is available for a fee from Multi-Health Systems in Toronto.

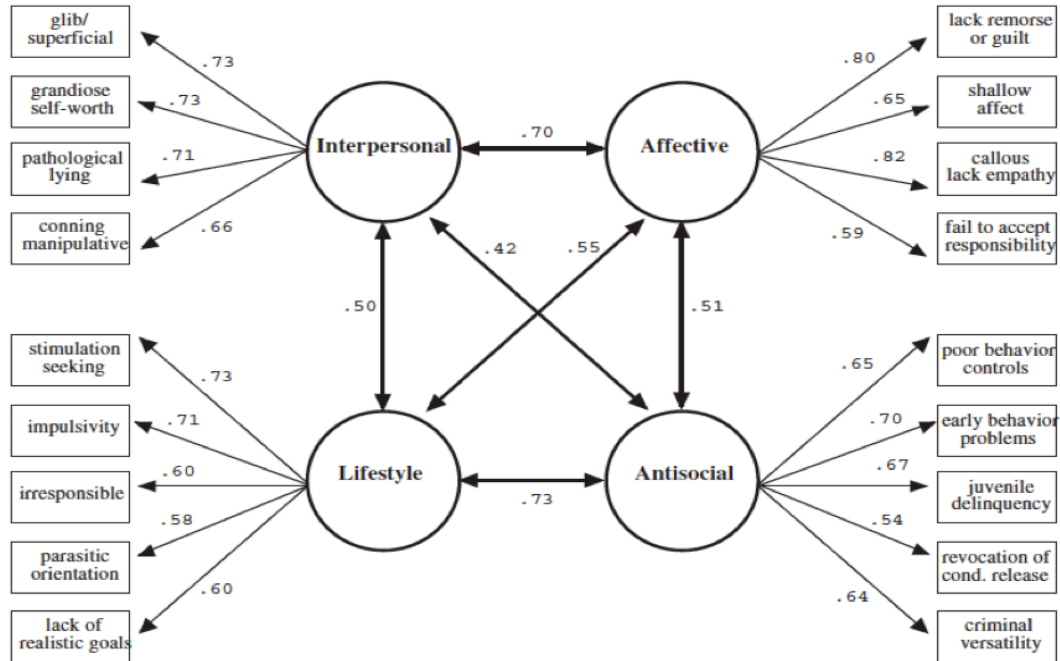


Figure 3. Four-Facet PCL-R model of psychopathy (Hare & Neumann, 2008).

The Hare checklists are not without critics. The premise that psychopathy is rooted in two factors of four facets has been challenged, with social scientists and neurologists arguing that psychopathy alternatively may be based on a dual-processing model, a hierarchical three-factor structure, five factors, or eight subscales. The factor structure reflects the authors’ interpretation of the psychopathy construct and various aspects of Cleckley’s original model. Hare’s current four-facet model reflects four balanced and strongly correlated dimensions as shown in Figure 3. The structure of this model has received considerable support from research in a variety of populations, including youth and adult offenders, psychiatric patients, and individuals from the community (Hare & Neumann, 2008). The original PCL was based on a two-factor model (Hare, 1980) and was expanded to incorporate a multitude of later findings.

In other criticism, Cooke and colleagues describe the PCL as a tool that is based on data from incarcerated Caucasian men. They contend that it does not completely predict psychopathy in minority cultures. (See Cooke, Michie, Hart, and Clark [2005] for an excellent discussion of cultural bias and the PCL.) In addition, using the PCL is time-consuming. It calls for a lengthy personal interview and examination of lifetime medical and criminal records, a process that may take hours. In addition, the PCL must be administered by clinicians with specialized training. These complications make the PCL difficult to use outside of a controlled environment.

In spite of the criticism, the Hare instruments are currently the most frequently-used tools to evaluate the presence of psychopathic traits. A wealth of data indicates they are the most reliable and valid instruments (see for example Lynam, Whiteside, & Jones, 1999). The least intrusive and least time-consuming instrument in this family is the Hare Self-Report Psychopathy checklist (SRP), which is currently in its third version (SRP-III).

Continuum Model. The PCL-R was designed to measure the severity of psychopathic traits up to a maximum score of 40. A total score of 25 or 30 is the low-end cutoff point for psychopathic personality. These values vary from country to country or region to region; Hare suggests that researchers calibrate their own cutoff scores based on standard deviations from the mean of the population under assessment. (Hare [1991] recommended 30 as the cutoff for North America, but the score of 25 is often used in the UK. A recent study [2003] indicated that the score of 23 would be used in Brazil.) In the US, total scores of 20-30 indicate personalities that are considered mildly or potentially psychopathic. Scores below 20 are non-psychopathic, or normal, in terms of severity of traits. These scores are often used as “low psychopathic” comparisons (see for example Glass and Newman, 2006, or Kosson, Suchy, Mayer, & Libby, 2002).

Although the PCL is based conceptually on a continuous–trait model, use of a cutoff score implies that psychopathy is a discrete taxon. Concrete score boundaries give clinicians the ability to declare a patient or inmate “a psychopath.” However, regardless of its convenience for clinicians, current research has found little support for the notion that psychopathy is a taxonomic construct (see Edens, Marcus, Lilienfeld, & Poythress, 2006, for a discussion). Likewise, when media portray psychopaths as vile and inhuman, they inadvertently subscribe to the discrete-category model, implying that the psychopath is qualitatively different from the rest of us (Hare & Neumann, 2008).

However, this portrayal of the “psychopath” rather than the “psychopathic” is not currently favored in the research literature.

Further, researchers who use the PCL-R have recently questioned the interpretation of scores that result in the label “psychopath.” They claim that there are no absolutes to the PCL scale, only highness or lowness relative to the mean. As a result, current research articles are imprecise in their quantification of psychopathic traits. Many use relative language (such as a participant “scored high” or scored “relatively high”) on the psychopathy checklist. Many articles use correlative methods to analyze findings, rather than methods that depend on categorical variables. Some researchers use both types of analysis, in parallel.

The Four Facets. Hare’s PCL instruments segregate psychopathic characteristics into four groups: Criminal Tendencies (CT), also called the antisocial factor, interpersonal manipulation (IPM), erratic lifestyle (ELS), and callous affect (CA). High or low scores in these four facets manifest themselves in different types of behavior. For example, an individual who has high interpersonal manipulation and high callous affect may be a person of business with nerves of steel. If he has low criminal tendencies (low anti-sociality), he may be able to control his impulses and operate within the boundaries of society.

Conversely, a person with the same overall psychopathy score but a different distribution of factors may demonstrate very different behavior. A woman who is high in erratic lifestyle may not be reliable enough to hold a job. If she is highly callous, manipulative, and charming, she might wangle her way into a man’s affections and drain his bank account. Or, she might sell fraudulent investment opportunities.

Callous affect (CA), is one of psychopathy’s most notable factors. This factor indicates lack of feelings for fellow persons (and often for animals as well). Some scholars use callous affect synonymously with lack of empathy (see Hodson, Hogg, & MacInnis, 2009 or Ross, Moltó, Poy, Segarra, Pastor, & Montañés, 2007, for example). In news reports we might hear that a criminal had no conscience, no empathy, or no remorse; these are presentations of high callous affect (CA). The CA factor is frequently described in newspaper stories and demonstrated in such TV series as *Law & Order*, *Criminal Minds*, and *Dexter*. It is depicted in biographies of criminals on such shows as *60 Minutes* and *Biography* (see A&E’s *Biography: Ted Bundy* [2007], Nova’s *Mind of a Serial Killer* [2005], or The Discovery Channel’s *Most Evil* series [2006] for examples).

Emotional Contagion

Emotional contagion is a rapid, unconscious, and automatic response to the expressions of others. In their book on the subject, Hatfield, Cacioppo, and Rapson (1994) describe the process of emotional contagion in this way: “the tendency to automatically mimic and synchronize facial expression, vocalizations, postures, and movements with those of another person, and consequently, to converge emotionally” (p. 5). They identify it as a *primitive* response that leads to sharing emotions. The three steps of emotional contagion are:

1. Mimicry
2. Feedback
3. Convergence

I will examine each step in detail.

Step 1: Mimicry

The first of these, mimicry, is displayed in a variety of ways. These include posture, gestures, speech, and facial expression. For example, posture of those in dyadic or small group conversation is usually reciprocated (see Siegman & Reynolds, 1982). Postural mimicry has been documented in other situations, including dating (Perper, 1985), counseling sessions (Maurer & Tindall, 1983), and in the classroom between students and teachers (see La France, 1982 or Bernieri, 1988, for example).

Speech patterns are also mimicked. Speech rate was unconsciously reciprocated in studies conducted by Webb (1972), and speech rhythms were mimicked in studies by Cappella and Planalp (1981). Pauses in speech were reciprocated in studies by Feldstein and Welkowitz (1978). Laughter and accents were also mimicked in several studies, including those by Giles and Powesland (1975) and Provine (1992), respectively. Mimicry of touching (Chartrand & Bargh, 1999), yawning (Provine, 1986), smoking (Harakeh, Engels, Van Baaren, & Scholte, 2007), and alcohol consumption (Quigley & Collins, 1999) have been noted by researchers. (Interestingly, Quigley tested the type of drink, the rate of consumption, and the volume of each sip when the subject was in the company of a peer or a superior and found mimicry in each test.)

The mimicry of facial expressions is also well documented (e.g., Dimberg, 1982). Expressions are even mimicked from the faces of strangers (Hsee, Hatfield, Carlson, & Chemtob, 1990). In addition, infants imitate facial expressions of others, such as pursing their lips and sticking out their tongues (see Meltzoff, 1988; Meltzoff & Moore, 1977), as well as imitating the facial expressions of their mothers, such as happy (Haviland &

Lelwica, 1987) or joyful expressions (Termine & Izard, 1988). Mothers, in turn, mimic the expressions of their babies (O'Toole & Dubin, 1968).

Mimicry is common between similar or desirable others. In 1981, LaFrance and Ickes suggested that mimicry of *physical* stance equates to a declaration of shared *psychological* stance. In 1988, Bavelas, Black, Chovil, Lemery, and Mullett recognized that mimicked posture indicates solidarity, thereby substantiating observations by Charney, 1966, LaFrance, 1979, LaFrance and Broadbent, 1976, and Trout and Rosenfeld, 1980. In 2003, Lakin, Jefferis, Cheng, and Chartrand reported that mimicry indicates the desire for affiliation and rapport. Their findings have been multiply confirmed, including by Yabar, Johnston, Miles, and Peace in 2006 and Guèguen, Jacob, and Martin in 2009. In addition, Lakin and Chartrand (2003) have recently reported *reduced* mimicry of out-group members.

Step 2: Feedback

The second step of emotional contagion is Feedback. We know that humans use their bodies to mimic posture, speech, gestures, and face, as well as a multitude of other expressions. This mimicry leads to feedback via afferent pathways.

Afferent Response. Through the 1970s and 1980s, researchers experimented to determine the order of steps in human emotional response. Many believed that first a thought occurred or a feeling was felt, and second an expression followed, thereby revealing the feeling to others. Ross Buck (1985), for example, concluded that expression is a display of underlying experience. However, during this era, many studies showed that, instead, expressions could *lead* and the emotion or the thought could *follow*.

Researchers Ekman, Levenson, and Friesen in 1983 found that manipulating facial expressions triggered emotions as well as secondary responses that included raised skin temperature and increased heart rate. These physiological changes differed according to the emotion being expressed. The authors summarized their findings thus: “the contraction of facial muscles...brought forth emotion-specific autonomic activity” (p. 1208).

James Laird, in 1984, physically arranged the faces of study participants into expressions of happiness or anger. He asked them to lift the corners of their mouths, push their eyebrows together, and so on, thereby contracting the muscles that correspond to smiling or frowning. Laird found that those forced to smile felt happier and those forced to frown felt angrier than their expressively neutral peers. In fact,

participants themselves were surprised by their own responses. Said one, “When my jaw was clenched and my brows [were] down, I tried not to be angry, but it just fit the position” (p. 480).

In 1988, Strack, Martin, and Stepper reported that artificially forcing a smile intensified the humor response among participants. (Notably, forcing the smile impacted the *affective* response and not the *cognitive* response to a humorous cartoon.) In addition to feelings triggered by facial expression, we now know that feelings are also stimulated by posture, voice, and position of the limbs. The process is afferent, meaning from the outside in; the emotions are felt after the physical position, gesture, or vocal inflection is adopted.

Mirror Neurons. Converging evidence for the process of feedback has come from neurophysiological research that originated in Parma, Italy. The specialized brain cells called mirror neurons were identified there in 1982 by a team of scientists led by Giacomo Rizzolatti. Mirror neurons fire when we view an action by others—whether it is a tennis serve, a scowl, or the cracking of an egg on the edge of a ceramic bowl—and the firing triggers our own emotions. “Mirror neurons provide an inner imitation ... of the observed facial expression,” says Iacoboni (p. 119).

Named “mirror neurons” because they allow us to internally reflect the expressions and actions of others, these unique cells did not come to public attention until near the turn of this century. After years of experimentation, the Italian scientists determined that mirror neurons not only fire when we observe an action, they also fire “merely at the *perception* of somebody else’s actions” (Iacoboni, 2009, p. 11). Iacoboni suspected that the firing mirror neurons send signals to the emotional centers in the limbic system, causing us to feel what others feel.

Based on research by Rizzolatti and colleagues, and by Marco Iacoboni, we know that mimicry is not always required for the convergence of emotions to occur. The mirror neuron response seems to be a different type of perception—one that does not require mimicry—but one that provides feedback by an alternate yet effective pathway. In a series of studies, Carr, Iacoboni, Dubeau, Mazziotta, and Lenzi (2003) found that while participants observed target faces, their mirror neuron area, insula, and amygdala (an area that is particularly responsive to emotion) were active. This activity increased when the participants physically imitated the target faces, but the same network of brain areas were engaged in both the imitation and the observation tasks. Future research will reveal the role that mirror neurons play in the emotional contagion process.

Step 3: Convergence

The final step in the process of emotional contagion is convergence: the sharing of emotions between the observed and the observer. Hatfield and her colleagues put it this way: “As a consequence of mimicry and feedback, people tend, from moment-to-moment, to ‘catch’ others’ emotions” (Hatfield, Rapson, & Le, 2009, p. 24).

Contemporary scientists have shown that the catching of emotions is a complex and yet common experience—one that spreads warnings rapidly through groups of monkeys, transmits distress amongst human infants, and transforms the moods of clinicians to match those of their clients. This last pitfall is so well known that Sigmund Freud warned therapists to maintain emotional distance (1912/1958). Likewise, Carl Jung instructed that, while it is the duty of the clinician to both accept and mirror a patient’s emotions, he should be “conscious of the fact that he is affected” (1968, p. 12). In *Emotional Contagion* (1994), Hatfield and Rapson discuss their own experiences with contagion, especially the difficulties of working with clients who are depressed. Says Hatfield, “Something about their slow sentences, sad facial expressions, or the endless, hopeless details they recite keeps putting one to sleep. It is hard to concentrate and attend long enough to be helpful” (p. 89).

If we pay attention to one another, we experience the process of emotional contagion: we observe and mimic, we feel the feelings associated with those mimicked expressions, and we identify with the object of our observations. Hence, we feel the feelings of others. We may not feel them as strongly, or as precisely, as the source feels them, but we catch the feelings of the source to some degree. Hatfield and her colleagues (2009) note that these feelings may be just a “pale reflection” of the original emotions (p. 26). Nonetheless, by the effortless process of mimicry, feedback, and convergence, we feel what others are feeling.

In 1909, Edward Titchener explained that humans could only really know each other by feeling another’s feelings; we could never know one another just by reasoning. Indeed, sometimes our thoughts and projections prejudice us from truly knowing others. Ongoing experiments with mirror neurons confirm Titchener’s thinking as well; we do not even have to observe a behavior—we might hear it or smell it or sense it somehow—and still we experience the contagion of emotions. We know this is not mind reading, as it has been described in papers both present and ancient (see Blakeslee, 2006; Goldman, 2006; Ickes, 2009; or Singer, 2006). Rather, emotional contagion is a sensing, or an unconscious participation, in the feelings of others.

Resisting Contagion

In his dissertation project, Dan Rempala investigated cognitive strategies for resisting emotional contagion (2008). He found two strategies effectively moderated contagion in some individuals. Dissociation (purposely creating distance from the source of contagion) decreased the contagion response as measured by self-report data. Empathic reflection, the paraphrasing of a client's concerns, also decreased emotional contagion according to self-reports. We can infer, looking solely at the self-reports of contagion, that personalities who engage in *natural* dissociation or empathic reflection might also be resistant to contagion. Perhaps those who have antisocial personalities engage in these strategies.

Aylward, in her 2008 thesis, found that liking or disliking can affect mimicry. Her data indicated that those who disliked others demonstrated less mimicry than those who liked others. (However, her study did not find a connection between decreases in mimicry and decreases in emotional contagion.) Studies examining the effects of power on emotional contagion have reported similar results; subordinates often mimic superiors in dress, vocal patterns, and mannerisms.

Cognition

In 1992, research by Hsee and colleagues illuminated an additional mechanism that humans use to understand each other. While Hatfield and others showed that primitive emotional contagion leads to convergence of *feeling*, Hsee found that a *cognitive* process also takes place. When people were asked what others must be feeling, they relied on what they had heard the others say, thereby engaging in a cognitive and conscious assessment of their feelings.

Humans have sophisticated cognitive responses to others that may rely on heuristics derived from life experience. For example, when we encounter a person who is weeping, we automatically interpret the weeping based on what we have learned about weeping in the past and the context of the weeping in the present. At a wedding, we would assume tears of joy, at a funeral, tears of grief. On the street, tears may mean pain, trauma, or fear. We know, based on our thoughtful interpretation, what the weeping means and how to respond to it. Concurrently, via our unconscious minds, we have already adopted the posture, the affect, and the heartache of the weeper. Therefore, at least two pathways of response occur: (1) a cognitive response based on what we know, and (2) an automatic, intuitive response based on what we feel.

This Dissertation Study

We know that people with high-psychopathic traits often break the rules that societies hold dear. In fact, antisocial behavior is a trait of the psychopathic personality, along with interpersonal manipulation, erratic lifestyle, and callous affect. One outcome of this set of traits is a purported lack of empathy. It is no surprise, then, that psychopaths often have few friends and little social support.

We also know that emotional contagion is ubiquitous in human society. It is rapid and automatic—an effective, though unconscious, indication of solidarity. Emotional contagion is an adaptation that binds people together.

Therein lies a contradiction. If emotional contagion is automatic and ubiquitous, how do psychopaths avoid being bound to others? How is it they do not enjoy the security and solidarity that comes with emotional contagion? How do they remain untethered, in our world of social beings, and capable of harming their fellows without qualm? How do they avoid empathy? Perhaps they do not experience emotional contagion in a manner that is similar to their peers.

These questions imply other questions: If psychopaths do *not* experience emotional contagion, where do they go wrong in the EC process—that is, at what step do they falter and what skills or capabilities do they lack compared to non-psychopaths? Or, do they use another process entirely to relate to others? This dissertation inquiry was intended to illuminate any deficit in emotional contagion that occurs in individuals with psychopathic personalities.

Research Question

Do people with high levels of psychopathic traits experience emotional contagion in a manner that is consistent with their normal counterparts? If not, in which steps does their emotional contagion differ?

Study Design

Emotional contagion (EC) follows three sequential steps: mimicry, afferent response, and emotional convergence. Because EC is involuntary and instantaneous, the process cannot be stopped after any one step. We could, however, create tasks that measured the ability to perform each step in isolation. The limitation of this approach was that it measured the participant's ability to perform a step in the contagion process, but not his / her actual performance of the steps in a real situation.

Comparing performance of high-psychopathy and low-psychopathy personalities on mimicry, afferent response, and convergence was intended to reveal any significant

differences—whether diminished capacity or possibly enhanced capacity—for each step. I tested the *ability* to mimic, but not the spontaneous *action* of mimicry by the participant. Next, I asked participants to manipulate their facial expressions, thereby stimulating the afferent pathway of step two, and measure their responses. (The afferent response is currently studied by neurologists, but has not yet been examined in people with high-psychopathic personalities.) Third, I measured emotional convergence after the last step of the emotional contagion process. Finally, I used self-report questionnaires to measure the emotional contagion capabilities and empathy propensity of the participants.

I also assessed the participants' overall capacities for emotional contagion as indicated by the EC scale, and I further analyzed their abilities for the contagion of five specific emotions: love, anger, fear, happiness, and sadness. This made for a 2 x 3 x 5 test model: psychopathic personality x steps of contagion x ability for contagion of five emotions. Several potential confounds, including ingroup/outgroup perceptions and facial affect recognition, were also assessed.

Importance of the Inquiry

The findings may be useful in developing treatments, reducing violence or recidivism, and making prison more productive for those who are incarcerated. Because people with high psychopathic traits commit a disproportionate number of crimes, especially violent crimes, any information we can garner about their mental processes and perspectives is illuminating. Findings about high-psychopathic persons could also inform interaction and treatment with sub-clinical “potentially” psychopathic persons.

Hypotheses

Specifically, I expected the following:

Hypothesis 1. Those with high psychopathic personalities would be less able to mimic facial expressions than their normal peers.

Hypothesis 2. Those with high psychopathic personalities would be less able to experience afferent feedback leading to emotional convergence than their normal peers.

Hypothesis 3. Those with high-psychopathic personalities would experience actual emotional contagion less often than their low-psychopathic counterparts.

Hypothesis 4. Those with high-psychopathic personalities would have less propensity for overall emotional contagion (as identified by the Doherty

EC scale) and for the emotional contagion of five individual emotions (as measured by the Doherty subscales) than normal people.

Hypothesis 5. Those with high-psychopathic personalities would have less capacity for empathy, as measured by the Toronto Empathy Questionnaire, than their low-psychopathic counterparts.

CHAPTER 2. METHODS

Measures

Measuring Emotional Contagion

The emotional contagion (EC) scale (Doherty, 1997) measures one's propensity to the primitive response of emotional contagion. It is a self-report, Likert-style instrument, consisting of 15 items (see Appendix C). Responders with high overall scores have been shown to possess a high susceptibility to EC. In addition, the EC scale contains five nested sub-scales that assess specific emotions conveyed through contagion: love, anger, fear, happiness, and sadness. These subscales reveal the vulnerabilities or resistances of an individual to the contagion of a specific basic emotion.

The EC scale is the only current measure of primary contagion. It was developed at the University of Hawai'i, Mānoa, and was based on the scholarship of Elaine Hatfield and her colleagues (see, for example Doherty, Orimoto, Singelis, Hatfield, & Hebb, 1995; Hatfield, Cacioppo, & Rapson, 1994; or Hsee, Hatfield, Carlson, & Chemtob, 1990). Since its release in 1997, the EC scale has been translated into many languages, including Finnish, French, German, Greek, Indian (Telugu), Japanese, Portuguese, and Swedish. Scholars in many countries have used the scale to test a variety of psychological events. (See, for example: Hietanen, Surakka, & Linnankowski [1998] "Facial Electromyographic Responses to Vocal Affect Expressions," which used the EC Finnish version.)

Several researchers have assessed the reliability and validity of the scale. Originally, R. William Doherty tested the EC scale in a three-part study with a large sample of U.S. participants (1997). He established its reliability and explored its factor structure. (Doherty intended a unidimensional structure that would reflect parsimony, but later research established that five factors were the best fit for the data [Lundqvist & Kevrekidis, 2008].) He compared the results of the EC scale to the outcomes of a variety of psychological measures to confirm the validity of the EC scale's construct. These included measures of reactivity, emotionality, sensitivity to others, social functioning, and self-esteem, which were all found to be positively related to susceptibility to emotional contagion. Negatively related constructs were alienation, self-assertiveness, and emotional stability. Doherty found no relationship between EC and measures of masculinity or approval motivation. In addition, Doherty found that EC scale results were strongly correlated to self-report experiences in response to emotional expressions, thereby reinforcing the validity of the measure. Soon thereafter (1998) Doherty used the

scale in an experiment to determine the effects of the contagion of emotional expressions on social judgment.

In 2006, Lars-Olov Lundqvist tested the factor structure and psychometric properties of the Swedish adaptation of the EC scale. He found good test-retest reliability and described the multi-faceted structure of the scale. He later (2008) found a strong correlation between results of the EC Scale and outcomes of the Temperament and Character inventory (TCI) of Cloninger, Svrakic, and Przybeck, (1993). The TCI measures four dimensions of temperament: novelty seeking, harm avoidance, reward dependence, and persistence, and three dimensions of character: self-directedness, cooperativeness, and self-transcendence. The strong correlation found by Lundqvist between the two measures further confirms the validity of the EC scale; Hatfield and her colleagues predicted that those who sense they are part of community, rather than alone in the world, should be highly susceptible to emotional contagion (1994); Lundqvist (2008) showed this to be true. In that same year, Lundqvist and Kevrekidis studied cross-cultural use of the scale. They validated the Greek version of the scale and confirmed the five-factor model. In addition, the authors conducted the first study that compared contagion across both cultures and genders using groups from Greece and Sweden. They reported, “meaningful comparisons of ECS can be made across men and women from different cultures and support the hypothesis that susceptibility to emotional contagion operates at a differential emotions level” (2008, p. 121).

A few doctoral dissertations have incorporated the EC scale and their results have added to its reputation for validity. Notably, Nancy Stockert at the University of Hawai‘i found that EC scores obtained from the scale were consistent with actual contagion measured across different situations and subjects (1994). The five EC subscales also accurately predicted the degree of contagion for each of the five specific emotions. In the present study, I will administer the EC Scale to assess overall capacity for emotional contagion. In addition, I will use the five subscales to estimate capacity for contagion of love, anger, fear, happiness, and sadness.

Measuring Psychopathy

As discussed earlier in this paper, the Hare PCL-R is the most widely used and vigorously tested measure of psychopathy. However, its protocol requires a lengthy interview with the participant, as well as an examination of his or her mental health case history and criminal record. While it serves criminal, forensic, and clinical patients, it is not an easy tool to use in other populations. To address this need, several scales have

been developed recently, and three are prominent. All three scales generate data through self-report. While controversial, the self-report approach streamlines evaluation by eliminating lengthy interviews and examinations of case histories. The first, the Self-Report Psychopathy scale (SRP), was described by Hare in 1985 as a self-report analogue of the famous PCL and PCL-R measures. Next, Levenson, Kiehl, and Fitzpatrick published the LPSP, Levenson's Primary and Secondary Psychopathy scales, in 1995. Finally, in 1996, the Psychopathic Personality Inventory (PPI) was published by Lilienfeld and Andrews.

I chose the Hare SRP as the psychopathy measure in this project (Appendix E). However, all three major methods are briefly described here to illustrate the advantages of the SRP for this study. Over the last decade, all three instruments have been tested independently and in comparison to the PCL-R.

The PPI Self-Report. The PPI of Lilienfeld and Andrews (1996) consists of 187 questions to be answered with a four-point Likert scale (see Appendix A for example questions). The measure generates an overall index of psychopathy plus scores on eight subscales. Early tests by the authors indicated internal consistency and test-retest reliability when used with non-criminal populations. Poythress, Edens, and Lilienfeld (1998) compared scores from the PPI with those from the PCL-R and found moderate correlations in overall scores and in the scores for Factor 1 and Factor 2 of the PCL-R (.54, .54, and .40, respectively). This indicated that two factors could be drawn from the eight subscales of the PPI. Other researchers believed that a three-factor model was a better fit (e.g. Neumann, Malterer, & Newman, 2008). Recently, Poythress et al. (2010) estimated the validity of both the PPI inventory and the LPSP with a large sample of offenders, using the PCL-R as a referent. Results showed stronger similarity of the PPI to the PCL-R in a number of measures, including better convergent and discriminant validity and more consistent predictability of PCL-R scores. The authors found the PPI was especially effective in assessing the interpersonal/affective (PCL-R Factor 1) features of psychopathy (Poythress et al., 2010), but weaker at assessing the lifestyle/antisocial features of PCL-R Factor 2.

The LPSP Self-Report. The LPSP consists of two separate scales, named the Primary and Secondary Psychopathy scales by Levenson (1995). This measure reflects an often-held notion that two different types of psychopath exist: Type 1, who exhibits strong characteristics of blunted affect and manipulative interpersonal skills, and Type 2, the person with neurotic / criminal / impulsive traits. (However, a few researchers use

the terms primary and secondary psychopathy to describe other groupings of traits.) The LPSP consists of 26 self-report questions, of which 16 constitute the primary scale and 10 constitute the secondary scale (see Appendix D for a sample page). However, neither primary nor secondary scales correlate strongly with the factors of the PCL-R. Researchers Brinkley, Schmitt, Smith, and Newman, for example, found that primary psychopathy correlated with Hare's PCL-R Factor 1 at a level of .30, while secondary psychopathy showed a correlation of .36 (2001). In a 2010 study, Poythress and colleagues found similar correlations with the two PCL-R Factors: the Primary scale showed a correlation of .23 with PCL-R Factor 1, and the Secondary scale a correlation of .29 with Factor 2. These researchers also found that the LPSP Primary Scale, intended to parallel Factor 1 of the PCL-R, actually correlated more strongly with Factor 2 (at .29) than Factor 1 (at .23), indicating weak discriminant validity.

The SRP Self-Report. Hare tested his original "experimental" SRP in 1985 to determine its fidelity to the Hare PCL-R (the gold standard). He found the agreement to be "rather poor" (p. 15). The self-report instrument was revised, generating the SRP-II. In 1994, Zágón and Jackson found that overall scores from the SRP-II showed moderate correlation of $r = .38$ with scores from the revised PCL. A few years later, the Hare SRP was used in field tests for the DSM-IV (see Lynam, Whiteside, & Jones, 1999); at that time the instrument's structure seemed to consist of only one factor. Other researchers, including Williams and Paulhus in 2004, tested the SRP-II and discovered that this version reflected two factors. The SRP has since been revised several times to increase its conformity to the four-factor model.

The newest version, the SRP-III (Paulhus, Neumann, & Hare, in press) has been used in several recently-published studies (see Jones & Paulhus, 2010, and Williams, Nathanson, & Paulhus, 2010, for example). Williams, Paulhus, and Hare (2007) used a student sample to determine that the new version loads on four factors. They also found good convergent and discriminant validity of the SRP-III. In 2011, Mahmut, Menictas, Stevenson, and Homewood used a community sample and confirmed the four-factor structure of the SRP-III. In a study with a large sample of students ($N=602$), Neal and Sellbom (2012) found that the data generated by the SRP-III showed "superior fit" to a four-factor model relative to other models (p. 244). In addition, the SRP-III instrument showed good internal reliability and "promising criterion-related, convergent...validity" (p. 248) when predicting scores on conceptually-relevant criteria (such as thrill-seeking, irresponsibility, and aggression) and on conceptually-opposed traits (such as honesty

and dependability). It showed weak or non-significant correlation with measures of social avoidance, fearfulness, and shyness, thus indicating discriminant validity. Neal and Sellbom (2012) conclude that the four factors of the SRP-III align “quite well” with the four-facet model of the PCL-R, but suggest that further research is needed with forensic and correctional samples. Nonetheless, they propose “the Hare SRP could be a good choice of measure to capture psychopathy in a broad range of individuals” (p. 251). Because I am interested in people with high levels of psychopathic traits who manage to live in the general population, the SRP-III is my instrument of choice (see Appendix E).

Problems of Self-Reporting. Two major criticisms have emerged regarding the use of self-report instruments to assess psychopathic characteristics. One addresses the structure of the scales while the second considers the capacity of the participant to use the scales. (1) Some scales place heavy emphasis on the social deviance or criminal component of psychopathy and little emphasis on the callous manipulation of others that psychopaths are known for (Lynam, Whiteside, & Jones, 1999). (2) Self-report scales are susceptible to socially desirable responding, especially by psychopathic respondents who are defined in part by their deception and manipulation of others (Lilienfeld & Fowler, 2007). Poythress et al. (2010) also point out that asking these individuals to report on the presence or strength of their emotions (notably guilt or remorse) may be fruitless at best and misleading at worst, since we suspect them of having no experience of these emotions and probably little psychological comprehension of them. However, Cleckley (1941/1976) commented that a glimpse into the thoughts of the psychopath might reveal that his reporting is inaccurate but it is not insincere; Cleckley imagined the psychopath’s deficiencies as akin to color blindness, where the color-blind person learns to recognize a shade of gray as “red” and another shade of gray as “green,” but he, of course, is not aware of exactly how these colors are seen by others. Lilienfeld (1994) mentions that psychopaths lack insight into their own nature and into the extent of their deficits, problems that may compromise the usefulness of any self-report.

However, all authors cited here support the use of self-report measures. In a book chapter on the dangers of using the self-report measure to assess psychopathy, Lilienfeld and Fowler state: “Notwithstanding a host of potential pitfalls, the use of questionnaires to detect psychopathy may prove considerably more fruitful than once believed” (2007, p. 107). Of primary importance is the self-report instrument’s ability to assess subjective emotions, such as fearlessness or callousness, in a sensitive manner. In the case of psychopathic traits, the *absence* of some emotions may be the most

interesting outcome. Also, researchers may find that those with high psychopathic traits experience certain emotions—perhaps rage or alienation—*more* frequently than do non-psychopaths (Lilienfeld & Fowler, 2006).

Self-reports allow comprehensive questions to be asked and answered, and provide the promise of anonymity that is lacking in interviews. In addition, they are more easily administered than the traditional interview-based PCL and PCL-R instruments, and are therefore more economical. Poythress et al. (2010) remind us that self-report scales can include items to detect false or inconsistent responses. Interviews cannot question false or inconsistent responses without compromising the dynamic of the interaction.

To the question of socially desirable responding, Lilienfeld and Fowler (2007) describe this problem as a “common misconception” of the self-report assessment (p. 111). They suggest: “psychopaths possess a different conception of what is socially undesirable” compared to average people (p. 112). Therefore, if those with psychopathic personalities engaged in positive impression management, they would not recognize which behaviors others perceive as socially undesirable and not know which responses to “manage.” They would perceive as normal—and perhaps emphasize—characteristics that they admire in themselves. Research conducted in 1982 found support for this: self-report measures of psychopathy showed negative correlations with socially desirable behaviors (Ray & Ray, 1982). Later research by Lilienfeld showed the same outcome: psychopaths self-reported accurately on such antisocial behaviors as recklessness, hostility, and poor impulse control (1994).

A 2012 meta-analysis of 54 studies confirms the significant negative association between social desirability and degree of psychopathic traits (Ray et al.) Psychopaths likely do not understand that their behaviors are socially undesirable and thus have little reason to manipulate the impression they make. In other studies, researchers have shown that high-psychopathy scores are strongly positively correlated with willingness to malingering and that psychopaths are more likely than non-psychopaths to malingering when it serves them. However, there is no evidence that they desire to misrepresent themselves when there is little gain, such as when taking an anonymous survey. In addition, E. A. Tyner (2005) showed that those with psychopathic personalities are not more successful at malingering than their non-psychopathic counterparts, and they are not more confident of their ability to malingering than non-psychopathic others. In consideration of the pros and cons of this approach, Lilienfeld and Fowler (2007)

concluded that the use of self-reports, including the PCL-based SRP, could be surprisingly valuable.

Scoring the Scale. Most researchers agree that the severity of psychopathic traits increases along a continuum. This means that a person is not “a psychopath” but rather has a degree of psychopathic traits that falls between normal and extreme. Most research findings are necessarily imprecise in their quantification of these traits. They use relative language such as a participant “scored high” or scored “relatively high” on the psychopathy checklist total score.

The SRP-III, although not yet published, provides no firm ranges of psychopathic versus non-psychopathic scores. It is the first measure to reflect the recent consensus that there are no hard and fast boundaries to the psychopathic condition, but a continuum. The scoring of the SRP-III is based on the reference sample mean and its standard deviations (see Appendix F for scoring instructions). Mahmut, et al. (2011) described the method, recommended by Hare, where participants who score one SD or greater above the mean were labeled High-P and those who scored one SD or more below the mean were in the Low-P group. Those who scored in the mid-range were considered potentially or mildly psychopathic and their scores were not considered in the Mahmut study.

The Mahmut, et al., approach allowed comparison of the performance of those with high scores with those with low scores. It did not exactly reflect the continuum model, which would force a correlational approach to data analysis. Instead, it allowed the careful examination of participants who fell in the high-psychopathic range (see Figure 4). It is those high-psychopathic persons who account for a disproportionate amount of crime and chaos in society. (These few account for more than 50% of violent crime, according to Hare, 1999.)

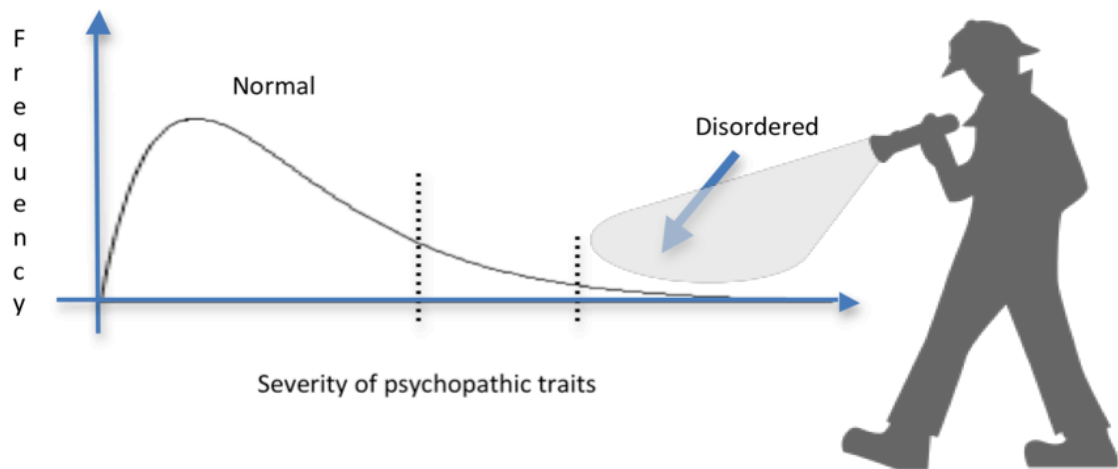


Figure 4. Investigation of persons with high-psychopathic traits in the general population (Luckhurst; character by J. Mourinho, 2011).

For my purposes, closely examining this extreme portion of the population provided information on emotional contagion and empathy in those who are reputed to lack empathy. The sample did not generalize to the normal population. Rather, it provided a magnified view of the characteristics of those with extreme traits (compared to normals), while avoiding the influences of an institution (which would have occurred in a sample drawn from a prison or hospital).

Measuring Empathy

Hogan published the first measure of empathy in 1969. A 64 item scale, it described empathy as a cognitive process (reflecting a view that was popular at that time) and drew questions from the well-established MMPI-CPI instrument. Hogan showed that empathy scores could be correlated with indices of “socially appropriate behavior” to predict the likelihood of “moral conduct” by participants (Hogan, 1969, p. 307). For more than a decade the Hogan Empathy Scale was the standard measure of empathy. However, in the 1980s scientists began to scrutinize the Hogan Scale. Cross and Sharpley (1982) tested the reliability of the scale and found it to be unsatisfactory. In addition, they reported that 43 of the 64 questions were “redundant or contradictory” to the Hogan construct of empathy (p. 62). The Cross and Sharpley study brought into question not only the measurement of empathy, but its definition.

Recent psychometric analyses of the Hogan Empathy Scale showed poor replication of the factor structure (Froman & Peloquin, 2001), low test-retest reliability,

and low internal consistency (Spreng, McKinnon, Mar, & Levine, 2009). In fact, Davis (1983) and Baron-Cohen and Wheelwright (2004) concluded that the Hogan Scale is a better measure of social skills than empathy.

As the construct expanded beyond cognitive empathy to include emotional empathy and involuntary empathy, new measures were created. The most influential were the Questionnaire Measure of Emotional Empathy (QMEE; 1972) by Mehrabian & Epstein, the Interpersonal Reactivity Index (IRI), created by Mark Davis in 1983, and the BEES (Balanced Emotional Empathy Scale) a revised scale by Mehrabian that was released in 2000.

Mehrabian and Epstein's 1972 scale, the QMEE, reflected the emerging hypothesis that empathy can result from emotion; that is, it comes from feeling the feelings of another. The QMEE introduced the measurement of affect into the empathy literature, which complemented the existing measure of cognition that was established by Hogan. Davis's scale, the IRI (1983), contains four subscales, which in pairs measure both cognitive and affective components of empathy. The IRI was the most widely used self-report measure of empathy for nearly two decades (Gerdes, Segal, & Lietz, 2010). Some social scientists argue, however, that the four-factor structure measures imagination and self-control, rather than empathy per se (e.g. Baron-Cohen & Wheelwright, 2004).

In 2000, Mehrabian released a scale that purported to assess responses to others' emotional states, a refined version of his first emotional empathy scale. His BEES test (Balanced Emotional Empathy Scale) has been frequently used but never formally published. Because the concept of empathy has continued to evolve, I searched for an instrument that reflected many definitions of empathy, one that had been published, and one that included the multi-dimensionality of the Davis model. The most appropriate measure is the Toronto Empathy Questionnaire (Spreng, McKinnon, Mar, & Levine, 2009). (See Appendix G.)

The Toronto Empathy Questionnaire (TEQ) was developed by Spreng and his colleagues to capture many types of empathic responding. The result is a 16-item instrument that uses Likert-style scales to indicate frequency of empathic behaviors (using *never*, *rarely*, *sometimes*, *often*, and *always*). The 16 items were extracted from existing self-report measures, including the IRI (Davis, 1983), the QMEE (Mehrabian & Epstein, 1972), the BEES (Mehrabian, 2000), the Hogan Empathy Scale (1969), as well as a few less-known scales, such as the Nursing Empathy Scale (Reynolds, 2000), the

Scale of Ethnocultural Empathy (Wang et al., 2003), and the Measure of Emotional Intelligence (Schutte et al., 1998). Using Exploratory Factor Analysis (EFA), the designers explored intercorrelations among items. They eliminated items that had item-remainder coefficients below .30. Questions that worsened internal consistency or that showed low factor loadings (below .40) also were excluded.

The resulting 16 questions capture many characteristics that are traditionally associated with empathy, as well as a few newer concepts known to be related or predictive of empathy. These include emotional contagion, emotion comprehension, sympathetic physiological arousal, and con-specific altruism. In short, the TEQ captures the variety of behaviors that are described in the current empathy literature. It shows good test-retest reliability, strong construct validity, and high internal consistency. State the authors: “in developing the TEQ, we created a parsimonious scale that is short, clear, and homogenous and has strong psychometric properties...” (Spreng, et al., 2009, p. 69). It draws on many popular scales that represent many perspectives on empathy (see Appendix G).

Participants

As discussed previously, most participants for research on psychopathy are recruited from prisons. Hare, in his 1991 handbook for the interpretation of the PCL-R, estimated that roughly 20.5% of U.S. prisoners have highly psychopathic traits (scores of ≥ 30 on the PCL-R), but prison studies reflect a “gross variation” of prevalence (see Cooke, 2002, for a discussion). Hare’s 2nd edition of the PCL-R manual (2003) estimates the prevalence at 28% or higher. While findings vary, it is safe to say that psychopathic personalities are much more common in incarceration facilities than they are in the population at large, where they comprise less than 1%. However, the culture of incarceration follows different rules for social interaction than does the free population; it holds different values. In addition, influences that are common in prisons, such as both illegal and prescribed drugs, are less common in the free world. As a result, incarcerated psychopaths may respond differently to emotional stimuli than their free counterparts. In an effort to understand psychopathic personality without the influences of prison life, I sought participants who lived free in the community.

MTurk

Because high-psychopathy individuals are rare in the general population, I sought an online tool that would allow a large sample of participants to be screened for desired traits. I used Amazon’s Mechanical Turk, an online job center (see Appendix H).

Mechanical Turk (MTurk) allows employers (called *Requesters*) to post jobs that require human intelligence. The work is broken down into simple one-time tasks. Usually a requester will need a task performed many times (for example, finding the web addresses of all police agencies in the US). He or she can recruit a large number of workers (called *Turkers*) to complete the job. The outsourcing of a large number of tasks to a large group of workers is commonly called *crowdsourcing*. Requesters post a job description, a rate of pay, and the number of *Human Intelligence Tasks (HITs)* available for that particular job.

My preliminary examination of the MTurk website (September 1, 2012) revealed 1337 job postings (see Appendix I for examples). They included jobs such as “identify the sentiment being expressed by a tweet,” or “answer basic questions about your smoking habits.” Each job advertised between 1 – 17,000 HITs (individual tasks) available for that job. The requester of the “identify the sentiment of a tweet” job, for example, had 3633 tweets to be evaluated. (One worker could perform all 3633 identifications, or 3633 workers could each perform one identification, or some other combination of workers and tasks could occur, until all 3633 HITs were completed for that Requester.) On that day, the total number of HITs available was about 132,020.

Most HITs require no special skills other than familiarity with the Internet. Rates of pay range from one cent to a few dollars, but generally cluster in the range of five cents to 35 cents. The jobs on September 1 included filling out a survey (rate of pay 5 cents), listening to a short advertising message for radio (rate of pay 15 cents), finding the email addresses of daycare centers in Ohio (rate of pay 6 cents per valid email address), and identifying celebrities in photos (rate of pay 3 cents per photo “tagged”). The job “identify the sentiment of a tweet” paid 2 cents per tweet. Workers finding the web addresses of police agencies in the US earned 5 cents per address. For seven cents, workers could receive the URL for a U.S. law firm and then look up the name, street address, and phone number of that firm.

According to researchers Ross, Irani, Silberman, Zaldivar, and Tomlinson (2010) the most requested tasks on MTurk are:

- (1) Completing surveys, polls, and questionnaires (52.9% of HITs)
- (2) Finding contact information on the Internet (12.2% of HITs)
- (3) Performing writing tasks, such as summaries, reviews, and editing (9.1% of HITs) (p. 3)

A few specialized tasks were also posted. Turkers who frequented online dating websites, for example, could evaluate a prototype questionnaire to be used for matching personality characteristics of clients. The pay for this HIT was \$1.25. Turkers could undertake this task only once, and only a few HITs were available (50). Several computer-programming tasks were listed; these required strong skills in writing computer code and strong past performance. To accept the programming tasks, Turkers must have had a 95% or higher satisfaction rate on previous HITs and must have passed a qualification test. Upon meeting the requirements, the rate of pay for these tasks was high: eight dollars per HIT.

Demographics of Turkers. In January 2011, Amazon reported that the 2010 MTurk workforce consisted of over 500,000 registered workers from more than 190 countries worldwide (Amazon Web Services). Other than these two numbers, Amazon has not released any information about Turkers, but social science researchers have studied their characteristics. Demographics of MTurk respondents have been compared to those from university subject pools, and not only were Turkers a more culturally diverse group, but they represented a broader spectrum of ages, lifestyles, incomes, and education (Kittur, Chi, & Suh, 2008; Ross et al., 2010). While Turkers are not a perfect microcosm of the U.S. population, these and other researchers concluded that their MTurk samples were more representative of the general public than university samples have been (see Paolacci, Chandler, & Ipeirotis, 2010).

Gabriele Paolacci and her colleagues looked specifically at U.S. Turkers (2010). Their findings indicated that the education level of U.S. Turkers is slightly higher than the general U.S. population, and their income level is roughly similar. However, when compared to the U.S. *Internet-using* population, MTurkers have slightly lower incomes—about 67% earn below \$60,000 per year—as compared to 45% earning below \$60,000 per year in the Internet population (Paolacci, Chandler, & Ipeirotis, 2010). This reporting of low income is consistent with the 2009 findings of Ipeirotis, published in 2010. However, other than income, MTurkers are found to be quite representative of the U.S. Internet-using population (Ross et al., 2010). A 2012 study showed that Turkers, like other Internet users, are more likely to identify as democrats, less likely to be affiliated with a major religion, less likely to be married, and “substantially more liberal in their ideology” (p. 11) than those from the general population who responded to traditional national surveys (Berinsky, Huber, & Lenz, 2012).

In addition, U.S. Turkers are predominately women (currently reported at 65%), which is a proportion consistent with demographics of other research recruited on the Internet (Gosling, Vazire, Srivastava, & John, 2004). However, different studies show different proportions of women; earlier studies report higher numbers including 75.5% and 80% female respondents; current studies show lower numbers such as 60% and 69% women.) Ross, Irani, Silberman, Zaldivar, and Tomlinson (2010) found that 63% of U.S. Turker respondents have college degrees, including advanced degrees, versus 25% of the U.S. population. Turkers are slightly younger than the U.S. population in general and the U.S. Internet population in particular. In her 2010 demographic study, Paolacci and her colleagues found the mean age of respondents to be 36 years old, with an age range from 18 to 81 years (these findings vary slightly from study to study).

Paolacci, Chandler, and Ipeirotis (2010) showed that the primary motivation for working on MTurk is income (usually secondary income), with 61.4% of respondents reporting income as an important driver. However, only 13.8% of U.S. Turkers report that MTurk is their primary source of income. Paolacci et al. found that users are also motivated by entertainment (40.7%) and “killing time” (32.3%). Other researchers have reported additional motivations, including education and fun. The Paolacci et al. study reported that 69.6% of U.S. Turkers considered MTurk “a fruitful way to spend free time” (p. 413) instead of watching TV. This finding is consistent with 2011 research by Horton, Rand, and Zeckhauser. U.S. Turkers average about eight hours per week on MTurk. During that time they complete from 20–100 HITs (Paolacci et al., 2010) and earn around ten dollars (Ross et al., 2010).

MTurk user demographics change frequently. While previous Turkers were required to have a U.S. bank account, a 2007 change in policy at Amazon now allows international users to receive their pay by check (in rupees) or in Amazon gift cards. Paolacci, Chandler, and Ipeirotis in their 2010 study reported that U.S. workers represented 47% of MTurk respondents, workers from India represented 34%, and the remainder of workers (19%) was drawn from 64 other countries. In a similar study, Ross et al., found 57% of their respondents were from the United States, 32% were from India, and the remainder “from countries ranging from Australia to Ukraine” (2010, p. 2). (Canada was the home of 3% of their respondents; the UK and the Philippines contributed 1% of respondents each, with Romania and Pakistan each providing 0.5%. Other countries contributed less than 0.5% of respondents to the Ross et al. study). Amazon states that over 190 nationalities are represented in the MTurk workforce. This

makes MTurk an excellent environment for conducting international or cross-cultural research (see Eriksson & Simpson, 2010, who recruited 984 workers in the United States and India via MTurk to participate in a study on gender differences in risk preferences). Researchers and other job requesters can specify the demographic profile needed for their HITs; it is easy to restrict the visibility of the HIT to a specific geographical location of workers.

Since my study began, policies at Amazon have once again changed. A posting on the TurkRequestersBlogspot (2013, January 17) noted that Amazon had put a hold on new worker accounts. According to the blog, when the hold was lifted, Amazon would no longer accept workers from outside the United States. Authors cited such reasons as fraud, attempts to violate the Amazon Terms of Service, and substandard working conditions for MTurkers in foreign countries. The blog speculated that this hold/new policy at Amazon had reduced the pool of cheap labor, but would increase the quality of work done via MTurk. A few competitive work sites have recently sprung up online to meet the need for international workers who will work for low wages. Amazon has allowed international Turkers with existing accounts to continue to work on MTurk.

Advantages of MTurk. In general, research indicates that MTurk can be a source of high-quality data, and, if payment is kept at a level comparable to other jobs on the site, it can be generated both inexpensively and rapidly. Regarding my research project, MTurk draws a large number of people overall, and this allowed screening of a large sample for a small price. Other advantages include the following:

- Survey results are returned rapidly on MTurk.

For example, psychology researchers at the University of Texas at Austin recently used the MTurk tool to conduct a series of studies and received about 40 qualified responses per day (M. Buhrmester, personal communication, January 27, 2012). Paolacci, Chandler, and Ipeirotis report generating 1000 qualified responses in three weeks, or about 48 per day (2010).

- Turkers work for little money.

Gratuities for completing surveys are seldom more than about 30 cents. Some pay as little as 2 or 3 cents. Research by Horton and Chilton (2010) showed that MTurk contractors are willing to work for an average of about \$1.40 an hour. (However, this number has likely changed in response to Amazon policy and the state of the economy.)

- Quality of the responses is high.
Studies have found data generated on MTurk to be just as reliable as data derived using traditional methods (see Buhrmester, Kwang, & Gosling, 2011, for example). The requester has the option to accept or reject the work performed.
- Online tasks may improve internal validity.
Because the researcher is not present while surveys are completed, MTurk may reduce experimenter bias. Due to its solitary nature, MTurk may also increase participant attention.
- Turkers are diverse in age, culture, income, gender, and so on.
The consensus of current researchers is that while the MTurk population is not precisely representative of U.S. population overall, it is much more representative than traditional subject pools such as university students. However, Ross et al. (2010) caution that there are limits to the “appropriateness of Turkers ... for some interventions or research areas” due to homogeneity in some areas such as education level (p. 1).

- Turkers can be screened for desired characteristics or geographical locations.
Because hundreds of people visit the MTurk site everyday to post jobs or perform tasks, it was an ideal tool to screen participants for characteristics of psychopathy. Once screened, the resulting sample was asked to participate in the study online. To be competitive on the site, I offered a small gratuity for participation.

Limitations of the Sample

Articles that assess the MTurk tool are overwhelmingly positive. Because the tool is new, however, not all limitations have been tested. I suspect that my MTurk worker sample was more Internet savvy, more comfortable with alternative or contract employment, and perhaps more risk-tolerant than most people. Participants were probably early-adopters of new technology, and were likely to have a younger median age. They also may have been less social than average or more introverted. My sample was skewed by self-selection—a pitfall in any research endeavor with voluntary human participants.

While results and identities are anonymous to the requester, the MTurk online engine retains participant email addresses (with consent) and allows researchers to re-contact participants. The contact database is inaccessible to users, but MTurk will provide an anonymized connection between an employer and a worker who has

performed satisfactorily in the past. Thus my screened sample remains available to me for future research.

High-psychopathic personalities are thought to account for less than one percent of the general population. I didn't know if the MTurk sample would reflect this proportion. I estimated that 0.6% of MTurk workers would have high-psychopathic characteristics, which is the most conservative number estimated by researchers for the general population. To yield a sample of participants who were in the high-psychopathic range, I planned to screen about 5000 people. I estimated that this screening would deliver about 30 high-psychopathic, as well as 30 low-psychopathic (normal) respondents.

Procedure

Workers at the MTurk website were recruited for this study. In order to limit the influences of cross-cultural variables, such as differences in ingroup/outgroup perceptions or variations in non-verbal emotional cues, I excluded respondents who live outside of the United States. Those who chose to participate indicated consent with an online form (Appendix J); they were given contact information for Dr. Hatfield, the researcher, and the UH Institutional Review Board. The Hare SRP-III checklist was used to screen each participant and each completed a short demographic survey.

Intended Selection of Participants

The first 30 of those with low psychopathy scores (equal to or lower than one standard deviation below the mean) and the first 30 of those with high psychopathy scores (equal to or greater than one standard deviation above the mean) were to be invited to continue with the three emotional contagion tasks. Because I wanted to invite qualified participants to continue as soon as possible after their initial contact, I initially used the mean and standard deviation from the Oregon Community Sample (see Appendix F) as a proxy in this study, intending at the study's conclusion to verify the appropriateness of this proxy. Participants who completed the entire study were to receive a small stipend of one U.S. dollar or less. All other participants were invited to complete only the empathy questionnaire and EC scale (for the purpose of correlating empathy, EC, and psychopathy). They were to be compensated with a stipend of 10 U.S. cents.

The selected high-psychopathy and low-psychopathy participants each completed EC tasks that measured mimicry, afferent response, and convergence. Participants also completed the emotional contagion self-report scale and the empathy self-report

questionnaires. I randomly varied the order of these tasks. Once all tasks were complete, the participant's work was approved, and the stipend was released to her or his online account.

The three tasks are described in the following paragraphs. They are numbered for reference, but the order of the tasks was varied. The step-by-step protocols for tasks 1 - 3 may be found in Appendices K, M, and O, respectively.

Task 1, Ability to Mimic

Task 1 was designed to measure hypothesis one: those with high psychopathic personalities would be less able to mimic facial expressions than their normal peers. The exact protocol for Task 1 may be found in Appendix J, and the steps are summarized here.

First, participants looked at a picture of a face expressing one of the six universal emotions: anger, fear, surprise, disgust, happiness, or sadness. These faces were selected from the NimStim Face Stimulus Set (2009) (Appendix L). The NimStim set includes 646 images of male and female faces, and represents Caucasian, Black, Asian, and Hispanic Americans. Emotions, genders, and races of the target faces were randomly varied.

Participants imitated the expression they saw and held that expression for several seconds, following the general protocol established by Levenson, Ekman, and Friesen (1990). While holding the expression, they named the emotion they were feeling by choosing from a list of the six universal emotions—angry, sad, happy, disgusted, fearful, surprised—as well as the options “other” and “neutral/no feeling.” They answered several additional questions, including the strength of their feelings, their level of success in mimicking, how they went about mimicking, and the degree of ease or difficulty in mimicking (see Appendix K—questions are embedded in the Task 1 protocol).

Participants were also asked whether the person in the photo would fit into their social group, and if they thought they could be friends with that person (to test ingroup bias). Finally, participants looked again at the photo and identified the emotion being expressed by the target, a test of Facial Affect Recognition, which was a possible confound. The complete procedure for Task 1 was to be repeated six times, allowing each participant to view and mimic each of the six universal emotions.

Scoring of the mimicry task was based on their match or non-match of the emotion (or near emotion) expressed by the target face. A match was scored with a value

of two and a non-match was scored with a value of one. The number of matches was summed for each participant.

Task 2, Afferent Response

Task two measured hypothesis two: those with high psychopathic personalities would be less able to experience afferent feedback leading to emotional convergence than their normal peers. The exact protocol for Task 2 may be found in Appendix M, and the steps are summarized here.

Participants used the Directed Facial Action instructions of Levenson, Ekman, and Friesen (1990). These instructions guided participants through muscle-by-muscle manipulation of their faces. Participants narrowed their eyebrows, pulled back the corners of their mouths, gritted their teeth, pursed their lips, and so on to express each of the six universal emotions. (See Appendix N for instructions of Levenson, Ekman, & Friesen.) They held an expression for several seconds.

After holding the expression, participants were asked to name their subsequent feeling from a list of emotions. Or, they could declare an absence of feeling or a different feeling. (See Appendix M—questions are embedded in the Task 2 protocol.) Presence of a feeling indicated that afferent feedback had occurred. A score of two was assigned for each feeling that matched or nearly matched the emotion intended by the Directed Facial Action instructions. A score of one was assigned when no match occurred. A total score was generated for each participant by summing the number of his or her matches.

In addition to identifying the emotions they were feeling, participants were asked the strength of their emotion, and if they experienced any physical sensations or memories. They were asked to describe any such sensations or memories.

Task 3, Convergence of Emotions

Task 3 was designed to test hypothesis three: those with high-psychopathic personalities would experience actual emotional contagion less often than their low-psychopathic counterparts. The exact protocol for Task 3 may be found in Appendix O, and the steps are summarized here.

Participants watched seven short video clips. Undergraduate research students in PSY499 chose some videos in spring term of 2012. Other clips were added in response to pilot study feedback. The clips were selected from the Internet and represented expressions of universal emotions. The PSY499 students agreed about the emotions expressed in the video clips with between 90-100% inter-rater reliability. (See Appendix P for the links to the film clips and their opening images.)

The clips showed a person (the target) or a group in a life situation: at home, at an office, on a date, at school, at a job site, or at a recreational activity. Each clip lasted between eight and fifteen seconds. Clips showed the facial expression(s) of the target or group in response to a situation, such as jubilant faces in the crowd during 2011's World Series game six homerun. Clips did not include the facial reactions of others to the target's expression; such visual information would have provided response cues to the participant. After watching the film clip, participants were asked to describe what emotion they felt and how strongly they felt the emotion (see Appendix N—questions are embedded in the Task 3 protocol). In addition, they identified the emotion expressed by the target. (This identification isolated any difficulty with Facial Affect Recognition [FAR], a possible confound.) Participants were asked if they could be friends with the person in the clip, and if the person would fit into their social group (a test of ingroup bias).

The order of the clips in this task was varied, as were the races and genders of the targets. This task was practiced once and repeated six times, so each participant saw all six universal emotions. If the participant's emotion matched or nearly matched the one demonstrated by the target in the film, we concluded that emotional convergence had occurred and assigned a score of two. A non-match generated a score of one. For each participant, the number of matches (instances of convergence) was summed to generate a total score for the task.

Task 4, Emotional Contagion Scale

Task 4 was designed to test hypothesis 4: those with high-psychopathic personalities would have less propensity for overall emotional contagion (as identified by the Doherty EC scale) and for the emotional contagion of five individual emotions (as measured by the Doherty subscales) than those with normal levels of psychopathy.

All participants completed the Emotional Contagion (EC) scale (see Appendix C). As described previously, the EC scale generates an overall EC susceptibility index—a continuous variable—derived from Likert-style responses to emotional situations. The EC scale also generates scores for five subscales. Each score represents the susceptibility of the participant to a specific emotion conveyed through contagion: love, anger, fear, happiness, or sadness.

Task 5, Toronto Empathy Questionnaire

Task 5 was designed to test hypothesis 5: those with high-psychopathic personalities would have less capacity for empathy, as measured by the Toronto Empathy Questionnaire, than normal people.

All participants, including those with high-p or low-p scores, completed the Toronto Empathy Questionnaire (TEQ) found in Appendix G. As described previously, the TEQ scale consists of 16 questions that have been compiled from several well-known measures of empathy. Questions are answered using Likert scales. The TEQ generates an overall score to represent the capacity for empathy by the participant.

After completing all tasks, participants were thanked for their participation. They were offered the opportunity to share any additional information in a free-response format. Stipends were released to participants within one hour of their completion.

Risk & Ethical Treatment

Participants were anonymous and exposed to little risk. Their contact information was not affiliated with their study responses. They were not deceived as to the purpose of the study, but simply asked how they felt in a variety of situations that were suggested by films and photos. They were also asked to recall situations from their memories.

It was possible that while completing the emotional contagion scale, they recalled an experience that was briefly troublesome, such as overhearing the crying of a frightened child at a dentist's office. The risk was small that this recollection would affect the participant in a lasting way.

The study, under the supervision of Elaine Hatfield, was found exempt by the UH Committee on Human Studies in April of 2012 (CHS # 20114). All participants were treated with respect, fairness, and care. All participants were informed of their rights and indicated their consent to participate. They were given contact information for Dr. Hatfield, the CHS, and me so they could express concerns or ask questions. (See Appendix Q for the letter of IRB approval.)

Pilot Test

Prior to the testing period, I created the study questionnaires and tasks using Qualtrics software. I gathered feedback from colleagues and friends. Based on their comments, I made revisions, including rewording instructions to increase clarity, improving the randomization of questions, adding answer choices to some questions,

and replacing a video clip that caused confusion. I posted the revised materials on Mechanical Turk on February 26, 2014 as a pilot test.

Responses from 95 people were collected over a three-day period. Sixty of the participants scored in the high-psychopathy (High-P) range of the SRPIII. (The High-P and Low-P score boundaries were set using the mean and standard deviation of the 2011 Oregon Community Sample data of Del Paulhus; see Appendix E.) From these pilot test responses, I learned that (1) the survey was taking too long--nearly an hour for some users—and they were dropping out before completing the emotional contagion tasks. (2) Participants were unhappy about the rate of pay relative to the time they invested. (3) The MTurk automatic payment process had not worked correctly. (To pay these early respondents, I manually transferred each payment to workers' Amazon MTurk accounts.) Finally, (4) characteristics of the SRPIII-SF data set were not as anticipated; the set contained many responses from participants who scored in the high-psychopathy range but very few who scored at the low-psychopathy end of the scale. This was problematic, because I needed approximately equal numbers in order to compare the two groups. In addition, the mean and standard deviation values from my pilot data were quite different from those found by Paulhus and his colleagues. I will describe this problem in greater detail as it had considerable impact on the screening of participants.

In the methods section of this paper, we defined high-psychopathy scores as those greater than one standard deviation above the mean, while low-psychopathy scores were less than one standard deviation below the mean. Those scoring high or low on the SRPIII-SF were to be invited to continue with the emotional contagion phase of the study, while those who scored in the middle range were to be directed out of the study. However, I did not have mean scores before I began and so needed proxy values to determine which participants to allow to continue and which participants should be directed out of the study. In order to set the high and low cutoff values, I used descriptive statistics from Paulhus, Neumann, and Hare (2011) the creators of the SRPIII-SF instrument. Paulhus and his colleagues used the SRPIII-SF in a 2011 study among a general population that he called the Oregon Community Sample (see Appendix E); the mean of that data was 41.83, and the standard deviation was 10.60.

However, once the pilot study began, I found the mean of the SRPIII-SF scores in my pilot test was 57.73 with a standard deviation of 14.90. Given my data, I needed those participants who scored above 72.63 or below 42.77 to continue with the emotional contagion portion of the study (see Table 1). Using the Paulhus et al. data, I had set the

high and low parameters at 52.42 and 31.22, respectively. These values turned out to be too low and thus identified too many respondents as high-psychopathy.

Table 1. Oregon Community Sample values used to estimate high and low boundaries, vs. boundaries needed based on pilot data.

	Mean	Std. Dev.	High-P Group boundary score	Low-P Group boundary score
Paulhus- OR	41.83	10.60	52.42	31.22
Cherie pilot	57.73	14.90	72.63 (needed)	42.77 (needed)

However, Paulhus and his colleagues also collected SRPIII-SF data from college students. They called this set the Texas College Sample. Five hundred ninety-one students generated a mean of 55.41 with a standard deviation of 15.21. The characteristics of this data set resembled my pilot data much more closely than did the Oregon Community Sample.

Several researchers have shown that the majority of MTurk workers have earned college degrees (see Martin, Hanrahan, O’Neill, & Gupta, 2014, for example, or Ross, Irani, Silberman, Zaldivar, & Tomlinson, 2010); therefore using the mean and standard deviation from the Texas College Sample seemed appropriate. I revised the selection parameters in my study to reflect Texas College Sample high and low cutoff values of 70.62 and 40.20, respectively (see Table 2).

Table 2. Texas College Sample values, versus boundaries from pilot data.

	Mean	Std. Dev	High-P Group boundary score	Low-P Group boundary score
Paulhus - TX	55.41	15.21	70.62	40.20
Cherie pilot	57.73	14.90	72.63 (needed)	42.77 (needed)

I made several other changes to the protocol in response to pilot participant feedback. To save survey time, I eliminated two of the six photo imitation tasks. (Rather than mimicking a photo of each of six universal emotions, each participant mimicked photos of only four different emotions. The emotions were randomly varied.) I also revised the Qualtrics program to generate completion codes that automated payments to participants. Finally, I had planned to pay each participant 10 US cents to take the

surveys, plus one dollar extra to complete the EC tasks. Based on pilot feedback, I increased the gratuity for survey completion to 12 US cents and the gratuity for EC completion to two dollars. Later, I again increased the gratuity for survey completion, this time to 16 US cents.

CHAPTER 3. RESULTS

The study was available on Mechanical Turk from March 1 - 26, 2014.

Participants totaled 559 individuals. All but 11 participants were located in the United States; data from these 11 were later eliminated from the set. See Figure 5 for mapped locations of participants.

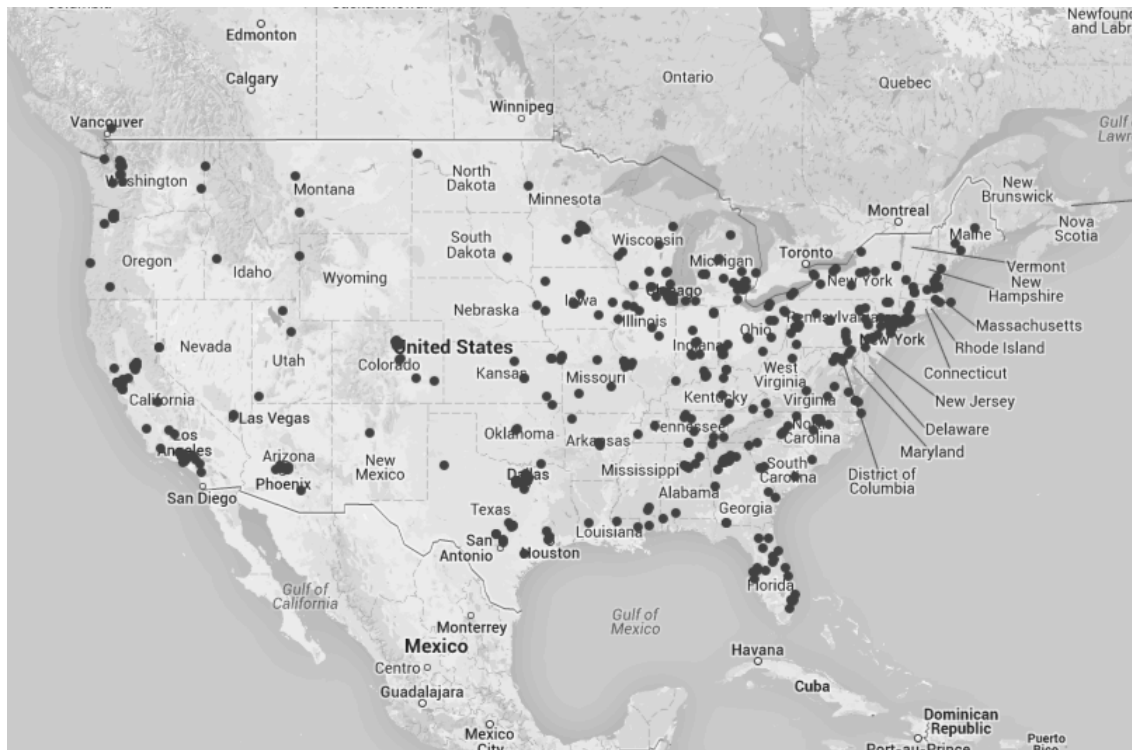


Figure 5. Locations of study participants, based on longitude and latitude data collected by Qualtrics.

(Generated using www.HamsterMap.com)

The High-P and Low-P group boundaries were set to reflect Paulhus's Texas College Sample, which had a mean of 55.41 +/- one standard deviation of 15.21, for a high score minimum of 70.62 and a low score ceiling of 40.20. All participants completed the psychopathy screener (SRPIII-SF), the Toronto Empathy Questionnaire (TEQ), the Emotional Contagion (EC) scale, and a short demographic profile. Those participants whose SRPIII-SF scores placed them in either the high-p or low-p group were invited to continue the study. They completed tasks to measure their capacities for

emotional contagion, which included tasks for mimicry, afferent response, and convergence with others' emotions. All participants whose scores fell in the middle range (between 40 and 71) completed three questionnaires plus demographic information but were not invited to continue with the three emotional contagion tasks.

The total number of respondents was 559. However, two had technical difficulties and were eliminated. Eleven, as stated previously, were located outside the U.S. and were excluded. Eight respondents used the same IP address and could not be reached to confirm they were eight different individuals; these eight responses were excluded. I included "catch trial" questions to insure participants were not selecting answers at random. One such catch trial question excluded 35 participants while another excluded 12 participants. Thirty participants left the study early; of these, 26 chose to withdraw and four did not agree to hold their facial expression for several seconds, a condition required by the Directed Facial Action protocol. In total, 98 participants were eliminated from the gross respondent pool of 559. This left a sample of 461 participants that completed the three surveys and demographic information. The general statistics that follow describe this sample.

General Descriptive Statistics

As predicted (see Chapter 1, Figure 1), the distribution of the scores on the psychopathy measure (the SRPIII-SF) was not normal (see Figure 6).

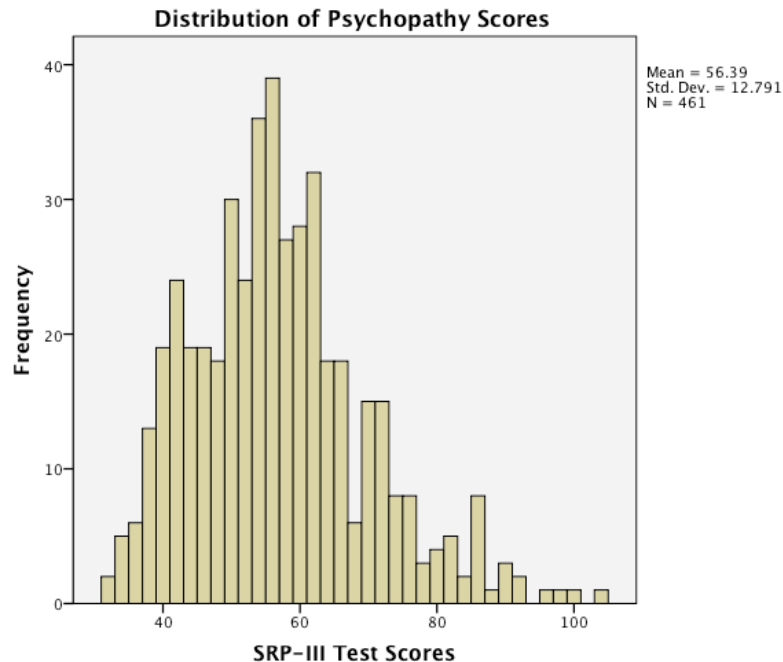


Figure 6. Histogram of scores from the SRPIII-SF psychopathy measure.

Descriptive data indicate a strong skew to the right and weak kurtosis. Skew for these data are .690 with SE of .114. The z-value for the skew is 6.05, which is very strong at $p < .001$. (However, given that the size of the sample is $N = 461$, a high z-value was expected.) Kurtosis was .553 with $SE_k = .227$, generating a z-value of 2.43. This score indicates leptokurtosis at $p < .05$. See Table 3 for descriptive statistics of the SRPIII-SF psychopathy scores.

Table 3. Descriptive Statistics for SRPIII-SF psychopathy scores.

Descriptives

Descriptive Statistics											
	N	Minimum	Maximum	Mean		Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
SRP sum score	461	30	103	55.90	.596	12.793	163.664	.690	.114	.553	.227
Valid N (listwise)	461										

Scores for the other two measures, the TEQ (Toronto Empathy Questionnaire) and the EC (Emotional Contagion) scale, were also non-normally distributed. TEQ scores showed a negative skew of .474 and a standard error of skew of .114. This generated a z-score of -4.15 representing a high negative skew at $p < .001$. The same data had a kurtosis value of .368 with a standard error of .227. The z-score for kurtosis was 1.62, which is normal at $p > .05$.

Table 4. Descriptive statistics for EC and TEQ data showing skew and kurtosis.

Descriptives

Descriptive Statistics											
	N	Minimum	Maximum	Mean		Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
EC sum	461	22	74	53.49	.334	7.168	51.385	-.274	.114	.905	.227
TEQ sum	461	38	80	61.95	.340	7.306	53.383	-.474	.114	.368	.227
Valid N (listwise)	461										

Emotional contagion (EC) values also showed a negative skew of .274 and a standard error of skew of .115, for a z-score of -2.40. This is a medium skew at $p < .05$ and is much less severe than the skews of the other measures. Kurtosis for EC data was very high. Kurtosis = .905, $SE_k = .227$ for a z-score of 3.99. This is quite severe at $p < .001$, indicating leptokurtosis. See Table 4 for descriptive statistics.

Skewed distributions are often troubling. They indicate that samples and their parent populations are not normally distributed, and normal distribution is a basic

assumption of parametric statistics. However, non-normality was anticipated in this study (see Chapter 2). To test the appropriateness of the analyzing this data with parametric methods, I transformed the SRP scores using natural log, standardized the scores, and re-ran the analyses. The outcomes were the same as the raw (non-normalized) data in every case. I repeated several analyses using non-parametric methods, and again the results were the same as results derived using parametric methods with the raw data.

Three Levels of Psychopathy

The three intervals of psychopathy showed good separation for the measures of EC and TEQ. Box plots show confidence intervals for empathy (Figure 7) and emotional contagion (Figure 8) at each level of psychopathy. Median values were distinct, and the 95% confidence intervals overlap for only one interval (high psychopathy EC).

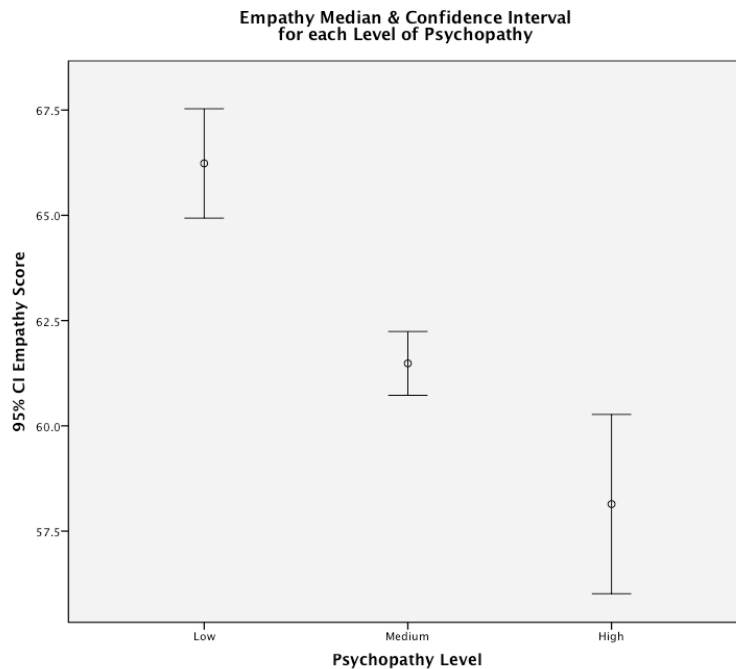


Figure 7. Comparison of 95% confidence intervals of empathy scores for each level of psychopathy (N = 461).

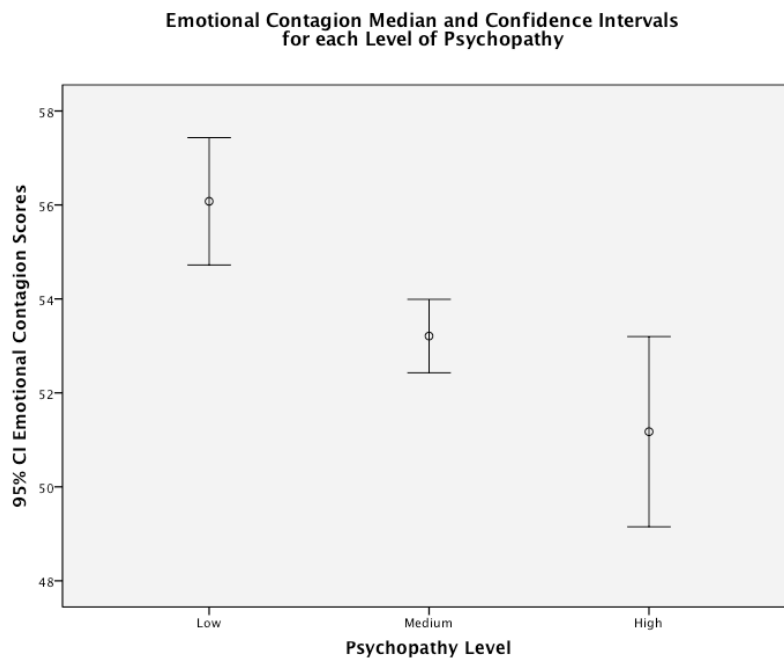


Figure 8. Comparison of 95% confidence intervals of emotional contagion scores for each level of psychopathy (N = 461).

Demographic Information

Limited demographic information was collected, including gender, race, age, and education. Of 461 qualified participants, 300 were women (65%). This number is in keeping with findings of other researchers. Three hundred ninety-eight participants reported that they had attended college, while 244 (53% of total participants) had earned a college degree. Ages ranged from 18 – 76 years old, with the majority of respondents in their younger years. (See the frequency distribution Figure 9.) Mean age was 36.6 years.

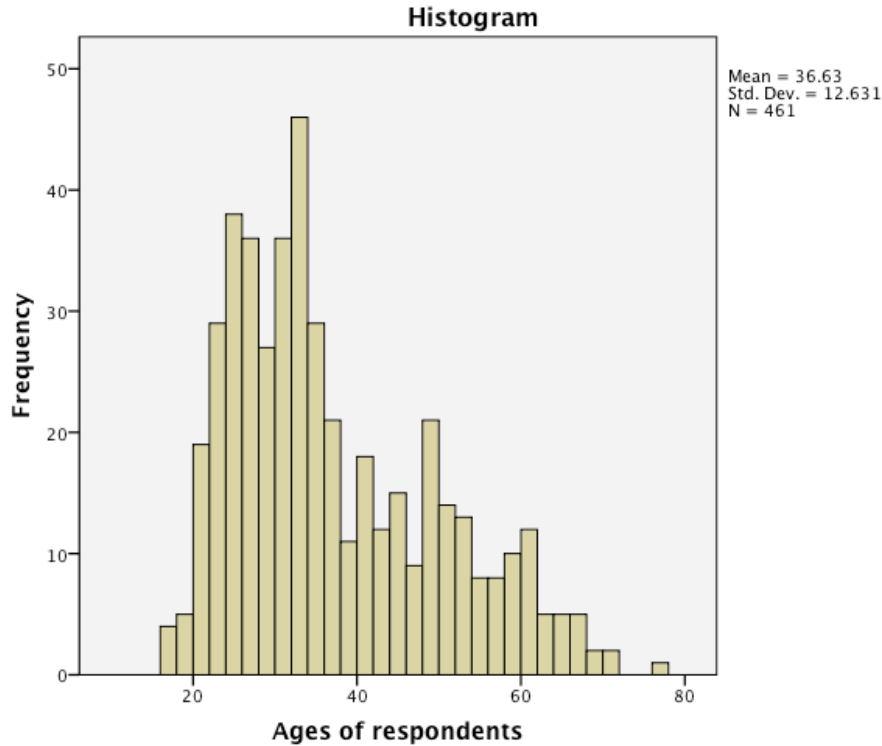


Figure 9. Frequency distribution of respondent ages.

Participants were asked about their self-identification with four races, as the photos in the NimStim Facial Stimulus Set represented four races. Of the 461 participants, 28 identified as African, 30 as Asian, 369 as Caucasian, 19 as Hispanic, and 15 as “none of these.” Caucasians constituted 80% of the sample.

High- and Low-Psychopathy Groups

After about two weeks of data collection, I had gathered about half of my goal of 30 high-p respondents. I replaced the high-p and low-p group boundaries from Paulhus’s Texas College Sample with the values from my own data set. Using the method described by Mahmut (2011) and recommended by Hare (discussed in Chapter 2), all scores greater than one standard deviation above the mean were considered “high” scores. My data indicated that high scores were those > 68.69 ($M = 55.90$, $SD = 12.79$). Scores less than one SD below the mean (i.e., < 43.11) fell into Group 1, the low-psychopathy set. (This group was thought to represent “normal” participants.)

The target of 30 high-p respondents was reached after about three weeks of data collection. At that time, 184 total responses had been collected, meaning the high-p

portion was about 16% of all respondents. I continued to collect data, hoping to increase the power that I would bring to later statistical analyses.

I found that a larger number of scores fell in the low-p set than the high-p set. To maintain a balance in scores, I lowered the ceiling for the low-psychopathy group slightly (from 43.11 to 43), thus reducing the number of low-psychopathy (“normal”) scores. In the final sample, the high-psychopathy set, called Group 2, consisted of 72 scores that ranged from 69 – 103. Low-psychopathy scores (Group 1) totaled 74 and ranged from 30 - 42, for a total of N = 146 after the medium-psychopathy scores were dropped from the sample.

The analyses of emotional contagion steps (in the sections that follow) are based on the sample of 146 respondents. Correlations of emotional contagion, empathy, and psychopathy are based on the large sample of N=461 that included the mid-psychopathy participants.

Specific Tasks in the Study

Three main topics were investigated. Each will be addressed in turn.

- (1) The ability of high-psychopathy versus low-psychopathy participants to perform the three steps of emotional contagion.
- (2) The capacity of high-psychopathy versus low-psychopathy participants to experience emotional contagion and empathy as measured by the EC Scale and the TEQ, respectively.
- (3) The correlation of empathy, emotional contagion, and psychopathy as measured by scores from the TEQ, the EC Scale, and the SRPIII-SF surveys of all qualified participants (N=461).

(1) Three Steps of Emotional Contagion for High-Ps vs. Controls (N=146)

Emotional contagion, although it happens involuntarily and instantaneously, was artificially broken into three steps: mimicry, afferent feedback, and convergence. A separate task tested participants’ capacities for each step. As described in the Procedure section, scores for each step consisted of the total number of times a participant’s self-reported feeling matched (or nearly matched) the emotion conveyed by the target. MANOVA testing of three steps on two levels of psychopathy showed non-significant multivariate effects ($p > .05$). However, between-subjects effects were significant ($p < .01$) on the third step of EC, convergence.

More specifically, in the task (step 1) of mimicking others’ facial expressions and feeling their feelings, a t-test indicated no significant differences ($p > .05$) between high-

psychopathic participants and controls. (That is, when instructed to imitate the facial expressions of others, high and low-psychopathic participants reported the ability to mimic and feel the target’s emotions at approximately the same rate.) High- and low-psychopathy participants also experienced afferent feedback in a similar manner (step 2); t-tests showed no significant difference ($p > .05$) between the contagion experienced by high-psychopathic participants and controls after being instructed to manipulate their facial expressions in a manner known to cause afferent feedback.

However, high- and low-psychopathic participants showed significantly different levels of convergence (step 3) after watching short film clips of others expressing emotion in real-life situations ($t(102) = 2.695, p < .01$) in a task designed to measure levels of convergence. Participants at each level did not differ in their skill at identifying the feelings of others in the videos ($p > .05$), only in their convergence with these feelings. The t-test data is summarized in Table 5.

Table 5. T-test of high vs. low psychopathic scores on emotional convergence and emotional identification using video clips.

T-Test

Group Statistics					
	HILOW 1=low 2=Hi	N	Mean	Std. Deviation	Std. Error Mean
sum of self scores on video emotions	1	51	9.04	1.685	.236
	2	53	8.17	1.602	.220
sume of others' emo on videos	1	51	10.98	.860	.120
	2	53	11.00	1.160	.159

Independent Samples Test								
		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
▶ sum of self scores on video emotions	Equal variances assumed	.542	.463	2.697	102	.008	.869	.322
	Equal variances not assumed			2.695	101.198	.008	.869	.323
sume of others' emo on videos	Equal variances assumed	3.511	.064	-.098	102	.922	-.020	.201
	Equal variances not assumed			-.098	95.839	.922	-.020	.200

(2) Capacity for EC and Empathy by High-Ps vs. Controls (N=146)

High versus low psychopathy groups were compared on capacities for empathy and emotional contagion using independent samples t-tests (Table 6). The difference in the means of empathy (TEQ) scores for high and low groups was significant at the $p < .001$ level ($t(144) = 6.83$). The high psychopathy group showed a lower empathy score mean ($M = 58.28, SE = 0.99$) compared to the low psychopathy group ($M = 66.50, SE = .69$).

Table 6. T-test results comparing high (Group 2) and low (Group 1) psychopathy groups on scores of TEQ (empathy) and EC (emotional contagion).

		Independent Samples Test								
		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
TEQ sum	Equal variances assumed	9.142	.003	6.829	144	.000	8.222	1.204	5.843	10.602
	Equal variances not assumed			6.798	127.786	.000	8.222	1.209	5.829	10.615
EC sum	Equal variances assumed	.626	.430	4.336	144	.000	5.191	1.197	2.824	7.557
	Equal variances not assumed			4.325	138.185	.000	5.191	1.200	2.818	7.564

Levene's Test showed that variances of empathy scores were significant $F = 9.14$, $p < .01$ so the assumption of homogeneity was not met. Using reduced degrees of freedom $df = 127.79$ generated a t value of 6.80, which maintained significance at the level of $p < .001$. This difference represented a large effect size ($r = .51$).

The difference in the means of emotional contagion scores for high and low psychopathy groups was significant at the $p < .001$ level ($t(144) = 4.34$). Similar to the empathy scores, emotional contagion scores showed a higher mean for those in the low (normal) psychopathy group ($M = 56.14$, $SE = 0.76$) compared to those in the high psychopathy group ($M = 50.94$, $SE = 0.93$). This difference represented a medium sized effect $r = .34$. The assumption of homogeneity was met for emotional contagion scores.

EC Subscales (N=146)

An exploratory MANOVA of high versus low-psychopathy scores on the five subscales of emotional contagion showed no multivariate effects ($p > .05$). However, effects between the High-P and Low-P groups were significant for three of the five subscales (happiness, fear, and sadness). Happiness showed significant results at the $p < .01$ level ($F(114) = 11.922$), with fear significant at the $p < .05$ level ($F(114) = 6.757$), and sadness significant at the highest level of $p < .001$ ($F(114) = 40.658$). Two of the subscales (anger, love) showed no significant differences between groups ($p > .05$).

After grouping the subscales into sets of negative and positive emotions, the data were analyzed again. The negative group consisted of the subscales anger, sadness, and fear, while the positive group consisted of happiness and love. T-tests showed that EC for the negative emotion set differed significantly between the high and low-p groups, $t(114) = -3.764$, $p < .001$. No significant difference in EC was found for the positive emotion set ($p > .05$). In both comparisons, Levene's test showed equal variances.

(3) Correlations in Empathy, Emotional Contagion, and Psychopathy

Using scores from the large sample of participants (N=461), correlations for the three measures Toronto Empathy Questionnaire (TEQ), Emotional Contagion Scale (EC), and Psychopathy Self-Report (SRPIII-SF) were as predicted. Empathy and emotional contagion correlated strongly and positively. Both empathy and emotional contagion correlated negatively with psychopathy, as shown in Table 7.

Table 7. Correlations of SRP (psychopathy), EC, and TEQ (empathy) scores.

Correlations^b

		SRP sum score	EC sum	TEC sum
SRP sum score	Pearson Correlation	1	-.259**	-.397**
	Sig. (2-tailed)		.000	.000
EC sum	Pearson Correlation	-.259**	1	.601**
	Sig. (2-tailed)	.000		.000
TEC sum	Pearson Correlation	-.397**	.601**	1
	Sig. (2-tailed)	.000	.000	

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

b. Listwise N=461

Figure 10 shows empathy and emotional contagion correlated strongly and positively $r = .601$, $p < .001$, $R^2 = .367$. Capacity for empathy accounts for 36.7% of the variability in emotional contagion in this sample. These findings are similar to a 2011 study of undergraduate students at the University of Hawai'i using the same two questionnaires.

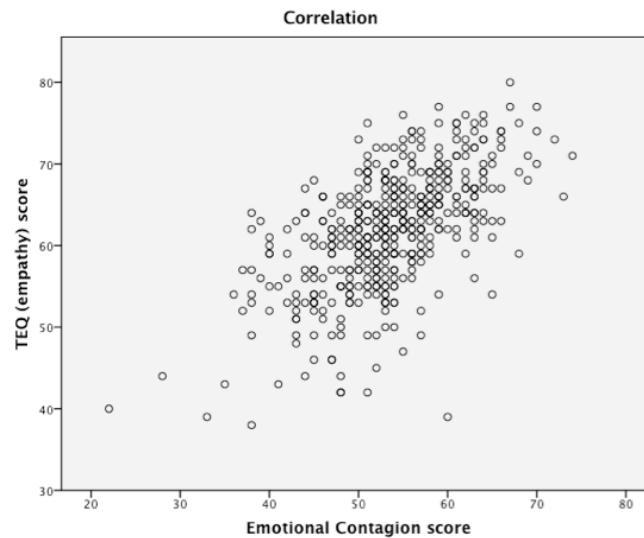


Figure 10. Correlation graph of TEQ (empathy) scores and emotional contagion scores

In that sample ($n = 268$), empathy and emotional contagion also correlated strongly and positively, with $r = .543$, $p < .001$, and $R^2 = .295$ (Luckhurst, 2012).

Figure 11 shows emotional contagion correlated negatively with psychopathy ($r = -.259$, $p < .001$). This is a significant, but small, effect. $R^2 = .067$, so only 6.7% of the variability in emotional contagion is accounted for by psychopathy.

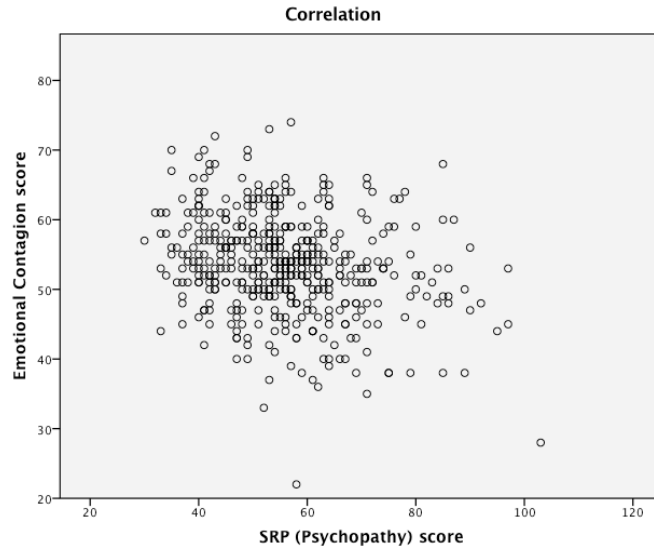


Figure 11. Correlation of emotional contagion and SRP (psychopathy) scores.

Finally, TEQ (empathy) scores and SRP (psychopathy) scores also correlate negatively, as shown in Figure 12. $r = -.397$, indicating a medium effect that is significant at the $p < .001$ level. $R^2 = .158$, or 15.8% of the variability in empathy is accounted for by psychopathy.

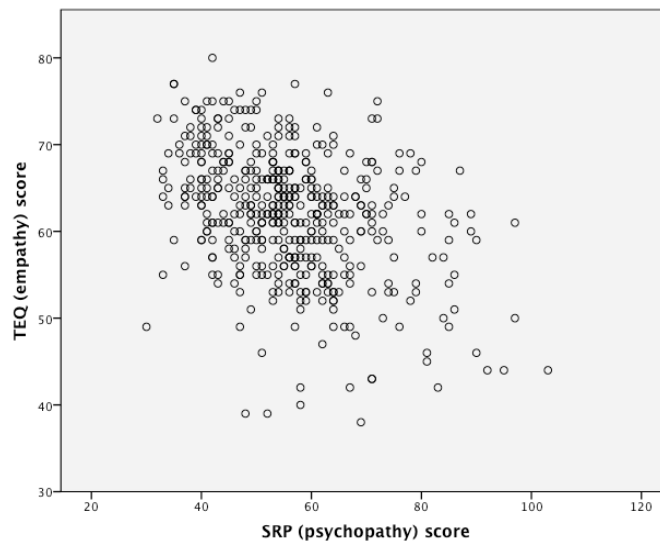


Figure 12. Correlation of TEQ (empathy) and SRP (psychopathy) scores.

Confounding Variables

Race and Gender Bias

Representations of race and gender were varied throughout this study to minimize effects of bias. The NimStim Facial Stimulus contained photos representing Caucasian, African, Asian, and Hispanic individuals and male and female genders (examples in Figure 13). Six photos were used for each of six emotions, for a total of 36 photos. Races and genders were similarly varied in the video clips. (See Appendix L for photos and Appendix P for video clips used in the study.) Appropriately, analysis of variance revealed that neither race nor gender of the participants nor their interaction affected EC scores significantly ($p > .05$).



Figure 13. Example photos from the NimStim Set of Facial Expressions (Tottenham et al., 2009)

In-Group Perceptions and FAR

No significant difference between High-P and Low-P groups was found in facial affect recognition ($p > .05$). Likewise, differences between the two groups were not significant for in-group perceptions ($p > .05$).

CHAPTER 4. DISCUSSION

Answers to Research Questions

The three steps of emotional contagion occur rapidly and unconsciously. In this study, they were artificially isolated into three discrete steps. Step one measured the ability of high-psychopathic participants (High-P) versus low-psychopathic participants (controls) to mimic the facial expressions of people in photos.

Hypothesis 1. Those with high psychopathic personalities will be less able to mimic facial expressions than their normal peers.

The data did not support this hypothesis. High-P scores were not significantly different than controls, indicating the self-reported ability of psychopaths to mimic facial expressions was normal.

Step two measured the capacity for afferent feedback. In natural responses, mimicry leads to afferent feedback. In this study, participant facial expressions were manipulated using step-by-step instructions.

Hypothesis 2. Those with high psychopathic personalities will be less able to experience afferent feedback leading to emotional convergence than their normal peers.

The data did not support this hypothesis. High-P scores were not significantly different than controls, indicating the capacity of psychopaths for afferent feedback was normal.

Step three measured the convergence of emotions. Participants viewed video clips of people who displayed emotions in response to everyday situations.

Hypothesis 3. Those with high-psychopathic personalities will experience actual emotional contagion less often than their low-psychopathic counterparts.

The data supported this hypothesis, and the null hypothesis was rejected. Psychopaths were significantly less able to converge emotionally than their normal counterparts. This outcome was echoed by the results of the emotional contagion scale.

Hypothesis 4. Those with high-psychopathic personalities will have less propensity for overall emotional contagion (as identified by the Doherty EC scale) and for the emotional contagion of five individual emotions (as measured by the Doherty subscales) than normal people.

Psychopaths scored significantly lower than normal participants on the overall measure of emotional contagion. Thus, the data supported hypothesis 4.

Similar to task four, task five measured the capacity for empathy by psychopaths.

Hypothesis 5. Those with high-psychopathic personalities will have less capacity

for empathy, as measured by the Toronto Empathy Questionnaire (TEQ), than normal people.

The data supported this hypothesis and the null was rejected. Psychopathic participants experience empathy significantly less frequently than normal people.

In summary, this study asked the following research questions:

- (1) Do people with high levels of psychopathic traits experience emotional contagion in a manner consistent with their normal counterparts? And
- (2) If not, in which steps does their emotional contagion differ?

The study found that (1) they do not experience emotional contagion in a manner consistent with their low-psychopathic counterparts. Yet, question (2) was not precisely answered by this study. It is true that their process of EC differs, but no single step in the EC sequence seems to be broken. Rather, those who qualify as high-psychopathic appear to be capable to of both mimicry and afferent feedback, but they somehow fail to launch the sequence of EC steps that result in convergence.

Interesting Finding #1: Steps of Emotional Contagion

This study featured three discrete tasks to test the three steps of emotional contagion. Although these steps do not occur separately in nature, isolating each task allowed the problems in the EC process of psychopaths to be revealed. Hypothesis one, those with high-psychopathic personalities would be less able to mimic than their normal counterparts, was not supported. Hypothesis two, those with high-psychopathic personalities would be less able to experience afferent feedback also was not supported. This finding supports the work of several earlier studies, including Forth (1994), who found no differences between psychopaths and non-psychopaths in autonomic responsiveness to expressions of mood.

My findings should help put to rest speculation among researchers that psychopaths might be unable to trigger autonomic responses to emotional stimuli (see, for example, Blair, 1999; Kosson, Suchy, Mayer, & Libby, 2002; also Levenston, Patrick, Bradley, & Lang, 2000); because psychopaths experienced contagion in step two, we know that autonomic afferent feedback was triggered. So, in the first two steps, those with psychopathic personalities performed in a manner that was very similar to normal people.

Hypothesis three, those with high-psychopathic personalities would be less able than normal people to converge with others' emotions, was supported by the data. The study assessed this third step in the emotional contagion process by asking high- and

low-psychopathy participants to watch short video clips (Appendix P). The clips depicted people in ordinary situations who felt specific emotions. One clip, for example, showed spectators at a baseball game who were happy about a home run. Another clip showed a man trying to drink a disgusting beverage. Each clip focused on one or two target people in the scene; the responses of other spectators to the target(s) were not shown. The task revealed that those with high-psychopathic scores were not able to share emotions with those in the video clips with the same frequency as normal people.

Psychopaths' lack of emotional convergence was predicted in this study (hypothesis three). Also predicted was the finding of a strong negative correlation between the EC scale scores and the psychopathy scale scores. However, it was unexpected and surprising that psychopaths were able to emotionally converge, both when instructed to mimic and through directed facial action (DFA) as a result of afferent channel activation. Yet, they did not automatically converge emotionally when viewing the video clips.

Possible Explanations of EC Results

A number of explanations are possible for this interesting outcome. First, a few characteristics of the study might have altered regular behavior of high-psychopathic participants. I will examine these possibilities. Next, susceptibility to contagion, as described by Hatfield and her colleagues (1994), may offer insight into the lack of convergence by psychopaths. Finally, new research by social scientists, including neuroscience studies, may help explain the unexpected outcome.

Characteristics of the study

1. Sound in video clips.

The still photos (task 1) and the directed facial actions (task 2) were reading exercises. That is, participants read the instructions silently and performed the task with no sound (except any sound in their ambient environment). However, the third task featured video clips that contained sound. I thought sound would enhance the experience of participants, giving them more cues and thus a better likelihood of shared emotion. However, sound may have somehow deterred psychopaths from experiencing emotional convergence.

2. Length of video clips.

Both the first and second tasks allowed participants to view the photos or repeat the directed facial actions for as long as they desired. Similarly, the video clips could be played as many times as the participant desired. Participants could also

stop or pause the clip to view a situation or facial expression at length. Yet, a few participants (from both high and low-p groups) noted that the clips were “too short” or they “couldn’t understand what was happening” in the scene. One said, “I usually respond to videos/tv/movies - things visual - but I found I didn't, for the most part, with the video clips. I think some of them were too brief for me to become emotionally engaged” (from a low-psychopathic participant). Perhaps the short duration of the clips (8 – 10 seconds) somehow restricted psychopathic participants’ abilities to converge. However, EC is not a cognitive process; it is involuntary and instantaneous. Perhaps, however, the length of clips influenced cognitive processing.

3. Motion in the video clips.

The still photos differed from the video clips by lacking motion. I expected that participants would more readily converge with emotions of people in the films because they contained many triggers for contagion, including posture, gestures, and changing expressions. Researchers have shown that normal people readily mimic these behaviors across many situations (see Chapter 1, Emotional Contagion section). However, while the High-P participants did converge with people in photos that lacked these cues, they did not converge with those in the film clips that displayed those cues. Perhaps the motion and other behavioral cues shown in the clips somehow inhibited emotional convergence by psychopaths.

4. Instruction in non-video tasks.

Participants were instructed to mimic in the first task, and they were instructed to generate facial expressions that led to afferent feedback in the second task. Following the instructions, they converged emotionally with others. However, we don’t know if they would mimic and experience afferent feedback on their own, without instructions. In task three, participants were not instructed and they did not experience emotional convergence automatically, as normal people do. It is possible that the instruction unnaturally influenced the behavior of psychopathic participants, causing them to converge in tasks one and two when they would not have without such instruction.

The first three explanations, previous, seem unlikely to have influenced high-p participants in an unnatural manner. Even so, they would need to be eliminated by

further research. The fourth characteristic best explains the lack of convergence, but it also requires further investigation. However it offers consistency with explanations expressed by some researchers in previous studies. For example, Cima et al., 2010 proposed that psychopaths have the knowledge of right and wrong but “do not care to use it.” That is, psychopaths understood the expectations of society regarding moral dilemmas, yet they did not always make moral decisions. (To be clear, the research of Cima and colleagues did not address the question of willful disregard—we don’t know if high-psychopathic individuals didn’t care or weren’t conscious or did not connect their actions with consequences—their intentions were not measured.) In this dissertation study I found that high-p participants recognized emotions but did not experience them. Similarly, Cima and colleagues found that psychopaths understood societal expectations but did not act upon them.

Seara-Cardoso, Neumann, Roiser, McCrory, & Viding (2012) believe that the moral knowledge of psychopath is intact, but they are deficient in processing moral emotions, thus “failing to motivate moral behavior” (p.68). In a study that investigated highly emotional moral decisions in high-p individuals in the community, these authors found that high levels of Factor 1, the callous, unemotional part of psychopathic personality, are related to increased ease in making moral decisions but reduced levels of empathic concern. Therefore, it appears that some deficits in the emotional processing of psychopaths might be specifically associated with Factor 1 characteristics. The deficits found by Seara-Cardoso and her colleagues indicate good decision-making by psychopaths but poor empathic outcomes.

Given these recent findings, my use of instructions in tasks one and two might have changed the natural behavior of psychopaths. Perhaps, lacking instruction or incentive, psychopaths would not naturally launch the emotional contagion sequence. Current studies show they process emotional information but often fail to act on it (especially those scoring high in the Factor 1 characteristics of psychopathy). It appears that high-p individuals have the ability for each step, but somehow do not proceed to contagion.

Susceptibility to Contagion

Other clues about lack of automatic convergence of emotions may come from the work of Hatfield, Cacioppo, and Rapson (1994). They hypothesized that susceptibility (or resistance) to contagion is influenced by an individual’s personal characteristics, paraphrased here:

1. Their level of attention to others
2. Their sense of being interrelated to others rather than independent
3. Their ability to read others' emotions (including voice, gestures, postures)
4. Their ability to mimic
5. Their self-awareness of emotional responses
6. Their level of physiological (autonomic) response (p. 148)

Any of these factors could influence the vulnerability of a mentally healthy person to contagion; these factors are likely to influence those with high-psychopathic personalities as well. Of the factors listed, the characteristic most likely to have influenced my participants is number two: the sense that they are connected with others rather than independent. This factor was not tested in the study. All other characteristics listed here were measured, manipulated, or controlled.

Recent research by Arakawa (2012) at the University of Hawai'i indicated that mood, whether transient or enduring, influences susceptibility to emotional contagion by healthy people. In the case of those with antisocial or psychopathic personalities, researchers as far back as Cleckley have described psychopaths as having a poverty of affect. By definition they are disengaged from regular social interaction in general and pro-social behavior in particular. Considering both the poverty of affect and the anti-social characteristics of psychopathy, I estimate that high-p individuals perceive themselves as disconnected from others and hence would be less susceptible to emotional contagion than healthy people. Future research might measure psychopathic participants' perceptions of interconnectedness as a factor in emotional contagion.

Brain Neuro-Processing

While my study has examined the process of EC in those with psychopathic personalities, brain research may eventually illuminate its exact biochemical cause. Several recent studies have assessed brain glucose activity using fMRI, including the neural activity of psychopaths. Many scientists have noted a lack of activity or disrupted activity in the amygdalae of psychopaths (see, for example Cima, Tonnaer, & Hauser, 2010; Glenn, Raine, & Schug, 2009; Marsh, Finger, et al., 2008). Abnormal activity is especially high when psychopaths are asked to consider moral dilemmas. However, Cima and colleagues found no differences in judgments that result from this abnormal amygdala activity. As a result, the authors reject the hypothesis that emotional processes are causally necessary for judgments about moral dilemmas. Instead, they suppose that moral judgment might occur first, followed by emotional decision-making. As a result,

they conclude that while psychopaths show good moral judgments, they are unable to rely on emotions to exercise them.

Wilson, Juodis, and Porter (2011) investigated the mixed results of previous studies on facial affect recognition by psychopaths. They noted that emotion-processing deficits could not always be traced to amygdala dysfunction. The authors suggest that while the amygdala itself may not be impaired, its activation might in some way contribute to a left-brain mechanism that is dysfunctional, resulting in difficulty in information processing, including cognitive processes.

According to Kosson, Suchy, Mayer, and Libby (2002), psychopaths may have difficulty with left-hemisphere resources in general. They have noted that some psychopaths use the right brain to process language-related information, a process that usually occurs in the left brain in healthy people. Right brain processing is likely inadequate, slow, and awkward, thus rendering those with psychopathic personalities able but inefficient at processing information. The authors suggest that participants in their study might have struggled to identify images of facial expressions because the images were shown too briefly; they suggest that more time might be needed to integrate processing across both brain hemispheres. Dolan and Fullam (2006) also found much slower recognition time for facial expressions by criminals with antisocial personality disorder relative to non-criminal healthy men. While out of the scope of this study, the influence of the amygdala and the use of right-brain versus left-brain processes may well explain why the autonomic emotional contagion process does not occur in psychopaths as it does in normal subjects.

Attention Deficit

Since this study began, two new papers were published that might elucidate psychopaths' inability to converge emotionally with others. Both papers discuss a type of attention deficit in psychopaths where they are easily distracted from the information necessary to understand others. Dadds and his colleagues (2012) found that children with oppositional defiant disorder, who tested high for Factor 1 (callous-unemotional) characteristics of psychopathy, showed low levels of eye contact and low levels of affection toward their mothers. The authors suggest, "psychopathic disorder begins as a failure to attend to the eyes of attachment figures" (p. 191). In an earlier study, Dadds et al. (2006) found that FAR problems could be reduced or eliminated by instructing psychopathic children to focus on the eye region of the target's face. While my

participants did not struggle with FAR, their emotional convergence might have been deterred by lack of eye contact.

Another publication investigated attention shortfalls in psychopaths. Naomi Sadeh and her colleagues (2013) supposed that each psychopathic factor is associated with distinct cognitive and emotional deficits. The authors found that psychopathic individuals differed in their ability to process emotions and maintain attention according to their dominant factor. The affective-interpersonal factor (Factor 1) was associated with enhanced sensitivity to positive stimuli. Participants showed increased error rates on cognitive tasks when positive distracters (words) were present. The social deviance factor (Factor 2) was associated with increased behavioral interference to both positive and negative stimuli, which resulted in delayed reaction times on cognitive tasks. This finding supports previous research indicating that high Factor 2 individuals are “particularly sensitive to emotional context” reports Sadeh, et al. (2013, p. 241). In addition, the authors found that these deficits were interactional, not merely additive, in individuals who scored high in both factors. The authors conclude that each psychopathic factor may indicate predictable dysfunction in cognitive and affective processes. Further research may clarify whether emotional contagion is affected by one factor of psychopathic personality over another.

In reflection of these new publications, perhaps in my study it was not the instructions themselves, but the encouragement provided by the instructions to focus on important cues that made the difference in performance between steps one-two and step three of the emotional contagion pathway. This speculation is supported by studies of patients on the Autism Spectrum who are known to pay little attention to the emotions of others naturally, but who are able to attend, identify, and understand others’ emotions when prompted (see Evers, Kerkhof, Steyaert, Noens, & Wagemans, 2014; Sawyer, 2012; Zager, Alpern, & Boutot, 2009).

Interesting Finding #2: Surprising Sample from MTurk

Mechanical Turk yielded many more high-p participants than expected. My study was available on Mechanical Turk from March 1 - 26, 2014. Participants totaled 559 people. 71 participants tested as high-psychopathic using the SRPIII-SF instrument. Based on my literature review, the anticipated qualification rate of those with high psychopathy scores was 0.6%. However, the qualification rate I found when drawing from the MTurk environment was 12.7%. I hope this rate indicates that MTurk

is a rich resource for locating psychopathic personalities. More studies are needed to confirm this supposition.

Possible Explanations of MTurk Sample

As discussed earlier in this paper (see Chapter 1), many characteristics of the psychopathic personality make life in the mainstream world difficult for high-p individuals. We anticipated that Mechanical Turk might be an attractive place to visit for those with high-psychopathic characteristics. Most psychopaths are not successful in holding down traditional jobs because they lack the social skills to work on a team, are unwilling to take direction, and resist following established rules. (In fact, a series of studies by Gao and Raine in 2010 recruited participants from temporary employment agencies.) The Mechanical Turk environment allows workers to choose their own hours, select jobs that appeal to them, and perform work in isolation and without commitment. Thus, MTurk may be a good place to find those with anti-social personalities, psychopathy, or other mental illness that make working in the conventional workplace a challenge.

SRPIII-SF Imprecise Instrument?

However, perhaps we should consider other explanations for the number of high-psychopathic personalities on MTurk. One possible explanation is that the SRPIII-Short Form imprecisely measures psychopathy in the community. The SRPIII instrument has been revised and re-tested since my research program began. Many scholars continue to use the longer, 40-item version of the SRPIII, because it reflects good consistency with the PCL-R, the forensic instrument upon which the SRP was modeled (see Lämmle, Oedl, & Ziegler, 2014; Bernard, 2013). The 40-item version contains 31 items from the SRPII plus nine new items that were intended to better measure the antisocial behavior component of psychopathy.

A few recent studies show that the 40-item SRPIII maybe be limited in its ability to reveal the complete psychopathic construct (see for example Sandvik, Hansen, Kristensen, Johnsen, Logan, & Thornton, 2012). A longer version of the SRPIII, which consists of 64 questions, has been developed and is being used by some researchers. (It is sometimes called the SRPIII-R13.) When tested using college students, Neal and Sellbom (2012) found this long version to show superior fit, compared to shorter versions, for the original PCL-R four-factor model of psychopathy. Neal and Sellbom confirmed that this long version also shows a factor loading structure that is similar to the PCL-R. Some researchers have expressed concerns about the 24 additional questions

in this measure. Their concerns focus on the possible assessment of anxiety, empathy, and emotional intelligence by the additional questions.

Only one recent paper describes an SRPIII –SF that is similar to the scale used in my study. The paper (Neumann, Schmitt, Carter, Embley, & Hare, 2012) used a shorter version of the SRP scale called the SRP-E. The authors claim that the 64 items of the most recent SRPIII scale can be reduced to 19 items and still maintain the four-factor model structure of the original SRP and an “excellent model fit” (p. 562). The Neumann, et al., study tested a sample of more than 33,000 participants from around the world using the 19-item scale.

In addition, a recent study by Seara-Cordoso, Neumann, Roiser, McCrory, & Viding (2012) used the SRP-4-SF in a test of empathy and morality in a psychopathic population. Authors described the scale as organized in four facets that reflect the PCL-R, with good construct validity. Del Paulhus, one of the authors of the SRP, says that SRP-4 is the commercial name for the SRPIII-SF, and consists of the same 29 questions that I used in my study (personal communication, 2012). While discussion continues amongst psychopathy scholars, only further research can clarify the accuracy of these scales in measuring levels of psychopathy of people who reside in non-forensic populations.

EPA Alternative Measure

A totally different perspective on assessment of psychopathy in a non-forensic sample was published in December 2013 by researchers Lynam, Sherman, Samuel, Miller, Few, and Widiger. The Elemental Psychopathy Assessment (EPA) scale measures psychopathy from a Five-Factor Model perspective, using 18 subscales. The original version was 178-item self-report instrument tested in both community and forensic applications (Lynam, Gaughan, Miller, J., Miller, D., Mullins-Sweatt, & Widiger, 2011). The 2013 article introduced a “short form,” that incorporated the same 18 subscales, but contained only 72 items. Researchers Miller, Hyatt, Rausher, Maples, and Zeichner (2014) recently tested the construct validity of the 178-item version and called it a “promising assessment tool” (p. 555). While the length of the instrument makes it prohibitive for studies like mine, the introduction of the five-factor model perspective to a research community that has been entrenched in the Hare approach for several decades suggests that a major change in both measuring and conceptualizing psychopathy may be at hand.

Interesting Finding #3: Non-Normal Data from SRPIII-SF

As described in the previous chapter (Results, Chapter Three), the data generated in this study by the SRPIII-SF showed a bell-shaped curve with a strong right skew. While the right skew was not problematic in terms of analysis (we adjusted for non-normality when needed) it does raise an interesting question: does this curve depict a sample that is representative of the general non-forensic population? The scale's creators insist that their own data were normally distributed (Paulhus, 2012, personal communication). We would expect a normal distribution from a community sample (those with infrequent occurrences of mental illness). However, my data show many respondents in the high range of psychopathy (see Figure 14). How should these data be interpreted?

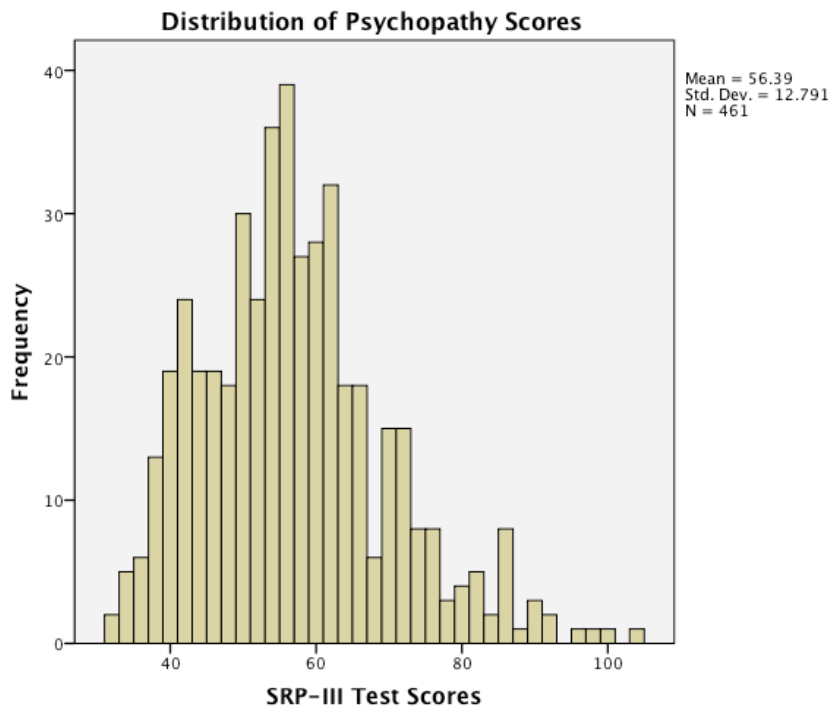


Figure 14. Distribution of SRPIII-SF scores (all participants).

Possible Explanation of the Non-Normal Distribution

The consideration of psychopathy in the community at large is a fairly new area of research. Its literature does not discuss in detail the measures used for testing. Perhaps as the number of studies increases, a conversation will take place about methods that are specific to community research. In addition, two conceptual questions arose for me in conducting this research: (1) why is one standard deviation used as the boundary

for high and low-psychopathy responses? (2) What do the low scores represent in the output distribution? I will briefly discuss the issues here.

(1) The problem of using the one standard deviation metric

As mentioned previously, the Robert Hare recommends and other scientists follow the practice of using one standard deviation above and below the mean to delineate SRPIII score boundaries. Concurrently, well-respected scientists, including Hare, estimate that less than 1% of the general population fit the criteria of high-psychopathic personalities. If this is so, and if scores from the community should generate a normal distribution, the metric of one standard deviation for judging a score as high- or low-psychopathic seems incorrect.

In a perfectly normal distribution using two-tails, the area within approximately two standard deviations from the mean contains 95% of all scores ($z = \pm 1.96$). Likewise, ± 2.58 standard deviations from the mean capture 99% of all scores (see Figure 15). Therefore, only 0.5% of all scores would fall outside the cutoff in each tail. Since researchers want to capture scores of high-scoring psychopaths that appear in one tail, we should look at scores that fall approximately three standard deviations from the mean in the normalized distribution: using a boundary of about $+2.81$ SD gives us 0.5% of scores in a single tail. This number approximates the expected rate of psychopathy in the general population (0.6%).

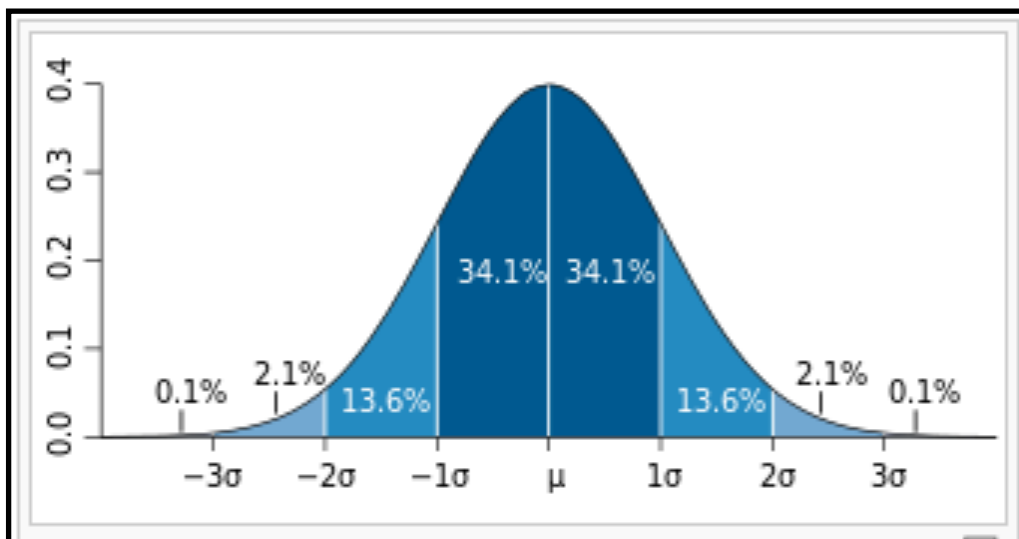


Figure 15. Standard Deviation Diagram (J. Kemp, 2009).

Perhaps the recent conceptual change from psychopathic taxon to continuum of psychopathy will cause researchers to re-examine the way we identify psychopaths on the continuum. However, I have found no papers that address this important topic.

(2) On the normal distribution, what do low scores mean conceptually?

At the beginning of this paper (Chapter 1), I described the output that I expected from the SRPIII scores in my study. (The distribution is shown again here in Figure 16, which was originally called Figure 1). In the original diagram, “Normal” was misnamed.

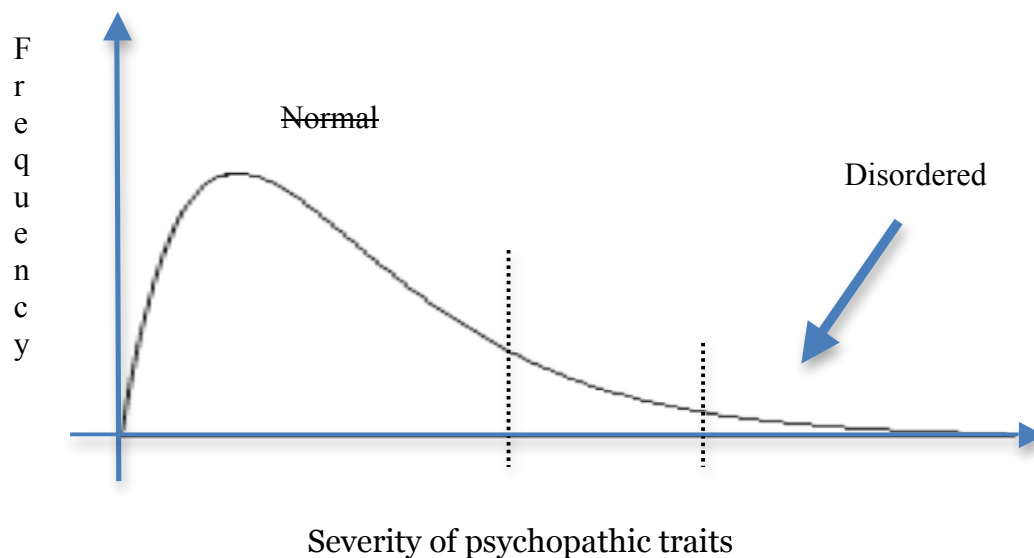


Figure 16. Expected frequency of psychopathic traits in the general population (Luckhurst).

The actual distribution of the SRPIII data from my study (see Figure 14, previous) was similar to this, with the most frequently occurring scores to the left of the mean, and a strong skew to the right. I anticipated this distribution based on the PCL forensic construct of psychopathy; I reasoned that most people in an average community should score in the normal range.

In the PCL model, the values of high-psychopathic and low-psychopathic are calibrated based on the forensic population. In the U.S., Hare (1991) recommends that psychopathic scores are those totaling 30 or over on the PCL-R scale. Recall from chapter 1 (Measuring Psychopathy section) that scores between 20 and 30 are considered mildly or potentially psychopathic. Scores below 20 are normal. Thus, using

the PCL model, it is reasonable to drop out the middle (potentially psychopathic) scores to compare the low-p with the high-p scores. However, applying the PCL construct to my data set was incorrect.

In my study, dropping out the middle scores allowed us to compare the high scores (1 SD above the mean and greater) with the low scores (1 SD below mean and lesser). However, the low scores do not have known meaning. In fact, they could be assumed to be “abnormal.” If the mean score is the cultural average in a community, any score that is much high or much lower could be considered a cultural outlier. Therefore, it was erroneous to call these low scores “normal” as I have several times throughout this paper. They are not even “controls,” in the sense that they indicate the absence of a manipulation. For now, they must simply be called “low-p.” These are respondents who are opposite end of the continuum from high-psychopathic. While high-p scorers would have anti-social (and perhaps criminal) tendencies, these low-scorers would be vigilant about rules and perhaps hyper-sensitive to others’ feelings. This part of the sample has not been studied or described.

At this juncture, we can only interpret those who are high scoring on the SRP measure. This interpretation is based on the continuum-based model for personality that is advised by the APA in the working papers of the DSM-5. We don’t know what low-p scores indicate, but we know that most people in a community sample should score around average, that is, around the middle of the distribution. We know from data gathered by Paulhus and his colleagues that the mean SRP score for folks in the community is about 41.8 (N=638) and the mean SRP score for those who attend college is about 55.1 (N=788).

In retrospect, perhaps it was incorrect for me to drop out the middle scores in order to compare high and low-scoring psychopaths. While low-scores indicated mental health in the forensic world of the PCL instrument, it is the average scores, not the low scores, which indicate mental health in the community using the SRP. Perhaps future research should test high-p responses against a small sliver of average-p responses (as depicted in Figure 17).

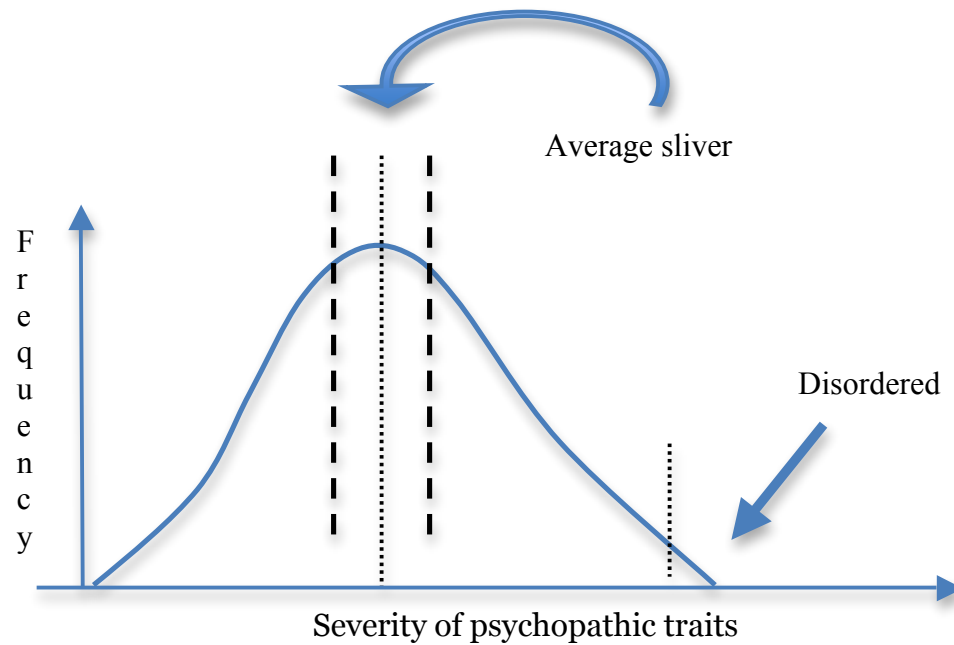


Figure 17. Proposed method of comparison for high-p and average-p scorers.

Limitations of the Study

Several potential confounds were eliminated by the design of the study. In particular, using faces from different races or mixed racial heritages reduced the influence of racial and in-group bias. Likewise, varying the gender in photos and video images minimized the impact of gender bias. The order in which emotions were presented was varied, as was the order of the questionnaires. Finally, the collection of data from high-psychopathic and low-psychopathic participants was maintained at approximately the same pace (by adjusting the boundary scores needed to qualify as low-p) in order to eliminate effects of the passage of time, including extreme weather events, holidays, and political changes.

FAR

One confound that was anticipated, based on research by other scientists, was a deficit in facial affect recognition (FAR) by those with high-p. My study found no such deficit in FAR by high-p respondent compared to low-p. While past researchers have asserted that people with high-psychopathic traits are unable to recognize facial expressions of emotions, the findings of recent research are mixed. Evidence from Blair et al. (2004) and Montagne et al. (2005), for example, found deficient recognition of fear or sadness by psychopathic adults. Kosson et al. (2002) found differences in recognition

of disgust by criminal psychopaths. Yet, a study by Glass & Newman (2006) showed that incarcerated subjects had no reduction in overall ability to recognize facial affect. Research with a community sample reported similar negative results (Del Gaizo & Falkenbach, 2008). Current research that separates psychopaths into Factor 1 (callous-unemotional) and Factor 2 (antisocial-criminal) types using the PCL-R might help clarify the mixed findings in the area of facial affect recognition.

Ingroup/Outgroup Bias

My protocols for Task 1 and Task 3 contained questions from the Social Distance Scale (Byrne, 1971) to check for in/out-group perceptions (see Appendix K and Appendix O, respectively). My study found no differences between high-p and low-p respondents to questions that asked whether they could be friends with targets in the photos and videos, or whether the targets would fit into respondents' social groups. No patterns arose connecting respondents to targets of their own race or gender.

MTurk as a Research Platform

A few limitations could not be mitigated. These included the collateral effects of using the Mechanical Turk website for recruiting participants. Many Turkers use MTurk as a source of income, and they are motivated to participate in studies that pay for participation. Anticipating this, my surveys included "catch trial" questions, logical traps to catch and exclude participants who were not paying attention or who were answering in a random manner. In addition, responses from each participant were closely reviewed for irregularities but none were found.

Based on the demographic information that was collected from participants, we know that this sample of Turkers differed from the general US population in their levels of education (higher) and age (lower) as well as its proportion of women participating (higher) relative to their proportion in the general population. In addition, we might assume that this sample also differs from the US average in income (lower), ease with technology (greater), and degree of liberal ideology (higher), based on the MTurk samples collected by prior researchers (see Chapter 2, Participants section).

Self-Consciousness

I did not anticipate the influence of self-consciousness on the study data. Several participants commented that they felt "silly" or "stupid" making the faces to complete the mimicry and afferent feedback tasks (steps 1 and 2). While most participants were not in public places, some were around people: usually family members or roommates. Their consciousness of others may have negatively influenced their participation. That is,

greater privacy probably would have increased their abilities to mimic and experience feedback, thus increasing their experience of emotional contagion. Only further testing will reveal the effect of self-consciousness on performance by both high and low- psychopathic participants. This would be a worthwhile study to undertake.

Future Research

This dissertation project revealed answers to some questions, while it brought other questions into focus. Two such questions invite future research. First, we now have some evidence that those with high-psychopathic personalities can identify the emotions expressed by others, they can mimic those emotions, and they can feel the emotions that come via afferent feedback. The question that remains for research is why they don't converge with others automatically. The second question that calls for further inquiry is how to interpret scores generated by the SRPIII-SF.

Steps of EC—Why do psychopaths not converge?

The most promising explanation may have been revealed by this dissertation: high-p individuals do not mimic without instruction. Other scientists have found a related explanation: psychopaths have an attention deficit so are often unaware of the need to respond to emotions of others. Future research might seek to isolate the amount of attention needed for these personalities to undergo emotional contagion. A study with protocol similar to mine, where participants view photos and identify their own emotions without instructions to mimic, would isolate whether it is the instruction to mimic that causes the contagion of emotions in these subjects. Similarly, a study similar to mine where participants viewed video clips, were instructed to mimic, and then were observed or video-taped would also isolate whether instructions (and actually following the instructions) causes psychopathic participants to converge emotionally. In addition, recent researchers have asked psychopathic participants to focus on the eyes of a target person to test whether they were able to overcome attention deficits. Similarly instructing participants to “focus on the eyes” in emotional contagion research might also result in improved convergence.

SRPIII-SF – How should researchers interpret scores?

The SRPIII-SF is the self-report instrument from the PCL-R family of psychopathy measures. The PCL-R was designed for use by clinicians with forensic populations. Their respondents are usually in jail, prison, or mental health treatment facilities such as military hospitals. Alternatively, the SRP was designed for use in the community. It has the same underlying factor structure as the PCL-R and represents the

same basic construct of psychopathy. Given low prevalence of psychopaths at large in the community, we should find very few in any sample. Yet researchers, as far as can be determined, are finding many. It is unclear if those who find many psychopaths in their sample are locating good sources of these personalities, or whether the measure is over-identifying what should be a very small sliver of the general population.

Future research could find how many researchers have yielded large numbers of psychopaths using the SRPIII metric. Most published papers, while they report the number of participants in the sample, do not report the number that scored at the high-end of the psychopathy continuum. For example, a recent study collected data from about 369 university students and drew conclusions about psychopathic behavior from that sample. If social scientists have correctly estimated the frequency of psychopathy in the general population, less than three of those participants would have scored in the high-psychopathy range. Contacting researchers who recently used the SRPIII measure and asking for firm numbers of high-scoring respondents would allow the usefulness of the measure to be evaluated. In addition, asking researchers about the distribution of the data would reveal whether a normal distribution or a skewed distribution of the data should be expected from community samples. A review of such findings would be very helpful to researchers. Only by looking more closely at the findings will we understand what the SRP-III is really measuring.

Conclusions

The results of this study were predictable in some ways and surprising in others. Both the scale of emotional contagion and the empathy questionnaire showed that people with psychopathic personalities lack the capacities for contagion and for empathy. This finding was predicted and reflects common knowledge about psychopaths. However, isolating the three steps of emotional contagion revealed something quite different: people with psychopathic personalities are able to mimic, recognize the emotions of others, and respond to afferent signals in their own bodies, thus leading to emotional convergence. The convergence seems to occur only when participants are instructed by the researcher to mimic; participants did not converge automatically with others, even after being primed by previous tasks. However, emotional convergence occurs without instruction and without priming in non-psychopathic individuals.

This study unpacked the three steps of emotional contagion to identify where the process was “broken” for those people with high-psychopathic personalities. I did not anticipate that the pathway of emotional contagion was not broken at all. Rather, these high-psychopathic participants, while able to respond to others’ emotions, simply did not do so. They did not experience contagion automatically and therefore do not respond to others in a normal way. It would be a mistake to assume that psychopaths simply do not care about others. A better conclusion, I believe, is that they fail to launch or fail to complete the contagion process automatically. This failure by high-psychopathic individuals to launch the steps of emotional contagion calls for further research.

APPENDICES

APPENDIX A—PSYCHOPATHIC PERSONALITY INVENTORY (PPI) (SAMPLE QUESTIONS, SUBSCALES, AND TARGETED CONSTRUCTS)

TABLE 1
Principal Focal Constructs Targeted During Test Construction

-
1. Superficial charm (Cleckley, 1941/1982)
 2. Egocentricity; grandiose self-concept (Cleckley, 1941/1982)
 3. Unreliability (Cleckley, 1941/1982)
 4. Untruthfulness and insincerity (Cleckley, 1941/1982)
 5. Guiltlessness (Cleckley, 1941/1982; McCord & McCord, 1964)
 6. Manipulativeness; Machiavellianism (Christie & Geis, 1969)
 7. Lack of anxiety and neurotic symptoms (Cleckley, 1941/1982)
 8. Fearlessness (Lykken, 1957, 1982)
 9. Poor impulse control (Hare, 1991)
 10. Low frustration tolerance; short temper (Hare, 1991)
 11. Risk taking; sensation seeking (Quay, 1965; Zuckerman, 1978)
 12. Inability to form close attachments (Cleckley, 1941/1982)
 13. Lack of empathy; role-taking deficits (Gough, 1960)
 14. Lack of emotional depth (Cleckley, 1941/1982)
 15. Failure to learn from punishment (Cleckley, 1941/1982)
 16. Lack of foresight and planning (Cleckley, 1941/1982)
 17. Propensity to externalize blame (Cleckley, 1941/1982)
 18. Authority problems; nonconformity (Lindner, 1956)
 19. Low ambition (Albert, Brigante, & Chase, 1959)
 20. Materialism (Albert, Brigante, & Chase, 1959)
 21. Failure to appreciate kindness (Cleckley, 1941/1982)
 22. Lack of capacity for fantasy (Karpman, 1948)
 23. Failure to delay gratification (Gorenstein & Newman, 1980)
 24. Hypermasculinity (Mosher & Sirkin, 1984)

Note. The first 18 constructs were targeted during the first round of test construction; the remaining constructs were added during subsequent rounds.

TABLE 2
PPI Subscales and Sample Items

Machiavellian Egocentricity (30 items)

I always look out for my own interests before worrying about those of the other guy. (True)

Social Potency (24 items)

Even when others are upset with me, I can usually win them over with my charm. (True)

Coldheartedness (21 items)

I have had "crushes" on people that were so intense that they were painful. (False)

Carefree Nonplanfulness (20 items)

I often make the same errors in judgment over and over again. (True)

Fearlessness (19 items)

Making a parachute jump would really frighten me. (False)

Blame Externalization (18 items)

I usually feel that people give me the credit I deserve. (False)

Impulsive Nonconformity (17 items)

I sometimes question authority figures "just for the hell of it." (True)

Stress Immunity (11 items)

I can remain calm in situations that would make many other people panic. (True)

Note. PPI = Psychopathic Personality Inventory.

Lilienfeld & Andrews (1996) p. 493-495.

APPENDIX B—PSYCHOPATHY CHECKLIST--REVISED

Table 1. Items in the PCL-R

Item	Description	Factor loading
1.	Glibness/superficial charm	1
2.	Grandiose sense of self-worth	1
3.	Need for stimulation/proneness to boredom	2
4.	Pathological lying	1
5.	Conning/manipulative	1
6.	Lack of remorse or guilt	1
7.	Shallow affect	1
8.	Callous/lack of empathy	1
9.	Parasitic lifestyle	2
10.	Poor behavioural controls	2
11.	Promiscuous sexual behaviour	—
12.	Early behavioral problems	2
13.	Lack of realistic, long-term goals	2
14.	Impulsivity	2
15.	Irresponsibility	2
16.	Failure to accept responsibility for own actions	1
17.	Many short-term marital relationships	—
18.	Juvenile delinquency	2
19.	Revocation of conditional release	2
20.	Criminal versatility	—

Note. From Hare (1991). —=item does not load on either factor.

The 'psycho test' referred to by the inmate is the Hare PCL-R, a 20-item scale completed on the basis of a semi-structured interview and file information (see Table 1). The PCL-R can be scored on the basis of file information alone, provided that the material contained in the files is extensive and detailed, and that the rater acknowledges the limitations of the procedure. *The PCL-R cannot be scored on the basis of an interview alone.* There are explicit criteria for scoring each item on a three-point scale (0, 1, 2) according to the extent to which it applies to the individual. The total score, which can range from 0 to 40, is highly reliable (intra-class correlations typically exceed .80) and valid when obtained by trained raters, and provides an estimate of the extent to which an individual matches the prototypical psychopath.

Hare (1998), p. 101-102.

APPENDIX C—EC SCALE

Please read each statement and circle how often you feel or act in the way described. There are no right or wrong answers!

1. If someone I'm talking with begins to cry, I get teary-eyed.

0	1	2	3	4
Never	Rarely	Sometimes	Often	Always

2. Being with a happy person picks me up when I'm feeling down.

0	1	2	3	4
Never	Rarely	Sometimes	Often	Always

3. When someone smiles warmly at me, I smile back and feel warm inside.

0	1	2	3	4
Never	Rarely	Sometimes	Often	Always

4. I get filled with sorrow when people talk about the death of their loved ones.

0	1	2	3	4
Never	Rarely	Sometimes	Often	Always

5. I clench my jaws and my shoulders get tight when I see the angry faces on the news.

0	1	2	3	4
Never	Rarely	Sometimes	Often	Always

6. When I look into the eyes of the one I love, my mind is filled with thoughts of romance.

0	1	2	3	4
Never	Rarely	Sometimes	Often	Always

7. It irritates me to be around angry people.

0	1	2	3	4
Never	Rarely	Sometimes	Often	Always

8. Watching the fearful faces of victims on the news makes me imagine how they might be feeling.

0	1	2	3	4
Never	Rarely	Sometimes	Often	Always

9. I am happy and content when the one I love holds me close.

0	1	2	3	4
Never	Rarely	Sometimes	Often	Always

10. I get tense when overhearing an angry quarrel.

0	1	2	3	4
Never	Rarely	Sometimes	Often	Always

11. Being around happy people fills my mind with happy thoughts.

0	1	2	3	4
Never	Rarely	Sometimes	Often	Always

12. I sense my body responding when the one I love touches me.

0	1	2	3	4
Never	Rarely	Sometimes	Often	Always

13. I notice myself getting tense when I'm around people who are stressed out.

0	1	2	3	4
Never	Rarely	Sometimes	Often	Always

14. I cry at sad movies.

0	1	2	3	4
Never	Rarely	Sometimes	Often	Always

15. Listening to the shrill screams of a terrified child in a dentist's waiting room makes me feel nervous.

0	1	2	3	4
Never	Rarely	Sometimes	Often	Always

Thank you for your participation!

Luckhurst adapted from Doherty (1997), p. 136.

APPENDIX D—LEVENSON PRIMARY AND SECONDARY PSYCHOPATHY SCALES
(EXAMPLE ITEMS, LOADINGS, AND SCALE DESCRIPTIONS)

Table 1
Items and Factor Loadings in the Primary and Secondary Psychopathy Scales

Item	Factor loading
Primary Psychopathy	
1. Success is based on survival of the fittest; I am not concerned about the losers.	.67
2. For me, what's right is whatever I can get away with.	.62
3. In today's world, I feel justified in doing anything I can get away with to succeed.	.62
4. My main purpose in life is getting as many goodies as I can.	.62
5. Making a lot of money is my most important goal.	.61
6. I let others worry about higher values; my main concern is with the bottom line.	.59
7. People who are stupid enough to get ripped off usually deserve it.	.57
8. Looking out for myself is my top priority.	.52
9. I tell other people what they want to hear so that they will do what I want them to do.	.44
10. I would be upset if my success came at someone else's expense.	-.50
11. I often admire a really clever scam.	.50
12. I make a point of trying not to hurt others in pursuit of my goals.	-.41
13. I enjoy manipulating other people's feelings.	.39
14. I feel bad if my words or actions cause someone else to feel emotional pain.	-.33
15. Even if I were trying very hard to sell something, I wouldn't lie about it.	-.33
16. Cheating is not justified because it is unfair to others.	-.32
Secondary Psychopathy	
1. I find myself in the same kinds of trouble, time after time.	.62
2. I am often bored.	.51
3. I find that I am able to pursue one goal for a long time.	-.49
4. I don't plan anything very far in advance.	.48
5. I quickly lose interest in tasks I start.	.48
6. Most of my problems are due to the fact that other people just don't understand me.	.46
7. Before I do anything, I carefully consider the possible consequences.	-.36
8. I have been in a lot of shouting matches with other people.	.34
9. When I get frustrated, I often "let off steam" by blowing my top.	.33
10. Love is overrated.	.32

Table 2
Scale Descriptives

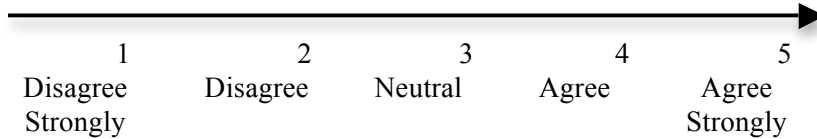
Scale	<i>M</i>	<i>SD</i>	Reliability
Stress Reaction	7.35	3.73	.86
Harm Avoidance	15.84	5.87	.87
Disinhibition	3.60	2.55	.75
Boredom Susceptibility	2.55	1.97	.59
Experience Seeking	4.95	2.17	.61
Thrill and Adventure Seeking	7.36	2.81	.78
Primary Psychopathy	29.13	6.86	.82
Secondary Psychopathy	19.32	4.06	.63
Antisocial Action	32.24	4.70	.70

Levenson, Kiehl, & Fitzpatrick (1995) p. 153-154.

APPENDIX E—SELF REPORT PSYCHOPATHY SCALE III, Short Form

SRP-III SF

Please rate the degree to which you agree with the following statements using numbers from the scale, below. Your name will be detached from your answers so you cannot be identified.



1. I'm a rebellious person..... _____
2. I have never been involved in delinquent gang activity. _____
3. Most people are wimps. _____
4. I've often done something dangerous just for the thrill of it..... _____
5. I have tricked someone into giving me money. _____
6. I have assaulted a law enforcement official or social worker. _____
7. I have pretended to be someone else in order to get something..... _____
8. I like to see fist-fights. _____
9. I would get a kick out of 'scamming' someone. _____
10. It's fun to see how far you can push people before they get upset..... _____
11. I enjoy doing wild things. _____
12. I have broken into a building or vehicle in order to steal something or vandalize. _____
13. I don't bother to keep in touch with my family any more..... _____
14. I rarely follow the rules. _____
15. You should take advantage of other people before they do it to you. _____
16. People sometimes say that I'm cold-hearted..... _____
17. I like to have sex with people I barely know. _____
18. I love violent sports and movies. _____
19. Sometimes you have to pretend you like people to get something out of them..... _____
20. I was convicted of a serious crime. _____
21. I keep getting in trouble for the same things over and over..... _____
22. Every now and then I carry a weapon (knife or gun) for protection. _____
23. You can get what you want by telling people what they want to hear. _____
24. I never feel guilty over hurting others..... _____
25. I have threatened people into giving me money, clothes, or makeup. _____

- 26. A lot of people are “suckers” and can easily be fooled..... _____
 - 27. I admit that I often “mouth off” without thinking _____
 - 28. I sometimes dump friends that I don’t need any more. _____
 - 29. I purposely tried to hit someone with the vehicle I was driving..... _____
-

Paulhus (2011), personal correspondence. Used with permission.

APPENDIX F—SELF REPORT PSYCHOPATHY SCALE SCORING

SRP-SF Key

Interpersonal items: 7, 9, 10, 15, 19, 23, 26

Affective items: 3, 8, 13, 16, 18, 24, 28

Lifestyle items: 1, 4, 11, 14, 17, 21, 27

Antisocial: 20, 2, 5, 6, 12, 22, 25, 29 (item 2 should be reverse-scored)

Oregon community sample

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
srp_int	638	7.00	27.00	11.6442	3.48899
srp_aff	638	7.00	27.00	10.4796	3.23522
srp_lif	638	6.00	26.00	11.8323	4.22355
srp_ant	638	6.00	26.00	7.8668	2.88875
SRP_29	638	26.00	84.00	41.8229	10.59686
Valid N (listwise)	638				

Texas college sample

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
srp_int	788	7.00	32.00	14.3325	5.03317
srp_aff	788	7.00	30.00	13.8655	4.63944
srp_lif	788	7.00	32.00	15.8071	4.98061
srp_ant	788	8.00	30.00	11.0622	3.83986
SRP_29	788	29.00	116.00	55.0673	15.05245
Valid N (listwise)	788				

SRP-SF means by males, females (Texas Sample)

Report

gender		srp_int	srp_aff	srp_lif	srp_ant	SRP_29
1 male	Mean	16.0980	16.0539	17.4216	12.5196	62.0931
	N	204	204	204	204	204
	Std. Deviation	5.42210	4.69798	5.24463	4.48145	15.94437
2 female	Mean	13.6718	12.7752	14.9793	10.4574	51.8837
	N	387	387	387	387	387
	Std. Deviation	4.70457	4.26925	4.67377	3.33767	13.55757
Total	Mean	14.5093	13.9069	15.8223	11.1692	55.4078
	N	591	591	591	591	591
	Std. Deviation	5.09198	4.68533	5.01056	3.89373	15.20931

Paulhus (2011), personal correspondence. Used with permission.

APPENDIX G—THE TORONTO EMPATHY QUESTIONNAIRE

Please read each statement carefully and consider how frequently you feel or act in the manner described. Circle your answer on the scale.

There are no right or wrong answers or trick questions. Please answer each question as honestly as you can.

	Never	Rarely	Sometimes	Often	Always
1. When someone else is feeling excited, I tend to get excited, too.	0	1	2	3	4
2. Other people's misfortunes do not disturb me a great deal	0	1	2	3	4
3. It upsets me to see someone being treated disrespectfully	0	1	2	3	4
4. I remain unaffected when someone close to me is happy	0	1	2	3	4
5. I enjoy making other people feel better	0	1	2	3	4
6. I have tender, concerned feelings for people less fortunate than me	0	1	2	3	4
7. When a friend starts to talk about his/her problems, I try to steer the conversation towards something else	0	1	2	3	4
8. I can tell when others are sad even when they do not say anything	0	1	2	3	4
9. I find that I am "in tune" with other people's moods	0	1	2	3	4
10. I do not feel sympathy for people who cause their own serious illnesses	0	1	2	3	4
11. I become irritated when someone cries	0	1	2	3	4
12. I am not really interested in how other people feel	0	1	2	3	4
13. I get a strong urge to help when I see someone who is upset	0	1	2	3	4

	Never	Rarely	Sometimes	Often	Always
14. When I see someone being treated unfairly, I do not feel very much pity for them	0	1	2	3	4
15. I find it silly for people to cry out of happiness	0	1	2	3	4
16. When I see someone being taken advantage of, I feel kind of protective towards him/her	0	1	2	3	4

Spreng, McKinnon, Mar, & Levine (2009), p. 70-71.

APPENDIX H—mTURK HOME PAGE

Amazon Mechanical Turk - Welcome

https://www.mturk.com/mturk/welcome

amazonmechanicalturk Artificial Intelligence

Your Account HITS Qualifications

Introduction | Dashboard | Status | Account Settings

Mechanical Turk is a marketplace for work.
We give businesses and developers access to an on-demand, scalable workforce.
Workers select from thousands of tasks and work whenever it's convenient.
212,779 HITS available. [View them now.](#)

Make Money
by working on HITS

HITS - *Human Intelligence Tasks* - are individual tasks that you work on. [Find HITS now.](#)

As a Mechanical Turk Worker you:

- Can work from home
- Choose your own work hours
- Get paid for doing good work

Find an interesting task → **Work** → **Earn money**

[Find HITS Now](#)

or [learn more about being a Worker](#)

Get Results
from Mechanical Turk Workers

Ask workers to complete HITS - *Human Intelligence Tasks* - and get results using Mechanical Turk. [Register Now](#)

As a Mechanical Turk Requester you:

- Have access to a global, on-demand, 24 x 7 workforce
- Get thousands of HITS completed in minutes
- Pay only when you're satisfied with the results

Fund your account → **Load your tasks** → **Get results**

[Get Started](#)

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Retrieved from <https://www.mturk.com/mturk/welcome>

APPENDIX I—mTURK SAMPLE POSTS

The screenshot shows the Amazon Mechanical Turk interface. At the top, there's a navigation bar with 'Your Account', 'HITS', and 'Qualifications' tabs. A notification indicates '212,943 HITS available now'. The user is identified as 'Cherie Luckhurst' with links for 'Account Settings' and 'Sign Out'. Below the navigation bar is a search and filter section with a search bar containing 'HITS', a filter for 'that pay at least \$ 0.00', and checkboxes for 'for which you are qualified' and 'require Master Qualification'. The main content area is titled 'All HITS' and shows '1-10 of 2566 Results'. The results are sorted by 'HITS Available (most first)'. The list of HITs includes:

Requester	HIT Expiration Date	Reward	Time Allotted	HITS Available
Freya Hurwitz	Nov 2, 2012 (5 days 2 hours)	\$0.04	60 minutes	19886
CrowdSource	Oct 28, 2013 (52 weeks)	\$0.08	16 minutes	14985
CrowdSource	Oct 28, 2013 (52 weeks)	\$0.12	30 minutes	14929
CrowdSource	Oct 28, 2013 (52 weeks)	\$0.12	30 minutes	14914
rohzi0d	Nov 8, 2012 (1 week 3 days)	\$0.00	48 minutes	12147
CrowdSource	Oct 28, 2013 (52 weeks)	\$0.15	30 minutes	10880
CrowdSource	Oct 28, 2013 (52 weeks)	\$0.15	30 minutes	10866
The Public Group	Nov 3, 2012 (5 days 19 hours)	\$0.06	60 minutes	6788

Retrieved from <https://www.mturk.com:443/mturk/findhits?match=false> (portrait view)

amazonmechanicalturk Artificial Intelligence

Cherie Luckhurst | Account Settings | Sign Out | H

Your Account | **HITS** | **Qualifications**

All HITS | **HITS Available To You** | **HITS Assigned To You** | **212,943 HITS** available now

Find containing that pay at least \$ for which you are qualified require Master Qualification

All HITS
1-10 of 2566 Results

Sort by: Show all details | Hide all details | 1 2 3 4 5 > Next >> Last

Categorize various things to do...places to see all over the world		Request Qualification	Request Qualification (Why?)	View a HIT in this group	
Requester: Freya Hurwitz	HIT Expiration Date: Nov 2, 2012 (5 days 2 hours)	Reward: \$0.04	HITS Available: 19886		
Time Allotted: 60 minutes					
View a HIT in this group					
Keyword Search on Google.com (US)					
Requester: CrowdSource	HIT Expiration Date: Oct 28, 2013 (52 weeks)	Reward: \$0.08	HITS Available: 14985		
Time Allotted: 16 minutes					
Find the Ranking of a Url (CA)					
Requester: CrowdSource	HIT Expiration Date: Oct 28, 2013 (52 weeks)	Reward: \$0.12	HITS Available: 14929	Not Qualified to work on this HIT (Why?) View a HIT in this group	
Time Allotted: 30 minutes					
Find the Ranking of a Url (US)					
Requester: CrowdSource	HIT Expiration Date: Oct 28, 2013 (52 weeks)	Reward: \$0.12	HITS Available: 14914	Request Qualification (Why?) View a HIT in this group	
Time Allotted: 30 minutes					
Inv_B_2					
Requester: rohzi0d	HIT Expiration Date: Nov 8, 2012 (1 week 3 days)	Reward: \$0.00	HITS Available: 12147		
Time Allotted: 48 minutes					
Find the Ranking of a Url in Google (CA)					
Requester: CrowdSource	HIT Expiration Date: Oct 28, 2013 (52 weeks)	Reward: \$0.15	Not Qualified to work on this HIT (Why?) View a HIT in this group		

Retrieved from <https://www.mturk.com:443/mturk/findhits?match=false> (landscape view)

APPENDIX J—ONLINE CONSENT FORM

University of Hawai‘i Consent to Participate in Research

By continuing, you indicate that you understand your rights and the potential risks of this study, and you consent to participate.

Project Description: This study is about emotional responses to social situations. All you need to do is view six photos and six short films clips, and answer a few questions on the following pages. We will also ask you to fill out a short questionnaire.

Completion of the study takes between 20 and 30 minutes.

Benefits and Risks: There is little risk to you in participating in this project. This study will contribute to psychology’s understanding of emotions and will offer you an opportunity to consider your own situational responses.

Confidentiality and Privacy: This survey is anonymous. Please do not include any personal information, such as your name, in your survey responses.

Voluntary Participation: Participation in this project is voluntary. There is no penalty for not participating. If you choose to participate, you can stop at any time.

Questions: My name is C. Luckhurst. I am a graduate student at the University of Hawaii. This survey is part of my research toward a doctoral degree.

If you have any questions or concerns about the study, feel free to contact me at emotionstudy@gmail.com or 956-8414. Or, you may contact my faculty advisor, Elaine Hatfield, at 956-6276. You can print this page, in case you want to contact us later.

If you have any questions about your rights as a research participant, you can contact the UH Committee on Human Studies at 808.956.5007 or uhirb@hawaii.edu.

Continuing the survey indicates that you agree to participate.

Thank you.

EXIT

PRINT

CONTINUE

APPENDIX K—TASK 1 PARTICIPANT INSTRUCTIONS

Task 1 Screen 1

On the next page, you will see a picture of a face.

Please imitate the expression on the face to the best of your ability.

Then, hold the expression while answering a few questions.

Don't worry, we do not have a hidden camera!

Continue



Task 1 Screen 2

Please imitate this expression and hold.



Continue



Task 1 Screen 3

Keep holding the expression while you answer a few questions.

1. How do you feel right now? Please mark one feeling in a box below.

angry	
sad	
happy	
disgusted	
fearful	
surprised	
other	
neutral/ no feeling	

If you marked “other,” please write the feeling here: _____

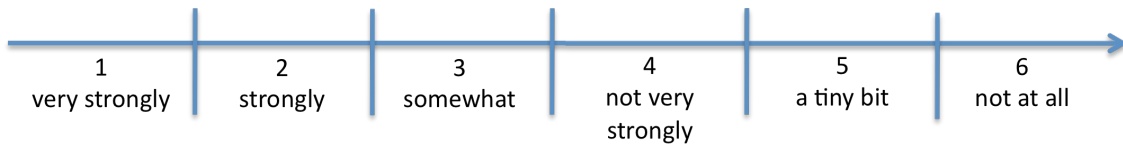
Keep holding the expression!

Continue



Task 1 Screen 4

2. How strongly are you feeling the emotion you just named?
(Please mark the scale to indicate the strength of your feeling.)



Please keep holding the expression.

Continue



Task 1 Screen 5

3. What are you doing with your face to imitate the expression
(for example, wrinkling your nose, gritting your teeth, etc.) ?

1.
2.
3.
4.
5.

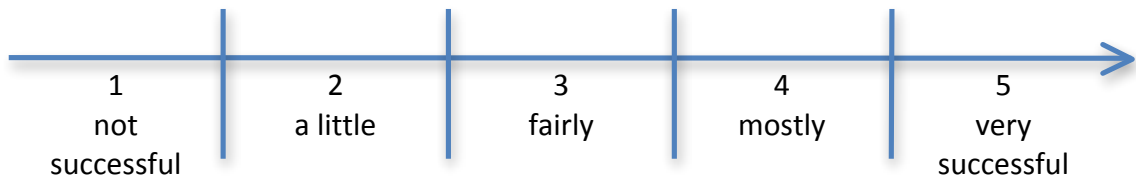
Continue



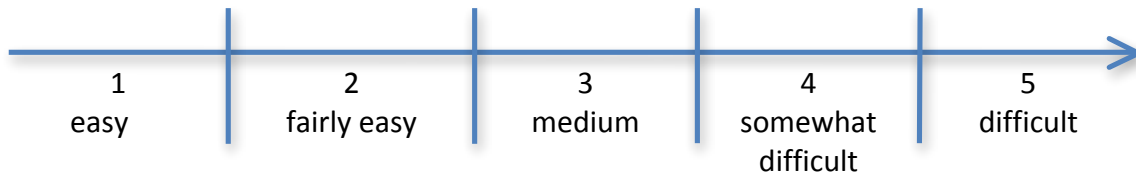
Task 1 Screen 6

You can stop holding the expression now.

4. How successful were you at imitating the expression?
(Please mark your success level on the scale.)



5. How easy or difficult was it to imitate the expression?

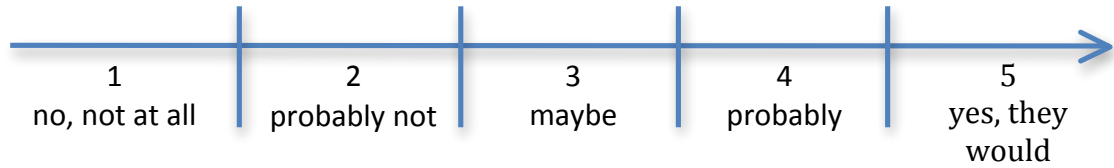


Continue



Task 1 Screen 7

6. Do you think the person in the photo would fit into your social group (the group of people you socialize with)?



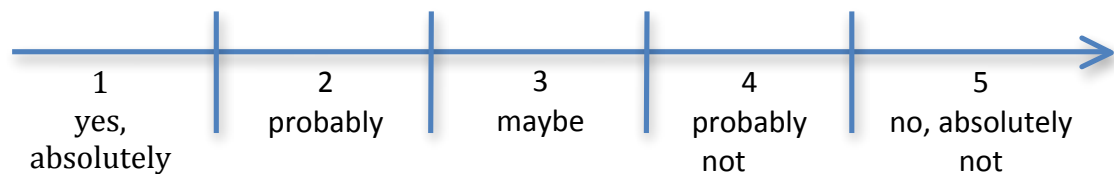
Any comments?

Continue



Task 1 Screen 8

7. Do you think you could be friends with the person in the photo?



Any comments?

Continue



Task 1 Screen 9

8. What emotion do you think the person in the photo was feeling?

angry	
sad	
happy	
disgusted	
fearful	
surprised	
other	
neutral/ no feeling	



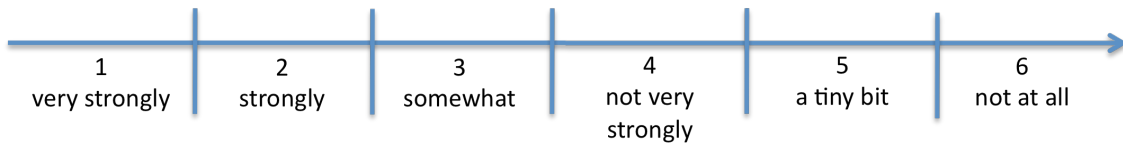
If you marked “other,” please write the feeling here: _____

Continue



Task 1 Screen 10

9. How strongly do you think he/she was feeling the emotion?



Continue



Task 1 Screen 11

Thank you for your responses.

Please repeat this process with another photo.

Continue



APPENDIX L—NIMSTIM FACIAL STIMULUS SET



Angry (closed mouth)



Angry (opened mouth)



Fear (closed mouth)



Fear (opened mouth)



Surprise



Sad (closed mouth)



Sad (opened mouth)



Happy (closed mouth)



Disgust (closed mouth)



Disgust (opened mouth)



Happy (opened mouth)



Happy (exuberant)



Neutral (closed mouth)



Neutral (opened mouth)



Calm (closed mouth)



Calm (opened mouth)

Sample photos from the NimStim Expression Set (2009), created by Nim Tottenham, funded by the MacArthur Foundation. Used with permission.

APPENDIX M—TASK 2 PARTICIPANT INSTRUCTIONS

Task 2 Screen 1

On the next page, you will read instructions for moving your facial muscles.

Please follow these instructions one step at a time.

Hold the new facial expression while answering a couple of questions.

Ready?

Continue



Task 2 Screen 2

- (a) Pull your eyebrows down and together.
- (b) Raise your upper eyelids.
- (c) Push your lower lip up and press your lips together.

Please hold this facial expression.

Continue



Task 2 Screen 3

Keep holding the expression while you answer a couple questions.

1. How do you feel right now?

Please mark one feeling in a box below.

angry	
sad	
happy	
disgusted	
fearful	
surprised	
other	
neutral/ no feeling	

If you marked “other,” please write the feeling here: _____

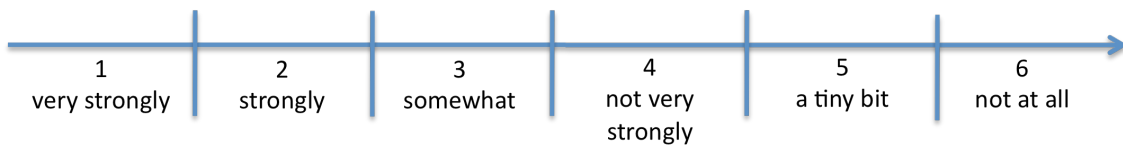
Keep holding the expression!

Continue



Task 2 Screen 4

2. How strongly do you feel the emotion you just named?
(Mark the scale to indicate the strength of your feeling.)



Keep holding the expression!

Continue



Task 2 Screen 5

In addition to the feeling you named, does this facial expression cause any other effect on you (such as a memory or physical sensation)?

Yes

No

If so, please describe:

You can relax your face.

Continue



Task 2 Screen 6

Thank you for your responses.

Please repeat this task with another set of facial instructions.

Continue



APPENDIX N—DIRECTED FACIAL ACTION INSTRUCTIONS

Excerpt from DFA revised December 22, 1989 -- Form 2

In this part of the experiment I will be asking you to make a number of different facial movements. ...The procedure will be for you to rest your face for a while, then I will ask you to make a “standard” set of facial movements. I will tell you to rest, and then ask you to make another set of facial movements. After that I will ask you if you experienced any emotions, memories, or sensations. By emotions, I mean feelings such as fear, anger, disgust, happiness, surprise, sadness.... By memories, I mean any thoughts that came to mind. By sensations, I mean any physical changes you became aware of in any part of your body, such as your heart, your stomach, or your skin.

We will repeat this sequence – first resting your face, then making a “standard” set of movements, then resting your face, followed by a new set of facial movements, a number of times during this part of the experiment.

....

1. Sadness

- raise your eyebrows
- tighten your lower eyelids
- close one eye
- pucker your lips
- puff your cheeks out gently

Now hold that face

2. Fear

- raise your brows as high as you can and pull them together.
- raise your upper eyelid & tighten your lower eyelid.
- let your mouth drop open and stretch your lips horizontally.

Now hold that face

....

4. Happiness

- raise your cheeks (try squinting a little)
- part your lips and let your lip corners come up

Now hold that face

....

Levenson, Ekman, and Friesen (1990). Used with permission.

APPENDIX O—TASK 3 PARTICIPANT INSTRUCTIONS

Task 3 Screen 1

In this task, we will ask you to watch a short film clip.

After watching, please answer a few questions.

Ready?

Continue



Task 3 Screen 2

The link takes you to YouTube, where you can watch the film clip.

When you are finished watching, come back to this page and click “Continue.”

<http://www.tubechop.com/watch/731677>

Continue



Task 3 Screen 3

1. How do you feel right now?

Please mark one feeling in a box below.

angry	
sad	
happy	
disgusted	
fearful	
surprised	
other	
neutral/ no feeling	

If you marked “other,” please write the feeling here: _____

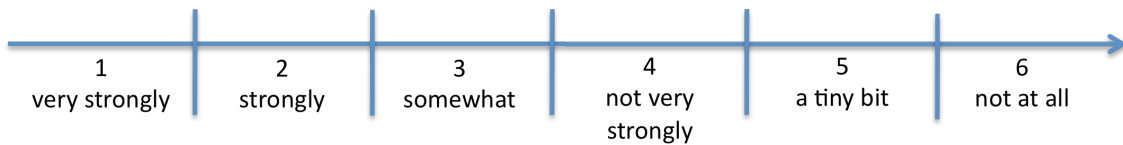
Continue



Task 3 Screen 4

2. How strongly are you feeling the emotion you just named?

(Please mark the scale to indicate the strength of your feeling.)



Continue



Task 3 Screen 5

3. Did you see a dog in this film clip?

yes
no

Continue



Task 3 Screen 6

4. What do you think the person in the film was feeling?

angry	
sad	
happy	
disgusted	
fearful	
surprised	
other	
neutral/ no feeling	

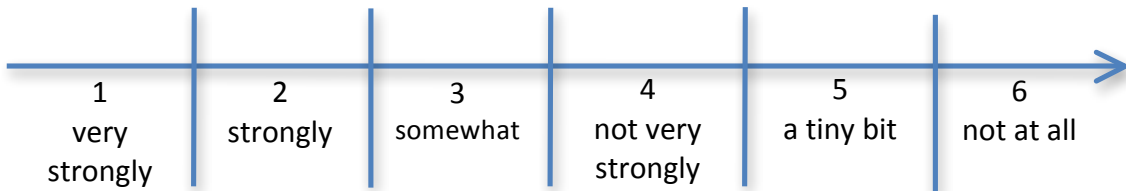
If you marked "other," please write the feeling here: _____

Continue



Task 3 Screen 7

5. How strongly do you think he/she was feeling the emotion?
(Please mark the scale to indicate the strength of the feeling.)



Continue

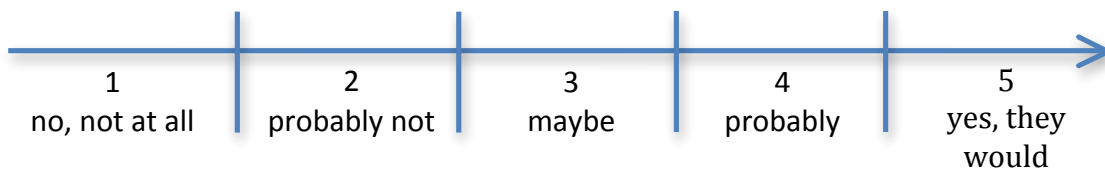


Task 3 Screen 8

6. Were you able to hear the sound when you watched the film?

did not hear it barely heard it heard it loud and clear

1. Do you think the person in the film would fit in with your social group (the people you socialize with most)?



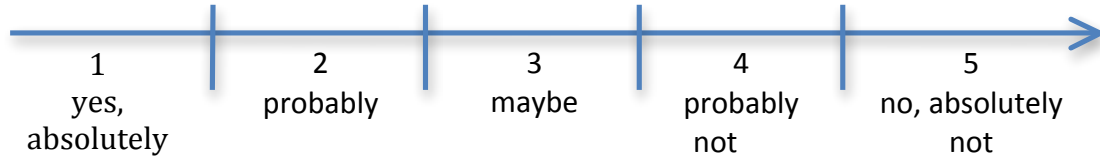
Any comments?

Continue



Task 3 Screen 9

8. Do you think you could be friends with the person in the photo?



Any comments?

Continue



Task 3 Screen 10

Thank you for your responses.

Please repeat this process with another short film clip.

Continue



APPENDIX P—VIDEO CLIP OPENING IMAGES AND URLS

(1) Happiness <http://www.tubechop.com/watch/731677>

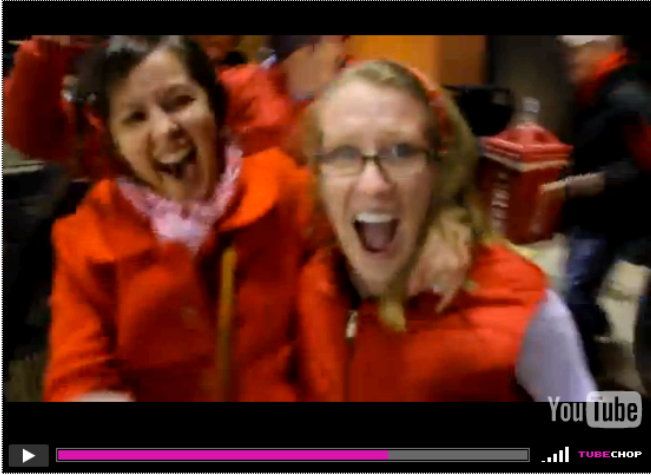
Tube Chop
Chop YouTube Videos

BUY ONE GET ONE FREE!
FREE GLASSES

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GlassesUSA.com
Shop Glasses

Enter keyword or YouTube URL... **search video**




Embed Code:
<object width="425" height="344"><param

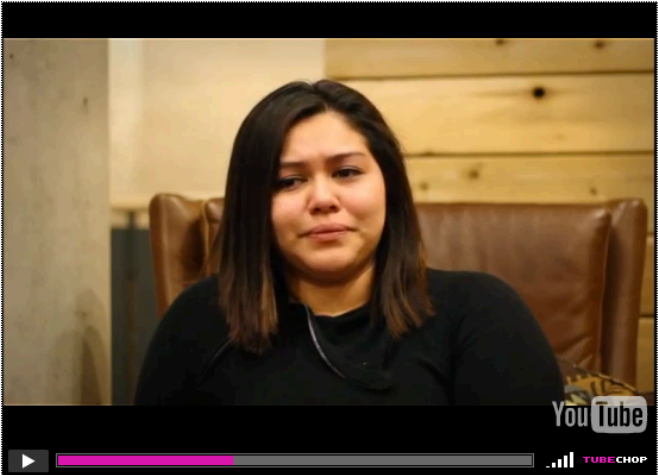
Link:
<http://www.tubechop.com/watch/349692>

0 0 + reddit this! Stumble Upon
f Share Tweet MySpace Email
del.icio.us

Chop Details:
Length: 00:26 of 01:10 total - Chopped 7 months ago

Original Video:
 **Freese Hits Game-Tying 9th Inning Triple - World Series 2011 | Cardinals vs. Rangers 10/27/11**
01:10 - chopped 1 times
chop it

(2) Sadness <http://www.tubechop.com/watch/734202>

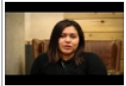


Embed Code:
<object width="425" height="344"><param

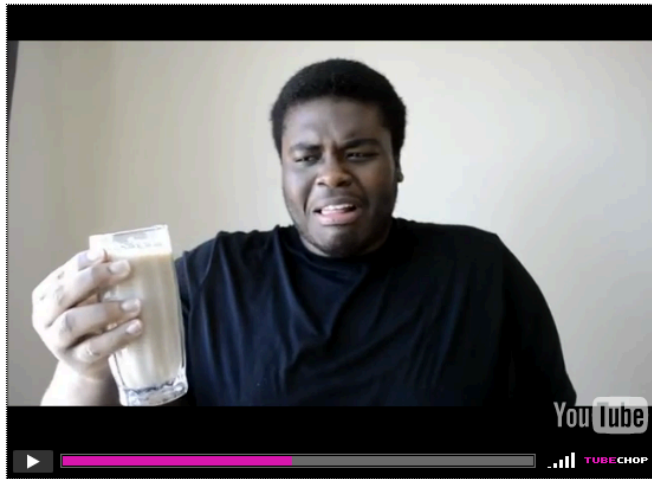
Link:
<http://www.tubechop.com/watch/734202>

0 0 + reddit this! Stumble Upon
f Share Tweet MySpace Email
del.icio.us

Chop Details:
Length: 00:15 of 03:26 total - Chopped 1 day ago

Original Video:
 **Our Stories - Sintia**
03:26 - chopped 2 times
chop it

(3) Disgust <http://www.tubechop.com/watch/734229>



Embed Code:
<object width="425" height="344"><param

Link:
<http://www.tubechop.com/watch/734229>

0 0 + reddit this! Stumble Upon
f Share Tweet MySpace Email
del.icio.us

Chop Details:
Length: 00:10 of 04:17 total - Chopped 1 day ago

Original Video:
 MILK & COKE CHALLENGE!
ReactionResponseKING
04:17 - chopped 1 times
chop it

(4) Fear <http://www.tubechop.com/watch/731881>



Embed Code:
<object width="425" height="344"><param

Link:
<http://www.tubechop.com/watch/731881>

0 0 + reddit this! Stumble Upon
f Share Tweet MySpace Email
del.icio.us

Chop Details:
Length: 00:08 of 04:52 total - Chopped 0

Original Video:
 Bhasha - 14th November 2012
04:52 - chopped 1 times
chop it

(5) Anger <http://youtu.be/gno8hgHoQaI>



(6) Surprise <http://youtu.be/Y5P5vpMOdyI>



APPENDIX Q—CHS APPROVAL LETTER, APRIL 23, 2012



UNIVERSITY
of HAWAII®
MĀNOA

Office of Research Compliance
Human Studies Program

April 23, 2012

TO: Cherie Luckhurst
Principal Investigator
Psychology

FROM: Nancy R. King
Director

A handwritten signature in cursive script that reads 'Nancy R. King'.

Re: CHS #20114- "Analysis of Emotional Contagion Experienced by People with Psychopathic Personalities in the General Population"

This letter is your record of the Human Studies Program approval of this study as exempt.

On April 23, 2012, the University of Hawai'i (UH) Human Studies Program approved this study as exempt from federal regulations pertaining to the protection of human research participants. The authority for the exemption applicable to your study is documented in the Code of Federal Regulations at 45 CFR 46 (2).

Exempt studies are subject to the ethical principles articulated in The Belmont Report, found at <http://www.hawaii.edu/irb/html/manual/appendices/A/belmont.html>

Exempt studies do not require regular continuing review by the Human Studies Program. However, if you propose to modify your study, you must receive approval from the Human Studies Program prior to implementing any changes. You can submit your proposed changes via email at uhirb@hawaii.edu. (The subject line should read: Exempt Study Modification.) The Human Studies Program may review the exempt status at that time and request an application for approval as non-exempt research.

In order to protect the confidentiality of research participants, we encourage you to destroy private information which can be linked to the identities of individuals as soon as it is reasonable to do so. Signed consent forms, as applicable to your study, should be maintained for at least the duration of your project.

This approval does not expire. However, please notify the Human Studies Program when your study is complete. Upon notification, we will close our files pertaining to your study.

If you have any questions relating to the protection of human research participants, please contact the Human Studies Program at 956-5007 or uhirb@hawaii.edu. We wish you success in carrying out your research project.

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Fax: (808) 956-8683

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REFERENCES

- Amazon Web Services (AWS; 2011). *About how many workers were on Mechanical Turk in 2010?* AWS Developer Forums: Discussion Forums/ Amazon Mechanical Turk (Beta)/Thread: MTurk CENSUS. Retrieved from <https://forums.aws.amazon.com/thread.jspa?threadID=58891>
- Andrews, D., & Bonta, J. (2010). *The psychology of criminal conduct* (5th ed.). Cincinnati, OH: Anderson.
- APA (American Psychiatric Association) (1952). *Diagnostic and statistical manual: Mental disorders*. Washington, D.C.: American Psychiatric Association Mental Hospital Service. Retrieved from <http://dsm.psychiatryonline.org/data/PDFS/dsm-i.pdf>
- APA (1968). *Diagnostic and statistical manual of mental disorders* (2nd ed.). Washington, DC: Author. Retrieved from <http://www.scribd.com/doc/14532307/dsmii>
- APA (2000). *The diagnostic and statistical manual of mental disorders* (4th ed. Text Revision) (DSM-IV-TR). Arlington, VA: Author.
- APA (2012). *Proposed revision of the DSM-5: Personality disorders*. APA Work Group on Personality Disorders. Retrieved from the DSM-5 Development Pages, <http://www.dsm5.org/proposedrevision/Pages/proposedrevision.aspx?rid=16>
- APA (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.
- Arakawa, D. (2014). *Emotional contagion and its relationship to mood* (Doctoral dissertation). Dissertation Abstracts International: Section B: The Sciences and Engineering, 74(8-B(E)). Ann Arbor, MI : ProQuest. Retrieved from <http://search.proquest.com/docview/1347617414>
- Aylward, A. G. (2008). Effect of context on mimicry and emotional contagion: Does disliking inhibit mimicry and emotional contagion? (unpublished master's thesis). University of Hawai'i, Honolulu HI.
- Babiak, P., & Hare, R. (2007). *Snakes in suits: When psychopaths go to work*. New York: HarperBusiness.
- Baron-Cohen, S., & Wheelwright, S. (2004). The empathy quotient: an investigation of adults with Asperger syndrome or high functioning autism, and normal sex differences. *Journal of autism and developmental disorders*, 34(2), 163-175.

- Bavelas, J., Black, A., Chovil, N., Lemery, C., & Mullett, J. (1988). Form and Function in motor mimicry: Topographic evidence that the primary function is communication. *Human Communication Research, 14*(3), 275-299.
- Berinsky, A., Huber, G., & Lenz, G. (2012, March 2). Evaluating online labor markets for experimental research: Amazon.com's Mechanical Turk. *Political Analysis*. Advance online publication. doi: 10.1093/pan/mpro57
- Bernard, L. (2013). Relationships between individual differences in motivation and borderline personality disorder, psychopathy, and maladjustment. *Psychological Reports, 113*(1), 129-161. doi: 10.2466/14.02.09.PRO.113x14z9
- Bernieri, F. (1988). Coordinated movement and rapport in teacher-student interactions. *Journal of Nonverbal Behavior, 12*(2), 120-138.
- Blair, R.J.R. (1999). Responsiveness to distress cues in the child with psychopathic tendencies. *Personality and Individual Differences, 27*(1) 135-145. doi: 10.1016/S0191-8869(98)00231-1
- Blair, R.J.R., Jones, L., Clark, F., & Smith, M. (1997). The psychopathic individual: A lack of responsiveness to distress cues? *Psychophysiology, 34*(2), 192-198.
- Blair, R. J. R., & Mitchell, D. (2009). Psychopathy, attention and emotion. *Psychological medicine, 39*(04), 543-555.
- Blair, J., Mitchell, D., & Blair, K. (2005). *The psychopath: Emotion and the brain*. Oxford, UK: Blackwell Publishing.
- Blair, R. J. R., Mitchell, D. G. V., Peschardt, K. S., Colledge, E., Leonard, R. A., Shine, J. H., ... Perrett, D. I. (2004). Reduced sensitivity to others' fearful expressions in psychopathic individuals. *Personality and Individual Differences, 37*(6), 1111-1122. doi:10.1016/j.paid.2003.10.008
- Blakeslee, S. (2006, January 10). Cells that Read Minds. *New York Times*. Retrieved from http://cf.linnbenton.edu/artcom/social_science/danced/upload/psy201mirrornurons.pdf
- Blonigen, D., Carlson, S., Krueger, R., & Patrick, C. J. (2003). A twin study of self-reported psychopathic personality traits. *Personality and Individual Differences, 35*(1), 179-197. Retrieved from doi: [http://dx.doi.org/10.1016/S0191-8869\(02\)00184-8](http://dx.doi.org/10.1016/S0191-8869(02)00184-8)

- Blonigen, D., Hicks, B., Krueger, R., Patrick, C. J., & Iacono, W. (2005). Psychopathic personality traits: Heritability and genetic overlap with internalizing and externalizing pathology. *Psychological Medicine*, *35*, 637-648.
- Bodholdt, R., Richards, H., Gacono, C. (2000). Assessing psychopathy in adults: The Psychopathy Checklist—Revised and Screening Version. In C. B. Gacono (Ed.), *The clinical and forensic assessment of psychopathy: A practitioner's guide* (pp. 55-86). Mahwah, NJ: Erlbaum.
- Bolt, D., Hare, R., & Neumann, C. (2007). Score metric equivalence of the Psychopathy Checklist—Revised (PCL-R) across criminal offenders in North America and the United Kingdom; A critique of Cooke, Michie, Hart, and Clark (2005) and New Analyses. *Assessment*, *14*(1), 44-56. doi: 10.1177/1073191106293505
- Brinkley, C. A., Schmitt, W. A., Smith, S. S., Newman, J. P. (2001). Construct validation of a self-report psychopathy scale. Does Levenson's self-report psychopathy scale measure the same constructs as Hare's psychopathy checklist-revised? *Personality and Individual Differences*, *31*(7), 2021-1038.
- Brown, S. (2010). *Women who love psychopaths: Inside the relationships of inevitable harm with psychopaths, sociopaths and narcissists* (2nd ed.). Pisgah Forest, NC: Mask Publishing.
- Buck, R. (1985). Prime theory: An integrated view of motivation and emotion. *Psychological Review*, *92*(3), 389-413. doi: 10.1037/0033-295X.92.3.389
- Buhrmester, M., Kwang, T., & Gosling, S. (2011). Amazon's Mechanical Turk: A new source of inexpensive, yet high-quality, data? *Perspectives on Psychological Science*, *6*(1), 3-5. doi: 10.1177/1745691610393980
- Burns, T., Fazel, S., Fahy, T., Fitzpatrick, R., Rogers, R., Sinclair, J., Linsell, L., Doll, H., Yiend, J., and I. D. E. A. group (2011). Dangerous Severe Personality Disordered (DSPD) patients: Characteristics and comparison with other high-risk offenders. *International Journal of Forensic Mental Health*, *10*(2), 127-136.
- Byrne, D. E. (1971). *The attraction paradigm*. New York: Academic Press.
- Cappella, J., & Planalp, S. (1981). Talk and silence sequences in informal conversations: III. *Human Communication Research*, *7*, 117-132.
- Carr, L., Iacoboni, M., Dubeau, M.-C., Mazziotta, J. C., & Lenzi, G. L. (2003). Neural mechanisms of empathy in humans: A relay from neural systems for imitation to limbic areas. *Proceedings of the National Academy of Sciences (PNAS)*, *100*(9), 5497-5502. doi: 10.1073/pnas.0935845100

- Casey, H., Rogers, R. D., Burns, T., & Yiend, J. (2013). Emotion regulation in psychopathy. *Biological psychology*, 92(3), 541-548.
- Charney, E. 1966. Psychosomatic manifestations of rapport in psychotherapy. *Psychosomatic Medicine*, 28, 305-315.
- Chartrand, T., Bargh, J. (1999). The chameleon effect: The perception-behavior link and social interaction. *Journal of Personality and Social Psychology*, 76(6), 893-910. doi: 10.1037/0022-3514.76.6.893
- Cima, M., Tonnaer, F., & Hauser, M. D. (2010). Psychopaths know right from wrong but don't care. *Social Cognitive and Affective Neuroscience* 5(1), 59-67. doi: 10.1093/scan/nsp051
- Clark, L. A. (2007). Assessment and diagnosis of personality disorder: Perennial issues and an emerging reconceptualization. *Annual Review of Psychology*, 58, 227-257.
- Clarke, J. (2010). *Working with monsters: How to identify and protect yourself from the workplace psychopath*. Sydney, Australia: ReadHowYouWant.
- Cleckley, H. (1976). *The mask of sanity: An attempt to clarify some issues about the so-called psychopathic personality* (5th ed.). St. Louis, MO: C. V. Mosby. (Original work published 1941)
- Cloninger, C. R., Svrakic, D., & Przybeck, T. (1993). A psychobiological model of temperament and character. *Archives of General Psychiatry*, 50(12), 975-990.
- Coid, J., Yang, M., Ullrich, S., Roberts, A., Hare, R. (2009). Prevalence and correlates of psychopathic traits in the household population of Great Britain. *International Journal of Law and Psychiatry*, 32(2) 65-73. doi:10.1016/j.ijlp.2009.01.002
- Cooke, D. (2002). Cross-cultural aspects of psychopathy. . In T. Millon, E. Simonsen, R. Davis, & M. Birket-Smith (Eds.), *Psychopathy: Antisocial, Criminal, and Violent Behavior* (pp. 260-275). New York: Guilford.
- Cooke D., Michie C., Hart S., & Clark, D. (2005). Searching for the pan-cultural core of psychopathic personality disorder. *Personality and Individual Differences*, 39(2), 283-295.
- Costa, P., & McCrae, R. (1992). The five-factor model of personality and its relevance to personality disorders. *Journal of Personality Disorders*, 6(4), 343-359.
- Cross, D. G., & Sharpley, C. F. (1982). Measurement of empathy with the Hogan Empathy Scale. *Psychological Reports* 50(1), 62. doi: 10.2466/pro.1982.50.1.62

- Dadds M., Allen, J., Oliver, B., Faulkner, N., Legge, K., Moul, C., Woolgar, M., & Scott, S. (2012). Love, eye contact and the developmental origins of empathy v. psychopathy. *The British Journal of Psychiatry*, 200(3), 191-196.
- Dadds, M., Perry, Y., Hawes, D., Merz, S., Riddell, A., Haines, D., Solak, E., & Abeygunawardane, A. (2006). Attention to the eyes and fear-recognition deficits in child psychopathy. *The British Journal of Psychiatry*, 189(3), 280-281.
- Davis, M. (1983). Measuring individual differences in empathy: Evidence for a multidimensional approach. *Journal of personality and social psychology*, 44(1), 113.
- Davis, M. (1996). *Empathy: A social psychological approach*. Boulder, CO: Westview Press.
- Day, R., & Wong, S. (1996). Anomalous perceptual asymmetries for negative emotional stimuli in the psychopath. *Journal of Abnormal Psychology*, 105(4), 648-652. doi: 10.1037/0021-843X.105.4.648
- Del Gaizo, A.; & Falkenbach, D. (2008). Primary and secondary psychopathic-traits and their relationship to perception and experience of emotion. *Personality and Individual Differences*, 45(3), 206-212. doi: 10.1016/j.paid.2008.03.019
- Dimberg, U. (1982). Facial reactions to facial expressions. *Psychophysiology* 19(6), 643-647. doi: 10.1111/j.1469-8986.1982.tb02516.x
- Doherty, R. W. (1997). The Emotional Contagion Scale: A measure of individual differences. *Journal of Nonverbal Behavior* 21(2), 131-154. doi: 10.1023/A:1024956003661
- Doherty, R. W. (1998). Emotional contagion and social judgment. *Motivation and Emotion*, 22(3), 187-209. doi: 10.1023/A:1022368805803
- Doherty, R. W., Orimoto, L., Singelis, T. M., Hatfield, E., Hebb, J. (1995). Emotional contagion: Gender and occupational differences. *Psychology of Women Quarterly*, 19(3), 355-371. doi: 10.1111/j.1471-6402.1995.tb00080.x
- Dolan, M., & Fullam, R. (2006). Face affect recognitions deficits in personality-disordered offenders: Association with psychopathy. *Psychological Medicine*, 36(11), 1563-1569. Retrieved from doi: <http://dx.doi.org/10.1017/S0033291706008634>
- Edens, J., Marcus, D., Lilienfeld, S., Poythress Jr., N. (2006). Psychopathic, not psychopath: Taxometric evidence for the dimensional structure of psychopathy.

- Journal of Abnormal Psychology*, 115(1), 131-144. doi: 10.1037/0021-843X.115.1.131
- Ekman, P., Levenson, R., Friesen, W. (1983). Autonomic nervous system activity distinguishes among emotions. *Science*, 221(4616), 1208-1210. doi: 10.1126/science.6612338
- Ekman, P., & Friesen, W. V. (1971). Constants across cultures in the face and emotion. *Journal of Personality and Social Psychology*, 17(2), 124-129. doi: 10.1037/h0030377
- Elfenbein, H. A., & Ambady, N. (2002). On the universality and cultural specificity of emotion recognition: A meta-analysis. *Psychological Bulletin*, 128(2), 203-235.
- Eriksson, K., & Simpson, B. (2010). Emotional reactions to losing explain gender differences in entering a risky lottery. *Judgment and Decision Making*, 5(3), 159-163.
- Evers, K., Kerkhof, I., Steyaert, J., Noens, I., & Wagemans, J. (2014). No differences in emotion recognition strategies in children with autism spectrum disorder: Evidence from hybrid faces. *Autism Research And Treatment* [Online journal], article ID: 345878, 8 pages. doi:10.1155/2014/345878 Retrieved from <http://www.hindawi.com/journals/aurt/2014/345878/>
- Feldstein, S., & Welkowitz, J. (1978). A chronography of conversation: In defense of an objective approach. In A. W. Siegman & S. Feldstein (Eds.), *Nonverbal behavior and communication* (pp. 435-499). Hillsdale, NJ: Erlbaum.
- Forth, A. E. (1994). Emotion and psychopathy: A three-component analysis. *Dissertation Abstracts International: Section B: The Sciences and Engineering*. Unpublished doctoral dissertation, University of British Columbia, Vancouver, Canada.
- Freud, S. (1958). Recommendations to physicians practising psycho-analysis. In J. Strachey (Ed.) (Trans. J. Reviene), *The standard edition of the complete psychological works of Sigmund Freud* (Vol. 12, p. 115). London: Hogarth Press. (Original work published 1912)
- Froman, R. D., & Peloquin, S. M. (2001). Rethinking the use of the Hogan Empathy Scale: A critical psychometric analysis. *American Journal of Occupational Therapy*, 55(5), 566-572.
- Gao, Y., & Raine, A. (2010). Successful and unsuccessful psychopaths: A neurobiological model. *Behavioral Sciences & the Law* 28(2), 194-210

- Gerdes, K., Segal, E., & Lietz, C. (2010). Conceptualising and measuring empathy. *British Journal of Social Work, 40*(7), 2326-2343.
- Giles, H., & Powesland, P. (1975). *Speech style and social evaluation*. London: Academic Press.
- Glass, S., & Newman, J. (2006). Recognition of facial affect in psychopathic offenders. *Journal of Abnormal Psychology, 115*(4), 815-820.
- Glenn, a L., Raine, a, & Schug, R. a. (2009). The neural correlates of moral decision-making in psychopathy. *Molecular Psychiatry, 14*(1), 5–6.
doi:10.1038/mp.2008.104
- Goldman A. (2006). *Simulating minds: The philosophy, psychology, and neuroscience of mindreading*. UK: Oxford University Press.
- Gosling, S., Vazire, S., Srivastava, S., & John, O. (2004). Should we trust web-based studies? A comparative analysis of six preconceptions about Internet questionnaires. *American Psychologist, 59*, 93-104.
- Guay, J.-P., Ruscio, J., Knight, R., Hare, R. (2007). A taxometric analysis of the latent structure of psychopathy: Evidence for dimensionality. *Journal of Abnormal Psychology, 116*(4), 701-716. doi: 10.1037/0021-843X.116.4.701
- Guèguen, N., Jacob, C., & Martin, A. (2009). Mimicry in social interaction: Its effect on human judgment and behavior. *European Journal of Social Sciences 8*(2), 253 - 259. Retrieved from <http://nicolas.gueguen.free.fr/Articles/EJSS2009a.pdf>
- Hall, J., & Benning, S. (2007). The “Successful” Psychopath; Adaptive and subclinical manifestations of psychopathy in the general population. In C. J. Patrick, the *Handbook of psychopathy* (pp. 459-478). New York: Guilford.
- Harakeh, Z., Engels, R., Van Baaren, R., Scholte, R. (2007). Imitation of cigarette smoking: An experimental study on smoking in a naturalistic setting. *Drug and Alcohol Dependence, 86*(2-3), 199-206.
- Hare, R. D. (1980). A research scale for the assessment of psychopathy in criminal populations. *Personality and Individual Differences, 1*(2), 111-119.
- Hare, R. D. (1985). Comparison of Procedures for the Assessment of Psychopathy. *Journal of Consulting and Clinical Psychology, 53*(1), 7-16.
- Hare, R. D. (1991). *The Hare Psychopathy Checklist-Revised*. Toronto, Ontario, Canada: Multi-Health Systems.
- Hare, R. D. (1998). The Hare PCL-R: Some issues concerning its use and misuse. *Legal and Criminological Psychology, 3*, 101-122.

- Hare, R. D. (1999). *Without conscience: The disturbing world of the psychopaths among us*. New York: Guilford.
- Hare, R. D. (2003). *The Psychopathy Checklist—Revised manual* (2nd ed.). Toronto, Ontario, Canada: Multi-Health Systems.
- Hare, R. D., & Neumann, C. (2006). The PCL-R assessment of psychopathy: Development, structural properties, and new directions. In C. J. Patrick (Ed.), *Handbook of psychopathy* (pp. 58-88). New York: Guilford.
- Hare, R. D., & Neumann, C. (2008). Psychopathy as a clinical and empirical construct. *Annual Review of Clinical Psychology*, 4, 217-246. doi: 10.1146/annurev.clinpsy.3.022806.091452
- Hare, R. D., Strachan, C., & Forth, A. (1993). Psychopathy and crime: A review. In K. Howells & C. R. Hollin (Eds.), *Clinical approaches to the mentally disordered offender*. New York: Wiley.
- Harpur, T. J., & Hare, R. D. (1994). Assessment of psychopathy as a function of age. *Journal of abnormal psychology*, 103(4), 604.
- Harpur, T. J., Hare, R. D., & Hakstian, A. R. (1989). Two-factor conceptualization of psychopathy: Construct validity and assessment implications. *Psychological Assessment: A Journal of Consulting and Clinical Psychology*, 1(1), 6-17.
- Harris, G., Rice, M., & Cormier, C. (1994). Psychopaths: Is a therapeutic community therapeutic? *Therapeutic Communities*, 15, 283-300.
- Harris, G., Rice, M., & Quinsey, V. (1994). Psychopathy as a taxon: Evidence that psychopaths are a discrete class. *Journal of Consulting and Clinical Psychology*, 62(2), 387-397. doi: 10.1037/0022-006X.62.2.387
- Harris, G., Skilling, T., & Rice, M. (2001). The Construct of Psychopathy. *Crime & Justice* 28, 197-264.
- Hart, S. D., Kropp, P. R., & Hare, R. D. (1988). Performance of male psychopaths following conditional release from prison. *Journal of Consulting and Clinical Psychology*, 56(2), 227-232. doi: 10.1037/0022-006X.56.2.227
- Hastings, M., Tangney, J. P., & Stuewig, J. (2008). Psychopathy and identification of facial expressions of emotion. *Personality and Individual Differences*, 44(7), 1474-1483.
- Hatfield, E., Cacioppo, J. T., & Rapson, R. L. (1994). *Emotional contagion*. New York: Cambridge University Press.

- Hatfield, E., Rapson, R. L., & Li, Y. (2009). Emotional contagion and empathy. In J. Decety & W. Ickes (Eds.), *The social neuroscience of empathy* (pp. 19-42). Cambridge, MA: MIT Press.
- Haviland, J., & Lelwica, M. (1987). The induced affect response: 10-week-old infants' responses to three emotion expressions. *Developmental Psychology, 23*(1), 97-104. doi: 10.1037/0012-1649.23.1.97
- Hemphill, J., & Hare, R. D. (2004). Some misconceptions about the Hare PCL-R and risk assessment: A reply to Gendreau, Goggin, and Smith. *Criminal Justice and Behavior 31*(2), 203-243. doi: 10.1177/0093854803261326
- Hietanen, J. K., Surakka, V., Linnankoski, I. (1998). Facial electromyographic responses to vocal affect expressions. *Psychophysiology, 35*(5), 530–536. doi: 10.1017/S0048577298970445
- Hodson, G., Hogg, S., MacInnis, C. (2009). The role of “dark personalities” (narcissism, Machiavellianism, psychopathy), Big Five personality factors, and ideology in explaining prejudice. *Journal of Research in Personality, 43*(4), 686-690.
- Hogan, R. (1969). Development of an empathy scale. *Journal of Consulting and Clinical Psychology 33*(3), 307-316. doi: 10.1037/h0027580
- Horton, J. J., & Chilton, L. B. (2010). The labor economics of paid crowdsourcing. *Proceedings of the 11th ACM conference on electronic commerce* (pp. 209-218). New York: ACM. Doi: 10.1145/1807342.1807376 Citation says 2011
- Horton, J. J., Rand, D. G., & Zeckhauser, R. (2011). The online laboratory: Conducting experiments in a real labor market. *Experimental Economics, 14*(3), 399-425. Doi: 10.1007/s10683-011-9273-9
- Hsee, C., Hatfield, E., Carlson, J., & Chemtob, C. (1990). The effect of power on susceptibility to emotional contagion. *Cognition and Emotion, 4*(4), 327-340. doi: 10.1080/02699939008408081
- Hsee, C., Hatfield, E., & Chemtob, C. (1992). Assessments of the emotional states of others: Conscious judgments versus emotional contagion. *Journal of Social and Clinical Psychology, 11*(2), 119-128.
- Huchzermeier, C., Friedemann, G., Bruß, E., Godt, N., Köhler, D., Hinrichs, G., & Aldenhoff, J. B. (2007). The relationship between DSM-IV cluster B personality disorders and psychopathy according to Hare's criteria: Clarification and resolution of previous contradictions. *Behavioral Sciences and the Law, 25*, 901-911. doi: 10.1002/bsl.722

- Iacoboni, M. (2009). *Mirroring people: The science of empathy and how we connect with others*. New York: Farrar, Straus, & Giroux.
- Ickes, W. (2009). Empathic accuracy: Its links to clinical, cognitive, developmental, social, and physiological psychology. In J. Decety & W. Ickes (Eds.), *The social neuroscience of empathy* (pp. 57-70). Cambridge, MA: MIT Press.
- Ipeirotis, P. G. (2010, April 06). *Demographics of mechanical Turk* [NYU Working Paper No. CEDER-10-01]. Retrieved from the Social Science Research Network: <http://ssrn.com/abstract=1585030>
- Jones, D. N., & Paulhus, D. L. (2010). Different provocations trigger aggression in narcissists and psychopaths. *Social Psychological and Personality Science*, *1*(1), 12-18. doi: 10.1177/1948550609347591
- Jung, C. G., Hisamatsu, S.-i. (1968). On the unconscious, the self and the therapy: A dialogue. *Psychologia: An International Journal of Psychology in the Orient*, *11*(1-2), 25-32.
- Kemp, J. (2009). Standard Deviation Diagram [graph]. Retrieved from Wikimedia Commons http://commons.wikimedia.org/wiki/File:Standard_deviation_diagram.svg
- Kittur, A., Chi, E., & Suh, B. (2008). Crowdsourcing user studies with Mechanical Turk. *Proceedings of the Twenty-Sixth Annual SIGCHI Conference on Human Factors in Computing Systems* (SIGCHI '08). New York: Association for Computing Machinery (ACM). Doi: 10.1145/1357054.1357127
- Kosson, D. S., Suchy, Y., Mayer, A. R., & Libby, J. (2002). Facial affect recognition in criminal psychopaths. *Emotion*, *2*(4), 398-411. doi: 10.1037/1528-3542.2.4.398
- LaFrance, M. (1979). Nonverbal synchrony and rapport: Analysis by the cross-lag panel technique. *Social Psychology Quarterly*, *42*(1), 66-70.
- LaFrance, M. (1982). Posture mirroring and rapport. In M. Davis (Ed.), *Interaction rhythms: Periodicity in communicative behavior* (pp. 279-298). New York: Human Sciences Press.
- LaFrance, M., & Broadbent, M. (1976). Group rapport: Posture sharing as a non-verbal indicator. *Group and Organization Management*, *1*(3), 328-333. doi: 10.1177/105960117600100307
- LaFrance, M., & Ickes, W. (1981). Posture mirroring and interactional involvement: Sex and sex typing effects. *Journal of Nonverbal Behavior*, *5*(3), 139-154. doi: 10.1007/BF00986131

- Laird, J. D. (1984). The real role of facial response in the experience of emotion: A reply to Tourangeau and Ellsworth, and others. *Journal of Personality and Social Psychology, 47*, 909-917.
- Lakin, J., Chartrand, T. (2003). Using nonconscious behavioral mimicry to create affiliation and rapport. *Psychological Science, 14*(4), 334-339. doi: 10.1111/1467-9280.14481
- Lakin, J., Jefferis, V., Cheng, C. M., Chartrand, T. (2003). The chameleon effect as social glue: Evidence for the evolutionary significance of nonconscious mimicry. *Journal of Nonverbal Behavior, 27*(3), 145-162. doi: 10.1023/A:1025389814290
- Lämmle, L., Oedl, C., Ziegler, M. (2014, September). Don't threaten me and my dark side or even self-harm won't stop me from hurting you. The Dark Triad [Special issue]. *Personality and Individual Differences* [Advanced online Publication], 67, 87-91. doi: 10.1016/j.paid.2013.12.024
- Levenson, M. R., Kiehl, K., Fitzpatrick, C. M. (1995). Assessing psychopathic attributes in a non-institutionalized population. *Journal of Personality and Social Psychology, 68*, 151-158.
- Levenson, R., Ekman, P., & Friesen, W. (1990). Voluntary facial action generates emotion-specific autonomic nervous system activity. *Psychophysiology, 27*, 363-384.
- Levenston, G. K., Patrick, C. J., Bradley, M. M., & Lang, P. J. (2000). The psychopath as observer: emotion and attention in picture processing. *Journal of abnormal psychology, 109*(3), 373.
- Lilienfeld, S. (1994). Conceptual problems in the assessment of psychopathy. *Clinical Psychology Review, 14*, 17-38. doi: 10.1016/0272-7358(94)90046-9
- Lilienfeld, S., & Andrews, B. P. (1996). Development and preliminary validation of a self-report measure of psychopathic personality traits in noncriminal populations. *Journal of Personality Assessment, 66*(3), 488-524.
- Lilienfeld, S., & Fowler, K. (2007). The self-report assessment of psychopathy: Problems, pitfalls, and promises. In C. J. Patrick (Ed.), *Handbook of psychopathy* (pp. 107-132). New York: Guilford.
- Lilienfeld, S., & Widows, M. R. (2005). *Psychopathic Personality Inventory—Revised (PPI-R) professional manual*. Odessa, FL: Psychological Assessment Resources.

- Luckhurst, C. (2012, January). *Emotional Contagion in Those who Feel and Lack Empathy*. Seminar at the Society for Personality and Social Psychology (SPSP) Annual Meeting, San Diego, CA.
- Lundqvist, L.-O. (2006). A Swedish adaptation of the Emotional Contagion Scale: Factor structure and psychometric properties. *Scandinavian Journal of Psychology*, 47(4), 263-272.
- Lundqvist, L.-O. (2008). The relationship between the biosocial model of personality and susceptibility to emotional contagion: A structural equation modeling approach. *Personality and Individual Differences*, 45(1), 89-95. Retrieved from <http://dx.doi.org/10.1016/j.paid.2008.03.003>
- Lundqvist, L.-O., & Kevrekidis, P. (2008). Factor structure of the Greek version of the emotional contagion scale and its measurement invariance across gender and cultural groups. *Journal of Individual Differences*, 29(3), 121-129.
- Lynam, D. (2002). Psychopathy from the perspective of the five-factor model of personality. In P. Costa Jr. & T. A. Widiger, (Eds.), *Personality disorders and the five-factor model of personality* (2nd ed.) (pp. 325-348). Washington, DC: American Psychological Association (APA). doi: 10.1037/10423-020
- Lynam, D., Gaughan, E., Miller, J. D, Miller, D., Mullins-Sweatt, S., Widiger, T. (2011). Assessing the basic traits associated with psychopathy: Development and validation of the Elemental Psychopathy Assessment. *Psychological Assessment*, 23(1), 108-124. doi: 10.1037/a0021146
- Lynam, D., Sherman, E., Samuel, D., Miller, J. D., Few, L., Widiger, T. (2013). Development of a short form of the elemental psychopathy assessment. *Assessment*, 20(6), 659-669. doi: 10.1177/1073191113502072
- Lynam, D. R., Whiteside, S., & Jones, S. (1999). Self-Reported psychopathy: A validation study. *Journal of Personality Assessment*, 73(1), 110-132.
- Maesschalck, C., Vertommen, H., and Hooghe, A. (2002). Psychometric Characteristics of the Psychopathic Personality Inventory in a Dutch-Speaking Population. *International Journal of Testing*, 2(3&4), 169-198.
- Mahmut, M. K, Menictas, C., Stevenson, R. J., & Homewood, J. (2011). Validating the factor structure of the Self-Report Psychopathy scale in a community sample. *Psychological Assessment* 23(3), 670-678.

- Marcus, D., John, S., Edens, J. (2004). A Taxometric Analysis of Psychopathic Personality. *Journal of Abnormal Psychology, 113*(4), 626-635. doi: 10.1037/0021-843X.113.4.626
- Marcus, D., Lilienfeld, S., Edens, J., & Poythress Jr., N. (2006). Is antisocial personality disorder continuous or categorical? A taxometric analysis. *Psychological Medicine, 36*(11), 1571-1581. doi: 10.1017/S0033291706008245
- Marcus, D., Ruscio, J., Lilienfeld, S., Hughes, K. (2008). Converging Evidence for the Latent Structure of Antisocial Personality Disorder: Consistency of Taxometric and Latent Class Analyses. *Criminal Justice and Behavior 35*(3), 284-293. doi: 10.1177/0093854807311679
- Marsh, A., & Blair, R.J.R. (2008). Deficits in facial affect recognition among antisocial populations: A meta-analysis. *Neuroscience & Biobehavioral Reviews, 32*(3), 454-465.
- Marsh, A. A., Finger, E. C., Mitchell, D. G. V., Reid, M. E., Sims, C., Kosson, D. S., . . . Blair, R. J. R. (2008). Reduced amygdala response to fearful expressions in children and adolescents with callous-unemotional traits and disruptive behavior disorders. *The American Journal of Psychiatry, 165*(6), 712-720. doi:10.1176/appi.ajp.2007.07071145
- Martin, D., Hanrahan, B. V, O'Neill, J., & Gupta, N. (2014). Being A Turker. In *CSCW14* (p. Feb 15–19). Baltimore, MD: ACM. Retrieved from <http://wtf.tw/ref/martin.pdf>
- Maurer, R., & Tindall, J. (1983). Effect of postural congruence on client's perception of counselor empathy. *Journal of Counseling Psychology, 30*(2), 158-163. doi: 10.1037/0022-0167.30.2.158
- Mehrabian, A., & Epstein, N. (1972). A measure of emotional empathy¹. *Journal of personality, 40*(4), 525-543.
- Meltzoff, A. (1988). Infant imitation after a 1-week delay: Long-term memory for novel acts and multiple stimuli. *Developmental Psychology, 24*, 470-476.
- Meltzoff, A., & Moore, M. (1977). Imitations of facial and manual gestures by human neonates. *Science, 198*, 75-78.
- Miller, J. D., Hyatt, C. Rausher, S., Maples, J. L., Zeichner, A. (2014). A test of the construct validity of the Elemental Psychopathy Assessment scores in a community sample of adults. *Psychological Assessment, 26*(2), 555-562. doi: 10.1037/a0035952

- Millon, T., Simonsen, E., & Birket-Smith, M. (2002). Historical conceptions of psychopathy in the United States and Europe. In T. Millon, E. Simonsen, R. Davis, & M. Birket-Smith (Eds.), *Psychopathy: Antisocial, criminal, and violent behavior* (pp. 3-31). New York: Guilford.
- Montagne, B., van Honk, J., Kessels, R., Frigerio, E., Burt, M., van Zandvoort, M., Perrett, D., de Haan, E. (2005). Reduced efficiency in recognising fear in subjects scoring high on psychopathic personality characteristics. *Personality and Individual Differences*, 38(1), 5-11. doi: 10.1016/j.paid.2004.02.008
- Mourinho, J. (2011, October 16). *Detective silhouette* [Clipart cartoon character]. Retrieved from the Open Clip Art Library website <http://openclipart.org/detail/163837>
- Munro, G. E., Dywan, J., Harris, G. T., McKee, S., Unsal, A., & Segalowitz, S. J. (2007). ERN varies with degree of psychopathy in an emotion discrimination task. *Biological psychology*, 76(1), 31-42.
- Navarro, J. (2011). *How to spot a psychopath* (Amazon Kindle edition). Amazon Digital Services.
- Neal, T. M. S., & Sellbom, M. (2012). Examining the factor structure of the Hare Self-Report Psychopathy scale. *Journal of Personality Assessment*, 94(3). 244-253. Doi: 10.1080/00223891.2011.648294
- Neumann, C., Malterer, M., & Newman, J. P. (2008). Factor structure of the Psychopathic Personality Inventory (PPI): Findings from a large incarcerated sample. *Psychological Assessment*, 20, 169-174.
- Neumann, C., Schmitt, D., Carter, R., Embley, I., Hare, R. (2012). Psychopathic traits in females and males across the globe. *Behavioral Sciences & the Law*, 30(5), 557-574. doi: 10.1002/bsl.2038
- O'Toole, R., & Dubin, R. (1968, September). Baby feeding and body sway: An experiment in George Herbert Mead's "taking the role of the other." *Journal of Personality and Social Psychology*, 10(1), 59-65.
- Paolacci, G., Chandler, J., & Ipeirotis, P. (2010). Running experiments on Mechanical Turk. *Judgment and Decision Making*, 5(5), 411-419. Retrieved from the Social Science Research Network, <http://ssrn.com/abstract=1626226>
- Paulhus, D., Neumann, C. S., & Hare R. D. (in press). *Manual for the Self-Report Psychopathy (SRP) scale*. Toronto: Multi-Health Systems.
- Perper, T. (1985). *Sex signals: The biology of love*. Philadelphia, PA: ISI Press.

- Pike, A. (2011). *Danger has a face: The most dangerous psychopath is educated, wealthy and socially skilled* (v. 2). Parker, CO: Outskirts Press
- Pinel, P. (1962). *A treatise on insanity* (D. Davis, Trans.). New York: Hafner. (Original work published 1806)
- Poythress, N. G., Edens, J. F., Lilienfeld, S. O. (1998). Criterion-related validity of the Psychopathic Personality Inventory in a prison sample. *Psychological Assessment, 10*(4), 426-430. doi: 10.1037/1040-3590.10.4.426
- Poythress, N. G., Edens, J. F., Skeem, J. L., Lilienfeld, S. O., Douglas, K. S., Frick, P. J., ... & Wang, T. (2010). Identifying subtypes among offenders with antisocial personality disorder: a cluster-analytic study. *Journal of abnormal psychology, 119*(2), 389.
- Poythress, N. G., Lilienfeld, S., Skeem, J., Douglas, K. S., Edens, J. F., Epstein, M., & Patrick, C. J. (2010). Using the PCL-R to help estimate the validity of two self-report measures of psychopathy with offenders. *Assessment, 17*(2), 206-219.
- Provine, R. (1986). Yawning as a stereotyped action pattern and releasing stimulus. *Ethology, 72*(2), 109-122. doi: 10.1111/j.1439-0310.1986.tb00611.x
- Provine, R. (1992). Contagious laughter: Laughter is a sufficient stimulus for laughs and smiles. *Bulletin of the Psychonomic Society, 30*(1), 1-4.
- Quigley, B., & Collins, R. (1999). The modeling of alcohol consumption: A meta-analytic review. *Journal of Studies on Alcohol, 60*(1), 90-98.
- Raine, A., Ishikawa, S. S., Arce, E., Lencz, T., Knuth, K. H., Bihrlé, S., LaCasse, L., Colletti, P. (2004). Hippocampal structural asymmetry in unsuccessful psychopaths. *Biological Psychiatry, 55*(2), 185-191.
- Ray, J. J., & Ray, J. A. B. (1982). Some apparent advantages of subclinical psychopathy. *The Journal of Social Psychology, 117*(1), 135-142.
- Ray, J. V., Hall, J., Rivera-Hudson, N., Poythress, N., Lilienfeld, S., Morano, M. (2012). The relation between self-reported psychopathic traits and distorted response styles: A meta-analytic review. *Personality Disorders: Theory, Research, and Treatment, 4*(1), 1-14. doi: 10.1037/a0026482
- Rempala, D. (2008). *Cognitive strategies for controlling emotional contagion* (Doctoral dissertation). Retrieved from ProQuest Dissertation & Theses [doc ID# 1528449221].
- Reynolds, W. (2000). *The measurement and development of empathy in nursing*. Burlington, VT: Ashgate.

- Rice, M. E., Harris, G. T., & Cormier, C. (1992). An evaluation of a maximum security therapeutic community for psychopaths and other mentally disordered offenders. *Law and Human Behavior, 16*, 299-412.
- Ross, J., Irani, L., Silberman, M. Six, Zaldivar, A., & Tomlinson, B. (2010). Who are the crowdworkers? Shifting demographics in Amazon Mechanical Turk. *Proceedings of the 28th International Conference Extended Abstracts of Human Factors in Computing Systems [CHI EA '10]* (p. 2863-2872). New York: Association for Computing Machinery (ACM). doi: 10.1145/1753846.1753873
- Ross, S., Moltó, J., Poy, R., Segarra, P., Pastor, M. C., & Montañés, S. (2007). Gray's model and psychopathy: BIS but not BAS differentiates primary from secondary psychopathy in noninstitutionalized young adults. *Personality and Individual Differences, 43*(7), 1644-1655.
- Sadeh, N., Spielberg, J., Heller, W., Herrington, J., Engels, A., Warren, S., Crocker, L., Sutton, B., & Miller, G. (2013). Emotion disrupts neural activity during selective attention in psychopathy. *Social Cognitive and Affective Neuroscience, 8*(3) 235-246. doi:10.1093/scan/nsr092
- Sandvik, A., Hansen, A., Kristensen, M. V., Johnsen, B. H., Logan, C., Thornton, D. (2012). Assessment of psychopathy: Inter-correlations between Psychopathy Checklist Revised, Comprehensive Assessment of Psychopathic Personality—Institutional Rating Scale, and Self-Report of Psychopathy Scale—III. *The International Journal of Forensic Mental Health, 11*(4), 280-288. doi: 10.1080/14999013.2012.746756
- Sawyer A., Williamson P., Young R. L. (2012). Can gaze avoidance explain why individuals with Asperger's syndrome can't recognise emotions from facial expressions? *Journal of Autism and Developmental Disorders, 42*(4), 606-618.
- Schneider, K. (1958). Psychopathic personalities (9th ed., M. W. Hamilton, Trans.) London: Cassell. (Original work published 1923: *Die Psychopathischen Personallichkeiten*)
- Schutte, N., Malouff, J., Hall, L. E., Haggerty, D., Cooper, J. T., Golden, C., & Dornheim, L. (1998). Development and validation of a measure of emotional intelligence. *Personality and Individual Differences, 25*(2), 167-177.
- Seara-Cardoso, A., Neumann, C., Roiser, J., McCrory, E., & Viding, E. (2012). Investigating associations between empathy, morality and psychopathic

- personality traits in the general population. *Personality and Individual Differences*, 52(1), 67–71. doi:10.1016/j.paid.2011.08.029
- Siegman, A., & Reynolds, M. (1982). Interviewer-interviewee nonverbal communications: an interactional approach. In M. Davis (Ed.), *Interaction Rhythms: Periodicity in Communicative Behavior* (pp. 249-278). New York: Human Sciences Press.
- Simonsen, E., & Birket-Smith, M. (1998/2003). Preface. In T. Millon, E. Simonsen, R. Davis, & M. Birket-Smith (Eds.), *Psychopathy: Antisocial, criminal, and violent behavior* (pp. vii-ix). New York: Guilford.
- Singer, T. (2006). The neuronal basis and ontogeny of mind reading: Review of literature and implications for future research. *Neuroscience & Biobehavioral Reviews*, 30(6), 855-863.
- Skeem, J., & Cooke, D. (2010). Is criminal behavior a central component of psychopathy? Conceptual directions for resolving the debate. *Psychological Assessment*, 22, 433-445. doi:10.1037/a0008512
- Skeem, J., Polaschek, D., Patrick, C., & Lilienfeld, S. (2011). Psychopathic personality: Bridging the gap between scientific evidence and public policy. A special issue of *Psychological Science in the Public Interest*, 12(3), 95-162.
- Spies, R., & Plake, B. (Eds.). (2005). *Sixteenth Mental Measurements Yearbook*. Lincoln: University of Nebraska Press.
- Spreng, R. N., McKinnon, M., Mar, R., & Levine, B. (2009). The Toronto Empathy Questionnaire: Scale development and initial validation of a factor-analytic solution to multiple empathy measures. *Journal of Personality Assessment*, 91(1) 62-71.
- Stockert, Nancy D. (1994). *Perceived Similarity and Emotional Contagion* (Unpublished doctoral dissertation). University of Hawai'i, Honolulu.
- Stout, M. (2006). *The sociopath next door*. New York: Random House.
- Strack, F., Martin, L., & Stepper, S. (1988). Inhibiting and facilitating conditions of the human smile: A nonobtrusive test of the facial feedback hypothesis. *Journal of Personality and Social Psychology*, 54(5), 768-777. doi: 10.1037/0022-3514.54.5.768
- Termine, N., & Izard, C. (1988). Infants' response to their mother's expressions of joy and sadness. *Developmental Psychology*, 24(2), 223-229.

- Titchener, E. B. (1909). Methods and Results: The Thought - Element. In E. Titchener, *Lectures on the experimental psychology of the thought-processes* (pp. 117-154). New York: MacMillan. doi: 10.1037/10877-004
- Tottenham, N., Tanaka, J. W., Leon, A. C., McCarry, T., Nurse, M., Hare, T. a, ... Nelson, C. (2009). The NimStim set of facial expressions: Judgments from untrained research participants. *Psychiatry Research, 168*(3), 242–9. doi:10.1016/j.psychres.2008.05.006
- Trout, D., & Rosenfeld, H. (1980). The effect of postural lean and body congruence on the judgment of psychotherapeutic rapport. *Journal of Nonverbal Behavior, 4*(3), 176-190. doi: 10.1007/BF00986818
- TurkRequestersBlogspot (2013, January 17). Tips for requesters on Mechanical Turk: The reasons why Amazon Mechanical Turk no longer accepts international Turkers [Web log post]. Retrieved from <http://turkrequesters.blogspot.ca/2013/01/the-reasons-why-amazon-mechanical-turk.html>
- Tyner, E. A. (2005). *The relation of psychopathic characteristics and malingering of PTSD* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses database: <http://gradworks.umi.com/14/29/1429135.html>
- Ullrich, S., Farrington, D. P., & Coid, J. W. (2008). Psychopathic personality traits and life-success. *Personality and Individual Differences, 44*, 1162-1171.
- Viding, E., Jones, A. P., Paul, J. F., Moffitt, T. E., Plomin, R. (2008). Heritability of antisocial behaviour at 9: Do callous-unemotional traits matter? *Developmental Science, 11*(1), 17-22. DOI: 10.1111/j.1467-7687.2007.00648.x
- Walters, G., Brinkley, C., Magaletta, P., & Diamond, P. (2008). Taxometric analysis of the Levenson Self-Report Psychopathy scale. *Journal of Personality Assessment, 90*(5), 491-498. doi: 10.1080/00223890802248828
- Wang, Y. W., Davidson, M., Yakushko, O., Savoy, H., Tan, J. A., & Bleier, J. (2003). The scale of ethnocultural empathy: development, validation, and reliability. *Journal of Counseling Psychology, 50*(2), 221.
- Webb, J. T. (1972). Interview synchrony: An investigation of two speech rate measures in an automated standardized interview. *Studies in Dyadic Communication, 115-133*.

- Westen, D., & Weinberger, J. (2004). When Clinical Description Becomes Statistical Prediction. *American Psychologist*, 59(7), 595-613. doi: 10.1037/0003-066X.59.7.595
- Widiger, T., & Lynam, D. (1998). Psychopathy and the five-factor model of personality. In T. Millon, E. Simonsen, M. Birket-Smith, & R. Davis (Eds.), *Psychopathy: Antisocial, criminal, and violent behavior* (pp. 171-187). New York: Guilford.
- Widiger, T., Costa Jr., P., McCrae, R. (2002). A proposal for Axis II: Diagnosing personality disorders using the five-factor model. In P. Costa Jr. & T. Widiger, (Eds.), *Personality disorders and the five-factor model of personality* (2nd ed.) (pp. 431-456). Washington, DC: American Psychological Association. doi: 10.1037/10423-025
- Williams, K. M., Nathanson, C., Paulhus, D. L. (2010). Identifying and profiling scholastic cheaters: Their personality, cognitive ability, and motivation. *Journal of Experimental Psychology: Applied*, 16(3), 293-307. doi: 10.1037/a0020773
- Williams, K., & Paulhus, D. (2004). Factor structure of the Self-Report Psychopathy scale (SRP-II) in non-forensic samples. *Personality and Individual Differences* 37(4), 765-778.
- Williams, K. M., Paulhus, D., & Hare R. (2007). Capturing the four-factor structure of psychopathy in college students via self-report. *Journal of Personality Assessment*, 88(2), 205-219.
- Wilson, K., Juodis, M., & Porter, S. (2011). Fear and loathing in psychopaths: A meta-analytic investigation of the Facial Affect Recognition deficit. *Criminal Justice and Behavior*, 38(7), 659-668. doi:10.1177/0093854811404120
- WHO [World Health Organization] (2010). *International Classification of Diseases*, 10th ed. [ICD-10]. Retrieved from the WHO website <http://apps.who.int/classifications/icd10/browse/2010/en#/F60.2> (Original work published 1990)
- Yabar, Y., Johnston, L., Miles, L., & Peace, V. (2006). Implicit Behavioral Mimicry: Investigating the Impact of Group Membership. *Journal of Nonverbal Behavior*, 30(3), 97-113. doi: 10.1007/s10919-006-0010-6
- Zager, D., Alpern, C., & Boutot, E. (2009). Autism spectrum disorders (pp. 501-535). In B. Mowder, R. Rubinson, & A. Yasik, (Eds.). *Evidence-Based Practices in Infant and Early Childhood Psychology*. Hoboken, NJ: John Wiley & Sons.

Zágon, I., & Jackson, H. J. (1994). Construct validity of a psychopathy measure.
Personality and Individual Differences, 17(1), 125-135.