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## The association between alexithymia and primary versus secondary psychopathy

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THE ASSOCIATION BETWEEN ALEXITHYMIA AND PRIMARY VERSUS  
SECONDARY PSYCHOPATHY

Thesis

Submitted to the

The College of Arts and Sciences of the

UNIVERSITY OF DAYTON

In Partial Fulfillment of the Requirements for

The Degree

Master of Arts in Clinical Psychology

By

Gwendoline Cecilia Lander

UNIVERSITY OF DAYTON

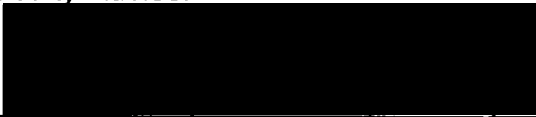
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## ABSTRACT

### The Association Between Alexithymia and Primary versus Secondary Psychopathy

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The current study was designed to gain a deeper understanding of the emotional deficits experienced by individuals with psychopathy by comparing this construct to alexithymia. The current study differs from previous research as it examined primary and secondary psychopathy separately. It also extended current research by utilizing the Emotion Regulation - Implicit Association Task. The rationale behind employing this task was to avoid socially desirable responses on the part of the participants. It was hypothesized that secondary psychopathy would be significantly positively related to alexithymia, whereas primary psychopathy would not. It was also hypothesized that primary psychopathy would be significantly positively related to implicit emotional control, whereas secondary psychopathy and alexithymia would not. The results supported the first hypothesis in that a significant relationship was found between secondary psychopathy and alexithymia, and no relationship between primary psychopathy and alexithymia. The results did not yield any relationship between

a preference for implicit emotional control and primary psychopathy, secondary psychopathy, or alexithymia.

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## CHAPTER I

### INTRODUCTION

While many criminals exhibit behaviors consistent with antisocial personality disorder (APD), such as impulsive and socially deviant behavior, only a few criminals possess the extreme emotional detachment and callous disregard for the rights and well-being of others, as seen in persons with psychopathic traits (Skeem, Johansson, Andershed, Kerr, & Eno Louden, 2007). Furthermore, offenders suffering from psychopathy have been shown to possess more cold-blooded motives and commit crimes that are more violent than non-psychopathic criminals (Kroner & Forth, 1995). However, it is important to mention APD in conjunction with psychopathy because, while the two concepts are not interchangeable, there is considerable overlap between the two disorders (Walsh & Wu, 2008). Psychopathy is viewed as a constellation of affective, interpersonal, and behavioral characteristics (Hare, 1996). The diagnosis of APD, on the other hand, is almost exclusively behavioral characteristics, but not the affective or interpersonal characteristics of psychopathy (Murphy & Vess, 2003).

Individuals with psychopathic attributes are thought to lack feelings of empathy, anxiety, or guilt. Such characteristics lead these individuals to

manipulate and exploit others with little concern for the consequences and to have difficulty forming meaningful relationships (Skeem et al., 2007). Researchers have speculated that people with psychopathy have difficulty understanding certain emotional states of others, or even experiencing the emotions themselves (Louth, Hare, & Linden, 1998). In which case, they do not need to feel remorse, since they are unaware or unconcerned about how their behavior affects others (Dolan & Fullam, 2006).

Researchers have noted that there may be an important tie between alexithymia and psychopathy (Haviland, Sonne, & Kowert, 2004; Kroner & Forth, 1995). For example, individuals with alexithymia and psychopathy both display impaired empathic capacity and poor response to psychological treatment. Though very few studies have investigated the possible link between the two disorders, there is evidence of alexithymic individuals with psychopathic personalities as well (Haviland, Sonne, & Kowert, 2004).

One of the first studies to compare alexithymia and psychopathy was conducted by Kroner and Forth (1995). Interestingly, they found a negative correlation between the core aspects of psychopathy and alexithymia. The self-report questionnaires are difficult to interpret in this study because individuals with psychopathy have a tendency to falsify information. Thus, participants with psychopathic attributes may have answered the questionnaires in such a way as to minimize their difficulties in experiencing or describing their affective states (Kroner & Forth, 1995).

Another study (Louth, Hare & Linden, 1998) observed the co-occurrence of psychopathy and alexithymia in incarcerated females. Of the 37 participants, only two had both psychopathy and alexithymia. However, like the previous study, the prisoners with psychopathy may have minimized their problems with the understanding of emotional states (Louth, Hare, & Linden, 1998). Therefore, it is important to utilize implicit rather than explicit measures of the emotional deficits that are thought to characterize both disorders.

Another area of weakness in existing research is the failure of researchers to distinguish between primary and secondary psychopathy when investigating their link to alexithymia. Primary psychopathy is characterized by extraversion, confidence, and low anxiety, while secondary psychopathy is characterized by social withdrawal, low self-confidence, high levels of anxiety, and submissive behavior (Skeem et al., 2007). As will be discussed, the defining features of alexithymia may be more in line with secondary psychopathy than primary psychopathy.

The remainder of the introduction will describe psychopathy, APD, and alexithymia in more detail. The introduction will end by describing a study that investigated the hypothesis that secondary psychopathy is more closely associated with alexithymia than primary psychopathy. The study also hypothesized that people with primary psychopathy are more likely to have a preference for implicit emotional control than those with secondary psychopathy and alexithymia.

## *Characteristics of Antisocial Personality Disorder, Psychopathy, and Alexithymia*

### *Antisocial Personality Disorder and Psychopathy*

Although closely related constructs, it is important to emphasize that APD and psychopathy are not synonymous (Walsh & Wu, 2008). Unlike APD, psychopathy is not included in the DSM-IV, but most individuals who meet the criteria for psychopathy also meet the criteria for APD. For example, individuals with psychopathy share the irresponsible, impulsive lifestyle of someone with APD, including the violation of social rules. On the other hand, most individuals with a DSM-IV diagnosis of APD do not meet the criteria for psychopathy (Skeem et al., 2007).

While the diagnosis of APD centers primarily around antisocial acts (e.g., frequent arrests), psychopathy includes a cluster of personality traits and affective symptoms that are not necessary for the diagnosis of APD (Louth, Hare, & Linden, 1998). Specifically, persons with psychopathy are interpersonally grandiose, arrogant, dominant, superficial, and manipulative. The psychopathic affect can be described as short-tempered and lacking guilt, anxiety, and the ability to form strong emotional bonds or relationships (Hare, 1999; Louth, Hare, & Linden, 1998). In addition, individuals with psychopathic traits have been associated with higher rates of community violence, violent and nonviolent criminal recidivism, institutional management difficulties, and poor treatment outcomes (Skeem, Poythress, Edens, Lilienfeld, & Cale, 2003).

Due to the more deeply entrenched personality patterns thought to characterize psychopathy, it is more difficult to treat than APD (Hare, 1999;

Skeem et al., 2007). Individuals with psychopathy suffer little personal distress, see little wrong with their attitudes and behavior, and seek treatment only when it is in their best interest to do so (i.e., seeking probation or parole). It is clear, then, that traditional programs are ineffective with this population (Hare, 2006). One disorder that may share common features with psychopathy, such as deficits in the interpretation and expression of emotions, and may therefore provide further insight and treatment in this area, is alexithymia.

### *Alexithymia*

Individuals with alexithymia are thought to have difficulty identifying and communicating feelings (Haviland, Sonne, & Kowert, 2004; Kroner & Forth, 1995; Louth, Hare, & Linden, 1998; Rodema & Simons, 1999). They also have difficulty distinguishing between emotional and physical states of arousal, and thereby appear to convert negative emotions into physical symptoms. Those suffering from alexithymia are often unable to associate visual images, fantasies, or thoughts with particular emotional states (Zackheim, 2007). Researchers have also consistently found that people with alexithymia are unable to recognize facial expressions (Rose, 2004). Collectively, all the symptoms of alexithymia aforementioned reflect a deficit in the cognitive processing of emotions and regulation of emotional states (Luminet, Vermeulen, Demaret, Taylor, & Bagby, 2006).

The emotional deficits experienced by persons with alexithymia often impede their ability to form interpersonal relationships, as they cannot comprehend the emotions of others. Similarly, persons with alexithymia exhibit

impaired capacity for empathy (Zackheim, 2007). Kroner and Forth (1995) pointed out that, "The construct of alexithymia may have implications for understanding emotionally-based violent transactions, including the violence of psychopaths" (p. 625). In other words, there may be an underlying factor shared by both psychopathy and alexithymia that contributes to the emotional and interpersonal deficits and violent behavior that is seen in both disorders. It should be noted, however, that whereas individuals with alexithymia are thought to have a deficit in identifying their emotions, those with psychopathy tend to fake or mimic emotions that they likely do not experience (Louth, Hare & Linden, 1998).

It is important to further investigate the possible connection between alexithymia and psychopathy. Before broaching this topic, however, the specific nature of the emotional impairments of each disorder must be considered. Thus, the specific affective deficits as well as the neurological substrates of these deficits will be the focus of the following section.

### *Emotional Deficits in Psychopathy and Alexithymia*

#### *Psychopathy*

*Specific types of documented impairments.* In more recent years, researchers have begun to examine the emotional deficits found in psychopathy in greater detail. Investigators (Blair, Jones, Clark, & Smith, 1997; Blair, Morris, Frith, Perrett, & Dolan, 1999; Dolan & Fullam, 2006) have consistently found that individuals with psychopathy have a specific deficit in the recognition of the sad and fearful facial affect when compared to normal controls. It is possible that this



emotional dysfunction in individuals with psychopathy leads to a heightened risk to learn antisocial strategies to achieve goals, as fear and sadness aid in the development of socially acceptable behavior (Blair, Peschardt, Budhani, Mitchell, & Pine, 2006). In other words, due to their impairment in associating others' sadness and fear with aversive actions, individuals with psychopathy have a poor moral and social development. Thus, they do not learn to avoid antisocial behavior to achieve their goals as readily as individuals without such deficits (Blair et al, 2006).

Researchers have also noted that individuals with psychopathy fail to fully understand the emotional and abstract undertones of language. It has consistently been found that persons with psychopathy can interpret the literal meaning of metaphors, yet they have difficulty sorting them in terms of their emotional implications. For example, while normal control participants interpret the metaphors "The sea is the mother of life" and "Love is the antidote for the world's ills" as being positive, individuals with psychopathy interpreted them as very negative (Herve, Hayes, & Hare, 2003). Ironically, individuals with psychopathy use such metaphoric language to manipulate others. They do not, however, seem to experience the affective connotation of it (Herve, Hayes, & Hare, 2003). This line of exploration further supports the presence of emotional impairments in psychopathic individuals.

*Neurological substrates.* Researchers have begun to uncover associations between cerebral anomalies and the emotional problems in psychopathy. One such anomaly is thought to occur in the amygdala.

Individuals with psychopathy show significantly less affect-related activity in the amygdala than control subjects (Blair et al., 2006; Kiehl, Smith, Hare, Mendrek, Forster, Brink et al., 2001). Similarly, research has shown reduced amygdala activation during emotional memory (i.e., memory of an emotional event, such as trauma or abuse), fear conditioning (i.e., a learned emotional response to a neutral stimulus that is paired with a threatening stimulus), and face affect recognition tasks in individuals with psychopathy (Birbaumer et al., 2005; Gordon, Baird, & End, 2004; Kiehl, Smith, Mendrek, Forster, Hare, & Lidele, 2004). Due to anomalies in the amygdala, persons with psychopathy are thought to be less physiologically responsive to aversive stimuli (Blair, 2006).

Another study found abnormalities in the processing of affective information using a functional MRI (fMRI). The results indicated that psychopathy is associated with dysfunction within the limbic system and frontal cortex while engaged in the processing of affective stimuli. The limbic system includes the anterior and posterior cingulate, inferior frontal gyrus, amygdala, hippocampal formation, and ventral striatum. These structures are likely to be involved in processes related to emotion, memory, and/or fear conditioning. This study found evidence of bilateral over-activation in the fronto-temporal cortex for individuals with psychopathy while they processed affective stimuli. The investigators proposed that, due to the absence of limbic input regarding affective stimuli, individuals with psychopathy are forced to use alternative cognitive strategies (i.e. in the fronto-temporal cortex) to process affective material (Kiehl et al., 2001). Moreover, normal controls have been found to make faster lexical

decisions and show larger event-related brain potentials (ERP's) in response to affective words compared to neutral words, whereas individuals with psychopathy do not (Kiehl et al., 2001; Williamson, Harpur, & Hare, 1991). The slowed decisions, and increase in neural activation, supports the idea that, due to a dysfunction in structures responsible for processing emotions, individuals with psychopathy require more cognitive effort to interpret and evaluate affective stimuli in comparison to control subjects.

Further evidence of neurological dysfunction comes from studies that presented pairs of neutral and negative emotional words, one word to the participants' left visual field (i.e., the right hemisphere) and the other to the right visual field (i.e., the left hemisphere; Day & Wong, 1993). Unlike the individuals with psychopathy, participants in the control group had shorter reaction times and less error when the emotional word was presented to the right hemisphere than when it was presented to the left hemisphere. There was no difference in those with psychopathy (Christianson, Forth, Hare, Strachan, Lidberg, & Thorell, 1996; Kiehl et al., 2001; Williamson, Harpur, & Hare, 1991). Williamson et al. (1991) concluded that persons suffering from psychopathy have difficulties processing emotional material due to right hemisphere deficits.

In conclusion, analyses of psychopathy have demonstrated a presence of deficits in facial affect recognition and the understanding of affective undertones in language. These deficits may be due to a number of cerebral anomalies, mainly in the amygdala, frontal cortex, and right hemisphere.

*Alexithymia*

*Specific types of documented impairments.* Several studies have also investigated the emotional deficits in alexithymia, and there is evidence to support the claim that this disorder is associated with impairment in the cognitive processing of emotions (Luminet et al., 2006). Luminet et al., (2006) found that individuals with alexithymia show a deficit in their ability to contemplate their emotional states, which may help explain their impaired ability to regulate their emotions.

Other studies support the finding that persons with alexithymia have difficulty processing emotional material as well. For instance, one investigation showed that individuals high in alexithymic attributes were significantly lower in accuracy than those low in alexithymic attributes when matching verbal and non-verbal emotional stimuli to verbal and non-verbal emotional responses (Lane, Sechrest, Reidel, Weldon, Kaszniak, & Schwartz, 1996). An additional study used the Stroop and an implicit memory task to demonstrate that persons high in alexithymic attributes scored significantly slower on color-naming illness words than negative emotion words in comparison to participants low in alexithymic features (Lundh, Johnsson, Sundqvist, & Olsson, 2002). The slower reaction time signifies that the participants with alexithymia were affected by the unpleasantness associated with illness words but were not affected by negative emotion words. This finding demonstrates that the deficit found in individuals with alexithymic attributes is specific to emotions (Luminet et al., 2006).

Another study attempted to reveal the emotional deficit of alexithymia using emotion-provoking movies. While observing these films, participants how

scored high on the alexithymia scale showed lower emotional responses at the cognitive-experiential level, but higher emotional responses at the physiological level in comparison to those who scored low in alexithymia. For example, while watching emotional stimuli, individuals with alexithymic traits had difficulty describing feelings, but their mean heart rate increased (Luminet, Rime, Bagby, & Taylor, 2004).

*Neurological substrates.* A problem within the anterior cingulate gyrus has been linked with alexithymia, as a lesion in this area induces a deficit in emotion processing, including emotional face perception (Schafer, Popp, Jorgens, Lindenberg, Franz, & Seitz, 2007). A recent investigation used an fMRI to find that alexithymia is associated with deactivation in the anterior cingulate gyrus in response to highly negative emotional stimuli, and activation during highly positive emotional stimuli (Bethoz, Artigues, Van De Moortele, Poline, & Rouquette, 2002). A study using a PET scan supported this finding as the anterior cingulate gyrus of persons with alexithymia was less activated in response to angry faces than neutral faces (Kano et al., 2003). Thus, it is clear that the anterior cingulate cortex plays an important role in the deficits experienced by individuals with alexithymia, particularly with respect to the processing of negative emotions.

Tabibnia and Zaidel (2006) found that individuals with alexithymia also show poor inter-hemispheric transfer. Early studies support this finding by showing that split-brain patients have significantly more alexithymic attributes than controls (Parker, Keightly, Smith, & Taylor, 1999). Vietnam combat

veterans with alexithymia and posttraumatic stress disorder also displayed a significant bidirectional deficit in the inter-hemispheric transfer of sensorimotor information when compared to veterans without alexithymia and normal controls (Parker et al., 1999; Zeitlin, Lane, O'Leary, & Schrift, 1989). When replicated with a non-clinical sample, individuals with alexithymia still made significantly more errors on a bidirectional inter-hemispheric task than persons without alexithymia (Parker et al., 1999). Furthermore, the use of a PET scan illustrated lower cerebral blood flow in the right hemisphere of individuals with alexithymia and higher cerebral blood flow in the left hemisphere in comparison to those who do not have alexithymia (Kano et al., 2003).

In conclusion, although alexithymia and psychopathy are two distinct disorders, there seems to be important similarities in their deficiencies regarding emotion. They include problems in the anterior cingulate gyrus and the right hemisphere. Exploring the relationship between these disorders could potentially help to shed light on the exact nature of emotional deficits that characterize each of the two disorders. The next section will further discuss the empirical findings with respect to the link between psychopathy and alexithymia. First, however, the distinction of two subtypes of psychopathy, primary and secondary, will be discussed, as these different types may share greater or fewer characteristics with alexithymia.

#### *The Associations between Psychopathy and Alexithymia*

Psychopathy can be categorized into one of two different subtypes: primary and secondary. There are some important differences between the two

subtypes. For example, individuals with primary psychopathy typically display low anxiety, fearlessness, poor passive avoidance (i.e., failing to avoid behaviors that will produce negative consequences), weak electrodermal anticipation of punishment (i.e., a change in the electrical properties of the skin in response to stress or anxiety), and pronounced traits of emotional detachment. Those with secondary psychopathy are characterized by high levels of anxiety and impulsiveness, and with average levels of passive avoidance and electrodermal activity in anticipation of punishment (Lykken, 1995; Newman, MacCoon, Vaughn, & Sadeh, 2005; Patrick, Hicks, Kreuger, & Lang, 2005; Skeem et al., 2007). Individuals with primary psychopathy are also extraverted, confident, and dominant (Newman et al., 2005), making it easy for them to exploit others for their own purposes. Meanwhile, people with secondary psychopathy are withdrawn, low in self-confidence, submissive, moody, and emotionally disturbed, yet are more responsive to traditional treatment than those with primary psychopathy (Skeem et al., 2007). Both persons with primary and secondary psychopathy are aggressive, hostile and frequently violent, but those with primary psychopathy are more likely to exhibit violence in order to achieve control over and abuse others, while persons with secondary psychopathy are more likely to exhibit violence due to autonomic arousal and emotional reactivity (Skeem et al., 2007).

The developmental trajectory of each subtype of psychopathy is relevant to understanding the differences between them. Primary psychopathy is thought to be a consequence of an intrinsic deficit that hampers self-regulation and normal adjustment. Secondary psychopathy, on the other hand, is presumed to

be an indirect consequence of inadequate intelligence, psychotic thinking, excessive neurotic anxiety, unusual sex drive, or other features that increase a person's vulnerability to chronic misconduct (Newman et al., 2005). Thus, researchers have concluded that primary psychopathy is due to a genetic affective deficit, and secondary psychopathy is due to an environmentally acquired affective disturbance (Poythress & Skeem, 2006; Skeem et al., 2007; Skeem et al., 2003).

As alluded to previously, it has been speculated that alexithymia and psychopathy may be somewhat overlapping disorders (Haviland, Sonne, & Kowert, 2004). Kroner and Forth (1995) pointed out that research on alexithymia might have important implications for understanding the emotionally based violence of individuals with psychopathy. In order to be able to communicate feelings and experience empathy, it is first necessary to identify feelings or emotions. Since neither individuals with psychopathy or alexithymia seem to have the ability to interpret and describe some emotions, they lack the ability to empathize, leading to the aggressiveness found in these disorders (Kroner & Forth, 1995). Furthermore, research has found that, not only do individuals with alexithymia and psychopathy lack empathy, but they also lack close interpersonal relationships and the ability to be introspective (Haviland, Sonne, & Kowert, 2004; Kroner & Forth, 1995).

In an investigation by Kroner and Forth (1995), they examined the correlation between the Toronto Alexithymia Scale (TAS) and clinical ratings of psychopathic affective and interpersonal traits. Their sample consisted of 508



inmates, incarcerated for sexual or other violent offenses. Participants completed the TAS, Basic Personality Inventory (BPI), Balanced Inventory for Desirable Responding (BIDR), Multidimensional Aptitude Battery (MAB), and Hare's Psychopathy Checklist-Revised (PCL-R). Contrary to their hypotheses, Kroner and Forth (1995) found a significant negative, rather than positive, correlation between many of the core aspects of psychopathy and alexithymia. However, an interesting finding, which is relevant to the current study, was a positive correlation between the social deviant component of psychopathy (Factor 2 of the PCL-R) and the "Importance of Emotions" subscale of the TAS-20 (Kroner & Forth, 1995). The implications of these results will be discussed in greater detail later in this section.

Haviland, Sonne, and Kowert (2004) also explored the commonalities and differences between psychopathy and alexithymia. They used Q-sort methodology, which is a general personality test consisting of many items (100 in this study) administered to a small group of people. The items cover a broad range of personality traits that are sorted into 9 categories ranging from 1 (most un-characteristic) to 9 (most characteristic), resulting in a general personality profile for each person rated in the study. The researchers applied the California Adult Q-set (CAQ), more specifically, two prototype descriptions: the CAQ Alexithymia Prototype (CAQ-AP) and the CAQ Psychopathy Prototype (CAQ-PP). Thirteen expert judges sorted the items of the CAQ-AP, 7 expert judges constructed the CAQ-PP. The judges assessed 42 political leaders from the late 1980's to early 1990's in this study. First, the researchers compared the

prototypes of alexithymia and psychopathy developed by the judges. Then, the prototypes were applied to leaders from Europe, North, South, and Central America, Asia, and Africa. Some examples of leaders are John F. Kennedy, Mikhail Gorbachev, Nelson Mandela, and Adolph Hitler.

The results of this study revealed that despite the emotional deficits that both disorders share, the correlation between the alexithymia and psychopathy prototypes was .13, which suggests little correspondence. Such results indicate the possibility that persons with alexithymia versus those with psychopathy are dissimilar in their manifestation of these features. Individuals with alexithymia and psychopathy show very different emotional expressions. The prototypic person with alexithymia, for example, is anxious, over-controls needs and impulses, has a flat affect, is moralistic, and fails in interpersonal relationships. The prototypic person with psychopathy, however, is anxiety-free, self-indulgent, expresses hostile feelings, and can be expressive in social interactions, though only to manipulate the others.

Regarding the political leaders, alexithymia and psychopathy were absent in 29 generally respected leaders, but present in the 13 controversial or notorious leaders. Chernenko and Nixon displayed the highest alexithymia scores, and neither were "stirring nor inspirational figures" (p. 313). Those highest in psychopathy scores were Krushchev and Lyndon Johnson, who were both well known for outbursts of emotion and temper. The three most notorious leaders in the sample, Francisco Nguema, Joseph Stalin, and Adolph Hitler, were moderately correlated with both psychopathy and alexithymia. These individuals

were characterized as unprepared for leadership, brutal, cruel, effective, and paranoid. Though there was a small correlation between the disorders, it appears that the combination of the emotional interpersonal and intrapersonal deficits associated with each disorder may lead to especially callous and dysfunctional behaviors (Haviland, Sonne, & Kowert, 2004).

A third study that investigated the association between alexithymia and psychopathy was conducted by Louth, Hare, and Linden (1998). The participants in this study were 37 female inmates from a correctional center for women. The Hare Psychopathy Checklist-Revised (PCL-R) and Toronto Alexithymia Scale (TAS) were used to assess the participants of the study. Other scales, such as the Beck Depression Inventory and intelligence scales, were used to control for possible effects of mood on their responses or for difficulties in reading comprehension. Similar to the results in Kroner and Forth's (1995) study, these results yielded a significant positive correlation between the PCL-R Factor 2 (social deviance) and total TAS scores, and between the PCL-R Factor 2 and TAS Factor 1 (inability to distinguish and describe feelings). However, the prediction that there would be a connection between alexithymia and the PCL-R factor 1 (interpersonal and affective impoverishment) was not found (Louth, Hare, & Linden, 1998). These correlations signify a key point, as the PCL-R Factor 2 is more akin to secondary psychopathy and Factor 1 is related to primary psychopathy (Skeem et al., 2007).

Thus, it is possible that alexithymia conceptually shares more in common with secondary psychopathy than with primary psychopathy. In the next section

this speculation will be discussed in greater detail. I will also address a second limitation of the existing research in this area: the fact that self-report measures are more susceptible to malingering.

### *Current Model*

#### *Secondary Psychopathy and Alexithymia*

Taken together, the results of the three studies reviewed above suggest that it may be important to investigate the associations between alexithymia and primary psychopathy versus alexithymia and secondary psychopathy separately. While results in the existing literature in the area seem to indicate that secondary psychopathy may share a greater resemblance to alexithymia than does primary psychopathy (Kroner & Forth, 1995; Louth, Hare, & Linden, 1998), such hypotheses should be tested using measures that have been specifically designed to assess primary and secondary psychopathy. Examples of such measures include the Levenson Self-Report Psychopathy Scale (LSRP; Levenson, Kiehl, & Fitzpatrick, 1995), or the Psychopathic Personality Inventory-Revised (PPI-R; Lilienfeld, 2005) in conjunction with a measure of trait anxiety such as the State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, & Lushene, 1970).

The importance of examining alexithymia and secondary psychopathy separately from alexithymia and primary psychopathy has also been implied by the previous studies, as they failed to show any similarities when comparing alexithymia to both types of psychopathy together. They did, however, find evidence for a relationship specific to secondary psychopathy and alexithymia.

For example, prototypic individuals with secondary psychopathy and alexithymia are anxious and submissive, whereas those with primary psychopathy are not (Haviland, Sonne, & Kowert, 2004; Skeem et al., 2007). Further, the results of both Kroner and Forth (1995) and Louth and his colleagues (1998) are noteworthy in that their studies found a significant association between the PCL Factor 2 and the Toronto Alexithymia Scale (TAS). The two factors of the PCL-R, although not specifically designed for this purpose, are thought to map onto the distinction between primary and secondary psychopathy. Factor 1 on the PCL-R inspects the more pronounced traits of emotional detachment that is characteristic of primary psychopathy, whereas Factor 2 measures the impulsivity, hostility, and social deviance that is characteristic of secondary psychopathy (Levenson, Kiehl, & Fitzpatrick, 1995; Skeem et al., 2007). The correlation between the TAS and on factor 1 of the PCL-R, together with the lack of a relationship between the TAS and factor 2 of the PCL-R, further suggests that there is more similarity between alexithymia and secondary psychopathy than between alexithymia and primary psychopathy.

#### *Implicit Measures of the Preference of Emotional Control*

Another limitation of the existing studies on the association between alexithymia and psychopathy is the reliance on self-report measures. Since automatic emotion regulation and associated deficits are typically processes outside of people's awareness, it is challenging to assess them with self-report measures (Mauss, Evers, Wilhelm, & Gross, 2006). In addition, individuals with

psychopathy are thought to be manipulative, and therefore, may be more likely to emit socially desirable answers (Louth, Hare, & Linden, 1998).

The Implicit Association Task (IAT) is a reaction time task that indirectly measures the implicit evaluation of categories (Mauss et al., 2006). It determines the level of association between two concepts (e.g., cancer, smile) and two contrasting hedonic tones (e.g., pleasant, unpleasant). When the highly associated items (e.g., cancer-unpleasant, smile-pleasant) share the same letter on the keyboard ('p' or 'q'), reaction time is fast and accurate. On the contrary, when the categories are negatively associated, responses become slow and error-prone. An example of an ER-IAT screen can be found in Appendix H. The IAT has been applied to many different issues, such as attitudes about obesity, race, age, gender, homophobia, and many more. The IAT, in comparison to other measures, is thought to circumvent conscious control, which is important in this study to test the emotional control (or lack thereof) exhibited by individuals with psychopathy and alexithymia. The IAT is also non-transparent (i.e., it is not obvious as to what is being tested), and so is difficult to fake. This is a crucial aspect of this paradigm, as members of the psychopathic population tend to be more likely to be unfaithful in their responses. Finally, the IAT may be a better indicator of real-life behavior than explicit measures, and is sensitive to clinical change (Snowden, Gray, Smith, Morris, & MacCulloch, 2004).

The current study will use a variant of the IAT, the Emotion Regulation-IAT (ER-IAT), to investigate the preference for emotional control in individuals with psychopathy and alexithymia. Before continuing, it is important to understand

the concept of emotional control. Emotional control refers to the ability of an individual to manage and modify one's emotional reactions to achieve goal-directed behavior. As Mauss, Evers, Wilhelm, and Gross (2006) pointed out, these underlying regulation strategies are automatic, or unconscious, processes. Also thought to be unconscious are the implicitly represented ideas that individuals have about emotion control (Mauss et al., 2006). Research using the ER-IAT has shown that a relatively stronger association between emotion control and positive items implies implicit positive evaluation of emotion control. The reasoning for this is, goal states that are associated with positive concepts appear to enhance an individual's pursuit of such goals, and this association might lead to a greater likelihood of engaging in automatic emotion control (Mauss, Bunge, & Gross, 2007). The current study will apply this version of the IAT to determine the degree of positive associations between psychopathy and alexithymia with implicit emotional control.

It is possible that individuals with primary psychopathy prefer implicit emotional control over those with secondary psychopathy and alexithymia. As discussed earlier in the introduction, individuals with secondary psychopathy likely have cognitive control deficits (Wilkowski & Robinson, 2008), and the behaviors they display are likely to be caused by arousal and emotional reactivity (Skeem et al., 2007). It would stand to reason that these individuals not only have less implicit control over their emotions, but they might not have such a preference for this control as those high in primary psychopathy because individuals with secondary psychopathy are less motivated by a specific desire to

dominate and control others than by a desire to satisfy their hedonic urges.

Individuals with alexithymia similarly may prefer implicit emotional control less than individuals with primary psychopathy because those with alexithymia also show impairment in the cognitive processing of emotions, thus lacking insight into or control over these deficits (Luminet et al., 2006). Individuals with primary psychopathy, on the other hand, are often inclined towards achieving control over and abusing others (Skeem et al., 2007), and are thus more likely prefer automatic emotional control, as it would better enable them to achieve such goals. Therefore, this study will examine the hypothesis that individuals with primary psychopathy prefer implicit control over their emotions more than individuals with secondary psychopathy and alexithymia.

#### *Current Study*

The purpose of the current study was to explore the association between psychopathy and alexithymia while addressing the two limitations of the existing literature discussed above. The current study utilized the implicit association test (IAT) to explore the implicit preference of emotional control, thereby attempting to bypass conscious attempts on the part of participants high in psychopathy to fabricate their answers. The current study also specifically examined the association between alexithymia and primary and secondary psychopathy. The distinction between primary and secondary psychopathy was assessed in two ways. First the LSRP, which contains primary and secondary psychopathy subscales, was used (Levenson, Kiehl, & Fitzpatrick, 1995). I also utilized the combination of the PPI-R and STAI (Spielberger, Gorsuch, & Lushene, 1970) to



create four categories. These four categories include persons that scored high on both the STAI and PPI-R (secondary psychopathy group), those that scored high on the STAI and low on the PPI-R (anxiety group), persons scoring low on both the STAI and PPI-R (normal group), and persons scoring low on the STAI but high on the PPI-R (primary psychopathy group). Because individuals with primary psychopathy are characterized by low anxiety, whereas those with secondary psychopathy are high in anxiety, this approach to assessing primary and secondary psychopathy has been used in previous research (Vassileva, Kosson, Abramowitz, & Conrod, 2005).

In the current study, a total of 6 measures were administered to undergraduate students from introduction psychology courses. Three measures, the PPI-R, STAI, and LSRP, were used to assess primary and secondary psychopathy. The TAS identified individuals with alexithymia. The ER-IAT investigated the preference for implicit emotional control in participants with psychopathy and alexithymia. A final measure of social desirability was included in order to measure and control for certain response biases. The hypotheses of the study follow:

Hypothesis 1: Secondary psychopathy will be more strongly correlated to alexithymia than will primary psychopathy.

Hypothesis 2: Individuals with primary psychopathy will demonstrate significantly higher preference for implicit control over their emotions than individuals with secondary psychopathy or alexithymia. This will be evidenced by a positive correlation between primary psychopathy and the

ER-IAT, and a negative correlation between secondary psychopathy or alexithymia and the ER-IAT.

## CHAPTER II

### METHOD

#### *Participants*

One hundred and seven students were sampled from a medium sized private university in the Midwest, yet three were deleted due to invalid or incomplete data, totaling 104 participants. These participants were recruited from undergraduate introductory psychology courses, and were awarded course credit for class. There were 48 male participants and 59 female participants. Each participant completed a demographic measure, which can be found in Appendix A.

#### *Measures*

*Levenson Self-Report Psychopathy Scale (LSRP).* The LSRP (Levenson, Kiehl, & Fitzpatrick, 1995) was used in this study to examine psychopathic traits. The LSRP is a 26-item, self-report measure that reflects the contents of Hare's Psychopathy Checklist-Revised (PCL-R). The items are endorsed on a 4-point scale ranging from "disagree strongly" to "agree strongly," with reversed items to control for response sets. The LSRP has a two-factor approach that measures primary and secondary psychopathy. The primary scale has 16 items and is designed to assess the interpersonal and affective features of psychopathy, (i.e.,

selfish, uncaring, and manipulative posture towards others). The 10-item secondary scale is designed to assess impulsivity and a self-defeating lifestyle (Falkenbach, Poythress, Falki, & Manchak, 2007; Levenson, Kiehl, & Fitzpatrick, 1995). The total scores may range from 26 to 104, the primary psychopathy subscale scores ranging from 16 to 64, and the secondary psychopathy subscale ranging from 10 to 40. Hypothesis 1 of the current study will utilize the primary and secondary scales to measure the presence of these tendencies.

Levenson et al. (1995) found the primary and secondary scales to be positively correlated ( $r = .40$ ). Subsequent studies have confirmed this finding, with  $r$  ranging from .21 (Ross & Rausch, 2001) to .59 (McHoskey, Worzel, & Szyarto, 1998; Falkenbach et al., 2007). The LSRP shows convergent validity with Hare's Self-Report Psychopathy Scale (HSRP), with a total  $r = .64$ ,  $r = .66$  for the primary psychopathy scale, and  $r = .42$  for the secondary psychopathy scale. Cronbach's alpha for the total score was found to equal .82, and .83 for primary psychopathy and .71 for secondary psychopathy (Levenson et al., 1995). In the current study, Cronbach's alpha was .84 for the total score, .85 for the primary psychopathy scale, and .65 for the secondary psychopathy scale. Test-retest reliability was found to be  $r = .83$  when compared between a period of eight weeks (Lynam et al., 1999). This measure can be found in Appendix B.

*Psychopathic Personality Inventory-Revised (PPI-R)*. The PPI-R (Lilienfeld, 2005), which is similar to the original PPI (Lilienfeld & Andrews, 1996), was used in this study to measure the core personality traits of psychopathy, as described by Cleckley (1941). The PPI (Lilienfeld & Andrews, 1996) was

developed on an undergraduate college-student sample, and helped to reveal the nature of personality traits underlying psychopathy.

The PPI-R is a self-report measure that includes 154 items presented on a 4-point Likert scale, ranging from false (F) to true (T). Lilienfeld and Andrews (1996) found that the two types, primary and secondary psychopathy, could be broken down into eight dimensions that are used on the PPI and PPI-R. Those eight subscales include Machiavellian Egocentricity (30 items), Social Potency (24 items), Coldheartedness (21 items), Carefree Nonplanfulness (20 items), Fearlessness (19 items), Blame Externalization (17 items), Impulsive Nonconformity (17 items), and Stress Immunity (11 items). The subscales provide a multifactorial approach, which is well suited for the research on the etiology of psychopathy (Falkenbach et al., 2007; Lilienfeld & Andrews, 1996; Wilson, Frick, & Clements, 1999). In this study, the total score will be used to measure psychopathy, excluding the Fearlessness scale. The reasoning for this is that the State-Trait Anxiety Inventory is already measuring the fearlessness attribute.

Falkenbach et al. (2007) found that the internal consistency for the eight subscales as assessed by Cronbach's alpha on the PPI (which are the same subscales on the PPI-R) fell in the range of .76 to .87; for the current study, Cronbach's alpha was .92. The internal consistency of the total score of the PPI-R was .82 (Falkenbach et al., 2007). Additionally, the test-retest reliability of the total score and the eight subscales ranged from  $r = .82$  to .95 when compared

over a period of about 20 days (Lilienfeld & Widows, 2005). This measure can be found in Appendix C.

*State-Trait Anxiety Inventory (STAI).* The STAI (Spielberger, Gorsuch, & Lushene, 1970) was utilized to measure trait anxiety. As stated previously, this measure was used in combination with the PPI-R in order to assess primary and secondary psychopathy. A median split was used for the two measures to create the four categories listed in the introduction: primary psychopathy, secondary psychopathy, normal, and anxiety groups.

The STAI is a 40-item scale that measures state and trait anxiety. There are 20 items for each state and trait measure. The current study used the Anxiety Trait (A-Trait) subscale, which assesses long-term expressions of anxiety by asking people how they typically feel. The items on the A-Trait subscale are rated on a 4-point Likert scale ranging from "almost never" to "almost always" (Spielberger, Gorsuch, & Lushene, 1970). Because this study only used the A-Trait scale, the possible range of items was 20-80.

The STAI has high internal consistency, with Cronbach's alpha ranging from .83 to .94 on the Anxiety State scale, and .86 to .92 on the A-Trait scale (Gaudry, Vagg, & Spielberger, 1975). In the current study, Cronbach's alpha for the A-Trait scale was .89. The A-Trait scale also demonstrates high test-retest reliability, with  $r$  ranging from .73 to .86 for a retest period of 104 days and 20 days, respectively (Gaudry, Vagg, & Spielberger, 1975). This measure can be found in Appendix D.

*Toronto Alexithymia Scale (TAS).* In the current study, the TAS (Taylor, Ryan, & Bagby, 1985) was used to measure the construct of alexithymia. The TAS is a 20-item self-report measure with a 5-point Likert scale, ranging from "strongly agree" to "strongly disagree." This measure was refined in 1992 in order to increase reliability and validity. This test has a 3-factor design to reflect the distinct facets of alexithymia. These facets are, (1) difficulty identifying feelings and distinguishing them from bodily sensations of emotion, (2) difficulty describing feelings to others, and (3) an externally oriented style of thinking (Parker, Bagby, Taylor, Endler, & Schmitz, 1993). The current study utilized the total score, which has a possible range of 20-100.

This measure has shown high internal validity; Cronbach's alpha for the total score was .79, .78 for factor 1, .73 for factor 2, and .64 for factor 3 (Parker et al., 1993). Cronbach's alpha for the total score in current study was .85, .81 for factor 1, .75 for factor 2, and .67 for factor 3. Furthermore, a recent study found a test-retest reliability value of  $r = .69$  over a period of ten weeks (Richards, Fortune, Griffiths, & Main, 2003). The measure can be found in Appendix E.

*Social Desirability Scale.* The Balanced Inventory of Desirable Responding (BIDR; Paulhus, 1984) was used in the current study to measure two components of social desirability: self-deceptive enhancement and impression management. It is a 40-item measure given in prepositions. The items are rated on a 7-point Likert scale ranging from "not true" to "very true." The first component of the scale, self-deceptive enhancement (SDE), represents the unconscious positive bias in terms of protecting one's self-esteem. The

impression management (IM) component refers to the conscious attempt to respond in ways to make a favorable impression on others. Each component has 20 items on the measure. Some of the items on the BIDR are reverse-scored, and then the entire measure is re-coded such that 1 point given for each "6" or "7," and 0 points are given on responses ranging from "1" to "5" (Stober, Dette, & Musch, 2002). The current study utilized the total score, which has a possible range from 0 to 40.

The internal consistency of the BIDR is high, with a Cronbach's alpha of .83 for the total score, a range of .68 to .80 for the SDE scale, and .75 to .86 for the IM scale. The Cronbach's alpha for the total score in the current study was .52. Test-retest reliability ranges from  $r = .65$  to .69 for the total score. Over a 5-week interval, the SDE scale showed a test-retest value of .69, and .65 for the IM scale (Paulhus, 1991; Peebles & Moore, 1998). The measure may be found in Appendix F.

*Emotion Regulation Implicit Association Test (ER-IAT).* The ER-IAT (Mauss et al., 2006) is a computer program based on Greenwald, McGee, and Schwartz's (1998) Implicit Association Test (IAT). It was used in the current study to assess the implicit preference for emotional control of individuals with psychopathy and alexithymia. The IAT examines unconscious attitudes by measuring the relative strength of association between an object and the concept "good" or "bad". There are few studies that have analyzed the reliability of the IAT; however, Greenwald (1998) demonstrated a test-retest reliability to be  $r = .65$ . A later study found a mean alpha of .69 for interim consistency (a proportion



of total variance that reflects consistent variance), a stability index of .68, and mean convergent validity of  $r = .63$  (Cunningham, Preacher, & Banaji, 2001).

The IAT adaptation, ER-IAT, assesses implicit evaluations of emotional control versus emotion expression by measuring reaction times for responding between positive (e.g., gold) or negative (e.g., gloom) words and emotion control (e.g., inhibit) or emotion expression (e.g., reveal) words. See Table G1 in Appendix G for a list of all the items, and Appendix H for an example of an ER-IAT screen. The ER-IAT consists of 5 blocks. Blocks 1, 2, and 4 are practice trials (20 items each). In Block 3, participants categorize items into two combined categories, emotion control and positive terms versus emotion expression and negative terms (20 practice and 40 critical trials), by pressing the 'q' or 'p' letters on the keyboard. In Block 5, the key assignments are switched, and participants categorize items into two combined categories, emotion expression and positive items versus emotion regulation and negative items (20 practice and 40 critical trials). The letters on the keyboard correspond to the categories, which are located in the top left and right hand corners of the screen, while the target word is flashed in the center of the screen. The test-retest reliability for the ER-IAT was found to be adequate at  $r = .68$  across an interval of 3 months (Mauss et al., 2006). Mauss and colleagues (2006) also found Cronbach's alpha to be .86.

### *Procedure*

Students received course credits for completing the study. The participants completed two self-report measures of psychopathy (LSRP & PPI-

R), an alexithymia scale (TAS), a measure of trait anxiety (STAI), and a social desirability measure (BIDR). The measures were given along with a demographic data sheet. Demographic measures always came first in the packet. The order of the other measures (excluding the ER-IAT) was randomized. The final part of the study was conducted, one participant at a time, on a PC computer with the program Superlab. Participants were asked to respond as rapidly as possible in categorizing each stimulus word, while attempting to respond as accurately as possible. After completion of all measures, the participants were thanked and debriefed.

## CHAPTER III

### RESULTS

#### *Preliminary Analyses*

The percentages and frequencies of the nominal and ordinal variables for the current study are summarized in Table 1. The means, standard deviations, and ranges of the continuous variables are summarized in Table 2. Preliminary analyses of the current study were conducted to examine the relationships between the primary study variables (i.e., primary psychopathy, secondary psychopathy, and alexithymia) and the demographic variables and the measure of social desirability, in order to assess the possibility for any confounding variables. Zero-order correlations were calculated for continuous variables. The results revealed significant negative relationships between secondary psychopathy and social desirability ( $r = -.24, p < .05$ ) and alexithymia and social desirability ( $r = -.23, p < .05$ ), such that persons scoring higher in social desirability scored lower on secondary psychopathy and alexithymia. The relationship between primary psychopathy and social desirability was not significant ( $r = -.03, p > .05$ ). The results also indicated a significant negative relationship between age and secondary psychopathy ( $r = -.21, p < .05$ ) such that persons higher in age scored lower on secondary psychopathy. The relationship

Table 1

*Descriptive Statistics for Gender, Race, and the Psychopathology Type (i.e., the four categories created by the STAI and the PPI)*

Variables	Frequency	Percentage
Gender		
Male	45	44
Female	59	56
Race		
Caucasian	96	92
Black	4	4
Asian	2	2
Hispanic	1	1
Other	1	1
Psychopathology Type		
Primary Psychopathy	29	28
Secondary Psychopathy	23	22
Anxiety	30	29
Normal	22	21

Table 2

*Descriptive Statistics for Age, Social Desirability, Alexithymia, Primary and Secondary Psychopathy, and Implicit Preference of Emotional Control*

Variables	Mean	Standard Deviation	Minimum- Maximum
Age	19.51	1.51	18 – 28
Alexithymia	48.03	11.60	27 – 86
Social Desirability	9.54	3.84	1 – 19
Primary Psychopathy (LSRP)	29.52	7.61	16 – 51
Secondary Psychopathy (LSRP)	20.84	4.35	12 – 33
ER-IAT	.09	.55	-2 – 2

between alexithymia and age was non-significant ( $r = .01, p > .05$ ), as was the relationship between primary psychopathy and age ( $r = .03, p > .05$ ). Thus, participants' age and social desirability were statistically controlled for in the primary analyses.

Possible group differences in the nominal level demographics (i.e., race and gender) on the primary study variables (i.e., primary psychopathy, secondary psychopathy, and alexithymia) were then examined. Three independent sample t-tests were conducted with gender as the grouping variable and either primary psychopathy, secondary psychopathy, or alexithymia as the dependent variables. The results of these analyses revealed significant gender differences between primary,  $t(102) = 3.21, p < .05$ , and secondary psychopathy,  $t(102) = 2.45, p < .05$ , such that males scored higher on primary psychopathy ( $M = 32.10, SD = 7.81$ ) than females ( $M = 27.46, SD = 6.87$ ) and males scored higher on secondary psychopathy ( $M = 22.00, SD = 3.47$ ) than females ( $M = 19.93, SD = 4.78$ ). No significant gender difference was found in alexithymia,  $t(102) = 1.65, p > .05$ . Thus, gender was statistically controlled for in all primary analyses involving psychopathy. Three one-way ANOVA's were conducted with race as the grouping variable and either primary psychopathy, secondary psychopathy, or alexithymia as the dependent variables. The results showed no significant group differences between race and alexithymia,  $F(2, 99) = .77, p > .05$ , primary psychopathy,  $F(2, 99) = .60, p > .05$ , or secondary psychopathy,  $F(2, 99) = 1.37, p > .05$ .

### *Primary Analyses*

A median split was applied to both the STAI and PPI-R. Four groups were created: persons scoring low on the STAI but high on the PPI-R (primary psychopathy group); persons scoring high on the STAI and PPI-R (secondary psychopathy group); persons scoring high on the STAI but low on the PPI-R (anxiety group); and persons scoring low on the STAI and PPI-R (normal group). Of these four groups, the current study utilized two: the primary and secondary psychopathy groups. The other groups (anxiety and normal) were not included in the study analyses involving this variable. An analysis of covariance (ANCOVA) was computed with pathology type as the grouping variable and alexithymia as the dependent variable. Age, gender, and social desirability were entered as covariates. In support of Hypothesis 1, the analyses showed a significant group difference between primary psychopathy and secondary psychopathy,  $F(1, 47) = 6.12, p < .05$ , with the secondary psychopathy group scoring higher on alexithymia ( $M = 54.13, SD = 13.50$ ) than the primary psychopathy group ( $M = 44.28, SD = 10.34$ ). See Table 3 for the results.

Because the TAS and LSRP are continuous scales, simple correlations were calculated to test Hypothesis 1 between alexithymia and the primary and secondary psychopathy subscales of the LSRP. In support of this hypothesis, there was a significant relationship between secondary psychopathy and alexithymia,  $r = .48, p < .01$ , but a non-significant correlation between primary psychopathy and alexithymia,  $r = .16, p > .05$ . Refer to Table 4 for these findings.

Table 3

*Analysis of Covariance for Alexithymia with Psychopathology Type as the Independent Variable and Age, Sex, and Social Desirability as Covariates*

Source	df	F	Eta	p
Age	1	.13	.01	.72
Sex	1	.23	.02	.64
Social Desirability	1	1.18	.04	.28
Pathology Type	1	6.12	.08	.02
S within-group error	47	(145.10)		

Note. Value enclosed in parentheses represent mean square errors. S = subjects.



Table 4

*Intercorrelations Between Alexithymia, Primary and Secondary Psychopathy, and Implicit Preference for Emotional Control*

Variable	Alexithymia	Primary Psychopathy	Secondary Psychopathy	Implicit Preference for Emotional Control
Alexithymia	---	.15	.48**	.02
Primary Psychopathy (LSRP)		---	.35**	.02
Secondary Psychopathy (LSRP)			---	.16
Implicit Preference for Emotional Control				---

\*p < .05

\*\*p < .01

With regards to Hypothesis 2, to investigate the preference of implicit control, the reaction times measured on the ER-IAT were analyzed. The IAT reaction time was scored following Greenwald et al.'s (2003) "D" algorithm ("D" = the equal weight average of the two resulting ratios). Data from test trials were used. First, trials with reaction time latencies greater than 10,000 milliseconds (ms) were deleted because they exceeded the time limit for automatic responding. Participants who had more than 10% of their trial latencies below 300 ms were also deleted to minimize the effect of careless responding. These steps were taken to minimize error. Final IAT scores were calculated by subtracting average reaction times from Block 3 from average reaction times from Block 5 for each participant. As noted in previously, Block 3 paired emotion control and positive terms, and Block 5 associated emotion control with negative terms. Higher ER-IAT scores, thus, indicated more positive implicit evaluation of emotional control relative to emotion expression.

Since the ER-IAT is also a continuous measure, Pearson correlations were calculated between this measure and primary and secondary psychopathy and alexithymia scores from the LSRP and the TAS. Contrary to Hypothesis 2, the results indicated a non-significant negative correlation between the ER-IAT scores and primary psychopathy scores,  $r = -.02, p > .05$ . As expected, the relationship between the ER-IAT scores and both secondary psychopathy,  $r = .16, p > .05$ , and alexithymia,  $r = .02, p > .05$ , were non-significant (see Table 4 for the results).

## CHAPTER IV

### DISCUSSION

Using a sample of 104 undergraduates from a mid-sized university in the midwest, the current study sought to explore the association between psychopathy and alexithymia while addressing the limitations of previous research. Previous studies have examined the relationship between psychopathy and alexithymia (Haviland, Sonne, & Kowert, 2004; Kroner & Forth, 1995; Louth, Hare, & Linden, 1998), yet they have been limited to the use of self-report measures, and they did not differentiate primary versus secondary psychopathy. The current study found partial support for the hypotheses, in that the analyses yielded a significant relationship between secondary psychopathy and alexithymia. The results did not, however, reveal a significant positive correlation between primary psychopathy and a preference for implicit emotional control. The remainder of the discussion will review the implications of the current findings and the limitations, as well as suggestions for future research.

#### *Hypothesis 1: The Relationship between Secondary Psychopathy and*

#### *Alexithymia*

A central result that was obtained was the association between secondary psychopathy and alexithymia. Previous researchers have implicated such a

relationship, as they consistently have found a significant positive correlation between Factor 2 on a scale for psychopathy (PCL-R), which consists of traits that tend to characterize secondary psychopathy, and a subscale referring to the experience of emotions on the TAS (Kroner & Forth, 1995; Louth, Hare, & Linden, 1998). The methodology of previous studies, however, has failed to find a significant relationship between psychopathy and alexithymia, as they have not separated primary from secondary psychopathy (Kroner & Forth, 1995; Louth, Hare, & Linden, 1998). The current study emphasized the importance of this separation when evaluating the association between psychopathy and alexithymia, as there was a significant positive relationship between secondary psychopathy and alexithymia. This is notable because, unlike previous studies, the current study utilized two measures that differentiated primary from secondary psychopathy, which both generated the same results. Further, the association between primary psychopathy and alexithymia was non-significant.

The significant association between secondary psychopathy and alexithymia, coupled with the lack of a relationship between alexithymia and primary psychopathy, is a crucial finding as researchers continue to study and learn about psychopathy. Prior research has shown that both persons with psychopathy and alexithymia have emotional deficits and a lack of empathy. They have proposed that the inability to experience empathy precludes moral development in individuals with psychopathy, leading them to be violent and antisocial, while remaining remorseless (Blair, 2005; Hare, 1993; Lykken, 1995). Similarly, those with alexithymia lack the ability to read and understand the

emotions of others, which is the basis for empathy (Zackheim, 2007). Since researchers have been hoping that the deficits in alexithymia might shed light on the difficulty individuals with psychopathy have regarding the processing of emotions, it is important for them to take into consideration that alexithymia seems to only share a significant correlation to secondary psychopathy.

There is growing evidence suggesting that individuals with alexithymia and secondary psychopathy may process emotions differently from individuals with primary psychopathy. The critical question that still remains, however, is how secondary psychopathy and alexithymia are related in terms of emotional processing, and how they both differ from primary psychopathy. There are a number of theories to be considered. One finding from previous studies is that both individuals with secondary psychopathy and alexithymia show high levels of anxiety, while those with primary psychopathy do not (Haviland, Sonne, & Kowert, 2004; Skeem et al., 2007). Another possibility to consider is the similarities regarding cerebral abnormalities in each disorder. Both individuals with psychopathy and alexithymia show deficits in the transfer of information between hemispheres of the brain (Hiatt & Newman, 2007; Lopez, Kosson, Weissman, & Banich, 2007; Rogstad & Rogers, 2008). Though, there is a lack of research investigating the cerebral deficits between primary and secondary psychopathy separately. Thus, future research should focus on trying to locate the exact places that malfunction during emotional processing, to see if there is some similarity specific to secondary psychopathy and alexithymia.

Individuals with secondary psychopathy also show less capability for cognitive control in comparison to those with primary psychopathy and are thus more impulsive in their socially deviant acts and less likely to learn from their errors (Wilkowski & Robinson, 2008). Related, individuals with alexithymia experience impulsivity in excess, so that it appears to overcome their natural aversion to break social convention (Louth, Hare, & Linden, 1998). Thus, while persons with primary psychopathy, secondary psychopathy, and alexithymia all seem to have emotional processing deficits, persons with secondary psychopathy and alexithymia, in particular, appear to experience negative emotions but have difficulties controlling these emotions.

Finally, studies have found that, whereas individuals with primary psychopathy seem to suffer from a genetic deficiency in emotional processing, those with secondary psychopathy appear to have an environmentally developed affective disturbance (Poythress & Skeem, 2006; Skeem et al., 2007; Skeem et al., 2003), which may also be the case for alexithymia. Both secondary psychopathy (Christopher, Lutz-Zois, & Reinhardt, 2007) and alexithymia (Webb & McMurran, 2008) are correlated with Borderline Personality Disorder, which has repeatedly demonstrated a positive relationship with child abuse (Green & Kaplan, 1994; Travin, Cullen, & Protter, 1990). Interestingly, studies have shown that abused children, like individuals with secondary psychopathy and alexithymia, display severe impulsivity (Becker-Blease & Freyd, 2008; Fehon, Grilo, & Lipschitz, 2006) and poor emotional control (Shipman, Edwards, Broan, Swisher, & Jennings, 2005). Taken together, these findings suggest that the

emotional difficulties in alexithymia and secondary psychopathy may share a stronger link to early childhood trauma. Consequently, it is possible that primary psychopathy, secondary psychopathy, and alexithymia have etiological differences as well.

*Hypothesis 2: Primary Psychopathy and the Preference for Emotional Control*

An interesting lack of an effect in the current study was that individuals who scored higher in primary psychopathy did not demonstrate a preference for implicit emotional control as measured by the ER-IAT. The use of the ER-IAT was an important aspect of the current study as it was not face valid and was thus meant to bypass the deceptiveness that is often characteristic of individuals with psychopathy. The ER-IAT is a valuable resource as it was created to measure the unconscious ideas that individuals have about emotional control (Mauss et al., 2006). Although there is support that the ER-IAT does in fact show that a stronger association between emotion control and positive items implies implicit positive evaluation of emotional control (Mauss, Bunge, & Gross, 2007), there is no previous research examining the preference for emotional control in psychopathic individuals with the use this task. It is important to consider that the ER-IAT was not developed for a psychopathic sample. It may, then, be possible that the ER-IAT is not an appropriate measure to examine the emotional deficiency experienced by individuals with psychopathy.

The participants in the current study also may have fallen on the lower end of the spectrum of psychopathic tendencies than those in other populations, such as prisoners or psychiatric patients. A study by Coid and Yang (2008) examined

the dimensional construct of psychopathy in the general population. They found that the majority of the population (70.8%) demonstrated no psychopathic traits, while 25.6% fell in the intermediate category of 'possible psychopathy,' and 3.6% were termed the 'probable psychopathy' category (Coid & Yang, 2008). The participants in the current study had a mean of 29.52 (SD = 7.61) for primary psychopathy and 20.84 (SD = 4.35) for secondary psychopathy on the Levenson Self Report Psychopathy Scale, which do not differ significantly from the norm means for the scale, which were developed on a college student sample. Specifically, published means for the LSRP are 31.54 (SD = 7.31) for primary psychopathy and 21.16 (SD = 4.54) for secondary psychopathy (Falkenbach et al., 2007). Consequently, it is likely that the rates at which our sample possesses some psychopathic tendencies mirror the general, community population, which according to Coid and Yang's (2008) data is roughly 25 percent. While it is possible that only persons with more severe variants of primary psychopathy have an implicit preference for emotional control, it is difficult to a priori see why that would be that case. A final explanation for the failure in the current study to detect a significant association between psychopathy and the ER-IAT is that the ER-IAT is a new development from the IAT, and its ability to assess an individual's implicit positive evaluation of emotion regulation in a variety of contexts and populations continues to be investigated (Mauss et al., 2006). It is noteworthy to mention that the ER-IAT was not associated with any of the demographic, social desirability, or primary study variables in the current study,



thus speaking to the need for further research on the validity of the assessment tool.

### *Clinical Implications*

Research in psychopathy has raised awareness about how it is currently addressed in clinical practice. The term "psychopathy" was first used by Kraepelin in 1914, and was later popularized by Cleckley in his book, "The Mask of Sanity," published in 1941. Today, psychopathy is a widely used term; yet, according to the DSM-IV, psychopathy is still referred to as APD (Walsh & Wu, 2008). As it was discussed in the introduction, psychopathy is unique from APD, and it appears to be more severe and embodies not only behavioral symptoms, but affective and interpersonal ones as well (Hare, 1999; Skeem et al., 2003; Skeem et al., 2007). Therefore, the absence of psychopathy from the diagnostic category system is an issue that must be addressed. The current study further supports that the DSM should include the distinct subtypes of psychopathy: primary and secondary, as they present symptoms differently (Lykken, 1995; Newman et al., 2005; Patrick et al., 2005; Skeem et al., 2007).

Another implication from the current study is in regards to treatment for alexithymia. Earlier in the introduction, it was noted that individuals with secondary psychopathy are more responsive to traditional treatment than those with primary psychopathy (Skeem et al., 2007). As the results in this study indicate, alexithymia and secondary psychopathy appear to share some similarities, particularly in the process of emotions. Thus, psychotherapists may consider the traditional treatment for secondary psychopathy when approaching

clients with alexithymia. Still, more research on the topic of treatment for these disorders is required.

### *Limitations and Directions for Future Research*

The methods that were used in the current study pose some problems that could be addressed in future research. One such problem was using an undergraduate population at a medium sized private university. One is less likely to find individuals with the most pathological end of the psychopathy or alexithymia spectrum in this population. To control for this limitation, a possible suggestion is to test a clinical sample, including individuals in a psychiatric hospital or prison setting where one is more likely to find individuals with these disorders.

Another concern has to do with the extent to which the participants responded in a manner to enhance their impression of themselves. While the confidentiality and anonymity of the questionnaires was emphasized to all of the participants, some of the students still may not have answered honestly. It is possible that these participants were deceptive in their responses to protect their self-esteem and/or give a better impression of themselves to the researcher. In fact, the results showed that individuals who scored high in social desirability scored lower in secondary psychopathy and alexithymia, so that they may have tried to feign their ability to understand emotions when really, they did not. Concerns with social desirability are especially serious in studies such this one that asks participants to complete tasks that are potentially embarrassing (i.e., "I feel like a failure" and "A lot times, I repeat the same bad decisions"). In addition

to some of the items on the self-report measures, some participants may have been overly cautious in their answering of the ER-IAT task, as it is a potentially anxiety-inducing task. In other words, participants may have been wary of such a reaction time task because they were not sure what it measured.

In regards to assessing the difference in emotional processing between primary psychopathy and both secondary psychopathy and alexithymia, the ER-IAT may not have been the optimal assessment device. Specifically, in light of the fact that an earmark of primary psychopathy is a proclivity towards manipulation, a measure that assesses the value of controlling others' emotions (as opposed to one's own) might have yielded different results. Another area of future research is to further explore the possible differences in emotional dysregulation between primary psychopathy, secondary psychopathy, and alexithymia. Individuals with primary psychopathy likely utilize their affect to obtain control of the situation, without experiencing guilt or empathy, while those with alexithymia and secondary psychopathy appear to act impulsively without understanding or having the ability to control their emotions (Wilkowski & Robinson, 2008; Zackheim, 2007). So, alexithymia and secondary psychopathy might have more of an emotional dysregulation problem, while those with primary psychopathy have an anomaly in the processing of emotions.

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## APPENDIX A

### Demographic Sheet

Please take a few moments to complete the demographic information on this page and then proceed in completing the remainder of the assessment packet in the order in which the questionnaires are presented.

Age: \_\_\_\_\_

Gender:      Male    Female

Race: \_\_\_\_\_

Year in School:      Freshman    Sophomore    Junior      Senior

## APPENDIX B

### Levenson's Self-Report Psychopathy Scale (LSRP)

Please answer the following questions using the scale below:

- 1= Disagree strongly
- 2= Disagree somewhat
- 3= Agree somewhat
- 4= Agree strongly

#### Primary Psychopathy

- \_\_\_\_\_ 1. Success is based on survival of the fittest; I am not concerned about the losers.
- \_\_\_\_\_ 2. For me, what's right is whatever I can get away with.
- \_\_\_\_\_ 3. In today's world, I feel justified in doing anything I can get away with to succeed.
- \_\_\_\_\_ 4. My main purpose in life is getting as many goodies as I can.
- \_\_\_\_\_ 5. Making a lot of money is my most important goal.
- \_\_\_\_\_ 6. I let others worry about higher values; my main concern is with the bottom line.
- \_\_\_\_\_ 7. People who are stupid enough to get ripped off usually deserve it.
- \_\_\_\_\_ 8. Looking out for myself is my top priority.
- \_\_\_\_\_ 9. I tell other people what they want to hear so that they will do what I want them to do.
- \_\_\_\_\_ 10. I would be upset if my success came at someone else's expense. **RS**
- \_\_\_\_\_ 11. I often admire a really clever scam.
- \_\_\_\_\_ 12. I make a point of trying not to hurt others in pursuit of my goals. **RS**
- \_\_\_\_\_ 13. I enjoy manipulating other people's feelings.
- \_\_\_\_\_ 14. I feel bad if my words or actions cause someone to feel emotional pain. **RS**
- \_\_\_\_\_ 15. Even if I were trying very hard to sell something, I wouldn't lie about it. **RS**
- \_\_\_\_\_ 16. Cheating is not justified because it is unfair to others. **RS**



## Secondary Psychopathy

- \_\_\_\_\_ 1. I find myself in the same kinds of trouble, time after time.
- \_\_\_\_\_ 2. I am often bored.
- \_\_\_\_\_ 3. I find that I am able to pursue one goal for a long time. **RS**
- \_\_\_\_\_ 4. I don't plan anything very far in advance.
- \_\_\_\_\_ 5. I quickly lose interest in tasks I start.
- \_\_\_\_\_ 6. Most of my problems are due to the fact that other people just don't understand me.
- \_\_\_\_\_ 7. Before I do anything, I carefully consider the possible consequences.
- RS**
- \_\_\_\_\_ 8. I have been in a lot of shouting matches with other people.
- \_\_\_\_\_ 9. When I get frustrated, I often "let off steam" by blowing my top.
- \_\_\_\_\_ 10. Love is overrated.

**RS** denotes reverse score items

## APPENDIX C

### Psychopathic Personality Inventory- Revised (PPI-R)

This test measures different personality characteristics- that is, the ways in which people's personality styles make them different from each other. Using the PPI-R Item Booklet, read each statement carefully and decide **how false or true** it is as a description of you. Then, mark the best choice that corresponds to your answer on this form. Use the answer choices provided as follows: **F = False, MF = Mostly False, MT = Mostly True, T = True**. Even if you feel that a statement is neither false nor true about you, or if you are not sure which answer to choose, select the answer that is the **closest** to describing you. Try to be as honest as you can. Please be sure to give your **own** opinion about whether each statement is false or true about you.

#### Machiavellian Egocentricity (ME)

- |  |   |    |    |   |
|--|---|----|----|---|
| 1. If I really want to, I can persuade most people of almost anything. | F | MF | MT | T |
| 2. I get mad if I don't receive special favors I deserve.              | F | MF | MT | T |
| 3. To be honest, I believe that I am more important than most people.  | F | MF | MT | T |
| 4. I enjoy seeing someone I don't like get into trouble.               | F | MF | MT | T |
| 5. I tell a lot of "white lies."                                       | F | MF | MT | T |
| 6. I could be a good "con artist."                                     | F | MF | MT | T |
| 7. I'll break a promise if it's too hard to keep.                      | F | MF | MT | T |
| 8. I like to (or would like to) wear expensive and "showy" clothing.   | F | MF | MT | T |

9. It would bother me to cheat on a test even if no one was hurt by it.	F	MF	MT	T
10. If I want to, I can get people to do what I want without them ever knowing.	F	MF	MT	T
11. In school or at work, I try to "stretch" the rules just to see what I can get away with.	F	MF	MT	T
12. I don't take advantage of people even when it would be good for me.	F	MF	MT	T
13. I sometimes lie just to see if I can get someone to believe me.	F	MF	MT	T
14. I often lose patience with people when I have to keep explaining things.	F	MF	MT	T
15. I quickly get annoyed with people who do not give me what I want.	F	MF	MT	T
16. I have to admit that I'm a bit of a materialist.	F	MF	MT	T
17. How much I like someone really depends on how much that person does for me.	F	MF	MT	T
18. To be honest, I try not to help people unless there's something in it for me.	F	MF	MT	T
19. I tell people only the part of the truth they want to hear.	F	MF	MT	T
20. If I can't change the rules, I try to get others to bend them for me.	F	MF	MT	T

#### Rebellious Nonconformity (RN)

1. I have always seen myself as something of a rebel.	F	MF	MT	T
2. I pride myself on being offbeat and different from others.	F	MF	MT	T
3. I'd like to spend my life writing poetry in a commune.	F	MF	MT	T

4. I get restless when my life gets too predictable.	F	MF	MT	T
5. I've never cared about society's "values of right and wrong."	F	MF	MT	T
6. I might like to travel around the country with some motorcyclists and cause trouble.	F	MF	MT	T
7. I like to dress differently from other people.	F	MF	MT	T
8. I don't care about following the "rules"; I make my own rules as I go along.	F	MF	MT	T
9. I might like to hang out with people who "drift" from city to city with no permanent home.	F	MF	MT	T
10. If I had grown up during the 1960s, I would have been a "hippie."	F	MF	MT	T
11. Many people see my political beliefs as "radical."	F	MF	MT	T
12. I would like to have a "wild" hairstyle.	F	MF	MT	T
13. I like my life to be unpredictable and surprising.	F	MF	MT	T
14. I like to poke fun at established traditions.	F	MF	MT	T
15. Keeping the same job for most of my life would be dull.	F	MF	MT	T
16. I would like to hitchhike across the country with no plans.	F	MF	MT	T

#### Blame Externalization (BE)

1. If I'd had fewer bad breaks in life, I'd be more successful.	F	MF	MT	T
2. People usually give me the credit that I have coming to me.	F	MF	MT	T
3. People "rake me over the coals" for no good reason.	F	MF	MT	T

4. Few people in my life have taken advantage of me.	F	MF	MT	T
5. A lot of people have tried to "stab me in the back."	F	MF	MT	T
6. When I'm with people who do something wrong, I usually get the blame.	F	MF	MT	T
7. I've often been betrayed by people I trusted.	F	MF	MT	T
8. I've been the victim of a lot of bad luck.	F	MF	MT	T
9. People's reactions to the things I do often are not what I would expect.	F	MF	MT	T
10. Some people have gone out of their way to make my life difficult.	F	MF	MT	T
11. I'm sure some people would be pleased to see me fail in life.	F	MF	MT	T
12. I get blamed for many things that aren't my fault.	F	MF	MT	T
13. I feel that life has treated me fairly.	F	MF	MT	T
14. People I thought were my "friends" have gotten me into trouble.	F	MF	MT	T
15. Some people have made up stories about me to get me in trouble.	F	MF	MT	T

#### Carefree Nonplanfulness (CN)

1. I like to act first and think later.	F	MF	MT	T
2. A lot of times, I repeat the same bad decisions.	F	MF	MT	T
3. When people lend me something, I try to get it back to them quickly.	F	MF	MT	T
4. I like having my vacations planned out.	F	MF	MT	T
5. I try to be the best at everything I do.	F	MF	MT	T

6. When a task gets too hard, I'll drop it and move on to something else.	F	MF	MT	T
7. I am careful when I do work that involves detail.	F	MF	MT	T
8. I've thought a lot about my long-term career goals.	F	MF	MT	T
9. I haven't thought much about what I want to do with my life.	F	MF	MT	T
10. I've learned from my big mistakes in life.	F	MF	MT	T
11. People who know me well know they can depend on me.	F	MF	MT	T
12. When I am doing something important, like taking a test or doing my taxes, I check it over first.	F	MF	MT	T
13. I usually think about what I'm going to say before I say it.	F	MF	MT	T
14. If I do something that gets me in trouble, I don't do it again.	F	MF	MT	T
15. I often put off doing fun things so I can finish my work.	F	MF	MT	T
16. I watch my finances closely.	F	MF	MT	T
17. I push myself as hard as I can when I'm working.	F	MF	MT	T
18. I think long and hard before I make big decisions.	F	MF	MT	T
19. I try to use my best manners when I'm around other people.	F	MF	MT	T

#### Social Influence (SOI)

1. When I meet people, I can often make them interested in me with just one smile.	F	MF	MT	T
2. I am hardly ever the center of attention.	F	MF	MT	T
3. I feel sure of myself when I'm around other people.	F	MF	MT	T

4. I get embarrassed more easily than most people.	F	MF	MT	T
5. I have a talent for getting people to talk to me.	F	MF	MT	T
6. I like to stand out in a crowd.	F	MF	MT	T
7. It's easy for me to go up to a stranger and introduce myself.	F	MF	MT	T
8. People are impressed with me after they first meet me.	F	MF	MT	T
9. The opposite sex finds me sexy and appealing.	F	MF	MT	T
10. When people are mad at me, I usually win them over with my charm.	F	MF	MT	T
11. I find it hard to make small talk with people I don't know well.	F	MF	MT	T
12. In conversations, I'm the one who does most of the talking.	F	MF	MT	T
13. I have a hard time standing up for my rights.	F	MF	MT	T
14. I'm hardly ever the "life of the party."	F	MF	MT	T
15. I'm not good at getting people to do favors for me.	F	MF	MT	T
16. I would make a good actor.	F	MF	MT	T
17. I hardly ever end up being the leader of a group.	F	MF	MT	T
18. It bothers me to talk in front of a big group of strangers.	F	MF	MT	T

#### Fearlessness (F)

1. Dangerous activities like skydiving scare me more than they do most people.	F	MF	MT	T
2. It might be exciting to be on a plane that was about to crash but somehow landed safely.	F	MF	MT	T

3. Parachute jumping would really scare me.	F	MF	MT	T
4. High places make me nervous.	F	MF	MT	T
5. I would find the job of a movie stunt person exciting.	F	MF	MT	T
6. When my life gets boring, I like to take chances.	F	MF	MT	T
7. I like (or would like) to play sports with a lot of physical contact.	F	MF	MT	T
8. It would be fun to fly a small airplane by myself.	F	MF	MT	T
9. I would not like to be a race-car driver.	F	MF	MT	T
10. I agree with the motto, "If you are bored with life, risk it."	F	MF	MT	T
11. I might like flying across the ocean in a hot-air balloon.	F	MF	MT	T
12. If I were a firefighter, I would like the thrill of saving someone from the top of a burning building.	F	MF	MT	T
13. Sometimes I do dangerous things on a dare.	F	MF	MT	T
14. I am a daredevil.	F	MF	MT	T

#### Stress Immunity (STI)

1. Sometimes I wake up feeling nervous without knowing why.	F	MF	MT	T
2. I tend to get crabby and irritable when I have too many things to do.	F	MF	MT	T
3. I am high-strung.	F	MF	MT	T
4. Some people say that I am a "worry-wart."	F	MF	MT	T
5. I am easily flustered in pressured situations.	F	MF	MT	T



6. I don't let everyday hassles get on my nerves.	F	MF	MT	T
7. When I'm in a frightening situation, I can "turn off" my fear almost at will.	F	MF	MT	T
8. I get stressed out when I'm "juggling" too many tasks.	F	MF	MT	T
9. I function well under stress.	F	MF	MT	T
10. I don't get nervous under pressure.	F	MF	MT	T
11. I can remain calm in situations that would make many other people panic.	F	MF	MT	T
12. I worry about things even when there's no reason to.	F	MF	MT	T
13. I'm the kind of person who gets "stressed out" pretty easily.	F	MF	MT	T

#### Coldheartedness (C)

1. I hate having to tell people bad news.	F	MF	MT	T
2. A lot of times, I worry when a friend is having personal problems.	F	MF	MT	T
3. I look out for myself before I look out for anyone else.	F	MF	MT	T
4. It would break my heart to see a poor or homeless person walking the streets at night.	F	MF	MT	T
5. At times, I worry that I have hurt the feelings of others.	F	MF	MT	T
6. I get mad when I hear about the injustices in the world.	F	MF	MT	T
7. I often feel guilty about small things.	F	MF	MT	T
8. It bothers me a lot when I see someone crying.	F	MF	MT	T

9. I feel bad about myself after I tell a lie.	F	MF	MT	T
10. I get deeply attached to people I like.	F	MF	MT	T
11. I do favors for people even when I know I won't see them again.	F	MF	MT	T
12. I cringe when an athlete gets badly injured during a game on TV.	F	MF	MT	T
13. I get very upset when I see photographs of starving people.	F	MF	MT	T
14. When someone is hurt by something I say or do, that's their problem.	F	MF	MT	T
15. I often place my friends' needs above my own.	F	MF	MT	T
16. Ending a friendship is (or would be) very painful for me.	F	MF	MT	T

#### Virtuous Responding (VR)

1. I have never wished harm on someone else.	F	MF	MT	T
2. Every once in a while, I nod my head when people speak to me even though I'm not paying attention to them.	F	MF	MT	T
3. I never give an opinion unless I've thought it over carefully.	F	MF	MT	T
4. On big holidays, I never eat more than I should.	F	MF	MT	T
5. I have no bad habits.	F	MF	MT	T
6. I have never pretended to know something I didn't know.	F	MF	MT	T
7. I sometimes put off unpleasant tasks.	F	MF	MT	T
8. I can honestly say that I've never met anyone I disliked.	F	MF	MT	T

9. I occasionally feel annoyed at people.	F	MF	MT	T
10. Even when I'm busy, I never have second thoughts about helping people who ask for favors.	F	MF	MT	T
11. I occasionally feel like giving up on difficult tasks.	F	MF	MT	T
12. I occasionally have bad thoughts about people who hurt my feelings.	F	MF	MT	T
13. I have never exaggerated a story to make it sound more interesting.	F	MF	MT	T

#### Deviant Responding (DR)

1. I sometimes forget my name.	F	MF	MT	T
2. I think that it should be against the law to badly injure someone on purpose.	F	MF	MT	T
3. Whenever I hear an airplane flying above me, I look down at the ground.	F	MF	MT	T
4. I smile at a funny joke at least once in a while.	F	MF	MT	T
5. I frequently have disturbing thoughts that become so powerful that I think I can hear claps of thunder or crashes of cymbals inside my head.	F	MF	MT	T
6. When an important person is talking to me, I usually try to pay attention.	F	MF	MT	T
7. During the day, I see the world in color rather than in black-and-white.	F	MF	MT	T
8. When I'm stressed, I often see big, red, rectangular shapes moving in front of my eyes.	F	MF	MT	T
9. When a friend says hello to me, I generally either wave or say something back.	F	MF	MT	T

10. Sometimes I go for several days at a time not knowing if I'm awake or asleep. F MF MT T

## APPENDIX D

### The State-Trait Anxiety Inventory (STAI)

A number of statements which people have used to describe themselves are given below. Read each statement and then circle the appropriate value to the right of the statement to indicate how you **generally** feel. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe how you generally feel.

A-Trait Scale	Almost Never	Sometimes	Often	Almost Always
1. I feel pleasant	1	2	3	4
2. I feel nervous and restless	1	2	3	4
3. I feel satisfied with myself	1	2	3	4
4. I wish I could be as happy as others seem to be	1	2	3	4
5. I feel like a failure	1	2	3	4
6. I feel rested	1	2	3	4
7. I am "calm, cool, and collected"	1	2	3	4
8. I feel that difficulties are piling up so that I cannot overcome them	1	2	3	4

9. I worry too much over something that really doesn't matter	1	2	3	4
10. I am happy	1	2	3	4
11. I have disturbing thoughts	1	2	3	4
12. I lack self-confidence	1	2	3	4
13. I feel secure	1	2	3	4
14. I make decisions easily	1	2	3	4
15. I feel inadequate	1	2	3	4
16. I am content	1	2	3	4
17. Some unimportant thought runs through my mind and bothers me	1	2	3	4
18. I take disappointments so keenly that I can't put them out of my mind	1	2	3	4
19. I am a steady person	1	2	3	4
20. I get in a state of tension or turmoil as I think over my recent concerns and interests	1	2	3	4

## APPENDIX E

### Toronto Alexithymia Scale (TAS)

Directions: Please indicate how much you agree or disagree with each of the following statements by circling a number from 1 to 5 provided each statement.

1. I am often confused about what emotion I am feeling. F1

**Strongly disagree** 1      2      3      4      5      **Strongly agree**

2. It is difficult for me to find the right words for my feelings. F2

**Strongly disagree** 1      2      3      4      5      **Strongly agree**

3. I have physical sensations that even doctors don't understand. F1

**Strongly disagree** 1      2      3      4      5      **Strongly agree**

4. I am able to describe my feelings easily. RS F2

**Strongly disagree** 1      2      3      4      5      **Strongly agree**

5. I prefer to analyze problems rather than just describe them. RS F3

**Strongly disagree** 1      2      3      4      5      **Strongly agree**

6. When I am upset, I don't know if I am sad, frightened, or angry. F1

**Strongly disagree** 1      2      3      4      5      **Strongly agree**

7. I am often puzzled by sensations in my body. F1

**Strongly disagree** 1      2      3      4      5      **Strongly agree**

8. I prefer to just let things happen rather than to understand why they turned out that way. F3

- Strongly disagree** 1      2      3      4      5      **Strongly agree**
9. I have feelings that I can't quite identify. F1
- Strongly disagree** 1      2      3      4      5      **Strongly agree**
10. Being in touch with emotions is essential. RS F3
- Strongly disagree** 1      2      3      4      5      **Strongly agree**
11. I find it hard to describe how I feel about people. F2
- Strongly disagree** 1      2      3      4      5      **Strongly agree**
12. People tell me to describe my feelings more. F2
- Strongly disagree** 1      2      3      4      5      **Strongly agree**
13. I don't know what's going on inside me. F1
- Strongly disagree** 1      2      3      4      5      **Strongly agree**
14. I often don't know why I am angry. F1
- Strongly disagree** 1      2      3      4      5      **Strongly agree**
15. I prefer talking to people about their daily activities rather than their feelings. F3
- Strongly disagree** 1      2      3      4      5      **Strongly agree**
16. I prefer to watch "light" entertainment shows rather than psychological dramas. F3
- Strongly disagree** 1      2      3      4      5      **Strongly agree**
17. It is difficult for me to reveal my innermost feelings, even to close friends. F2
- Strongly disagree** 1      2      3      4      5      **Strongly agree**
18. I can feel close to someone, even in moments of silence. RS F3
- Strongly disagree** 1      2      3      4      5      **Strongly agree**



19. I find examination of my feelings useful in solving personal problems. **RS**

**F3**

**Strongly disagree** 1      2      3      4      5      **Strongly agree**

20. Looking for hidden meanings in movies or plays distracts from their enjoyment.

**F3**

**Strongly disagree** 1      2      3      4      5      **Strongly agree**

**RS** denotes reverse score items

**F1** denotes factor 1 items

**F2** denotes factor 2 items

**F3** denotes factor 3 items

## APPENDIX F

### Balanced Inventory of Desirable Responding (BIDR)

Using the scale of 1 to 7 below, write a number beside each statement to indicate how much you agree with it.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree
----------------------	---	---	---	---	---	---	---	-------------------

- \_\_\_\_\_ 1. My first impressions of people usually turn out to be right.
- \_\_\_\_\_ 2. It would be hard for me to break any of my bad habits. **RS**
- \_\_\_\_\_ 3. I don't care to know what people really think of me.
- \_\_\_\_\_ 4. I have not always been honest with myself. **RS**
- \_\_\_\_\_ 5. I always know why I like things.
- \_\_\_\_\_ 6. When my emotions are aroused, it biases my thinking. **RS**
- \_\_\_\_\_ 7. Once I've made up my mind, other people can seldom change my opinion.
- \_\_\_\_\_ 8. I am not a safe driver when I exceed the speed limit. **RS**
- \_\_\_\_\_ 9. I am fully in control of my own fate.
- \_\_\_\_\_ 10. It's hard for me to shut off a disturbing thought. **RS**
- \_\_\_\_\_ 11. I never regret my decisions.
- \_\_\_\_\_ 12. I sometimes lose out on things because I can't make up my mind soon enough. **RS**
- \_\_\_\_\_ 13. The reason I vote is because my vote can make a difference.
- \_\_\_\_\_ 14. My parents were not always fair when they punished me. **RS**
- \_\_\_\_\_ 15. I am a completely rational person.
- \_\_\_\_\_ 16. I rarely appreciate criticism. **RS**
- \_\_\_\_\_ 17. I am very confident of my judgments.
- \_\_\_\_\_ 18. I have sometimes doubted my ability as a lover. **RS**
- \_\_\_\_\_ 19. It's all right with me if some people happen to dislike me.
- \_\_\_\_\_ 20. I don't always know the reasons why I like to do things. **RS**
- \_\_\_\_\_ 21. I sometimes tell lies if I have to. **RS**
- \_\_\_\_\_ 22. I never cover up my mistakes.

- \_\_\_\_\_ 23. There have been occasions when I have taken advantage of someone. **RS**
- \_\_\_\_\_ 24. I never swear.
- \_\_\_\_\_ 25. I sometimes try to get even rather than forgive and forget. **RS**
- \_\_\_\_\_ 26. I always obey laws, even if I'm unlikely to get caught.
- \_\_\_\_\_ 27. I have said something bad about a friend behind his or her back. **RS**
- \_\_\_\_\_ 28. When I hear people talking privately, I avoid listening.
- \_\_\_\_\_ 29. I have received too much change from a salesperson without telling him or her. **RS**
- \_\_\_\_\_ 30. I always declare everything at customs.
- \_\_\_\_\_ 31. When I was young I sometimes stole things. **RS**
- \_\_\_\_\_ 32. I have never dropped litter on the street.
- \_\_\_\_\_ 33. I sometimes drive faster than the speed limit. **RS**
- \_\_\_\_\_ 34. I never read sexy books or magazines.
- \_\_\_\_\_ 35. I have done things that I don't tell other people about. **RS**
- \_\_\_\_\_ 36. I never take things that don't belong to me.
- \_\_\_\_\_ 37. I have taken sick-leave from work or school even though I wasn't really sick. **RS**
- \_\_\_\_\_ 38. I have never damaged a library book or stole merchandise without reporting it.
- \_\_\_\_\_ 39. I have some pretty awful habits. **RS**
- \_\_\_\_\_ 40. I don't gossip about other people's business.

**RS** denotes reverse score items (Award 1 point for each "6" or "7" responses and 0 points for any other response)

## APPENDIX G

Table G1

*Items used in the Emotion Regulation – Implicit Association Test (ER-IAT)*

Emotion	Emotion	Positive	Negative
Control	Expression		
Controlled	Expressive	Pleasant	Unpleasant
Calm	Emotional	Good	Bad
Inhibit	Reveal	Gold	Gloom
Contain	Disclose	Honor	Filth
Control	Express	Lucky	Rotten

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## APPENDIX H

### *Examples of Emotion Regulation - Implicit Association Test (ER-IAT) Screen*

EXPRESSION	CONTROL
<i>*or positive</i>	<i>*or negative</i>
REVEAL	

EXPRESSION	CONTROL
<i>*or positive</i>	<i>*or negative</i>
GLOOM	

\*denotes words that were included in the instructions but were not shown on the actual test screen

The participant is instructed to categorize the term in the center as accurately and quickly as possible to the corresponding category (e.g. either expression or positive word versus either control or negative word) using the keys 'p' and 'q'.