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The Differential Association Between Alexithymia and Primary Versus Secondary  
Psychopathy

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### Abstract

Using a sample of 104 college students, this study tested the hypothesis that alexithymia is positively related to secondary (also known as “neurotic psychopathy”), but not primary psychopathy (i.e., inability to form emotional bonds with others and a fear insensitivity). Participants completed the TAS-20 (alexithymia), the LSRP (primary and secondary psychopathy), the PPI-R (psychopathy), and the trait version of the STAI (trait anxiety). The interaction between the latter two measures was used as a second index of primary and secondary psychopathy. Support was found for the study hypothesis with both methods of assessing psychopathy (i.e., the LSRP subscales or the combination of the PPI-R and the STAI). These results further our understanding of both alexithymia and psychopathy.

### The Differential Association Between Alexithymia and Primary Versus Secondary Psychopathy

Definitions of alexithymia and psychopathy both emphasize emotional processing deficits (Kroner & Forth, 1995). Alexithymia is defined as difficulty identifying and distinguishing between feelings and bodily sensations of emotional arousal, and difficulty describing feelings to others (Taylor, Bagby, & Parker, 1992). Individuals with alexithymia also have difficulties empathizing with the others' feelings (Guttman & Laporte, 2002). Such deficits closely correspond to deficits seen in persons high in psychopathy. Psychopathy is characterized by interpersonal and affective deficits such as manipulative behavior, callousness, and difficulties empathizing with others as well as a socially deviant or antisocial lifestyle (Hare, 2003). Studies have documented the specific emotion processing deficits of both alexithymia and psychopathy such as difficulties in interpreting facial expressions (Dolan & Fullam, 2006), understanding emotional tone in language (Herve, Hayes, & Hare, 2003), and describing one's own feelings (Luminet, Rime, Bagby, & Taylor, 2004).

Because of the conceptual overlap between the two disorders, studies have begun to explore the association between alexithymia and psychopathy. Using the Toronto Alexithymia Scale (TAS) and the Psychopathy Checklist-Revised (PCL-R), two studies have examined the association between alexithymia and psychopathy in clinical or criminal samples (Kroner & Forth, 1995; Louth, Hare, & Linden, 1998). While both studies found positive correlations between the PCL-R factor 2 (social deviance) and TAS, interestingly, they found negative correlations (Kroner & Forth, 1995) or no relationship with the PCL-R factor 1 (interpersonal and affective impoverishment) (Louth, et al., 1998). This pattern of relationships is somewhat surprising in that one might initially presume that the deficits in empathy that are characteristic of the PCL-R factor 1 would be the same traits that are common to alexithymia.

These findings raise the intriguing question of whether alexithymia is more closely associated with secondary psychopathy than primary psychopathy. The distinction between primary and secondary psychopathy was first made by Karpman (1941), in which he asserted that primary psychopathy might be a heritable deficit characterized by callousness, lack of empathy, and fear insensitivity. In contrast, he described secondary psychopathy as being shaped by a combination of heritable and environmental causes (e.g., childhood abuse). Unlike those high in primary psychopathy, those with secondary psychopathic characteristics possess the capacity to form emotional bonds with others and experience feelings of anxiety and guilt. Both those with primary and secondary psychopathy are prone to aggression and criminal activities. However, for those with secondary psychopathy these behaviors are less planful and more impulsive, while for those primary psychopathy these behaviors appear to be more driven by sensation seeking tendencies (Skeem, Johansson, Andershed, Kerr, & Loudon, 2007). This is consistent with research (e.g., Fowles & Dindo, 2006) linking primary psychopathy to subcortical deficits (brain regions tied to fear sensitivity) and secondary psychopathy to prefrontal cortex deficits (brain regions tied to executive functions including attention and planning). Such theorizing is in line with a number of studies suggesting that primary psychopathy is negatively correlated with behavioral inhibition, whereas secondary psychopathy is positively correlated with behavioral activation (see Wallace, Malterer, & Newman, 2009 for a more complete review).

The PCL-R was not developed to specifically measure primary and secondary psychopathy (Brinkley, Diamond, Magaletta, & Heigel, 2008; Skeem et al., 2007). However, some theorists have asserted that persons with primary psychopathy may possess characteristics of Factor 1, and persons with secondary psychopathy may possess characteristics of Factor 2

(Levenson, Kiehl, & Fitzpatrick, 1995; Mealey, 1995). Thus, the finding from the studies by Kroner and Forth (1995) and Louth, et al. (1998) that the TAS is strongly correlated with Factor 2 of the PCL suggests a possible link between alexithymia and secondary psychopathy.

Research is needed that directly tests this hypothesis using measures specifically designed to assess primary and secondary psychopathy. Only one study to our knowledge has presented data suggesting differential associations of alexithymia with secondary versus primary psychopathy (Grieve & Mahar, 2010). Grieve and Mahar (2010) presented a correlation matrix in which the association between TAS and primary psychopathy was smaller than the association between TAS and secondary psychopathy. However, the study did not hypothesize or provide a direct test of whether primary and secondary psychopathy were differentially associated with alexithymia, nor were their data conclusive in that regard, as correlations were significant for both primary and secondary psychopathy.

The current study differs from Grieve and Mahar (2010) by directly testing the hypothesis that alexithymia is associated with secondary, but not primary psychopathy, while ruling out potentially confounding effects. In addition, the current study differs from Kroner and Forth (1995) and Louth et al. (1998) by examining the association between psychopathy and alexithymia within a non-clinical, non criminal sample. Different processes may operate for persons with psychopathy within community samples versus criminal samples (Brinkley et al., 2008; Mahmut, Homewood, & Stevenson, 2008), presumably because those within community samples are likely to display higher levels of adjustment and would be considered “subclinical” with respect to psychopathic attributes. Consequently, it is important to replicate findings on psychopathy using both criminal and community samples. Using two different methods of

assessing primary versus secondary psychopathy, the current study tested the hypothesis that alexithymia is positively related to secondary but not primary psychopathy.

## **Method**

### **Participants**

One hundred and four undergraduate students, 45 men and 59 women, from a medium-sized private university in the Midwest completed study measures in exchange for credit in their introductory psychology course. The average age of participants was 20-years-old ( $SD = 1.51$ ), and the composition of racial backgrounds was as follows: 92% Caucasian, 4% African American, and 4% from other racial backgrounds.

### **Measures**

**Primary and secondary psychopathy.** The distinction between primary and secondary psychopathy was assessed in two ways. First, the Levenson Self-Report Psychopathy Scale, which contains primary and secondary psychopathy subscales, was used (LSRP; Levenson et al., 1995). We also used the interaction between combination of scores on both the Psychopathic Personality Inventory-Revised (PPI-R; Lilienfeld, 2005) and State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983) to operationalize primary versus secondary psychopathy. Specifically, the interaction between these variables was used in the primary analyses to predict alexithymia. Because individuals with primary psychopathy are thought to experience low anxiety, whereas those with secondary psychopathy are thought to experience high anxiety, this approach to assessing primary and secondary psychopathy has been advocated and used in previous research (Vassileva, Kosson, Abramowitz, & Conrad, 2005).

To provide further evidence for the validity of this second method, we calculated two hierarchical multiple regression equations. In the first analysis, the secondary psychopathy

subscale of the LSRP served as the criterion variable, while STAI, PPI-R, and their product term served as predictors. Social desirability, age, and gender were included as covariates. As predicted, anxiety was found to significantly moderate the association between PPI-R and secondary psychopathy ( $\beta=.22, p<.05$ ). Simple slopes analysis indicated that that PPI-R scores were significantly positively associated with secondary psychopathy scores for individuals at 1 standard deviation above the mean in anxiety ( $\beta=.28, p<.05$ ), but not for individuals at the mean of anxiety ( $\beta=.05, p=.16$ ) or 1 standard deviation below the mean in anxiety ( $\beta=.02, p=.89$ ). In contrast, in a second analysis using primary psychopathy as the criterion variable, anxiety was not found to be a significant moderator ( $\beta=.13, p=.18$ ). These findings support the approach to assessing secondary psychopathy using a combination of high anxiety and high scores on the PPI-R advocated by Vassileva et al. (2005).

***Levenson Self-Report Psychopathy Scale (LSRP)***. The LSRP (Levenson, Kiehl, & Fitzpatrick, 1995) is a 26-item, self-report measure that assesses primary and secondary psychopathy. The items are endorsed on a 4-point scale ranging from “disagree strongly” to “agree strongly.” The primary scale has 16 items that assess interpersonal and affective features of psychopathy (i.e., selfish, uncaring, and manipulative; e.g., “Looking after myself is my top priority”). The 10-item secondary scale assesses impulsivity and a self-defeating lifestyle (e.g., “I find myself in the same kinds of trouble time after time.”). The LSRP demonstrates good test-retest reliability and convergent validity with other self-report measures of psychopathy (Lynam, Whiteside, & Jones, 1999).

***Psychopathic Personality Inventory-Revised (PPI-R)***. The PPI-R (Lilienfeld, 2005) is a self-report measure of the core personality traits of psychopathy. It includes 154 items (e.g., “I sometimes lie to see if I can get someone to believe me”) presented on a 4-point Likert scale,



ranging from “false” to “true” (the two middle options are “mostly false” and “mostly true”) with eight subscales. In this study, the total score was used to measure psychopathy, but the Fearlessness scale was excluded in order to avoid content overlap with the STAI. The PPI-R demonstrates good test-retest reliability (Lilienfeld, 2005), as well as good discriminant, convergent, and external validity in community samples (e.g., Uzieblo, Verschuere, Van den Bussche, & Crombez, 2010).

***State-Trait Anxiety Inventory (STAI).*** The STAI (Spielberger et al., 1983) is a 40-item scale that measures state and trait anxiety (20 items each) and has good reliability and validity (Spielberger, 1989). The current study used the Anxiety Trait (e.g., “I feel nervous and restless”) 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” with a possible range of values from 20 to 80.

**Alexithymia.** The Toronto Alexithymia Scale-20 (TAS-20; Taylor et al., 1992) is a 20-item self-report measure with well-demonstrated reliability and validity (Parker, Bagby, Taylor, Endler, & Schmitz, 1993; Richards, Fortune, Griffiths, & Main, 2003). Responses are made on a 5-point Likert scale, ranging from “strongly agree” to “strongly disagree.” This test has a 3-factor structure which includes: (1) difficulty identifying feelings and distinguishing them from bodily sensations of emotion (e.g., “I am often confused about what emotion I am feeling”), (2) difficulty describing feelings to others (e.g., “It is difficult for me to find the right words to describe my feelings”), and (3) an externally oriented style of thinking (i.e., a tendency to focus on stimuli outside of oneself; e.g., “Looking for hidden meanings in movies or plays distracts from their enjoyment” ) (Parker et al., 1993).

**Social Desirability.** The Balanced Inventory of Desirable Responding (BIDR; Paulhus, 1984) is a 40-item measure with good psychometric properties (Paulhus, 1991; Peebles & Moore, 1998). The items are rated on a 7-point Likert scale ranging from “not true” to “very true.” The BIDR assesses two components of social desirability: self-deceptive enhancement (e.g., “I never regret my decisions”), which is defined as unconscious positive biases designed to protect one’s self-esteem, and impression management (e.g., “I never cover up my mistakes”), which refers to conscious attempts to respond in ways to make a favorable impression on others.

### **Procedure**

Participants completed questionnaire packets in small groups ranging from 15 to 25. The packet included a demographic data sheet and all of the measures described above. The measures were counterbalanced using a random starting order with rotation. Finally, the participants were thanked and debriefed.

## **Results**

### **Preliminary Analyses**

Means, standard deviations, and ranges of the continuous variables are presented in Table 1, and zero-order correlations between scores on the TAS-20 and scores on the psychopathy and anxiety measures are presented in Table 2. Preliminary analyses also revealed negative correlations between the socially deceptive enhancement subscale of the BIDR and alexithymia ( $r = -.24, p < .01$ ) as well as primary psychopathy ( $r = -.23, p < .05$ ), but not secondary psychopathy ( $r = -.04, p > .05$ ). The impression management subscale of the BIDR was not correlated with alexithymia ( $r = -.09, p > .05$ ), but was negatively correlated with both primary ( $r = -.25, p < .01$ ) and secondary psychopathy ( $r = -.35, p < .01$ ). The results also indicated a negative correlation between age and secondary psychopathy ( $r = -.21, p < .05$ ). Thus, participants’ ages and both types

of social desirability were statistically controlled in the primary analyses to eliminate their potentially confounding effects.

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Insert Tables 1 and 2 about here  
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Gender differences were tested using independent sample t-tests, and race differences were tested using ANOVAs. Significant gender differences were found between primary,  $t(102)=3.21, p<.05$ , and secondary psychopathy,  $t(102)=2.45, p<.05$ , with males scoring higher on both. Thus, gender was statistically controlled in all further analyses. No significant group differences in race were found.

### **Primary Analyses**

Because we assessed psychopathy with two different methods, our study hypothesis was tested in two ways. First, a hierarchical multiple regression was run using alexithymia as the criterion variable. Age, gender, and social desirability were controlled in the first step, PPI-R and STAI were mean-centered and entered in the second step, and their product term was entered in the third step. In support of Hypothesis 1, anxiety was a significant moderator of PPI-R ( $\beta=.28, p<.05$ ). Coefficients from the model are presented in Table 3. The interaction effect was decomposed using the procedure described by Preacher, Curran, and Bauer (2006). Simple slopes analysis indicated that the effect of PPI-R on alexithymia was nonsignificant when STAI was one standard deviation below ( $\beta=-.24, p=.14$ ) and one standard deviation above ( $\beta=.11, p=.85$ ) the mean (see Figure 1). However, calculation of the region of significance for the moderator indicated that PPI-R and alexithymia were significantly positively associated for individuals scoring at least 1.93 standard deviations above the mean on the STAI, and were

significantly negatively associated for individuals scoring at least 2.10 standard deviations below the mean on the STAI.

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Insert Table 3 about here  
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Insert Figure 1 about here  
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In the second test of our hypothesis, a hierarchical multiple regression was run using alexithymia as the criterion variable and both primary and secondary psychopathy subscales of the LSRP as predictor variables entered on the second step. Age, gender, and social desirability were controlled in the first step. As shown in Table 4, secondary psychopathy was a significant predictor of alexithymia ( $\beta=.56, p<.05$ ), but primary psychopathy was not ( $\beta=.02, p=.82$ ).

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Insert Table 4 about here  
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### **Discussion**

This study found a significant association between secondary psychopathy and alexithymia, but not between primary psychopathy and alexithymia, using two different methods to assess primary and secondary psychopathy. Although previous studies have suggested such a pattern of relationships, they did not employ measures that explicitly assess primary and secondary psychopathy (Grieve & Mahar, 2010; Kroner & Forth, 1995; Louth et al., 1998), did not examine associations in non-criminal populations (Kroner & Forth, 1995; Louth et al., ,

1998), or did not provide a direct test of the hypothesis (Grieve & Mahar).

More research is needed to better understand what accounts for the overlap between secondary psychopathy and alexithymia. One possibility is that emotional dysregulation links psychopathy and alexithymia. This stands to reason given that impulse control problems and anxiety are associated with alexithymia (Haviland, Sonne, & Kowert, 2004; Karukivi et al., 2010; Louth et al., 1998), and are hallmarks of secondary, but not primary psychopathy (Fowles & Dindo, 2006; Skeem et al., 2007). Also supporting this link, both secondary psychopathy (Blackburn, 1996; Christopher, Lutz-Zois, & Reinhardt, 2007; Ross et al., 2008) and alexithymia (Modestin et al., 2004; Webb & McMurrin, 2008) are associated with Borderline Personality Disorder, which is characterized by intense problems with affect regulation (Linehan, 1993; Trull, Widiger, Lynam, & Costa, 2003). Future studies could test the hypothesis that emotional dysregulation deficits and/or Borderline Personality Disorder account for the association between secondary psychopathy and alexithymia.

Examination of correlations between subscales of the LSRP and TAS-20 (Table 2) revealed an interesting pattern of relations, with primary psychopathy demonstrating a significant relationship with “externally oriented thinking,” but not with “difficulty identifying feelings” or “difficulty describing feelings.” While this pattern was not predicted *a priori*, it is generally consistent with theoretical specifications of the disorder and research on primary psychopathy and emotional processing. Persons with attributes of primary psychopathy often use emotions to manipulate others, suggesting some ability to identify and describe feelings. In fact, Austin, Farrelly, Black, and Moore (2007) have suggested that manipulation might best be thought of as the ‘dark side of emotional intelligence.’ Related, Del Gaizo and Falkenbach (2008) found that persons high in primary psychopathy recognized fearful faces more accurately than those low in

primary psychopathy. Thus, it is not surprising that primary psychopathy was not significantly positively related to difficulties on the identifying and describing feelings subscales of the TAS-20. In contrast, primary psychopathy was positively associated with the externally oriented subscale of the TAS-20. This subscale simply refers to a preference to attend to one's external rather than internal world. However, this tendency could be used in a malevolent way by those high in primary psychopathy in that such persons are generally thought to blame others for failures and to be especially attentive to aspects of their external environment that might impede their goals. Such speculation is consistent with the significant, positive correlations observed between the externally oriented subscale and the coldhearted and externalization of blame subscales of the PPI-R. Although these are intriguing findings, they were not predicted a priori, and thus replication in future studies is needed before drawing firm conclusions.

The results of the current study have implications both with respect to classification and to treatment of both psychopathy and alexithymia. With respect to the former, the results of the current study adds to a growing body of literature on the validity of the conceptual distinction between primary and secondary psychopathy (Lykken, 1995; Newman, MacCoon, Vaughn, & Sadeh, 2005; Patrick, Hicks, Krueger, & Lang, 2005; Skeem et al., 2007), a distinction which may be beneficial to acknowledge in future diagnostic systems. In addition, our finding that the PPI-R was positively associated with secondary psychopathy only at high levels of anxiety provides empirical support for Vassileva et al.'s (2005) method of operationalizing secondary psychopathy. The current study also has implications for treatment of psychopathy and alexithymia in that the results of the current study imply that treatment approaches for both alexithymia and secondary psychopathy may be mutually informed by each other. Some researchers have speculated that persons with secondary psychopathy, because of their capacity

to experience anxiety and guilt, may be more responsive to traditional treatment than those with primary psychopathy (e.g., Skeem et al., 2007). Unfortunately, there is a relative dearth of empirical demonstrations of this assertion. Likewise, little has been written on effective treatments for secondary psychopathy. Clearly, more research on both the treatment of secondary psychopathy in general, as well as the responsiveness of those with this syndrome to treatment approaches traditionally used on those with symptoms of alexithymia.

Finally, the current study possesses limitations that could be addressed in future studies. As stated previously, one of the aims of this study was to explore associations between psychopathy and alexithymia in a non-criminal sample. Nonetheless, it could be argued that an undergraduate population at a private university may exhibit lower levels of psychopathy and alexithymia than the general population. Further, such a sample is also not likely to be representative of the general population in other respects such as race, religion, and socio-economic status. Another concern is the degree to which participants high in psychopathy provided honest responses. However, primary psychopathy and social desirability were not found to be associated in the current study. Nonetheless, it is possible that participants high in primary psychopathy are more skilled at deceptive responding than those high in secondary psychopathy. Future studies could benefit from having someone who knows the participant also rate the person on the measure of interest (Cale & Lilienfeld, 2002).

The current study provides evidence for a conceptual distinction between primary and secondary psychopathy. Specifically, differential associations of primary and secondary psychopathy with alexithymia provide insight into core emotional deficits that appear to be unique to secondary psychopathy. These results, if replicated, suggest the possibility that primary and secondary psychopathy have partially distinct etiologies and may be linked with variable treatment

responses. Further research is needed to evaluate these intriguing possibilities.



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Table 1

*Descriptive Statistics for Alexithymia, Anxiety, Psychopathy, and Social Desirability*

Variables	Mean	SD	Min to Max	Cronbach's Alpha
Alexithymia (TAS)	48.03	11.60	27-86	.85
Anxiety (STAI)	40.08	8.66	23-70	.89
Psychopathy (PPI-R)	294.38	32.31	193-410	.92
Primary Psychopathy (LSRP)	29.52	7.61	16-51	.85
Secondary Psychopathy (LSRP)	20.84	4.35	12-33	.65
Self Deceptive Enhancement (BIDR)	4.79	2.52	0-12	.49
Impression Management (BIDR)	4.76	2.93	0-13	.59

Table 2

*Correlations between the Toronto Alexithymia Scale-20 (TAS-20) and measures of psychopathy and trait anxiety*

Variable	TAS-20 Total	Difficulty Identifying Feelings	Difficulty Describing Feelings	Externally Oriented Thinking
LSRP	.36**	.30**	.20*	.36**
Primary	.18	.11	.07	.26**
Secondary	.52**	.50**	.34**	.40**
PPI-R	.08	.09	.02	.08
Blame Externalization	.34**	.30**	.30**	.24*
Carefree Non-planfulness	.25**	.34**	.14	.11
Coldheartedness	.10	-.10	.03	.32**
Impulsive Non-conformity	.01	.08	-.01	-.06
Machiavellian Egocentricity	.16	.13	.13	.13
Social Potency	-.18	-.07	-.20*	-.17
Stress Immunity	-.25*	-.27**	-.16	-.17
STAI	.35**	.39**	.34**	.10

*Note.* LSRP=Levenson Self-Report Psychopathy Scale; PPI-R=Psychopathic Personality Inventory-Revised; STAI=State-Trait Anxiety Inventory.

\* $p < .05$ . \*\* $p < .01$ .



Table 3

*Hierarchical Multiple Regression Analyses Predicting Alexithymia from PCI-R, STAI Anxiety, and their Interaction, Controlling For Age, Gender, and Social Desirability*

Variable	Beta	T	p	R <sup>2</sup> Δ	P	f <sup>2</sup> (for step)
Step 1						
Age	-.09	-.861	.39	.12	.01	.14
Gender	-.25	-2.42	.02			
Self Deceptive Enhancement (BIDR)	-.31	-3.15	.00			
Impression Management (BIDR)	-.06	-.65	.52			
Step 2						
Anxiety (STAI)	.34	3.72	.00	.11	.00	.24
Psychopathy (PPI-R)	-.07	-.62	.54			
Step 3						
Psychopathy x Anxiety	.28	2.81	.01	.06	.01	.08

Table 4

*Hierarchical Multiple Regression Analyses Predicting Alexithymia from Primary Psychopathy and Secondary Psychopathy (LSRP), Controlling for Age, Gender, and Social Desirability*

Variable	Beta	T	p	R <sup>2</sup> Δ	P	f <sup>2</sup> (for step)
Step 1						
Age	-.09	-.86	.39	.12	.01	.14
Gender	-.25	-2.42	.02			
Self Deceptive Enhancement (BIDR)		-3.15	.00			
Impression Management (BIDR)		-.65	.52			
Step 2						
Primary Psychopathy	.02	.22	.82	.24	.00	.38
Secondary Psychopathy	.56	5.68	.00			

Figure 1

*Relation between Psychopathy (PPI-R) and Alexithymia at Low, Mean, and High Levels of Anxiety*

