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Heterogeneity of Interpersonal Problems Among Depressed Young Adults: Associations With Substance Abuse and Pathological Personality Traits

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This study extended previous theory and research on interpersonal heterogeneity in depression by identifying groups of depressed young adults who differ in their type and degree of interpersonal problems, and by examining patterns of pathological personality traits and alcohol abuse among these groups. We examined the interpersonal problems, personality traits, and alcohol-related problems of 172 college students with at least moderate levels of self-reported depression on the Patient Health Questionnaire (Spitzer, Kroenke, & Williams, 1999). Scores from the Inventory of Interpersonal Problems—Short Circumplex (Soldz, Budman, Demby, & Merry, 1995) were subjected to latent profile analysis, which classified individuals into 5 distinct groups defined by the types of interpersonal problems they experience (dominant, warm, submissive, cold, and undifferentiated). As hypothesized, groups did not differ in depression severity, but did show predicted patterns of differences on normative and maladaptive personality traits, as well as alcohol-related problems. The presence of clinically meaningful interpersonal heterogeneity in depression could have important implications for designing more individualized treatments and prevention efforts for depression that target diverse associated interpersonal problems.

Major depression is one of the most common, distressing, and costly illnesses worldwide (World Health Organization, 2002). Risk for depression is increased during young adulthood (Furr, Westefeld, McConnell, & Jenkins, 2001) due to both the normative course of temperamental risk factors (Hopwood et al., 2011) and environmental stressors associated with young adulthood (Westefeld & Furr, 1987). According to the 2008 National College Health Assessment survey, one in three undergraduates reported “feeling so depressed it was difficult to function” at least once in the past 12 months (American College Health Association, 2008). Depression among young adults impairs relationship functioning, work functioning, quality of life, and mortality (Beck & Alford, 2009; Friis, Wittchen, Pfister, & Lieb, 2002; Furr et al., 2001; Kendler, Karkowski, & Prescott, 1999; Pearl & Johnson, 1977; Westefeld & Furr, 1987). Subclinical depression—a condition in which a person has symptoms of depression but fails to meet diagnostic threshold for a depressive disorder—has similar negative consequences for a young adult’s quality of life (Gollust, Eisenberg, & Golberstein, 2008; Hill & Kemp-Wheeler, 1986; Kisch, Leino, & Silverman, 2005; Mackenzie et al., 2011).

Depressed individuals tend to differ in the kinds of interpersonal problems they experience (e.g., Cain et al., 2012). Better understanding the heterogeneity in interpersonal problems among depressed individuals would allow for the identification of risk for other problematic outcomes, such as alcohol abuse and pathological personality features. For example, young adults with problems related to dominance have been found to have a higher rate of antisocial personality disorder and alcohol problems, whereas those with problems related to submissiveness tend to have higher rates of dependent personality disorder (Matano & Locke, 1995; Pincus & Wiggins, 1990). Thus, understanding heterogeneity in interpersonal problems among depressed individuals might be clinically useful in indicating other kinds of problems.

**INDIVIDUAL DIFFERENCES IN THE EXPRESSION OF DEPRESSION**

The differential expression of depressive symptoms can impede the identification of the disorder and frustrate efforts to prevent or treat it (L. A. Clark, Watson, & Reynolds, 1995). As one-size-fits-all treatments might fail to address the significant heterogeneity among depressed individuals, several theorists have advocated tailoring treatments of depression to individuals who express it differently. For example, Beck (1983) proposed distinguishing between autonomous and sociotropic depressed individuals. Autonomous individuals are oriented by need for achievement, independence, and mobility, and are presumed to become prone to depression when they believe they have failed in these areas. Conversely, sociotropic individuals have a strong need for close relationships, sharing, and affiliation, and are sensitive to interpersonal deprivation or exclusion. Essentially, Beck proposed that individuals who are either autonomous or sociotropic are likely to present differently when depressed, and these differences might have important implications for the course, correlates, and effective treatment of depression.

Blatt’s (1974, 1991) psychoanalytic theory of depression is similar to Beck’s (1983) in articulating two dimensions that depict the variability in depressed patients. He labeled these dimensions introjective (or self-critical, like Beck’s autonomy) and anaclitic (or dependent, like Beck’s sociotropy). Self-critical individuals are characterized by concerns of self-worth and self-definition, and are disposed to feel guilty when they fail...
to meet their unrealistically high personal expectations. Dependent individuals are characterized by interpersonal concerns related to approval and care, and are inclined to feel helpless and to fear rejection in social relationships. Significantly, both Beck’s cognitive and Blatt’s psychoanalytic models are organized by depressed person’s interpersonal motives, behaviors, and attributions rather than the severity or type of depression symptoms the individual exhibits (Blatt & Zuroff, 1992).

AN INTERPERSONAL MODEL OF HETEROGENEITY AMONG DEPRESSED INDIVIDUALS

It would seem worthwhile to take advantage of the apparent similarity of these models toward the development of an integrative framework for individual differences in interpersonal manifestations of depression (Pincus, 2005; Wiggins, 2003). Interestingly, the dimensions in Beck’s (1983) and Blatt’s (Guisinger & Blatt, 1994) models bear a strong resemblance to two dimensions—agency and communion—that are considered by interpersonal theorists to be fundamental for describing social behavior in general (Wiggins, 1991). The dimension of agency (dominance to submission) refers to individual differences in individuality, separation, dominance, and self-determining achievement, whereas the dimension of communion (warmth to coldness) articulates variability in affiliation and the sense of closeness and belonging to others.

The interpersonal circumplex (IPC; Leary, 1957) defines the interpersonal behavior, strengths, weaknesses, and attributions of an individual or group based on the combination of warmth and dominance it reflects (see Figure 1). Previous research suggests that one’s placement in the IPC has implications for the expression of other personality features (Kiesler, 1996; Slaney, Pincus, Uliaszek, & Wang, 2006; Wright, Pincus, Conroy, & Elliot, 2009), treatment response (Salzer et al., 2010), and the course of depression (Cain et al., 2012). Moreover, groups categorized using the IPC also suggests that heterogeneity in interpersonal dysfunction within most forms of psychopathology among depressed individuals might allow for more nuanced clinical predictions. For instance, some disorders, particularly the personality disorders, are associated with particular interpersonal behaviors and problems (Pincus & Wiggins, 1990). Thus, the assessment of interpersonal behavior allows clinicians to make inferences about underlying personality features and risks for personality disorders among depressed individuals. Alcohol abuse might also be associated with particular interpersonal styles, such as dominance (e.g., Markey, Markey, & Tinsley, 2005). Given the importance of personality pathology (Trull, Useda, Conforti, & Doan, 1997) and alcohol abuse (Knight et al., 2002) for college student functioning, this pattern of findings implies that some young adults with depression are more at risk for dysfunction than others, despite similar levels of depression.

That individuals with a wide range of pathology can be categorized using the IPC also suggests that heterogeneity in interpersonal functioning (i.e., symptom expression and maintenance) among depressed individuals might generalize to other diagnoses. Thus, the IPC can be understood to provide a transdiagnostic model for understanding individual differences in interpersonal dysfunction within most forms of psychopathology. Such an understanding could augment clinical practice. For instance, some evidence suggests that interpersonal style is related to treatment response (Constantino et al., 2012; Salzer et al., 2010). This indicates that there might be clinical potential in matching treatment approaches to patient’s transdiagnostic interpersonal style in addition to matching treatment to their psychiatric diagnosis. Indeed, evidence-based models of effective psychotherapy process based on the interpersonal patterns that occur between clinician and client appear to apply regardless of diagnosis or therapeutic orientation (Tracey, 1993; Tracey, Sherry, & Albright, 1999).

Cain et al. (2012) identified six groups of depressed individuals who did not vary in depression severity or age of onset but did differ in interpersonal style. Relative to other groups, individuals with a submissive interpersonal style had more chronic depression and poorer functioning over a 10-year follow-up. These findings suggest that specific interpersonal styles such as submissiveness might represent important risk factors for predicting the course of Major Depressive Disorder (MDD) symptoms and dysfunction above and beyond MDD symptom severity (Cain et al., 2012). Overall, the IPC has the potential to offer valuable information that would supplement the diagnosis of depression for predicting clinical functioning.
Unlike most previous research on interpersonal heterogeneity among individuals with clinical disorders, the study by Cain et al. (2012) focused on interpersonal traits as opposed to interpersonal problems. Someone with a particular interpersonal style might not necessarily manifest interpersonal problems that correspond with the same interpersonal trait (Hopwood, Koonce, & Morey, 2009). For instance, a person might be warm and appropriately assertive generally, but under stress could become hostile and domineering. The advantage of an interpersonal problems measure is that it can assess the kinds of interpersonal problems a person experiences most frequently as well as the severity of interpersonal dysfunction a person experiences. Therefore, the examination of interpersonal problems, in addition to traits, can augment previous research by developing a better understanding of interpersonal heterogeneity in depression.

**This Study**

To extend previous research, we sampled college students above a recommended clinical cut score on a self-report measure of depression to determine the heterogeneity in interpersonal problems in this population and its relevance for understanding personality features and risk for alcohol problems. We examined personality and alcohol abuse for two reasons. Depression has been linked to student drinking, with some research suggesting a causal relationship among subsets of college student drinkers who drink to cope with depression (Aneshensel & Huba, 1983; Camatta & Nagoshi, 1995; Gonzalez, Reynolds, & Skewes, 2011; Kushner & Sher, 1993; Park & Levenson, 2002; Wood, Nagoshi, & Dennis, 1992). It has been estimated that 84% of college students drink alcohol, with 25% drinking at least once per week (Fromme & Corbin, 2004), and research has shown that drinking behavior can lead to problems of its own, including academic trouble, legal problems, unplanned sexual activity, and personal injuries (e.g., Syre, Pesa, & Cockley, 1999; Wechsler, Dowdall, Davenport, & Castillo, 1995). Therefore, more effectively identifying college students at risk for depression-related drinking might help address the problem of student drinking. We propose, given the association of certain kinds of interpersonal problems to substance abuse (Matano & Locke, 1995) that interpersonal problems might be a key variable for predicting which depressed students are at greatest risk for alcohol abuse.

Depression is associated with personality pathology in general (Fava et al., 2002), but individuals with different interpersonal problems could also be at risk for different personality disorders, given robust evidence regarding the links between interpersonal style and personality disorders (Pincus & Wiggins, 1990). Thus, identifying depressed students with particular kinds of maladaptive interpersonal functioning might pinpoint those at risk for the development of certain personality disturbances. On the basis of the studies we previously described, we predicted that depressed young adults would vary in the types of interpersonal problems they experience. We further predicted that this heterogeneity would not be explained by depression severity, but that it would be linked to risk for alcohol abuse and personality disorders.

Given our general expectation that groups would be identified across the IPC, we also made specific predictions about how these groups would tend to differ in terms of personality traits and alcohol problems. We evaluated two personality trait models. The Five-factor model (FFM; McCrae & Costa, 1990) is currently the most well-established trait model in personality psychology and provides a fairly comprehensive depiction of broad individual differences in stable, normative behavioral tendencies (Costa & McCrae, 1994), as well as systematic links to personality disorders (Samuel & Widiger, 2008). Among FFM traits, extraversion and agreeableness consistently relate to interpersonal style (Costa & McCrae, 1980; McCrae & Costa, 1989), whereas neuroticism, openness, and conscientiousness do not. We therefore predicted that, among FFM traits, only extraversion and agreeableness would differ across interpersonal groups. Specifically, we expected extraversion to be highest in groups characterized by high warmth and dominance and agreeableness to be highest in groups characterized by high warmth and low dominance.

Given that the focus of the FFM is on normal personality traits but the clinical relevance of interpersonal heterogeneity in depression involves evaluating risk for personality disorders, we also sought to evaluate group differences using a pathological trait model. We examined the *Diagnostic and Statistical Manual of Mental Disorders* (5th ed. [DSM–5]) pathological trait model, which depicts 25 traits proposed to capture phenotypic heterogeneity in the expression of personality disorders (Krueger, Derringer, Markon, Watson, & Skodol, 2012; Krueger et al., 2011). Initial research suggests that the higher order structure of these traits is organized by five factors that bear a strong resemblance to the FFM (Krueger et al., 2012; Krueger et al., 2011; Thomas et al., 2012; Wright, Thomas, et al., 2012). We accordingly predicted that the DSM–5 domains would show a similar pattern to the FFM with respect to interpersonal groups. We also made facet-level predictions for the DSM–5 model. For instance, we did not expect interpersonal groups to differ in depressivity given our general expectation that depressive features would not be associated with a particular interpersonal style (Wright, Pincus, et al., 2012). We likewise did not expect distractibility, which is more cognitive than interpersonal and is symptomatic of depression, to differ across interpersonal groups. In contrast, we expected manipulativeness, deceitfulness, and callousness to differ among interpersonal groups because these traits tend to be associated with cold-dominance. Similarly, we hypothesized that groups high in cold and dominant interpersonal problems would have greater alcohol-related problems given research on the association of externalizing problems with cold-dominant (antagonistic) personality features (Krueger, 1999; Markby et al., 2005).

**Method**

**Participants**

Participants were drawn from a larger sample of 808 undergraduates at a large Midwestern university who completed self-report questionnaires online for course credit. We selected participants whose self-reported depression score was at least 10 (selected range = 10–27, M = 22.94, SD = 3.62), signifying the presence of moderate to severe depression (Kroenke & Spitzer, 2002). This resulted in a final sample of 172 participants (71.50% female, 28.50% male), who ranged in age from 18 to 33 years (M = 20.10, SD = 2.11). The ethnic makeup of the sample was as follows: 75.00% Caucasian, 6.40% Asian American, 5.81% African American, 12.21% reported other ethnicities, and 0.58% did not report ethnicity.
Measures

The Patient Health Questionnaire (PHQ–9; Spitzer, Kroenke, & Williams, 1999) is a nine-item self-report questionnaire used to screen and diagnose depression. For each item (e.g., “Feeling down, depressed, or hopeless”), response options range from 0 (not at all) to 3 (nearly every day) on a 4-point Likert scale. Sensitivity (88%) and specificity (88%) for major depression were both found to be high at a PHQ–9 cutoff of 10 using the Mental Health Professional Interview as a criterion measure of depression (Kroenke, Spitzer, & Williams, 2001). Cronbach’s alpha for the PHQ–9 was .89 in the full sample.

The Inventory of Interpersonal Problems–Short Circumplex (IIP–SC; Soldz, Budman, Demby, & Merry, 1995) is a 32-item self-report measure of interpersonal problems that has been validated in college students (Hopwood, Pincus, DeMoor, & Kooce, 2008). These items describe interpersonal behaviors that participants report that they find “hard to do” or that they “do too much.” There are eight 4-item scales arrayed around the IPC structured by the two dimensions of agentic and communal problems (see Figure 1). The internal consistency of the IIP–SC scales ranged from .63 to .80 (Mdn $\alpha = .72$). The mean IIP–SC elevation score was higher than average ($M = .42$, $SD = .56$, where the average in students is 0.00; cf. Hopwood et al., 2008), suggesting a level of interpersonal dysfunction that might be expected from a depression-selected group (e.g., Barrett & Barber, 2007).

The Five Factor Model Rating Form (FFMRF; Mullins-Sweatt, Jamerson, Samuel, Olson, & Widiger, 2006) is an abbreviated measure of the FFM. The FFMRF has one item for each of the 30 FFMRF facets, which are rated using a 5-point Likert scale with trait descriptive adjective anchors for both high and low scores. These facets were summed to derive domain scores, which had internal consistencies as follows: neuroticism = .61, extraversion = .67, openness = .69, agreeableness = .70, and conscientiousness = .74.

The Personality Inventory for DSM–5 (PID–5; Krueger et al., 2012) is a 220-item self-report questionnaire that measures the proposed DSM–5 traits on a 4-point response scale. This measure has 25 primary scales that map onto five higher order dimensions: negative affectivity, detachment, antagonism, disinhibition, and psychoticism (Krueger et al., 2012; Thomas et al., 2012; Wright, Thomas, et al., 2012). The internal consistency of the scales ranged from .61 to .94 in the full sample (Mdn $\alpha = .82$). The scales of the PID–5 were scored by averaging the items.

The Alcohol Use Disorder Identification Test (AUDIT; Saunders, Aasland, Babor, De La Fuente, & Grant, 1993) is a self-report measure of an individual’s harmful use of alcohol in the past year (Kokotailo et al., 2004). Scores were obtained by summing items. Cronbach’s alpha for the AUDIT was .80.

Data Analysis

We conducted a latent profile analysis (LPA) using Mplus 6.1 (Muthén & Muthén, 1998—2010) to classify depressed individuals into distinct interpersonal problems groups. LPA is a person-oriented analytic technique that determines underlying (i.e., latent) groups of individuals who share similar profiles on designated observed variables. This LPA model used IIP–SC octant scores (i.e., PA, BC, DE, FG, HI, JK, LM, & NO; see Figure 1) as the observed variables. Bayesian Information Criteria (BIC) and Akaike Information Criteria (AIC), with small sample correction (AIC$_c$; Burnham & Anderson, 2004), were used to evaluate models with different numbers of classes and to select a final model (Nylund, Asparouhov, & Muthén, 2007). Given that BIC places a higher value on parsimony, we chose to use BIC in selecting the best fit model. We also evaluated entropy, which served to indicate whether subsequent analyses with individuals assigned to the most likely class were warranted (S. L. Clark & Muthén, 2009). A high entropy value (> .80) indicates an acceptable classification of individuals (Burnham & Anderson, 2004).

The structural summary method for circumplex data developed by Gurtman and Balakrishnan (1998) was used to examine the nature and level of interpersonal problems in each group. This approach models the pattern of octant scores from the group-average interpersonal profile as a cosine-curve function (Figure 2). The parameters of this curve are its (a) angular displacement, or the angular shift from $0^\circ$ for the peak of the curve; (b) elevation, or mean level of octant scores; and (c) amplitude, or the variability across octant scores. Interpretive guidelines that link each of these summary features to clinical hypotheses have been provided by Gurtman and Balakrishnan (1998) and Wright, Pincus, Conroy, and Hilsenroth (2009). The angular displacement indicates a person’s primary or most prominent interpersonal style (Kiesler, 1996). Displacement values are only interpretable when the pattern of octant scores conforms to circumplex assumptions. We thus evaluated the prototypicality (i.e., goodness of fit) and profile differentiation of the overall sample and each subgroup using the structural summary approach to determine whether structural summary parameters were interpretable. The $R^2$, or goodness of fit to the cosine curve model, was calculated to indicate the degree to which the profile conforms to circumplex expectations (Wright, Pincus, & Hilsenroth, 2009). A good fit demonstrates that the profile can be efficiently described by its parameters as opposed to all eight octant scores. In other words, a high $R^2$ value (> .80) indicates a group with high interpersonal prototypicality. A low $R^2$ (< .80) might be suggestive of an interpersonally

![Figure 2.—Circumplex structural summary example. X axis = circumplex angle in degrees; Y axis = standard (c) score on Inventory of Interpersonal Problems–Short Circumplex octant. In this example, elevation = 1.0, amplitude = 1.5, and displacement = 140°.](image-url)
heterogeneous group, which can be assessed directly with angular variance. We calculated variances and 95% circular confidence intervals (CIs) for displacement values to test whether groups with $R^2$ values $>.80$ overlapped in terms of prominent interpersonal problems (Wright, Pincus, Conroy, & Hilsenroth, 2009). We also estimated amplitude and elevation values for these groups to compare them in terms of the specificity of interpersonal problems and overall distress, respectively. Finally, we compared mean differences across IIP–SC defined groups on FFMRF, PID–5, and AUDIT scales using a series of one-way analyses of variance (ANOVA) with Duncan’s post-hoc tests.

RESULTS

Structural summary parameters were computed for the average interpersonal problems profile of 172 depressed young adults. As expected, the $R^2$ (.77) value indicated low interpersonal prototypicality, suggesting the potential existence of more homogeneous subgroups. We therefore used LPA to classify individuals with depression into distinct groups based on IIP–SC octant scores. A five-profile solution was selected based on BIC (see Table 1). Additionally, the AIC$_C$ was within a value of 2, suggesting that there is substantial support for the five-class model by either metric (Burnham & Anderson, 2004). These groups were labeled dominant, warm, submissive, cold, and undifferentiated (see Figure 1) based on their structural summary parameters (Table 2). Four of the five IIP–SC subgroups demonstrated interpersonal prototypicality (i.e., $R^2 ≥ .86$) and varied significantly in terms of angular displacements (i.e., dominant, warm, submissive, and cold). Conversely, the relatively low amplitude and $R^2$ values of the fifth group limit the interpretive value of the displacement parameter, justifying the label undifferentiated. Unlike the other groups, which were quite similar in terms of interpersonal distress, the elevation parameter was also lower for the undifferentiated group. Overall this pattern suggests that, whereas members of the first four groups endorsed a specific pattern of interpersonal problems that varied about the IPC, the undifferentiated group can be characterized as reporting relatively few, nonspecific interpersonal problems. Based on the high entropy value (.86), we classified individuals using the model estimated posterior probabilities to their most likely class.

We next compared normative and maladaptive traits across groups (Table 3). As predicted given robust relations between extraversion and agreeableness with interpersonal styles (Costa & McCrae, 1980; McCrae & Costa, 1989), these traits showed significant differences across interpersonal groups. Specifically, individuals who reported problems related to warmth and dominance tended to have higher levels of extraversion and individuals with problems related to warmth tended to have the highest level of agreeableness compared to other groups. Also as expected, groups did not significantly differ from each other with regard to neuroticism, openness, or conscientiousness.

A series of one-way between-groups ANOVAs revealed that the five interpersonal subgroups significantly differed from one another in regard to three of the five higher order PID–5 trait domains: antagonism, detachment, and disinhibition (Table 3). Differences for antagonism and detachment corresponded to effects seen for FFM domains, whereas disinhibition differed significantly across IIP–SC groups, thus distinguishing the pathological trait model from the normative trait model.

In terms of primary pathological traits, both submissiveness and anxiousness were highest in both warm and submissive groups. Hostility and restricted affectivity were highest in the cold group, and separation insecurity was highest in the cold group. Withdrawal and anhedonia were highest in the cold and submissive groups, whereas intimacy avoidance was highest in the dominant group. Antagonism and its related traits of manipulativeness, deceitfulness, and callousness were highest in the cold group. Meanwhile, attention-seeking and grandiosity were lowest in the submissive group. As expected, groups did not differ in depressivity or distractibility, two traits with strong links to depression. Disinhibition traits, including irresponsibility, impulsivity, and risk taking, were highest in the dominant group, as were unusual beliefs.

Finally, we compared alcohol-related problems across interpersonal groups (Table 3). The one-way between-groups ANOVA indicated that IIP–SC groups significantly differed from one another with regard to alcohol abuse. Specifically, the dominant group tended to have higher rates of alcohol-related problems, whereas the submissive group tended to have the least amount of alcohol problems. The warm, cold, and undifferentiated groups did not differ from each other on alcohol abuse.


**Table 3.** Inventory of Interpersonal Problems–Short Circumplex group means and standard deviations for Five Factor Model Rating Form (FFMRF), Personality Inventory for DSM–5 (PID–5), and Alcohol Use Disorder Identification Test (AUDIT) scales.

<table>
<thead>
<tr>
<th>Group 1</th>
<th>Group 2</th>
<th>Group 3</th>
<th>Group 4</th>
<th>Group 5</th>
<th>ANOVA F</th>
<th>η²</th>
</tr>
</thead>
<tbody>
<tr>
<td>PID–5 scales</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Detachment</td>
<td>1.24b (3.3)</td>
<td>1.03b (4.1)</td>
<td>1.34b (5.0)</td>
<td>1.41b (5.1)</td>
<td>1.06b (3.8)</td>
<td>4.35b (0.9)</td>
</tr>
<tr>
<td>Suspiciousness</td>
<td>1.45 (3.8)</td>
<td>1.28 (5.5)</td>
<td>1.22 (6.2)</td>
<td>1.57 (6.2)</td>
<td>1.26 (4.6)</td>
<td>1.91 (0.4)</td>
</tr>
<tr>
<td>Depression</td>
<td>1.20 (4.9)</td>
<td>1.22 (6.9)</td>
<td>1.40 (7.8)</td>
<td>1.22 (8.7)</td>
<td>1.08 (5.6)</td>
<td>1.47 (0.3)</td>
</tr>
<tr>
<td>Withdrawal</td>
<td>1.17b (5.1)</td>
<td>0.68 (4.7)</td>
<td>1.59 (5.9)</td>
<td>1.74 (4.8)</td>
<td>1.00b (5.2)</td>
<td>12.52b (0.2)</td>
</tr>
<tr>
<td>Intimacy Avoidance</td>
<td>1.12 (6.0)</td>
<td>0.73 (7.0)</td>
<td>0.86 (6.2)</td>
<td>0.88 (5.2)</td>
<td>0.72 (0.7)</td>
<td>2.90b (0.7)</td>
</tr>
<tr>
<td>Anhedonia</td>
<td>1.26 (1.07)</td>
<td>1.25 (1.17)</td>
<td>1.64 (1.14)</td>
<td>1.63 (0.35)</td>
<td>1.23 (0.07)</td>
<td>2.80b (0.6)</td>
</tr>
<tr>
<td>Antagonism</td>
<td>1.29b (3.2)</td>
<td>0.85b (3.1)</td>
<td>0.60b (3.8)</td>
<td>1.60b (6.0)</td>
<td>1.03b (4.6)</td>
<td>16.17b (0.8)</td>
</tr>
<tr>
<td>Manipulativeness</td>
<td>1.39b (4.5)</td>
<td>0.96b (6.5)</td>
<td>0.73b (6.5)</td>
<td>2.00b (9.9)</td>
<td>1.24b (7.1)</td>
<td>8.28b (0.7)</td>
</tr>
<tr>
<td>Deceitfulness</td>
<td>1.42b (3.9)</td>
<td>0.92b (6.2)</td>
<td>0.73b (6.0)</td>
<td>1.79b (7.6)</td>
<td>1.17b (6.0)</td>
<td>9.21b (0.8)</td>
</tr>
<tr>
<td>Callousness</td>
<td>1.10b (4.8)</td>
<td>0.24 (2.2)</td>
<td>0.31 (2.8)</td>
<td>1.60b (6.8)</td>
<td>0.57 (4.2)</td>
<td>31.77b (0.4)</td>
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<tr>
<td>Attention Seeking</td>
<td>1.47b (5.4)</td>
<td>1.39b (6.4)</td>
<td>0.81 (6.2)</td>
<td>1.29b (6.5)</td>
<td>1.36b (6.7)</td>
<td>5.09b (0.1)</td>
</tr>
<tr>
<td>Grandiosity</td>
<td>1.10b (5.2)</td>
<td>0.70 (4.9)</td>
<td>0.45 (4.9)</td>
<td>1.24b (6.9)</td>
<td>0.82b (5.9)</td>
<td>6.86b (0.4)</td>
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<tr>
<td>Disinhibition</td>
<td>1.39b (2.9)</td>
<td>1.28b (4.7)</td>
<td>1.09b (2.8)</td>
<td>1.22b (4.8)</td>
<td>1.25b (3.3)</td>
<td>3.35b (0.7)</td>
</tr>
<tr>
<td>Irresponsibility</td>
<td>1.16b (4.7)</td>
<td>0.63 (1.3)</td>
<td>0.71b (0.9)</td>
<td>0.86b (2.6)</td>
<td>0.78b (0.6)</td>
<td>5.28b (1.1)</td>
</tr>
<tr>
<td>Impulsivity</td>
<td>1.41b (6.2)</td>
<td>1.12b (8.5)</td>
<td>0.81b (5.8)</td>
<td>1.05b (6.6)</td>
<td>1.17b (6.6)</td>
<td>3.43b (0.8)</td>
</tr>
<tr>
<td>Distractibility</td>
<td>1.47 (5.0)</td>
<td>1.83 (7.8)</td>
<td>1.74 (5.9)</td>
<td>1.43 (5.9)</td>
<td>1.56 (5.8)</td>
<td>1.79b (0.4)</td>
</tr>
<tr>
<td>Rigid Perfectionism</td>
<td>1.45 (5.7)</td>
<td>1.44 (7.2)</td>
<td>1.29 (7.1)</td>
<td>1.47 (7.7)</td>
<td>1.29 (5.8)</td>
<td>0.69b (0.2)</td>
</tr>
<tr>
<td>Risk Taking</td>
<td>1.48b (4.3)</td>
<td>1.38 (6.6)</td>
<td>0.93 (3.8)</td>
<td>1.32b (3.9)</td>
<td>1.44b (5.5)</td>
<td>5.94b (1.3)</td>
</tr>
<tr>
<td>Psychoticism</td>
<td>1.26b (4.8)</td>
<td>1.04 (6.6)</td>
<td>1.12 (5.7)</td>
<td>1.22 (7.5)</td>
<td>1.09 (4.9)</td>
<td>0.93b (0.2)</td>
</tr>
<tr>
<td>Eccentricity</td>
<td>1.43 (5.5)</td>
<td>1.42 (1.00)</td>
<td>1.61 (7.3)</td>
<td>1.93 (9.6)</td>
<td>1.43 (7.2)</td>
<td>1.05b (0.3)</td>
</tr>
<tr>
<td>Perceptual Dysregulation</td>
<td>1.19 (5.2)</td>
<td>1.02 (5.7)</td>
<td>0.96 (5.3)</td>
<td>0.89 (6.0)</td>
<td>0.98 (5.2)</td>
<td>1.33b (0.3)</td>
</tr>
<tr>
<td>Unusual Beliefs</td>
<td>1.16b (6.3)</td>
<td>0.69 (6.7)</td>
<td>0.79b (6.7)</td>
<td>0.82b (8.3)</td>
<td>0.85b (5.3)</td>
<td>2.91b (0.7)</td>
</tr>
<tr>
<td>AUDIT scale</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alcohol Problems</td>
<td>20.62b (6.08)</td>
<td>18.95b (4.90)</td>
<td>16.23b (4.79)</td>
<td>19.29b (7.30)</td>
<td>17.80b (5.02)</td>
<td>2.99b (0.7)</td>
</tr>
</tbody>
</table>

**Note.** PID–5 domains are listed in bold type. Significant differences according to Duncan’s post-hoc test are indicated by superscripts. ANOVA = analysis of variance. *p < .05.

**Discussion**

The purpose of this study was to examine interpersonal problem heterogeneity in a sample of depressed college students and to explore personality trait and alcohol abuse differences among interpersonal groups. We identified five groups (dominant, warm, submissive, cold, and undifferentiated) of depressed individuals that did not differ in depressive severity but did differ in the nature of characteristic interpersonal problems. Cain and colleagues (2012) identified six groups with different interpersonal styles (extraverted, dominant, arrogant, cold, submissive, and unassuming), and no significant differences between interpersonal groups were found in depressive symptom severity in that study either. Although the number of groups were somewhat different, this might have been due to sampling or measurement variability, and the broader point is that in both studies depressed individuals array around the circle whether they represent an older and more clinically severe population measured by interpersonal traits or a nonclinical young adult population measured by interpersonal problems.

The findings in this study support previous literature suggesting that interpersonal functioning provides a useful means for depicting the heterogeneity among individuals with depression (Cain et al., 2012) and extends this observation to a sample of depressed young adults. The identified interpersonal subgroups also significantly differed from each other in terms of normative and maladaptive personality features, as well as alcohol-related problems, supporting the clinical relevance of demarcating subgroups of young adults with depression.

**The Dominant Group**

Individuals in the dominant group were more likely to have alcohol-related problems and to engage in impulsive, irresponsible, and attention-seeking behaviors than members of other groups. These individuals might tend to be aggressive
or irritable when under stress, such as when others challenge or provoke them. Previous research suggests modest to moderate associations between depression and aggressive or impulsive behavior (Apter et al., 1990; Perroud, Baud, Mouthon, Courtet, & Malafosse, 2011); these results might suggest a subgroup of depressed individuals who are particularly at risk for such behaviors.

**The Warm Group**

We found that depressed individuals who tend to have problems related to excessive warmth were more likely to be friendly, sociable, and outgoing, and to have concerns about rejection and approval by others. Overall this pattern suggests that the predominant concerns among such individuals might involve separation from individuals in their support network. We also found that individuals in the warm group were more likely to experience anxiety and separation insecurity relative to the other groups. This pattern of results could suggest that warm depressed individuals tend to internalize negative affects rather than expressing them to others, a strategy for maintaining close bonds that might have negative personal consequences.

**The Submissive Group**

Individuals in the submissive group reported being least likely to draw attention toward themselves or reach out to others. They were also relatively anxious and unlikely to engage in potentially harmful or dangerous behaviors. This pattern suggests that depressed individuals who report interpersonal problems related to submissiveness might tend to see themselves as inferior to others and to behave in a manner that avoids social risks. One could infer from this pattern that someone with these sorts of personality features might be become depressed when others blame them or hurt their feelings in some way, and that such problems would persist to the degree that submissive individuals are unlikely to confront others about this sort of behavior.

**The Cold Group**

Individuals in the cold group were relatively more likely to manipulate others and enjoy taking advantage of others’ weaknesses, deliberately lie to others, and show little interest in or regard for others’ feelings or relationships in general than members of other groups. This pattern suggests that depressed individuals with cold problems might tend to lash out at or distance themselves from others during negative mood states, and that efforts by others to support or become close to them might actually worsen distress, symptoms, and maladaptive behavior.

**The Undifferentiated Group**

Unlike the other groups, the undifferentiated group had relatively few interpersonal problems, and could not be well characterized in terms of any particular type of problem. It is possible that individuals in this group experience conflictual patterns of interpersonal problems (e.g., being both too warm and too cold) that average to a middling value. Clinically, it is generally worth investigating the specific pattern of octant scores and item responses for individuals who do not have interpretable structural summary coefficients, such as might be the case with a sizable proportion of this group.

**Clinical and Research Implications**

Overall, these results have a number of clinical implications. A primary implication is the utility of interpersonal problems for understanding clinically relevant individual differences among individuals with depression. Particular subgroups might be at risk for certain kinds of associated problems. For instance, depression and alcohol abuse commonly occur together among college students (e.g., Wood et al., 1992). In this study, we found a significant correlation between depression scores (as measured by the PHQ–9) and alcohol problem scores (as measured by the AUDIT) for the total sample ($r = .29, p < .001$). These findings suggest that some, but not all depressed persons, experience alcohol-related problems. The likelihood of depressed individuals experiencing alcohol-related problems could in part be identified by interpersonal problems related to dominance.

In general, research using interpersonal assessments to understand individual differences among individuals with shared diagnoses has been generative (Ambwani & Hopwood, 2009; Barrett & Barber, 2007; Borkovec, Newman, Pincus, & Lytle, 2002; Cain et al., 2012; Cain, Pincus, & Holtforth, 2010; Constantino et al., 2012; Constantino et al., 2008; Kachin et al., 2001; Przeworski et al., 2011; Salzer et al., 2008; Thomas et al., in press; Wright, Pincus, Conroy, & Elliot, 2009). Given the typical finding that individuals with many disorders experience a wide range of interpersonal styles and problems, and that these interpersonal differences are likely to influence symptom expression and treatment, this research points toward the possibility of transdiagnostic treatment principles based on interpersonal functioning. For example, Tracey and colleagues (Tracey, 1994; Tracey et al., 1999) have found a particular treatment process tends to be associated with successful treatment across diagnoses and treatment orientation. This approach involves supporting the client’s interpersonal style to develop an alliance, subsequently challenging that style to effect change, and then resolving the relationship with a smoother, more complementary interaction pattern. Employing this evidence-based strategy might heighten the impact of other evidence-based techniques, but it is only possible with an initial assessment of interpersonal functioning.

It is also possible that young adults with depression but with different interpersonal problems might differentially benefit from certain treatment goals and techniques. For instance, someone with depression who has a cold interpersonal style could benefit greatly from learning how to obtain and maintain social support given their tendency to be withdrawn from others. Conversely, someone who is warm and tends to be drawn to social networks might gain more in therapy by learning how to become more independent and less emotionally dependent on others. Overall, the finding of interpersonal heterogeneity in depression suggests the potential for developing and tailoring individualized treatment and prevention. Future research should explore the clinical implications of interpersonal heterogeneity in depression and other disorders.

A consideration of interpersonal heterogeneity might also benefit research on the etiology of depression, as there could be different pathways to depression for individuals with different interpersonal styles (see Ambwani & Hopwood, 2009). For example, findings in this study suggest that depressed young adults with interpersonal problems related to dominance might
become more prone to alcohol abuse, raising the possibility that such alcohol-related problems could lead to further depression. Likewise, temperament models suggest that high neuroticism and low extraversion predispose depression (reviewed by L. A. Clark, Watson, & Mineka, 1994); however, given that these FFM traits are elevated in different interpersonal groups, depression might have a stronger effect on individuals with a particular interpersonal style. Future research should explore the etiological implications of interpersonal heterogeneity in depression and other forms of psychopathology.

Given that only a small percentage of depressed young adults seek counseling services even though college campuses often provide them for free (e.g., Furr et al., 2001), it is important to implement prevention and treatment interventions that target these individuals with depression. Currently, screening for depression on college campuses has yielded mixed results in terms of effective treatment for depression (e.g., Chung et al., 2011; Farr, Dietz, Gibbs, Williams, & Tregear, 2011). Incorporating measures of interpersonal problems into screening efforts might provide a more extensive assessment of depressed individuals because these measures capture interpersonal problems, distress, and maladaptive behaviors that other measures do not (e.g., Soldz et al., 1995).

Limitations

The findings in this study must be interpreted in view of several limitations. Although the number of individuals with moderate to severe depression in this sample was sufficient for LPA given the number of parameters we estimated, the sample was nonetheless not large. The cold subgroup identified by LPA had a particularly small number of participants compared to the other groups, limiting power to find group differences and decreasing our confidence in the generalizability of effects found for this group. In addition, participants were largely White (75.00%) and female (71.50%). Future studies should examine interpersonal heterogeneity in depression in larger and more diverse samples. It is also important to note that the findings in this study are based on self-report measures; research using other kinds of measures would be useful to extend these results.

There are notable challenges in classifying individuals with depression into distinct groupings. One issue involves the tendency of empirical typologies to vary across samples based on sampling characteristics (Eaton, Krueger, South, Simms, & Clark, 2011). In interpersonal typologies, this tendency leads to a certain arbitrariness in the labeling of groups across studies that masks the more general finding of heterogeneity across the entire IPC. Isolating and labeling interpersonal groups has the advantage of readily depicting individual differences and comparing groups on outcome variables. However, it would be misleading to think that interpersonal groups reflect natural clusters or types rather than a shorthand for interpersonal heterogeneity more generally. Figure 1 makes this clear—the overall pattern is a cloud about the center of the circle, not distinct groups with zones of rarity between them (see Kendell & Jablensky, 2003). Thus, although it is convenient and efficient to talk about people as cold, dominant, warm, or submissive, it should be kept in mind that these groups are relative and coarse approximations of the more fine-grained distinctions that can be observed individually.

Conclusion

The purpose of this study was to examine interpersonal problem heterogeneity in depressed young adults. Our results are generally consistent with Cain et al.’s (2012) findings of interpersonal heterogeneity in individuals with depression that has important clinical and research implications. We demonstrated that the differences in interpersonal functioning are present among a sample of depressed young adults using a measure of interpersonal problems rather than styles. These differences were related to risks for certain forms of personality problems and alcohol abuse. These findings strongly support the importance of interpersonal heterogeneity in psychopathology and suggest that incorporating interpersonal measures with clinical practice and research involving depression would be advantageous. In the future, such research can form an empirical basis for individualized prevention and intervention efforts to target the interpersonal expressions of depression.

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References


INTERPERSONAL HETEROGENEITY IN DEPRESSION


