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Interpersonal Self-Efficacy, Goals, and Problems of Persistently Depressed Outpatients: Prototypical Circumplex Profiles and Distinctive Subgroups

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Abstract

Severely and persistently depressed outpatients (*n*=138) completed interpersonal circumplex measures of self-efficacy, problems, and values/goals. Compared to normative samples, patients showed deficits in agency: They reported less self-efficacy, especially for being assertive, tough, and influential; stronger goals, especially to avoid conflict or humiliation; and more problems, especially with being too timid, inhibited, and accommodating. Circular and structural summary indices suggested greater variability among patients in goal profiles than in efficacy or problem profiles; nonetheless, latent profile analyses identified coherent subgroups of patients with distinct patterns of efficacy (e.g., lacking confidence for speaking up versus setting boundaries) and problems (e.g., being overly inhibited versus self-sacrificing) as well as goals (e.g., to be included versus unobtrusive). Women and those with more severe symptoms were overrepresented in the least agentic groups. The results show how observing patients through multiple circumplex surfaces simultaneously can help clarify their interpersonal dispositions and inform interventions.

Keywords: depression, interpersonal circumplex, goals, self-efficacy, problems, latent profile analysis

Interpersonal Self-Efficacy, Goals, and Problems of Persistently Depressed Outpatients: Prototypical Circumplex Profiles and Distinctive Subgroups

Of patients suffering from a first depressive episode, approximately 50% experience a recurrence, and in perhaps 25% of depressive episodes, the symptoms persist for over two years (Eaton et al., 2008; Penninx et al., 2011). Supportive relationships can help shorten the duration and prevent the recurrence of depressive episodes. However, depressed individuals may engage in behaviors which tend to undermine social support and eventually provoke irritated, controlling, dismissive, and rejecting reactions from others (Hames, Hagan, & Joiner, 2013; McCullough, 2000). Such behaviors include avoiding eye contact, acting timid and insecure, self-derogating, and relentlessly seeking assurance that they are lovable and worthy (Joiner, Metalsky, Katz, & Beach, 1999; Segrin, 2011).

Three interpersonal dispositions that are central to understanding and treating depression are interpersonal problems, interpersonal self-efficacy, and interpersonal values or goals (Sayegh & Penberthy, 2016a). Interpersonal problems are interpersonal actions that cause distress because one does them *too much* or *not enough* (e.g., arguing too much). Self-efficacy is confidence that one can successfully perform a specific type of interpersonal behavior (e.g., being helpful). Values or goals are the importance one ascribes to experiencing particular interpersonal actions or outcomes (e.g., appearing confident). Problems, efficacy, goals (along with strengths and sensitivities) are complementary components of comprehensive assessments of interpersonal functioning—whether of an individual patient (Dawood & Pincus, 2016) or a sample of individuals (Dowgillo & Pincus, 2016). In particular, self-efficacy and goals are linchpins of social-cognitive models and interventions because people typically only attempt

and sustain actions they expect to perform successfully and expect to be personally rewarding (Bandura, 1997; Mischel & Shoda, 1998). Thus, identifying a patient's interpersonal problems can highlight targets for behavior change, while examining and modifying efficacy expectancies and goals can facilitate making those changes.

The first aim of the current paper was to deepen our understanding of how the interpersonal self-efficacy, goals, and problems of severely and persistently depressed patients differ from those of non-depressed individuals. In order to evenly sample a comprehensive spectrum of interpersonal dispositions, we relied on the interpersonal circumplex (IPC), a popular model for organizing and assessing interpersonal dispositions (Gurtman, 2009; Wiggins, 2003). The IPC is defined by a vertical axis of dominance, assertiveness, decisiveness, or *agency* and a horizontal axis of friendliness, sincerity, warmth, or *communion*. Numerous studies support the centrality of agency and communion in understanding social cognition, motivation, and behavior (Locke, 2015). As Figure 1 shows, the IPC is typically divided into eight octants. Moving around the circle, each octant reflects a progressive blend of the two axial dimensions.

Multiple studies have compared interpersonal problems associated with each IPC octant in depressed and non-depressed samples (e.g., Barrett & Barber, 2007; Grosse Holtforth et al., 2014; Locke et al., in press; Vittengl, Clark, & Jarrett, 2003); their results showed that depressed patients were more troubled by interpersonal problems, especially uncommunal and (to an even greater degree) unagentic problems (e.g., being too unassertive and withdrawn). Two studies have compared interpersonal goals or motives associated with each IPC octant in patient and non-patient samples (Thomas et al. 2012; Locke et al., 2016); their results showed that depression was associated with stronger unagentic goals (e.g., to avoid conflict, rejection,

and humiliation). Finally, one study compared self-efficacy for behaviors from each IPC octant in depressed and non-depressed samples (Locke et al., 2016), and found that depressed patients lacked confidence, especially for agentic behaviors (e.g., expressing oneself firmly). In addition, a number of studies have found that lower general social efficacy (typically operationalized as self-confidence for behaviors reflecting the agentic-and-communal region of the IPC, such as forming relationships and managing conflicts) predicts higher symptoms of depression, both concurrently and prospectively (Bandura, 1997; Smith & Betz, 2002; Wei, Russell, & Zakalik, 2005). In sum, previous research suggests that depressed—and especially severely depressed—individuals tend to exhibit less agentic (and, to a lesser extent, less communal) interpersonal goals, self-efficacy, and problems.

While the research reviewed above concerned the typical IPC profile of depressed patients, there is also increasing interest in using latent profile analysis to determine if within diagnostic groups there exist subgroups characterized by their own distinct assessment profiles. Thus, a second aim of the current paper was to test for the existence of subgroups among severely and persistently depressed patients. Three prior studies have employed latent profile analysis to identify subgroups of depressed patients with distinct IPC profiles. First, using a measure of interpersonal traits with a sample of patients with major depressive disorder, Cain et al. (2012) distinguished six types of profiles, and found that the group with profiles peaking in the -A (and to a lesser extent -C) region reported more chronic symptoms over a 10-year follow-up period. Second, using the IIP with a sample of depressed patients, Grosse Holtforth et al. (2014) distinguished eight types of profiles, and found more severe depression in those with profiles peaking in the -A region. Third, using the IIP with a sample of patients with major

depressive disorder, dysthymia, or subclinical depression, Simon et al. (2015) distinguished five types of profiles, and found more severe depression in those with profiles peaking in the -A-C region than those with profiles peaking in the +A-C region. In sum, though they identified different numbers of subgroups, all three studies observed more severe or more chronic depression in the patient groups whose interpersonal profiles peaked in the unagentic region and, to a lesser extent, uncommunal region. In addition, both Grosse Holtforth et al. and Simon et al. observed that women were overrepresented among those with profiles peaking in the -A+C region and underrepresented among those with profiles peaking in the -C region.

To summarize, the current study has two aims. First, we will compare the typical IPC efficacy, goal, and problem profiles in the general population with those in a sample of severely and persistently depressed outpatients. Based on previous research, we expected depressed patients' interpersonal self-efficacy, goals, and problems to be characterized, on average, by deficits in agency. Second, we will test if there are also subgroups of severely and persistently depressed patients who show distinctive efficacy, goal, or problem profiles.

Method

Participants

The depressed participants were 138 outpatients (96% Caucasian) who underwent a comprehensive psychiatric evaluation at the Douglas Mental Health University Institute's Depressive Disorders Program, a specialized outpatient clinic in Montreal, Canada. All study participants had received a primary DSM-IV-TR diagnosis of major depression, unipolar, from staff psychiatrists, and were judged to either have or be at risk for persistent depressive disorder based on clinical history. Specifically, 82.8% had a previously diagnosed depressive

episode (median number of previous episodes = 3) and the minimum duration of the current depressive episode was 6 months (median duration = 24 months).

We also recruited random samples of U.S. and Canadian citizens through Amazon's Mechanical Turk (MTurk) website to provide relevant normative data for the three IPC measures: the Circumplex Scales of Interpersonal Efficacy (CSIE; Locke & Sadler, 2007), which assesses self-efficacy for actions from each IPC octant; the Circumplex Scales of Interpersonal Values (CSIV; Locke, 2000), which assesses interpersonal goals reflecting each IPC octant; and the brief version of the Inventory of Interpersonal Problems (IIP; Horowitz, Alden, Wiggins, & Pincus, 2003), which assesses problems reflecting each IPC octant. Although some studies suggest MTurk samples are more educated, introverted, and anxious than the general population, they are generally considered adequate alternatives to other sources of normative samples (Buhrmester, Kwang, & Gosling, 2011; Paolacci & Chandler, 2014). Normative participants completed the CSIE, CSIV, or IIP online in exchange for a small monetary reward. We only used respondents who completed the entire questionnaire, did not give identical answers to >16 consecutive items, correctly answered two validity-check questions, and—to maximize comparability with the patient sample—described their ethnicity as White or Caucasian. Table 1 summarizes the characteristics of the depressed and normative samples; gender and marital status were similar across samples, but the depressed patients were slightly older and much less likely to be working.

IPC Measures

The IIP asks respondents to rate how distressed they are by 32 interpersonal problems (4 per IPC octant) on 0 (not at all) to 4 (extremely) scales. The CSIV asks respondents to rate the

importance of 64 interpersonal goals or values (8 per octant) on 0 (not important) to 4 (extremely important) scales. The CSIE asks respondents to rate their confidence for performing 32 interpersonal actions (4 per octant) on 0 (not at all confident) to 10 (absolutely confident) scales, but we transformed their responses to 0-to-4 scales to make them comparable to the IIP and CSIV scales. Whereas the standard instructions for these measures do not specify a particular interpersonal situation, in the current study the CSIE and CSIV instructions asked respondents to imagine a group therapy setting. Table 2 shows sample items from the CSIE, CSIV, and IIP.

The IIP, CSIV, and CSIE have demonstrated good psychometric properties in previous research (Dowgillo & Pincus, 2016; Hopwood et al., 2011; Locke, 2011). In the current samples, the 48 (2 samples x 3 measures x 8 octant scales per measure) Cronbach αs ranged from .46 to .89 (*Median* = .77), with 96% exceeding 0.65. We tested if the octant scales conformed to a circumplex by conducting randomization tests of hypothesized order relations using the program RANDALL (Tracey, 1997, 2000). A circular model makes 288 predictions about the relative magnitudes of correlations among octant scales (with correlations between adjacent octants exceeding correlations between octants two octants apart, which exceed correlations between octants three octants apart, which exceed correlations between opposite octants). The proportion of predictions met minus the proportion violated yields a correspondence index (*CI*) which can range from -1.0 (all predictions violated) to 1.0 (perfect fit). The *CI* can be interpreted as a rank-order correlation coefficient. In the context of evaluating circumplex measures, *CI*s > .8 (indicating 90% of predictions were met and 10% were violated) are considered to indicate very good fit and *CI*s > .9 (indicating 95% of predictions were met and 5%

were violated) are considered to indicate excellent fit. The *CI*s for the ipsatized (within-person centered) IIP, CSIE, and CSIV octant scales were .87, .86, and .94 in the patient sample, and .94, .81, and 1.00 in the normative samples (all *p*s < .001); thus, the scales clearly fit a circular model.

Depression Measures

The Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) is a 21-item self-report measure of attitudes and symptoms frequently displayed by depressed patients. The Hamilton Rating Scale for Depression (HRSD; Hamilton, 1960) is a 17-item clinician-report measure of the severity of depression symptoms experienced by the patient over the past week. Numerous studies have demonstrated adequate to good reliability and validity for the BDI (Beck, Steer, & Garbin, 1988) and HRSD (Bagby, Ryder, Schuller, & Marshall, 2004). On both scales, higher scores reflect greater depression. In the current study, the BDI and HRSD were completed on, respectively, 123 and 126 of the depressed patients at intake; their mean BDI and HRSD scores were 30.4 (*SD* = 10.9) and 28.2 (*SD* = 7.5), which indicate severe levels of depressive symptomatology. We did not assess depression in the normative samples, but previous studies on MTurk samples that (as in the current study) excluded respondents who failed validity checks embedded in the measures found rates of depression comparable to that in the general population (Shapiro, Chandler, & Mueller, 2013).

Results

What are the Typical Interpersonal Dispositions of Depressed Patients?

Table 3 shows the average CSIE, CSIV, and IIP scores for the depressed and the normative samples. Relative to the norms, depressed patients expressed less interpersonal self-efficacy,

stronger interpersonal goals, and more interpersonal problems. However, these differences varied across octants. On the CSIE, depressed patients expressed much less confidence that they could be aggressive (+A-C) and cold (-C) when necessary, but no less confidence that they could be agreeable (-A+C). On the CSIV, depressed patients were much more concerned with avoiding humiliation and conflict (-A-C and -A), but slightly less concerned with being respected and influential (+A+C). On the IIP, although depressed patients were more distressed by every type of problem, they were particularly more troubled by being overly accommodating (-A+C). Figure 2 plots onto the IPC the average CSIE, CSIV, and IIP octant scores in the depressed and normative samples. The figure highlights that depressed patients expressed relatively weak self-efficacy (i.e., scores closer to the circle's center), especially in the high agency and low communion octants; conversely, depressed patients expressed relatively strong goals and problems (i.e., scores closer to the circle's circumference), especially in low agency octants.

We could create graphs analogous to Figure 2 for each individual patient. For a particular inventory, the vector sum of the individual's eight octant scores would show the individual's overall angular location within the circumplex. Circular statistics are procedures for summarizing these angles across a group of individuals (for details and formulas, see Gurtman & Pincus, 2003; Wright et al., 2009). Table 4 shows the circular statistics—specifically, circular means and circular variances (V_{θ})—of the depressed and normative participants' interpersonal problems, goals, and self-efficacy. Participants expressed predominantly communal goals, unagentic problems, and unagentic-and-communal self-efficacy, but the predominant goals, problems, and self-efficacy of depressed participants tended to be less agentic than those of normative participants.

In Figure 2 each octant scale radiates out in different directions from one central point, which is how a circumplex is typically depicted. Figure 3 shows a different way to represent the same data. Specifically, Figure 3 unrolls the CSIE data in Figure 2a so that each octant scale extends upward from different points along the horizontal axis, which is how a wave function is typically depicted. Figure 4 shows how a wave function can be characterized by three structural parameters: Elevation (the curve's average level relative to some zero point), Vector Length or Amplitude (the difference between the average and peak levels, reflecting the degree to which the wave shows a distinct peak and trough), and Displacement (the angular distance from the angle defined as 0° to the peak angle). Profiles of actual octant scores—such as those in Figure 3—can be modeled as function of these parameters, plus random deviations from an ideal cosine curve which can be summarized in a goodness-of-fit index, R^2. Collectively, these four parameters (Elevation, Amplitude, Displacement, and R^2) are referred to as a circumplex profile's *structural summary* (Gurtman, 1994; Gurtman & Pincus, 2003).

We subjected the depressed and normative participants' raw scores to structural summary analyses using the procedures detailed in Wright et al. (2009). Table 4 shows the structural summary parameters for depressed and normative participants' raw interpersonal problems, goals, and self-efficacy profiles.[1] The angle and elevation values simply confirm results discussed above. The R^2 values indicate the degree to which the profile of octant scores form a wave pattern, with the conventional criterion for fitting a sinusoidal curve being $R^2 \geq .8$. The amplitude values indicate the degree to which the wave has a pronounced peak and trough. The structural summary values for the problem (IIP) profiles indicate a clear sinusoidal pattern, with a trough in the agentic region and a peak in the unagentic region, and with the

peak being particularly pronounced in the depressed sample. The structural summary values for the efficacy (CSIE) profiles also indicate a sinusoidal pattern, with a trough in the agentic-and-uncommunal region and a peak in unagentic-and-communal region. Although a similar pattern was apparent in both samples, the trough was much shallower—and thus the amplitude much lower—in the normative sample because normative participants were at least moderately confident that they could express *any* behavior if necessary. Finally, the structural summary values for the goals (CSIV) profiles indicate that the normative participants' goals could be summarized by a single, sinusoidal profile, but the depressed patients' goals could not. Therefore, in the next section we investigated if there were distinct groups of goal profiles within the depressed sample. Moreover, because previous studies have identified distinct groups of problem profiles in samples of depressed patients and have suggested the clinical utility of distinguishing patients with distinct interpersonal profiles, we also tested for distinct profiles of self-efficacy and problems within the depressed sample.

Do Subgroups of Patients Express Distinct Interpersonal Dispositions?

We used Latent Profile Analysis in Mplus 7.3 (Muthén & Muthén, 2014) to classify patients into distinct groups based on their IIP, CSIV, or CSIE profiles. Following standard procedure (e.g., Simon et al., 2015; Wright et al., 2013), we ipsatized the octant scores prior to conducting latent profile analyses to prevent the identification of clusters based on response elevation rather than on distinct interpersonal profiles. We estimated models with between 1 and 8 latent profiles. Table 5 summarizes the Bayesian information criteria (BIC) and entropy statistics for each model. Entropy values below .80 indicate insufficient confidence or reliability regarding how to classify individuals into groups; entropy was acceptable for all models except the model

with only two interpersonal problem profiles. Smaller BIC values indicate better model fit. For interpersonal problems, the three group model showed the best fit and yielded groups of adequate size; therefore, we used those three groups in the analyses below. We also used three group models for goals and efficacy—though models with five or six groups showed the best fit—because the models with more than three groups yielded one or more small ($n \leq 10$) groups.

Table 6 shows the circular statistics and structural summary parameters for each group, and Figures 5, 6, and 7 show the mean locations of each (IIP, CSIV, and CSIE) group on the IPC. First, consider the three interpersonal problem groups. The R^2 values indicate that all three showed sinusoidal profiles. The smallest group showed a peak in the nonassertive (-A) octant; the largest group showed a peak at the border between the nonassertive and socially inhibited (-A-C) octants; the remaining group showed a peak in the self-sacrificing (-A+C) region. Therefore, we labeled these groups “Nonassertive”, “Inhibited”, and “Self-Sacrificing”. The elevation values show that interpersonal distress was highest in the Nonassertive group and lowest in the Inhibited group (but was greater in all three patient groups than in the normative sample). The Nonassertive and Self-Sacrificing groups—with their low V_θ and high R^2 and amplitude—were clearly distinct from each other and from the normative sample. The large Inhibited group—with its higher V_θ and lower R^2 and amplitude—was less distinct, suggesting greater within-group heterogeneity.

Next, consider the interpersonal goals and interpersonal efficacy groups. The structural summary parameters indicate that one of the three goals groups and one of the three efficacy groups did not exhibit a prototypical circumplex profile with a distinct, perspicuous peak and

trough. We labeled these groups “Undifferentiated”. Of the goals groups that showed prototypical circumplex patterns, the larger group showed a peak in the communal octant, while the smaller showed a peak at the lower edge of the unagentic-and-communal octant. Therefore, we named these groups’ core motives: “Be Included” and “Be Unobtrusive”. Comparing the values in Tables 3 and 5, the “Be Included” and “Be Unobtrusive” groups’ profiles were more sinusoidal, pronounced, and homogeneous than the profile for the overall patient sample.

With regard to efficacy, the most striking, defining differences between the patient groups and the normative group were in those regions where the patients were particularly lacking in efficacy—i.e., the troughs of their circumplex profiles. Of the efficacy groups that showed prototypical circumplex patterns, the larger group showed a trough at the border of the agentic and agentic-and-uncommunal octants, while the smaller showed a trough near the upper edge of the uncommunal octant. Therefore, we labeled these groups “Cannot Assert” and “Cannot Set Limits”. The 95% *CI*s for these two groups did not overlap, indicating that the lack of interpersonal self-efficacy in each group had a distinct emphasis.

As Table 7 shows, none of the subgroups differed with respect to marital status or employment status. However, there were gender differences: Females were overrepresented in least agentic (i.e., Nonassertive, Be Unobtrusive, and Cannot Assert) groups, while males were overrepresented in the least communal (i.e., Inhibited and Undifferentiated) groups. As Table 8 shows, there were no age differences between groups, but the goals and efficacy groups did differ in depression. Specifically, on the HRSD, clinicians rated the CSIV “Be Included” group as less depressed than the “Be Unobtrusive” or Undifferentiated groups, and rated the CSIE

"Cannot Set Limits" group as less depressed than the "Cannot Assert" or Undifferentiated groups. Likewise, on the BDI, patients in the "Be Unobtrusive" group rated themselves as more depressed than did patients in the "Be Included" or Undifferentiated groups. Thus, the groups with the most agentic and communal profiles ("Be Included" and "Cannot Set Limits") were rated as less depressed than the groups with least agentic and communal profiles ("Be Unobtrusive" and "Cannot Assert"). Gender did not predict HRSD scores (t[124]=.34), but did predict BDI scores (Ms for women and men = 32.7 and 27.1, SDs = 10.5 and 10.7, t[121]=2.89). Thus, the interpersonal goal subgroups were related both to gender and to BDI scores; but even controlling for gender, the CSIV subgroups still predicted BDI scores (F[2,123]=4.32, η_p^2=.07).

Discussion

Compared to the normative sample, depressed patients reported more interpersonal problems, especially problems with being too meek, inhibited, and accommodating; reported less interpersonal self-efficacy, especially efficacy for being forceful, influential, and tough; and stronger interpersonal goals, especially goals to avoid conflict or humiliation. Across all three IPC measures, circular statistics and structural summary indices confirmed that depressed individuals' average interpersonal tendencies were less agentic than those of non-depressed individuals.

The circular and structural indices further suggested that the current sample of depressed patients could be represented by a single circumplex profile of interpersonal goals or interpersonal efficacy, but not by a single profile of interpersonal goals. Thus, among depressed individuals there may be greater variability in some patterns of interpersonal dispositions (e.g., motives) than others (e.g., efficacy and problems), though none of these interpersonal

phenomena are included in the diagnostic criteria for depressive disorders. Nonetheless, latent profile analysis distinguished coherent subgroups of patients with distinct problem profiles and efficacy profiles as well as distinct goal profiles.

Specifically, we identified two coherent clusters of interpersonal goals profiles—one primarily concerned with being unobtrusive, the other more concerned with being included—plus a third less distinct and coherent group. Likewise, we identified two coherent clusters of interpersonal efficacy profiles—one primarily lacking efficacy for being assertive, the other primarily lacking efficacy for setting limits on others—plus a third less distinct and coherent group. Finally, we identified three groups of interpersonal problem profiles whose central themes concerned being too inhibited, being too unassertive, or being too self-sacrificing.

Women were overrepresented in the least agentic (i.e., Nonassertive, Cannot Assert, Be Unobtrusive) groups and underrepresented the least communal (i.e., Inhibited and Undifferentiated) groups. These results are consistent with those of Grosse Holtforth et al. (2014) and Simon et al. (2015) who found women were overrepresented in subgroups with interpersonal problem profiles peaking in the -A+C region and underrepresented in subgroups with profiles peaking in the -C region. These results also fit with previous research on non-depressed samples indicating that gender differences in interpersonal problems generally align with the IPC axis running from the +A-C region (where men typically score higher) to the -A+C region (where women typically score higher) (Gurtman & Lee, 2009).

Clinician ratings (and, to a lesser degree, patient self-ratings) suggested that the patient groups with more agentic goal or efficacy (i.e., “Be Included” or “Cannot Set Limits”) profiles were less depressed than the patient groups with less agentic (i.e., “Be Unobtrusive” or

"Cannot Assert") profiles. The interpersonal problem subgroups did not differ in depression, but the most unagentic (Too Nonassertive) group did express the most interpersonal distress, while least unagentic (Too Inhibited) group expressed the least. Thus, overall, subgroups whose IPC profiles were distinctively low in agency tended to report the greatest distress and depression. Partially corroborating our results, previous studies that used latent profile analyses to identify distinct interpersonal trait or problem profiles among depressed patients (Cain et al. 2012; Grosse Holtforth et al., 2014; Simon et al., 2015) also observed more persistent or severe depression symptoms in subgroups with less agentic profiles.

On the other hand, those studies identified between five and eight groups of problem profiles, whereas we identified only three. Two differences between our depressed sample and the samples examined in previous studies may help explain the discrepancy.[2] First, our sample was smaller. Larger samples can support more complex models, both statistically and substantively in yielding more groups of sufficient size to be interpretable. Second, the previous samples included participants with less severe depressive symptomatology, and—as noted above—there is evidence that the peak interpersonal problems of patients with more severe and persistent depression tend to cluster in unagentic regions of the IPC. In any case, discrepancies in the number of latent classes identified should not be interpreted as indicating that one model is correct and the others are incorrect.

Indeed, the general recommendation in applied latent profile analysis is to treat the groups not as natural types but as useful heuristics, and concomitantly to select models based not simply on quantitative information criteria, but also on their utility and consistency with substantive theory (Marsh et al., 2009). However, studies identifying latent interpersonal

profiles in samples of depressed patients—including the present study—have not tested the agreement between those latent profiles and theoretical models of depressive subtypes. For example, Blatt (1974) and Beck (1983) suggested that self-criticism/autonomy and dependency/sociotropy are depressive vulnerabilities that manifest in distinct clinical presentations (e.g., introjective versus anaclitic depression). Testing the congruence between such theories and empirically derived latent classes—for example, the congruence between dependency/sociotropy and our "Self-Sacrificing", "Be Included", or "Cannot Set Limits" groups—could help refine both the selection of latent profile models and the conceptualization of depressive subtypes.

The current study has both strengths and limitations. A key strength is that the current study is the first to test for subgroups of depressed patients with distinct profiles of interpersonal goals or interpersonal self-efficacy. One limitation, though, is that we assessed goals and efficacy for interactions in therapy groups, and interpersonal goals and efficacy may vary across situations. Another limitation is that without data from non-depressed or less severely depressed patients, we cannot determine if the observed differences between the patient and the normative samples are unique to severe and persistent depression or would also be true of less depressed or non-depressed patient samples. A third limitation is the lack of ethnic diversity; additional research is needed to determine how well the results generalize to non-Caucasian patients.

Conclusions and Clinical Implications

Our IIP results suggest that the principal interpersonal problems of severely and persistently depressed patients almost always involve being too unagentic, and rarely involve

being too domineering or controlling. Furthermore, although failures of agency may frame the overarching narrative of their interpersonal lives, different patients emphasize different themes, with the most common being repeatedly withdrawing from others, repeatedly acquiescing to others, and repeatedly sacrificing for others. While such behaviors may deter direct attacks from others in the short term, over the long term they may make others annoyed, dismissive, and rejecting, thus ultimately eroding social support and exacerbating interpersonal distress (Dobson, Quigley, & Dozois, 2014). Indeed, the vast majority of patients in the current study reported that their repetitive reliance on a narrow behavioral repertoire had contributed to long-standing difficulties in their professional and/or personal relationships.

Analyzing specific incidents in which these interpersonal problems occur typically reveals how depressed patients' avoidance motives interfere with achieving their ideal "desired outcomes" for the interaction (Sayegh & Penberthy, 2016a). Specifically, our CSIV results suggest that depressed patients typically place normative levels of importance on agentic and communal experiences—such as asserting, expressing, and connecting with others—but these approach goals are often thwarted by unusually high levels of unagentic and uncommunal avoidance goals. Although the focus of patients' fears varied, clinicians can anticipate that some patients will worry mainly about losing face (e.g., by being foolish or ridiculous), while others will worry mainly about losing support (e.g., by being displeasing or irritating). Recognizing and reducing the maladaptive intensity of their avoidance goals can help patients restore a more positively balanced goal profile and more situationally adaptive interpersonal behavior.

The likelihood that patients will commit to practicing and implementing this expanded repertoire of interpersonal behaviors depends on their self-efficacy—i.e., expectancies that

they can perform the behaviors successfully (Bandura, 1997). Previous research shows that, even controlling for concurrent depression, greater efficacy for agentic and communal actions prospectively predicts lower depression, partly due to increased adaptive personal and social behavior (Locke et al., 2016). Unfortunately, our CSIE results suggest that severely depressed patients—despite showing normative levels of efficacy for being accommodating—suffer from a debilitating lack of confidence for more agentic and less communal actions, with some feeling particularly incapable of speaking up and asserting their wishes, and others feeling particularly incapable of protecting their interests and setting clear boundaries. Fortunately, there are many effective ways to enhance self-efficacy, such as observing patients similar to you demonstrate mastery of the relevant behaviors, recalling your past mastery experiences or vividly imagining future mastery experiences, and believing that other people have confidence in you (Bandura 1997; Brown et al., 2016), though of course the most effective way is to successfully perform the behaviors yourself.

In conclusion, viewing patients through the lens of multiple IPC surfaces can provide both patients and clinicians with a more vivid and complete impression of patients' interpersonal patterns (Dawood & Pincus, 2016). While the current sample of severely and persistently depressed patients showed some heterogeneity (especially with respect to goals), they generally lacked confidence that they could express and assert themselves effectively, powerfully, and persuasively; were very worried of becoming the target of anger, ridicule, and rejection; and had problems sticking up for themselves and engaging with others. A subset of our patients subsequently participated in Group Cognitive Behavioral Analysis System of Psychotherapy (Group-CBASP; Sayegh & Penberthy, 2016a, 2016b), a manualized

psychotherapy for persistent depression that integrates the assessment of multiple IPC surfaces (problems, impacts, values, and efficacy) into the treatment process. Encouragingly, during treatment, these patients' interpersonal problems decreased, their agentic efficacy increased, and improvements in agentic-and-communal efficacy predicted subsequent improvements in depression (Locke et al., 2016). Thus, there appears to be merit in continuing to develop and implement assessments and interventions that target multiple levels of interpersonal functioning (e.g., expectancies, motives, actions), in both their dispositional and dynamic manifestations (Hopwood et al., 2016).

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Footnotes

[1] When conducting structural summary analyses on patient groups, most researchers have first standardized patients' raw scores relative to a normative sample, yielding a distinctive score profile that highlights how the patient profile deviates from the normative profile. In contrast, the current study used raw scores for two reasons. First, standardized scores conflate characteristics of the patient sample and the normative sample. For example, a standardized patient profile may be sinusoidal either because the raw patient profile is sinusoidal while the normative profile is flat or because the normative profile is sinusoidal while the patient profile is flat; likewise, a standardized patient profile may be flat either because both the normative and raw patient profiles are flat or because both the normative and patient profiles conform to closely overlapping sinusoidal functions. Second, standardized scores can reconfigure which octants are relatively high or low for a particular patient. For example, as Figure 2b shows, most people strongly prefer communal goals (e.g., making connections) to uncommunal goals (e.g., staying aloof). If patient P also favors communal over uncommunal goals, albeit to a lesser degree than most people, then P's standardized profile would show him to place *more* importance on uncommunal than communal goals. Indeed, for this reason, when giving patients feedback on IPC inventories, the current authors first show their raw score profile (which sketches a self-portrait patients recognize and accept) before considering how that profile differs from a more normative or ideal profile. We believe the same approach makes sense for presenting the results of the current study.

[2] A third possible explanation is that whereas we conducted latent profile analyses on ipsatized raw scores, the three previous studies (as explained in Footnote 1) conducted them

on ipsatized standardized scores. To test whether this would make a difference, we repeated our latent profile analyses on ipsatized standardized scores, and then—once again—selected models with the lowest BIC whose groups contained at least 10 patients. Doing so yielded three CSIE groups, three CSIV groups, and four IIP groups—that is, the same number of efficacy and goal groups, and one additional problem group. Thus, using standardized scores changed our results only slightly, and probably does not explain why previous studies identified between five and eight classes of problem profiles.

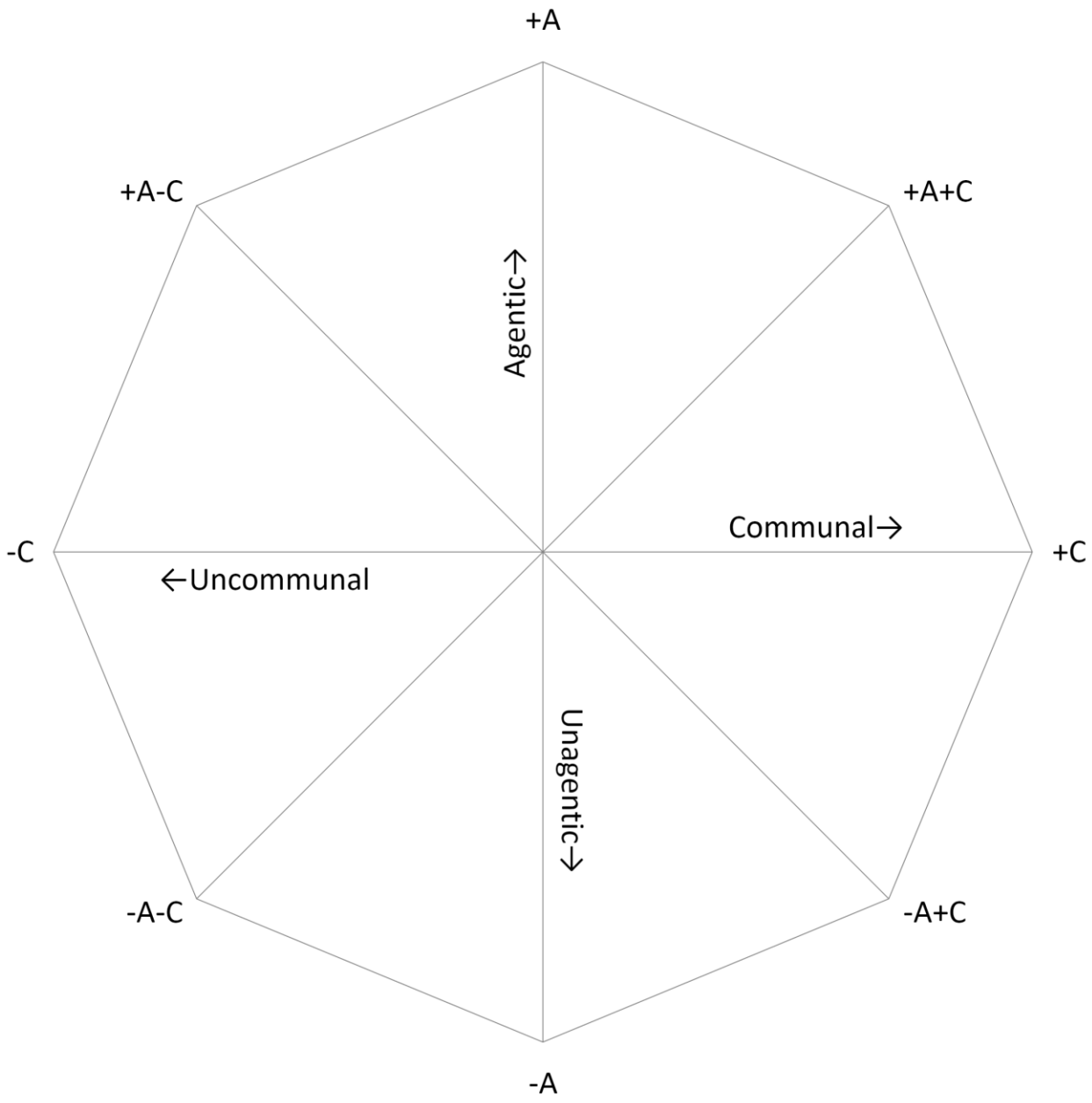
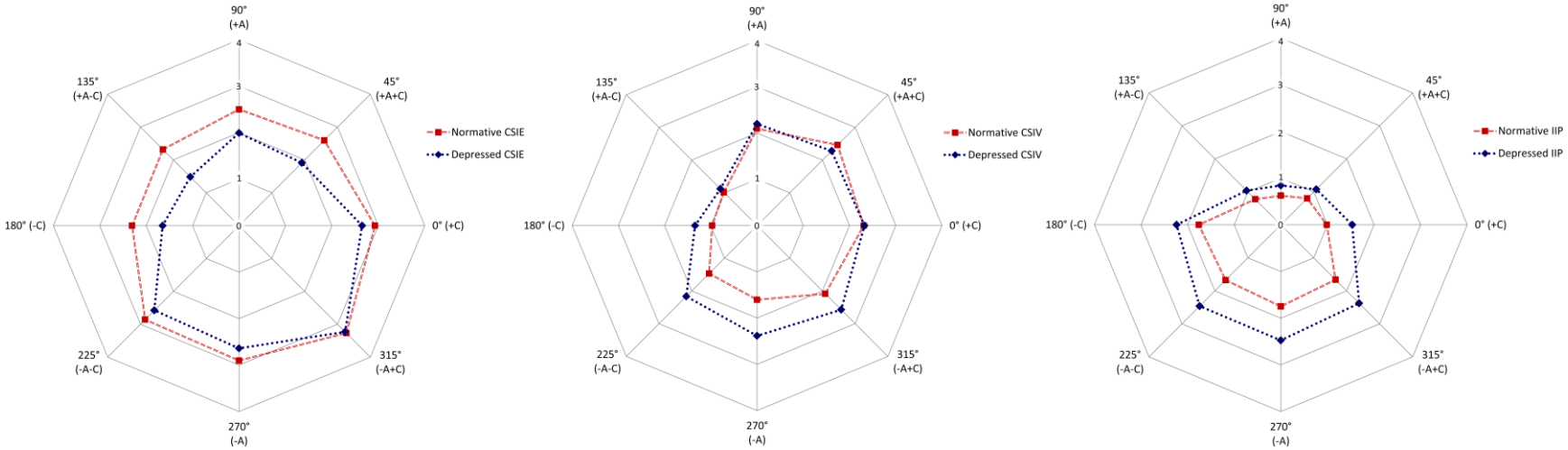


Figure 1. The Interpersonal Circumplex.



a. b. c.

Figure 2. Mean interpersonal self-efficacy (panel a), goals (panel b), and problems (panel c) in the depressed and normative samples. Along each octant scale, scores could range from a minimum of zero (the midpoint of the circle) to a maximum of four (the circumference).

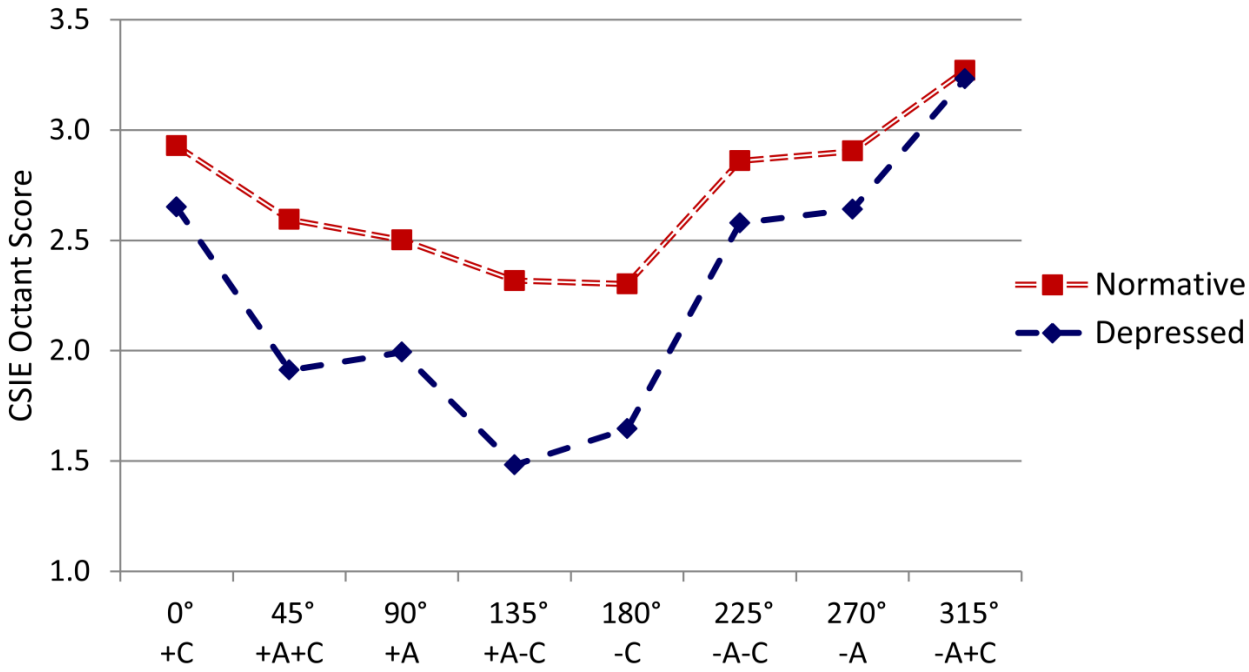


Figure 3. Mean Circumplex Scales of Interpersonal Efficacy octant scores for the depressed and normative samples.

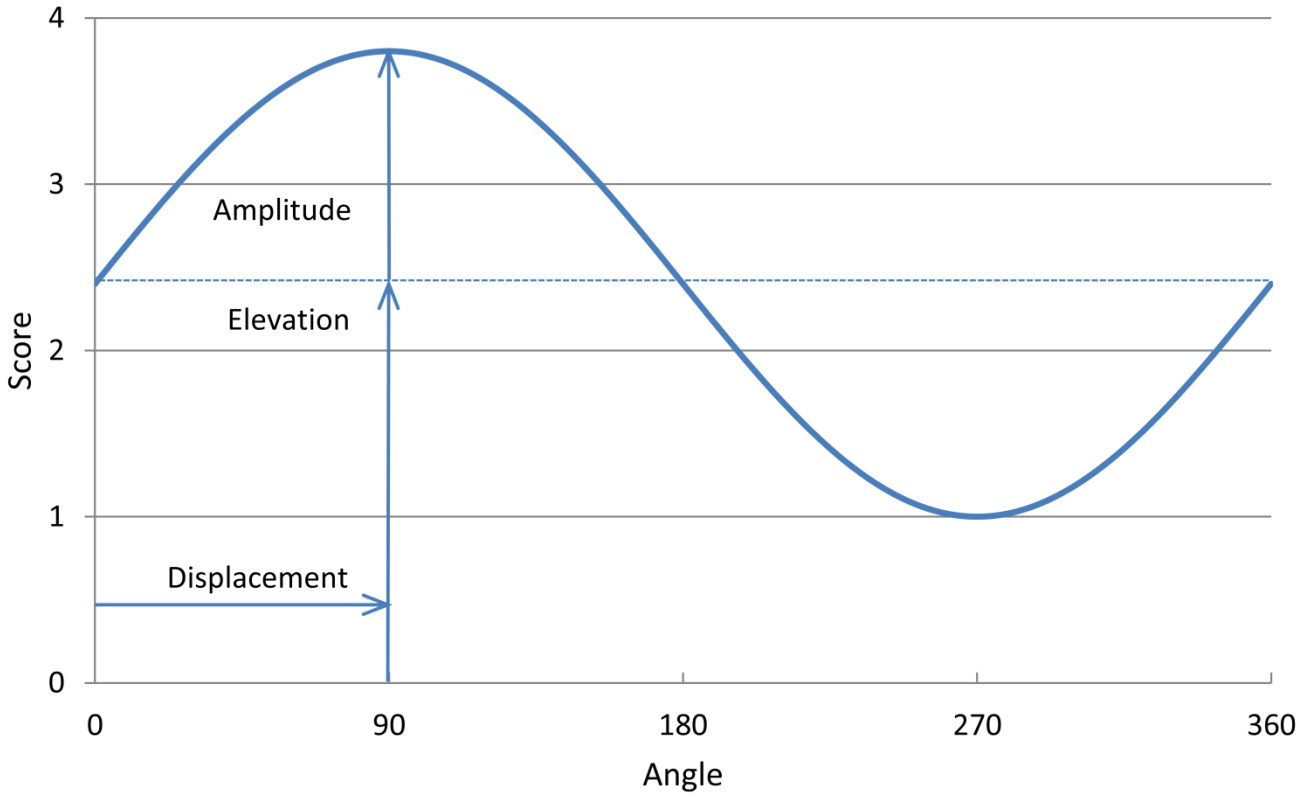


Figure 4. Illustration of a hypothetical structural summary cosine curve. Displacement is the distance in degrees from 0° (+C) to the peak angle. Amplitude reflects the degree to which the curve shows a distinct peak and trough. Elevation reflects the curve's average level.

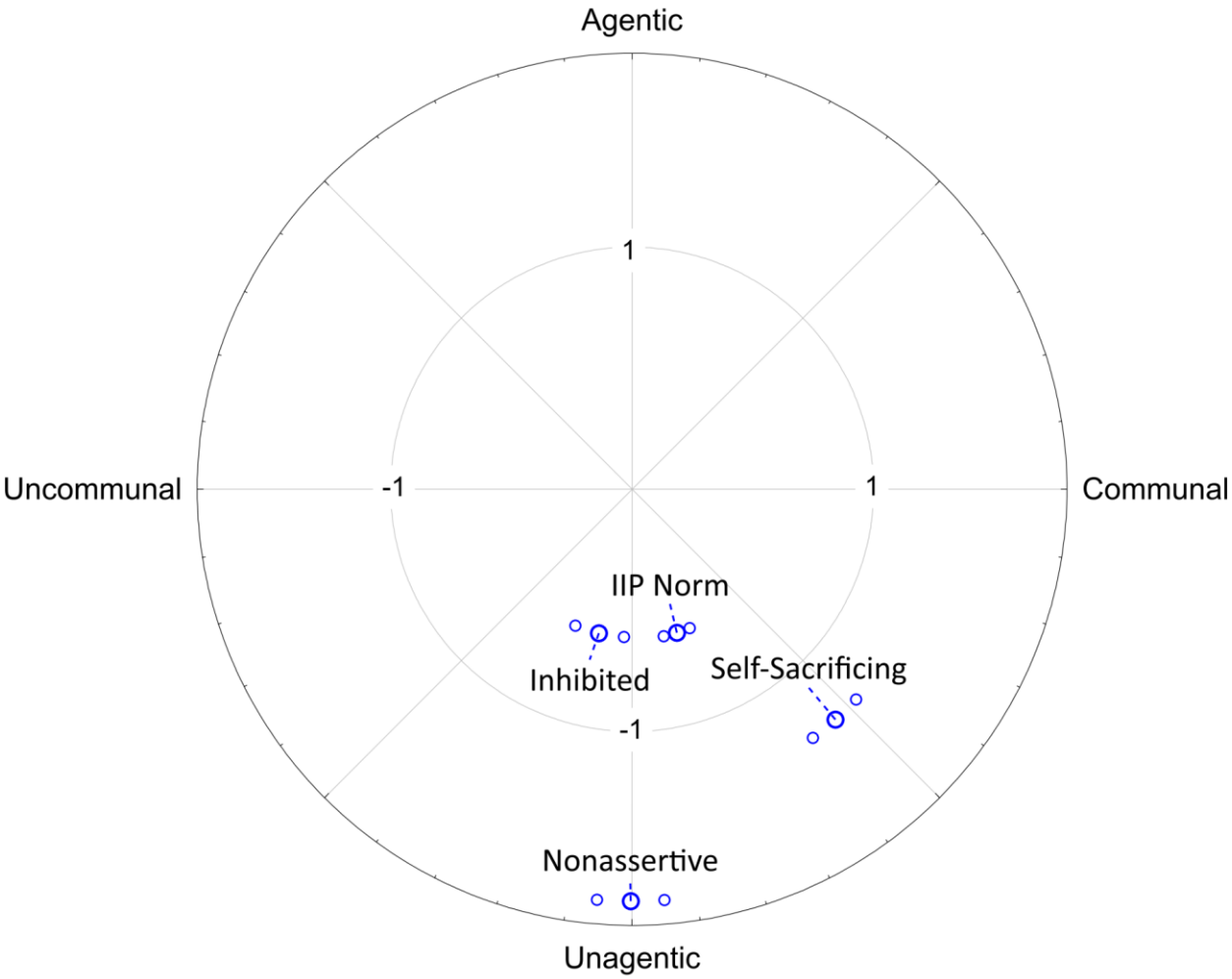


Figure 5. Circular means and amplitudes of interpersonal problem profiles for the normative participants and the three groups of depressed patients identified by latent profile analysis. The smaller circles show the 95% confidence interval around each mean angular location.

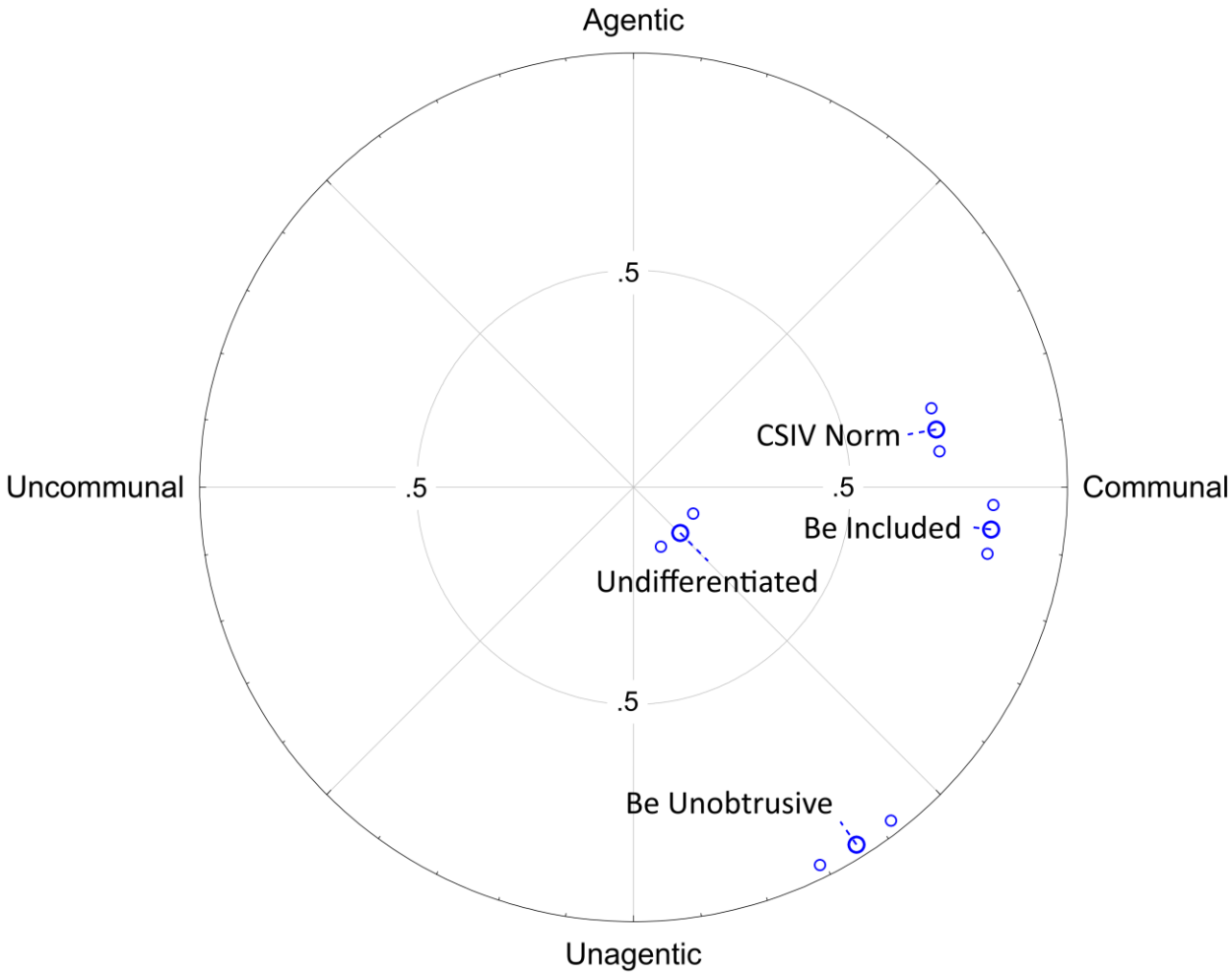


Figure 6. Circular means and amplitudes of interpersonal goal profiles for the normative participants and the three groups of depressed patients identified by latent profile analysis. The smaller circles show the 95% confidence interval around each mean angular location.

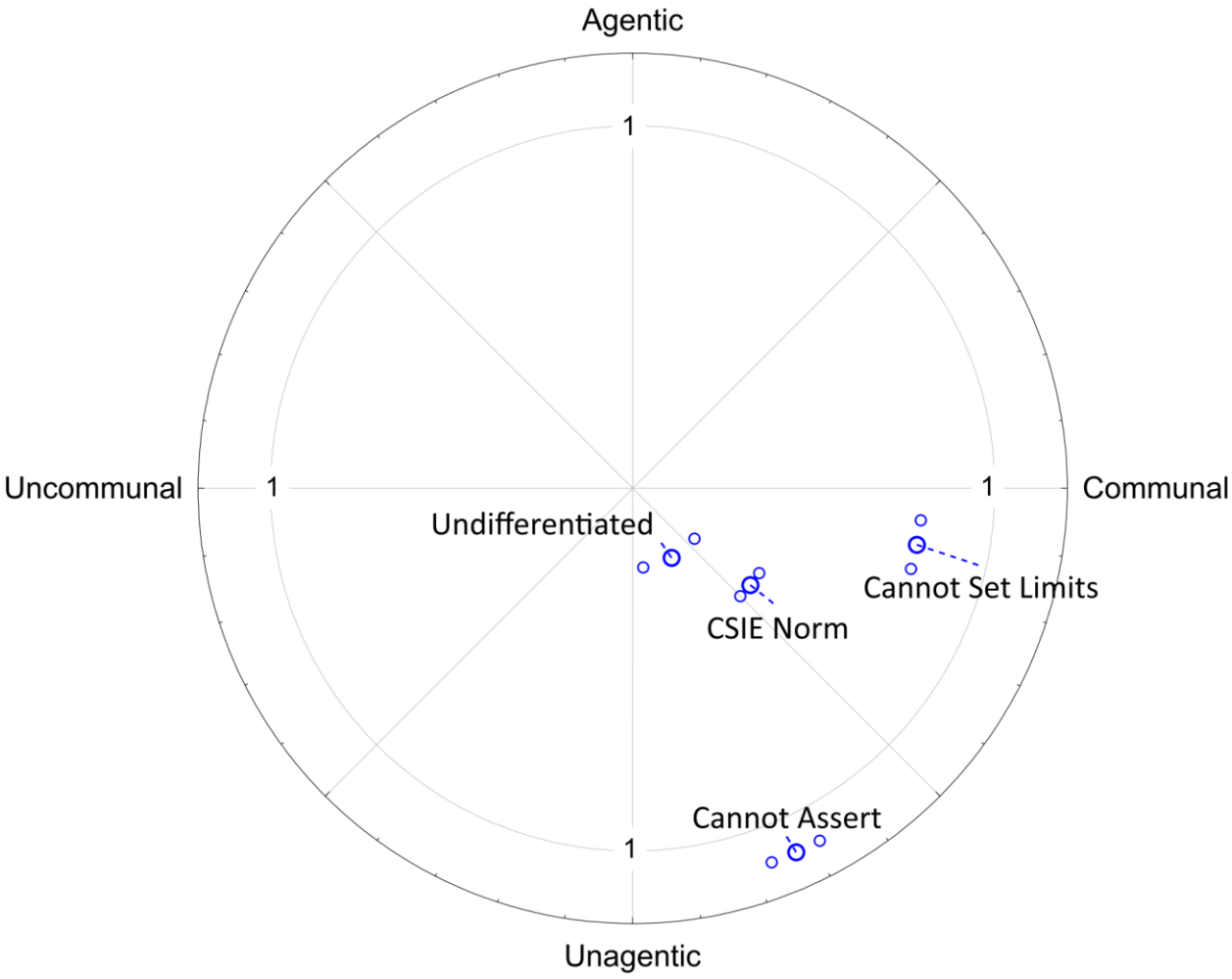


Figure 7. Circular means and amplitudes of interpersonal efficacy profiles for the normative participants and the three groups of depressed patients identified by latent profile analysis. The smaller circles show the 95% confidence interval around each mean angular location.

Table 1

Demographics Characteristics for the Depressed and Normative Samples

	Depressed	Normative - IIP	Normative - CSIV	Normative - CSIE
N	138	361	389	406
Age	45.6 (9.4)	33.5 (12.0)	35.2 (11.1)	36.2 (11.9)
% Female	58.7	52.1	55.0	53.7
% Married	44.2	--	41.6	39.7
% Not Working	77.5	--	18.5	18.0

Note. "Not Working" includes individuals who are unemployed or on welfare or sick leave, but excludes students and retired individuals. The IIP normative sample did not report employment or marital status.

Table 2

Examples of Items from Each Octant of the CSIE, CSIV, and IIP

Octant	Example CSIE Items *How confident are you that you can…*	Example CSIV Items *When with others, how important is it that…*	Example IIP Items *It is hard for me to…*
Communal (+C)	…be helpful	…I feel connected to them	…let myself feel angry at somebody I like
Agentic & Communal (+A+C)	…express myself openly	…they respect what I have to say	…keep things private from other people
Agentic (+A)	…be assertive	…I appear confident	…take instructions from people who have authority over me
Agentic & Uncommunal (+A-C)	…tell them when I am annoyed	…I keep the upper hand	…really care about other people's problems
Uncommunal (-C)	…get them to leave me alone	…I keep my guard up	…show affection to people
Unagentic & Uncommunal (-A-C)	…hide my thoughts and feelings	…I not say something stupid	…join in on groups
Unagentic (-A)	…let others take charge	…I not make them angry	…be firm when I need to be
Unagentic & Communal (-A+C)	…get along with them	…they like me	…say "no" to other people

Table 3

Interpersonal Self-Efficacy, Goals, and Problems in the Depressed and Normative Samples

	Interpersonal Self-Efficacy (CSIE)						Interpersonal Goals (CSIV)						Interpersonal Problems (IIP)					
	Depressed		Normative				Depressed		Normative				Depressed		Normative			
Scale	*M*	*SD*	*M*	*SD*	*t*	*d*	*M*	*SD*	*M*	*SD*	*t*	*d*	*M*	*SD*	*M*	*SD*	*t*	*d*
+A	1.99	*0.82*	2.50	*0.89*	-5.92**	-.58	2.20	*0.71*	2.10	*0.70*	1.48	.15	0.84	*0.71*	0.63	*0.66*	3.19**	.32
+A-C	1.48	*0.78*	2.32	*0.84*	-10.31**	-1.02	1.12	*0.71*	1.02	*0.75*	1.45	.14	1.08	*0.98*	0.80	*0.80*	3.22**	.32
-C	1.65	*0.88*	2.30	*0.77*	-8.30**	-.82	1.34	*0.78*	0.97	*0.75*	4.93**	.49	1.53	*0.91*	0.99	*0.84*	6.33**	.63
-A-C	2.58	*0.69*	2.86	*0.69*	-4.16**	-.41	2.17	*0.73*	1.46	*0.79*	9.10**	.90	2.38	*0.93*	1.66	*1.07*	6.90**	.69
-A	2.64	*0.64*	2.90	*0.60*	-4.37**	-.43	2.38	*0.69*	1.61	*0.81*	10.05**	1.00	2.47	*0.99*	1.75	*0.97*	7.47**	.75
-A+C	3.23	*0.56*	3.27	*0.49*	-0.77	-.08	2.57	*0.77*	2.09	*0.79*	6.26**	.62	2.46	*0.86*	1.67	*0.88*	9.00**	.90
+C	2.65	*0.69*	2.93	*0.61*	-4.46**	-.44	2.32	*0.77*	2.31	*0.80*	0.15	.01	2.24	*1.04*	1.76	*0.97*	4.84**	.48
+A+C	1.91	*0.84*	2.59	*0.79*	-8.61**	-.85	2.28	*0.66*	2.46	*0.69*	-2.65**	-.26	1.04	*0.87*	0.77	*0.74*	3.34**	.33
Mean	2.27	*0.47*	2.71	*0.46*	-9.79**	-.97	2.05	*0.52*	1.75	*0.54*	5.61**	.56	1.75	*0.49*	1.25	*0.55*	9.32**	.93

*Note. N*s = 138 depressed patients, 406 normative CSIE, 389 normative CSIV, and 361 normative IIP. Ratings are on 0-to-4 scales. Standard deviations are in italics. The *t*-values test the difference between depressed and normative samples. By convention, Cohen's *d* values exceeding .2, .5, and .8 reflect small, medium, and large effect sizes, respectively.

* $p < .05$ ** $p < .005$

Table 4

Circular Statistics and Structural Summary Parameters for Depressed Patients

	Circular Statistics			Structural Summary Parameters			
Measure - Sample	Mean	Variance (V_θ)	95% CI	Angle	Elevation	Amplitude	R^2
IIP - Normative	287.5	50.3	[292.6,282.2]	287.8	1.25	0.62	.89
IIP - Depressed	279.2	39.1	[285.7,272.7]	281.6	1.75	0.91	.95
CSIV - Normative	10.8	41.2	[14.9,6.7]	8.9	1.75	0.71	.88
CSIV - Depressed	333.8	43.1	[341.0,326.7]	331.6	2.05	0.59	.74
CSIE - Normative	320.6	57.6	[326.2,315.0]	311.4	2.71	0.42	.89
CSIE - Depressed	311.2	39.2	[317.7,304.6]	306.9	2.27	0.74	.87

*Note. N*s = 138 depressed patients, 406 normative CSIE, 389 normative CSIV, and 361 normative IIP. V_θ = Angular variance (dispersion around circular mean); Angle = direction of group's predominant interpersonal tendency (in degrees); Elevation = average rating; Amplitude = circular profile differentiation; R^2 = goodness-of-fit to cosine curve.

Table 5

Model Fit and Entropy for Latent Profile Analyses of Interpersonal Problem (IIP), Interpersonal Goal (CSIV), and Interpersonal Efficacy (CSIE) Octant Scores

Model (# Profiles)	Interpersonal Problems		Interpersonal Goals		Interpersonal Efficacy	
	BIC	Entropy	BIC	Entropy	BIC	Entropy
1	2614. 7	N/A	1698.6	N/A	3979.4	N/A
2	2521.7	0.75	1567.9	0.83	3825.7	0.83
3	2488.8	0.82	1488.9	0.86	3782.3	0.86
4	2490.1	0.84	1477.4	0.85	3743.3	0.90
5	2491.8	0.86	1474.2	0.86	3726.7	0.91
6	2516.9	0.86	1476.4	0.85	3707.5	0.91
7	2530.3	0.88	1475.3	0.89	3717.2	0.92
8	2549.4	0.88	1484.1	0.90	3742.0	0.93

Note. BIC = Bayesian information criterion.

Table 6

Circular Statistics and Structural Summary Parameters for Each Group of Interpersonal Problem (IIP), Goal (CSIV), and Efficacy (CSIE) Profiles

		Circular Statistics			Structural Summary Parameters			
Measure / Group	*N*	Mean	V_θ	95% CI	Angle	Elevation	Amplitude	R^2
IIP (Problems)								
Inhibited	69	257.0	41.2	[247.3,266.8]	251.5	1.60	0.61	.86
Nonassertive	23	269.8	11.6	[265.1,274.5]	270.9	2.09	1.70	.93
Self-Sacrificing	46	311.5	18.8	[306.1,316.9]	310.6	1.82	1.27	.99
CSIV (Goals)								
Be Unobtrusive	32	302.0	16.4	[296.3,307.7]	302.1	2.04	0.97	.83
Undifferentiated	40	315.7	66.9	[294.9,336.3]	282.5	2.01	0.15	.15
Be Included	66	353.3	16.3	[349.4,357.2]	352.7	2.08	0.83	.84
CSIE (Efficacy)								
Cannot Assert	69	294.2	15.9	[290.4,298.0]	293.8	2.07	1.10	.92
Undifferentiated	31	299.3	61.6	[277.6,320.9]	276.4	2.50	0.22	.34
Cannot Set Limits	38	348.8	15.3	[343.9,353.7]	349.3	2.44	0.80	.85

Note. V_θ = Angular variance (dispersion around circular mean); Angle = direction of group's predominant interpersonal tendency (in degrees); Elevation = average rating; Amplitude = circular profile differentiation; R^2 = goodness-of-fit to cosine curve.

Table 7

Demographics Characteristics for Each Group of Interpersonal Problem (IIP), Goal (CSIV), and Efficacy Profiles

Measure / Group	% Female	% Married	% Not Working
IIP (Problems)			
Inhibited	42.0%	47.0%	73.4%
Nonassertive	87.0%	39.1%	86.4%
Self-Sacrificing	69.6%	45.7%	75.6%
$\chi^2(2)$	*17.72***	*0.43*	*1.54*
CSIV (Goals)			
Be Unobtrusive	81.3%	62.5%	81.3%
Undifferentiated	47.5%	44.7%	84.6%
Be Included	54.5%	56.9%	68.3%
$\chi^2(2)$	*9.25**	*2.44*	*4.04*
CSIE (Efficacy)			
Cannot Assert	69.6%	43.5%	83.8%
Undifferentiated	38.7%	45.2%	74.2%
Cannot Set Limits	55.3%	44.7%	73.7%
$\chi^2(2)$	*8.66**	*0.03*	*2.02*

* $p < .05$ ** $p < .005$

Table 8

Age and Depression Levels for Each Group of Interpersonal Problem (IIP), Goal (CSIV), and Efficacy (CSIE) Profiles

IIP Groups								
	Inhibited		Nonassertive		Self-Sacrificing			
	M	*SD*	*M*	*SD*	*M*	*SD*	F	η_p^2
Age	44.3	*9.2*	48.7	*6.6*	46.2	*10.7*	1.99	.03
HRSD	27.1	*7.5*	31.6	*7.0*	28.0	*7.3*	2.85	.04
BDI	29.1	*11.2*	35.5	*8.3*	30.0	*11.1*	2.88	.05
CSIV Groups								
	Be Unobtrusive		Undifferentiated		Be Included			
	M	*SD*	*M*	*SD*	*M*	*SD*	F	η_p^2
Age	47.3	*9.6*	45.7	*9.7*	44.9	*9.2*	0.66	.01
HRSD	30.5_b	*6.1*	31.1_b	*7.4*	25.0_a	*7.1*	11.02**	.15
BDI	36.5_b	*8.4*	28.6_a	*10.6*	28.6_a	*11.2*	6.35**	.10
CSIE Groups								
	Cannot Assert		Undifferentiated		Cannot Set Limits			
	M	*SD*	*M*	*SD*	*M*	*SD*	F	η_p^2
Age	46.2	*9.0*	44.1	*10.5*	45.8	*9.2*	0.56	.01
HRSD	29.0_b	*7.6*	29.4_b	*7.6*	25.5_a	*6.7*	3.07*	.05
BDI	32.2	*8.9*	27.6	*12.8*	29.6	*12.2*	1.95	.03

Note. HRSD = Hamilton Rating Scale for Depression. BDI = Beck Depression Inventory. Due to missing data, *n*s = 126 and 123 for the HRSD and BDI analyses, respectively. η_p^2 = partial eta-squared. Means with different subscripts differ at $p < .05$ using Duncan's post hoc test.

* $p < .05$ ** $p < .005$