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Interpersonal Competence Across Domains: Relevance to Personality Pathology

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Abstract

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Interpersonal problems are significant markers of personality disorders (PDs), yet there are few data examining the specific social skills deficits that individuals with PDs exhibit. There is evidence to suggest that interpersonal problems in PD do not clearly map onto DSM-IV PD diagnostic categories. This study used canonical correlation analyses to examine the relationship between interpersonal competence and PDs, first as categorized by DSM-IV diagnoses, then as categorized by empirically-derived factors, in a sample (n=135) of euthymic college freshmen with a history of major depressive disorder. In both analyses, the most significant source of shared variance was social inhibition, or trouble initiating social interactions. The variates extracted in the first analysis reveal that individuals with low interpersonal competence endorse more avoidant, schizotypal, and schizoid PD descriptors ($p < 0.001$). The variates extracted in the second analysis describe two groups. One represents a group of individuals with generally low interpersonal competence who are socially inhibited, mistrusting, unable to empathize, and fearful of abandonment ($p < 0.001$). The other represents individuals who are poor at self-disclosure; these individuals are suspicious of others and only seek to connect with people for their own gain, but at the core, they are insecure about their own identity ($p = 0.005$). Training in initiating social interactions and disclosure of personal information may be important in the treatment of individuals with PD who experience interpersonal impairment. Empirically derived categories of PD symptoms may capture interpersonal problems experienced by individuals with PD which the traditional DSM-IV categories do not.

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Table of Contents

Introduction.....	1
Methods.....	9
Results.....	13
Discussion.....	15
References.....	25
Table 1: Sample Characteristics- Demographic and Clinical Variables.....	30
Table 2: Bivariate Correlations- IPDE Dimensional Scores with ICQ Domains.....	32
Table 3: Bivariate Correlations- IPDE Factor Scores with ICQ Domains.....	33
Table 4: Canonical Correlations of IPDE Dimensional Scores and ICQ Domains..	34
Table 5: Canonical Correlations of IPDE Factor Scores and ICQ Domains.....	35

INTERPERSONAL COMPETENCE ACROSS DOMAINS: RELEVANCE TO PERSONALITY PATHOLOGY

By Anjana Muralidharan

Introduction

Personality pathology has been repeatedly linked with enduring impairment in social functioning (Oltmanns, Melley, & Turkheimer, 2002; Shea et al., 1990; Skodol et al., 2005), putatively due to rigid and persistent adherence to maladaptive patterns of interpersonal behavior (Sim & Romney, 1990). There is, in fact, a line of evidence which suggests that impaired interpersonal functioning is common to all personality pathology and can be used as an observable marker of PD (Kim, Pilkonis, & Barkham, 1997; Stern, Kim, Trull, Scarpa, & Pilkonis, 2000). Despite the significant link between PD pathology and interpersonal difficulties, there is little research on the specific PD symptoms which are associated with social impairment. In other words, there is little information regarding the *interpersonal skills* deficits that lead to the troubled relationships that patients with PD experience.

One reason for the dearth of information in this area is that social functioning in PDs has generally been measured by using a global assessment of impairment. Relatively little attention has been given to delineating the specific interpersonal skills deficits (deficits in *interpersonal competence*) associated with social impairment in PDs. Further characterization of the relationship between PD diagnoses and interpersonal competence will inform the treatment of personality pathology.

A number of studies have described social functioning in PDs in terms of maladaptive interpersonal styles employing the two-factor interpersonal circumplex

model (Pincus & Wiggins, 1990; Sim & Romney, 1990; Soldz, Budman, Demby, & Merry, 1993). These studies have shown that certain dysfunctional interpersonal styles occur across different PDs; i.e., they are not unique to specific diagnoses. Similarly, interpersonal problems within PD diagnoses may be quite heterogeneous. For example, in one study, both schizoid and antisocial PDs were characterized as being “overly guarded” on the interpersonal circumplex, while antisocial PD subjects were also characterized as being “overly domineering” (Matano & Locke, 1995). Thus, there is some evidence that interpersonal impairment in PDs does not clearly map onto DSM-IV PD diagnoses (for review, see (Sheets & Craighead, 2007)). This indicates that it may be useful to explore the possibility of classifying interpersonal problems in PD by some means other than using conventional diagnostic categories.

The present study had two aims: to characterize the relationship between personality pathology and interpersonal competence; and, to explore the usefulness of an alternative (empirically-derived) PD symptom classification system to describe interpersonal skills deficits in PDs. To accomplish these aims, a reliable and valid measure of interpersonal competence was needed.

Interpersonal Competence

Interpersonal competence may be conceptualized according to *interpersonal task domains*. Based on a comprehensive literature review (Buhrmester, Furman, Wittenberg, & Reis, 1988), investigators identified five conceptually significant interpersonal task domains: initiating relationships, self-disclosure, asserting displeasure with others’ actions, providing emotional support, and managing interpersonal conflict. Proficiency in each of these interpersonal tasks contributes uniquely to success in initiating and

maintaining different types of interactions and relationships (Buhrmester et al., 1988; Lipton & Nelson, 1980).

The Interpersonal Competence Questionnaire (ICQ) is a 40-item self-report measure which assesses interpersonal competence in each of the five aforementioned task domains (Buhrmester et al., 1988). Each item describes a common interpersonal situation, and subjects are asked to rate their own self-perceived competence in handling each situation on a five-point scale. For example, one of the “initiation” items is “Asking or suggesting to someone new that you get together and do something (e.g., go out together)”. Confirmatory factor analysis revealed the same five distinguishable internally consistent domains (Cronbach alphas ranged from 0.77 to 0.87), and they were moderately correlated with each other. In the original version of the ICQ, each item was rated for “same-sex friends” and “opposite-sex romantic partners,” and the five-factor structure was found to be generalizable across same-sex and opposite-sex ratings. For the purposes of the present study, each item was rated only once for social interactions in general, without differentiating between friends and romantic partners. Four-week test-retest reliability was 0.78 for total ICQ score and ranged from 0.69 to 0.89 for each of the domain scales (Buhrmester et al., 1988).

ICQ scores among college students have been positively related to self-report measures of social activities, well-being, dating skills, and assertion, but negatively correlated with measures of anxiety, loneliness, social reticence, and depressive symptoms (Buhrmester et al., 1988; Daley & Hammen, 2002; Gudleski & Shean, 2000). ICQ scores were negatively correlated with insecure attachment cognitions and poor quality of family and peer relationships; in turn, insecure attachment and poor quality of

relationships were found to predict development of depression in a non-clinical sample of late adolescent women (Eberhart & Hammen, 2006). ICQ scores have been positively related to relationship satisfaction in dating couples (Lamke, Sollie, Durbin, & Fitzpatrick, 1994), improved memory for conversation (Miller & de Winstanley, 2002), and retrospective recall of childhood social support (Butler, Doherty, & Potter, 2007), and negatively related to interpersonal stress in adolescent females (Herzberg et al., 1998) and self-reported rejection sensitivity (Butler et al., 2007).

The only study to relate the ICQ to personality pathology administered it to 50 inpatients with substance abuse disorders. The study found that subjects with any comorbid PD diagnosis had significantly lower self-disclosure, negative assertion, and conflict management competence in same-sex interactions and significantly lower conflict management competence in opposite-sex interactions (Smyth & Wiechelt, 2005).

In summary, the ICQ is a reliable and valid measure of self-perceived interpersonal competence in five distinguishable, empirically-supported interpersonal task domains. Social impairment in personality pathology has been typically measured using a global assessment of functioning (Shea et al., 1990; Skodol et al., 2005). The use of the ICQ in a population with PD symptoms will provide a more in-depth characterization of the relationship between personality pathology and social impairment.

Interpersonal Dysfunction in PD

As previously mentioned, there is evidence to suggest that specific interpersonal problems in PDs do not clearly map onto DSM-IV diagnostic categories. One set of studies, which began to explore the way in which interpersonal problems do tend to cluster in subjects with PD symptoms, comes from the factor analysis of the Inventory of

Interpersonal Problems – Personality Disorders version (IIP-PD; Kim et al., 1997). The IIP-PD is a self-report of interpersonal difficulties which can be reliably used to screen for the presence or absence of PD. When items that discriminated between the presence and absence of PD were factor analyzed, three factors emerged. The first, *interpersonal sensitivity*, was characterized by heightened sensitivity and affectivity to criticism and rejection in interpersonal interactions. The second, *interpersonal ambivalence*, represented an inability to work collaboratively with others in relationships. The third, *aggression*, was characterized by argumentative and hostile behavior in social interactions (Kim et al., 1997). Confirmatory factor analyses of the IIP-PD in both clinical and non-clinical samples have found that the best-fitting model also includes one second-order factor representing general interpersonal dysfunction (Kim et al., 1997; Stern et al., 2000).

Two of the three first-order factors described by Kim et al. (1997), as well as the second-order global interpersonal dysfunction factor, were replicated in a recent study which correlated self and peer ratings of personality pathology (as measured by the Peer Inventory for Personality Disorder) and interpersonal problems (as measured by an interpersonal circumplex version of the IIP, the IIP-64) (Clifton, Turkheimer, & Oltmanns, 2005). These investigators used a canonical correlation procedure to examine the relationship between self ratings of personality pathology and interpersonal problems. The first pair of variates to emerge appeared to represent a general dysfunction factor which was positively correlated with all the PDs and with a pattern of *interpersonal hostility* and *social inhibition* on the IIP-64. The second pair of canonical variates was also characterized by *social inhibition*. *Interpersonal hostility* parallels Kim et al.'s

aggression factor, while *social inhibition* is subsumed under Kim et al.'s *interpersonal sensitivity* factor. These findings suggest a pattern by which interpersonal problems tend to cluster together in subjects with PD; yet, this pattern does not map clearly onto conventional DSM-IV PD categories.

Factor analyses of a widely used interview measure of personality pathology, the International Personality Disorder Examination (Loranger, Sartorius, Andreoli, & Berger, 1994), provide further evidence for how interpersonal problems in PD tend to cluster (Nestadt et al., 2006; Sheets, Duncan, Bjornsson, & Craighead, 2008). One such analysis (Sheets et al., 2008), produced an eight-factor solution. This analysis is of particular relevance to the present study as it sampled the same population (namely, previously depressed college students); indeed, the subjects included in the current study comprised part of the factor analysis sample. Sheets and colleagues (2008) compared their eight-factor solution to a five-factor solution described in a factor analysis of the International Personality Disorder Examination (IPDE) in an epidemiological sample (Nestadt et al., 2006) and concluded that three of the five factors described by Nestadt et al. (2006) were closely related to their own analysis (Sheets et al., 2008).

First, Nestadt's *neurotic avoidant* factor was a combination of Sheets' *social anxiety*, *interpersonal hypersensitivity*, and *identity disturbance* factors. *Social anxiety* included *social inhibition* (which also emerged in the Clifton study (2005)), feeling inferior to others, and anxiety in social interactions. *Interpersonal hypersensitivity* was similar to Kim et al.'s *interpersonal sensitivity*, and included fears of rejection and abandonment. The *neurotic avoidant* factor also included more broadly seeking

validation through affiliation with others, an unstable sense of self, and conflict and instability in interpersonal relationships.

Second, Nestadt's *aloof* factor included Sheets' *social avoidance* and *suspiciousness* factors and was characterized by paranoia, a preference for solitary activities, emotional coldness, and a lack of interest in relationships. This factor may include some of the *social inhibition* factor which emerged so prominently in the Clifton and colleagues (2005) study.

Finally, Nestadt's *impulsive callous* factor was related to Sheets' *antisocial conduct* and *unscrupulousness* factors. Although Sheets' factors included the diagnostic criteria for antisocial PD, *impulsive callous* also includes interpersonal exploitation and intense anger (Nestadt et al., 2006; Sheets et al., 2008). *Impulsive callous* is similar, then, to Kim et al.'s *aggression* factor and to Clifton et al.'s *interpersonal hostility* factor, described above.

Taking Sheets' and Nestadt's findings together with Kim et al.'s factor analysis of the IIP-PD (1997), as well as Clifton et al.'s canonical correlation using the IIP-64 (2005), we concluded that four main interpersonal dysfunction factors are present in subjects with PD. These four factors approximately map onto the three Nestadt factors described above, but separate *social anxiety/inhibition* from the *neurotic avoidant* factor. In sum, there is a *social sensitivity* factor (characterized by sensitivity to rejection and abandonment and an unstable sense of self), a *social anxiety/inhibition* factor (characterized by anxiety and inhibition in social situations due to a sense of inadequacy), an *aggression/hostility* factor (characterized by interpersonal exploitation, anger, and

hostility), and a *social avoidance* factor (characterized by suspiciousness and a lack of interest in relationships).

The present study conducted an analysis similar to the Clifton et al. (2005) study described above. The IPDE was employed to assess the presence of PD symptoms in a population at risk for major depression; namely, a sample of college students fully recovered from at least one past major depressive episode. The IPDE produces a dimensional score for each of the ten DSM-IV PD diagnoses. The first aim of the present study was to examine the relationship between the latent variables represented by the IPDE and the ICQ (“personality pathology” and “interpersonal competence”). To this end, a canonical correlation was conducted using the ten DSM-IV PD dimensional scores from the IPDE and the five domain scores from the ICQ. It was hypothesized that this analysis would reveal two pairs of canonical variates, similar to those found in the Clifton et al. (2005) study. The first, accounting for the most variance, would represent a general interpersonal dysfunction factor which would be negatively related to all the ICQ domains and positively related to all the PD diagnoses. The second would represent a social inhibition factor which would be most strongly related to initiation and negative assertion competence, and to the PD diagnoses marked by shyness, isolation, and/or interpersonal sensitivity (schizoid, schizotypal, and avoidant PDs) (APA, 2000).

The second aim of the present study was to investigate the relationship between Sheets and colleagues’ (2008) empirically-derived categorization of PD symptoms and the five ICQ domains. We aimed to determine whether these empirically derived categories better accounted for variance in interpersonal competence when compared to the DSM-IV categorization of PD symptoms in a population vulnerable to depression. A

canonical correlation was conducted with the five ICQ domains and the eight IPDE factors delineated by Sheets et al. We hypothesized that the largest source of shared variance would be *social anxiety/inhibition*, which would be most strongly related to initiation and negative assertion competence, and to the *social anxiety* factor of the IPDE. We hypothesized that subjects who were high on *social sensitivity* and *aggression/hostility* would both have deficits in managing conflict and in providing emotional support, so the second pair of variates to emerge would represent an interpersonal conflict factor which would be most strongly related to emotional support and conflict management competence of the ICQ, and to the *interpersonal hypersensitivity*, *identity disturbance*, *antisocial conduct* and *unscrupulousness* factors of the IPDE. Finally, we hypothesized that the third pair of canonical variates to emerge would represent a *social avoidance* factor which would be strongly related to initiation competence on the ICQ and to the *social avoidance* and *suspiciousness* IPDE factors.

Methods

Overview

Subjects were 135 participants enrolled in a study assessing the efficacy of a group intervention in the prevention of recurrence in depression at University of Colorado at Boulder (CU). Full-time first semester freshman students between 18-21 years old who met DSM-IV criteria (APA, 2000) for a past major depressive disorder (MDD) but were in recovery at the time of the study were enrolled. Subjects were considered recovered if they had experienced no more than two symptoms of major depression for at least two months. Subjects were excluded if they met criteria for bipolar

disorder, current dysthymic disorder, current substance dependence, and a past or current psychotic disorder. They were also excluded if they were receiving treatment (regular psychotherapy or antidepressant medication) at study entry, or if they were imminently suicidal. Participants entered the study in the fall semester of their freshman year and completed two assessment sessions which included clinical interviews and the completion of self-report measures. Prior to study entry, all individuals signed written consent forms approved by the university's IRB.

Assessment Materials

Structured Clinical Interview for DSM-IV, Nonpatient Version (SCID)

The SCID (First, Spitzer, Gibbon, & Williams, 2001) is a commonly used semi-structured interview which provides current and lifetime diagnoses of DSM-IV Axis I disorders. The SCID takes between 45-90 minutes to administer and was used to determine eligibility. Interrater reliability for depression diagnosis is approximately 0.80 (Zanarini et al., 2000). In the current study, MDD diagnosis reliability was moderately satisfactory ($\kappa = 0.66$ in a random 20% of interviews).

International Personality Disorder Examination (IPDE)

The IPDE (Loranger et al., 1994) is a 99-item semistructured clinical interview which provides both dimensional and categorical scores for each of the DSM-IV Axis II diagnoses. Interrater reliability ranges from 0.79 to 0.94 ($M = .77$) for the dimensional score for each disorder. Temporal stability coefficients range from 0.65 to 0.92 ($M = .86$) for the total dimensional score (Boyle, 2003). In the present study, the intraclass correlation across six interviewers for the IPDE total dimensional score was 0.95, and the intraclass correlations for the dimensional scores on each DSM-IV personality disorder

ranged from 0.75 to 0.98 in a random twenty percent of interviews, except for the intraclass correlation for the schizotypal PD dimensional score, which was 0.46 (Sheets et al., 2008).

Beck Depression Inventory, 2nd Edition (BDI-II)

The BDI-II (Beck, Steer, & Brown, 1996) is a 21-item self-report measure in which items assess the presence of symptoms of depression over the past 2 weeks. Items are rated on a scale from 0-3, in which 0 indicates the absence of a symptom and greater item scores indicate higher severity of the symptom. The BDI-II has strong internal consistency (mean coefficient alpha = 0.93 for college students), test-retest reliability (0.93 for a 1-week interval), and construct validity (Beck, Steer, & Brown, 1996).

Interpersonal Competence Questionnaire (ICQ)

The ICQ (Buhrmester et al., 1988) is a 40-item self-report questionnaire which assesses interpersonal competence and social skills in five interpersonal task domains: initiating relationships, providing emotional support, self-disclosure, negative assertion, and conflict management. Confirmatory factor analysis revealed that the five aforementioned domains were distinct and internally consistent (Cronbach alphas ranged from 0.77 to 0.87) and were moderately correlated with each other. In the original version of the ICQ, each item is rated for “same-sex friends” and “opposite-sex romantic partners,” and the five-factor structure was generalizable across same-sex and opposite-sex ratings. For the purposes of this study, each item was rated only once for social interactions in general, without differentiating between friends and romantic partners. Four week test-retest reliability was 0.78 for total ICQ score and ranged from 0.69 to 0.89 for each of the domain scales. ICQ self ratings and ratings by close friends showed a

moderate correlation (ranging from 0.31-0.50 for the five domain scales) (Buhrmester et al., 1988).

Sampling and Recruitment

For three consecutive years, a survey was sent by mail to all matriculating freshman the summer before they entered the University of Colorado at Boulder. The survey explained the recurrence of depression study, defined depression, and asked students who thought they had experienced an MDE to respond. It offered a \$50 prize for one out of every 25 respondents who returned it. The survey asked students if they had ever had an MDE, how long the MDE lasted, and if they were willing to be contacted about a research study. Students who were willing to be contacted were asked to provide a name, address, and phone number. The survey was sent again via e-mail (an e-memo) to all freshmen in mid-September, but the \$50 incentive was not offered in this version of the announcement.

Gender and ethnicity of the respondents who agreed to be contacted was obtained from the Office of the Registrar with approval from the Vice Chancellor of Student Affairs. All ethnic minority respondents and a randomly selected sample of the Caucasian respondents, who had experienced at least one two-week MDE and did not indicate that they were currently depressed, were telephoned by members of the research team for further screening. Phone screens consisted of a thorough explanation of the study and a preliminary check for eligibility based on the aforementioned inclusion and exclusion criteria. Respondents were informed that they would be paid \$36 for completing the baseline assessment. Eligible individuals were scheduled for a baseline assessment with a

clinical interviewer, and received a reminder phone call the evening before their appointment.

Assessment Sessions

Participants attended two assessment sessions of approximately two hours each. At the beginning of the first session, participants consented to the prevention of recurrence study. The participants then completed the BDI-II and the ICQ¹. Finally, a clinical interviewer conducted the SCID assessment. If the individual met eligibility based on his/her SCID assessment, they were scheduled for a second baseline assessment. Treatment referrals were provided to participants as needed. Final decisions about study eligibility occurred in a consensus conference that included the clinical interviewers and an experienced Ph.D. level clinical psychologist. Individuals who did not meet criteria following the SCID assessment were given \$36 for completing this session.

The second assessment session included the completion of the IPDE with a clinical interviewer, usually the same interviewer who conducted the SCID with the subject. Subjects who completed these two assessment sessions were given \$36 for their participation.

Results

Ethnic background of the participants is reported by gender in Table 1. Means and standard deviations of all clinical data are also reported by gender in Table 1. BDI-II scores were in the mildly symptomatic range, similar to other studies which have sampled a remitted depressed adult population (Hart, Craighead, & Craighead, 2001; Iardi,

¹ Participants completed several self-report measures at this assessment. However, only the BDI-II and ICQ are relevant to the current study, so the other self-reports were not included in the present analysis.

Craighead, & Evans, 1997). IPDE total dimensional scores were somewhat lower than found previously in this population (Hart et al., 2001). **Only four individuals (approximately 3%) met criteria for a PD (three avoidant PD and one OCPD). This is a lower prevalence rate than has been found in epidemiological surveys of PD prevalence in the general population, in which the prevalence was between 9-11% (Lenzenweger, Lane, Loranger, & Kessler, 2007).** T-tests were computed to determine significant differences between genders. IPDE total dimensional scores were higher in males than females, apparently due to the presence of significantly more antisocial PD symptoms in the males. This difference was not unexpected as antisocial PD is more prevalent in males (APA, 2000). No other significant gender differences were present. Total ICQ scores and ICQ domain scores were very similar to those reported in previous studies of college students (Buhrmester et al., 1988). Bivariate correlations of IPDE scores with ICQ scores are reported in Tables 2 and 3.

After controlling for BDI-II scores (to account for variance due to current depressive symptoms), two canonical correlation analyses were conducted. Canonical correlation analyses extract multiple variate pairs from two sets of variables in order to maximize the shared variance between the two sets. All variables were standardized before being entered into the analyses. For each significantly correlated canonical variate pair ($p < 0.01$), the canonical r and the scales which were highly correlated with the variate pair are reported (correlations higher than 0.30). The cumulative variance accounted for in each set of variables by the significant variates in the opposite set of variables is also reported.

In the first canonical correlation analysis, the first variable set consisted of the five ICQ domains and the second variable set consisted of the ten IPDE PD dimensional scores. Results from this analysis are presented in Table 4. The only significant variate pair extracted (canonical $r = 0.589$, $p < 0.001$) explained only a small amount of the cumulative variance. The IPDE variate explained approximately 13% of the variance in the ICQ, while the ICQ variate explained approximately 5% of the variance in the IPDE. This variate pair was characterized by high scores on the Avoidant, Schizoid, and Schizotypal IPDE scales, and low scores on the initiation, negative assertion, emotional support, and self disclosure scales of the ICQ.

In the second analysis (see Table 5), the first variable set again consisted of the five ICQ domains, but the second variable set consisted of the eight IPDE factors as delineated by Sheets and Craighead (2008). Two significant variate pairs were extracted in this analysis (canonical $r = 0.561$, $p < 0.001$; canonical $r = 0.452$, $p = 0.005$). These variate pairs explained slightly more of the cumulative variance than the first canonical analysis. The IPDE variates collectively explained approximately 16% of the variance in the ICQ, and the ICQ variates collectively explained approximately 8% of the variance in the IPDE. The first variate pair was characterized by *high* scores on the Social Anxiety, Social Avoidance, and Interpersonal Hypersensitivity IPDE factors, and *low* scores on the initiation, negative assertion, emotional support, and self disclosure scales of the ICQ. The second variate pair was characterized by *low* scores on the Suspiciousness and Identity Disturbance IPDE factors, and by *high* scores on the Self-Disclosure scale of the ICQ.

Discussion

The present study had two main aims. The first was to examine the relationship between PD symptoms and interpersonal competence. Because previous studies have generally used global assessments to measure social impairment in individuals with PD, the present study aimed to identify *specific* interpersonal skills deficits associated with this impairment. Secondly, as there is evidence to suggest that interpersonal problems in PD do not clearly map onto DSM-IV PD diagnostic categories, another aim of the present study was to determine whether empirically-derived PD symptom categories would better account for variance in interpersonal competence when compared to the DSM-IV categorization of PD symptoms.

Interpersonal Competence and PD

Self-reported interpersonal competence was moderately related to clinician-rated PD symptoms, explaining between 12-16% of the variance in the IPDE. The largest source of shared variance between PD symptoms and interpersonal competence was social inhibition; that is, trouble initiating social interactions. This is consistent with previous findings (Clifton et al., 2005). Regardless of how PD symptoms were categorized, low initiation competence accounted for the largest portion of the variance in PD symptoms. Low initiation competence was accompanied by low emotional support, negative assertion, and self-disclosure competences. One reason for this might be because individuals who are poor at initiating social interactions have little opportunity to develop interpersonal skills in other domains. Thus, individuals with PD symptoms may benefit from social skills training which targets initiation of social interactions and assertiveness, but also includes components on how to maintain and deepen social relationships via self-disclosure and provision of emotional support.

The cumulative variance accounted for in interpersonal competence by personality disorder symptoms in the present study, regardless of how the PD symptoms were categorized, is lower than that reported in the Clifton (2005) study (38%). **It is possible that the lower shared variance in the present study is due to the relatively low level of PD symptoms in the sample, which may result in a restriction of range and spuriously low shared variance between PD symptoms and interpersonal skills.** Another reason for the higher shared variance in the Clifton study **may be** that they compared two self-report measures, while our study compared a self-report and a clinical interview measure. In fact, in a second analysis, the Clifton (2005) study found that peer reported personality disorder symptoms accounted for very little variance in self-reported interpersonal style (5%). This variance is lower than the variances found in the present study, suggesting that clinician-rated PD is better at accounting for self perception of interpersonal skills than peer report of PD. This could be because the IPDE is based on clinical interpretation of patient report, and/or because it is informed by clinical opinion. To get a better picture of how interpersonal skills and PD symptoms overlap, a clinician report of interpersonal competence, based on interview or behavioral observation, might be useful.

DSM-IV PD Categories and the ICQ

Canonical correlation analysis of the DSM-IV PD scales of the IPDE and the ICQ domains extracted only one significant variate pair. This pair is characterized by low initiation competence, emotional support competence, negative assertion competence, and self disclosure competence, and high scores on the schizoid, schizotypal, and avoidant PD scales. Low scores on the histrionic PD scale also contributed to this shared

variance; that is, individuals with *fewer* histrionic traits were *less* skilled in various interpersonal competence domains. This indicates that individuals with histrionic PD traits tended to perceive themselves as being skilled in interpersonal interactions. This might be due to faulty self-perception on the part of the reporter, as one of the symptoms of histrionic PD is the belief that one's relationships are more intimate than they actually are. However, it may also reflect a true strength in this PD population. If this is the case, treatments for histrionic PD might capitalize on their skills in initiating social interactions in order to help them develop more meaningful and lasting relationships.

In contrast to previous findings (Clifton et al., 2005), a general interpersonal dysfunction factor did not emerge across PDs in this analysis. The ICQ appears to capture the interpersonal difficulties faced by the schizoid, schizotypal, and avoidant PDs (social anxiety and/or avoidance), but not the interpersonal difficulties faced by other types of PD. For example, individuals with borderline PD experience chronic relationship instability, narcissistic PD patients exhibit a lack of empathy towards others, and people with antisocial PD traits are deceitful, exploitative, and aggressive in their relationships, yet none of these PD scales explained a significant amount of variance in the ICQ. There are two possible reasons for this. One is that the ICQ is a self-report, and individuals with narcissistic, antisocial, or borderline traits may be less likely to perceive or report their own interpersonal deficits. In fact, in the previously mentioned Clifton study (2005), individuals perceived by others as having extreme interpersonal styles (i.e., being domineering or vindictive) had little awareness of how they were perceived. Future studies might use a clinical interview or observational measure of interpersonal competence to circumvent this issue.

The second possibility is that because the items on the ICQ were not developed specifically for individuals with PD, they do not tap the specific interpersonal skills which PD patients lack. In support of this idea, the ICQ conflict management scale did not account for any variance in the IPDE. Because interpersonal conflict is present in many PD diagnoses, this suggests that the ICQ conflict management scale does not capture the conflict management deficits experienced by people with PD. Thus, an interpersonal skills measure developed specifically for PD, such as the IIP-PD, might be more appropriate to use in this type of analysis.

Empirically-derived IPDE Factors and the ICQ

Two significant canonical variate pairs were extracted to explain the relationships between Sheets' (2008) eight IPDE factors and the ICQ. The first was characterized by high *social anxiety* on the IPDE and low initiation competence on the ICQ, accompanied by low competence in negative assertion, emotional support, and self-disclosure. The *interpersonal hypersensitivity* and *suspiciousness* factors also comprised this variate pair. Thus the first pair of variates describes a group of individuals who have generally low interpersonal competence, and who are socially inhibited, anxious, avoidant, mistrusting, unable to empathize, and fearful of rejection and abandonment. This grouping of PD symptoms is similar to Nestadt's *neurotic avoidant* factor, but includes elements of his *aloof* factor (Nestadt et al., 2006).

The second variate pair extracted in this analysis is comprised of low self-disclosure competence and high scores on the IPDE factors *suspiciousness* (mistrusting others' intentions and being uninterested in relationships), *identity disturbance* (narcissism, a poor sense of self, deceitfulness, and being interpersonally exploitative),

and *unscrupulousness* (law-breaking, disregard for others' safety, and impulsivity). This variate pair appears to represent a group of people who are suspicious of others, only seek to connect with people for their own gain, disregard others' needs, but at the core, are insecure about their own identity; thus, they do not self-disclose or share themselves with others.

Unexpectedly, self-disclosure competence was a significant part of both variate pairs extracted in this analysis. The self-disclosure scale on the ICQ is made up of items such as "Revealing something intimate about yourself while talking with someone you're just getting to know," or "Telling a close companion things about yourself that you're ashamed of." Competence in this domain has been found to be important for success in romantic relationships and intimacy (Lamke et al., 1994).

Although low self-disclosure competence contributes to both pairs of variates extracted in this analysis, each variate pair appears to represent a very different group. The first variate pair is marked by individuals with more "internalizing" tendencies. They are anxious, avoidant, and fearful of rejection. In contrast, the second variate pair appears to represent individuals who are more "externalizing." They are exploitative, deceitful, distant, manipulative, and narcissistic. Neither group shares intimate information about themselves with the people in their lives. The first group fails to do so because they feel they are "not good enough", while the second group fails to do so because they feel they are "too good" for everyone else. Although it is likely that this dichotomization is too simplistic (i.e., the core insecurity of the "externalizing" group indicates that they too, fear that they are inferior to others, which also contributes to their inability to self-disclose), it indicates that skills training in self-disclosure may be useful for individuals

with both internalizing and externalizing PD traits, and provides a framework to approach the treatment of individuals exhibiting symptoms characteristic of each of these groups.

DSM-IV PD Categories vs. IPDE Factors

Interestingly, the externalizing, low self-disclosure group described above did not appear when the DSM-IV PD scales were used to categorize PD symptoms. This group was characterized by symptoms from antisocial, narcissistic, borderline, and paranoid PDs, yet none of these PD scales accounted for variance in the ICQ. Thus, it appears that the IPDE factor categories captured an interpersonal problem present in people with PD which the traditional DSM-IV categories did not. As hypothesized, the cumulative variance accounted for by empirically-derived IPDE factors in interpersonal competence was greater than the cumulative variance accounted for by the DSM-IV PD categories in interpersonal competence (16.2% versus 12.7%). However, these differences are small, and it would be premature to state that the IPDE factor scales are a better representation of interpersonal problems in PD than the DSM-IV categories based on this data, especially given that the ICQ does not appear to inclusively capture all types of interpersonal difficulties experienced by individuals with PD. Future studies should consider the use of a behavioral observation or clinician report measure of interpersonal skills developed specifically to detect interpersonal skills deficits in PD.

Treatment Implications

A number of behavioral treatments address social skills deficits. For example, Social Problem-Solving Therapy (SPST) involves training in metacognitive processes to successfully approach, assess, and solve problems of everyday living, including interpersonal problems, and has been applied to PTSD, criminal offenders, and

individuals with serious medical conditions (Nezu, D'Zurilla, Zwick, & Nezu, 2004), as well as individuals with PD (Huband, McMurrin, Evans, & Duggan, 2007). Bellack and Hersen's Social Skills Training (SST) is an ideographic approach which targets individualized treatment goals such as assertiveness, initiating conversation, and maintaining conversation and has been applied to severe mental illness (schizophrenia, depression, and schizotypal PD, among other disorders) (Bellack, 2004; Liberman & Robertson, 2005).

The present study suggests that training in not only initiation and assertiveness, but also in self-disclosure and providing emotional support, may be useful in treating individuals with "internalizing" PD traits such as social anxiety, inhibition, avoidance, and fear of rejection and abandonment. Individuals with "externalizing" PD traits, such as an inclination to exploit others for personal gain and a disregard for others' safety, may benefit particularly from training in self-disclosure competence, or revealing their "true selves" to others. As both SST and SPST are individualized, skills-based approaches to the treatment of individuals with social impairment, the skills deficits implicated in the present study could easily be incorporated into either model – for example, self-disclosure could be emphasized as a treatment target in SST or a problem of focus in SPST. Additional characterization of the specific skills deficits present in individuals with PD will further inform these treatment models.

Because the sample in the present study was at risk for depression, the results also inform the prevention of depressive recurrence. In Sheets' study (2008), investigators followed the factor analysis sample for 18 months to see which participants suffered a recurrence of major depressive disorder. Three factors predicted depressive recurrence:

social anxiety, interpersonal hypersensitivity, and antisocial conduct. The former two factors contributed significantly to variance in the ICQ; that is, individuals who were high in *social anxiety* and *interpersonal hypersensitivity* reported generally low interpersonal competence, especially in the initiation domain. This is consistent with the social skills-stress hypothesis, which posits that individuals with poor interpersonal skills are at risk for depression because they experience more interpersonal stress and are less able to reach out for social support in times of need (Herzberg et al., 1998). These results suggest that social skills training in various domains of interpersonal competence might be useful in preventing depression in vulnerable populations.

Limitations

The present study has a few important limitations. First of all, these analyses were conducted in a very specific population, namely, first-year college students aged 18-19 with a history of major depressive disorder. The majority of the sample was Caucasian. Also, **the level of PD symptoms and prevalence of PD diagnoses** is relatively low. Thus these results may not generalize to other PD populations, particularly populations with more severe personality pathology.

Secondly, to conduct an adequately powered canonical correlation, it is recommended that there should be ten subjects for every variable entered in the analysis (Leech, Barrett, & Morgan 2004). The first canonical correlation (fifteen variables, $n=135$) falls just short of this mark. Thus this analysis might be slightly underpowered to adequately detect more subtle ways in which these two sets of variables are related. In the second canonical correlation (thirteen variables, $n=135$), the sample size is just adequate. It should be noted that in the Clifton study (2005), which conducted a similar analysis

and had almost three times as many subjects, a conservative $p < 0.0001$ was used to indicate significance. Thus, in the present study, the second variate pair extracted in the second canonical correlation ($p = 0.005$) might be considered a trend in a more conservative analysis. However, because this study is exploratory in nature, a cutoff of $p = 0.01$ was used, erring on the side of Type I error. These results should be considered preliminary and in need of replication with a larger subject pool. Finally, future studies should consider the use of a behavioral observation or clinician report measure of interpersonal skills developed specifically to detect interpersonal skills deficits in PD.

In conclusion, this study examined the relationship between personality disorder symptoms and interpersonal competence in a sample of young adults vulnerable to depression. The most significant source of shared variance was social inhibition, or trouble initiating social interactions, accompanied by low competence in self-disclosure, providing emotional support, and negative assertion. An empirically-derived categorization of PD symptoms accounted for more variance in interpersonal competence than the traditional DSM-IV PD diagnostic categories. Empirically driven PD symptom clusters may better capture specific interpersonal skills deficits experienced by people with PD than the DSM-IV diagnoses, but further investigation is needed. Individuals with PD symptoms who experience social impairment may benefit from social skills training in initiation and self-disclosure. Interpersonal skills training in specific domains may also be useful in the prevention of recurrence of major depressive disorder.

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Table 1
Sample Characteristics: Demographic and Clinical Variables

Variable	Females (N = 105)	Males (N=30)
	N (%)	N (%)
Race		
Caucasian	76 (72.4)	22 (73.3)
African-American	2 (1.9)	0 (0.0)
Latino	6 (5.7)	2 (6.7)
Asian	10 (9.5)	4 (13.3)
Native American	2 (1.9)	0 (0.0)
Did not identify	9 (8.6)	2 (6.7)
<hr/>		
	M (SD)	M (SD)
BDI-II	13.55 (8.09)	11.03 (7.27)
IPDE Total Dimensional*	7.69 (6.70)	11.43 (9.87)
Paranoid dim	0.30 (0.73)	0.57 (1.01)
Schizoid dim	0.41 (0.91)	0.87 (1.41)
Schizotypal dim	0.09 (0.28)	0.27 (0.83)
Antisocial dim*	1.50 (2.16)	3.23 (4.30)
Borderline dim	1.74 (1.86)	1.30 (1.39)
Histrionic dim	0.71 (1.22)	0.63 (1.25)
Narcissistic dim	0.39 (0.78)	0.80 (1.65)
Avoidant dim	1.00 (1.72)	1.87 (2.54)

Dependent dim	0.33 (0.72)	0.40 (0.81)
OC dim	1.01 (1.70)	1.20 (1.86)
IPDE Factor 1 ^a **	0.24 (0.564)	1.03 (1.450)
IPDE Factor 2 ^a	0.08 (0.385)	0.47 (1.871)
IPDE Factor 3 ^a	1.02 (1.513)	1.77 (2.176)
IPDE Factor 4 ^a	0.86 (1.410)	1.13 (1.570)
IPDE Factor 5 ^a	0.50 (1.075)	0.50 (0.820)
IPDE Factor 6 ^a	0.11 (0.400)	0.20 (0.551)
IPDE Factor 7 ^a	0.30 (0.681)	0.60 (1.632)
IPDE Factor 8 ^a	0.15 (0.387)	0.53 (1.252)
ICQ Total Score	137.98 (18.65)	132.80 (20.91)
Initiation	26.18 (6.09)	24.80 (7.55)
Self disclosure	26.11 (5.76)	25.33 (5.71)
Conflict management	26.82 (4.14)	26.60 (5.10)
Emotional support*	34.14 (4.28)	32.57 (5.12)
Negative assertion	24.72 (5.76)	23.50 (5.05)

Note. BDI-II = Beck Depression Inventory (2nd ed.); IPDE = International Personality Disorder Examination; ICQ = Interpersonal Competence Questionnaire; dim = dimensional score.

^aIPDE Factor scores as delineated by Sheets and Craighead (in preparation): Factor 1 = Interpersonal Hypersensitivity, Factor 2 = Antisocial Conduct, Factor 3 = Unscrupulousness, Factor 4 = Social Anxiety, Factor 5 = Identity Disturbance, Factor 6 = Suspiciousness, Factor 7 = Misperception, Factor 8 = Social Avoidance.

*Significant difference between males and females, $p < 0.05$

**Significant difference between males and females, $p < 0.01$

Table 2
Bivariate Correlations- IPDE Dimensional Scores with ICQ Domains

	P	Sz	St	As	B	H	N	Av	D	OC	Total dim
In	-.164	-.343**	-.259**	.099	-.039	.128	.002	-.482**	-.090	-.096	-.192*
NA	-.143	-.212*	-.214*	.132	-.138	.004	-.096	-.325**	.014	-.073	-.165
Dis	-.317**	-.248**	-.137	-.007	-.213*	.014	-.051	-.422**	-.043	-.101	-.282**
ConM	-.142	-.025	-.026	-.010	-.100	-.198*	-.153	-.138	-.217*	-.002	-.173*
Emo	-.076	-.163	-.105	-.104	-.138	-.049	.004	-.290**	-.124	-.024	-.225**
Total ICQ	-.241**	-.295**	-.221**	.043	-.172*	-.008	-.076	-.481**	-.117	-.090	-.289**

Note. IPDE= International Personality Disorder Examination; ICQ= Interpersonal Competence Questionnaire; P= Paranoid PD; Sz= Schizoid PD; St= Schizotypal PD; As= Antisocial PD; B= Borderline PD; H= Histrionic PD; N=Narcissistic PD; Av= Avoidant PD; D= Dependent PD; OC= Obsessive-Compulsive PD; Total dim= Total IPDE Dimensional Score; In= Initiation Competence; NA= Negative Assertion Competence; Dis= Self-disclosure Competence; ConM= Conflict Management Competence; Emo= Emotional Support Competence; Total ICQ= Total ICQ Score.

* Correlation is significant at the 0.05 level

** Correlation is significant at the 0.01 level

Table 3
Bivariate Correlations- IPDE Factor Scores with ICQ Domains

	1	2	3	4	5	6	7	8
In	-.198*	.113	.051	-.503**	.063	-.172*	-.166	-.306**
NA	-.186*	.136	.121	-.386**	-.063	-.189*	-.164	-.124
Dis	-.108	.098	-.079	-.480**	-.187*	-.381**	-.072	-.203*
ConM	-.168	-.040	.056	-.226**	-.214*	-.125	-.113	.050
Emo	-.177*	.020	-.112	-.282**	-.003	-.020	-.132	-.125
Total ICQ	-.233**	.103	.015	-.542**	-.102	-.259**	-.182*	-.217*

Note. IPDE= International Personality Disorder Examination; ICQ= Interpersonal Competence Questionnaire; Factor 1= Interpersonal Hypersensitivity; Factor 2= Antisocial Conduct; Factor 3= Unscrupulousness; Factor 4= Social Anxiety; Factor 5= Identity Disturbance; Factor 6= Suspiciousness; Factor 7= Misperception; Factor 8= Social Avoidance; In= Initiation Competence; NA= Negative Assertion Competence; Dis= Self-disclosure Competence; ConM= Conflict Management Competence; Emo= Emotional Support Competence; Total ICQ= Total ICQ Score.

* Correlation is significant at the 0.05 level

** Correlation is significant at the 0.01 level

Table 4
Canonical Correlations of IPDE Dimensional Scores and ICQ Domains

Variate	<i>p</i>	Cumulative variance explained		Canonical <i>r</i>	Variable (<i>r</i> > .30) composing significant variates	
		IPDE	ICQ		IPDE	ICQ
1	<.001	.046	.127	.589	Avoidant (.785) Schizoid(.552) Schizotypal (.438) Histrionic (-.343)	<i>Initiation</i> (-.949) <i>Negative assertion</i> (-.588) <i>Self-disclosure</i> (-.640) <i>Emotional support</i> (-.412)

Note. IPDE= International Personality Disorder Examination; ICQ= Interpersonal Competence Questionnaire.

Table 5
Canonical Correlations of IPDE Factor Scores and ICQ Domains

Variate	<i>p</i>	Cumulative variance explained		Canonical <i>r</i>	Variable (<i>r</i> > .30) composing significant variates	
		IPDE	ICQ		IPDE	ICQ
1	<.001	.054	.142	.561	Factor 1 (.338) Factor 4 (.926) Factor 6 (.300) Factor 8 (.407)	<i>Initiation</i> (-.942) <i>Negative assertion</i> (-.679) <i>Self-disclosure</i> (-.763) <i>Emotional support</i> (-.510)
2	.005	.078	.162	.452	<i>Factor 3</i> (-.327) <i>Factor 5</i> (-.523) <i>Factor 6</i> (-.610)	Self-disclosure (.625)

Note. IPDE= International Personality Disorder Examination; ICQ= Interpersonal Competence Questionnaire; Factor 1= Interpersonal Hypersensitivity; Factor 2= Antisocial Conduct; Factor 3= Unscrupulousness; Factor 4= Social Anxiety; Factor 5= Identity Disturbance; Factor 6= Suspiciousness; Factor 7= Misperception; Factor 8= Social Avoidance.