The Pennsylvania State University

The Graduate School

College of the Liberal Arts

INTERPERSONAL PATHOPLASTICITY IN SOCIAL PHOBIA: A CLINICAL REPLICATION

A Dissertation in

Psychology

by

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Submitted in Partial Fulfillment
of the Requirements
for the Degree of

Doctor of Philosophy

August 2009

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ABSTRACT

A number of research investigations have found that individual differences in interpersonal problems exhibit pathoplastic relationships with pathological symptoms and mental disorders. The current study sought to expand the research of Kachin, Newman, and Pincus (2001) by providing evidence for the interpersonal pathoplasticity of social phobia in a sample of 77 socially phobic outpatients who had completed a course of psychotherapy. Using the Inventory of Interpersonal Problems – Circumplex Scales (IIP-C; Alden, Wiggins, & Pincus, 1990), this study was generally able to replicate Kachin et al. by finding two interpersonally-based clusters of socially phobic patients. These clusters did not differ on pre-treatment symptom severity or comorbidity but did exhibit differential responses to psychotherapy. Overall, this study found that Friendly-Submissive social phobics had significantly lower scores on measures of social anxiety and significantly higher scores on measures of well-being and satisfaction at post-treatment than Cold-Submissive social phobics. The results of this study are discussed in terms of interpersonal theory and the clinical relevance of an assessment of interpersonal functioning prior to beginning psychotherapy with socially phobic patients.

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Chapter 1

Introduction

Social phobia has been reported to be the most common anxiety disorder and the third most common mental disorder in the United States (Hofmann & Barlow, 2002). The results of the National Comorbidity Survey indicated that the lifetime prevalence rate of social phobia was 13.3% (Kessler et al., 1994). Social phobia has also been reported to follow a chronic course resulting in substantial impairments in vocational and social functioning (Beidel & Turner, 2007). However, despite its high prevalence rate and associated impairments, research on social phobia was relatively rare until recently. In fact, Liebowitz, Gorman, Fyer, and Klein (1985) referred to social phobia as the "neglected anxiety disorder." At that time, social phobia was often assumed to be a variant of shyness and was considered to be non-distressing. Since 1985, research has exponentially increased on the etiology, course, and treatment of social phobia and the significant distress associated with social phobia has become more widely recognized.

Recognition of social phobia dates back to the writings of Hippocrates; however, social phobia was not officially recognized in the diagnostic nomenclature until the publication of the third edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-III; American Psychiatric Association, 1980). The criteria established in DSM-III were based on the research of Isaac Marks and colleagues and described a condition where individuals become fearful in situations where they may be subject to scrutiny while performing a specific task (Marks, 1970; Marks & Gelder, 1966). Social phobia was initially classified as a "phobic disorder" and was included in the same category as agoraphobia and simple (specific) phobia. Based on DSM-III criteria, an

individual could only have one social phobia and did not include the generalized fear of social interactions. In fact, the diagnosis of social phobia was ruled out if the individual met criteria for avoidant personality disorder (AVPD) (Hofmann, Heinrichs, & Moscovitch, 2004; Hofmann & Barlow, 2002). The diagnostic criteria for social phobia underwent significant changes in DSM-III-R (APA, 1987), but have remained virtually unchanged from DSM-III-R to DSM-IV (APA, 1994) and DSM-IV-TR (APA, 2000).

The DSM-IV currently characterizes social phobia as "a marked and persistent fear of one or more social or performance situations in which the person is exposed to unfamiliar people or possible scrutiny by others" (APA, 1994, p. 416). Beidel and Turner (2007) reported that the commonly feared situations include: public speaking, attending social events, maintaining social dialogue, eating or writing in front of others, and using public restrooms. Individuals with social phobia live in constant fear of embarrassing themselves, appearing foolish, or appearing less intelligent than others. Hofmann et al. (2004) found that the most commonly reported feared situation was public speaking. Due to their significant distress, individuals with social phobia often engage in avoidance behaviors that allow them to stay away from feared social or performance situations.

A second characteristic of social phobia in DSM-IV is "exposure to the feared situation almost invariably provokes anxiety, which may take the form of a situationally bound or situationally predisposed panic attack" (APA, 1994, p. 417). Beidel and Turner (2007) reported that most socially phobic individuals often experience panic attacks when in a social encounter or when anticipating social encounters. The physical symptoms of these attacks have been described to be the same as those of panic disorder and can be severe. In addition, research has shown that the pattern of physiological response when

in a distressful situation is one of the main features that distinguish individuals with social phobia from individuals with "normal" speech anxiety (Hofmann & Barlow, 2002). For example, Turner and Beidel (1989) found that when individuals who do not meet criteria for social phobia begin a speech, their blood pressure and heart rate initially increase but begin to decrease after about 3-5 minutes. In contrast, socially phobic individuals also experience an initial increase in their blood pressure and heart rate but then remain elevated for the duration of the speech.

The third characteristic of social phobia in DSM-IV is that "the person recognizes that the fear is excessive and unreasonable" (APA, 1994, p. 417). Individuals with social phobia recognize that there is often no reasonable basis for their fears. This criterion distinguishes social phobia from paranoid personality disorder. Unlike individuals with paranoid personality disorder, socially phobic individuals do not fear that others are planning to purposefully embarrass, humiliate, or harm them (Beidel & Turner, 2007).

One of the most significant changes in social phobia criteria was the inclusion of a generalized subtype. According to DSM-IV, the generalized specifier should be used "when the [individual's] fears are related to *most* social situations" (APA, 1994, p. 451). Individuals whose symptoms do not meet the definition of generalized social phobia have been described as "a heterogeneous group that includes persons who feared a single performance situation as well as those who feared several, but not most, social situations" (APA, 1994, p. 413).

Researchers have noted a high degree of overlap between the generalized subtype of social phobia and AVPD (e.g. Heimberg, 1996; Hofmann et al., 2004; Schneier, Spitzer, Gibbon, Fyer, & Liebowitz, 1991). This finding is not surprising given that six

of seven diagnostic criteria for AVPD include the social/interaction component that is essential to the diagnosis of social phobia. However, this high degree of comorbidity has led researchers to question the utility of maintaining two diagnostic categories on two separate DSM axes. It has been suggested that these diagnoses may actually be different points on a social phobia continuum of increasing severity: from non-generalized social phobia, to generalized social phobia without AVPD, to generalized social phobia with AVPD (Hummelen, Wilberg, Pedersen, & Karterud, 2007; McNeil, 2001).

Diagnostic Subtypes of Social Phobia

In response to the subtype designation, there was an increase in research examining whether generalized (GSP) and non-generalized social phobia (NGSP) could be discriminated on a variety of outcomes. Overall, the research has consistently shown that GSP represents the more severe manifestation of social phobia (Hofmann, et al., 2004). These studies have reported differences between the diagnostic subtypes in a number of important variables including: prevalence, demographics, clinical severity, physiological and neuropsychological responses during exposure to feared situations, and treatment response.

Prevalence. Hofmann et al. (2004) reported that the social phobia literature consistently demonstrates that at least 50% of individuals with social phobia meet criteria for GSP. For example, Mannuzza, Schneier, Chapman, Liebowitz, Klein, and Fyer (1995) interviewed 129 patients with social phobia and diagnosed 52% as having GSP and 48% as having NGSP. Similarly, Brown, Heimberg, and Juster (1995) interviewed 108 social phobic patients and found that 59.3% met criteria for GSP (with and without AVPD) and 38.9% were classified as NGSP.

Demographics. Mannuzza et al. (1995) reported that two-thirds of patients with GSP and one-third of patients with NGSP have never been married. Heimberg, Hope, Dodge, and Becker (1990) found that individuals with GSP were shown to be less educated and less likely to be employed. Furthermore, studies have shown that individuals with GSP tend to be younger and have lower socioeconomic status than NGSP individuals (Brown et al., 1995; Levin et al., 1993; Mannuzza et al., 1995).

Clinical Severity. Studies have consistently reported that individuals with GSP score higher than individuals with NGSP on self-report measures of social anxiety, including the Fear of Negative Evaluation Scale (FNE; Watson & Friend, 1969), the Social Avoidance and Distress Scale (SADS; Watson & Friend, 1969), and the Social Phobia and Anxiety Inventory (SPAI; Turner, Beidel, Dancu, & Stanley, 1989) (Beidel & Turner, 2007; Brown et al., 1995; Heimberg et al., 1990; Hofmann, 2000; Hofmann et al., 2004; Hofmann & Barlow, 2002; Hofmann & Roth, 1996; Holt et al., 1992; Turner et al., 1992; Stein & Chavira, 1998). Individuals with both GSP and AVPD have been shown to score the highest on these measures (e.g. Brown et al., 1995) and are also more likely to have other comorbid Axis I disorders and more overall psychopathology, such as generalized anxiety and depression (Herbert, Hope, & Bellack, 1992; Hofmann & Roth, 1996), and higher trait neuroticism (Stemberger, Turner, Beidel, & Calhoun, 1995). Interestingly, research has demonstrated that individuals with GSP do not typically rate themselves as more impaired by their social phobia than individuals with NGSP, which suggests that the clinical severity results cannot be explained by differences in the subjective severity of their illness (Gelernter, Stein, Tancer, & Uhde, 1992).

Responses to Feared Situations. Evidence has indicated that individuals with GSP differ from those with NGSP in their physiological responses to feared situations. Heimberg et al. (1990) compared socially phobic individuals whose fears were restricted to public speaking with individuals who met criteria for GSP. Individuals with only a fear of public speaking showed higher heart rates, but reported less subjective anxiety to a behavioral challenge than individuals with GSP. However, one of the main limitations of this study was that the behavioral challenge test was individually tailored for the GSP group and therefore not uniform for all participants. Levin et al. (1993) replicated the findings of Heimberg et al. (1990) by comparing patients with GSP and patients with NGSP on heart rate and biochemical measures such as plasma epinephrine. Unlike Heimberg et al.'s design, Levin et al. (1993) included a standard public speaking task. Levin et al. found that individuals with NGSP demonstrated higher heart rates but reported less subjective anxiety during their speech than individuals with GSP. Similarly, Hofmann, Newman, Ehlers, and Roth (1995) asked GSP patients and NGSP patients to give a public speech while cardiovascular parameters, behavioral measures, and subjective anxiety were recorded. The GSP group scored the highest on social phobia severity measures while the heart rates of the NGSP group were the highest in response to giving the speech. Because the reported physiological response pattern of GSP individuals is similar to individuals with chronic anxiety such as generalized anxiety disorder (GAD) (e.g. Borkovec & Hu, 1990), several researchers have suggested that GSP individuals may have a more worried thinking style and are closer to the profile of a chronically anxious person that are NGSP individuals (e.g. Hofmann et al., 1995).

Research has also shown that GSP and NGSP individuals differ in their neuropsychological responses to feared situations. McNeil et al. (1995) reported that GSP individuals demonstrate greater cognitive interference on a Stroop task than do NGSP individuals. Recently, Graver and White (2007) examined the neuropsychological effects of stress on social phobia in 33 clinically-diagnosed undergraduates (20 GSP individuals and 13 NGSP individuals). Participants were assessed under baseline and stressor conditions and were administered the Trail Making Test, the Wisconsin Card Sorting Test, Spatial Span, and Digit Span. The results of this study showed that the GSP and NGSP groups were not significantly different at baseline, but that GSP may be associated with spatial working memory disturbances during social stress. Overall, the GSP group performed worse than the NGSP on all tests during the stressor condition. In particular, Graver and White found that Spatial Span scores were significantly reduced and numbers of errors on the Wisconsin Card Sorting Test were significantly increased for GSP individuals during the stressor condition.

Treatment Response. Hofmann et al. (2004) noted that the social phobia literature is often inconsistent when reporting on treatment response in GSP and NGSP individuals. There are several studies that have suggested that the presence of GSP and/or AVPD may complicate psychosocial treatment and may dictate alternative treatments other than cognitive-behavioral therapy (e.g. Chambless, Tran, & Glass, 1997; Feske, Perry, Chambless, Rennenberg, & Goldstein, 1996). In contrast, other studies have not found GSP with or without AVPD to be predictive of poor psychosocial treatment outcome (e.g. Brown et al., 1995; Hofmann, Newman, Becker, Taylor, & Roth, 1995; Hope, Herbert, & White, 1995; Turner, Beidel, & Townsley, 1992). Turner, Beidel, Wolff, Spaulding, and

Jacob (1996) reported that individuals with GSP and NGSP improved equivalently over treatment, but that the overall status of the generalized subtype was poorer than that of the non-generalized subtype at post-treatment. Based on their results, these researchers suggested that the addition of social skills training to exposure intervention may improve the functional status of individuals with GSP (Turner et al., 1996).

Critiques of Social Phobia Diagnostic Subtypes

The research literature comparing the DSM-based social phobia subgroups has been important and has demonstrated a number of useful distinguishing features. The research reviewed suggests that the generalized and non-generalized subtypes can be distinguished in terms of severity, prognosis, and pervasiveness. However, as evidenced by the inconsistent findings on treatment response, there are a number of problems with the current DSM criteria for subtyping.

One of the main problems is that the DSM does not explicitly define the number and type of social situations that comprise the generalized subtype. As a result, various research groups have developed slightly different operational definitions for GSP and NGSP (Hofmann et al., 2004). For example, Turner et al. (1992) and Stemberger et al. (1995) assigned individuals to the generalized subtype if they feared attending parties, initiating conversations, or maintaining conversations. A "specific" subtype (not specified in DSM-IV) was assigned if individuals feared only performance-oriented situations, such as giving a speech, speaking in meetings, or eating or writing in public. Individuals assigned to this group could fear multiple "specific" social situations, but could not fear more "general" social situations, such as parties or conversations. Alternatively, Heimberg, Holt, Schneier, Spitzer, and Liebowitz (1993) discussed three

possible subtypes of social phobia: GSP, NGSP, and circumscribed social phobia. According to their definition, individuals with NGSP function in at least one broad social domain without experiencing clinically significant anxiety. Individuals with circumscribed social phobia, on the other hand, experience anxiety in only one or two discrete situations, while individuals with GSP experience anxiety in "many" discrete situations (Heimberg et al., 1993).

Some researchers have attempted to quantify the number and type of feared social situation on the basis of items endorsed on social anxiety questionnaires and other self-report measures. Holt et al. (1992) proposed four different situational domains that can be used to determine GSP and NGSP based on their factor analysis of the 24-item Liebowitz Social Anxiety Scale (LSAS; Liebowitz, 1987) – formal speaking, informal speaking, assertive interaction, and observation by others. Several research groups have replicated this four-factor solution (e.g. Safren et al., 1999); however, the four-factors have varied somewhat among researchers. For example, Safren et al.'s (1999) four-factor solution included social interaction, public speaking, observation by others, and eating and drinking in public. Baker, Heinrichs, Kim, and Hofmann (2002) conducted a confirmatory factor analysis and reported a poor fit to Safren et al.'s (1999) four-factor solution and instead advocated for a five-factor model that included social interaction anxiety, performance anxiety, ingestion anxiety, public performance anxiety, and assertiveness anxiety.

Furmark, Tillfors, Stattin, Ekselius, and Frederickson (2000) attempted to quantify the situational subtypes of social phobia using a cluster analysis of the Social Phobia Scale and Social Interaction Anxiety Scale (Mattick & Clarke, 1998). Three

clusters of participants emerged from the analyses, distinguished on the basis of their scores on these measures (i.e. high, intermediate, or low). Furmark et al. interpreted these clusters as corresponding to the generalized, non-generalized, and circumscribed subtypes of social phobia. Similar results were obtained by Levin, Hermesh, and Marom (2001) who examined socially phobic participant's scores on the MMPI-2 and found three distinct clusters of responses. The first cluster was characterized by the absence of any significant elevation on the MMPI-2 scales, the second cluster showed elevated scores on Scale 2 (Depression) and Scale 7 (Psychasthenia), while the third cluster showed elevated symptoms on Scales 2 and 7 in addition to significant elevation on Scale 8 (Schizophrenia). The authors suggested that the first MMPI-subtype corresponded to the circumscribed type of social phobia while the third cluster paralleled the generalized subtype. It was unclear whether the second cluster represented the non-generalized subtype (Levin et al., 2001).

These varying definitions of social phobia subtypes have made it difficult to compare results across empirical studies. In fact, one study found that the heterogeneous definition leads to the formation of different subgroups when applied to the same sample (Newman, Kachin, Schut, & Constantino, 1998). A subtype division based on number or commonality of feared situations provides no differential central characteristic around which each of the subgroups is organized. This has led several researchers to criticize the DSM-symptom based classification for failing to create subgroups with qualitative differences (Turner et al., 1992).

A potential explanation for the research demonstrating many more quantitative than qualitative differences between the subgroups may be that the actual diagnosis of

social phobia leads to a homogeneous group of individuals who share common socially phobic symptomatology. By creating subgroups based on a further quantitative subdivision of the same central symptomatology (i.e. number of feared situations), the likelihood that the subgroups will have distinctive organizing features is limited (Vriends, Becker, Meyer, Michael, & Margraf, 2007). Furthermore, determination of diagnostic severity, impairment, and number of feared situations is a routine aspect of clinical assessment; thus, such a subdivision does not provide additional information beyond what would normally be collected.

A potentially more clinically useful way to identify qualitatively different subgroups of socially phobic individuals may be to investigate the differential ways in which these individuals cope with their social fears. From an interpersonal perspective, it could be argued that the DSM-IV criteria do not fully capture the range of maladaptive responses to social situations that may be exhibited by the socially phobic individual, such as dominant and/or submissive reactions (Kachin, Newman, & Pincus, 2001). Additionally, the ability to interact successfully with others is particularly relevant for individuals with social phobia, making the assessment of interpersonal functioning essential (Alden & Phillips, 1990; Alden & Capreol, 1993; Hofmann et al., 2004; McLemore & Benjamin, 1979).

Interpersonal Classification of Social Phobia

Interpersonal behavior has often been viewed as a fundamental component of personality (Benjamin, 1996, 2003; Kiesler, 1996; Leary, 1957; McLemore & Benjamin, 1979; Pincus & Ansell, 2003). The interpersonal theory of personality originated from Sullivan's (1953) relational model, which was developed as a reaction to Freud's drive-

structural model. Sullivan (1953) considered interpersonal relations and the self-concept to be central in the development of normal and abnormal personality and wrote that "personality is the relatively enduring pattern of recurrent interpersonal situations which characterize a human life" (p. 111). Pincus and Ansell (2003) summarized Sullivan's concept of the interpersonal situation as "the experience of a pattern of relating self with other associated with varying levels of anxiety (or security) in which learning takes place that influences the development of self-concept and social behavior" (p. 210). Sullivan believed that the interpersonal situation underlies the development, maintenance, and flexibility of personality through the continuous adjustments that an individual makes in response to biological needs, security needs, and esteem needs (Pincus & Gurtman, 2006).

Pincus and Ansell (2003) noted that because Sullivan's interpersonal theory was a response to Freud's drive-based intrapsychic model, a common misconception of interpersonal theory is that it relies only on observable social behaviors and ignores intrapsychic processes. However, Pincus and Ansell reported that this is an incorrect interpretation of Sullivan's relational model. In fact, Sullivan viewed the interpersonal situation as equally likely to be found within the mind of the person as it is to be found in the observable interactions between two people. According to Sullivan, interpersonal functioning can occur inside the person via the capacity for mental representation of self and others (e.g. Blatt, Auerbach, & Levy, 1997). Pincus and Ansell (2003) asserted that interpersonal situations can occur in perceptions of current experiences, memories of past experiences (either accurate or distorted), and fantasies of future experiences.

Sullivan (1953) proposed the term "parataxic distortion" to describe the mediation of observable social behavior by internal interpersonal situations. Pincus (2005)

summarized that the effects of parataxic distortions can occur in several forms: chronic distortions of new interpersonal experiences; the use of rigid, extreme, and maladaptive behaviors in response to all interpersonal experiences; and the dominance of the internal interpersonal situation over the actual situation. Pincus (2005) argued that normal and pathological personalities may be differentiated by their tendencies to organize interpersonal experiences in particular ways, with pathological personalities exhibiting more distorted organizations of interpersonal experience.

Applying interpersonal theory to diagnosis, McLemore and Benjamin (1979) argued that interpersonal functioning is an essential component of the diagnostic process, in addition to the assessment of symptoms. They pointed out that quite often the most useful aspects of psychiatric diagnoses are psychosocial in nature and that most diagnoses of "functional mental disorders" are made on the basis of observed interpersonal behavior (McLemore & Benjamin, 1979). In fact, theorists such as Sullivan (1953), Leary (1957), Kiesler (1982) and Benjamin (1996, 2003) have argued that adult psychopathology is primarily expressed through disturbed interpersonal relations. Empirical studies have demonstrated that many forms of pathology are associated with interpersonal impairment including depression (Joiner, 2002), bipolar disorder (Miklowitz, 2001), substance abuse and dependence (Fals-Stewart, Birchler, & O'Farrell, 1999), and personality disorders (Pincus & Wiggins, 1990; Russell, Moskowitz, Zuroff, Sookman, & Paris, 2007). Empirical studies have also demonstrated that interpersonal characteristics are associated with therapeutic alliance (e.g. Muran, Segal, Samstag, & Crawford, 1994) and therapeutic outcome (e.g. Alden & Capreol, 1993; Blatt, Zuroff, Quinlan, & Pilkonis, 1996; Ruiz, Pincus, Borkovec, Echemendia, Castonguay, & Ragusea, 2004).

Following this argument, it seems that an interpersonal classification of social phobia could augment the assessment of symptoms by providing clinically useful and non-overlapping information on the full spectrum of interpersonal difficulties experienced by socially phobic individuals. An interpersonal classification could lead to the creation of subgroups based on qualitative differences in interpersonal style and could be organized around the differential patterns of rigid and potentially maladaptive overt and covert responses given by socially phobic individuals to interpersonal situations.

One possible method for deriving an interpersonal classification is to use the Inventory of Interpersonal Problems – Circumplex Scales (IIP-C; Alden, Wiggins, & Pincus, 1990). The IIP-C is based on interpersonal theory, which provides a nomological framework for articulating dynamic interpersonal processes that are both adaptive and maladaptive. The instrument was created to measure recurrent interpersonal themes identified in the clinical material of patients receiving outpatient psychotherapy (Horowitz, Rosenberg, Baer, Ureno, & Villasenor, 1988). It has subsequently been revised to contain 64-items that assess a circumplex model of behaviors that are problematic for the respondent (Alden et al., 1990). The IIP-C contains eight subscales that can be conceptually organized in a circular manner along the dimensions of dominance and affiliation. These dimensions provided the basis for Leary's (1957) interpersonal circumplex (see Figure 1) and are considered to be the basic elements of interpersonal behavior (Wiggins, 1979, 1991). Circumplex quadrants are often described as representing a mixture of the underlying dimensions (i.e. hostile dominance or friendly submissiveness) and are useful summary descriptors of interpersonal behavior (Pincus & Gurtman, 2006). The IIP-C allows for the location of individual or group data within the

interpersonal problem space. By taking scores or correlations to each axis, a set of Cartesian coordinates can be generated to define the location of the predominant interpersonal problem. The IIP-C also contains a general factor, which is equivalent to mean level of interpersonal distress in the respondent (Tracey, Rounds, & Gurtman, 1996). The maladaptive behaviors sampled by this measure can be considered extreme variants of the underlying interpersonal dispositions of the respondent.

Two studies have examined the clinical utility of the IIP-C for socially anxious individuals. Alden and Phillips (1990) examined differences between socially anxious, depressed, and non-disordered participants. These investigators found that socially anxious individuals differed from controls on the circumplex dimensions of unassertiveness and social avoidance. There were no differences between depressed individuals and controls (Alden & Phillips, 1990). In a related study, Alden and Capreol (1993) examined the extent to which the interpersonal problems of DSM-III-R diagnosed AVPD individuals predicted treatment response. Results showed that AVPD patients reported two distinct types of interpersonal problems on the IIP-C: Exploitable problems and Cold problems. Patients who reported problems related to being exploited by others (Exploitable Avoidants) benefited from both graduated exposure and skills training procedures, while AVPD patients with problems related to cold, distrustful, and angry behavior (Cold Avoidants) only benefited from graduated exposure (Alden & Capreol, 1993). In addition, research has also found that the IIP-C index of elevation (i.e. distress resulting from interpersonal problems) was highly correlated ($r = .71$) with the Social Phobia Diagnostic Questionnaire, a self-report measure of social phobia that assesses DSM symptoms (e.g. Newman, Kachin, Zuellig, & Constantino, 1997; Newman, Kachin,

Zuellig, Constantino, & Cashman, 2003). Taken together, these findings seem to suggest that the IIP-C may be a particularly relevant measure for socially phobic individuals.

Pathoplasticity

The use of the IIP-C to form interpersonally-based subgroups of socially phobic individuals is based on a theory of pathoplasticity. Pathoplasticity is characterized by a mutually influencing non-etiological relationship between psychopathology and another psychological system (Klein, Wonderlich, & Shea, 1993; Widiger & Smith, in press; Widiger, Verheul, & van den Brink, 1999). Although it was initially conceptualized as a model relating personality and depression, its scope has been broadened to include personality and psychopathology in general. Pathoplasticity recognizes that the expression of certain maladaptive behaviors, symptoms, and mental disorders all occur in the larger context of an individual's personality (Millon, 1996; 2005), and points out that it would be unreasonable to assume that the expression of pathology would not be influenced by one's characteristic manner of perceiving, thinking, feeling, behaving, and relating to the environment. Personality also has the potential to influence the content and focus of a disorder and will likely shape the responses and coping strategies individuals employ when presented with a psychological stressor (Millon, 2000).

The interpersonal tradition has asserted that maladaptive self-concepts and disturbed interpersonal relations are key elements of the phenotypic presentation of all psychopathology. Pincus, Lukowitsky, and Wright (in press) suggested that using the architecture of the interpersonal paradigm to systematically account for these elements provides additional and valuable information beyond diagnosis itself for both treatment planning (e.g. Benjamin, 2005; Pincus & Cain, 2008) and developing testable hypotheses

regarding the etiology and maintenance of psychopathology (Horowtiz, 2004; Schechtman & Horowitz, 2006). Pincus et al. (2008) argued that a promising advance in this regard is the concept of interpersonal pathoplasticity in psychopathology.

Interpersonal pathoplasticity can describe the observed heterogeneity in the phenotypic expression of psychopathology (e.g. Barrett & Barber, 2007), predict variability in response to psychotherapy within a disorder (e.g. Alden & Capreol, 1993; Borkovec, Newman, Pincus, & Lytle, 2002; Maling, Gurtman, & Howard, 1995), and account for a lack of uniformity in regulatory strategies displayed by those who otherwise are struggling with similar symptoms (e.g. Wright, Pincus, Conroy, & Elliot, in press). Differences in interpersonal diagnosis will affect the manner in which patients express their distress and will influence the type of interpersonal situation they feel is needed to regulate their self, affect, and relationships (Pincus et al., in press).

Pincus and colleagues have described statistical methods for using the IIP-C to determine the presence of a pathoplastic relationship. If patients with a particular disorder are not defined by a uniform interpersonal profile on the IIP-C nor are they defined by a complete lack of systematic interpersonal expression, then it is necessary to examine whether a pathoplastic relationship exists. Individuals with a particular disorder are subjected to a cluster analysis based on their responses to the IIP-C and distinct groups with characteristic interpersonal problem profiles may emerge. If the data support these clusters, this provides necessary but not sufficient evidence for a pathoplastic relationship. Important additional evidence is that the identified groups should not differ in their level of reported interpersonal distress and other psychological variables, such as symptom severity or comorbid psychopathology, which could serve as alternative

explanations for the distinct patterns of interpersonal problems. Both results combine to provide the necessary and sufficient evidence to conclude pathoplasticity.

A number of investigations have found that individual differences in interpersonal problems exhibit pathoplastic relationships with pathological symptoms and mental disorders. For example, patients diagnosed with GAD can be discriminated based on distinct clusters of interpersonal problems within the diagnostic category (Kasoff & Pincus, 2002; Pincus & Borkovec, 1994; Przeworski, Yamasaki, Kasoff, Pincus, Newman, Castonguay, & Borkovec, in preparation). In these studies, Pincus and colleagues found four clusters of GAD patients reflecting predominantly cold, intrusive, exploitable, and nonassertive problems respectively. Again, these groups did not differ in symptom severity, comorbid psychopathology, or attachment style, but did exhibit differences in treatment response. Thus, the contrasting styles of interpersonal presentation within a diagnostic category have important implications for case formulation and treatment planning. Adding to the strength of these findings, these GAD clusters have recently been replicated in a German clinical sample (Salzer, Pincus, Hoyer, Kreische, Leichsenring, & Leibing, 2008).

Hopwood, Clarke, and Perez (2007) examined the pathoplasticity of bulimic features and interpersonal problems using the IIP-C in a female undergraduate sample. They found four clusters of females with bulimic features: a Warm-Submissive cluster, a Cold-Dominant cluster, a Cold-Submissive cluster, and a Warm-Dominant cluster. These groups did not differ on average age, weight, depression, drive for thinness, or body dissatisfaction, but did exhibit significant differences in the type of interpersonal problems reported. Hopwood et al. argued that the differing interpersonal problems

reported among the four groups may indicate a need for a differential treatment process based on interpersonal style that could be specified by a complete interpersonal assessment prior to the beginning treatment.

Maladaptive traits and coping strategies can also be more distinctly understood when interpersonal features are considered. Slaney, Pincus, Uliaszek, and Wang (2006) investigated the interpersonal problems associated with maladaptive perfectionism. Their results supported the contention that maladaptive perfectionism is associated with interpersonal problems, while adaptive perfectionism is not. Further, the interpersonal problems experienced by maladaptive perfectionists were not unitary, but were better described by two dissimilar clusters of perfectionists with prominently cold or exploitable interpersonal problems (Slaney et al., 2006). When pathoplastic relationships exist, mutually influencing systems give rise to heterogeneous expressions of psychological states and behavior (Widiger et al., 1999). In the case of maladaptive perfectionism for example, the chronic discrepancy between a person's performance standards and their perceived level of performance interacts with an individual's personality to produce contrasting interpersonal expressions of maladaptive coping strategies.

Similarly, Wright, Pincus, Conroy, and Elliot (in press-a) demonstrated interpersonal pathoplasticity in individuals with high levels of fear of failure (FF). Conceptualized as an avoidance (versus approach) achievement motive, FF is activated in situations where a failure to perform adequately is perceived to threaten an individual's ability to accomplish personally meaningful goals (Conroy, Willow, & Metzler, 2002) and sensitivity to shame motivates the individual to avoid failure (Atkinson, 1957; McGregor & Elliot, 2005). Two interpersonal subtypes of high FF individuals were

associated with vindictive and nonassertive interpersonal problems respectively, consistent with hypotheses derived from two distinct strategies for coping with elicited shame: rage versus appeasement (Wright et al., in press-a).

Research on borderline personality pathology conducted by Leihener and colleagues (2003) found that the IIP-C could be used to distinguish two borderline personality disorder subtypes; an autonomous and a dependent type. This finding was replicated by Ryan and Shear (2007) in a student analogue sample. However, Hilsenroth, Menaker, Peters and Pincus (2007) examined the interpersonal functioning of seventy-four outpatients at a university-based community clinic in a naturalistic study and did not find evidence for the pathoplasticity of borderline personality pathology. These researchers found that the 23 individuals diagnosed with borderline pathology consistently reported interpersonal distress about overly accommodating, self-sacrificing, and intrusive/needy interpersonal behaviors. Evaluation of their circumplex profiles indicated that there was group homogeneity in the type of interpersonal problem endorsed. The results of the Hilsenroth et al. (2007) study are important because they highlight that evidence for pathoplasticity is not an artifact of this methodological approach.

Finally, interpersonal pathoplasticity has been demonstrated in a group of socially phobic individuals. Kachin et al. (2001) examined DSM-based social phobia subgroups and interpersonally-based social phobia subgroups in a sample of thirty generalized socially phobic individuals, thirty non-generalized socially phobic individuals, and thirty non-disordered control participants. They found that the traditional DSM-based subtype classification yielded quantitative differences between the subgroups. In particular, the GSP group had more problems with vindictiveness, coldness, social avoidance, and

unassertiveness than NGSP participants and was higher on all eight IIP-C octants when compared to the controls. NGSP participants reported more problems of dominance, social avoidance, exploitability, and intrusiveness than controls. In addition, the results showed differences in the severity of interpersonal distress (i.e. elevation) between the groups, with the GSP group demonstrating the highest level of distress. The GSP group was not significantly different from the NGSP group on interpersonal rigidity (i.e. amplitude). Kachin et al. described that although their results indicated that the symptom-based subgroups had differences in the degree of their interpersonal problems, the DSM-based subgroups could not be discriminated on core interpersonal problems. They reported that there was a lack of homogeneity in interpersonal problem type endorsed among DSM-IV social phobia subtypes which provided support for the absence of qualitative distinctions between the DSM-based subgroups.

In contrast, when Kachin et al. (2001) performed a cluster analysis of the IIP-C, they found two distinct subgroups that yielded high homogeneity in type of interpersonal problem reported. The two subgroups each had discriminating core interpersonal features suggesting qualitatively different responses to feared interpersonal situations. One group reported difficulties with anger, hostility, and mistrustfulness and was located at 125.21º on the IIP-C (the Hostile Dominant group), while the other group reported difficulties with unassertiveness, exploitability, and over-nurturance and was located at 294.92º on the IIP-C (the Friendly-Submissive group). There were no significant differences between the two groups on level of interpersonal distress (i.e. elevation) and level of interpersonal rigidity (i.e. amplitude). Kachin et al. noted that the symptom-based GSP and NGSP groups were randomly and equally distributed within both of the interpersonal

clusters, suggesting that the clusters were not redundant with the current symptom-based approach. They also reported that the clusters were not significantly different on depression or other disorders comorbid to social phobia, thus providing evidence for pathoplasticity. One potential limitation of the Kachin et al. study was that their results were based on an undergraduate sample. The authors acknowledged that their sample may be functioning at a higher level than a sample of individuals who are currently in psychotherapy treatment for social phobia and argued that further research is necessary to examine these subtypes in a clinical sample (Kachin et al., 2001).

Based on previous research, the current study had three main goals. First, this study aimed to replicate the results of Kachin et al. (2001) by using an interpersonally-based approach to subgroup socially phobic individuals using the IIP-C in a clinical sample. Second, this study aimed to provide evidence for the pathoplasticity of social phobia by demonstrating that different subgroups of social phobia can be formed using the IIP-C and that those groups will be similar on measures of demographics, symptom severity, and comorbidity, but different on the types of interpersonal problems reported. Third, because this study was analyzing data that had already been collected in a clinical sample of patients who had completed their course of psychotherapy, this study aimed to examine any similarities or differences between the interpersonally-based social phobia subgroups at post-treatment on measures of general symptom severity, level of social anxiety, psychological well-being, self-efficacy, level of optimism, and domains of life functioning. In addition, this study examined differences between the subgroups in number of psychotherapy sessions attended and early termination rate.

Chapter 2

Hypotheses

Hypothesis 1: Replication of Kachin et al.'s (2001) interpersonally-based subgroups of social phobia in a clinical sample.

As noted earlier, Kachin et al. (2001) found two subgroups of socially phobic individuals based on their responses to the IIP-C: a Hostile-Dominant cluster and a Friendly-Submissive cluster. It was predicted that the current study would also classify socially phobic outpatients into the same two groups based on a cluster analysis of their responses to the IIP-C.

Hypothesis 2: Provide evidence for the pathoplasticity of social phobia.

It was predicted that two interpersonally distinct groups of socially phobic outpatients would emerge from the cluster analysis. It was also predicted that there would be no significant differences between these clusters in level of interpersonal distress (i.e. elevation). Additionally, it was hypothesized that the clusters would not differ on demographic variables, initial symptom severity, and comorbid psychiatric diagnoses, thus showing the necessary and sufficient condition for pathoplasticity.

Hypothesis 3: Evaluate the similarities and differences between the interpersonally-based subgroups of socially phobic outpatients at post-treatment.

Extensive research using the IIP-C has shown that Friendly-Submissive interpersonal problems are positively related to psychotherapy outcome, whereas Hostile-Dominant problems are negatively related to outcome (e.g. Gurtman, 1996). For example, Muran et al. (1994) found a positive correlation between Friendly-Submissive problems and patient ratings of the working alliance early in therapy. Horowitz et al. (1993)

observed that problems with being overly exploitable (or Friendly-Submissive) were the most treatable symptoms in brief psychodynamic psychotherapy. Similarly, Horowitz at al. (1992) found that patients with affiliative interpersonal distress communicated more clearly about others than did hostile patients and thus were better candidates for expressive (or psychodynamic) treatment. In addition, Kasoff and Pincus (2002) found that end-state functioning immediately after cognitive-behavioral treatment (CBT) for GAD indicated that the Nonassertive and Exploitable GAD patients exhibited better adjustment than the Cold and Intrusive GAD patients. At 6-month follow-up, Kasoff and Pincus reported that the functioning of the Nonassertive and Exploitable patients continued to improve while the functioning of the Cold and Intrusive patients declined.

In the current study, therapists practiced an integrative form of psychotherapy based on research conducted by Grawe and colleagues. The therapists in this study differentially combined interventions from different therapy schools (i.e. CBT, interpersonal, process-experiential, systemic) following a case formulation based on consistency theory (Grawe, 2004). Consistency theory is an integrative therapy approach based on empirically-supported general change mechanisms. Grawe (1997) articulated the following five change mechanisms that are necessary for psychotherapy: (1) the therapeutic bond, (2) problem activation, (3) resource activation, (4) mastery, and (5) motivational clarification. Accordingly, all empirically validated treatment procedures were used in the therapy as long as their use was justified by the individual needs of the patient to whom the treatment plan was tailored. In this study, consistent with previous research using the IIP-C, it was predicted that the Friendly-Submissive group of socially phobic outpatients would respond more positively to psychotherapy treatment than the

Hostile-Dominant group. Therefore, it was hypothesized that the Friendly-Submissive group would report lower general symptom severity, lower levels of social anxiety, increased psychological well-being, increased self-efficacy, increased optimism, and increased life satisfaction at post-treatment than the Hostile-Dominant group controlling for the respective intake levels on these measures.

With regard to the number of therapy sessions attended by patients with particular interpersonal problems, the current research is mixed. As reviewed above, there is a plethora of empirical studies showing that patients with Friendly-Submissive interpersonal problems respond more positively to psychotherapy than do patients with Hostile-Dominant interpersonal problems. However, one research study examining the change of interpersonal problems in response to varying "doses" (or number of sessions) of psychotherapy found that interpersonal problems related to Controlling (or Hostile-Dominant) behaviors actually changed readily in psychotherapy, with 45% of the patients experiencing significant improvement around session 4, and they appeared to improve progressively as a dose-dependent function; while interpersonal problems related to Self-Effacing behaviors appeared almost intractable to psychotherapy over the course of 38 sessions. Patients with interpersonal problems related to Detached behaviors initially appeared intractable; however, they seemed to improve progressively after the 17th session (Maling, Gurtman, & Howard, 1995). The current study proposed exploratory analyses to examine differences in the number of sessions attended by the two groups of socially phobic outpatients. Finally, it was predicted that the Hostile-Dominant group would have a higher early termination rate from psychotherapy than the Friendly-

Submissive group due to their difficulties forming a working alliance with the therapist (e.g. Muran et al., 1994).

Chapter 3

Method

Patients and Therapists

The data for this study was collected at the University of Bern, Switzerland in their outpatient psychotherapy clinic. This clinic accepts patients suffering from a wide range of problems and disorders, with the exception of psychotic disorders and substance use disorders. The first three to four psychotherapy sessions are devoted to a detailed assessment which includes clinical interviews, a structured diagnostic interview, and standardized questionnaires. At the end of the assessment phase, the assessors choose the therapist that they judge to be best suited to the patient's needs. The available therapists are partly trainees, at various stages of their 4-year training course in psychotherapy, and partly experienced therapists, who are also involved in the weekly supervision of the trainees (Grosse Holtforth & Grawe, 2003).

The current study analyzed the data of 77 patients diagnosed with DSM-IV social phobia according to the Structured Clinical Interview for DSM (SCID-I; Spitzer, Williams, Gibbon, & First, 1994). The assessors at the clinic did not specify GSP versus NGSP; therefore, the current study was not able to analyze data on the diagnostic-based subgroups of social phobia. The demographics of the patients in this study were as follows: 44 males and 33 females with a mean age range of 32.78 (SD= 11.35) overall.

In this sample, 100% of the patients met criteria for at least one Axis I disorder and 55.8% of the patients met criteria for more than one Axis I disorder. The Axis I disorders in this sample included: Social Phobia (100%), Major Depressive Disorder (22.1%), Specific Phobia (0.06%), Depressive Disorder NOS (0.04%), Adjustment

Disorder with depressed mood (0.04%), Dysthymia (0.03%), Hypochondriasis (0.03%), Panic Disorder with Agoraphobia (0.01%), Agoraphobia (0.01%), Panic Disorder without Agoraphobia (0.01%), Alcohol Dependence (0.01%), Cannabis Dependence (0.01%), Polysubstance Dependence (0.01%), Alcohol Abuse (0.01%), Cannabis Abuse (0.01%), Generalized Anxiety Disorder (0.01%), and Pain Disorder (0.01%). The Axis II disorders in this sample included: Avoidant Personality Disorder (0.08%), Dependent Personality Disorder (0.01%), and Personality Disorder NOS (0.01%).

Treatment

The philosophy behind the treatment at the University of Bern outpatient clinic is that all psychotherapy should be "research informed." This means that instead of subscribing to a particular therapy school from which the therapeutic interventions are drawn, empirical findings from as broad a background as possible (including basic psychology, neuropsychology, and all the various theoretical models) should be the basis for an integrative framework for psychotherapy which is continually revised according to the latest empirical findings (Grawe, 1997, 2004). The empirically-supported change mechanisms identified in Grawe's consistency theory provide the framework within which individual case conceptualizations are formulated using the detailed information gathered in the assessment phase. As noted earlier, all empirically-validated treatment interventions were used in this integrative therapy, as long as their use was justified by the individual needs of the patient to whom the treatment plan is tailored (Grawe, 2004).

Interpersonal Measures

Inventory of Interpersonal Problems Circumplex version (IIP-C; Alden et al., 1990; Horowitz et al., 2000). Interpersonal problems were assessed using the German

version of the IIP-C. The IIP-C is a 64-item measure that contains items related to "It is hard for me to…" and "Things you do too much." Respondents are asked to indicate their degree of distress associated with the problem on a 5-point Likert scale ranging from 0 (not at all) to 4 (extremely). The IIP-C assesses interpersonal problems across eight themes emerging around the dimensions of Dominance and Love: Domineering, Vindictive, Cold, Socially Avoidant, Nonassertive, Exploitable, Overly-nurturant, and Intrusive (see Figure 1). Previous research reported alpha coefficients that ranged from .72 for the Intrusive scale to .85 for the Nonassertive and Social Avoidant scales. The alpha coefficients in this sample ranged from .76 for the Intrusive scale to .88 for the Nonassertive scale. Test-retest reliability was reported to be .98 (Horowitz et al., 2000). The validity of the IIP-C has been supported in investigations of its relations with various forms of psychopathology (e.g. Kachin et al., 2001; Pincus & Wiggins, 1990; Soldz, Budman, Demby, & Merry, 1993), therapeutic alliance (e.g. Muran et al., 1994), psychotherapy process (e.g. Maling et al., 1995; Ruiz, Pincus, Borkovec, Echemendia, Castonguay, & Ragusea, 2004).

Symptom Measures

Brief Symptom Inventory (BSI; Derogatis, 1993). The BSI is a 53-item abbreviated form of the Symptom Checklist-90 (SCL-90) that was designed to assess common psychological symptoms. Each item represents a problem, with respondents indicating the extent to which each item has distressed them over the past week. The BSI uses a 5-point Likert scale response format ranging from *not at all* to *extremely*. The measure assesses the following nine symptom dimensions: depression, interpersonal sensitivity, anxiety, phobic anxiety, paranoid ideation, somatization, obsessive-

compulsive, hostility, and psychoticism. Cronbach's alpha coefficients have been reported to range from .74 to .97 for the symptom dimensions. The alpha coefficients in this sample ranged from .77 to .96 for the symptom dimensions.

Unsicherheitsfragenbogen (U-Bogen; Ullrich & Ullrich, 1990). The English translation of this measure is Insecurity Questionnaire. It was designed to measure six different facets of social anxiety and social competence. The scales are: Fear of Failure and Critique, Fear of Contact, Being Able to Demand, Not Being Able to Say "No," Guilt Feelings, and Excessive Norm Orientation. Ratings are made on a 6-point Likert scale. This questionnaire is widely used in German speaking countries (Germany, Switzerland, Austria) for the assessment of social skills and social fears, especially in clinical settings. Investigations on a clinical psychotherapy sample have shown satisfactory results concerning factorial validity and internal consistency. Cronbach's alpha values have been reported to range from .73 to .87 for the six scales (Ullrich & Ullrich, 1990). In this sample, alpha coefficients ranged from .79 to .89 for the six scales.

Taylor Manifest Anxiety Scale (MAS; Taylor, 1953). The items of the MAS were originally drawn from the MMPI. These items were judged by clinicians to be indicative of manifest anxiety. It was developed as a device for selecting subjects for experiments in human motivation. It is comprised of 50 true/false questions that assess manifest anxiety. The MAS meets accepted psychometric criteria with respect to reliability, stability, and validity (Taylor, 1953). The alpha coefficient for the MAS in this sample was .84.

Outcome Measures

Bern Subjective Well-Being Inventory (BFW; Grob et al., 1991). The BFW is a 39-item self-report measure that assesses two separate aspects of subjective well-being: "satisfaction" and "ill-being." The components of satisfaction are "positive attitude towards life," "self-value," "depressive mood," and "joy in living." The components of ill-being are "problem awareness" and "somatic complaints and reactions." The BFW meets accepted psychometric criteria with respect to reliability, stability, and validity (Grob et al., 1991). The alpha coefficients in this sample ranged from .77 for the "problem awareness" scale to .91 for the "positive attitude toward life " scale.

Changes in Life Domains Questionnaire (VLB; Itten, 2002). This measure is a change-sensitive instrument constructed to evaluate changes in life domains and life satisfaction over time in psychotherapy. Global ratings range from -4 (deterioration) to 4 (improvement). This measure has demonstrated adequate reliability and validity (Itten, 2002). The alpha coefficients in this sample ranged from .82 to .96.

Generalized Self-Efficacy Scale (GKE; Schwarzer, 1994). This measure is a German-language scale for assessing generalized self-efficacy, a personality characteristic which measures an individual's belief that he or she can cope with difficult demands. This 10-item scale has been used to assess perceptions of self-efficacy in a wide range of empirical studies, including research on stress, psychosocial adaptation, and health beliefs. Empirical findings have supported the validity and reliability of the scale and have also shown that the GKE correlates positively with optimism, self-esteem, internal control, and achievement motivation while correlating negatively with anxiety, depression, and neuroticism (Schwarzer, 1994). In this sample, the alpha coefficient for the GKE was .92.

Revised Questionnaire of Changes in Experiencing and Behavior (VEV-VW; Willutzki, 1999; *Zielke & Kopf - Mehnert, 1978).* This measure is a change-sensitive instrument constructed to evaluate change in optimism over time in psychotherapy. For 27-items, the participant is requested to imagine a given point of time (usually pre-treatment) and then to rate the changes experienced since then on a 7-point Likert scale ranging from "significant change" to "significant negative change." An example of an item on the VEV is: "In comparison to the beginning of my therapy, I feel more self-confident now." Scores on this measure can range from 27 (maximal change to the worse) to 189 (maximal change to the better). This measure has demonstrated adequate internal consistency, high reliability and substantial validity (Zielke, 1980). The alpha coefficient in this sample was .87.

Data Analyses

Hypothesis 1: Replication of Kachin et al.'s (2001) interpersonally-based subgroups of social phobia in a clinical sample.

Structural Summary Method for Group-Level Circumplex Data. The level and structure of interpersonal problems in patients with social phobia was examined using the Structural Summary Method for Circumplex Data. This circumplex analytic approach involves creating a structural summary of the IIP-C profile by modeling the pattern of octant scores to a cosine-curve function. Accordingly, the profile is "decomposed" into two parts: a structured component (cosine function) reflecting the prototype for a circumplex and a deviation component. As shown in Figure 2, the parameters of this curve are its (a) angular displacement, or the peak-shift of the curve, from 0°; (b) amplitude, or peak value; and (c) elevation, or mean level. The coordinates in the analysis

are the polar angles of the octant scales, as shown in the earlier Figure 1; e.g., PA at 90°, BC at 135°, etc. The goodness-of-fit of the modeled curve to the actual scores can be also calculated by a R^2 value, which essentially indicates the degree to which the profile conforms to circumplex expectations. Gurtman and Balakrishnan (1998) provide a detailed description of the structural summary, as well as procedures for solving for the various parameters.

Gurtman and Balakrishnan (1998) also offer interpretive guidelines that relate each of these summary features to clinical hypotheses. The angular displacement of the curve indicates the person's interpersonal "central tendency," signifying the individual's "typology" (Leary, 1957) or predominant interpersonal "theme" (Kiesler, 1996). For example, based on the circumplex of Figure 1, an angle of 135° suggests the central interpersonal qualities of distrust, exploitativeness, and vindictiveness (broadly, hostile-dominance); 180° suggests lack of warmth and interpersonal distance, and so on. Amplitude is a measure of profile differentiation. It is viewed as a measure of the profile's "structured patterning," or degree of differentiation, indicating the extent then to which the predominant trend "stands out." An amplitude value of 0 indicates a flat (i.e., undifferentiated) profile; high amplitude indicates a profile with a clear interpersonal peak (and trough). Elevation, or the mean level of the curve, is an index of global level of *interpersonal distress* that an individual reports across all types of interpersonal problems (Gurtman, 1994) with high values indicating high overall distress or maladjustment.

To the extent that a group's profile exhibits non-trivial amplitude (i.e., is differentiated) and conforms well to circumplex expectations (i.e., $R^2 \geq .70$), the group may be distinctively characterized by the prototypical interpersonal problem pattern

indicated by the profile's angular displacement and the level of distress associated with that interpersonal problem pattern as indexed by the profile's elevation (Wright, Pincus, Conroy, & Hilsenroth, in press). This approach has been used successfully to identify distinct interpersonal profiles among groups of individuals exhibiting pathological perfectionism (Slaney, et al., 2006), high in fear of failure (Wright et al., in press-a), diagnosed with DSM-IV social phobia (Kachin, et al., 2001), diagnosed with DSM-IV generalized anxiety disorder (Kasoff & Pincus, 2002; Salzer et al., 2008), and women high in bulimic features (Hopwood, et al, 2007). The method has also been used to evaluate the consistency of multiple judges' interpersonal assessments of target individuals (Ansell & Pincus, 2004).

Using the structural summary method, an interpersonal profile was calculated for the group of 77 socially phobic outpatients. It was predicted that as a whole this group would exhibit a complex profile indicative of low interpersonal prototypicality. A lack of uniformity in profile is consistent with predictions; however it will not reveal the nature of this lack of homogeneity. A low R^2 value could equally be obtained from an unsystematically heterogeneous group, in which individual profiles are not similar to other profiles, or from a systematically heterogeneous group. In other words, a group made up of smaller homogenous groups, creating multiple circular distributions with offsetting interpersonal profiles.

Cluster Analysis. To test the nature of this heterogeneity, the socially phobic outpatients' scores on the two dimensions of the IIP-C (Dominance and Love) were cluster analyzed. The goal of cluster analysis is to build homogeneous groups of persons out of a heterogeneous total sample. Because this study aimed to replicate Kachin et al.

(2001), the centroids from the clusters of Kachin et al. were used. This sample was cluster analyzed by employing an agglomerative clustering method (SPSS K-Means) using squared Euclidian distances to allot cases to clusters based on their scores on the two dimensions of the IIP-C (Dominance and Love).

Evaluations of Subgroup Profiles (vs. Entire Sample). The structural summary method does not allow for direct between-group comparisons of interpersonal data. To test data at the individual-level, circular means, circular variances, and 95% circular confidence intervals (CI) were calculated for each group. The circular mean represents the average of the angular displacements for each individual within the group. It is calculated using the following equations:

$$X = \sum (\cos\theta i) \quad (1.1)$$

$$Y = \sum (\sin\theta i) \quad (1.2)$$

where θi represents the angle of each individual in the group. The resulting circular mean is expressed as an average angle for each group. The circular variance refers to the dispersion of the angular displacements of individuals within a given group around the circular mean and is calculated using the following equation:

$$V = 1 - \sum \cos (\theta m - \theta i)/ N \quad (1.3)$$

where θm represents the circular mean and N equals the number of participants in each group. Circular confidence intervals are calculated as a way of identifying reliable differences in group circular means. The 95% confidence interval is calculated as follows:

$$95\%\ CI = \theta m \pm 1.96 \times \cos^{-1} (1 - V)/ \text{sqrt } N \quad (1.4)$$

where 1.96 represents the multiplier factor based on a two-tailed normal curve probability (Gurtman & Pincus, 2003). CIs allow for a direct comparison between each corresponding cluster, with the expectation that each pair of CIs will not overlap.

It is important to note that the angular locations of each group as defined by a circular mean will differ slightly from the angular displacement given by the structural summary method. The reason is that circular means are calculated using only angular locations and not the vector length from the origin of the circle. By not taking vector length into account, all angles are accorded equal weight in the equation. The structural summary method accounts for data that not only differ in angular location but also vector length, thus according differing weights to each subject's angle when calculating the overall displacement for the group. In defining groups based on circular statistics some of the information given by the structural summary method is lost, but what is gained is the ability to statistically compare separate groups (Wright et al., in press-b).

Hypothesis 2: Provide evidence for the pathoplasticity of social phobia.

To provide evidence of pathoplasticity, the current study performed mean comparisons, using one-way ANOVAs, between the identified clusters on IIP-C octants, axes (Dominance and Love), amplitude, and elevation. To show evidence of pathoplasticity, there should be no significant differences between the clusters on elevation. In addition, this study compared pre-treatment scores on the BSI, MAS, and U-Bogen (the symptom measures) between the identified clusters using one-way ANOVAs. Again, there should be no significant differences between the clusters on these measures if there is pathoplasticity. Finally, Chi-Square tests were conducted to

examine the influence of gender and diagnostic comorbidities on the clusters. The clusters should not differ by gender or comorbidity.

Hypothesis 3: Evaluate the similarities and differences between the interpersonally-based subgroups of socially phobic outpatients at post-treatment.

This study also compared differences between the interpersonally-based subgroups on symptom measures (BSI, MAS, U-Bogen) and outcome measures (BFW, GKE, VEV-VW, VLB) at post-treatment. This study used two different types of change measures: measures that were assessed at both pre- and post-treatment (i.e. BSI, MAS, U-Bogen, BFW, GKE) and measures that assessed change retrospectively and are not measured at pre-treatment (i.e. VEV-VW, VLB). For the measures that were assessed at both pre- and post-treatment, pre-treatment scores on each measure were used as a covariate in one-way ANCOVAs to evaluate the similarities and differences between the interpersonally-based subgroups at post-treatment on these measures. For the measures that assessed change retrospectively, post-treatment scores were compared between the interpersonally-based subgroups using one-way ANOVAs. In addition, one-way ANOVAs were also conducted to examine any significant differences between groups in number of psychotherapy sessions attended. Finally, a Chi-Square test was performed to evaluate the frequency of early termination in each of the clusters to examine any differences in termination rate between the clusters.

Chapter 4

Results

Replication of Kachin et al.'s (2001) interpersonally-based subgroups of social phobia in a clinical sample.

Interpersonal Problem Profiles. Using the structural summary method, an interpersonal profile was calculated for the whole sample of 77 socially phobic patients (see Table 1). The interpersonal profile of this sample indicated that, on average, they are located in the (HI) octant (265.11º) reflecting a Submissive interpersonal style. The profile elevation for the whole sample of socially phobic patients was high (1.28), indicating high levels of interpersonal distress. The structural summary parameters of amplitude (0.82) and R^2 (.85) indicated that this group of socially phobic patients may exhibit interpersonal prototypicality. However, previous research by Kachin et al. (2001) suggested that socially phobic individuals may form smaller and more prototypical groups, creating multiple circular distributions with offsetting interpersonal profiles.

To test the possibility that multiple interpersonal profiles may exist in this sample and in an attempt to replicate Kachin et al. (2001), the socially phobic patients' scores on the IIP-C dimensions of Dominance and Love were cluster analyzed. Using the centroids from Kachin et al., this sample was cluster analyzed using an agglomerative clustering method (SPSS K-means) that used squared Euclidean distances to allot cases to clusters based on their scores on Dominance and Love. Cluster 1 (n = 68) fell at 268.95º on the circumplex with an elevated peak indicative of Submissive interpersonal problems and had a high elevation (1.33) indicating high levels of interpersonal distress. Cluster 2 (n = 9) fell at 140.99º on the interpersonal circumplex with an elevated peak indicative of

Hostile-Dominant interpersonal problems and also had a high elevation (0.88) indicating high levels of interpersonal distress. The interpersonal problem profiles for Cluster 1 (R^2 = .89; amplitude = .97) and Cluster 2 (R^2 = .73; amplitude = .59) in this sample exhibited high goodness-of-fit to circumplex expectations and moderate to large amplitudes when compared to the group as a whole (R^2 = .85; amplitude = .82) (see Table 1). A visual summary of these results is provided in Figure 3. The results of this study are generally consistent with Kachin et al. (2001) and indicate that the socially phobic patients in this sample can be clustered into two interpersonally-based subgroups with prototypical interpersonal definitions.

Comparing the Interpersonally-Based Subgroups Using Circular Statistics. In order to directly compare the two interpersonally-based clusters, circular statistics were computed. Table 2 presents the circular means, angular variances, and 95% CIs for each cluster. As noted previously, the angular location of each cluster as defined by a circular mean will differ slightly from the angular displacement given by the structural summary method. The circular mean for the Submissive cluster was 274.28º with a 95% confidence interval of 266.02° to 282.54°. The circular mean for the Hostile-Dominant cluster was 129.71° with a 95% confidence interval of 100.84°-158.59°. Please refer to Figure 4 for a graphical representation of the circular statistics. It is important to note that the 95% confidence intervals of the two interpersonally-based clusters do not overlap, providing further evidence that individuals within each of these clusters are reporting distinct interpersonal problems.

<u>Provide evidence for the pathoplasticity of social phobia.</u>

As noted above, this study generally replicated Kachin et al. (2001) by finding two interpersonally-based subgroups of socially phobic patients; a Submissive cluster and a Hostile-Dominant cluster. This replication provided necessary, but not sufficient evidence of a pathoplastic relationship. Additional analyses were conducted to provide evidence of pathoplasticity.

IIP-C Means. One-way ANOVAs were conducted on the IIP-C octants, axes, amplitude, and elevation to examine differences between individuals in the two interpersonal clusters. Table 3 presents the results of these mean comparisons. As predicted, there were significant differences on the IIP-C octants and axes. Individuals in the Hostile-Dominant cluster reported significantly more interpersonal problems that were domineering and vindictive, while individuals in the Submissive cluster reported significantly more interpersonal problems that were avoidant, nonassertive, exploitable, and overly-nurturant. There were no significant differences on cold and intrusive interpersonal problems. For the IIP-C axes, as predicted, individuals in the Submissive cluster scored significantly lower on the Dominance axis, while individuals in the Hostile-Dominant cluster scored significantly lower on the Love axis. Importantly, there were no significant differences on the IIP-C parameter of elevation, which was predicted and provided necessary evidence for pathoplasticity.

Pre-treatment Symptom Comparisons. To further provide evidence of pathoplasticity, one-way ANOVAs were conducted to compare the two interpersonally-based clusters on three pre-treatment symptom measures; the BSI, the MAS, and the U-Bogen. Table 4 presents the results of the mean comparisons for these measures. As predicted, there were no significant differences between the two clusters at pre-treatment

on the BSI subscales and the MAS total score. These findings provided support for the pathoplasticity of social phobia in this sample.

However, contrary to prediction, there were significant differences between the two clusters on several subscales of the U-Bogen (e.g. fear of failure and critique, not being able to say "no", guilt feelings, excessive norm orientation). The U-Bogen is a German language measure that assesses insecurity and social fears, which are constructs that are interpersonal in nature. Previous research on pathoplasticity (e.g. Wright, et al, in press-a) has suggested that if a measure assesses interpersonal constructs, then it should be excluded from determining the presence of a pathoplastic relationship because the clusters are interpersonally-based and should in fact differ on interpersonal measures. To test whether the U-Bogen is an interpersonally-based measure, its subscales were correlated with scores on the IIP-C axes of Dominance and Love with elevation (i.e. interpersonal distress) partialed out. If the U-Bogen is measuring interpersonal constructs, then its correlations with Dominance and Love should be significant even when interpersonal distress is partialed out. As predicted, all of the subscales of the U-Bogen significantly correlated with Dominance and Love with elevation partialed out (see Table 5). Therefore, because these results indicated that the U-Bogen is measuring interpersonal constructs and the two clusters should differ on interpersonal variables, it was not used as a pre-treatment symptom measure to provide evidence of pathoplasticity. However, the U-Bogen was used as part of the post-treatment data analyses in order to examine any differences between the clusters on the types of social fears reported at pre- and post-treatment. As a contrast, the subscales of the BSI were also correlated with Dominance and Love with elevation partialed out. None of the BSI subscales correlated

significantly with Dominance and Love with elevation partialed out (see Table 5), demonstrating that the BSI is not an interpersonal measure and can be used to determine the presence of a pathoplastic relationship. Overall, comparisons of the two clusters at pre-treatment provided evidence for the pathoplasticity of social phobia in this sample.

Gender and Diagnostic Comorbidity. Finally, if there is pathoplasticity, then the two clusters should not differ in gender composition or diagnostic comorbidities. Chi-square analyses were conducted to examine any differences between the clusters on these variables. Chi-square analyses indicated no significant differences in percentage of men and women in each cluster (X^2 (1) = 0.38; p = .539). Similarly, Chi-Square analyses indicated no significant differences in percentage of comorbid diagnoses in each cluster (X^2 (15) = 12.09; p = .672).

Taken together, the results of the IIP-C mean comparisons, the pre-treatment symptom mean comparisons, and the gender and diagnostic comorbidity percentages indicated that there is necessary and sufficient evidence to determine that there is pathoplasticity of social phobia in this sample.

Evaluate the similarities and differences between the interpersonally-based subgroups of socially phobic outpatients at post-treatment.

Due to the difficulties associated with collecting follow-up data at post-treatment, the sample size for this study was significantly reduced to 35 socially phobic patients at post-treatment (out of 77 patients assessed at pre-treatment). This reduction in data resulted in an uneven distribution of patients in the two interpersonally-based clusters replicated from Kachin et al. (2001) (Submissive cluster n = 33; Hostile-Dominant cluster n = 2) and eliminated the possibility of conducting meaningful post-treatment analyses

using the replicated clusters. In order to fully maximize the use of collected data in this sample, it was decided that a second cluster analysis would be performed to determine whether there was another interpersonally-based clustering that would allow post-treatment analyses to be performed and may also better represent the data from this socially phobic patient sample.

A Natural Cluster Analysis of the Current Data

Interpersonal Problem Profiles. The entire sample of socially phobic patients' (n = 77) scores on the IIP-C dimensions of Dominance and Love were cluster analyzed for a second time. However, the centroids from Kachin et al. (2001) were not used and two, three, and four cluster solutions were now considered. Ultimately, a two cluster solution was replicated across Ward's (1963) hierarchical clustering method and an agglomerative clustering method (SPSS K-Means [KM]) using squared Euclidean distances: 81.2% of Ward's Cluster 1 (n = 27) were grouped into KM Cluster 1 (n = 32) and 97.8% of Ward's Cluster 2 (n = 50) were grouped into KM Cluster 2 (n = 45). A Chi-Square analysis indicated similarity of groups across cluster algorithms (X^2 (1) = 51.23; p <.001). Three and four cluster solutions were not as robust. The KM clusters were retained for subsequent analyses.

The interpersonal problem profile for Cluster 1 (n = 32) of the natural cluster analysis had an elevated peak at 308.22º on the interpersonal circumplex indicative of Friendly-Submissive interpersonal problems and had an elevation of 1.27 indicative of high interpersonal distress (see Table 6). Cluster 2 (n = 45) fell at 258.75º on the interpersonal circumplex with an elevated peak indicative of Cold-Submissive interpersonal problems and had an elevation of 1.45 also indicative of high levels of

interpersonal distress. Additionally, both new clusters exhibited excellent goodness-of-fit to circumplex expectations with Cluster 1 having an R^2 value of .88 and Cluster 2 having an R^2 value of .91; and both Cluster 1 and Cluster 2 displayed large amplitudes (1.40 and 1.29 respectively). A visual summary of these results is provided in Figure 5.

It is important to note that the natural cluster analysis revealed two clusters that were interpersonally distinct from the two clusters formed using the Kachin et al. centroids. When comparing the interpersonal profiles of the two sets of clusters, the amplitude values for the natural clusters were much larger (Cluster 1: amplitude = 1.40; Cluster 2: amplitude = 1.29) than the amplitudes found for the replicated Kachin et al. clusters (Cluster 1: amplitude = 0.97; Cluster 2: amplitude = 0.59) suggesting that the natural clusters exhibited more profile differentiation than the replicated Kachin et al clusters. Similarly, the goodness-of-fit statistic for the Cold-Submissive cluster formed using the natural cluster analysis is much larger (R^2 = .91) than for the replicated Kachin et al. Hostile-Dominant cluster (R^2 = .73). These findings suggest that the interpersonal clusters identified in the natural cluster analysis exhibited more interpersonal prototypicality than the clustering found using the Kachin et al. centroids.

Comparing the Interpersonally-Based Subgroups Using Circular Statistics. Table 7 presents the circular means, angular variances, and 95% CIs for the two new clusters. The circular mean for the Friendly-Submissive cluster was 305.68º with a 95% confidence interval of 282.83° to 328.53°. The circular mean for the Cold-Submissive cluster was 259.34° with a 95% confidence interval of 252.10° to 266.58°. Please refer to Figure 6 for a graphical representation of the circular statistics. It is important to note that the 95% confidence intervals of the two interpersonally-based clusters do not overlap,

providing further evidence that individuals within each of these clusters are reporting distinct interpersonal problems.

As has been noted throughout this paper, the presence of two interpersonally-based clusters provides necessary, but not sufficient evidence of pathoplasticity for social phobia. Additional analyses were performed comparing the two new clusters in order to determine the presence of a pathoplastic relationship.

IIP-C Means. One-way ANOVAs were conducted on the IIP-C octants, axes, amplitude, and elevation to examine differences between individuals in the two interpersonal clusters. Table 8 presents the results of these mean comparisons. As shown in Table 8, there were significant differences between Friendly-Submissive social phobics and Cold-Submissive social phobics on the IIP-C octants and axes. Individuals in the Cold-Submissive cluster reported significantly more interpersonal problems that were cold, avoidant, and nonassertive, while individuals in the Friendly-Submissive cluster reported significantly more interpersonal problems that were exploitable, overly-nurturant, and intrusive. There were no significant differences on domineering and vindictive interpersonal problems. For the IIP-C axes, Friendly-Submissive social phobics scored significantly higher on both the Dominance and Love axes. Importantly, there were no significant differences on the IIP-C parameter of elevation, which provides necessary evidence for pathoplasticity.

Pre-treatment Symptom Comparisons. To further provide evidence of pathoplasticity, one-way ANOVAs were conducted to compare the two new interpersonally-based clusters on two pre-treatment symptom measures; the BSI and the MAS. As noted earlier, the U-Bogen assesses interpersonal constructs; therefore, pre-

treatment scores on the U-Bogen were not used to determine pathoplasticity, but were used later in the paper to examine differences in the types of social fears reported by the two clusters. Table 9 presents the results of the mean comparisons for these measures. As predicted, there were no significant differences between the two clusters at pre-treatment on the BSI subscales and the MAS total score. These findings provided support for the pathoplasticity of social phobia in this sample.

Gender and Diagnostic Comorbidity. Finally, the two new clusters should not differ in gender composition or diagnostic comorbidities. Chi-Square analyses were conducted to examine any differences between the clusters on these variables. Chi-Square analyses indicated no significant differences in percentage of men and women in each cluster (X^2 (1) = 0.11; p = .739). Similarly, Chi-Square analyses indicated no significant differences in percentage of comorbid diagnoses in each cluster (X^2 (15) = 18.78; p = .714).

Taken together, the identification of two interpersonally-based clusters and the results of the IIP-C mean comparisons, the pre-treatment symptom mean comparisons, and the gender and diagnostic comorbidity percentages indicated that there is necessary and sufficient evidence to determine that there is pathoplasticity of social phobia in this sample. It is important to note that the improved interpersonal prototypicality of the clusters identified by the natural cluster analysis indicated that these clusters, the Friendly-Submissive cluster and the Cold-Submissive cluster, may best represent the patients in this clinical sample as compared to the clusters identified using the centroids from Kachin et al. (2001).

Post-Treatment Comparisons of the Interpersonally-Based Clusters. As noted above, there were significantly fewer patients with post-treatment data in this sample; the overall sample size was reduced from 77 patients to 35 patients. With the new clustering of patients, there were a comparable number of patients in each cluster to allow for meaningful post-treatment analyses to be conducted (Friendly-Submissive cluster = 19; Cold-Submissive cluster = 16). This study used two different types of post-treatment change measures: measures that were assessed at both pre- and post-treatment (i.e. BSI, MAS, U-Bogen, BFW, GKE) and measures that assessed change retrospectively and were not measured at pre-treatment (i.e. VEV-VW, VLB). For the measures that were assessed at both pre- and post-treatment, one-way ANCOVAs were proposed in order to examine differences between the clusters at post-treatment while controlling for scores at pre-treatment. However, it is only necessary to use pre-treatment scores as covariates if there are significant differences between the clusters at pre-treatment. As noted earlier, there were no significant pre-treatment differences between the two clusters on the BSI and MAS which provided evidence of pathoplasticity; therefore, to maximize degrees of freedom, one-way ANOVAs were conducted comparing the two clusters on the BSI and the MAS at post-treatment (see Table 10). There were no significant differences between the two clusters on the BSI subscales at post-treatment. On the MAS, Friendly-Submissive social phobics scored significantly lower than Cold-Submissive social phobics at post-treatment. There were no significant differences between the two clusters at pre-treatment on the GKE; therefore, a one-way ANOVA was conducted comparing the two clusters on this measure at post-treatment. The results indicated that there were no significant differences between the two clusters on the GKE at post-treatment. There

were also no significant differences between the two clusters at pre-treatment on any of the BFW subscales; therefore, one-way ANOVAs were conducted comparing the two clusters on this measure at post-treatment. On the BFW, Friendly-Submissive social phobics reported significantly higher scores on the positive attitude toward life subscale and the self-value subscale than Cold-Submissive social phobics at post-treatment.

As indicated earlier, there were significant differences between the two clusters on the U-Bogen at pre-treatment; therefore, pre-treatment differences on this measure were controlled for in the post-treatment data analyses. The first step was to conduct a between-subjects MANCOVA, entering the post-treatment scores on the six U-Bogen subscales as the dependent variables and entering the pre-treatment scores on the six U-Bogen subscales as covariates. There was a significant multivariate effect for cluster membership at post-treatment when controlling for pre-treatment scores; $F(7, 20) = 3.50$, $p < .01$. Univariate follow-up analyses for each U-Bogen subscale indicated that Friendly-Submissive social phobics scored significantly lower than Cold-Submissive social phobics on the U-Bogen subscales measuring fear of failure and critique, fear of contact, difficulties being able to demand, difficulties being able to say "no," and excessive norm orientation (see Table 10).

Table 10 also presents the results of the one-way ANOVAs that were conducted for the retrospective change measures and the number of psychotherapy sessions attended. On the measure of optimism (VEV-VW), Friendly-Submissive social phobics reported higher levels of optimism at post-treatment than Cold-Submissive social phobics. Similarly, Friendly-Submissive social phobics reported significantly more satisfaction with family of origin, current family life, current social environment, and current therapy

outcome at post-treatment than Cold-Submissive social phobics. There were no significant differences between the two clusters in number of psychotherapy sessions attended. Finally, a Chi-square analysis indicated that there were no significant differences in frequency of early termination between the clusters (X^2 (1) = 0.01; p = .942).

Overall, the results of the post-treatment analyses indicate that Friendly-Submissive social phobics exhibited significantly lower scores on measures of psychopathology and significantly higher scores on measures of well-being and satisfaction at post-treatment than Cold-Submissive social phobics in this sample.

Chapter 5

Discussion

The current study addressed three major aims. The first aim was to replicate the results of Kachin et al. (2001) by using an interpersonally-based approach to subgroup socially phobic individuals using the IIP-C in a clinical sample. The interpersonal profile of the whole sample of socially phobic outpatients in this study initially suggested that this sample might exhibit interpersonal protypicality; however, when the socially phobic patient's responses on the dimensions of Dominance and Love on the IIP-C were cluster analyzed, two distinct subgroups of socially phobic patients were found (a Hostile-Dominant cluster and a Submissive cluster) generally replicating the results of Kachin et al. (2001). These two subgroups demonstrated high goodness-of-fit to circumplex expectations when compared to the interpersonal profile for the whole sample and did not exhibit overlapping circular confidence intervals suggesting that patients within each of the clusters were reporting distinct interpersonal problems. Similar to Kachin et al., Hostile-Dominant social phobics reported difficulties with being domineering and vindictive while Submissive social phobics reported difficulties with being avoidant, nonassertive, and exploitable.

Once the interpersonally-based subgroups were identified using the Kachin et al. centroids, a second aim of this study was to provide evidence for the pathoplasticity of social phobia. The formation of two interpersonally distinct subgroups of socially phobic patients provides necessary but not sufficient evidence of pathoplasticity. Additional analyses revealed that there were no significant differences between the two clusters on gender, diagnostic comorbidity, interpersonal distress (i.e. elevation), as well as on pre-

treatment symptom measures. These results demonstrated that the differences between the clusters were not due to differences in demographics, level of interpersonal distress, and additional symptomatology thus providing sufficient evidence for the pathoplasticity of social phobia in this sample.

The third aim of this study was to compare the two interpersonally-based subgroups at post-treatment on symptom and outcome measures. However, difficulties with collecting post-treatment data significantly reduced the overall sample size and resulted in an uneven distribution of patients in the two clusters thus eliminating the possibility of meaningful post-treatment analyses using the two clusters. A second cluster analysis was conducted to determine if there was another interpersonally-based clustering that would allow for post-treatment analyses and may also better represent this clinical sample of socially phobic patients. The results of the second, natural clustering of patients again revealed two distinct interpersonally-based subgroups of socially phobic patients; a Friendly-Submissive cluster and a Cold-Submissive cluster. Both new clusters exhibited excellent goodness-of-fit to circumplex expectations when compared to the whole sample. In this new clustering, Cold-Submissive social phobics reported interpersonal problems related to being cold, avoidant, and nonassertive, while Friendly-Submissive social phobics reported interpersonal problems related to being exploitable and overly-nurturant. Additional analyses revealed that there were no significant differences between the two new clusters on gender, diagnostic comorbidity, interpersonal distress, as well as on pre-treatment symptom measures. Taken together, these results provided necessary and sufficient evidence for the pathoplasticity of social phobia using the second, natural clustering of patients.

This study produced two sets of interpersonally-based clusters of socially phobic patients, the clusters identified using the Kachin et al. (2001) centroids and the natural clusters, with both sets of clusters providing necessary and sufficient evidence for the pathoplasticity of social phobia. When comparing the interpersonal profiles of the two sets of clusters, the two clusters identified by the natural cluster analysis exhibited improved interpersonal prototypicality. In particular, the Cold-Submissive cluster formed by the natural cluster analysis exhibited much larger profile differentiation (i.e. amplitude) than the Hostile-Dominant cluster formed by the Kachin et al. replication, suggesting that the interpersonal problems reported by the Cold-Submissive cluster were highly differentiated from other interpersonal problems on the circumplex while the interpersonal problems reported by the Hostile-Dominant cluster were less differentiated. Similarly, the goodness-of-fit statistic was much larger for the Cold-Submissive cluster when compared to the Hostile-Dominant cluster, indicating that the Cold-Submissive cluster demonstrated more interpersonal prototypicality than the replicated Hostile-Dominant cluster. Finally when examining the circular statistics, the circular variance as well as the 95% circular confidence interval were much smaller for the Cold-Submissive cluster than for the Hostile-Dominant cluster (see Figures 4 & 6). Individuals within the Cold-Submissive cluster reported interpersonal problems that were tightly centered around the circular mean, again suggesting that the interpersonal problems reported by Cold-Submissive social phobics were highly differentiated and highly prototypical.

Taken together, these results suggest that while this study was generally able to replicate the clusters of Kachin et al. (2001), the two clusters formed by the natural cluster analysis (the Friendly-Submissive cluster and the Cold-Submissive cluster) better

represent the data in this sample due to their improved interpersonal prototypicality (Wright et al, in press-a). As noted earlier, one limitation of the Kachin et al. study was their use of a non-clinical student sample, which may have been higher functioning than a treatment-seeking sample. The current study had the distinct advantage of using data from socially phobic outpatients seeking psychotherapy, which suggests that the Friendly-Submissive cluster and the Cold-Submissive cluster found through the natural clustering of this data best represent socially phobic patients who may be exhibiting more psychopathology than their student counterparts. Given that the two clusters formed by the second, natural cluster analysis appear to be the best clustering for this sample, they were used for the post-treatment analyses and will be the only clustering discussed for the remainder of this paper.

The post-treatment comparisons of the Friendly-Submissive social phobics and the Cold-Submissive social phobics indicated that Friendly-Submissive social phobics exhibited significantly lower levels of social anxiety and significantly higher levels of well-being and satisfaction at post-treatment than Cold-Submissive social phobics. In particular, on a measure of social anxiety (the U-Bogen), Friendly-Submissive social phobics demonstrated lower levels of fear of failure, fear of critique, and fear of contact with others than Cold-Submissive social phobics. Similarly, Friendly-Submissive social phobics were better able to assert themselves through being able to demand and being able to say "no" and they were less likely to excessively adhere to social norms than Cold-Submissive social phobics at post-treatment. The reduced levels of social anxiety found in Friendly-Submissive social phobics were also supported by their significantly lower level of trait anxiety (the MAS) when compared to Cold-Submissive social phobics

at post-treatment. On a measure examining psychological well-being (the BFW), Friendly-Submissive social phobics reported significantly more positive attitudes toward life and higher self-value than Cold-Submissive social phobics at post-treatment. In addition, Friendly-Submissive social phobics reported higher levels of optimism as well as more satisfaction with family, social environment, and current therapy outcome than Cold-Submissive social phobics at post-treatment.

It is interesting to note that on a measure of general psychopathology (the BSI) there were no significant differences between the two clusters at post-treatment, suggesting that what might matter the most in the treatment of social phobia is targeting social fears and maladaptive interpersonal behaviors rather than overall level of psychopathology. Similarly, there were no significant differences in the number of psychotherapy sessions attended by individuals in each cluster, indicating that Friendly-Submissive social phobics and Cold-Submissive social phobics were attending similar numbers of psychotherapy sessions, but that overall it appears that Friendly-Submissive social phobics achieved significantly more gains over their psychotherapy course than their Cold-Submissive counterparts.

Interpersonal Complementarity and Interpersonal Motives

Kiesler (1983) defined interpersonal complementarity as: "a person's interpersonal actions tend (with a probability significantly greater than chance) to initiate, invite, or evoke from an interactant complementary responses" (pp. 200-201). These complementary responses are organized around the dimensions of agency and communion. Research on complementarity has shown that typically a behavior and its complement are: (1) similar with respect to communion – hostility pulls for hostility and

friendliness pulls for friendliness, and (2) reciprocal with respect to agency – dominance pulls for submission and submission pulls for dominance (Carson, 1969; Kiesler, 1983; 1996). Kiesler (1983) suggested that in a self-fulfilling manner, certain types of rigid, maladaptive interpersonal behaviors actually increase the probability that an individual will elicit the type of response from others that reinforces their fears and maladaptive behaviors. Thus, according to this theory, the maladaptive interpersonal behavior of the socially phobic patient would tend to pull others into a restricted range of complementary responses. For example, in the current study, Friendly-Submissive social phobics reported problems with being exploitable and overly nurturing toward others. It is likely that others may respond to these patients by being controlling and intrusive. On the other hand, Cold-Submissive social phobics reported problems with being overly cold, avoidant of social interactions, and unable to assert themselves. It is likely that others will respond to these patients by being cold and vindictive.

Horowitz (2004) expanded the principle of complementarity by noting that individuals have interpersonal motives that influence their behavior during interpersonal situations and that these interpersonal motives are also organized around the dimensions of agency and communion. An agentic motive is related to a need for autonomy while a communal motive is related to a need for intimacy. Horowitz argued that over time individuals develop strategies to satisfy their agentic and communal motives; however, the chronic frustration of interpersonal motives leads to the development of interpersonal problems and distress. Horowitz noted that interpersonal problems and distress can be developed either by excessive reliance on rigid interpersonal strategies or by the development of self-protective interpersonal motives. In the current study, both Friendly-

Submissive social phobics and Cold-Submissive social phobics seem to be maladaptively trying to satisfy their communal strivings; Friendly-Submissive social phobics appear to be trying to achieve intimacy while Cold-Submissive social phobics appear to be trying to avoid rejection. For example, Friendly-Submissive social phobics seem to be seeking greater intimacy with others by employing rigid and maladaptive interpersonal strategies that focus on being excessively compliant and overly friendly. Friendly-Submissive social phobics seem to fear displeasing others and fear being ignored or disliked in social situations; therefore, they strive to be excessively pleasing toward others and may allow others to take charge in order to achieve greater intimacy. On the other hand, Cold-Submissive social phobics seem to be attempting to avoid rejection in social situations by employing self-protective interpersonal motives that are cold and socially avoidant. Cold-Submissive social phobics seem to fear being embarrassed, humiliated, or judged in social situations; therefore, they may be trying to minimize social contact and avoid intimacy and relationships with others as a way of protecting themselves from rejection. However, by rigidly adhering to these maladaptive and self-protective strategies socially phobic patients often frustrate the very motive they are trying to satisfy thus leading to the creation of interpersonal problems (Horowitz, 2004; Horowitz, Wilson, Turan, Zolotsev, Constantino, & Henderson, 2006). For example, the excessive compliance of Friendly-Submissive social phobics can lead to disrespect, exploitation, boundary crossings, and unwanted intrusion by others while the self-protective minimization of social contact by Cold-Submissive social phobics can lead to a lack of meaningful relationships and rejection by others.

Clinical Implications

The results of the current study suggest that using the IIP-C to assess interpersonal functioning may provide complementary information to the current DSM approach and that traditional psychotherapy may need to be modified to better address specific interpersonal problems and interpersonal motives. As noted earlier, previous research has shown that the DSM subtyping system for social phobia based on number of feared situations often leads to subgroups with few qualitative distinctions (Turner et al., 1992; Vriends et al., 2007). The current study found two distinct subgroups of socially phobic patients who shared a common Axis I diagnosis, but differed qualitatively in the types of interpersonal problems reported. Using the IIP-C to subgroup socially phobic patients may represent a potential first step for improving diagnostic classification for this disorder by providing non-overlapping information that may augment the current DSM approach. It is important to note that the current study does not directly compare the validity and utility of the DSM approach to the interpersonal approach; therefore, this paper is not suggesting that the interpersonal approach is better than the DSM approach. However, the results of this study do suggest that an interpersonal classification for social phobia may help improve diagnostic clarity and inform treatment conceptualization and planning. Incorporating an interpersonal problem component in the diagnostic assessment process may lead to a better assessment of interpersonal distress and maladaptive behaviors.

In addition, research has demonstrated that using the IIP-C to assess interpersonal problems has clinical relevance. For example, interpersonal problems influence the development of the therapeutic alliance, with Friendly-Submissive patients being able to

form an alliance much easier than Hostile-Dominant patients (Muran et al., 1994). Similarly, several research studies have also shown that Friendly-Submissive interpersonal problems are positively related to psychotherapy outcome whereas Hostile-Dominant interpersonal problems are negatively related to outcome in both cognitive-behavioral and psychodynamic therapy (Borkovec et al., 2001; Horowitz et al., 1993). Furthermore, the results of the current study using Grawe's (1997, 2004) integrative psychotherapy also found differential post-treatment results between two interpersonally-based social phobia subgroups. Friendly-Submissive social phobics reported lower levels of social anxiety and higher levels of psychological well-being than Cold-Submissive social phobics at post-treatment. These differential responses to CBT, psychodynamic therapy, and Grawe's integrative treatment may be due to differing interpersonal problems and interpersonal motives.

Taken together, these results suggest that it may be useful to begin developing and testing treatment guidelines to more effectively treat patients who have similar Axis I pathology but differing interpersonal problems. Pincus and Cain (2008) described that interpersonal psychotherapy intervention strategies are pluralistic, employing relational, cognitive, behavioral, and interpretive techniques depending on the nature of the patient's interpersonal distress. Anchin (1982) stated that the variable use of intervention techniques should be guided by considerations such as "the precise nature of the patient's maladaptive style, the stage of therapy, the quality of the therapist-patient relationship at any point in treatment, the interpersonal issues thus far examined, and the therapist's own personality characteristics" (p. 322).

Based on the interpersonal tradition, specific interventions could be tailored to target the therapeutic relationship and the patient's interpersonal problem areas more effectively (e.g. Alden & Capreol, 1993; Borkovec et al., 2002). As noted earlier, the maladaptive interpersonal behavior of the socially phobic patient tends to pull others into a restricted range of complementary responses, which will affect therapist-patient interactions. Pincus and Cain (2008) noted that therapists might need to avoid responding to patients in complementary ways to avoid reinforcing their maladaptive relational patterns and to inject a new interpersonal influence into the therapeutic transaction. For example, the coldness and the lack of assertiveness exhibited by the Cold-Submissive social phobic may pull for the therapist to respond by being dominant, cold, and hostile. However, if the therapist were aware of the Cold-Submissive patient's maladaptive interpersonal behavior and intense self-protective motivation, then he/she would be able to offer a more nurturing and therapeutic response to the patient's maladaptive behavior to avoid reinforcing the patient's fears that others will react with rejection and hostility. On the other hand, the exploitability of the Friendly-Submissive social phobic may pull the therapist to take advantage of the patient's willingness to please him/her in order to develop intimacy. If the therapist were aware of the Friendly-Submissive patients maladaptive interpersonal behavior, then he/she would be able to respond in a way that will maximize the patient's self-confidence while also increasing the intimacy of the therapeutic relationship.

Similarly, modifications or adjuncts to traditional cognitive-behavioral treatment for social phobia may be needed in order to target specific interpersonal problem areas (e.g., Alden & Capreol, 1993; Newman, Castonguay, Borkovec, Fisher, & Nordberg,

2008; Newman, Castonguay, Borkovec, & Molnar, 2004). For example, based on the previous research of Alden and Capreol (1993), it is likely that both Friendly-Submissive and Cold-Submissive social phobics would benefit from exposure to feared social situations. However, greater attention must be given to how each subgroup of socially phobic patients would respond to other important CBT interventions such as assertiveness training. Friendly-Submissive social phobics, in an effort to achieve greater intimacy, may be more responsive to feedback regarding the negative impact of their inhibited, exploitable, and overly-nurturant interpersonal style and may be receptive to skills training in assertiveness; while Cold-Submissive socially phobic patients who are using self-protective motives to avoid rejection may initially react poorly to interventions that are aimed at maximizing social intimacy and assertiveness. These patients may be more prone to treatment noncompliance or drop-out in order to protect themselves from rejection by others. Treatment with Cold-Submissive socially phobic patients may need to initially focus on interventions that increase treatment compliance and decrease fears about social rejection before a more skills based approach could be useful.

The importance of modifications or adjuncts to traditional CBT for anxiety disorders has been shown in the recent research conducted by Newman and colleagues examining the efficacy of an integrative psychotherapy for GAD. Their integrative treatment combines traditional CBT with techniques addressing interpersonal problems and emotional avoidance. Newman et al. (2008) found that their integrative treatment for GAD significantly decreased GAD symptomatology, with maintenance of gains up to 1-year post-treatment. Their results showed clinically significant change in GAD symptomatology as well as reported interpersonal problems with continued gains during

the 1-year follow-up. Finally, these authors conducted a review of the existing literature for GAD treatment and found that the effect size for their integrative treatment was higher than the average effect size of CBT for GAD (Newman et al., 2008). The results of Newman et al. highlight the importance of designing treatment modifications or adjuncts that address interpersonal problems in order to improve treatment outcome for all patients. It is important to note that Grawe's (1997, 2004) integrative therapy used in the current study would have benefited from a more thorough assessment and understanding of the specific interpersonal problems being reported by socially phobic patients prior to designing their treatment plan. As noted earlier, Grawe's treatment allows for the use of all empirically validated treatment procedures in therapy (i.e. CBT, interpersonal, process-experiential, and systemic) as long as their use is justified by the needs of the patient. The results of the current study showing differential responses by interpersonally distinct subgroups of socially phobic patients to Grawe's integrative treatment underscore the importance of assessing interpersonal problems as part of the treatment planning process to ensure that the interpersonal problems being experienced by the patient, as well as their symptoms on Axis I, are being adequately targeted in the treatment.

Critiques and Future Directions

A possible critique of the current study is that the identification of two distinct interpersonally-based clusters of socially phobic patients may be an artifact of the methodology used. However, it is important to emphasize that a cluster analysis of any data set collected using the IIP-C does not guarantee the formation of robust clusters with elevated peaks in differential circumplex locations (e.g. Hilsenroth et al., 2007). It is the

differential responses of the socially phobic patients to the IIP-C that led to two distinct and robust clusters. Furthermore, there was necessary and sufficient evidence that cluster differences were not due to non-interpersonal variables, such as gender and diagnostic comorbidity.

A second possible critique of this study is the small sample size. As noted earlier, the sample size was reduced by more than 50% from pre-treatment to post-treatment, causing valuable post-treatment data to be lost. This reduction in sample size was due to a number of factors associated with collecting follow-up data, such as difficulties contacting patients for a follow-up assessment and patient attrition. Future studies should include a larger sample of socially phobic patients. A third possible critique of this study is its use of an exclusively German-speaking population. The use of this sample may restrict the generalizability of the results to other non-German speaking populations. It is important to note that the pathoplasticity of GAD has been replicated in both English speaking and German-speaking populations with similar results (e.g. Salzer et al., 2008); however, future research examining the pathoplasticity of social phobia should include non-German speaking populations to extend these results outside of German and Swiss culture.

The results suggest that while this study was generally able to replicate the interpersonally-based clusters of Kachin et al. (2001), the two clusters formed by the natural cluster analysis (the Friendly-Submissive cluster and the Cold-Submissive cluster) better represent the data in this clinical sample due to their improved interpersonal prototypicality. It is necessary for future studies to clarify which clustering best represents the pathoplasticity of social phobia in a clinical sample. Finally, the results of

this study demonstrated that the two clusters of socially phobic patients differentially responded to the same treatment; therefore, it is necessary to begin to determine empirically which types of psychotherapy techniques will effectively target the maladaptive interpersonal behavior of both Friendly-Submissive and Cold-Submissive social phobics.

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Appendix A: Tables

Table 1. Comparison of structural summary parameters for the Kachin et al. (2001) replicated clusters.

	Angle	Amplitude	Elevation	R^2
Whole Sample (n = 77)	265.11°	0.82	1.28	.85
Replicated Clusters				
Cluster 1: Submissive (n= 68)	268.95°	0.97	1.33	.89
Cluster 2: Hostile-Dominant (n = 9)	140.99°	0.59	0.88	.73

Table 2. Kachin et al. (2001) Replicated Clusters: Circular Statistics.

	Cluster 1 (n = 68)	Cluster 2 (n = 9)
Mean	274.28°	129.71°
Variance	34.76°	44.20°
95% CI	266.02°- 282.54°	100.84°- 158.59°

Note. All values reported in degrees.

Table 3. Mean Comparisons of the Kachin et al. (2001) Replicated Clusters on the IIP-C.

	Cluster 1: Submissive (n = 68)	Cluster 2: Hostile-Dominant (n = 9)		
IIP-C Octants	Mean (SD)	Mean (SD)	F (1, 75)	η^2
(PA) Domineering	5.75 (3.58)	10.08 (4.25)	11.16***	0.13
(BC) Vindictive	8.80 (3.66)	12.78 (3.87)	9.29**	0.11
(DE) Cold	12.11 (5.63)	11.56 (5.94)	0.08	0.00
(FG) Avoidant	20.71 (6.53)	14.22 (7.17)	7.68**	0.09
(HI) Nonassertive	20.74 (5.45)	10.89 (4.46)	26.88***	0.26
(JK) Exploitable	16.74 (4.95)	7.56 (4.36)	28.04***	0.27
(LM) Over-Nurturant	16.42 (4.89)	10.33 (5.79)	11.81***	0.14
(NO) Intrusive	9.62 (5.27)	11.11 (5.86)	0.62	0.00
IIP-C Axes				
Dominance	-0.97 (0.53)	0.37 (0.46)	52.32***	0.41
Love	-0.02 (0.59)	-0.46 (0.69)	4.23**	0.05
IIP-C Profile				
Amplitude	1.16 (0.48)	0.88 (0.46)	2.69	0.04
Elevation	1.33 (0.60)	0.88 (0.46)	4.39	0.06

*** p<.001, ** p<.01, * p<.05

Table 4. Comparison of the Kachin et al. (2001) Replicated Clusters on Pre-Symptom Measures.

	Cluster 1: Submissive (n = 68)	Cluster 2: Hostile-Dominant (n = 9)		
Measure	Mean (SD)	Mean (SD)	F (1, 65)	η^2
BSI				
Somatic Complaints	0.66 (0.69)	0.39 (0.31)	1.01	0.02
Interpersonal Sensitivity	1.18 (0.77)	0.80 (0.89)	1.45	0.02
Obsessive-Compulsive	1.54 (0.84)	1.21 (0.82)	0.97	0.02
Depression	1.16 (0.83)	0.89 (1.00)	0.66	0.01
Anxiety	1.25 (0.81)	1.12 (0.66)	0.18	0.00
Hostility	0.75 (0.48)	0.71 (0.55)	0.86	0.00
Phobic Anxiety	0.80 (0.76)	0.77 (0.59)	0.01	0.00
Paranoid Ideation	0.79 (0.68)	0.63 (0.44)	0.54	0.01
Psychotic Symptoms	0.77 (0.58)	0.57 (0.72)	0.75	0.01
MAS				
Total Score	14.41 (4.89)	12.32 (3.44)	2.58	0.07
U-Bogen				
Fear of failure & critique	46.67 (11.87)	34.92 (16.44)	5.66*	0.08
Fear of contact	40.08 (13.29)	30.71 (12.02)	3.16	0.05

Not being able to demand	42.40 (7.37)	36.10 (13.11)	3.82	0.06
Not being able to say "no"	29.81 (9.03)	16.29 (11.18)	13.40***	0.18
Guilt Feelings	7.68 (3.93)	3.18 (3.60)	8.28**	0.11
Excessive Norm Orientation	13.99 (3.95)	9.29 (4.31)	8.76**	0.12

*** p<.001; ** p<.01; * p<.05

Table 5. Partial Correlations for the U-Bogen and BSI with Dominance and Love.

	Dominance	**Love**
Measure		
U-Bogen		
Fear of failure & critique	-0.39***	-0.33**
Fear of contact	-0.43***	-0.47***
Not being able to demand	-0.40***	-0.20*
Not being able to say "no"	-0.49***	-0.02
Guilt Feelings	-0.21**	0.04
Excessive Norm Orientation	-0.20**	-0.13
BSI		
Somatic Complaints	0.10	0.15
Interpersonal Sensitivity	0.05	-0.16
Obsessive-Compulsive	0.06	-0.01
Depression	0.02	-0.11
Anxiety	0.06	0.10
Hostility	0.16	0.13
Phobic Anxiety	0.15	0.07
Paranoid Ideation	0.06	0.05
Psychotic Symptoms	-0.04	-0.11

*** p<.001; ** p<.01; * p<.05

Table 6. Comparison of the Interpersonally-Based Clusters on Structural Summary Parameters.

	Angle	Amplitude	Elevation	R^2
Whole Sample (n = 77)	265.11°	0.82	1.28	.85
Clusters				
Cluster 1: Friendly-Submissive (n = 32)	308.22°	1.40	1.27	.88
Cluster 2: Cold-Submissive (n = 45)	258.75°	1.29	1.45	.91

Table 7. Interpersonally-Based Clusters: Circular Statistics

	Cluster 1 (n = 32)	Cluster 2 (n = 45)
Mean	305.68°	259.34°
Variance	65.96°	24.78°
95% CI	282.83°- 328.53°	252.10°- 266.58°

Note. All values reported in degrees.

Table 8. Mean Comparisons of the Interpersonally-Based Clusters on the IIP-C

	Cluster 1: Friendly-Submissive (n = 32)	Cluster 2: Cold-Submissive (n = 45)		
IIP-C Octants	Mean (SD)	Mean (SD)	F (1, 75)	η^2
(PA) Domineering	6.22 (4.28)	5.09 (3.15)	1.03	0.03
(BC) Vindictive	6.26 (4.09)	9.16 (3.75)	0.09	0.00
(DE) Cold	7.22 (5.02)	14.31 (4.94)	22.51***	0.23
(FG) Avoidant	12.34 (5.99)	23.76 (4.58)	57.81***	0.44
(HI) Nonassertive	15.45 (6.12)	22.60 (4.20)	38.15***	0.34
(JK) Exploitable	24.52 (5.93)	17.38 (4.89)	11.15***	0.13
(LM) Over-Nurturant	23.22 (5.45)	16.79 (5.03)	14.74***	0.16
(NO) Intrusive	11.56 (5.96)	7.71 (3.63)	20.94***	0.22
IIP-C Axes				
Dominance	-0.19 (0.50)	-1.26 (0.36)	118.05***	0.61
Love	0.18 (0.57)	-0.25 (0.59)	10.42**	0.12
IIP-C Profile				
Amplitude	0.72 (0.34)	0.84 (0.34)	4.35	0.06
Elevation	1.04 (0.75)	1.14 (0.45)	7.75	0.09

*** $p<.001$, ** $p<.01$, * $p<.05$

Table 9. Comparison of the Interpersonally-Based Clusters on Pre-Symptom Measures

	Cluster 1: Friendly-Submissive (n = 32)	Cluster 2: Cold-Submissive (n = 45)		
Measure	Mean (SD)	Mean (SD)	F (1, 65)	η^2
BSI				
Somatic Complaints	0.58 (0.68)	0.66 (0.67)	0.21	0.00
Interpersonal Sensitivity	1.11 (0.79)	1.30 (0.76)	1.04	0.02
Obsessive-Compulsive	1.32 (0.91)	1.64 (0.78)	2.26	0.03
Depression	0.95 (0.82)	1.27 (0.85)	2.33	0.04
Anxiety	1.10 (0.77)	1.33 (0.80)	1.43	0.02
Hostility	0.70 (0.53)	0.78 (0.45)	0.35	0.01
Phobic Anxiety	0.79 (0.90)	0.81 (0.63)	0.01	0.00
Paranoid Ideation	0.65 (0.55)	0.86 (0.71)	1.63	0.02
Psychotic Symptoms	0.66 (0.55)	0.76 (0.61)	1.07	0.02
MAS				
Total Score	12.79 (4.99)	14.78 (4.74)	2.74	0.04

*** p<.001; ** p<.01; * p<.05

Table 10. ANCOVA and ANOVA Comparisons of the Interpersonally-Based Clusters on Post-Treatment Measures

	Cluster 1: Friendly-Submissive (n = 19)	Cluster 2: Cold-Submissive (n = 16)			
Measure	Mean (SD)	Mean (SD)	F	df	η^2
BSI					
Somatic Complaints	0.44 (0.32)	0.23 (0.21)	2.49	1, 33	0.10
Interpersonal Sensitivity	1.03 (0.81)	0.51 (0.47)	3.92	1, 33	0.15
Obsessive-Compulsive	0.75 (0.39)	0.78 (0.55)	0.11	1, 33	0.01
Depression	0.72 (0.67)	0.47 (0.69)	0.94	1, 33	0.04
Anxiety	0.56 (0.45)	0.42 (0.27)	1.12	1, 33	0.05
Hostility	0.71 (0.50)	0.44 (0.50)	1.46	1, 33	0.06
Phobic Anxiety	0.42 (0.62)	0.25 (0.39)	2.30	1, 33	0.09
Paranoid Ideation	0.77 (0.66)	0.48 (0.53)	3.25	1, 33	0.12
Psychotic Symptoms	0.73 (0.53)	0.49 (0.32)	3.63	1, 33	0.12
MAS					
Total Score	7.58 (5.47)	10.65 (2.63)	4.71*	1, 32	0.13
U-Bogen					
Fear of failure & critique	16.58 (3.50)	30.90 (12.23	21.18***	1, 26	0.45
Fear of contact	11.74 (11.73)	27.06 (9.87)	6.87**	1, 26	0.21

Not being able to demand	28.11 (7.60)	33.00 (8.85)	5.59*	1, 26	0.18
Not being able to say "no"	14.00 (8.85)	31.94 (8.23)	6.28**	1, 26	0.20
Guilt Feelings	5.42 (4.91)	5.77 (5.00)	0.27	1, 26	0.10
Excessive Norm Orientation	6.00 (4.35)	9.94 (3.75)	6.77**	1, 26	0.21
BFW					
Positive Attitude Toward Life	-3.57 (1.20)	-4.28 (0.96)	4.68*	1, 33	0.12
Problem Awareness	2.38 (0.79)	2.53 (0.71)	0.33	1, 33	0.01
Somatic Complaints & Reactions	1.96 (0.61)	1.72 (0.48)	1.59	1, 33	0.05
Self-Value	-4.09 (0.93)	-4.75 (0.80)	4.98*	1, 33	0.13
Depressive Mood	2.39 (1.10)	2.36 (1.14)	0.01	1, 33	0.00
Joy in Living	-3.92 (1.29)	-4.35 (1.06)	1.18	1, 33	0.04
GKE					
Total Score	-29.28 (8.05)	-29.63 (4.24)	0.38	1, 31	0.01
VEV-VW					
Total Score	160.11 (10.09)	138.19 (21.99)	15.14***	1, 33	0.32
VLB					
Satisfaction with Family of Origin	3.60 (2.20)	1.63 (1.65)	5.05*	1, 19	0.21

Current Family Satisfaction	4.63 (2.38)	1.50 (1.84)	10.65**	1, 19	0.36
Current Social Satisfaction	3.33 (1.26)	1.44 (1.52)	18.53**	1, 19	0.34
Current Therapy Satisfaction	3.92 (1.84)	1.33 (1.36)	34.42***	1, 19	0.40
Number of Sessions Attended	24.11 (17.24)	27.13 (18.87)	0.25	1, 33	0.01

*** p<.001; ** p<.01; * p<.05

Appendix B: Figures

Figure 1. Interpersonal problems circumplex

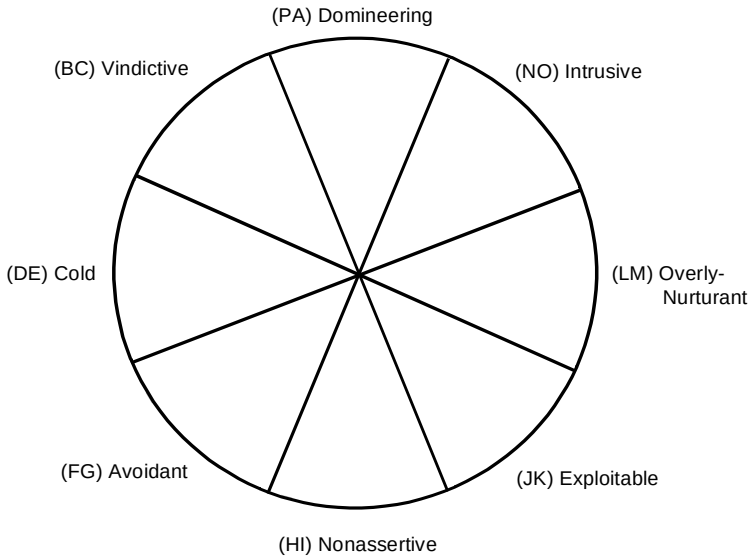


Figure 2. Circumplex structural summary

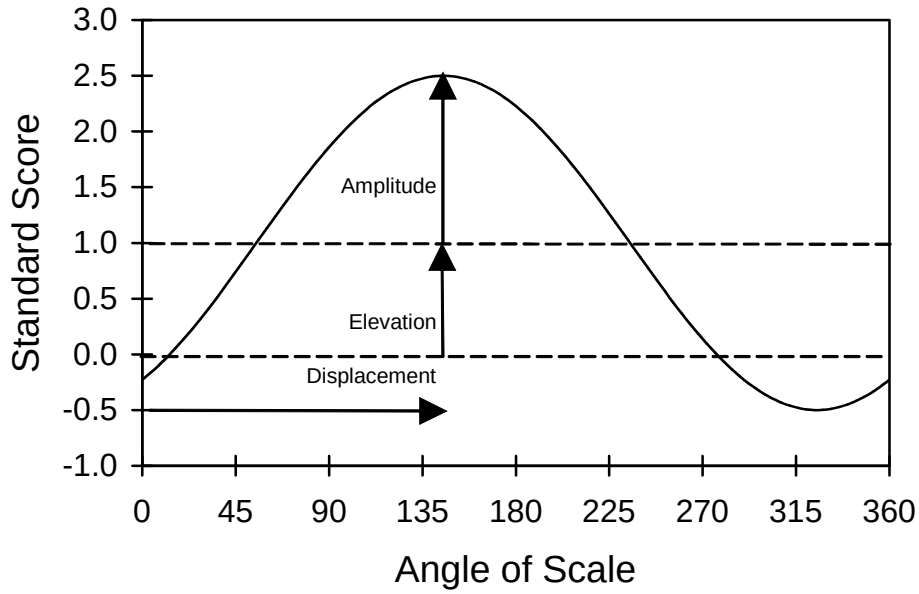


Figure 3. Structural summary profiles of the replicated clusters

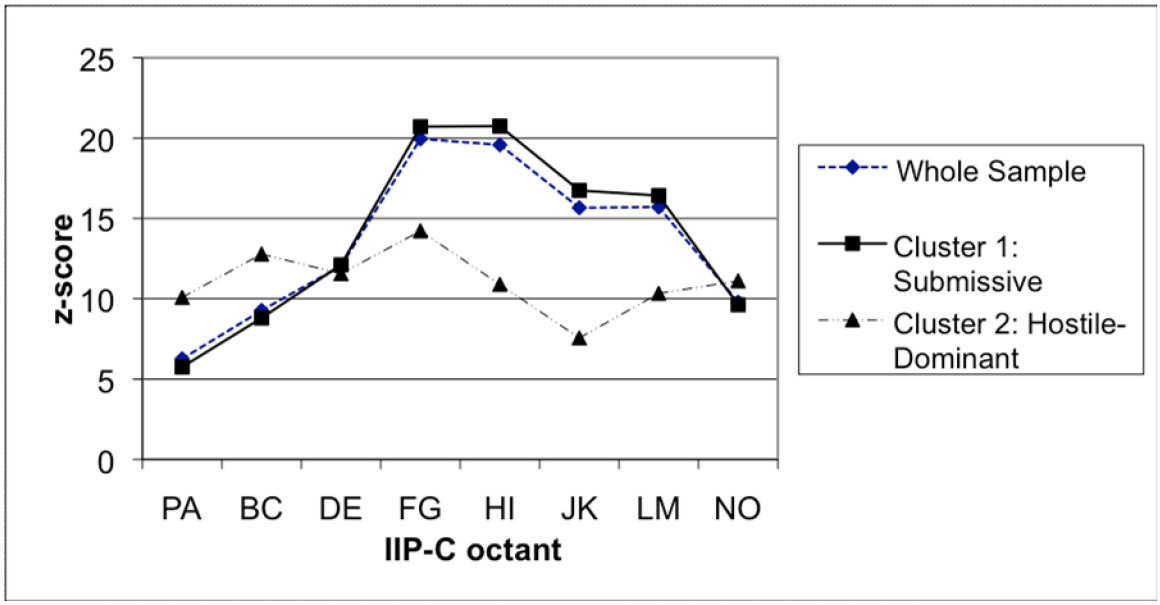


Figure 4. Circular statistics of replicated clusters

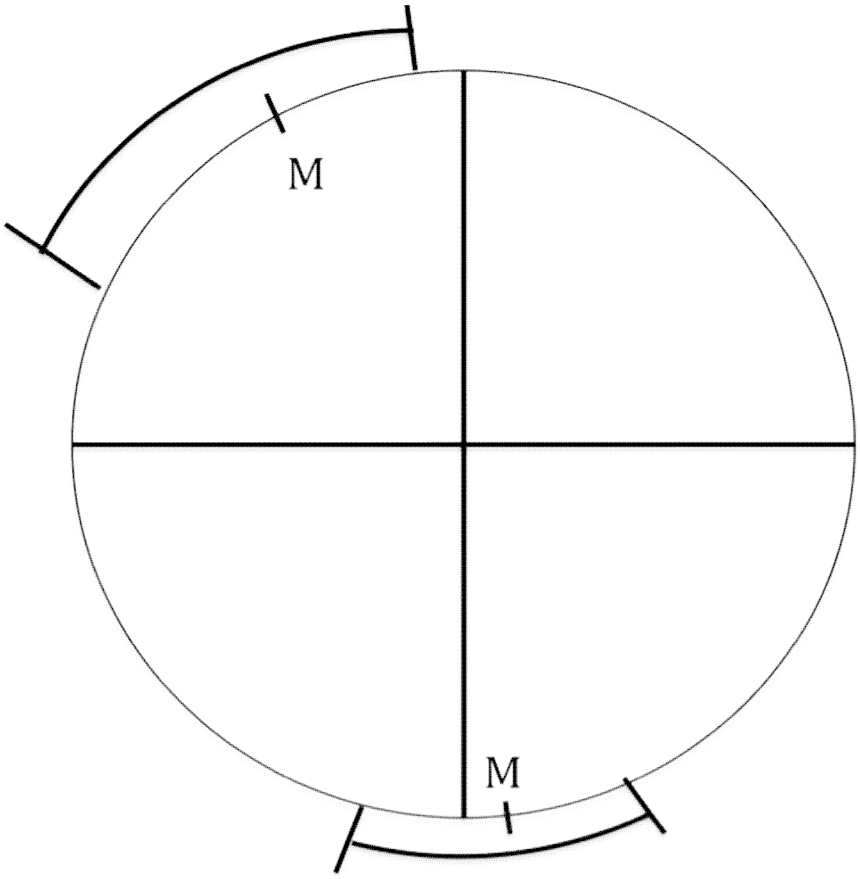


Figure 5. Structural summary profiles of the interpersonally-based clusters

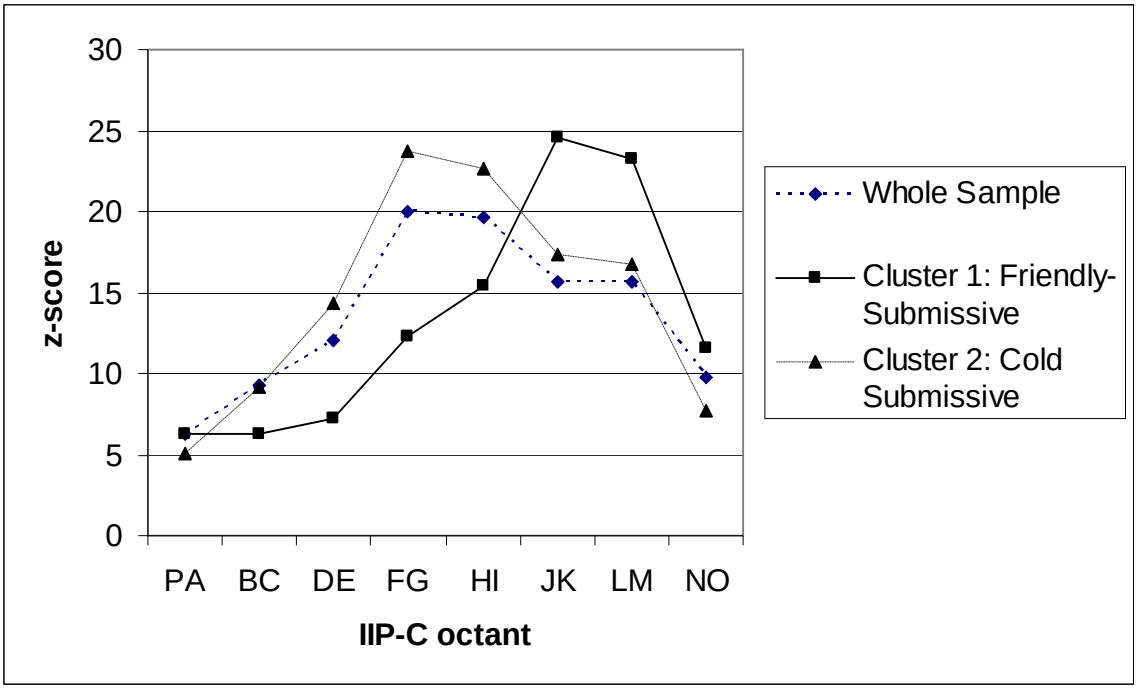
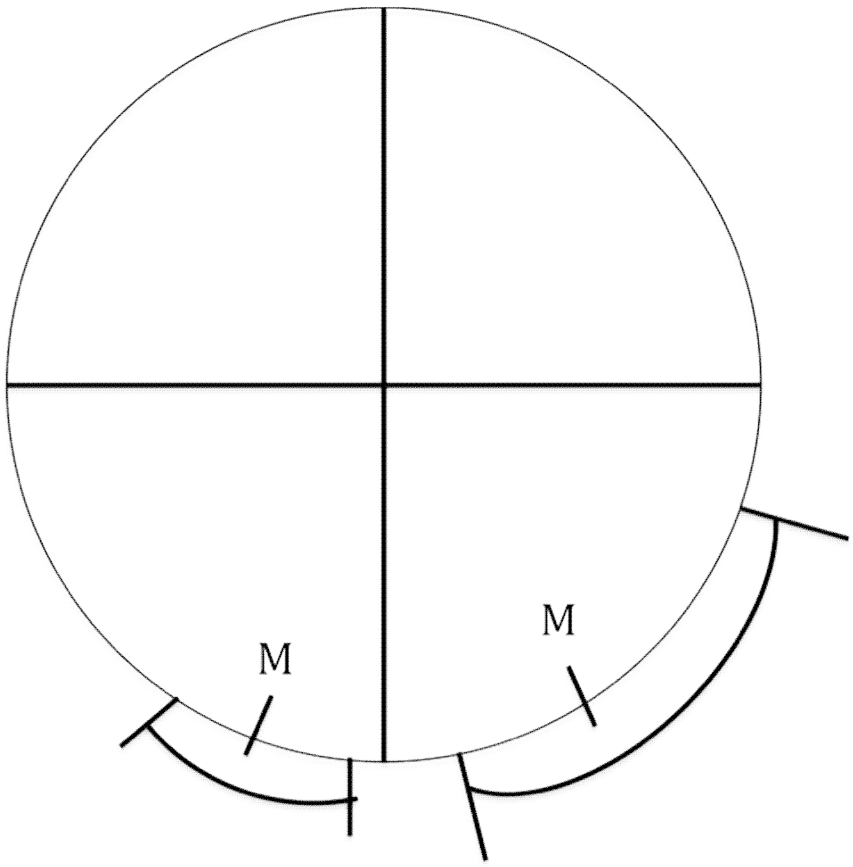


Figure 6. Circular statistics of the interpersonally-based clusters



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Publications

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