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INVESTIGATING THE CONSTRUCT VALIDITY OF THE MINNESOTA MULTIPHASIC  
PERSONALITY INVENTORY-3 INTERPERSONAL SCALES (41 pp.)

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The Minnesota Multiphasic Personality Inventory-3 (MMPI-3) contains a set of five Interpersonal scales that have either been added or modified as part of the revisions made in the transition from the MMPI-2-Restructured Form (MMPI-2-RF) to the MMPI-3. The current study aims to investigate the construct validity of each MMPI-3 Interpersonal scale by examining associations between them and various external measures of relevant interpersonal constructs across three separate undergraduate student samples. Hypotheses were first developed regarding associations between each Interpersonal scale and relevant criterion measures, which were then tested using correlational analyses. Associations between each Interpersonal scale and criteria were further examined using hierarchical regression when unhypothesized, meaningful associations occurred. Discriminant validity was also investigated using a series of dominance analyses. Results indicate that most hypotheses were supported. While some unhypothesized Interpersonal scales incrementally predicted scores on criterion measures, dominance analyses indicated that most scales initially hypothesized to be associated with a criterion also dominated prediction of that criterion over other Interpersonal scales. Implications of these findings and limitations of the current study are discussed.

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## **Introduction**

The Minnesota Multiphasic Personality Inventory and its subsequent versions are broadband self-report measures of personality and psychopathology. The Minnesota Multiphasic Personality Inventory-3 (MMPI-3; Tellegen & Ben-Porath, 2020a) is the most recent iteration of the MMPI family of instruments, featuring an updated, nationally representative normative sample and updated and additional scales.

Among the Specific Problems (SP) Scales included in the MMPI-3 are a set of Interpersonal scales designed to assess a range of dysfunction associated with interacting with others. These scales include Self-Importance (SFI), Dominance (DOM), Disaffiliativeness (DSF), Social Avoidance (SAV), and Shyness (SHY). SFI is a scale introduced in the transition to the MMPI-3 developed to measure beliefs that one possesses special talents, abilities, and qualities. Low scores on SFI indicate that the individual believes that they are lacking in positive qualities (Ben-Porath & Tellegen, 2020a). DOM is a modified version of the Interpersonal Passivity scale featured in the Minnesota Multiphasic Personality Inventory-2-Restructured Form (MMPI-2-RF; Ben-Porath & Tellegen, 2008a/b), the version of the MMPI produced before the MMPI-3. Along with the addition and removal of some items composing the scale, the test authors reversed scoring on the scale so that higher scores are indicative of being domineering in one's relationships with others, whereas low scores indicate that the test taker is passive and submissive in interpersonal relationships (Ben-Porath & Tellegen, 2020a). The items composing DSF and SAV were also changed, with some items from DSF being removed and replaced. DSF is intended to assess a dislike of people and being around others. One item was removed from SAV in the transition to the MMPI-3. SAV measures whether one avoids and dislikes social interactions with others, with low scores indicating that one enjoys social events. Finally, SHY is

unchanged on the MMPI-3. This scale assesses whether the test taker feels anxious around others, with low scores indicating that they experience little or no social anxiety (Ben-Porath & Tellegen, 2020a).

### **Evidence Documented in the MMPI-3 Technical Manual**

Though some studies have examined the MMPI-3 Interpersonal scales alongside other SP scales, research focused primarily on examining the newest versions of these scales is limited to the extensive associations between each scale and criterion measures documented in the *MMPI-3 Technical Manual* (Ben-Porath & Tellegen, 2020b) and investigations focused on SFI. In the *MMPI-3 Technical Manual*, SFI scores are meaningfully associated with therapist ratings of hostility and stormy relationships in outpatient settings and self-reported self-efficacy, entitlement, grandiosity, narcissism self-esteem, and multiple facets of narcissistic personality. SFI scores are negatively associated with ratings of social isolation, social awkwardness, shyness, and introversion in an outpatient community mental health sample, as well as with self-report measures of callousness, social withdrawal, and need for admiration (Ben-Porath & Tellegen, 2020b).

Findings reported in the *MMPI-3 Technical Manual* (Ben-Porath & Tellegen, 2020b) indicate that DOM scores are positively associated in outpatients with therapist ratings of being hostile, aggressive, argumentative, acting out, and having stormy relationships and negatively associated with ratings of being shy, introverted, socially awkward, having engaged in bullying, childhood conflicts, and a history of experiencing physical or emotional abuse. DOM scores are also associated with self-reported dominance, grandiosity, narcissism, self-esteem, verbal aggression, acclaim seeking, authoritativeness, and narcissistic personality traits and negatively

associated with self-reported tolerance, social phobia, and social detachment (Ben-Porath & Tellegen, 2020b).

DSF scores are positively associated with therapist ratings of clients as being socially awkward, blaming family for difficulties, aggressiveness, hostility, having been bullied, childhood conflicts, childhood isolation, and lack of adult interests in outpatient mental health samples. DSF scores are also associated with self-reported deficits in interpersonal dynamics, cynical beliefs, lack of support, avoidance, resentment, social detachment, negative relationships, aggressive attitude, and paranoid social phobia and distress. DSF is also associated with measures of secondary psychopathy, emotional detachment, callousness, rudeness, romantic disinterest, social withdrawal, submissiveness, and distrust. DSF scores are negatively associated with measures of self-efficacy, warmth, social presence, socialization, and acclaim seeking (Ben-Porath & Tellegen, 2020b).

Several meaningful associations are also documented between SAV and conceptually related criteria. SAV scores are associated in outpatient mental health samples with therapist ratings of social isolation, insecurity, shyness, introversion, being socially awkward, family discord, childhood conflict and isolation, physical and emotional abuse, being bullied, and adulthood isolation. SAV is associated with self-reported post-traumatic avoidance, social detachment, paranoia, lack of support, social phobia, agoraphobia, and worry. SAV is also associated with measures of secondary psychopathy, emotional detachment, peculiarity, social withdrawal, mistrust, relationship insecurity, romantic disinterest, and callousness. SAV scores are also negatively associated with measures of self-efficacy, dominance, grandiosity, warmth, sociability, social presence, exhibitionism, and authoritarianism (Ben-Porath & Tellegen, 2020b).

Finally, SHY scores are meaningfully associated with ratings of social isolation, social awkwardness, shyness, and introversion in mental health outpatient settings, as well as self-report measures of social phobia, relationship insecurity, social withdrawal, and submissiveness. SHY is negatively associated with self-reported dominance, warmth, sociability, social presence, independence, exhibitionism, acclaim seeking, and authoritativeness (Ben-Porath & Tellegen, 2020b).

### **Recent Findings with SFI**

Recent investigations of the Interpersonal scales aside from those in the *MMPI-3 Technical Manual* focus on the functioning of SFI. Sellbom (2021) investigated the internal structure and criterion and incremental validity of SFI in a large university student sample. The results of this study indicate that the items of SFI converge to form a single dimension, as demonstrated using confirmatory factor analysis. SFI scores were also found to be moderately associated with measures of narcissistic personality disorder, moderately to largely associated with measures of grandiose narcissism, and weakly associated with measures of vulnerable narcissism. This study also demonstrated that SFI meaningfully incremented prediction of each external narcissism measure over other SP scales in hierarchical regression models.

Whitman and Ben-Porath (2021) investigated the distinctiveness of constructs measured by SFI compared with the Self-Doubt (SFD) SP scale, which measures a lack of self-confidence and feelings of uselessness. Using correlational, multiple regression, and dominance analyses, this study indicated that SFI and SFD are not associated highly enough to indicate that they measure the same construct. Additionally, SFI and SFD form distinct patterns of correlations with external measures of positive valence, self-esteem, and grandiose and vulnerable narcissism consistent with the constructs each aim to assess. Results of multiple regression and dominance

analyses indicate that both scales add incrementally to the prediction of criteria relevant to their respective constructs. The results of this study were expanded upon by Whitman et al. (2022), who found that low SFI scores convey clinically relevant information beyond that accounted for just by clinically meaningful elevations of SFD.

### **Prior MMPI-2-RF Research**

There is also relevant research investigating the MMPI-2-RF versions of the MMPI-3 Interpersonal scales. Findings with the MMPI-2-RF versions of MMPI-3 scales can broadly be applied to their MMPI-3 counterparts due to the comparable empirical correlates of the MMPI-2-RF and MMPI-3 substantive scales reported in Appendix E of the *MMPI-3 Technical Manual* (Ben-Porath & Tellegen, 2020b). However, such research cannot be generalized to SFI, as all of the items composing SFI were introduced in the MMPI-3.

Ayearst and colleagues (2013) examined associations between the MMPI-2-RF Interpersonal scales and measures of normal and maladaptive interpersonal traits circumplexes. Results of this study indicate that scores on the MMPI-2-RF Interpersonal scales are associated with one's expected location on both circumplexes, demonstrating convergent and discriminant validity in such placement. For instance, the authors found that IPP and SHY were associated with the Unassured-Submissive portion of the Interpersonal Adjective Scales Circumplex, whereas DSF was associated with the Cold portion of the Interpersonal Problems Circumplex. Franz et al. (2017) also investigated the construct validity of the MMPI-2-RF Interpersonal scales by documenting a conceptually expected pattern of associations between each scale and scales in the Computerized Adaptive Test of Personality Disorder-Static Form. The authors also created regression models in instances in which multiple MMPI-2-RF Interpersonal scales were

hypothesized to be associated with a given criterion. Results largely indicated that each predictor significantly contributed to each model with few exceptions.

## **Current Study**

The current study aims to expand upon previous work investigating the construct validity of the MMPI-3 Interpersonal scales by examining the associations between each MMPI-3 Interpersonal scale and external criteria. The current study utilizes multiple archival undergraduate student samples to allow for the investigation of a variety of criteria. Limitation of the scope of the current study to a single sample would restrict the number of criteria that measure constructs relevant to each MMPI-3 Interpersonal scale. Specific hypotheses were generated for criteria expected based on the literature just reviewed to be associated with each Interpersonal scale. These hypotheses are reported in Table 1. Correlations were calculated between each Interpersonal scale and the set of criterion measures. Hierarchical regression analyses were conducted to examine whether MMPI-3 scales that were found in correlational analyses to be meaningfully associated with a criterion with which they are not hypothesized to be correlated significantly incremented prediction of the criterion beyond the hypothesized scale. Finally, dominance analyses were conducted to determine which Interpersonal scales dominate prediction of a given criterion when scales not hypothesized to be associated with a criterion incrementally predict it beyond hypothesized scales.

## **Methods**

### **Participants**

Sample 1 consisted of 355 undergraduate students from a large, Midwestern university. This sample was collected between January and December 2017. Sixty-eight (19.2%) participants were excluded due to producing invalid MMPI-3 protocols as outlined in the *MMPI-*

3 *Manual for Administration, Scoring, and Interpretation* (Ben-Porath & Tellegen, 2020a; Cannot Say [CNS]  $\geq 18$ , Combined Response Inconsistency [CRIN], Variable Response Inconsistency [VRIN], and True Response Inconsistency [TRIN]  $> 80$ T, Infrequent Responses [F] and Infrequent Psychopathology Responses [Fp]  $\geq 100$ ). The final sample consisted of 286 students. This sample was mostly female (65.4% female, 23.4% male, 11.2% did not specify), White (88.1% White, 9.8% Black/African American, 3.1% Asian, 2.4% Hispanic or Latino, 1.7% Native Hawaiian or Other Pacific Islander, and 1.7% American Indian or Alaska Native with 1.4% who identified their race as “Other”) and young (age  $M = 19.14$ ,  $SD = 3.01$ ). There were no differences in exclusion rate based on age, ( $t[256] = -0.77$ ,  $p = 0.63$ ,  $d = 0.16$ ). Males (23.9%) were excluded at a higher rate than females (11.8%),  $\chi^2[1] = 6.98$ ,  $p = 0.01$ ,  $\phi = 0.15$ . White participants (14.5%) were excluded less than participants identifying as another race (35.9%),  $\chi^2[1] = 17.95$ ,  $p < 0.001$ ,  $\phi = 0.23$ .

Sample 2 consisted of 964 undergraduate students from a large, Midwestern university. This sample was collected between February and December 2016. Eighty-six (17.6%) participants were excluded due to producing invalid MMPI-3 protocols, resulting in a final sample of 878 students. This sample was mostly female (73.2% female, 26.8% male), White (80.2% White, 13.7% Black/African American, 4.3% Asian, 4.3% Hispanic or Latino, 1.6% American Indian/Alaska Native, 1.7% Native Hawaiian or Pacific Islander, and 1.4% who identified their race as “Other”) and young ( $M = 19.5$ ,  $SD = 2$ ). There were no differences in exclusion rate based on age, ( $t[962] = -.21$ ,  $p = 0.83$ ). Men (13%) were excluded at a higher rate than women (7.3%),  $\chi^2[1] = 7.54$ ,  $p = 0.006$ ,  $\phi = 0.08$ . White participants (6.6%) were excluded less than participants who identified as another race (15.2%),  $\chi^2[1] = 17.60$ ,  $p < 0.01$ ,  $\phi = 0.14$ .

Sample 3 consisted of 583 undergraduate students from a large, Midwestern university. This sample was collected between January 2018 and May 2019. Seventy-three (12.5%) were excluded due to producing invalid MMPI-3 protocols, resulting in a final sample of 510 students. This sample was mostly female (70.4% female, 21.8% male, 7.8% did not specify), White, (73.7% White, 10.8% Black or African American, 5.5% Asian, 4.3% Hispanic or Latino, 1.4% American Indian or Alaska Native, 1.4% Native Hawaiian or Other Pacific Islander, and 2.5% who identified their race as “Other”), and young ( $M = 19.3$ ,  $SD = 2.9$ ). There were no significant differences in exclusion rate based on sex,  $\chi^2[1] = 2.09$ ,  $p = 0.15$ ,  $\phi = 0.06$ , or age,  $t[505] = 0.90$ ,  $p = 0.37$ . White (4.9%) participants were excluded less than participants who identified as another race (26.1%),  $\chi^2[1] = 50.64$ ,  $p < 0.001$ ,  $\phi = 0.31^1$ . Across each sample, participants were administered self-report measures via a computer in a group setting of up to fifteen participants. Completion of these measures was proctored by a trained research assistant. Each participant received credit for an undergraduate psychology course for their participation.

## Measures

### MMPI-3

Participants were administered the MMPI-2-RF-Expanded Form (MMPI-2-RF-EX), from which MMPI-3 scores were derived (Ben-Porath and Tellegen, 2020a/b). MMPI-3 scores derived from the MMPI-2-RF-EX are psychometrically equivalent to those scored from the

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<sup>1</sup> Significant differences in the exclusion rates of participants due to race were observed in each sample. Upon further examination, White individuals were excluded less than individuals who identified as another race due to non-content-based invalid responding. Lower rates of CNS elevations were observed among White individuals in Sample 1,  $\chi^2[1] = 6.01$ ,  $p = 0.01$ ,  $\phi = -.13$ . Lower rates of CRIN elevations among White individuals were observed in Sample 1,  $\chi^2[1] = 13.35$ ,  $p < 0.001$ ,  $\phi = -.19$ , Sample 2,  $\chi^2[1] = 30.81$ ,  $p < 0.001$ ,  $\phi = -.18$ , and Sample 3,  $\chi^2[1] = 50.64$ ,  $p < 0.001$ ,  $\phi = .31$ . Lower rates of VRIN elevations were also observed in Sample 1,  $\chi^2[1] = 6.61$ ,  $p = 0.01$ ,  $\phi = -.14$ , Sample 2,  $\chi^2[1] = 23.53$ ,  $p < 0.001$ ,  $\phi = -.16$ , and Sample 3,  $\chi^2[1] = 12.30$ ,  $p < 0.001$ ,  $\phi = -.15$ . Finally, lower rates of TRIN elevations were also observed in Sample 1,  $\chi^2[1] = 7.63$ ,  $p = 0.006$ ,  $\phi = -.15$ , Sample 2,  $\chi^2[1] = 15.81$ ,  $p < 0.001$ ,  $\phi = -.13$ , and Sample 3,  $\chi^2[1] = 29.43$ ,  $p < 0.001$ ,  $\phi = -.24$ . No differences in exclusion rate due to content-based invalid responding (F or Fp > 100T) were observed.

MMPI-3 (Hall et al., 2021). The MMPI-3 consists of ten validity scales, three Higher-Order scales, eight Restructured Clinical scales, 26 SP scales, and five Personality Psychopathology Five scales. The current study focuses only on the five Interpersonal SP scales, consisting of SFI, DOM, DSF, SAV, and SHY.

### ***Sample 1 Measures***

The Comprehensive Assessment of Traits Relevant to Personality Disorder, Static Form (CAT-PD-SF; Simms et al., 2011) is a broadband measure of personality pathology. The current study utilizes the Hostile Aggression, Grandiosity, Domineering, Rudeness, Submissiveness, Emotional Detachment, Social Withdrawal, Romantic Disinterest, and Anhedonia subscales of the CAT-PD-SF. The Hostile Aggression subscale measures instrumental or reactive hostile and violent behavior, while secondarily measuring tendencies to be resentful and vindictive. The Grandiosity subscale measures feelings of arrogance and entitlement. The Domineering subscale assesses for a need to maintain power and be controlling and dominant in interpersonal relationships. The Submissiveness subscale, however, measures yielding to others, accommodation of others, being exploited, and lack of confidence in decision making. The Rudeness subscale measures bluntness, tactlessness, and interpersonal insensitivity. The Emotional Detachment subscale measures one's tendency to be reserved and emotionally distant from others, including difficulties in experiencing and expressing feelings. The Social Withdrawal subscale measures avoidance of interpersonal interactions and preference to be alone caused by either social anxiety or lack of interest in interacting with others. The Romantic Disinterest subscale assesses for a lack of interest in sex and interpersonal intimacy. Finally, the Anhedonia subscale measures low positive emotionality and energy, including difficulties

experiencing excitement and showing little interest in various things. The CAT-PD-SF and its subscales have demonstrated adequate reliability and validity (Long et al., 2021).

The Inventory of Depression and Anxiety Symptoms-II (IDAS-II; Watson et al., 2012) is a broad measure of emotional dysfunction, including anxiety, depression, anger, positive mood, obsessive-compulsive, and bipolar symptoms. The current study utilizes the IDAS-II Social Anxiety scale, which measures fear of interacting with others and fear of performance and scrutiny. Evidence for the validity of the IDAS-II is documented by Watson and colleagues (2012).

The Levenson Self-Report Psychopathy Scale (LSRP; Levenson et al., 1995) is a measure of psychopathy containing two scales measuring psychopathic emotional affect and lifestyle. Revised scoring of the LSRP allows for the scoring of Callous, Antisocial, and Egocentric scales (Brinkley et al., 2008). The Egocentricity scale, used in the current study, is associated with narcissism, meanness, antagonism, and Machiavellianism (Few et al., 2013; Salekin et al., 2014; Sellbom, 2011). Evidence for the validity of the Egocentric scale has been documented (Salekin et al., 2014).

### ***Sample 2 Measures***

The Five Factor Narcissism Inventory-Short Form (FFNI-SF; Sherman et al., 2015) is a shortened version of the Five Factor Narcissism Inventory (Glover et al., 2012) which measures vulnerable and grandiose narcissism based on the five-factor model of personality (McCrae & Costa, 2003). The current study utilizes the Entitlement, Grandiose Fantasies, Acclaim Seeking, Arrogance, Authoritativeness, and Exploitativeness scales of the FFNI-SF. The Entitlement scale assesses feelings and actions related to entitlement, expectations of self-serving treatment, and presumptuousness. The Grandiose Fantasies scale measures preoccupation with fantasies related

to status, success, and glory. The Acclaim Seeking scale assesses high achievement-striving and preoccupation with fame, status, or acclaim. The Arrogance scale measures conceited, haughty, and arrogant thoughts and behavior. The Authoritativeness scale assesses goal-directed assertiveness with the aim to obtain status, power, and leadership, particularly in social settings. Finally, the Exploitativeness scale measures one's disposition to exploit others.

The Social Provisions Scale (SPS; Curtona & Russell, 1987) is a measure of perceived social support. The Attachment subscale of the SPS, used in the current study, measures the degree to which one is emotionally close to others. The SPS has demonstrated adequate reliability and validity (Perera, 2016).

### ***Sample 3 Measures***

The Level of Personality Functioning Scale-Self Report (LPFS-SR; Morey, 2017) is a self-report inventory designed to measure diagnostic indicators contained in the Level of Personality Functioning Scale, a clinician rating guide for measuring personality pathology included in the Alternative Model of Personality Disorder of the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (American Psychological Association, 2013). The current study utilizes the LPFS-SR Intimacy subscale, which measures the depth and duration of one's positive relationships with others, desire and ability to be emotionally close with others, and reciprocity of interpersonal behaviors. Previous studies document the validity of the LPFS-SR (Hopwood et al., 2018).

The Severity Indices of Personality Problems (SIPP-118; Verheul et al., 2008) is a broadband measure of higher-order and facet level constructs relevant to personality functioning. The Enduring Relationships subscale was used in the current study as a measure of one's ability

to feel loved and love others to form long-term intimate relationships and healthy attachments to others. Validity of the SIPP-118 and its facets scales has been documented (Verheul et al., 2008).

The Dysfunctional Attitudes Scale-24 (DAS-24; Power et al., 1994) is a twenty-four-item version of the Dysfunctional Attitudes Scale (Weissman & Beck, 1978) designed to measure Beck's cognitive theory of depression (see Beck et al., 1979). The Dependency subscale, used in the current study, measures attitudes that one needs approval and is dependent on others.

The Interpersonal Dependency Inventory (IDI; Hirschfeld et al., 1977) broadly measures individuals' thoughts, feelings, behaviors, and beliefs associated with a need to be connected to valued others. The IDI Emotional Reliance on Another Person subscale measures the degree to which one worries about losing a close relationship and one's need of approval from others. The Lack of Social Self-Confidence subscale measures an individual's lack of confidence in social situations, submissiveness, and lack of confidence in making decisions in social settings. The Assertion of Autonomy subscale assesses to what degree one avoids reliance on others and is unaffected by others' judgements or opinions. Use of the IDI subscales are supported by extensive validity research (Bornstein, 1994).

The Brief Fear of Negative Evaluation Scale-Straightforward Items (BFNE-S; Rodebaugh et al., 2004) assesses the degree to which one fears being evaluated negatively by others. The BFNE-S has demonstrated adequate reliability and validity (Liu & Lowe, 2016).

The 100-item version of the Externalizing Symptoms Inventory (ESI-100) is a shortened version of Externalizing Symptoms Inventory (Krueger et al., 2007), which measures behaviors and feelings associated with various forms of behavioral or externalizing dysfunction. The Empathy subscale of the ESI-100 measures whether an individual is concerned about how others feel.

The Big Three Perfectionism Scale (BTPS; Smith et al., 2016) is a measure of higher-order rigid, self-critical, and narcissistic perfectionism containing ten lower-order facet scales. The Grandiosity facet scale specifically measures sustained beliefs that one is superior to others or perfect. The BTPS and its subscales have demonstrated adequate reliability and validity (Smith et al., 2016).

The Cognitive Behavioral Avoidance Scale (CBAS; Otterbreit & Dobson, 2004) is a multidimensional measure of cognitive and behavioral avoidance. The current study uses the Behavioral Social subscale of the CBAS, which specifically measures avoidance of social situations. The validity to the CBAS has been documented (Otterbreit & Dobson, 2004).

The Post-Event Processing Questionnaire (PEP-Q; Rachman et al., 2000) is a measure of prolonged rumination resulting from fear-inducing social situations, also measuring fear around social situations, difficulties forgetting fear-inducing social events, and avoiding such events. This measure has demonstrated adequate reliability and validity (Rachman et al., 2000).

Finally, the Self-Consciousness Scale-Revised (SCS-R, Scheier & Carver, 1985) measures thoughts, feelings, and behaviors associated with self-consciousness, as well as social anxiety. The Public Self-Consciousness subscale measures the tendency for one to worry about one's behavior, mannerisms, and expressiveness in social settings, while the Social Anxiety subscale measures anxiety in social settings, including shyness in social situations, being embarrassed easily, and nervousness when speaking in a group.

## **Procedure**

After providing informed consent, participants completed the MMPI-2-RF-EX and were then administered the criterion measures in a random order on a computer. Data collection was approved and conducted in compliance with a university institutional review board.

## Analysis Plan

First, criteria administered in any sample that measure constructs related to an MMPI-3 Interpersonal scale were identified. Any criterion identified was then utilized in the analyses. Hypotheses specifying which criteria would be conceptually expected (based on the literature reviewed earlier) to be meaningfully associated with a given MMPI-3 Interpersonal scale were generated and are reported in Table 1. Following this, a priori thresholds for meaningful associations between measures were established. Associations between criteria and MMPI-3 scales which were hypothesized to be associated with one another were considered meaningful at  $r \geq |0.15|$ , whereas associations that were not hypothesized to be meaningfully associated were considered meaningful at  $r \geq |0.30|$ . Use of differential effect size thresholds for hypothesized versus unhypothesized associations is analogous to the adjustment of significance levels when conducting one-tailed versus two-tailed significance tests when directional hypotheses are tested. Non-hypothesized associations were considered meaningful at a more stringent cutoff to prevent statistical artifacts from indicating that two measures were meaningfully associated when such association is not conceptually expected. Pearson product-moment correlations were then calculated between each identified criteria and each MMPI-3 Interpersonal scale. Then, a series of hierarchical regressions were conducted to determine whether MMPI-3 scales that were meaningfully associated with criteria aside from those that were hypothesized would incrementally predict a criterion beyond the scales initially hypothesized to do so. Scales hypothesized to be meaningfully associated with a criterion were placed in the first block and scales not included in the initial hypotheses that were found to have meaningful zero-order associations with a given criterion were entered in the second block. These analyses were conducted in SPSS version 29. Finally, a series of dominance analyses were conducted to

determine which MMPI-3 scales best accounted for variance in a given criterion. Only MMPI-3 scales that significantly predicted a criterion in the second block of the hierarchical regression analyses were included in the dominance analyses. Dominance analyses were conducted using R version 4.2.1 using the “psych” (Revelle, 2022) and “dominanceanalysis” (Bustos & Coutinho, 2020) packages.

## Results

A series of Pearson product-moment correlations were calculated between each MMPI-3 Interpersonal scale and each identified criterion. Results of these analyses, including the internal consistencies of each measure, are displayed in Table 2. Results indicate that 28 of 35 (80%) of hypotheses specifying which MMPI-3 Interpersonal scales were expected to be associated with specific criteria met threshold for meaningfulness and were thus supported. SFI was most highly correlated with the FFNI-SF Acclaim Seeking scale ( $r = 0.48$ ). DOM was most highly correlated with the FFNI-SF Authoritativeness scale ( $r = 0.53$ ). DSF ( $r = 0.60$ ) and SAV ( $r = 0.77$ ) were both most highly correlated with the CAT-PD-SF Social Withdrawal scale. SHY was most highly correlated with the SCS-R Social Anxiety scale ( $r = 0.80$ ).

Each of the five MMPI-3 Interpersonal scales were meaningfully correlated with at least one unhypothesized criterion. Including each sample, SFI was meaningfully associated with seven of the 24 (29.2%) scales not included in hypotheses. DOM was meaningfully associated with five of the 21 (23.8%) unhypothesized criteria. DSF was meaningfully associated with two of the 20 (10%) unhypothesized criteria. SAV was meaningfully associated with five of the 23 (21.7%) criteria excluded from hypotheses. Finally, SHY was meaningfully correlated with nine of the 26 (34.6%) unhypothesized measures. Twelve of the 31 (38.7%) criteria were correlated beyond the threshold for meaningfulness with MMPI-3 Interpersonal scales with which they

were not hypothesized to correlate. For example, aside from hypothesized associations, SFI was most strongly correlated with the FFNI-SF Authoritativeness scale ( $r = 0.52$ ). The strongest non-hypothesized correlation between DOM and a criterion was with the FFNI-SF Acclaim Seeking scale ( $r = 0.35$ ). The strongest non-hypothesized associations between DSF ( $r = 0.41$ ) and SAV ( $r = 0.59$ ) with criteria were with the IDAS-II Social Anxiety scale. Finally, among non-hypothesized associations, SHY was most strongly correlated with the CAT-PD-SF Social Withdrawal scale ( $r = 0.62$ ).

Table 3 displays the results of follow-up hierarchical regression analyses conducted to determine whether unhypothesized MMPI-3 Interpersonal scale predictors of a criterion measure added incrementally to prediction of scores on that criterion beyond the hypothesized MMPI-3 predictor. These analyses were limited to criteria meaningfully correlated with a hypothesized MMPI-3 scale. As seen in Table 3, the standardized and unstandardized coefficients for each regression model calculated are reported, as well as t-statistics and the significance of each t-statistic.  $R$  and  $R^2$  are reported to indicate the amount of variance each block accounts for in prediction of the criterion. For example, the results of the hierarchical regression model predicting CAT-PD-SF Submissiveness are displayed first in this table. First are displayed the  $R$  and  $R^2$  values of the model when only the MMPI-3 Interpersonal scale that was hypothesized to be meaningfully associated with CAT-PD-SF Submissiveness is included. In the case of CAT-PD-SF Submissiveness, the only scale included in hypotheses was DOM. Alongside DOM are displayed statistics relevant to its prediction of CAT-PD-SF Submissiveness, including  $B$ ,  $\beta$ ,  $t$ , and the  $p$ -value indicating whether the scale significantly contributes to the prediction of the criterion. An  $R^2$  value of .09 indicates that DOM accounts for 9% of the variance in CAT-PD-SF Submissiveness. Additionally,  $p < .001$  indicates that DOM significantly contributes to

prediction of CAT-PD-SF Submissiveness. Below the statistics describing the first block are the statistics describing the second block, starting with the  $R$  and  $R^2$  values of each scale included. SHY is added in this block alongside DOM because it was not included in a priori hypotheses, yet was meaningfully associated with CAT-PD-SF Submissiveness. Statistics describing DOM and SHY prediction the criterion are displayed next to each scale. The addition of SHY to the model results in an  $R^2$  value of .19, indicating an increased 10% of accounted variance. The  $p$  values displayed in the same line as DOM ( $p = .01$ ) and SHY ( $p < .001$ ) indicate that both scales are significantly contributing to the prediction of CAT-PD-SF Submissiveness.

Incremental prediction of criteria by SHY over DSF and SAV were often observed. For instance, SHY most strongly incremented the prediction of the IDI Lack of Social Self-Confidence scale over DOM ( $\beta = 0.39$ ). DOM most strongly incremented the prediction of the CAT-PD-SF Emotional Detachment scale over DSF ( $\beta = -0.17$ ). DSF most strongly incremented prediction of the IDI Assertion of Autonomy scale over DOM ( $\beta = 0.41$ ). SAV most strongly incremented prediction of the IDAS-II Social Anxiety scale over SHY ( $\beta = 0.28$ ). Finally, SHY most strongly incremented prediction of the IDI Lack of Social Self-Confidence scale over DOM ( $\beta = 0.39$ ).

A series of dominance analyses were conducted to further examine the unique contributions of MMPI-3 Interpersonal scales in predicting a given criterion. These analyses were limited to predicting criteria in which scales not included in hypotheses to meet threshold for a meaningful association incrementally predicted a criterion beyond hypothesized scales. The results of these analyses are displayed in Table 4. The correlation coefficients between the criterion and each MMPI-3 Interpersonal scale included in the dominance analysis are displayed alongside the  $R^2$  statistics and beta weights for the models calculated when each scale is included

in the model. The dominance weights then indicate the strength with which each MMPI-3 Interpersonal scale predicts the criterion when accounting for the other included scales. Statistics describing the prediction of CAT-PD-SF Submissiveness by both DOM and SHY are displayed beside each scale. The total variance accounted for and the correlation coefficients between CAT-PD-SF Submissiveness and both DOM ( $r = -.29$ ) and SHY ( $r = .41$ ) are displayed under the first column. The beta weights of DOM ( $\beta = -.16$ ) and SHY ( $\beta = .35$ ) when predicting CAT-PD-SF Submissiveness in a linear regression model are also displayed. Finally, the dominance weights of DOM ( $DW = .06$ ) and SHY ( $DW = .14$ ) are displayed, indicating that SHY dominates prediction of SAT-PD-SF Submissiveness over DOM. Seven of the eleven (63.6%) dominance analyses conducted indicated that an MMPI-3 Interpersonal scale which was initially hypothesized to be meaningfully associated with the criterion dominated prediction of the criterion. Contrary to a priori hypotheses, SFI dominated the prediction of the FFNI-SF Authoritativeness scale over DOM. DSF also unexpectedly dominated prediction of the IDI Assertion of Autonomy scale over DOM. Additionally, SHY dominated the prediction of the IDI Lack of Social Self-Confidence scale and the CAT-PD-SF Submissiveness scale over DOM. Neither DOM nor SAV dominated the prediction of any criteria with which it was not hypothesized to be meaningfully associated.

### **Discussion**

Each of the MMPI-3 Interpersonal scales was found to be meaningfully associated with criteria as hypothesized. Meaningful correlations between the Interpersonal scales and hypothesized criteria support the convergent validity of each scale. SFI was meaningfully associated with measures of grandiosity, acclaim seeking, and arrogance. DOM was meaningfully associated with measures of domineering, authoritativeness, and assertion of

autonomy and negatively associated with measures of submissiveness and lack of social self-confidence. DSF was associated with measures of emotional detachment and social withdrawal and negatively associated with measures of attachment and close relationships. SAV was associated with measures of social withdrawal and negatively associated with measures of attachment as well. Finally, SHY was meaningfully associated with measures of social anxiety.

There were several findings of unhypothesized meaningful associations. In several cases, unhypothesized scales incremented criterion prediction by the hypothesized scales. For example, each Interpersonal scale was meaningfully associated the IDAS-II and SCS-R Social Anxiety subscales. Each scale except DSF was also meaningfully associated with the FFNI-SF Authoritativeness and Acclaim Seeking scales. These unhypothesized associations indicate a potential lack of discriminant validity of the Interpersonal scales. Follow up regression analyses and dominance analyses (discussed next) were conducted to explore this possibility.

The discriminant validity of the Interpersonal scales was further examined using hierarchical regressions. For these analyses, scales initially hypothesized to be meaningfully associated with criteria that met the designated threshold were entered in the first block. Additional scales that were meaningfully associated with the criterion were added in the second block. In many instances, scales entered in the second block significantly incremented prediction of the criterion. These hierarchical regressions varied in the amount of increased variance they accounted for with the inclusion of the second block. Additional variance accounted for may result from criterion heterogeneity, that is the criteria assessing multiple constructs in addition to the one designated by its label. Alternatively, it is possible that the MMPI-3 Interpersonal scales are heterogeneous, assessing multiple constructs in addition to the one designated by their labels. The degree to which the Interpersonal scales and criteria measure multiple constructs was further

examined using dominance analyses. The results of the dominance analyses primarily indicated that Interpersonal scales hypothesized to be meaningfully associated with a criterion dominated prediction of that criterion. The dominance of SHY in predicting CAT-PD-SF Submissiveness over DOM, as well as DSF in predicting IDI Assertion of Autonomy over DOM, were the few instances in which this pattern did not occur.

Most of the unhypothesized associations occurred among a small number of criterion measures. Only seven of the 31 (22.6%) criteria were meaningfully correlated with multiple unhypothesized scales. Moreover, 22 of the 26 (84.6%) unhypothesized meaningful correlations occurred among these seven criteria. These criteria likely measure broader constructs than implied by their labels, which is the most likely explanation for their association with multiple Interpersonal scales.

Notably, this pattern mostly occurred with criteria measuring social anxiety and social withdrawal. SFI and DOM were negatively associated with the CAT-PD-SF Emotional Detachment, Social Withdrawal, IDAS-II Social Anxiety, and SCS-R Social Anxiety scales, whereas DSF, SAV, and SHY were positively associated with each of these criteria. This may be due to the interrelatedness of the constructs being measured by each scale. Individuals who dislike other people, avoid social interaction, or experience social anxiety may all withdraw socially. Conversely, individuals high in self-importance or dominance may seek social settings.

Overall, the findings of this investigation support the construct validity of the MMPI-3 Interpersonal scales. Eighty percent of the correlations specified in a priori hypotheses, as indicated in Table 1, reached the threshold for meaningfulness consistent with hypotheses. In addition, most dominance analyses indicated that scales hypothesized to be meaningfully associated with a criterion dominated prediction of that criterion.

Some limitations of this investigation point to areas for further research. The current study utilized only college student samples and should be replicated in other samples with more diverse demographic distributions, such as outpatient mental health and prison samples. Future investigations of the Interpersonal scales should also include additional, varied criteria that measure the Interpersonal scales' target constructs. Should additional studies indicate an Interpersonal scale is associated with criterion in a conceptually unexpected way, further examination may be required to determine whether the scales are saturated with irrelevant constructs or whether a broadening of the conceptualization of the scale is indicated. Use of criterion measures that more narrowly measure the target constructs of each Interpersonal scale would help clarify their discriminant validity. Notwithstanding these limitations, the current study supports the construct validity of the MMPI-3 Interpersonal scales.

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Table 1. Hypothesized Associations between MMPI-3 Interpersonal Scales and Identified Criteria

Identified Criteria	Hypothesized Convergent Associations
<u>Sample 1</u>	
CAT-PD-SF	
Grandiosity	SFI
Hostile Aggression	DOM
Domineering	DOM
Submissiveness	DOM*
Emotional Detachment	DSF
Romantic Disinterest	DSF
Social Withdrawal	DSF, SAV
Anhedonia	SAV
IDAS-II Social Anxiety	SHY
LSRP Egocentricity	SFI
<u>Sample 2</u>	
FFNI-SF	
Entitlement	SFI
Grandiose Fantasies	SFI
Acclaim Seeking	SFI
Arrogance	SFI
Authoritativeness	DOM
Exploitativeness	DOM
SPS Attachment	DSF, SAV
<u>Sample 3</u>	
BTPS Grandiosity	SFI
IDI	
Emotional Reliance on Another Person	DOM
Lack of Social Self-Confidence	DOM*
Assertion of Autonomy	DOM
LPFS-SR Intimacy	DSF
SIPP-118 Enduring Relationships	DSF, SAV
CBAS Behavioral Social	DSF, SAV
BFNES	SHY
PEP-Q	SHY
SCS-R	
Public Self-Consciousness	SHY
Social Anxiety	SHY

Note. \* indicates correlation is hypothesized to be negative, CAT-PD-SF = Comprehensive Assessment of Traits relevant to Personality Disorder-Static Form, IDAS-II = Inventory of Depression and Anxiety Symptoms-II, LSRP = Levenson Self-Report Psychopathy Scale, FFNI-SF = Five Factor Narcissism Inventory-Short Form, SPS = Social Provisions Scale, LPFS-SR = Level of Personality Functioning Scale-Self Report, SIPP-118 = Severity Indices of Personality Problems, DAS-24 = Dysfunctional Attitudes Scale-24, IDI = Interpersonal Dependency Inventory, BFNES = Brief Fear of Negative Evaluation Scale, ESI-100 = Externalizing Symptoms Inventory, BTPS = Big Three Perfectionism Scale, CBAS = Cognitive Behavioral Avoidance Scale, PEP-Q = Post-Event Processing Questionnaire, SCS-R = Self-Consciousness Scale-Revised.

Table 2. MMPI-3 Interpersonal Scales and Criterion Measures Correlation Table

	SFI	DOM	DSF	SAV	SHY	
<u>Sample 1</u>	.77	.63	.72	.84	.81	$\alpha$
CAT-PD-SF						
Hostile Aggression	.01	.08*	.26	.13	.05	.78
Grandiosity	.22*	.27	.08	.00	-.03	.78
Domineering	.12	.26*	.07	.01	-.06	.83
Rudeness	-.01	.10*	.23	.17	.06	.82
Submissiveness	-.26	-.29*	.27	.25	<b>.41</b>	.86
Emotional Detachment	-.29	<b>-.30</b>	<b>.46*</b>	<b>.37</b>	<b>.33</b>	.86
Social Withdrawal	<b>-.42</b>	<b>-.34</b>	<b>.60*</b>	<b>.77*</b>	<b>.62</b>	.78
Romantic Disinterest	-.13	-.12	.26*	.28	.19	.79
Anhedonia	-.15	-.10	.29	<b>.35*</b>	.17	.84
IDAS-II Social Anxiety	<b>-.37</b>	<b>-.32</b>	<b>.41</b>	<b>.59</b>	<b>.61*</b>	.87
LSRP Egocentricity	.08*	.13	.12	-.03	-.08	.78
<u>Sample 2</u>	.78	.68	.73	.84	.76	$\alpha$
FFNI-SF						
Entitlement	.21*	.12	.05	-.09	-.03	.79
Grandiose Fantasies	.29*	.26	-.01	-.19	-.12	.73
Acclaim Seeking	<b>.45*</b>	<b>.32</b>	-.21	<b>-.32</b>	<b>-.31</b>	.86
Arrogance	<b>.37*</b>	.29	.02	-.20	-.18	.63
Authoritativeness	<b>.51</b>	<b>.51*</b>	-.20	<b>-.41</b>	<b>-.50</b>	.87
Exploitativeness	.10	.15*	.09	-.10	-.08	.82
SPS Attachment	.20	.08	<b>-.31*</b>	-.24*	-.20	.72
<u>Sample 3</u>	.80	.66	.79	.84	.79	$\alpha$
LPFS-SR Intimacy	.14	.02	<b>-.37*</b>	-.21	-.28	.78
SIPP-118 Enduring Relationships	<b>.31</b>	.08	<b>-.42*</b>	<b>-.37*</b>	<b>-.34</b>	.69
DAS-24 Dependency	.14	.11*	-.07	-.06	-.22	.51
IDI						
Emotional Reliance on Another Person	.15	.03*	-.17	-.10	<b>-.33</b>	.85
Lack of Social Self-Confidence	<b>-.36</b>	<b>-.33*</b>	.29	<b>.31</b>	<b>.50</b>	.81
Assertion of Autonomy	.14	.20*	<b>.38</b>	.15	-.01	.78
BFNES	<b>-.31</b>	-.28	.12	.22	<b>.48*</b>	.95
ESI-100 Empathy	-.05	-.13	-.05*	.10	.14	.58
BTPS Grandiosity	.29*	.25	.02	-.16	-.14	.75
CBAS Behavioral Social	-.26	-.22	<b>.52*</b>	<b>.59*</b>	<b>.48</b>	.90
PEP-Q	-.21	-.08	.23	.13	.13*	.92
SCS-R						
Public Self-Consciousness	-.13	-.08	.19	.13	<b>.37*</b>	.84
Social Anxiety	<b>-.37</b>	<b>-.33</b>	<b>.36</b>	<b>.55</b>	<b>.80*</b>	.86

Note.  $r \geq .15$  is italicized,  $r \geq .30$  is bolded, \* indicates correlation hypothesized to meet threshold for meaningfulness, CAT-PD-SF = Comprehensive Assessment of Traits relevant to Personality Disorder-Static Form, IDAS-II = Inventory of Depression and Anxiety Symptoms-II, LSRP = Levenson Self-

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Report Psychopathy Scale, FFNI-SF = Five Factor Narcissism Inventory-Short Form, SPS = Social Provisions Scale, LPFS-SR = Level of Personality Functioning Scale-Self Report, SIPP-118 = Severity Indices of Personality Problems, DAS-24 = Dysfunctional Attitudes Scale-24, IDI = Interpersonal Dependency Inventory, BFNES = Brief Fear of Negative Evaluation Scale, ESI-100 = Externalizing Symptoms Inventory, BTPS = Big Three Perfectionism Scale, CBAS = Cognitive Behavioral Avoidance Scale, PEP-Q = Post-Event Processing Questionnaire, SCS-R = Self-Consciousness Scale-Revised.

Table 3. Hierarchical Regression of Meaningfully Associated MMPI-3 Interpersonal Scales with  
Criteria

		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
Sample 1						
<u>CAT-PD-SF Submissiveness</u>						
		<u>R = 0.29</u>	<u>R<sup>2</sup> = .09*</u>			
1	(Constant)	2.88	0.16		17.70	< .001
	DOM	-0.13	0.03	-0.29	-5.19	< .001
		<u>R = 0.44</u>	<u>R<sup>2</sup> = .19*</u>			
2	(Constant)	2.06	.20		10.08	<.001
	DOM	-.08	.03	-0.16	-2.85	.01
	SHY	.15	.02	0.35	6.10	<.001
<u>CAT-PD-SF Social Withdrawal</u>						
		<u>R = 0.81</u>	<u>R<sup>2</sup> = 0.65*</u>			
1	(Constant)	1.67	.05		36.31	<.001
	DSF	0.14	.02	0.28	6.82	<.001
	SAV	0.19	.01	0.62	15.19	<.001
		<u>R = 0.83</u>	<u>R<sup>2</sup> = 0.70*</u>			
2	(Constant)	1.68	0.13		12.68	<.001
	DSF	.13	0.02	0.27	6.96	<.001
	SAV	.15	0.01	0.47	10.31	<.001
	SFI	-.00	0.01	-0.01	-0.16	0.87
	DOM	-.03	0.02	-0.06	-1.61	0.11
	SHY	.09	0.02	0.24	5.53	<.001
<u>CAT-PD-SF Emotional Detachment</u>						
		<u>R = 0.46</u>	<u>R<sup>2</sup> = 0.21*</u>			
1	(Constant)	2.48	.07		34.11	<.001
	DSF	.26	.03	.46	8.63	<.001
		<u>R = 0.53</u>	<u>R<sup>2</sup> = 0.27*</u>			
2	(Constant)	2.849	.22		13.23	<.001
	DSF	.20	.03	.35	5.85	<.001
	DOM	-.09	.03	-.17	-3.13	.00
	SAV	.03	.03	.08	1.22	.22
	SHY	.05	.03	.11	1.65	.10
<u>IDAS-II Social Anxiety</u>						
		<u>R = 0.61</u>	<u>R<sup>2</sup> = 0.37*</u>			

1	(Constant)	6.78	.46		14.65	<.001
	SHY	1.53	.12	.61	12.81	<.001
		<u>R = 0.69</u>	<u>R<sup>2</sup> = 0.47*</u>			
2	(Constant)	7.83	1.12		7.01	<.001
	SHY	.92	.14	.36	6.47	<.001
	SFI	-.06	.12	-.03	-.50	.62
	DOM	-.18	.14	-.06	-1.27	.21
	DSF	.41	.16	.13	2.57	.01
	SAV	.56	.12	.28	4.66	<.001
<hr/>						
Sample 2						
<u>FFNI-SF Acclaim Seeking</u>						
		<u>R = 0.48</u>	<u>R<sup>2</sup> = 0.23*</u>			
1	(Constant)	12.69	.23		55.01	<.001
	SFI	.59	.04	.48	15.71	<.001
		<u>R = 0.52</u>	<u>R<sup>2</sup> = 0.27*</u>			
2	(Constant)	12.97	.47		27.78	<.001
	SFI	.43	.04	.35	9.79	<.001
	DOM	.20	.05	.13	3.72	<.001
	SAV	-.16	.05	-.12	-3.33	<.001
	SHY	-.08	.06	-.05	-1.38	.17
<hr/>						
<u>FFNI-SF Authoritativeness</u>						
		<u>R = 0.53</u>	<u>R<sup>2</sup> = 0.28*</u>			
1	(Constant)	7.22	.34		21.24	<.001
	DOM	.94	.05	.53	17.98	<.001
		<u>R = 0.66</u>	<u>R<sup>2</sup> = 0.43*</u>			
2	(Constant)	9.49	.47		20.21	<.001
	DOM	.53	.05	.30	9.75	<.001
	SFI	.35	.05	.24	7.74	<.001
	SAV	-.14	.05	-.09	-2.85	.00
	SHY	-.40	.06	-.23	-7.06	<.001
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Sample 3						
<u>SIPP-118 Enduring Relationships</u>						
		<u>R = 0.46</u>	<u>R<sup>2</sup> = 0.22*</u>			
1	(Constant)	3.32	.04		82.52	<.001
	SAV	-.09	.02	-.32	-5.58	<.001
	DSF	-.04	.01	-.22	-3.91	<.001
		<u>R = 0.51</u>	<u>R<sup>2</sup> = 0.26*</u>			
2	(Constant)	3.14	.09		36.73	<.001

	SAV	-.09	.02	-.32	-5.65	<.001
	DSF	-.02	.01	-.11	-1.68	.09
	SFI	.04	.01	.20	3.72	<.001
	SHY	-.012	.01	-.08	-1.31	.19
<u>IDI Lack of Social Self-Confidence</u>						
		<u>R = 0.33</u>	<u>R<sup>2</sup> = 0.11*</u>			
1	(Constant)	157.13	1.22		129.25	<.001
	DOM	-1.20	.20	-.33	-6.11	<.001
		<u>R = 0.54</u>	<u>R<sup>2</sup> = 0.29*</u>			
2	(Constant)	150.42	1.67		90.26	<.001
	DOM	-.51	.20	-.14	-2.60	.01
	SFI	-.42	.16	-.15	-2.74	.01
	SAV	.03	.17	.01	.15	.89
	SHY	1.31	.20	.39	6.56	<.001
<u>IDI Assertion of Autonomy</u>						
		<u>R = 0.20</u>	<u>R<sup>2</sup> = 0.04*</u>			
1	(Constant)	148.99	1.11		134.06	<.001
	DOM	.65	.18	.20	3.62	<.001
		<u>R = 0.45</u>	<u>R<sup>2</sup> = 0.20*</u>			
2	(Constant)	145.68	1.10		132.81	<.001
	DOM	.79	.17	.24	4.78	<.001
	DSF	1.47	.19	.41	7.94	<.001
<u>BFNES</u>						
		<u>R = 0.48</u>	<u>R<sup>2</sup> = 0.23*</u>			
1	(Constant)	17.52	.82		21.32	<.001
	SHY	1.85	.19	.48	9.60	<.001
		<u>R = 0.50</u>	<u>R<sup>2</sup> = 0.25*</u>			
2	(Constant)	20.42	1.40		14.59	<.001
	SHY	1.64	.21	.43	7.86	<.001
	SFI	-.43	.17	-.14	-2.55	.01
<u>CBAS Behavioral Social</u>						
		<u>R = 0.64</u>	<u>R<sup>2</sup> = 0.41*</u>			
1	(Constant)	11.22	.46		24.16	<.001
	DSF	1.06	.18	.30	5.78	<.001
	SAV	1.11	.13	.43	8.31	<.001
		<u>R = 0.64</u>	<u>R<sup>2</sup> = 0.41*</u>			
2	(Constant)	11.65	.88		13.31	<.001
	DSF	1.06	.18	.30	5.80	<.001

	SAV	1.08	.15	.42	7.36	<.001
	SFI	-.07	.12	-.03	-.58	.56
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<u>SCS-R Social Anxiety</u>						
		<u>R = 0.80</u>	<u>R<sup>2</sup> = 0.64*</u>			
1	(Constant)	3.27	.32		10.25	<.001
	SHY	1.70	.08	.80	22.76	<.001
		<u>R = 0.81</u>	<u>R<sup>2</sup> = 0.66*</u>			
2	(Constant)	3.92	.72		5.42	<.001
	SHY	1.48	.09	.69	16.06	<.001
	SFI	.02	.07	.01	.23	.82
	DOM	-.14	.08	-.06	-1.63	.11
	DSF	.01	.10	.00	.08	.934
	SAV	.29	.09	.16	3.35	<.001

Note. \* = significant R<sup>2</sup> change, CAT-PD-SF = Comprehensive Assessment of Traits relevant to Personality Disorder-Static Form, IDAS-II = Inventory of Depression and Anxiety Symptoms-II, FFNI-SF = Five Factor Narcissism Inventory-Short Form, SIPP-118 = Severity Indices of Personality Problems, IDI = Interpersonal Dependency Inventory, BFNES = Brief Fear of Negative Evaluation Scale, CBAS = Cognitive Behavioral Avoidance Scale, SCS = Self-Consciousness Scale.

Table 4. Predicting Interpersonal Dysfunction from MMPI-3 Interpersonal Scale Scores.

	<i>r</i>	$\beta$	DW
<u>Sample 1</u>			
CAT-PD-SF Submissiveness			
		$R^2 = 0.19$	
DOM*	-0.29	-0.16	0.06
SHY	0.41	0.35	0.14
CAT-PD-SF Social Withdrawal			
		$R^2 = 0.69$	
DSF*	0.60	0.27	0.18
SAV*	0.77	0.48	0.33
SHY	0.62	0.26	0.19
CAT-PD-SF Emotional Detachment			
		$R^2 = 0.26$	
DOM	-0.30	-0.22	0.07
DSF*	0.46	0.42	0.19
IDAS-II Social Anxiety			
		$R^2 = 0.47$	
DSF	0.41	0.13	0.07
SAV	0.59	0.36	0.18
SHY*	0.61	0.40	0.21
<u>Sample 2</u>			
FFNI-SF Acclaim Seeking			
		$R^2 = 0.27$	
SFI*	0.48	0.36	0.15
DOM	0.35	0.14	0.06
SAV	-0.34	-0.14	0.06
FFNI-SF Authoritativeness			
		$R^2 = 0.43$	
SFI	0.52	0.24	0.14
DOM*	0.53	0.30	0.12
SAV	-0.34	-0.09	0.06
SHY	-0.32	-.023	0.11
<u>Sample 3</u>			
SIPP-118 Enduring Relationships			
		$R^2 = 0.25$	
SFI	0.31	0.27	0.08
DSF*	-0.42	-0.39	0.17
IDI Lack of Social Self-Confidence			
		$R^2 = 0.29$	
SFI	-0.36	-0.15	0.07
DOM*	-0.33	-0.14	0.05
SHY	0.50	0.39	0.18
IDI Assertion of Autonomy			
		$R^2 = 0.20$	

DOM*	-0.33	0.24	0.05
DSF	0.38	0.41	0.15
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BFNES			
		$R^2 = 0.25$	
SFI	-0.31	-0.14	0.05
SHY*	0.48	0.43	0.19
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SCS-R Social Anxiety			
		$R^2 = 0.66$	
SAV	0.55	0.17	0.16
SHY*	0.80	0.71	0.49

Note. \* = hypothesized scale, DW = dominance weight, CAT-PD-SF = Comprehensive Assessment of Traits relevant to Personality Disorder-Static Form, IDAS-II = Inventory of Depression and Anxiety Symptoms-II, FFNI-SF = Five Factor Narcissism Inventory-Short Form, SIPP-118 = Severity Indices of Personality Problems, IDI = Interpersonal Dependency Inventory, BFNES = Brief Fear of Negative Evaluation Scale, SCS = Self-Consciousness Scale.