### Title

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### Journal

Journal of Personality, 87(4)

### ISSN

0022-3506



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### Publication Date

2019-08-01

### DOI

10.1111/jopy.12437

Peer reviewed

# Structure and Correlates of Interpersonal Problems and Sensitivities

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Note. Portions of this manuscript were presented at the annual meeting of the Society for Personality Assessment in San Francisco, CA, in March 2017.

Abstract

*Objective*: Interpersonal dysfunction is an important marker of individual differences in personality and well-being. Existing research on interpersonal dysfunction focuses primarily on the problematic behaviors of individuals without considering how sensitivity to others' behavior impacts functioning. In this study we test the structure and correlates of a model of relationship dysfunction that integrates the problems individuals bring to relationships with their sensitivities to others' behavior. We specifically examine the conjoint structure of interpersonal problems and sensitivities using a circumplex framework and associations between dimensions derived from this structure and personality, well-being, attachment, and response style variables.

*Method:* We evaluated competing measurement models and examine validity correlations of interpersonal problems and sensitivities in two samples ($N_1$=955; 79.2% women; $M_{age}$ = 19.43; $N_2$ = 1005; 72.1% women; $M_{age}$ = 19.77).

*Results*: Six factors capturing general (non-specific problems and sensitivities) and stylistic (warmth and dominance for both problems and sensitivities) variation in interpersonal dysfunction were empirically distinguishable and provided incremental information about external criteria.

*Conclusion:* Results support problems and sensitivities as overlapping but distinct sources of information about interpersonal dysfunction, and specifically suggest an integrative six-factor model with considerable potential for future research.

*Keywords:* interpersonal, dysfunction, problems, sensitivities, circumplex

Although sensitivities to others' behavior can be an important determinant of interpersonal functioning and well-being (O'Connor, 2010), the literature on personality, and relationship functioning, and well-being has been focused primarily on individual differences in the way a person behaves, and pays relatively little attention to the perceived impacts of others' behavior. For instance, the vast majority of measures in personality, clinical, and social psychology ask about aspects of the person being rated, as opposed to how the person is impacted by others. As such, there is a gap in the literature regarding the impacts of other's behavior. In this paper we attempt to address this gap by examining differences between the problems an individual brings to relationships (Horowitz et al., 1988) and the sensitivities an individual has to others' behaviors (Hopwood et al., 2011).

*Dimensions of Interpersonal Dysfunction*

A suite of interpersonal circumplex (IPC) tools have been developed to measure various aspects of interpersonal functioning (see Locke, 2011), including problems (Alden, Wiggins, & Pincus, 1990; Bodreaux, Ozer, Oltmanns, & Wright, 2017; Soldz, Budman, Demby, & Merry, 1993) and sensitivities (Hopwood et al., 2011). IPC measures generally have eight octant scales that assess blends of dominant and warm attributes (Kiesler, 1996; Leary, 1957, Pincus et al., 2010; see Figure 1). Factor analyses of these octant scales typically yield three dimensions (Alden et al., 1990; Hopwood et al., 2011). The first is a general dimension that describes what all octant scales have in common (Gurtman & Balakrishnan, 1998). On a measure such as the Inventory of Interpersonal Problems-Circumplex (IIP-C; Alden et al., 1990), this factor can be interpreted as non-specific variance in interpersonal distress, or *general interpersonal problems*. On the Interpersonal Sensivitieis Circumplex (ISC; Hopwood et al., 2011), this factor can be interpreted as

non-specific variance in the tendency to be annoyed by others, or *general interpersonal sensitivity.*

IPC instruments also tend to have style factors that can be rotated to reflect dominance/submissiveness and warmth/coldness (Table 1). Problems and sensitivities may be expressed on either ends of these dimensions. Problems with dominance involve being too domineering whereas problems with submissiveness involve being difficulties expressing one's needs. People with warm problems may smother others with their affection whereas people who are too cold have difficulty connecting. Similarly, people may be more or less sensitive to other people who are too dominant or too submissive and to people who are too warm or too cold.

General interpersonal problems and sensitivities are positively correlated across instruments, whereas dominance and warmth dimensions are negatively correlated across instruments (Hopwood et al., 2011). In contrast, general, dominance, and warmth factors are relatively independent of one another within measures of problems or sensitivities, (e.g., dominant problems not correlate with general or warm problems). This pattern has not yet been tested, however, in a formal measurement model, and thus the distinctiveness of interpersonal problems and sensitivities is unclear. It may be necessary to have six independent factors reflecting general and specific problems and sensitivities. This would suggest that problems and sensitivities are indeed descrete aspects of interpersonal functioning even though they can both be conceptualized using the IPC. Given that these dimensions all reflect general, warm, and dominant variation in interpersonal functioning, they may be collapsible into these three factors across problems and sensitivities. This would suggest a lack of distinctiveness between interpersonal problems and sensitivities. Alternatively, it may be possible to synthesize the

general factors (i.e., five factor model with a single general dimension but independent dominance and warmth dimensions) or to collapse the specific style factors (i.e., four factor model with independent general dimensions but collapsed dominance and warmth dimensions). The first goal of this study is to test these competing models of interpersonal problems and sensitivities. We specifically hypothesize that six factors will be needed to capture the covariation in IPC models of interpersonal problems and sensitivities.

Our second hypothesis is that, within this six-factor model, individuals with more problems will have more sensitivities; those with greater dominance problems will have greater sensitivity to submission; and those with greater warmth problems will have greater sensitivity to coldness. However, parameters will not correlate across dimensions (e.g., sensitivities to dominance will not correlate with general interpersonal problems or warm interpersonal problems).

*Correlates of Interpersonal Problems and Sensitivities*

Previous research suggests that general interpersonal problems are related to negative affect (e.g., Nysaeter, Langvik, Berthelsen, & Nordvik, 2009; Wei, Heppner, & Mallinckrodt, 2003), poorer well-being (e.g., Hopwood, Koonce, & Morey, 2009; Wright et al, 2012), and relationship dysfunction (Haggerty, Hilsenroth, & Vala-Stewart, 2009; Wei et al., 2003 Wei, Vogel, Ku, & Zakalik, 2005). These correlates situate general interpersonal problems as a relatively non-specific marker of interpersonal distress and dysfunction. There has been less research on interpersonal sensitivities than interpersonal problems, consistent with the general bias in personality psychology to focus on aspects of the individual rather than the impacts of others. General interpersonal sensitivities are related to negative affect and borderline personality features (Hopwood et al., 2011; Yalch, Thomas, &

Hopwood, 2012), a tendency to have rigid expectations about others (e.g., obsessive-compulsive personality; Cain, Ansell, Simpson, & Pinto, 2015), and low tolerance for others' annoying behavior (e.g., irritability; Hopwood et al., 2011; Williams, Thomas, Donnellan, & Hopwood, 2014). This pattern of findings suggests that interpersonal sensitivities have relatively broad impacts albeit somewhat more specific than general interpersonal problems to the tendency to find other peoples' behavior irritating. Based on these findings, our third hypothesis was that general interpersonal problems and sensitivities would correlate with a wide range of distress and dysfunction variables (e.g., alexithymia, depression, and maladaptive traits). Given that individuals who endorse problems locate dysfunction within themselves whereas people who endorse sensitivities locate dysfunction in others, our fourth hypothesis was that interpersonal problems would correlate with a more internal locus of control whereas interpersonal sensitivities would correlate with a more external locus of control.

Stylistic problems related to dominance and warmth are more modestly correlated with general indicators of negative affect or impairment but more discriminant with respect to constructs that have distinguishing interpersonal qualities (Pincus & Hopwood, 2012). Impulsivity, risk taking, and grandiose narcissism are related to dominance problems (Dickinson & Pincus, 2003; Hopwood et al., 2008, Hopwood et al, 2009; Gurtman, 1992; Pincus et al., 2009; Wright et al., 2012); aggression, mistrust, manipulativeness and avoidant attachment are associated with coldness and cold-dominance (Bartholomew & Horowitz, 1991; Chen & Mallinckrodt, 2002, Hopwood et al., 2009; Wright et al., 2012); avoidant personality, depressiveness, alexithymia, and social withdrawal are related to cold-submissive problems (Barrett & Barber, 2007; Hopwood et al., 2009; Vanheule,

Desmet, Maganck, & Bogaerts, 2007; Wiggins & Pincus, 1989; Wright et al., 2012); dependency, anxious attachment, and agreeableness are related to warm-submissiveness (Bartholomew & Horowitz, 1991; Chen & Mallinckrodt, 2002; Nysaeter et al., 2009; Pincus & Gurtman, 1995; Soldz et al., 1993); warmth problems are correlated with empathy (Gurtman, 1992) and positive temperament (Hopwood et al., 2009); and histrionic personality disorder (PD), separation insecurity, emotional lability, attention-seeking, and extraversion are related to warm-dominant problems (Nysaeter et al., 2009; Soldz et al., 1993; Wiggins & Pincus, 1989; Wright et al., 2012).

A similar pattern emerges for specific styles of interpersonal sensitivity. Depression is related to sensitivity to dominance (Miller, 2015); dependency, agreeableness, and anxiety are related to sensitivity to cold-dominance (Hopwood et al, 2011; Miller, 2015); extraversion and attention-seeking relate to sensitivity to cold-submission (Hopwood et al, 2011; Miller, 2015); grandiose narcissism and risk-taking relate to sensitivity to submission (Miller, 2015); antisocial behavior, callousness, and irresponsibility relate to sensitivity to warm-submission (Hopwood et al, 2011; Miller, 2015); withdrawal, intimacy avoidance, and paranoia relate to sensitivity to warmth (Miller, 2015); and obsessive-compulsive personality traits and irritability relate to sensitivity to warm-dominance (Cain et al., 2015; Hopwood et al., 2011).

Based on previous findings, our fifth hypothesis was that variation in warmth and dominance in both problems and sensivities will have more modest and specific correlates than variation in general problems and sensitivities. We expected individuals with greater warmth problems and sensitivity to coldness would have a warm interpersonal style as indicated by positive correlations with extraversion,

agreeableness, dependent PD, attachment anxiety, and communal impression management but negative correlations with narcissistic PD and attachment avoidance. We expected greater dominance problems and sensitivity to submission to be correlated positively with extraversion, narcisisstic and obsessive compulsive PDs, and agentic impression management but negatively with agreeableness, dependent PD, and anxious and avoidant attachement styles.

**Study 1**

In Study 1 we tested five hypotheses: 1) six factors would be needed to describe covariation in interpersonal problems and sensitivities, 2) general problems and sensitivities would be related but warmth and dominance in problems and sensitivities would be inversely related, 3) general problems and sensitivities would have less specific correlates than warmth and dominance in problems and sensitivities, 4) interpersonal problems would correlate with internal locus of control whereas interpersonal sensitivities would correlate with external locus of control, and 5) warmth and dominant interpersonal problems and sensitivities would show specific patterns of association consistent with the distinguishing interpersonal features of criterion variables. This study was approved by the local IRB and all subjects consented to participate.

**Subjects and procedure**

Data for study 1 were collected from 955 undergraduate psychology students who completed surveys via Qualtrics.com and were compensated with course credit. Participants averaged 19.43 years of age (SD = 1.97) and ranged from 18 to 54. A majority of participants were female (79.2%). The sample was 70.4% white non-Hispanic, 13.5% Asian or Pacific Islander, 7.6% African-American, 2.7% Hispanic, 5.3% multi or other ethnic background, and 0.4% did not report a

racial or ethnic background. All participants completed the IIP-SC and ISC first and then were randomly administered the remaining questionnaires. Data from study 1 are publically available at osf.io/aar3e.

**Measures**

The *Inventory of Interpersonal Problems-Short Circumplex* (IIP-SC; Hopwood et al., 2009; Soldz et al., 1995) measures interpersonal problems with 32 items spread across 4-item octant scales and rated on a 5-point Likert-type scale ranging from 0 (*not at all*) to 4 (*extremely*). The median internal consistency of the octant scales was .75.

The *Interpersonal Sensitivities Circumplex* (ISC; Hopwood et al., 2011) is a measure of others' behaviors that bother the respondent with 64 items spread across 8-item octant scales rated on a 7-point Likert-type scale ranging from 1 *(not at all, never bothers me*) to 7 (*very much, bothers me most of the time*). The median internal consistency of the octant scales was .80.

The *Five-Factor Model Rating Form* (FFMRF; Mullins-Sweatt, Jamerson, Samuel, Olson, & Widiger, 2006) is a 30-item measure with 6-item scales for the domains of neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness that correspond to the facets proposed by Costa and McCrae's (1992) NEO Personality Inventory-Revised. Respondents rate themselves on each facet using a 5-point Likert-type scale that ranges from 1 (low levels of a facet) to 5 (high levels of a facet). Two to three descriptive adjectives are used to anchor the tails of each facet scale in order to aid in respondents comprehension of the scale's meaning. FFMRF domain scales had a median internal consistency of .71.

The *Hyperbolic Temperament Questionnaire-Hyperbolic Scale* (HTQ-H; Hopwood, Thomas, Zanarini, 2012) is an 11-item scale measuring chronic and

intense experiences of negative affect associated with borderline personality with items rated using an 8-point Likert-type scale ranging from 1 (*Strongly disagree*) to 9 (*Strongly agree*). The internal consistency of the HTQ-H was .91.

The *Personality Diagnostic Questionnaire-Dependent (DPD), Narcissistic (NPD), and Obsessive-Compulsive (OCPD) Personality Disorder Scales* (PDQ-4; Hyler, 1994) are self-report measures of DSM-IV PDs. We administered the dependent, narcissistic, and obsessive-compulsive scales based on past research connecting these disorders to problems and sensitivities within specific regions of the IPC. These scales contained 8, 9, and 8 true-false items respectively. Internal consistencies were $\alpha_{DPD}$ = .64, $\alpha_{NPD}$ = .59, and $\alpha_{OCPD}$ = .42.

The *Patient Health Questionnaire 9* (PHQ-9; Kroenke, Spitzer, & Williams, 2001) is a 9-item measure of DSM-IV depression with items are rated on a 4-point scale ranging from ranges from 0 (*Not at all*) to 3 (*Nearly Every Day)*. The internal consistency was .86.

The *Toronto Alexithymia Scale* (TAS-20; Bagby, Parker, & Taylor, 1994) is a 20-item measure of alexithymia, or the experience of having difficulty identifying and describing emotions. Items from the TAS-20 are rated on a 5-point Likert-type scale ranging from 1 (*Strongly Disagree*) to 5 (*Strongly Agree*). The TAS-20 internal consistency was .85.

The *Experiences in Close Relationships-Revised* (ECR-R; Fraley, Waller, & Brennan, 2000) is a 36-item measure of adult attachment style containing two 18-item scales: *attachment anxiety*, the degree to which an individual is insecure about the availability and responsiveness of an intimate partner, and *attachment avoidance*, the extent to which an individual is uncomfortable being close or intimate with a partner. All items are rated using a 7-point Likert-type scale ranging

from 1 (*Strongly disagree*) to 7 (*Strongly Agree*). Internal consistencies were .94 for anxiety and .95 for avoidance.

The *Bidimensional Impression Management Index* (BIMI; Blasberg, Rogers, & Paulhus, 2013) is a 20-item measure of impression management with two scales focused on *agentic management*, the degree to which an individual exaggerates their competence, and *communal management*, the degree to which an individual exaggerates their consideration for other people. The BIMI uses a 7-point Likert-type scale which ranges from 1 (*Not True*) to 7 (*Very True*). Internal consistencies were . 64 for agentic and .68 for communal scales.

The *Levenson Internal Locus of Control Scale Scale* (LOC; Levenson. 1973) is an 8-item measure of the degree to which they ascribe causality between their behavior and life-outcomes. Items are rated on a 6-point Likert-type scale ranging from -3 (*Strongly disagree*) to 3 (*Strongly agree*) (there is no zero point on the response scale). Internal consistency was .59.

## Results and Discussion

We examined the conjoint structure of interpersonal problems and sensitivities by comparing the fit of four CFA models to the covariance matrix of the octant scales of the IIP-SC and ISC using Mplus7.4 (Muthen & Muthen, 2015) with maximum likelihood estimation. The first model was a 3-factor solution in which standardized octant scales of the IIP-SC and ISC were estimated to load onto common elevation, dominance, and warmth factors. In the second, four-factor model, the general factors were independent but warmth and dominance factors were collapsed across problems and sensitivities. In the third, five-factor model, warmth and dominance factors were independent but general factors were collapsed across instruments. The fourth hypothesized structure was a 6-factor

model with independent general, warmth, and dominance factors for problem and sensitivities. General factors in both models were estimated to be influenced evenly by all octant scales. Dominance and warmth factors were estimated with starting values according to circumplicial predictions (i.e., for the warmth factor, the warm octant had a loading of 1, coldness of -1, dominance and submissiveness of 0, warm/dominant and warm/submissive of .71, and cold/dominant and cold/submissive of -.71). For the 6-factor model, factors were freed to covary within parameter, across problems and sensitivities (general problems with general sensitivities, warm problems with warm sensitivities, and dominance problems with dominance sensitivities) but cross-parameter correlations were constrained to zero (See Figure 2).

Results from these analyses indicated that the 6-factor model fit the data well ($X^2$ = 542.49, $p$ <. 001, $df$ = 69, RMSEA = .09, CFI = .95, TLI = .90, SRMR = .04) and better than the 3 ($X^2$ = 1858.27, $p$ <. 001, $df$ = 72, RMSEA = .16, CFI = .79, TLI = .65, SRMR = .06), 4 ($X^2$ = 1193.71, $p$ <. 001, $df$ = 71, RMSEA = .13, CFI = .87, TLI = .78, SRMR = .06), or 5 ($X^2$ = 731.57, $p$ <. 001, $df$ = 70, RMSEA = .10, CFI = .92, TLI = .87, SRMR = .04) factor models according to $X^2$ difference tests (all $p$'s < . 001). Path coefficients between octant scores and latent factors for the 6-factor model are presented in Table 1. As expected, inter-correlations between general problem and sensitivity parameters were positive whereas inter-correlations between warmth and dominance parameters were moderately negative.

These results are consistent with our first two hypotheses regarding the conjoint structure of interpersonal problems and sensitivities and support the interpretation of problems and sensitivities as non-redundant surfaces of interpersonal dysfunction. However, the moderate cross-instrument correlations

between analogous factors also suggest that these factors are indeed interconnected, consistent with past research showing that sensitivities are coordinated with the types of problems a person has.

We next included criterion variables one at a time in separate SEM regression models anchored by the conjoint 6-factor measurement framework. As a first step, we compared the fit of a model in which all paths were constrained to equality to a model in which paths were freely estimated for each criterion variables, to test the interpretability of any pattern that might be found in the regression paths. The model with paths freely estimated fit the data significantly better accordsing to $X^2$ difference tests ($p < .001$) for neuroticism, extraversion, hyperbolic temperament, agentic impression management, dependent, narcissistic, and obsessive compulsive personality disorders, depression, alexithymia, and anxious and avoidant attachment. We only interpreted differences in path coefficents for these models, although we present freely estimate path coefficients for all variables in Table 2.

The importance of interpersonal problems and sensitivities for various aspects of personality and well-being was indicated by significant path coefficients for every variable examined. Our third hypothesis, that general interpersonal problems would show the most consistent correlations with a range of maladaptive outcomes, was largely confirmed. This variable was related to all criteria with the exception of alexithymnia, anxious attachment, and avoidant attachment in models in which we interpreted path coefficients. Given that a model with all paths constrained to equality fit the data better than one in which they were freely estimated for locus of control, our fourth hypothesis that problems would relate more strongly than sensitivities to an internal locus of control was disconfirmed. In

fact, the pattern in the freely estimated model actually suggests the opposite pattern.

There was mixed support for our fifth hypothesis regarding specific associations between the style of interpersonal problem and sensitivity and various outcome variables. General sensitivities were related to extraversion, hyperbolic temperament, obsessive-compulsive PD, and agentic impression management. Dominant problems were related to extraversion, narcissistic PD, agentic impression management, and low alexithymia and anxious attachment. Warm problems were related to low neuroticism, hyperbolic temperament, depression, and avoidant attachment. Sensitivities to dominance were related to narcissistic PD whereas sensitivities to warmth were related to low neuroticism, hyperbolic temperament, depression, and high agentic impression management. Overall, this pattern suggests that interpersonal problems show the broadest pattern of correlates, general sensitivities are somewhat more specific, and variation in dominance and warmth problems and sensitivities is related to variables that can be distinguished based on their specific interpersonal styles, albeit not always in the ways we hypothesized based on theory and previous research.

The fact that coefficients tended to be larger and more consistent for interpersonal problems, and particularly for general interpersonal problems, than interpersonal sensitivities raised the possibility that interpersonal problems are more relevant for personality, well-being, and relationship functioning than sensitivities. However, an alternative possibility is that this finding is an artifact of the similar focus of our measure of interpersonal problems and criterion variables. Specifically, like most variables in personality psychology, the IIP-SC asks about attributes of the respondent, rather than attributes of others. If criterion variables

had been similar to the ISC in asking about attributes of others that the respondent finds bothersome, it is possible that coefficients would have been larger for sensitivities. Our second study was designed to replicate the results of study 1 and test a sixth hypothesis regarding differential associations of problem and sensitivities variables with self- versus other-focused criteria.

**Study 2**

Study 2 was approved by the local IRB and all subjects consented to participate; data are publicly available at osf.io/aar3e.

**Subjects and procedure**

One-thousand twenty-eight undergraduate psychology students were recruited from a large university in the Midwest and compensated with course credit. Twenty participants' data were excluded because 10% of the study protocol was incomplete or they were younger than 18 years of age. We also removed the data of three participants for answering incorrectly on two items that asked them to "Select answer 'B' for this item." The remaining 1005 participants averaged 19.77 years of age (*SD* = 2.03) and ranged from 18 to 49. Participants were largely female (72.1%). The sample was 70.2% white non-Hispanic, 13.1% Asian or Pacific Islander, 6% African-American, 3.3% Hispanic, 6.3% mixed or other ethnic background, and 1.1% did not report a racial or ethnic background.

All participants completed study questionnaires online through Qualtrics.com. In addition to the IIP-SC and ISC, we selected the FFMRF, PDQ-4-NPD, and ECR-R as *self-focused* criterion variables given their associations with parameters from study 1. We then constructed and administered parallel *other-focused* versions of each of these measures to test hypothesis 6. Sensitivity versions of the FFMRF, PDQ-4-NPD, and ECR-R had altered instructions and item wording that asked respondents to rate

how much the traits and behaviors described in the measures bothered them when expressed in other people. The instructions for each instrument asked the respondent to focus on what bothers the respondent about others in general, rather than the specific behaviors of one particularly bothersome person. All items had a four point scale, that ranged from “does not bother me at all” to “bothers me very much”. We aimed to create sensitivity versions that tapped similar content to the self-report versions of each of these instruments. In most cases this did not require meaningfully changing item content. In a few cases, item wording was changed for clarity, as described in detail below. The altered versions of these measures are available at osf.io/aar3e.

**Measures**

We administered the IIP-SC (octant Mdn $\alpha$ = .78), ISC (octant Mdn $\alpha$ = .80), FFMRF (Mdn $\alpha$ = .72,), ECR-R (anxiety $\alpha$ = .95; avoidance $\alpha$ = .94), and PDQ-4-NPD ($\alpha$ = .59) again in study 2.

The *Five-Factor Model Rating Form - Sensitivity Version* (FFMRF-S) is a 60-item measure of sensitivity to others’ personality traits, created for this study. The FFMRF-S was developed to parallel the content and structure of the original FFMRF, however, several adaptations were made in order to assess sensitivities. First, we altered the instructions for this measure such that participants rated how much they are bothered by the traits rather than rating their own personality. Second, we split each of the 30 items into two; one measuring sensitivity to each side of the facet distribution (e.g., sensitivity to extraversion and sensitivity to introversion). We did this because the original FFMRF items ask the respondent to describe where their personality falls, on average, along the entire distribution of a trait facet. This rating format was problematic for a sensitivity measure because a rating in the middle of

the distribution could either mean that behavior connected to that trait is not bothersome, or that behavior is equally bothersome at both extremes. We added additional adjectives for facet labels when only one adjective was used to describe the tail of the facet on the original FFMRF. We added these labels so that the information given about each item was similar across all items. In some cases, we also replaced labels from the original measure that respondents might have difficulties defining with synonyms (e.g., we changed “desultory” to “unfocused”). An example item from the FFMRF-S is, “It bothers me when another person is anxious, fearful, apprehensive”.

The FFMRF-S was scored by averaging items from similar tails of a trait dimension to create 10 scale scores (one for each tail of each FFM domain). The median internal consistency of these scales was .70. General sensitivity was computed by taking the average score across all scales. Stylistic sensitivity scores were computed by taking the difference between scale scores representing opposite ends of a domain. Stylistic scales were intended to capture a person’s specific sensitivity to one end of a trait domain over another.

The *Experiences in Close Relationships – Revised Sensitivity Version* (ECR-R-S) is a 36-item measure of sensitivity towards attachment anxiety and avoidance in romantic partners created for this study. The content and structure of this measure parallels the original ECR-R with a focus on others’ behavior rather than the self. We revised several of the reverse-keyed items from the avoidance scale of the original measure to focus on sensitivity towards others’ avoidant behavior rather than non-avoidant behavior. This was done because we assumed that there would be greater variability in sensitivity to others’ avoidance than in the lack of others’ avoidance. Internal consistencies were .92 for anxiety and .94 for avoidance.

The *Personality Disorder Questionnaire –4 – Narcissistic Personality Disorder Sensitivity Version* (PDQ-4-NPD-S) is a 9-item measure of sensitivity to others' narcissistic grandiosity created for this study. Items were left identical to the PDQ-4-NPD except that they were worded to focus on others' behavior. We also made several word changes to make the sensitivity version more relevant to other-reporting (e.g., the other person *talks* about how great they are, rather than, *thinks* about how great they are). Item scores were averaged to produce a total score with an alpha of .81.

## Results and Discussion

We first tested the fit of identical CFA models to those specified in study 1. Similar to study 1, the 6-factor model fit the data well ($x^2$ = 544.27, $p < .001$, $df$ = 69, RMSEA = .08, CFI = .95, TLI = .92, SRMR = .04), and better than while the 3- ($x^2$ = 1894.17, $p < .001$, $df$ = 72, RMSEA = .16, CFI = .82, TLI = .71, SRMR = .06), 4- ($x^2$ = 1189.52, $p < .001$, $df$ = 71, RMSEA = .13, CFI = .89, TLI = .82, SRMR = .05), or 5- ($x^2$ = 709.11, $p < .001$, $df$ = 70, RMSEA = .10, CFI = .94, TLI = .89, SRMR = .04) factor models ($p < .001$ for all $\Delta X^2$ tests). Point estimates and standard errors for path coefficients and intercorrelations between latent factors for the 6-factor model were similar to those in study 1 (Table 3). These results provide further support our first two hypotheses about the conjoint structure of the IIP-SC and ISC, again suggesting that problems and sensitivities represent distinct but overlapping surfaces of interpersonal dysfunction. Results from study 2 also replicated past research showing that the number of problems a person has relates to the number of sensitivities they have, and that people tend to be most sensitive to people who behave opposite of their interpersonal style.

We next included all criterion variables one at a time in separate SEM regression models anchored by the conjoint 6-factor model. We again compared fit of a model with all paths freely estimated to a model with paths constrained to equality. The model with freely estimated paths fit the data better for all variables except conscientiousness and sensitivity to openness. Point estimates and standard errors for freely estimated path coefficients between latent factors and validity criteria are presented in Table 4.

As in study 1, interpersonal problems tended to relate more strongly than sensitivities to self-focused criteria. General interpersonal problems were related to neuroticism, low extraversion, and attachment problems. Dominance problems were related to extraversion, openness, and narcissistic PD. Warm problems were negatively related to neuroticism and narcissistic PD, and attachment problems, and positively related to agreeableness. General sensitivities were related to neuroticism, extraversion, and openness. Sensitivities to dominance were related to openness, and sensitivities to warmth were related to low neuroticism, low agreeableness, narcissistic PD, and avoidant attachment. Overall, these results are somewhat consistent with hypothesis 5 and with study 1, but there were also a number of exceptions. The most robust effects, replicated across both studies, were significant associations of general interpersonal problems with high neuroticism and low extraversion, dominance problems with extraversion and narcissistic PD, warmth problems with neuroticism and low avoidant attachment, general sensitivities with extraversion, and sensitivities to warmth with neuroticism.

Consistent with hypothesis 6, interpersonal sensitivities had generally stronger correlations than problems with the other-focused measures. General sensitivities were associated with all other-focused criteria. While general problems

were correlated with all other-focused criteria except narcissistic PD, these coefficients were smaller for every variable than the coefficients for general sensitivities. Sensitivities to dominance were negatively related to sensitivity to neuroticism and sensitivity to avoidant attachment whereas sensitivities to warmth were related to trait sensitivity, sensitivity to low extraversion, agreeableness, conscientiousness, sensitivity to anxious attachment, and low sensitivity to avoidant attachment. Dominance problems were related to lower sensitivity to neuroticsm and extraversion and higher sensitivity to agreeableness and conscientiousness. Warm problems were not significantly related to any other-focused criteria.

## General Discussion

In this study, we aimed to identify and elaborate an integrative model of individual differences in relationship dysfunction that incorporates both interpersonal problems and interpersonal sensitivities. We specifically tested six hypotheses regarding the structure of interpersonal problems and sensitivities as well as the differential correlations between problem and sensitivity parameters with a broad range of personality, psychopathology, well-being, and response style variables.

Overall, the results from both studies highlighted the value of an integrative model of interpersonal dysfunction that takes into account both what individuals do in relationships with others as well as how they are affected by what others do. In this model, problems and sensitivities share a similar structure that corresponds to other circumplex models of interpersonal characteristics. At the same time, problems and sensitivities are distinguished from one another in that they provide distinct sources of information about dysfunction within interpersonal relationships. Problems tend to be more related to perceptions of characteristics of the self,

whereas sensitivities tend to be more related to perceptions of others characteristics. This suggests that knowing both the way a person views her own behavior and how she views others' behavior is important for a comprehensive understanding of her personality, personality problems, and relationship functioning.

This is particularly relevant because individual differences research has historically focused on how a person experiences one's self and has ignored experiences of or reactions to others (O'Connor, 2010). Perceptions of others' behavior represents a relatively unexplored source of variation of individual differences with significant potential for augmenting existing personality theories. Beyond sensitivities, other relevant types of other-focused variables might include values placed on others' behavior, expectations for others' behavior, or how a person generally perceives being treated by others. Indeed, most attributes for which there are measures of one's own characteristics could be reconfigured to assess how one perceives others, as we did in this study. However, work on the impact of sensitivity to others is preliminary, and our study was a relatively conservative test of the importance of this domain of functioning. This is an important direction for future work.

Several specific findings with respect to criterion validity bear some mention. These results were consistent with our hypotheses only at a very general level, and cross-study differences in assessment and analytic methods and the reliance on significance values to test hypotheses may have complicated the interpretation of these findings. That said, there were even some differences across studies 1 and 2, despite the same methods and relatively large and similar samples. Although one can generally conclude from the literature that general problems and sensitivities

have less specific associations than style problems and sensitivities, more work is needed on the nomological networks of these variables. For example, our hypothesis related to locus of control was not confirmed, and this result was actually quite counter-intuitive. This may be related to our locus of control measure or other factors, and this issue should perhaps be followed up in further research.

Testing similar models with other measures of interpersonal problems (e.g., Boudreaux et al., in press) and sensitivities would add confidence to the current results. Such measures could employ dimensions other than those in the interpersonal system (e.g., using instruments like the other-focused measures we created for study 2). It would also be interesting for future research to incorporate aspects of an individual's interpersonal style beyond problems and sensitivities, such as values, efficacies, and strengths (see Locke, 2011). It would be beneficial to examine how these variables overlap with problems and sensitivities, as well as increment each other in explaining interpersonal functioning in clinical and other contexts (see Dawood & Pincus, 2016; Hopwood et al., 2016; Pincus et al., 2011). In addition to understanding how interpersonal variables relate to psychopathology and functioning, it is also interesting to understand how they can help distinguish individuals with the same form of psychgopathology (e.g., Pincus & Wright, 2011; Thomas et al., 2014).

Future work should focus on examining how interpersonal processes play out over time, across different time scales (Wright & Hopwood, 2016; Hopwood et al., 2016; Pincus et al., 2014). Capturing dynamic processes using ecologically valid and temporally sensitive assessments would enable tests of how problems, sensitivities, and other domains of interpersonal functioning interact with one another to produce more or less adaptive outcomes (e.g., Sadikaj, Russell, Moskowitz, & Paris, 2010).

This type of research could also be used to assess individual differences in dynamic variables (flux, spin, pulse; Moskowitz & Zuroff, 2004) or within-person covariance (Roche, Pincus, Hyde, Conroy, & Ram, 2013) across different surfaces of interpersonal functioning. Finally, the use of questionnaires in undergraduate convenience samples was among the most significant limitations of these studies. Future work should focus on examining the structure and correlates of interpersonal problems and sensitivities using multimethod assessment in more diverse samples.

## Conclusion

Overall, this research suggests that problems and sensitivities are distinct but related aspects of an individual's interpersonal dysfunction. While measures of problems and sensitivities share structural and conceptual similarities, they are empirically distinguishable and provide incremental information about individual differences in personality, relationship functioning, and well-being. This research underscores the value of assessing problems and sensitivities as separate sources of interpersonal dysfunction.

Table 1

*Path Coefficients and Latent Factor Correlations for 6-Factor Model in Study 1*

| | | Problems | | | | | | Sensitivities | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | General | | Dominance | | Warmth | | General | | Dominance | | Warmth | |
| | | *θ* | *SE* | *θ* | *SE* | *θ* | *SE* | *θ* | *SE* | *θ* | *SE* | *θ* | *SE* |
| *Path Coefficients* | | | | | | | | | | | | | |
| *Problems* | Dominant | .55* | .09 | .47* | .18 | -.35 | .23 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Cold-Dominant | .61* | .06 | .20 | .20 | -.40* | .12 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Cold | .43* | .08 | -.19 | .28 | -.60* | .10 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Cold-Submissive | .45* | .08 | -.42* | .16 | -.30 | .20 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Submissive | .64* | .10 | -.59* | .14 | .19 | .28 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Warm-Submissive | .72* | .09 | -.49* | .20 | .35 | .24 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Warm | .52* | .06 | -.22 | .18 | .35* | .12 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Warm-Dominant | .56* | .07 | .33* | .16 | .28 | .17 | .00 | .00 | .00 | .00 | .00 | .00 |
| *Sensitivities* | Dominant | .00 | .00 | .00 | .00 | .00 | .00 | .84* | .05 | .31* | .14 | -.03 | .17 |
| | Cold-Dominant | .00 | .00 | .00 | .00 | .00 | .00 | .75* | .05 | .18 | .22 | -.40* | .13 |
| | Cold | .00 | .00 | .00 | .00 | .00 | .00 | .72* | .07 | -.22 | .24 | -.47* | .13 |
| | Cold-Submissive | .00 | .00 | .00 | .00 | .00 | .00 | .75* | .09 | -.52* | .15 | -.19 | .25 |
| | Submissive | .00 | . | .00 | . | .00 | .00 | .68* | .07 | -.45* | .13 | .15 | .22 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Warm-Submissive | .00 | .00 | .00 | .00 | .00 | .00 | .61* | .08 | -.38 | .24 | .48* | .19 |
| | Warm | .00 | .00 | .00 | .00 | .00 | .00 | .45* | .06 | -.12 | .22 | .47* | .08 |
| | Warm-Dominant | .00 | .00 | .00 | .00 | .00 | .00 | .80* | .04 | .21 | .14 | .13 | .14 |
| *Factor Correlations* | | | | | | | | | | | | | |
| *Sensitivities* | General | .36* | .03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Dominance | -- | -- | -.51* | .04 | -- | -- | -- | -- | -- | -- | -- | -- |
| | Warmth | -- | -- | -- | -- | -.57* | .04 | -- | -- | -- | -- | -- | -- |

*Note*. $N = 955$; *$p < .001$.

Table 2

*Path Coefficients between Latent Factors and Validity Criteria in Study 1*

| | Problems | | | | | | Sensitivities | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | General | | Dominance | | Warmth | | General | | Dominance | | Warmth | |
| | *β* | *SE* | *β* | *SE* | *β* | *SE* | *β* | *SE* | *β* | *SE* | *β* | *SE* |
| Neuroticism* | .48* | .04 | .04 | .15 | -.26* | .08 | .03 | .04 | .06 | .11 | -.22* | .05 |
| Extraversion* | -.27* | .11 | .61* | .26 | .30 | .52 | .09* | .03 | .11 | .06 | .06 | .11 |
| Openness | -.17* | .05 | .14 | .08 | .14 | .08 | .12* | .04 | .13 | .08 | -.15 | .08 |
| Agreeableness | -.19* | .06 | -.18 | .15 | .34* | .09 | .10* | .04 | .12 | .10 | -.21* | .07 |
| Conscientiousness | -.26* | .04 | -.01 | .06 | .01 | .06 | .19* | .04 | .12 | .08 | -.13 | .07 |
| Hyperbolic Temperament* | .48* | .07 | .11 | .21 | -.22* | .15 | .12* | .08 | .10 | .29 | -.39* | .11 |
| Narcissistic PD* | .28* | .05 | .23* | .09 | -.16 | .12 | -.02 | .04 | -.10* | .05 | .06 | .06 |
| Dependent PD* | .56* | .03 | -.10 | .11 | .04 | .09 | -.07 | .04 | -.13 | .07 | -.13 | .07 |
| Obsessive Compulsive PD* | .30* | .01 | .10 | .02 | -.08 | .02 | .11* | .01 | .08 | .01 | -.07 | .01 |
| Depression* | .39* | .04 | -.03 | .13 | -.22* | .07 | .01 | .04 | -.02 | .06 | -.10* | .05 |
| Alexithymia* | .20 | .27 | -.32* | .14 | -.28 | .23 | -.02 | .05 | -.02 | .04 | -.05 | .04 |
| Anxious Attachment* | .35 | .25 | -.27* | .17 | -.20 | .43 | .03 | .09 | -.06 | .05 | .07 | .06 |
| Avoidant Attachment* | .00 | .31 | -.27 | .23 | -.41* | .15 | .02 | .05 | -.03 | .05 | .05 | .04 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Agentic Impression Management* | -.10* | .05 | .17* | .05 | -.01 | .09 | -.11* | .04 | -.10 | .09 | .19* | .07 |
| Communal Impression Management | -.08 | .04 | -.15* | .05 | .02 | .09 | -.19* | .04 | -.03 | .06 | .01 | .06 |
| Locus of Control | -.17* | .04 | .02 | .06 | .01 | .06 | .11* | .04 | .07 | .05 | -.02 | .06 |

*Note. N = 955.* Underlined values were hypothesized to be positive. Italicized values were hypothesized to be negative. An asterisk in the first column indicates that a model in which all parameters were constrained to equality fit the data significantly worse than a model in which they were freed to vary. Asterisks in the remaining columns indicate significant path coefficients. All asterisks indicate $p < .001$.

Table 3

*Path Coefficients and Latent Factor Correlations for 6-Factor Model in Study 2*

| | | Problems | | | | | | Sensitivities | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | General | | Dominance | | Warmth | | General | | Dominance | | Warmth | |
| | | *β* | *SE* | *β* | *SE* | *β* | *SE* | *β* | *SE* | *β* | *SE* | *β* | *SE* |
| *Path Coefficients* | | | | | | | | | | | | | |
| *Problems* | Dominant | .29* | .07 | .48* | .16 | -.59* | .13 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Cold-Dominant | .48* | .05 | .29 | .16 | -.59* | .08 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Cold | .48* | .05 | -.16 | .16 | -.59* | .06 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Cold-Submissive | .59* | .04 | -.23* | .11 | -.31* | .08 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Submissive | .85* | .03 | -.19 | .11 | .20* | .09 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Warm-Submissive | .86* | .02 | .01 | .13 | .28* | .07 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Warm | .68* | .03 | .12 | .10 | .24* | .07 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Warm-Dominant | .45* | .07 | .64* | .06 | -.05 | .17 | .00 | .00 | .00 | .00 | .00 | .00 |
| *Sensitivities* | Dominant | .00 | .00 | .00 | .00 | .00 | .00 | .91* | .01 | .05 | .11 | .09 | .07 |
| | Cold-Dominant | .00 | .00 | .00 | .00 | .00 | .00 | .86* | .03 | -.12 | .12 | -.25* | .07 |
| | Cold | .00 | .00 | .00 | .00 | .00 | .00 | .73* | .06 | -.46* | .09 | -.12 | .13 |
| | Cold-Submissive | .00 | .00 | .00 | .00 | .00 | .00 | .62* | .07 | -.64* | .10 | .24 | .17 |
| | Submissive | .00 | .00 | .00 | .00 | .00 | .00 | .57* | .06 | -.45* | .12 | .40* | .12 |
| | Warm- | .00 | . | .00 | . | .00 | .00 | .46* | .06 | -.28 | .19 | .71* | .08 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Submissive | | 00 | | 00 | | | | | | | |
| | Warm | .00 | . 00 | .00 | . 00 | .00 | .00 | .31* | .05 | -.06 | .18 | .69* | .03 |
| | Warm-Dominant | .00 | . 00 | .00 | . 00 | .00 | .00 | .81* | .03 | .03 | .13 | .31* | .07 |
| *Latent Factor Correlations* | | | | | | | | | | | | | |
| *Sensitivities* | General | .33* | . 03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Dominance | .00 | . 00 | -.55* | . 04 | -- | -- | -- | -- | -- | -- | -- | -- |
| | Warmth | .00 | . 00 | .00 | . 00 | -.64* | .04 | -- | -- | -- | -- | -- | -- |

*Note.* $N = 1005$; * $p < .001$.

Table 4

*Path Coefficients between Latent Factors and Validity Criteria in Study 2*

| | Problem | | | | | | Sensitivities | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | General | | Dominance | | Warmth | | General | | Dominance | | Warmth | |
| | *B* | *SE* | *β* | *SE* | *β* | *SE* | *β* | *SE* | *β* | *SE* | *β* | *SE* |
| *Self Focused Criteria* | | | | | | | | | | | | |
| Neuroticism* | .44* | .04 | .04 | .11 | -.35* | .06 | .07* | .03 | -.07 | .05 | -.11* | .05 |
| Extraversion* | -.37* | .05 | .60* | .06 | .28 | .10 | .15* | .02 | -.08 | .03 | .04 | .04 |
| Openness* | -.08 | .04 | .25* | .06 | .14 | .09 | .12* | .04 | .14* | .06 | -.11 | .07 |
| Agreeableness* | .00 | .04 | -.06 | .12 | .44* | .05 | .12* | .03 | -.03 | .06 | -.11* | .05 |
| Conscientiousness | -.14* | .04 | -.18* | .06 | .11* | .07 | .21* | .04 | -.14* | .06 | -.09 | .07 |
| Anxious Attachment* | .42* | .03 | .12 | .08 | -.20* | .06 | .07* | .03 | -.07 | .05 | -.07 | .05 |
| Avoidant Attachment* | .32* | .04 | -.15 | .10 | -.38* | .06 | -.18* | .04 | .06 | .07 | .24* | .05 |
| Narcissistic PD* | .08 | .05 | .34* | .08 | -.23* | .10 | -.04 | .03 | .03 | .05 | .11* | .05 |
| *Other Focused Criteria* | | | | | | | | | | | | |
| General Trait Sensitivity* | .13* | .03 | .09 | .05 | -.01 | .05 | .22* | .04 | -.18 | .11 | .42* | .06 |
| Sensitivity to Neuroticism* | -.21* | .04 | -.14* | .06 | .08 | .07 | .34* | .04 | -.14* | .07 | -.11 | .07 |
| Sensitivity to Extraversion | .24* | .04 | -.17* | .06 | .10 | .07 | -.26* | .04 | .11* | .08 | -.24 | .06 |
| Sensitivity to Openness* | .08* | .04 | -.02 | .06 | -.09 | .05 | -.24* | .04 | -.03 | .07 | .16* | .06 |
| Sensitivity to Agreeableness* | .10* | .04 | .18* | .06 | -.13 | .07 | -.43* | .04 | -.01 | .11 | .38* | .05 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sensitivity to Conscientiousness* | .17* | .04 | .17* | .05 | -.01 | .07 | -.40* | .04 | .13 | .10 | .29* | .07 |
| Sensitivity to Anxious Attachment* | -.09* | .03 | .06 | .05 | .06 | .05 | .29* | .04 | -.07 | .09 | .27* | .06 |
| Sensitivity to Avoidant Attachment* | -.14 | .03 | .03 | .05 | .04 | .05 | .47* | .04 | -.20* | .08 | -.18* | .08 |
| Sensitivity to Narcissistic PD* | -.05 | .03 | -.03 | .05 | .06 | .05 | .52* | .03 | -.04 | .08 | .03 | .06 |

*Note.* $N = 1005$. * $p < .001$.

Figure 1

*Interpersonal Problems and Sensitivities Circumplexes*

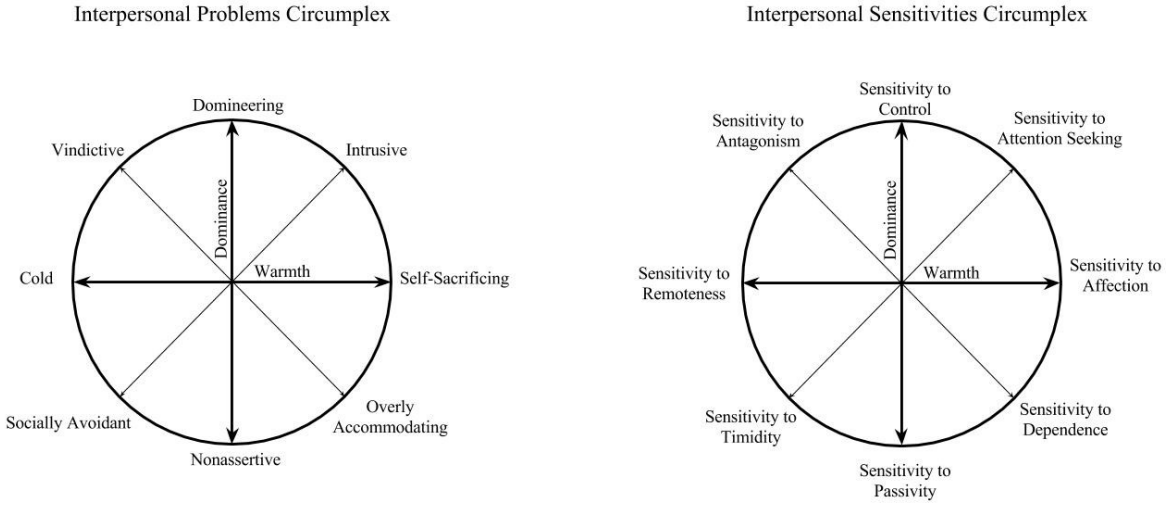
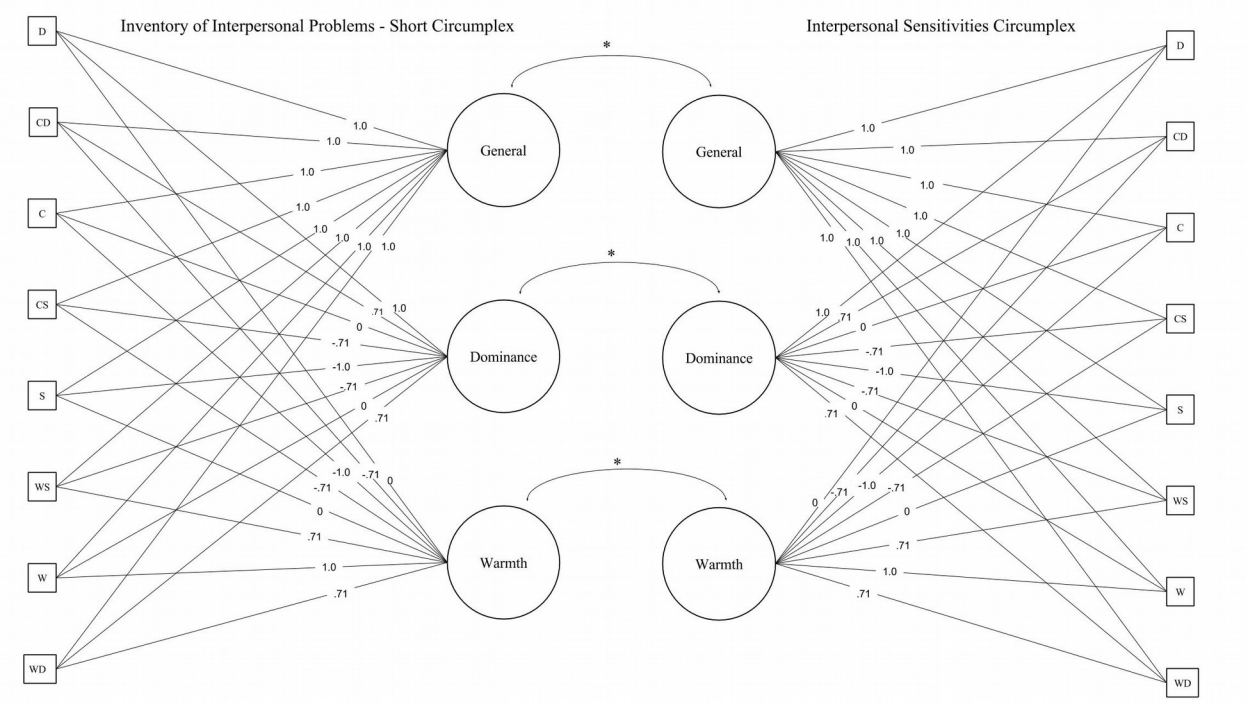


Figure 2

*Six factor measurement model of interpersonal problems and sensitivities circumplexes.*




Note. D = Dominant, W = Warm, S = Submissive, C = Cold

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## Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

## Funding

The authors received no financial support for the research, authorship, and/or publication of this article