

Assessing the Internal Working Model of Self-with-Others: Psychometric Properties of the Impact Message Inventory-Generalized Other

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Abstract

The authors investigated the theoretical foundations of the construct known as the working model of self—and the development of the Impact Message Inventory-Generalized Other (IMI-GO) as a potential circumplex representation of this construct. The IMI is a circumplex measure that assesses both self-report and transactional features of interpersonal relations. The current study involved a six-week longitudinal examination of several measures of interpersonal style on an undergraduate population. The intent was to evaluate the unique contributions of the IMI to our understanding of interpersonal transactions and to assess the reliability, validity and factor structure of this measure. An analysis of the psychometric properties of the IMI-GO revealed acceptable levels of internal consistency, reliability, and stability, along with good construct and concurrent validity. However, the measure did not manifest true orthogonality of the agency and affiliation axes. Hierarchical factor analysis revealed a solution consistent with eight primary factors (octants) and two secondary factors (control and affiliation), but the higher-order factor representing control showed a strong relationship with interpersonal sensitivity. Suggestions for restructuring the measure were addressed.

Keywords

Interpersonal Circumplex, Model of Personality, Donald Kiesler, Relationship Style, Attachment Theory

1. Introduction

The purpose of this article is to propose a construct, called *the working model of*

self-with-others, and to introduce an approximate measure of that construct, which may be useful for assessing interpersonal functioning.

2. The Construct

Harry Stack Sullivan, in his interpersonal theory of personality (Sullivan, 1947, 1953), posited that a child develops a sense of self-based on the approval and disapproval of others, particularly caregivers. Characteristics that are approved are perceived as part of the “good me”, while disapproved traits are seen as belonging to the “bad me”. The “bad me” self is linked to intense feelings of distress and threats to the child’s survival, which Sullivan termed “anxiety” by Sullivan. Currently, and consistent with Sullivan’s theory, evolutionary psychologists emphasize social relationships and social interactions as critical factors in the reproductive success and survival of the *Homo sapiens* species (e.g., Brewer & Caporael, 1990; Buss & Kendrick, 1998). For those infants and their caregivers who were better at forming attachments with one another, those bonds increased the likelihood that the infant would be protected, nourished, and grow up to be able to reproduce. The evolutionary evidence and theory thus support the contention that the need for attachment and social relationships, in general, is biologically “hard-wired”, which is also consistent with the experiments of Harlow (1958) and the observations of Bowlby (1969).

Bowlby (1979) further proposed that early experiences with persons who protect his/her survival are organized by the child into an internal “working model” of self, and another “working model” of others. Such working models were adaptive for the child by improving predictions of caregiver responses. In Sullivan’s theory, the self reflects caregivers’ attributions toward the child. The working model of self-with-others develops from a history of what Sullivan termed “*reflected appraisals*” of the child by caregivers.

Attachment patterns and related working models have been generally found to be stable from adolescence to young adulthood (Cooper, Albino, Orcutt, & Williams, 2004) and are predictive of substance abuse, sexual behavior, depression, personality disorders, and relationship problems in general (Cooper et al., 2004). Recent studies on working models have emphasized that such models are affect-laden and explicitly interpersonal, developing primarily from emotional experiences (Collins, Guichard, Ford, & Feeney, 2004). Collins et al. (2004) have further differentiated working models as organized within a “default hierarchy”. At the top of the hierarchy are the most general representations of self and others; next, are the domain-specific models regarding types of relationships (e.g., employer-employee, romantic relationships); next in their hierarchy are those models regarding the person’s relationship with a specific person (e.g., significant other, therapist). Following this view, the construction of the working model of self-with-others would be located at the most general level. This study defines the working model of self-with-others as a person’s expectations regarding his or her typical interpersonal impact on others when interacting with others.

For Sullivan (1947), as well as other theorists (Fairbairn, 1952; Mead, 1934), our

experience of ourselves comes from the responses of significant others (“significant others” was originally Sullivan’s term) and their evaluations of ourselves (reflected appraisals). [Marcus and Cross \(1990\)](#) reviewed studies of early infant development that suggest that the infant’s sense of self (reflected appraisals). [Marcus and Cross \(1990\)](#) reviewed studies of early infant development that suggest the infant’s sense of self and caregiver develops simultaneously through interactions (e.g., [Bretherton, 1990](#); [Stern, 1985](#)). In their sociometric theory of self-esteem, [Leary and Baumeister \(2000\)](#) propose that the self-esteem system acts as a gauge (the sociometer) of a person’s *relational value*: as relational appreciation from others rises, self-esteem increases; as relational devaluation rises, self-esteem decreases. While acknowledging that self-esteem may include non-interpersonal determinants ([Kernis, 2003](#)), this position emphasizes that the interpersonal aspect of the working model of self is particularly significant for psychological functioning and psychotherapy, especially in psychodynamic-interpersonal approaches.

In assessing the adequacy of interpersonal functioning, [Kiesler \(1996\)](#), among other interpersonal theorists ([Carson, 1969](#); [Leary, 1957](#); [Teyber, 2000](#)), has emphasized the quality of rigidity and extremeness in the interpersonal patterns of those with maladaptive interpersonal functioning. The assumption is that early relationships with the child in dysfunctional families were characterized by repeated and persistent messages to the child, shaping introjected views of self and over-learned responses that were minimally influenced by external interactions. Messages such as “You will never amount to anything” or “Boy, you do what I say!” or “I wish you had never been born!” or “You behave or I will send you away!” conveyed to the child that they were inadequate, unimportant, a burden, and unloved. The more rigid and extreme the working model of self-with-others the greater the likelihood that the person will expect essentially the same kind of response to him/her by others, across different interpersonal domains, and in different specific relationships.

[Binder \(2004\)](#) has suggested two primary goals of brief dynamic interpersonal psychotherapy: (1) modification of *maladaptive interpersonal patterns of interaction*, and (2) modification of *maladaptive internal working models*. Binder has extended his thinking beyond his earlier work with Hans Strupp ([Strupp & Binder, 1984](#)), to incorporate a stronger cognitive emphasis. To assess changes in maladaptive interpersonal patterns as indications of therapeutic progress, there are several interpersonal circumplex instruments available, most notably, the Inventory of Interpersonal Problems-circumplex version (IIP-C) ([Horowitz, Rosenberg, Baer, Ureno, & Villsenor, 1988](#)) and the Impact Message Inventory-circumplex version (IMI-C) ([Kiesler, Anchin, Perkins et al., 1985](#)), which are described in greater detail below. To assess changes in maladaptive working models, this study is proposes the Impact Message Inventory-Generalized Other (IMI-GO), also referred to as the IMI-Self ([Wagner, Kiesler, & Schmidt, 1995](#)), a self-report version of the IMI, developed by Kiesler and his colleagues ([Kiesler & Schmidt., 1993](#)), as the measure for the internal working model of self-with-others. To our knowledge,

there is no other instrument available to measure this construct. The measure's utility, however, is contingent upon its proven psychometric properties, specifically, its reliability, stability, circumplexity, and the validity of its factor structure.

3. The Measure

Development, Psychometrics, and Relationships to Other Measures

The IMI is unique because it measures the interpersonal impact of a target person as perceived by the respondent. Unlike the Inventory of Interpersonal Problems or the Interpersonal Adjective Scales, which are purely self-report measures of perceived personality attributes, its developers described the IMI as both a self-report and a transactional inventory in which respondents can assess their reactions to others' interpersonal behaviors (Kiesler et al., 1985). The item pool was developed after research team members were asked to imagine their reactions to descriptions of typical overt interpersonal styles. Subsequently, an undergraduate sample was presented with 15 paragraph descriptions of "pure" interpersonal styles and asked to judge the accuracy of items from the pool in describing these paragraphs. A major emphasis in item selection was identifying items that would yield a circumplex ordering based on two dimensions of control (dominance-submission), and affiliation (friendly-hostile). Strong, Hills, Kilmartin et al. (1988) found that when undergraduate women responded to confederates performing scripted interpersonal styles, their reported impacts on the IMI corresponded with the scripted overt interpersonal behavior designed by Strong et al. (1988) as predicted, thus providing support for the validity of the IMI. Internal consistency for the eight IMI octants has been found to range from .62 (friendly-dominant) to .89 (friendly), as reported by Kiesler and Schmidt (1993). Subsequently, Wiggins (1982) informed Kiesler that his research group identified a 56-item octant version of the original IMI items closely conforming to a circumplex structure (Wiggins, 1982), now known as the IMI-C. A bibliography assembled by Kiesler (2001) reported 131 studies using the IMI (including theses and dissertations); 17 interpersonal theory hypotheses were supported using the IMI or IMI-C, with 137 references to the IMI in publications.

The circumplexity of a measure requires two orthogonal dimensions: In Interpersonal circumplexes, control (DOM), and affiliation (LOV), with several scales representing various combinations of these dimensions, typically arranged as octants in a circle on interpersonal circumplexes (see Figure 1). For circumplexity, the octants closest in space (e.g., friendly and friendly-submissive) on the circumplex need to be highly positively correlated, octants opposite to one another on the circumplex (e.g., dominant and submissive) need to be negatively correlated, and octants at right angles to one another (hostile and submissive) need to be uncorrelated. Perkins, Kiesler, Anchin et al. (1979) reported that the IMI conformed to the circumplex ordering of interpersonal subscales around a circular space, with contiguous categories correlated positively each other. Less support was offered for the two-dimensional solution around the axes of control and

affiliation (**Figure 2**). Likewise, Schmidt, Wagner, and Kiesler (1999) reported that the IMI-C manifested adequate psychometric and structural properties, but it departed from true circumplexity in confirmatory factor analysis. Pepe (1984) similarly found inadequate support for the two-factor solution (DOM and LOV) across eight measures of interpersonal style, including the IMI.

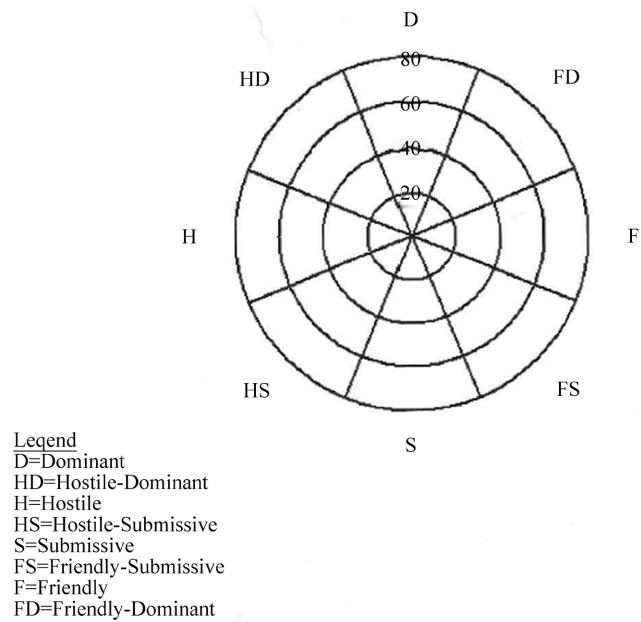


Figure 1. The interpersonal circumplex.

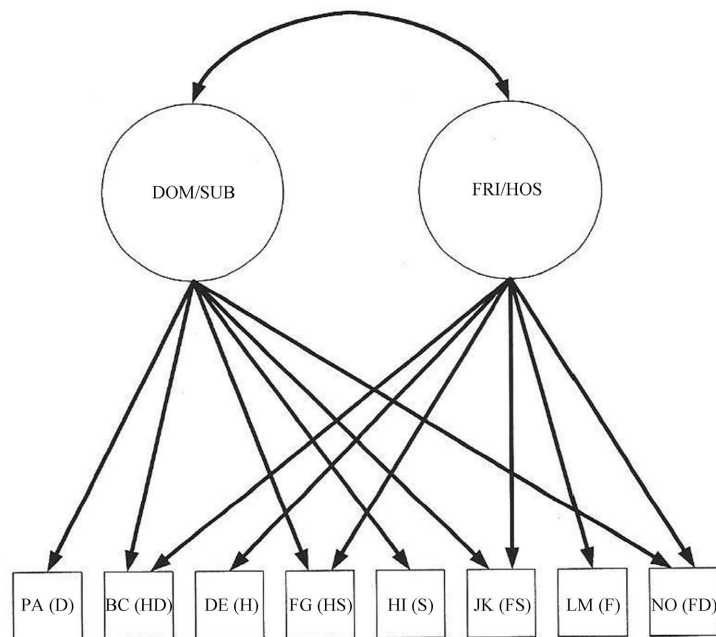


Figure 2. Theoretical factor structure of the IMI-GO.

In a study of the convergence of overt and covert interpersonal characteristics,

Wagner et al. (1995) compared IIP-C (overt “action”) patterns with IMI-C (covert “reaction”) patterns. Two versions of the IIP-C were used: the standard self-report of interpersonal problems and an “interactant” version in which peers rated the participants on the IIP-C items. Two versions of the IMI-C were used, the standard version, in which participants described the impact of the target’s interpersonal behaviors on themselves, and the I and the IMI-self version, where respondents rated the typical reactions of others to themselves, now termed the Generalized Others (GO) version, which is the focus of the current study. Generally, responses to the four measures converged and loaded at the same locations on the circumplex. The IMI-GO and both IIP versions were found to meet circumplexity requirements, but not the IMI-C. Of the four measures, the IMI-GO had the greatest variation in vector length but the poorest fit to circularity, i.e., octant loadings did not fit as well to expected circumplex loadings, particularly the modest distances between the friendly and friendly-dominant mean factor loading locations, as well as between the hostile and hostile-dominant mean factor loading locations.

4. Aims of the Study

Providing Psychometric Properties

The overarching goal of the current study was to establish the psychometric properties of the IMI-GO for its use in research and clinical populations. The first step involved assessing the reliability and stability of the IMI-GO. Since there remains some uncertainty regarding the circularity or circumplexity of the IMI-C, the characteristics of the IMI-GO were also examined. Finally, the factor structure of the measure was evaluated to assess the existence of two secondary factors (control and affiliation) and eight primary factors (octants) as defined by the measure.

Contribution to Interpersonal Measurement

There already exist interpersonal measures with established psychometric properties: the IIP-C measuring interpersonal problems; the Interpersonal Adjective Scales-Revised (IAS-R) (Wiggins, Trapnell, & Phillips, 1988) measuring interpersonal traits; and the Circumplex Scales of Interpersonal Values (CSIV) (Locke, 2000) measuring the importance of different interpersonal characteristics to the respondent. Thus, a second aim of the current study was to assess whether the IMI-GO contributes additional information about interpersonal processes beyond these measures or is simply redundant with one or more of them. Does the IMI-GO have value for providing a complete picture of interpersonal functioning, and thus also for making a unique contribution as a therapy outcome measure?

For this study, the convergence of the IMI-GO with other interpersonal measures (IAS-R, IIP, CSIV) was examined, in addition, the face validity of the measure was assessed to determine if participants perceived that their responses to the IMI-GO differed from other measures of interpersonal style in any significant ways.

5. Methods

Sample

A total of 588 participants recruited from introductory psychology courses (146 men; 442 women; mean age = 19) completed demographic and personality measures in a longitudinal study of interpersonal style over a six-week period. Participants were given partial course credit as compensation for their participation. Undergraduate students were used a sample of convenience, however, active efforts were made to recruit a diverse sample representative of the local population of the metro university area.

Measures

Working model of self-with-others. This measure was the Impact Message Inventory-Generalized Others (IMI-GO; Kiesler & Schmit, 1993). The IMI-GO is a 56-item self-report measure of how individuals believe others are emotionally engaged or impacted when interacting with them. Respondents are instructed to “respond to each item in terms of how precisely it describes the feelings you think you typically arouse in others, the behaviors you think others want to direct towards you when they are around you, and/or the descriptions of you that you think come to other people’s minds when you are present.” Responses are reported on a four-point Likert-style scale (1 - 4), with values of 1 indicating low endorsement of an item and 4 indicating high endorsement of an item. Participants respond to items concerning three statements about the individual’s style of interpersonal functioning. The IMI yields eight circumplex octant scales (see **Figure 1**) and has generally demonstrated good inter-rater reliability (.56 to .85) and circumplex properties (Bluhm, 1987; Schmidt, Wagner, & Kiesler, 1994). Estimates of the validity of the IMI were provided by Strong et al. (1988) found that IMI ratings were consistent with ratings made by observers of interpersonal interactions. Woodward, Murrell, & Bettler (2005) reported the test-retest reliability of the IMI-GO over a six-week period and found IMI ratings were consistent with ratings made by observers of interpersonal interactions. Woodward, Murrell, & Bettler (2005) reported the test-retest reliability of the IMI-GO over six weeks to be $r = .70, p < .001$ for control and $r = .78, p < .001$ for affiliation, respectively.

Interpersonal problems. This measure is based on the Inventory of Interpersonal Problems (IIP-C; Horowitz et al., 1988), which consists of 127 self-report items. It focuses on interpersonal issues identified in a large sample of initial client interviews. The inventory includes eight subscale scores corresponding to each section of an interpersonal circumplex, which encompasses the two dimensions of affiliation and control. The authors reported internal consistency for the subscales ranging from .82 to .94.

Interpersonal traits. The assessment of interpersonal traits was the Revised Interpersonal Adjectives Scale (IAS-R; Wiggins, Trapnell, & Phillips, 1988). This measure is a 64-item self-report measure requiring respondents to rate themselves according to the descriptive accuracy of each adjective on an 8-point scale, ranging from “Extremely inaccurate” to “Extremely accurate.” The scale provides

scores for the participants on each of the following eight categories of interpersonal style: Assured-Dominant, Gregarious-Extraverted, Warm-Agreeable, Unassuming-Ingenuous, Unassured-Submissive, Aloof-Introverted, Cold-Hearted, and Arrogant-Calculating.

Interpersonal values. This measure is known as the Circumplex Scale of Interpersonal Values (CSIV; Locke, 2000). The CSIV is a 64-item, self-report measure that asks respondents to rate the importance to themselves of various interpersonal outcomes or modes of conduct on a five-point Likert-style scale (0 = not important, 4 = very important). The author reported generally high test-retest coefficients ranging from .76 to .88 across octant scores and octant-level internal consistencies from alpha = .76 to .86.

Face-value impressions. To assess the incremental validity of the IMI-GO, the authors constructed a brief 12-item, five-point Likert-style scale assessing the respondents' face-value impressions of each measure as compared to other measures of interpersonal style. Higher values indicated a higher endorsement of the item. Items included such queries as, "To what extent do you feel your answers on this questionnaire could be different depending on the situation?" "In general, how well do you think this questionnaire measured the way you behave?" and "In general, how well do you think this questionnaire measured the way you feel emotionally?" Test-retest reliability is not available for this measure.

Statistical tools

Circumplexity data analyses. Using Lisrel 8.0, a confirmatory factor analysis was conducted on the IMI-GO. Analyses generally followed the procedures outlined in Pedhazur and Schmelkin (1991). In graphical terms, the model tested was as pictured in Figure 2. This, the standard, presumed interpersonal factor structure, consists of two latent factors (depicted as circles), Dominance-Submissiveness and Friendliness-Hostility. The indicators are depicted below as squares whose labeling corresponds to the traditional octant labels (PA to NO), or to more descriptive labeling (D for Dominance, HD for Hostile-Dominance, etc.). The curved arrow between the latent factors suggests the possibility of a correlation between them, although the presumption would be of orthogonal factors. This is also suggested by the absence of an arrow from, for example, DOM/SUB to the DE octant since the latter would generally be presumed to indicate pure hostility, with no admixture of dominance or submissiveness. Perfect circumplexity would evince factor loadings approximating the following:

	DOM LOV			DOM LOV	
PA/D	1.00	0.00	HI/S	-1.00	0.00
BC/HD	0.71	-0.71	JK/FS	-0.71	0.71
DE/H	0.00	-1.00	LM/F	0.00	1.00
FG/HS	-0.71	-0.71	NO/FD	0.71	0.71

Hierarchical factor analysis. A hierarchical principal components analysis was

conducted using the program SECONDOR (Thompson, 1990) and Schmid and Leiman's (1957) approach to examine the underlying factor structure of the IMI-GO. Solutions with eight primary factors and one, two, and three general factors were inspected to identify the most interpretable factor structure. According to Burkard, Jones, and Johll (2002), the examination of second-order factors (general), in combination with first-order factors (primary), provides multiple perspectives on the data, allowing for a broader understanding of the measure's structure. As recommended by Stevens (1996), critical values for correlation coefficients at $p = .01$ (two-tailed) were doubled, and only structure coefficients exceeding this in absolute value were considered statistically significant.

Confirmatory analyses

Internal consistency. The internal consistency analysis (Table 1) for the IMI-GO revealed acceptable levels of internal consistency for the octant scales with Chronbach's alphas ranging from .677 for Friendly-dominance (FD) to .817 for Friendly (F). See Table 2 for a complete listing of values with reported means and standard deviations.

Table 1. Internal consistency of the Impact Message Inventory-GO octant scales.

Subscale	Chronbach's Alpha	<i>M/S.D. (Wave 1)</i>
D (N = 463)	.699	11.81/3.04
HD (N = 461)	.794	9.30/2.77
H (N = 462)	.776	9.69/2.85
HS (N = 458)	.799	10.77/3.52
S (N = 459)	.693	12.41/3.19
FS (N = 456)	.653	16.94/3.27
F (N = 460)	.817	21.99/3.70
FD (N = 461)	.677	18.64/3.50

Note: Using non-ipsatized item values.

Table 2. Means and standard deviations across three administrations of the Impact Message Inventory-GO.

IMI-GO scale	W1			W2			W3		
	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>
IMI DOM	-21.53	13.55	412	-21.85	14.27	273	-22.70	13.52	245
IMI LOV	18.74	14.17	413	17.40	17.61	271	15.76	17.20	245
IMI D	33.71	3.89	461	33.73	4.15	316	33.41	4.00	288
IMI HD	29.98	2.86	459	30.56	3.48	308	30.51	3.33	298
IMI H	36.89	4.22	460	37.29	4.90	312	37.77	4.92	284
IMI HS	44.28	7.16	456	44.76	8.20	313	44.90	7.60	292

Continued

IMI S	43.28	5.33	457	43.39	5.46	315	42.99	5.40	283
IMI FS	45.01	4.29	454	44.80	4.24	318	44.90	4.44	288
IMI F	48.92	4.10	458	48.58	4.79	311	48.61	4.86	287
IMI FD	40.27	5.73	459	39.49	6.26	307	38.95	6.10	286

Note: Using ipsatized item values.

Reliability and Stability. Wave 1 to Wave 3 test-retest correlations for the octants, as reported in **Table 3**, ranged from $r = .47$ (Hostile-dominant) to $r = .69$ (Dominant) across a span of six weeks. Although all correlations were statistically significant, several were lower than anticipated. Thus, a second method of assessing temporal stability was employed. Heise (1969) and Wiley and Wiley (1970) argued that simple test-retest correlations may not measure true reliability because of instability as a result of shifts in time. To address such instability over time, the authors used a procedure for analyzing test-retest correlations so that the effects of instability and error could be separated. The procedure entailed three administrations at two-week intervals of the measure at three separate points in time. The temporal stability of each administration was then calculated using Heise's (1969) formula based on the respective reliabilities of each administration:

$$s_{12} = r_{13}/r_{23}; s_{23} = r_{13}/r_{12}; s_{13} = r_{13}^2/r_{12}r_{23}.$$

Stabilities over three administrations for each IMI-GO subscale were generally high, as detailed in **Table 3**.

Table 3. Reliability and stability of the Impact Message Inventory-GO^a.

IMI-GO Scale	Reliability			Stability		
	W1-W2	W2-W3	W1-W3	W1-W2	W2-W3	W1-W3
IMI DOM	.77	.83	.75	.90	.97	.88
IMI LOV	.79	.84	.64	.76	.81	.62
IMI D	.67	.66	.69	1.04	1.03	1.08
IMI HD	.52	.56	.47	.84	.90	.76
IMI H	.60	.67	.52	.78	.87	.67
IMI HS	.68	.65	.55	.85	.81	.68
IMI S	.51	.68	.58	.85	1.14	.97
IMI FS	.53	.63	.49	.78	.92	.72
IMI F	.62	.74	.52	.70	.84	.59
IMI FD	.71	.74	.62	.84	.87	.73

^aAll values were significant at the .001 level.

Circumplexity Analysis. The LISREL analysis of the theoretically orthogonal dimensions of agency and affiliation indicated that “pure” loadings on control and

affiliation (i.e., D, H, S, and F octants) are approximately equal (see **Table 4**). There exists some balance on two diagonal factors, HS and FD; however, the measure appears less balanced on the subscales HD and FS. A relatively high Phi coefficient, $-.27$, indicates a correlation between Dominance/Submission and Friendly/Hostile, suggesting that the measure does not maintain perfect orthogonality along the two axes of control and affiliation.

Table 4. Impact Message Inventory-GO Goodness of fit statistics for wave 1.

Chi-Square for Independence Model with 28 Degrees of Freedom = 3483.68		
Goodness of Fit Index (GFI) = .80		
Adjusted Goodness of Fit Index (AGFI) = .52		
Root Mean Square Error of Approximation (RMSEA) = .25		
90 Percent Confidence Interval for RMSEA = (.23; .28)		
<i>p</i> -Value for Test of Close Fit (RMSEA < .05) = .00		
Completely Standardized Solution		
LAMBDA-X	DOM	LOV
D	.58	--
HD	.49	.78
H	--	.62
HS	-.53	.43
S	-.57	--
FS	-.44	-.64
F	--	-.60
FD	.54	-.43
PHI	DOM	LOV
DOM	1.00	--
LOV	-.27	1.00

Factor structure. Three solutions were evaluated: an eight-factor extraction with one general factor, an eight-factor solution with two general factors, and an eight-factor solution with three general factors. Among the three solutions, the eight-factor extraction with two general factors emerged as the best fit for the data, accounting for 51% of the total variance. For the sample of 400 participants with complete data sets, the resulting minimum structure coefficient criterion was .25. For variables that cross-loaded, only the largest coefficient was deemed significant in interpreting the primary factors. Using these criteria, all but nine of the 56 items were salient on one of the eight primary factors (see **Table 5**) and 54 items were salient on one of the secondary factors. The eight first-order factors accounted for 23% of the variance. The items associated with these factors generally loaded as expected according to the eight octants of the circumplex, although the factor loadings were not perfect. The remaining two second-order factors accounted for

28% of the variance. The two general factors would appear, at first glance to represent the circumplex domains of control (Dom) and affiliation (Lov); however, upon closer inspection only the factor associated with affiliation (G1) maintained a consistent correspondence with the dichotomy implied by the theoretical structure of the interpersonal circumplex (items loading on hostility were negatively correlated to items loading on friendliness). Although many items on the second general factor (G2) loaded onto the axis associated with control, all relationships were positive. This suggests a high degree of similarity in participants' responses to both high dominance and high submission behaviors. Participants who endorsed being very dominant in some situations also reported being very submissive in some situations. Likewise, people who were low in dominance were also low in submission. Consequently, the construct validity of the second general factor is considered questionable.

Validity. A comparison of the four circumplex measures of interpersonal style (IMI-GO, IAS-R, IIP, and CSIV) administered to participants revealed consistently high positive correlations between corresponding octant scores, all significant at $p < .05$ (see [Table 6](#)). Per [Hemphill \(2003\)](#) all Pearson's correlations between corresponding octants across measures achieved medium to large effect sizes (.18 - .78). The octant score for dominance, for example, on the IMI-GO had a strong positive correlation with the octant score for dominance on the IAS-R, the IIP, and the CSIV. These results provide excellent support for the construct validity of the IMI-GO. However, the utility of this measure lies in its unique contribution to the measurement of the interpersonal self with others. To demonstrate that the IMI-GO provided information that was not redundant with other measures of interpersonal functioning, a correlational analysis was performed on the three circumplex measures in this study as predictors of responses on the ten personality disorder scales of the PDQ. The results printed in [Table 7](#), are summarized below.

Table 5. Orthogonalized higher order analysis and H2 for the Impact Message Inventory-GO.

Oct. Item	G1	G2	F1	F2	F3	F4	F5	F6	F7	F8	H2
	Lov	Dom	HS	F	FD	H	FS	D	HD	S	
WHEN PEOPLE ARE WITH ME, THEY TYPICALLY FEEL...											
D 1. bossed around	----	.326	----	----	----	----	----	.406	----	----	.360
H 2. distant from me	.538	----	----	----	----	.415	----	----	----	----	.547
FS 3. important	-.557	----	----	.457	----	----	----	----	----	----	.575
FD 4. entertained	-.519	----	----	----	.410	----	----	----	----	----	.577
H 5. like an intruder	.504	----	----	----	----	----	----	----	-.386	----	.491
S 6. in charge	----	.387	----	----	----	----	----	----	----	.568	.563
F 7. appreciated by me	-.592	----	----	.502	----	----	----	----	----	----	.637
F 8. part of the group when I'm around	-.632	----	----	.419	----	----	----	----	----	----	.603

Continued

H	9. forced to shoulder all the responsibility	.383	.390	----	----	----	----	----	----	-.352	----	.504
F	10. complimented	-.417	----	----	.491	----	----	----	----	----	----	.534
FD	11. as if I'm the class clown	----	----	----	----	----	.547	----	----	----	----	.506
HD	12. uneasy	.468	----	----	----	----	----	----	----	-.314	----	.426
S	13. dominant	.387	.375	----	----	----	----	----	----	----	.569	.642
F	14. welcome with me	-.700	----	----	.326	----	----	----	----	----	----	.666
F	15. as important to me as others in the group	-.629	----	----	.335	----	----	----	----	----	----	.575
HD	16. annoyed	.395	.336	----	----	----	----	----	----	-.308	----	.455
D	17. taken charge of	----	.335	----	----	----	----	----	.397	-.341	----	.440
WHEN PEOPLE ARE WITH ME, I TYPICALLY MAKE THEM FEEL THAT...												
D	18. they want to tell me to give somebody else a chance to make a decision	.369	----	----	----	----	----	----	----	----	.403	.424
S	19. they want me to disagree with them sometimes	----	----	----	----	----	----	----	----	----	----	.335
F	20. they could lean on me for support	.615	----	----	.309	----	----	----	----	----	----	.625
H	21. they're going to intrude	.510	----	----	----	----	----	----	----	-.446	----	.598
S	22. they should tell me to stand up for myself	----	.538	.308	----	----	----	----	----	----	----	.530
F	23. they can ask me to carry my share of the load	----	----	----	----	----	----	----	.476	----	----	.404
FD	24. they could relax and I'd take charge	----	----	----	----	----	----	----	.605	----	----	.534
HD	25. they want to stay away from me	.521	----	----	----	----	----	----	----	-.510	----	.603
FS	26. they could tell me anything and I would agree	----	.349	----	----	----	----	.593	----	----	----	.494
HD	27. they should tell me I'm often quite inconsiderate	.464	----	----	----	----	----	----	----	-.438	----	.483
HS	28. they should tell me not to be so nervous around them	.390	.495	.432	----	----	----	----	----	----	----	.604
FS	29. they could ask me to do anything	-.358	.358	----	----	----	----	----	----	----	----	.419
HD	30. they want to get away from me	.514	.301	----	----	----	----	----	----	-.469	----	.595
HS	31. they should do something to put me at ease	.433	.494	.411	----	----	----	----	----	----	----	.664
S	32. they want to point out my good qualities to me	----	.505	.375	----	----	----	----	----	----	----	.488
WHEN PEOPLE ARE WITH ME, IT TYPICALLY APPEARS TO THEM THAT...												
D	33. I want to be the center of attention	.345	----	----	----	.572	----	----	----	----	----	.497
H	34. I don't want to get involved with them	.506	----	----	----	----	.367	----	----	----	----	.459
HS	35. I am most comfortable withdrawing into the background when an issue arises	.458	.381	----	----	----	----	----	----	----	----	.574
D	36. I want them to put me on a pedestal	----	.408	----	----	.426	----	----	----	----	----	.422
H	37. I'd rather be alone	.558	----	----	----	----	.560	----	----	----	----	.679

Continued

HS	38. I think I can't do anything for myself	----	.339	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	.304
FS	39. my time is theirs if they need it	-.477	.317	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	.459
HD	40. I think its everyone for herself or himself	.309	----	----	----	----	----	.396	----	----	----	----	----	----	----	----	----	----	----	----	.381
HS	41. I think I will be ridiculed if I assert myself with others	.437	.440	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	.491
FS	42. I would accept whatever they said	----	.388	----	----	----	----	----	.608	----	----	----	----	----	----	----	----	----	----	----	.591
FD	43. I want to be the charming one	----	.459	----	----	----	----	.449	----	----	----	----	----	----	----	----	----	----	----	----	.479
D	44. I think I'm always in control of things	----	.356	----	----	.346	----	----	----	.341	----	----	----	----	----	----	----	----	----	----	.419
HS	45. I think I am inadequate	.388	.396	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	.423
S	46. I think they have most of the answers	----	.548	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	.524
FD	47. I enjoy being with people	-.670	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	.699
D	48. I weigh situations in terms of what I can get out of them	----	.354	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
H	49. I'd rather be left alone	.599	----	----	----	----	----	.521	----	----	----	----	----	----	----	----	----	----	----	----	.670
S	50. I see them as superior	----	.460	----	----	----	----	----	.355	----	----	----	----	----	----	----	----	----	----	----	.469
FD	51. I want to be with others	-.388	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	.370
HD	52. I'm carrying a grudge	.320	.365	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	.374
HS	53. I'm nervous around them	.445	.445	.448	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	.628
FS	54. Whatever they did would be okay with me	----	.434	----	----	----	----	----	.506	----	----	----	----	----	----	----	----	----	----	----	.511
FS	55. I trust them	-.537	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	.451
FD	56. I think other people find me interesting, amusing, fascinating, and witty	-.502	----	----	----	.440	----	----	----	----	----	----	----	----	----	----	----	----	----	----	.528
<i>r</i> square sum			9.36	5.99	1.24	1.60	2.09	1.57	1.63	1.37	2.17	1.57	28.59								

Notes: The row after the orthogonalized matrix presents the sum of the squared entries in a given column. The first 2 columns represent the second order factors. The next 8 columns represent the first order solution, based on variance orthogonal to the second order (Gorsuch, 1983: pp. 248-254).

Table 6. Intercorrelations between the Impact Message Inventory-GO and other measures of interpersonal style.

	IMI D	IMI HD	IMI H	IMI HS	IMI S	IMI FS	IMI F	IMI FD	IAS D	IAS HD	IAS H	IAS HS	IAS S	IAS FS	IAS F	IAS FD
IMI D	1.0	.17**	-.16**	-.37**	-.27**	-.34**	-.25	.29**	.47**	.34**	.21**	-.10*	-.36**	-.28**	-.20**	.08
IMI HD		1.0	.35**	.09	-.07	-.50**	-.47**	-.20**	.11*	.20**	.44**	.28**	-.07	-.07	-.37**	-.28**
IMI H			1.0	.28**	.08	-.36**	-.33**	-.52**	-.19**	.06	.36**	.58**	.25**	.08	-.30**	-.50**
IMI HS				1.0	.41**	-.18**	-.46**	-.57**	-.40**	-.01	.19**	.53**	.56**	.29**	-.10*	-.38**
IMI S					1.0	-.11*	-.40**	-.45**	-.33**	-.07	.13**	.24**	.32**	.22**	-.11*	-.22**
IMI FS						1.0	.28**	-.04	-.17**	-.27**	-.37**	-.28**	.08	.10*	.37**	.27**
IMI F							1.0	.20**	.09	-.28**	-.43**	-.42**	-.19**	-.05	.38**	.34**
IMI FD								1.0	.38**	.13**	-.23**	-.51**	-.47**	-.25**	.12*	.45**

Continued

IAS D									1.0	.39**	.05	-.23**	-.46**	-.32**	.10*	.38**
IAS HD										1.0	.42**	.25**	.00	-.30**	-.27**	-.07
IAS H											1.0	.64**	.21**	.09	-.60**	-.47**
IAS HS												1.0	.56**	.28**	-.41**	-.64**
IAS S													1.0	.58**	.04	-.29**
IAS FS														1.0	.15**	.01
IAS F															1.0	.65**
IAS FD																1.0
IIP D																
IIP HD																
IIP H																
IIP HS																
IIP S																
IIP FS																
IIP F																
IIP FD																
CSIV D																
CSIV HD																
CSIV H																
CSIV HS																
CSIV S																
CSIV FS																
CSIV F																
CSIV FD																
	IIP D	IIP HD	IIP H	IIP HS	IIP S	IIP FS	IIP F	IIP FD	CSIV D	CSIV HD	CSIV H	CSIV HS	CSIV S	CSIV FS	CSIV F	CSIV FD
IMI D	.40**	.26**	.01	-.25**	-.39**	-.26**	-.16*	.38**	.19**	.20**	.01	-.05	-.15**	-.15**	-.03	.04
IMI HD	.33**	.33**	.19**	.05	-.27**	-.31**	-.23**	.00	.08	.41**	.36**	.14*	-.11*	-.39**	-.30**	-.18**
IMI H	-.06	.17**	.31**	.36**	.02	-.13**	-.25**	-.37**	.00	.12*	.22**	.19**	.03	-.16**	-.24**	-.15**
IMI HS	-.28**	-.13**	.06	.38**	.26**	.10*	-.08	-.29**	-.29**	-.11*	.22**	.43**	.34**	-.01	-.28**	-.34**
IMI S	-.16**	-.15**	-.03	.10*	.14**	.20**	.02	-.08	-.29**	-.03	.19**	.26**	.31**	.01	-.22**	-.27**
IMI FS	-.25**	-.35**	-.17**	-.04	.26**	.32**	.26**	-.10*	-.12*	-.25**	-.17**	-.09	.14	.28**	.16**	.05
IMI F	-.07	-.12*	-.17**	-.06	.11*	.09	.20**	.02	.21**	-.22**	-.38**	-.35**	-.24**	.20**	.42**	.39**
IMI FD	.18**	.09	-.09	-.41**	-.20**	-.12*	.11*	.38**	.20**	.01	-.25**	-.36**	-.26**	.08	.29**	.31**
IAS D	.37**	.27**	.05	-.29**	-.43**	-.27**	-.05	.34**	.37**	.19**	-.17**	-.28**	-.36**	-.14*	.16**	.26**
IAS HD	.20**	.27**	.19**	-.01	-.24**	-.25**	-.19**	.01	.12*	.30**	.21**	.07	-.07	-.24**	-.25**	-.12*
IAS H	.22**	.32**	.29**	.14**	-.19**	-.33**	-.30**	-.10*	-.10	.42**	.48**	.33**	.08	-.40**	-.46**	-.37**

Continued

IAS HS	-.09	.12*	.28**	.50**	.06	-.14**	-.28**	-.40**	-.20**	.12*	.35**	.42**	.20**	-.16**	-.41**	-.35**
IAS S	-.44**	-.25**	-.04	.50**	.43**	.25**	-.06	-.42**	-.30**	-.18**	.16**	.36**	.31**	.10	-.21**	-.27**
IAS FS	-.33**	-.25**	-.09	.20**	.30**	.28**	.08	-.22**	-.14*	-.19**	-.06	.15**	.17**	.14*	.02	-.10
IAS F	-.28**	-.33**	-.34**	-.11*	.25**	.31**	.38**	.03	.03	-.39**	-.40**	-.32**	-.08	.38**	.43**	.36**
IAS FD	-.07	-.22**	-.29**	-.41**	.02	.23**	.33**	.33**	.26**	-.25**	-.45**	-.49**	-.26**	.27**	.50**	.46**
IIP D	1.0	.40**	.06	-.31**	-.61**	-.55**	-.17**	.27**	.29**	.42**	.06	-.13*	-.29**	-.39**	-.03	.10
IIP HD		1.0	.31**	-.09	-.51**	-.57**	-.42**	.05	.21**	.46**	.20**	.04	-.23**	-.41**	-.15**	-.08
IIP H			1.0	.23**	-.29**	-.41**	-.42**	-.34**	.03	.21**	.32**	.16**	-.05	-.23**	-.27**	-.16**
IIP HS				1.0	.21**	-.12*	-.37**	-.52**	-.11*	-.01	.17**	.36**	.14*	-.06	-.26**	-.24**
IIP S					1.0	.45**	.00	-.38**	-.27**	-.39**	-.11*	.05	.28**	.32**	.07	.01
IIP FS						1.0	.28**	-.14**	-.28**	-.37**	-.13*	-.00	.34**	.35**	.11	-.05
IIP F							1.0	.06	-.05	-.30**	-.27**	-.23**	.03	.33**	.31**	.19**
IIP FD								1.0	.17**	.08	-.20**	-.20**	-.21**	.00	.20**	.18**
CSIV D									1.0	.22**	-.31**	-.48**	-.67**	-.31**	.24**	.44**
CSIV HD										1.0	.50**	.11	-.26**	-.76**	-.45**	-.35**
CSIV H											1.0	.52**	.20**	-.56**	-.75**	-.66**
CSIV HS												1.0	.48**	-.27**	-.70**	-.72**
CSIV S													1.0	.20**	-.46**	-.58**
CSIV FS														1.0	.44**	.23**
CSIV F															1.0	.69**
CSIV FD																1.0

Where D = dominant, HD = hostile-dominant, H = hostile, HS = hostile-submissive, S = submissive, FS = friendly-submissive, F = friendly, FD = friendly-dominant. *Results significant at $p < .05$, two-tailed; **Results significant at $p < .01$, two-tailed.

Table 7. Predictive validity of IMI-GO: Correlation between wave 2 circumplex measures and PDQ personality disorders.

	Paranoid	Histrionic	OCPD	Schizoid	Narcissist	Avoidant	Schizo-typal	Borderline	Dependent	Antisocial
IMI DOM	.061	.163**	.056	-.094	.188**	-.279**	-.042	-.039	-.115	.203**
IAS DOM	-.022	.189**	.049	-.233**	.128*	-.411**	-.158**	-.134*	-.144**	.140*
IIP DOM	.233**	.273**	.097	.086	.285**	-.283**	.108	.098	-.015	.338**
IMI LOV	-.223**	-.022	-.161**	-.442**	-.268**	-.282**	-.336**	-.264**	-.246**	-.106
IAS LOV	-.150**	.008	.015	-.380**	-.229**	-.061	-.333**	-.189**	-.045	-.244**
IIP LOV	-.197**	.076	-.043	-.459**	-.203**	-.190**	-.350**	-.178**	.028	-.138*

*significant at the .05 level or better; **significant at the .001 level.

The dominance dimension on the IAS and the love dimension on the IMI emerged as the best overall predictors of personality disorders as assessed by the PDQ. Both scales had significant correlations on eight of the ten personality disorders represented. Specifically, IMI LOV was the strongest predictor of OCPD, Avoidant Personality Disorder, and Dependent Personality Disorder, while IMI

DOM was the best predictor of Schizoid, Schizotypal, and Borderline Personality Disorders, and Dependent Personality Disorders. In reviewing **Table 7**, although there is some overlap in the predictive validity of the various circumplex measures in diagnosing personality disorders, each also provides a unique contribution to our understanding of the manifestation of these symptoms.

Exploratory analyses

Moskowitz (1994) suggested that the cross-generality of affiliative traits tends to be higher than that of traits associated with agency/control. Therefore, situations where individuals vary in power can dictate the interpersonal interactions of a dyad, irrespective of the individuals' trait levels of agency. Previously, Moskowitz (1988) reported that there was greater situational variance in dominance behaviors and greater trait-like stability in friendly/hostile behaviors. In a related line of research, Wright and Ingraham (1986) found insufficient evidence for rules of complementarity on the agentic axis of Kiesler's circumplex (DOM). These findings may suggest that the IMI-GO does not assess the two extreme dimensions of control—dominance, and submission—but rather another related factor that dictates role-appropriate behaviors, such as interpersonal sensitivity. To assess this possibility, the factor that emerged as G2 in this sample was correlated to the screener for interpersonal sensitivity (which includes items about relationship role awareness) developed as a subscale for the Inventory of Interpersonal Problems (IIP; Horowitz et al., 1988), achieving significance with a Pearson's $r = .45$, $p < .001$ ($n = 400$). Therefore, the two variables would appear to be highly related.

6. Conclusion

A summary of the findings from this study demonstrated the IMI-GO manifests robust psychometric properties. The internal consistency across octants ranged from .677 to .817, while the test-retest reliability across administrations over six weeks were all statistically significant (.47 to .69). A temporal stability analysis was also generally high. Validity across the eight octants of the IMI had strong positive correlations with the related octants on other circumplex measures of personality (IIP and IAS) but also predicted personality disorders with better accuracy than alternative measures. Only the circumplexity analysis suggested that due to considerable overlap between agency and affiliation, some revision of individual items might improve the measure.

7. Discussion

The current study examined the psychometric properties of the IMI-GO to assess the measure's utility as a clinical and research tool. While the measure demonstrated adequate internal reliability for clinical purposes, an assessment of its circumplexity revealed correlations between the orthogonal dimensions of agency and affiliation, along with a lack of balance on the HD/FS diagonal. The measure's factor structure appeared to hold up to the principal component's analysis for the general factor affiliation (G1), and for the eight octant subscales with varying

success, but the items representing the general factor agency (G2) demonstrated all positive loadings—a theoretical impossibility according to the circumplex model. Given that the agentic axis (DOM) represents a continuum of behavior ranging from high dominance to low dominance, items that load highly on dominant behaviors should exhibit a negative relationship with items associated with submissive behaviors. Upon further analysis, high correlations to the IIP interpersonal sensitivity screener suggested that the Dominance/Submission dimension of Kiesler's Generalized-Other circumplex may represent a construct more closely related to role sensitivity. These results would suggest that the items loading on DOM need to be anchored with instructions that are specific to a particular type of relationship—one that is less sensitive to role-determined interpersonal behaviors. For instance, the phrase “When people are with me, they typically feel...” could be revised to “When significant others are with me, they typically feel...”.

Our initial expectation that the IMI-GO might be a measure of a *general* working model of self-with-others was not supported by these findings. Rather, this measure appears to reflect the respondent's report of “what is my effect on other people in different situations,” with the instructions for this measure allowing the individual to choose among his/her situations. This may reflect the cognitive-affective personality system model proposed by Mischel and Shoda (1995), which considers a person's ability to select situations and even reconstruct their requirements. Revisions of the instructions to limit the situations to significant others would then revise the construct to a *domain-specific* (Collins et al., 2004) working model of self-with-significant others. The IMI-GO demonstrated strong construct validity, evidenced by medium to high positive correlations between corresponding octants on the IAS-R, the IIP, and the CSIV. Furthermore, a correlational analysis revealed that the IMI Love dimension provided good predictive and concurrent validity for several personality disorder scales. Future research should be directed at scale revision to address the concerns addressed in this paper and to consider the predictive validity of IMI-GO in clinical settings, particularly in identifying personality disturbances related to maladaptive interpersonal introjects.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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