A Brief Assessment of the Interpersonal Circumplex: The IPIP-IPC

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A Brief Assessment of the Interpersonal Circumplex

The IPIP-IPC

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Three studies are presented that demonstrate the psychometric properties and initial validation of the International Personality Item Pool–Interpersonal Circumplex (IPIP-IPC). The IPIP-IPC is a brief 32-item assessment of the interpersonal cirucmplex designed to be used when time is limited or when participants have difficulty understanding the adjective items used in more traditional assessments of the interpersonal circumplex. In Study 1, 501 participants were examined to develop the IPIP-IPC and demonstrate the circular structure of the IPIP-IPC scales and their relation to the five-factor model of personality. Study 2 included 274 participants to reconfirm the circular structure of the IPIP-IPC scales. Finally, in Study 3, 100 participants again reconfirm the circular structure of the IPIP-IPC scales and demonstrate the overlap of the IPIP-IPC with a commonly used assessment of the circumplex: the 64-item Interpersonal Adjective Scale. Overall, the results suggest that the IPIP-IPC provides a relatively short, quick, and valid assessment of the interpersonal circumplex while maintaining many of the psychometric properties of longer assessment tools.

Keywords: *interpersonal; circumplex; warmth; dominance*

Previous researchers and theorists have proposed that the traits of dominance and warmth are the primary dimensions of social behavior and are important elements for understanding various interpersonal outcomes (Carson, 1969; Kiesler, 1983; Leary, 1957; Wiggins, 1979). Arguably, the interpersonal circumplex (IPC) is the most popular model used by researchers to examine these two interpersonal dimensions. The IPC has proven itself a useful model for organizing, conceptualizing, and assessing interpersonal behavior, motives, and traits (Wiggins, 2003). The IPC model presented in Figure 1 indicates that interpersonal octants can be arranged on the circumference of a circle using the primary dimensions of dominance and warmth. This circular ordering suggests that octants that fall close together are more positively related than octants that fall further apart, interpersonal octants at right angels are unrelated, and octants opposite each other are negatively related. This report details how items from the International Personality Item Pool (IPIP; Goldberg, 1999) were used to create a freely available 32-item assessment of the IPC (the IPIP-IPC).

The structure of the IPC presented in Figure 1 implies that the eight interpersonal octants arranged around the circumplex represent different "blends" of the two dimensions of dominance and warmth. For example, the octant of extraversion (i.e., the NO octant) is a blend of dominance and warmth; whereas arrogance (i.e., the BC octant) is a blend of dominance and hostility (low warmth). In this manner, dominance and warmth can be conceptualized as two bipolar coordinates that can be used to geometrically locate various interpersonal constructs around the cirucmplex. The octants around the circumplex are given alphabetic names in a counterclockwise direction (e.g., PA, BC, DE, etc.) and can be defined by their angular location ranging from 0° to 360°. By considering the two dimensions of dominance and

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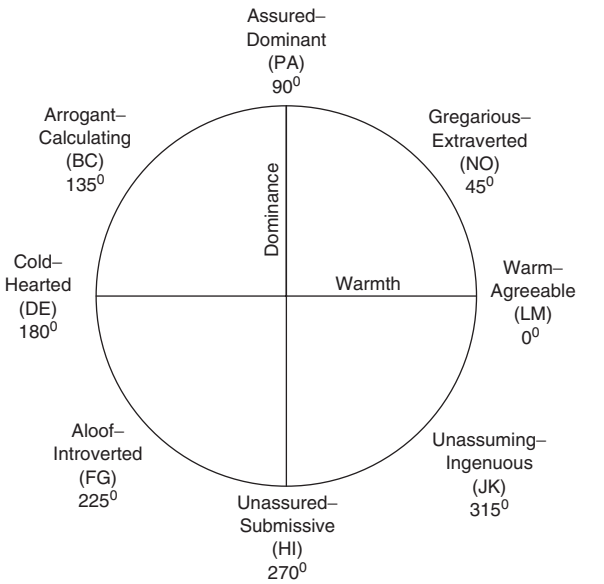
Figure 1
Wiggins' (1995) Interpersonal Circumplex



warmth together, the IPC provides a useful elaboration of two factors of the five-factor model (FFM). The two primary dimensions of the IPC represent approximately 45° to 60° rotations of the FFM dimensions of extraversion and agreeableness, indicating that these traits are located in the NO and JK octants, respectively (Ansell & Pincus, 2004; McCrae & Costa, 1989; Pincus, 2002). In this manner, the FFM provides a framework with which to interpret the circumplex, and the IPC provides an elaboration of two factors from the FFM (McCrae & Costa, 1989). Research clearly demonstrates the utility of the two-dimensional IPC as both a model of personality and as a tool for the interpersonal researcher (e.g., Bartholomew, 1990; D'Antono, Ditto, Moskowitz, & Rios, 2001; Gurtman, 1992; Locke, 2000; Madison, 1997; Markey, Funder, & Ozer, 2003; Markey, Markey, & Tinsley, 2004; Matano & Locke, 1995; Moskowitz & Zuroff, 2004; Pincus, Gurtman, & Ruiz, 1998; Pincus & Wilson, 2001; Sadler & Woody, 2003; Tracey, 1994; Tracey, Ryan, & Jaschik-Herman, 2001; Wiggins & Pincus, 1989).

Perhaps the most widely used assessment of the IPC as a measurement of normal variations in interpersonal personality is the Interpersonal Adjective Scales (IAS; Wiggins, 1995). The IAS consists of 64 adjective items designed to assess the eight octants of the IPC presented in Figure 1. Previous research shows strong support for the circumplex structure of the IAS octant scales (e.g., Gurtman & Pincus, 2000; Wiggins, 2003; Wiggins & Brougthon, 1991) and the validity of these scales as assessments of interpersonal octants (e.g., Wiggins, & Broughton, 1991; Wiggins & Trobst, 1997). However, the IAS items themselves can be difficult for some individuals to understand. Wiggins (2003) notes that some of the adjectives that comprise the IAS are unfamiliar (e.g., "ironhearted," "boastless," etc.) and are often negations of more familiar words (e.g., "unsly," "unsparkling," "unwily," etc.). Because of the difficulty associated with understanding some of the IAS items researchers often include a glossary, which includes definitions of each adjective.

The current research presents three studies to demonstrate the psychometric properties and initial validation of a 32-item alternative measurement of the IPC (the IPIP-IPC). Instead of using adjectives that might be unfamiliar to some participants or that require a glossary, the IPIP-IPC consists of very short phrases (e.g., "Love large parties," "Think of others first," etc.). It is hoped that this relatively brief and easy to understand measurement of the IPC will provide an efficient alternative to the IAS when time is limited (e.g., when participants rate themselves or multiple others on several occasions, during large-scale surveys, prescreening packets, etc.). Study 1 discusses how 32 items were selected to confirm to the properties of the IPC. Additionally, this study examines the circular structure of eight IPIP-IPC octant scales and how this new measurement relates to another popular model of personality: the FFM. Using separate samples, Studies 2 and 3 also examine the circular structure of the eight IPIP-IPC scales. Study 3 further examines the similarity between the 32-item IPIP-IPC and the 64-item IAS.

Study 1

There were three main goals of Study 1. First, the development of the IPIP-IPC is discussed. Second, the reliability, interscale correlations, and circular structure of the IPIP-IPC are examined. Finally, the IPIP-IPC is related to one of the most popular model of personality: the FFM. As discussed earlier, previous research suggests that the IPC is strongly related to the FFM traits of extraversion and agreeableness. Specifically, it is predicted that this new measurement will locate the trait of extraversion in the NO octant and the trait of agreeableness in the JK octant.

Method

Participants

Participants in the current study were 501 adults from the Eugene–Springfield Community Sample, ranging in age from 22 to 90 years and was composed of 216 males (43%) and 285 females (57%; for additional information about this sample see Goldberg, 1999). As part of a larger study, all participants competed the initial 1,956 IPIP items (Goldberg et al., 2006), and 481 participants also completed the NEO Personality Inventory (NEO-PI-R; Costa & McCrae, 1992). In the current study, these data were initially split into two samples. Sample 1 ($n = 250$) was used to initially select appropriate items to measure the IPC, and Sample 2 ($n = 251$) was used to confirm the structure of the selected items.

Measurements

The International Personality Item Pool (*IPIP*). The IPIP is an extensive collection of personality items available to the public at the IPIP Web site (http://ipip.ori.org). Participants indicate how accurately each IPIP item describes themselves using a scale of 1 to 5, with 1 indicating *very inaccurate* and 5 indicating *very accurate* (see appendix). The IPIP items have been used to create a multitude of personality measures (e.g., the IPIP-HEXACO scales [Ashton, Lee, & Goldberg, 2007]; the Mini-IPIP Scales [Donnellan, Oswald, Baird, & Lucas, 2006]), due in part to the generous nature of the researchers at the Oregon Research Institute in their sharing of resources and data.

The NEO Personality Inventory (*NEO-PI-R*). The NEO-PI-R (Costa & McCrae, 1992) is a 240-item self-report measure designed to measure the personality domains represented by the FFM. Participants indicate how accurately each NEO item describes themselves using a 5-point, Likert-type scale ranging from 0 (*strongly disagree*) to 4 (*strongly agree*). Internal reliabilities for the extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience scales were .91, .85, .90, .91, and .89, respectively.

Results

To create a brief assessment of the IPC, the authors had the goal of selecting four items from the IPIP to represent each of the eight IPC octants, for a total of 32 items. Using the octant definitions and IAS items provided by Wiggins (1995) as a guide, the authors first selected between 20 and 35 IPIP items that seemed to best define each IPC octant. Next, the items included in the LM, DE, PA, and HI octants (i.e., the main dimensions of the IPC; see Figure 1) were subjected to a principal components analysis using Sample 1, and two orthogonal components were extracted. The four items that loaded highest and lowest on the resulting components were selected and averaged to create measures for the octants LM, DE, PA, and HI. Next, to select items that represented the NO octant, the candidate items of this octant were submitted to a principal components analysis with the previously selected mean octant scales, and two components were extracted and rotated to match the theoretical location of the two dimensions. This was done by using the four octant scales of these dimensions as markers and then rotating the components until maximum concordance with the markers' theoretical positions was achieved. Four items were then selected that loaded highly on these two components and had a loading pattern that occurred in the expected manner. The remaining octant scales were created in the same manner using three basic steps: (a) candidate items for a given octant were submitted to a principal components analysis containing the previously selected octant scale (i.e., octant scales were added incrementally, with earlier scales part of each new principal components analysis); (b) two components were extracted and rotated for maximum concordance with the theoretical positions of the previously selected octant scales; (c) the four items that best conformed to the octant's theoretical location on the IPC were selected (see Markey & Markey, 2006). Using the above methodology, a total of eight, 4-item octant scales were created (see appendix).

Reliability of the IPIP-IPC Octant and Dimensional Scales

Participants' scores on a given octant was computed by averaging together the four items for a given octant (for the combined sample, PA: $M = 2.21$, $SD = .77$; BC: $M = 2.09$, $SD = .73$; DE: $M = 2.24$, $SD = .69$; FG: $M = 2.81$, $SD = .80$; HI: $M = 3.19$, $SD = .70$; JK: $M = 3.80$, $SD = .57$; LM: $M = 3.92$, $SD = .57$; NO: $M = 3.17$, $SD = .77$). Because four items were used to assess each octant, it was expected that the reliability of any single octant would be modest. As anticipated, the average 4-item composite reliability of the eight octant scales was .64 (range = .51 to .75) in Sample 1

and .63 (range = .50 to .77) in Sample 2. However, because the IPC suggests that these octant scales are ordered in a circular manner, these scales can be used in concert with each other to compute dimensional scores for warmth and dominance. This is advantageous because it increases the overall reliability of these dimensional scores. An individual's dimensional score of dominance and warmth can be computed using the geometric formula (Wiggins, 1995):

$$\text{Dominance Dimension} = (.3)\ \Sigma Z_i \sin \theta_i$$

$$\text{Warmth Dimension} = (.3)\ \Sigma Z_i \cos \theta_i$$

where Z_i represents the standardized score of the *i*th octant and θ_i is the angle of the *i*th octant.

The reliability of these dimensional scores is easily calculated by methods traditionally used to compute reliabilities of weighted sums (Nunnally & Bernstein, 1994; Equation 7-17). As expected, the reliabilities for the dimensional scores of warmth and dominance were reasonably high for both Sample 1 (.85 and .86, respectively) and Sample 2 (.86 and .84, respectively).

Circular Structure of the IPIP-IPC

Table 1 presents the intercorrelations of the eight scales for both samples. As would be expected from a circular structure, the highest positive correlation for each scale occurred with an adjacent octant and the highest negative correlation was with an opposite octant. When a principal components analysis is conducted on these intercorrelations, a clear two-factor solution emerges for both samples as evidenced by the clear second to third eigenvalue ratio in Sample 1 (eigenvalues = 2.84, 2.42, and .65) and Sample 2 (eigenvalues = 2.71, 2.46, and .66). To visually demonstrate the circular nature of the scales, Figures 2 and 3 display the loading of the eight octant scales on the two factors after these scales were rotated for maximum convergence with their theoretical locations on the IPC.

A more precise way to assess the extent to which the scales conform to a circular structure is to examine whether the eight scales are related to each other in a manner predicted by the IPC. Specifically, the correlations of octants closer on the circle are predicted to be greater than those more distal. The correlations for the octant scales separated by 45° should be greater than the correlations for the octants separated by 90°; the correlations for the octants separated

Table 1
Intercorrelation Matrices of the International Personality Item Pool–Interpersonal Circumplex (IPIP-IPC) Octant Scales

Sample 1 (n = 251)

	PA	BC	DE	FG	HI	JK	LM	NO
PA	—							
BC	.43	—						
DE	.00	.23	—					
FG	**−.51**	−.14	.39	—				
HI	**−.64**	−.30	.04	.54	—			
JK	−.17	**−.44**	−.43	−.03	.22	—		
LM	.01	−.22	**−.56**	−.30	.01	.54	—	
NO	.42	−.10	−.37	**−.57**	−.42	.12	.36	—

Sample 2 (n = 250)

	PA	BC	DE	FG	HI	JK	LM	NO
PA	—							
BC	.47	—						
DE	.05	.34	—					
FG	−.41	−.07	.36	—				
HI	**−.61**	−.29	.08	.54	—			
JK	−.22	**−.45**	−.33	.01	.17	—		
LM	−.09	−.28	**−.53**	−.31	−.02	.45	—	
NO	.22	−.08	−.45	**−.61**	−.35	.20	.40	—

Note: Values in boldface indicate the largest negative correlation for each IPIP-IPC scale.

Figure 2
Circular Structure of the International Personality Item Pool–Interpersonal Circumplex (IPIP-IPC) Scales From Sample 1 in Study 1

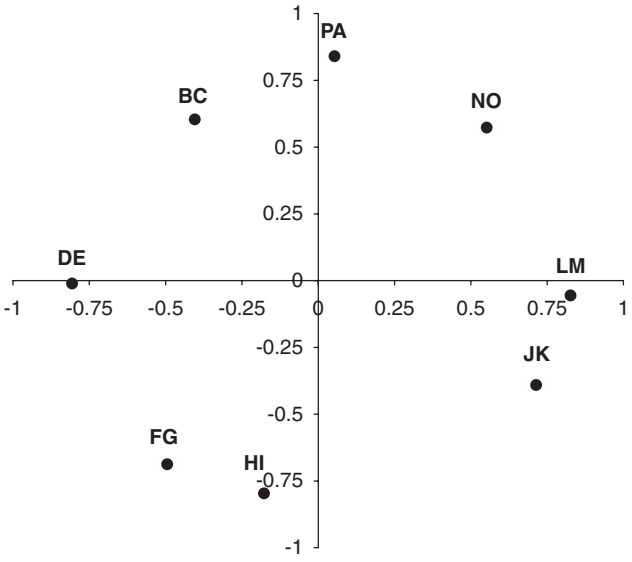
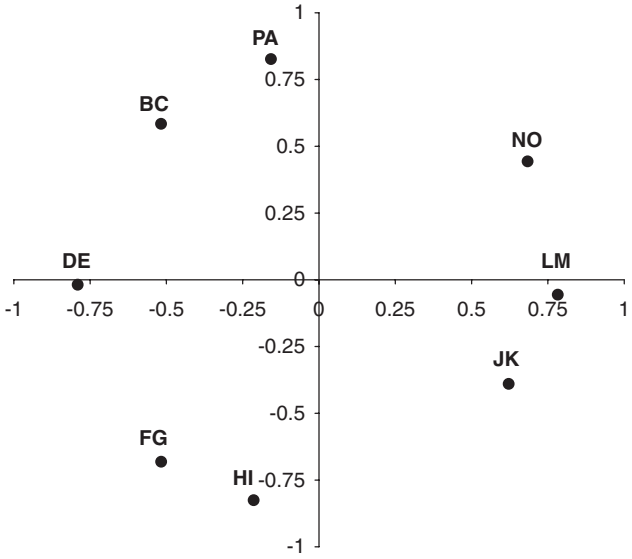


Figure 3
Circular Structure of the International Personality Item Pool–Interpersonal Circumplex (IPIP-IPC) Scales From Sample 2 in Study 1



by 90° should be greater than the octants separated by 135°; and the correlations for the octants separated by 135° should be greater than the correlations for the octants separated by 180°. Taken together, the circular structures presented in Figure 1 generate a total of 288 order predictions for each circumplex model.

To evaluate the fit of the circular model to the obtained correlation matrices of Samples 1 and 2, correspondence indices were computed (Hubert & Arabie, 1987). A correspondence index (CI) serves as a measure of fit of a correlation matrix with the order predictions and is computed by comparing an obtained correlation matrix with the 288 order predictions (Hubert & Arabie, 1987). The CI is a correlation coefficient (Somers's *D*; Somers, 1962) that can range from +1 (perfect fit) to −1 (no predictions were met), with a CI of 0.0 indicating the number of predictions met is equal to the number of predictions violated. To evaluate the significance of the fit of a circumplex model to the obtained correlation matrices, the confirmation or violation of the 288 order predictions for that circumplex model is examined with a randomization test of hypothesized order relations (Hubert & Arabie, 1987; Rounds, Tracey, & Hubert, 1992). This test yields an exact probability of obtaining the predicted order among the correlations in the observed data matrix under the null hypothesis that the octant scales are relabeled at random; no assumptions about the independence of the order predictions are made. In a correlation matrix with eight variables, there are a total of 8! (40,320) possible random matrices that can be used to create a comparison distribution for evaluating the fit of the original matrix.

Table 2
Randomization Tests of Circular Order Relations for the International Personality Item Pool–Interpersonal Circumplex (IPIP-IPC) Octant Scales

	N	Predictions Made	Predictions Met	Correspondence Index	*p*
Study 1					
Sample 1	251	288	287	.99	<.001
Sample 2	250	288	286	.99	<.001
Study 2	274	288	283	.97	<.001
Study 3	100	288	276	.92	<.001

Randomization tests were computed to examine the 288 predicted order relations for the circumplex model using the RANDALL (Tracey, 1997) set of computer programs. As shown in Table 2, for both Sample 1 and Sample 2, all the randomization tests were significant, and none of the random matrices fit the predicted order relations better than the original matrices. Additionally, the obtained CIs indicated that the octants scales consistently fit a circular structure (CIs = .99 and .99).

Relating the IPIP-IPC to the FFM of Personality

Next, the IPIP-IPC was related to the traits of the FFM by simultaneously using the eight IPIP-IPC scales to predict each FFM traits' vector length and angular location on the circumplex. By examining the eight IPIP-IPC scales simultaneously, instead of separately, not only is there a substantial increase in reliability, there is also a decrease in the likelihood of Type I errors occurring. The vector length of a trait can be interpreted in a manner similar to a multiple *R* (i.e., vector length provides an assessment of how strongly a trait is related to the IPIP-IPC). The vector length of a FFM trait can be calculated using the formula (Wiggins & Broughton, 1991):

$$\text{vector length} = [(r_{wt})^2 + (r_{dt})^2]^{1/2}$$

where r_{wt} is the correlation between the warmth dimension and the FFM trait and r_{dt} is the correlation between the dominance dimension and the FFM trait.

Table 3
Angular Displacement and Vector Length of the Five-Factor Model Traits Based on the Correlations Between the Dimensional Scores of Warmth and Dominance and Each Trait

	Warmth (*r*)	Dominance (*r*)	Vector (Length)	Angular Displacement
Extraversion	.54**	.51**	.74	43°
Agreeableness	.48**	−.44**	.65	317°
Conscientiousness	.05	−.07	.08	314°
Neuroticism	−.20**	.06	.21	163°
Openness	.19**	.09*	.21	25°

Note: degrees of freedom (*df*) = 479.
*$p < .05$. **$p < .01$.

The correlations between the dimensional scores of dominance and warmth and each of the FFM traits are presented in Table 3. Applying these correlations to the above formula, the vector length of extraversion and agreeableness were the greatest (.74 and .65), whereas the vector length for the other traits were relatively low (mean vector length = .17). As predicted, such findings suggest that the traits of extraversion and agreeableness are strongly related to the IPIP-IPC.

The angular location of a trait represents its location around the circumference of the circumplex. The angular location of a trait can be calculated using the formula (Wiggins & Broughton, 1991):

$$\text{angular location} = \arctan (r_{wt}/r_{dt})$$

where r_{wt} is the correlation between the warmth dimension and the FFM trait and r_{dt} is the correlation between the dominance dimension and the FFM trait.

Table 3 presents the angular location of each FFM trait. As expected, the angular location for extraversion was 43° (in the NO octant), and the angular location for agreeableness was 317° (in the JK octant).

Study 2

Although the previous study suggests that the IPIP-IPC scales occur in a manner predicted by the IPC, the participants in the first study completed the IPIP-IPC items as part of a much larger questionnaire. To ensure that this assessment procedure did not bias the findings, participants in Study 2 only completed the 32 items designed to assess the IPIP-IPC (see appendix). As with the previous findings, it is predicted that the eight scales of the IPIP-IPC will conform to a circular structure.

Method

Participants and Procedure

Data were collected from 274 undergraduate students, ranging in age from 18 to 26 years (*M* age = 18.71). This sample was composed of 80 males (29%) and 194 females (71%), who were all students from a private Northeastern university in the Philadelphia area. All participants completed the 32-item IPIP-IPC via a computer terminal at home or at school for course credit.

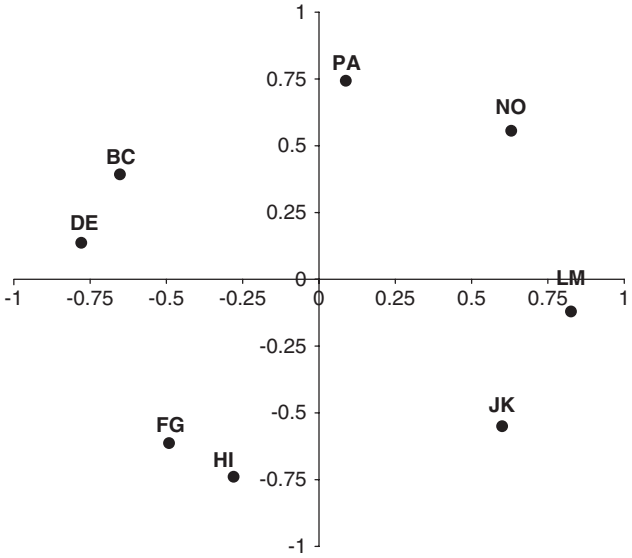
Results

As before, the average 4-item composite reliability of the eight octant scales for the IPIP-IPC was modest (*M* reliability = .60; range = .46 to .75), and the warmth and dominance dimensional scales produced higher levels of reliability (.80 and .86, respectively). Additionally, a principal components analysis again found a clear two-factor solution (eigenvalues = 2.89, 2.18, and .86). To visually demonstrate the circular nature of the scales, Figure 4 displays the loading of the eight octant scales on the two factors after these scales were rotated for maximum convergence with their theoretical locations on the IPC. As in the earlier study, randomization tests and a CI were used to examine whether or not IPIP-IPC ratings occurred in a manner predicted by the IPC. As shown in Table 2, the randomization test was significant, and the corresponding CI indicated that the IPIP-IPC octant scales were adequately fit by a circular structure.

Study 3

The previous two studies suggest that the IPIP-IPC scales occur in circular manner predicted by the IPC. Additionally, the IPIP-IPC is related in a predictable manner to the traits of the FFM. The final study sought to examine the overlap between the IPIP-IPC and Wiggins's (1995) IAS. As noted earlier, Wiggins's IAS is one of the most used assessments of the IPC. Because the IPIP-IPC and IAS were designed to assess the same underlying constructs it was predicted that these two assessment scales would be highly related to each other. Finally, to demonstrate that the IPIP-IPC takes less time to complete than the IAS, a subset of participants were timed completing each assessment tool.

Figure 4
Circular Structure of the International Personality Item Pool–Interpersonal Circumplex (IPIP-IPC) Scales From Study 2



Method

Participants

Data were collected from 100 undergraduate students whose age ranged from 18 to 21 years (M = 18.78 years). This sample was composed of 40 males (40%) and 60 females (60%) who were all students from a private northeastern university in the Philadelphia area. Participants completed the IPIP-IPC and IAS in random order in groups of 2 to 6 individuals. Additionally, the amount of time it took a subset of participants (n = 30) to complete the IPIP-IPC and IAS was recorded.

Measurements

The International Personality Item Pool–Interpersonal Circumplex (IPIP-IPC). The IPIP-IPC consists of 32 items designed to assess the eight octants of the IPC. Participants indicate how accurately each IPIP-IPC item describes themselves using a scale of 1 to 5, with 1 indicating *very inaccurate* and 5 indicating *very accurate* (see appendix).

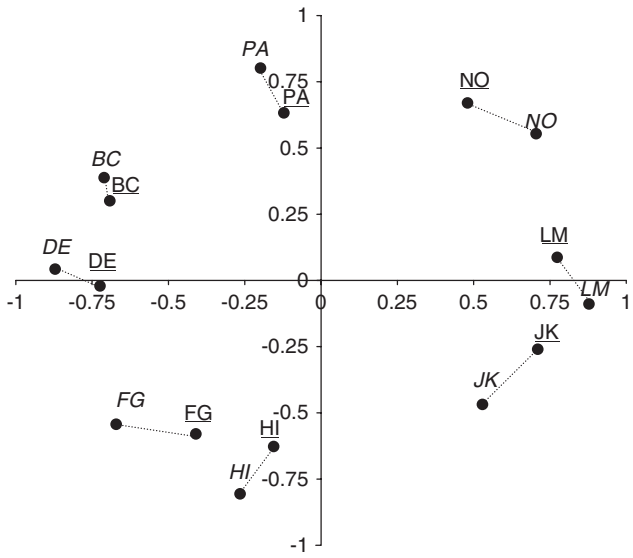
Interpersonal Adjective Scale (IAS). The IAS (Wiggins, 1995) consists of 64 adjective items designed to assess the eight octants of the IPC. Participants indicate how accurately each IAS adjective describes themselves using a scale of 1 to 8, with 1 indicating an *extremely inaccurate* description and 8 an *extremely accurate* description (IAS; Wiggins, 1995). Past research shows strong support for the circumplex structure of the IAS octant scales (e.g., Gurtman & Pincus, 2000; Wiggins, 2003; Wiggins & Brougthon, 1991) and the validity of these scales as assessments of interpersonal octants (e.g., Wiggins, & Broughton, 1991; Wiggins & Trobst, 1997).

Results

The average 4-item composite reliability of the eight octant scales for the IPIP-IPC was lower (M reliability = .64; range = .48 to .76) than the average 8-item composite reliability of the IAS (M reliability = .82). However, the reliability of the IPIP-IPC warmth and dominance dimensional scales (.89 and .82, respectively) were only slightly lower than the reliability of the IAS warmth and dominance dimensional scales (.95 and .94, respectively). As in the studies reported above, a principal components analysis of the IPIP-IPC scales found a clear two-factor solution (eigenvalues = 3.01, 2.10, and .74). Additionally, randomization tests and a CI of the IPIP-IPC octant scales again indicated that the scales occurred in circular manner consistent with the IPC (see Table 2).

Correlations revealed that parallel IAS and IPIP-IPC octant scales were moderately correlated (Median r = .58, range = .44 to .69) and the dimensional scales of warmth, $r(98)$ = .82, $p < .001$, and dominance, r (98) = .75, $p < .001$, were highly correlated with each other. To further examine the similarity between the IPIP-IPC and the IAS, the 16 octant scales from both measures were subjected to a principle components analysis. Figure 5 displays the loading of the 16 scales on the first two factors after the IPIP-IPC scales were rotated for maximum convergence with their theoretical locations on the IPC. As seen in this figure, the scales of the IPIP-IPC and IAS tended to be located fairly close to each other. To formally test the convergence between these two scales, the mean angular displacement (MAD; in degrees) between corresponding octant scales was computed. The significance of this displacement was then tested as a chi-square using the formula (Wagner, Kielser, & Schmidt, 1995), $\chi^2 = 4(n)[\cos(MAD/2)^2]$ with n equal to the number of pairs of scales being compared. The results indicated that the mean angular displacement was only 10.37°, $\chi^2(8) = 31.73$, $p < .001$, indicting that there was significant convergence between the IPIP-IPC and the IAS. Although the IPIP-IPC and IAS appear to be

Figure 5
Principal Components Analysis of the 16 Scales From the International Personality Item Pool–Interpersonal Circumplex (IPIP-IPC) and Interpersonal Adjective Scale (IAS) From Study 3



Note: Scales that were designed to assess the same octant are connected with dashed lines. Italicized items represent scales from the IAS and underlined items represent scales from the IPIP-IPC.

assessing the same underlying constructs, on average it only took participants 124.5 seconds (2 minutes 4 seconds) to complete the IPIP-IPC whereas it took participants, on average, 398.7 seconds (6 minutes 38 seconds) to complete the IAS, $t(29) = 25.14$, $p < .001$. In other words, the IPIP-IPC reduces the amount of time it takes to assess the IPC by almost 70%.

Discussion

The IPC can be used to describe an individual's personality, specifically his or her interpersonal characteristics, using the primary dimensions of dominance and warmth. The current research presents a new measure of the IPC, the 32-item IPIP-IPC. The IPC has often been assessed using the 64-item IAS. Although the IAS is an important measure that has contributed to valuable research for decades, it contains items which can be difficult for some to understand. The three studies presented demonstrate that (a) the IPIP-IPC conforms to the circular structure of the IPC, (b) the IPIP-IPC is related to the FFM traits of extraversion and agreeableness in a predictable manner, and (c) the IPIP-IPC has strong convergent validity with the IAS.

The main contribution of the IPIP-IPC is that it allows researchers the ability to assess the IPC when time is limited or when there is concern about participants' ability to understand the adjective items used by the IAS. Of course, the IPIP-IPC does have some limitations that should be considered. Although there is strong overlap between the IPIP-IPC and the IAS, the reliability of the four-item IPIP-IPC octant scales was lower than the reliability typically produced by the eight-item IAS octant scales. Additionally, because the IPIP-IPC is a new measurement, its validity has not been established as strongly as the validity of the IAS.

The IPC has proven itself an extremely valuable model for understanding interpersonal characteristics and behaviors. Many current interpersonal theorists and researchers have emphasized the importance of the IPC primary dimensions, warmth and dominance, as predictors of various interpersonal issues (e.g., Ansell & Pincus, 2004; Pincus & Ansell, 2003; Wiggins, 1991; Wiggins & Trapnell, 1996). Previous studies assessing the IPC have contributed to our understanding of interpersonal interactions, attachment styles, values, complementarity of interpersonal behaviors, personality traits, health-related behaviors, interpersonal problems, personality disorders, and therapeutic outcomes (e.g., Alden, Wiggins, & Pincus, 1990; Bartholomew, 1990; Gurtman, 1997; Locke, 2000; Madison, 1997; Markey et al., 2003; Markey & Markey, 2006; Matano & Locke, 1995; Pincus & Wiggins, 1990; Sadler & Woody, 2003; Tracey et al., 2001; Wiggins & Broughton, 1991; Wiggins & Pincus, 1989). We expect that the IPIP-IPC will contribute to our ability to quickly and easily measure interpersonal characteristics thereby allowing an even broader exploration of the links between the IPC and various interpersonal and intrapersonal outcomes.

Appendix
The IPIP-IPC Questionnaire

On this page, there are phrases describing people's behaviors. Please use the rating scale below to describe how accurately each statement describes you. Describe yourself as you generally are now, not as you wish to be in the future. Describe yourself as you honestly see yourself, in relation to other people you know of the same gender as you are, and roughly your same age. Please read each statement carefully, and then fill in the number that corresponds to your response using the scale below.

(continued)

Appendix (continued)

Very Inaccurate	Moderately Inaccurate	Neither Inaccurate nor Accurate	Moderately Accurate	Very Accurate
1	2	3	4	5

____ 1. Am quiet around strangers. (*FG*)
____ 2. Speak softly. (*HI*)
____ 3. Tolerate a lot from others. (*JK*)
____ 4. Am interested in people. (*LM*)
____ 5. Feel comfortable around people. (*NO*)
____ 6. Demand to be the center of interest. (*PA*)
____ 7. Cut others to pieces. (*BC)*
____ 8. Believe people should fend for themselves. (*DE*)
____ 9. Am a very private person. (*FG*)
____10. Let others finish what they are saying. (*HI*)
____11. Take things as they come. (*JK*)
____12. Reassure others. (*LM*)
____13. Start conversations. (*NO)*
____14. Do most of the talking. (*PA*)
____15. Contradict others. (*BC*)
____16. Don't fall for sob stories. (*DE*)
____17. Don't talk a lot. (*FG*)
____18. Seldom toot my own horn. (*HI*)
____19. Think of others first. (*JK*)
____20. Inquire about others' well-being. (*LM*)
____21. Talk to a lot of different people at parties. (*NO*)
____22. Speak loudly. (*PA*)
____23. Snap at people. (*BC*)
____24. Don't put a lot of thought into things. (*DE*)
____25. Have little to say. (*FG*)
____26. Dislike being the center of attention. (*HI*)
____27. Seldom stretch the truth. (*JK*)
____28. Get along well with others. (*LM*)
____29. Love large parties. (*NO*)
____30. Demand attention. (*PA*)
____31. Have a sharp tongue. (*BC*)
____32. Am not interested in other people's problems. (*DE*)

Note: Italicized letters in parentheses indicate each item's octant scale.

References

Alden, L. E., Wiggins, J. S., & Pincus, A. L. (1990). Construction of circumplex scales for the inventory of interpersonal problems. *Journal of Personality Assessment, 55*, 521-536.

Ansell, E. B., & Pincus, A. L. (2004). Interpersonal perceptions of the five-factor model of personality: An examination using the structural summary method for circumplex data. *Multivariate Behavioral Research, 39*, 167-201.

Ashton, M. C., Lee, K., & Goldberg, L. R. (2007). The IPIP-HEXACO scales: An alternative, public-domain measure of the personality constructs in the HEXACO model. *Personality and Individual Differences, 42*, 1515-1526.

Bartholomew, K. (1990). Avoidance of intimacy: An attachment perspective. *Journal of Social and Personal Relationships, 7*, 147-178.

Carson, R. (1969). *Interaction concepts of personality.* Chicago: Aldine.

Costa, P. T., & McCrae, R. R. (1992). *Revised NEO Personality Inventory (NEO-PI-R) and NEO Five-Factor Inventory (NEO-FFI) professional manual*. Odessa, FL: Psychological Assessment Resources.

D'Antono, B., Ditto, B., Moskowitz, D. S, & Rios, N. (2001). Interpersonal behavior and resting blood pressure in college women: A daily monitoring study. *Journal of Psychosomatic Research, 50*, 309-318.

Donnellan, M. B., Oswald, F. L., Baird, B. M., & Lucas, R. E. (2006). The Mini-IPIP Scales: Tiny-yet-effective measures of the Big Five Factors of Personality. *Psychological Assessment, 18*, 192-203.

Goldberg, L. R. (1999). A broad-bandwideth, public domain, personality inventory measuring the lower-level facets of several five-factor models. In I. Mervielde, I Deary, F. DeFruyt, & F. Ostendorf (Eds.), *Personality Psychology in Europe* (Vol. 7, pp. 7-28). Tilburg, the Netherlands: Tilburg University Press.

Goldberg, L. R., Johnson, J. A., Eber, H. W., Hogan, R., Ashton, M. C., Cloninger, C. R., et al. (2006). The International Personality Item Pool and the future of public-domain personality measures. *Journal of Research in Personality, 40*, 84-96.

Gurtman, M. B. (1992). Construct validity of interpersonal personality measures: The interpersonal circumplex as a nomological net. *Journal of Personality and Social Psychology, 63*, 105-118.

Gurtman, M. B. (1997). Studying personality traits: The circular way. In R. Plutchik & H. Conte (Eds.), *Circumplex models of personality and emotions* (pp. 81-102). Washington, DC: American Psychological Association Press.

Gurtman, M. B., & Pincus, A. L. (2000). Interpersonal Adjective Scales: Confirmation of circumplex structure from multiple perspectives. *Personality and Social Psychology Bulletin, 26*, 374-384.

Hubert, L., & Arabie, P. (1987). Evaluating order hypotheses within proximity matrices. *Psychological Bulletin, 102*, 172-178.

Kiesler, D. J. (1983). The 1982 interpersonal circle: A taxonomy for complementarity in human transactions. *Psychological Review, 90*, 185-214.

Leary, T. (1957). *The interpersonal diagnosis of personality*. New York: Roland.

Locke, K. D. (2000). Circumplex scales of interpersonal values: Reliability, validity, and applicability to interpersonal problems and personality disorders. *Journal of Personality Assessment, 75*, 249-267.

Madison, J. K. (1997). Interpersonal assessment and therapy of eating disorders: A clinical application of a circumplex model. In R. Plutchik & H. R. Conte (Eds.), *Circumplex models of personality and emotions* (pp. 431-446). Washington, DC: American Psychological Association.

Markey, P. M., Funder, D. C., & Ozer, D. J. (2003). Complementarity of interpersonal behaviors in dyadic interactions. *Personality and Social Psychology Bulletin, 29*, 1082-1090.

Markey, P. M., & Markey, C. N. (2006). A spherical conceptualization of personality traits. *European Journal of Personality, 20*, 169-193.

Markey, P. M., Markey, C. N., & Tinsley, B. J. (2004). Children's behavioral manifestations of the five-factor model of personality. *Personality and Social Psychology Bulletin, 30*, 423-432.

Matano, R., & Locke, K. D. (1995). Personality disorder scales as predictors of interpersonal problems of alcoholics. *Journal of Personality Disorders, 9*, 62-67.

McCrae R. R., & Costa, P. T. (1989). The structure of interpersonal traits: Wiggins's circumplex and the five-factor model. *Journal of Personality and Social Psychology, 56*, 586-595.

Moskowitz, D. S., & Zuroff, D. C. (2004). Flux, pulse, and spin: Dynamic additions to the personality lexicon. *Journal of Personality and Social Psychology, 86*, 880-893.

Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). New York: McGraw Hill.

Pincus, A. L. (2002). Constellations of dependency within the five-factor model of personality. In P. T. Costa Jr., & T. A. Widiger (Eds.), *Personality disorders and the five-factor model of personality* (pp. 203-214). Washington DC: American Psychological Association.

Pincus, A. L., & Ansell, E. B. (2003). Interpersonal theory of personality. In T. Millon & M. J. Lerner (Eds.), *Handbook of psychology: Vol. 5. Personality and social psychology* (pp. 209-229). Hoboken, NJ: Wiley.

Pincus, A. L., Gurtman, M. B., & Ruiz, M. A. (1998). Structural analysis of social behavior (SASB): Circumplex analyses and structural relations with the interpersonal circle and the five-factor model of personality. *Journal of Personality and Social Psychology, 74*, 1629-1645.

Pincus, A. L., & Wiggins, J. S. (1990). Interpersonal problems and conceptions of personality disorders. *Journal of Personality Disorders, 4*, 342-352.

Pincus, A. L., & Wilson, K. R. (2001). Interpersonal variability in dependent personality. *Journal of Personality, 69*, 223-251.

Rounds, J., Tracey, T. J., & Hubert, L. (1992). Methods for evaluating vocational interest structural hypotheses. *Journal of Vocational Behavior, 40*, 239-259.

Sadler, P., & Woody, E. (2003). Is who you are who you you're talking to? Interpersonal style and complementarity in mixed-sex interactions. *Journal of Personality and Social Psychology, 84*, 80-96.

Somers, R. H. (1962). A new asymmetric measure of association for ordinal variables. *American Sociological Review, 27*, 799-811.

Tracey, T. J. (1994). An examination of complementarity of interpersonal behavior. *Journal of Personality and Social Psychology, 67*, 864-878.

Tracey, T. J. (1997). RANDALL: A Microsoft FORTRAN program for the randomization test of hypothesized order relations. *Educational and Psychological Measurement, 57*, 164-168.

Tracey, T. J., Ryan, J. M., & Jaschik-Herman, B. (2001). Complementarity of interpersonal circumplex traits. *Personality and Social Psychology Bulletin, 27*, 786-797.

Wagner, C. C., Kiesler, D. J., & Schmidt, J. A. (1995). Assessing the interpersonal transaction cycle: Convergence of action and reaction interpersonal circumplex measures. *Journal of Personality and Social psychology*, *69*, 938-949.

Wiggins, J. S. (1979). A psychological taxonomy of trait-descriptive terms: The interpersonal domain. *Journal of Personality and Social Psychology, 37*, 395-412.

Wiggins, J. S. (1991). Agency and communion as conceptual coordinates for the understanding and measurement of interpersonal behavior. In D. Cicchetti & W. M. Grove (Eds.), *Thinking clearly about psychology: Essays in honor of Paul E Meehl. Vol. 2: Personality and psychopathology* (pp. 89-113). Minneapolis: University of Minnesota Press.

Wiggins, J. S. (1995). *Interpersonal Adjective Scales professional manual.* Odessa, FL: Psychological Assessment Resources.

Wiggins, J. S. (2003). *Paradigms of personality assessment*. New York: Guilford Press.

Wiggins, J. S., & Broughton, R. (1991). A geometric taxonomy of personality scales. *European Journal of Personality, 5*, 343-365.

Wiggins, J. S., & Pincus, A. L. (1989). Conceptions of personality disorders and dimensions of personality. *Journal of Consulting and Counseling Psychology, 1*, 305-316.

Wiggins, J. S., & Trapnell, P. D. (1996). A dyadic-interactional perspective on the five-factor model. In J. Wiggins (Ed.), *The five-factor model of personality: Theoretical perspectives.* (pp. 88-162). New York: Guilford Press.

Wiggins, J. S., & Trobst, K. K. (1997). When is a circumplex an "interpersonal circumplex"? The case of supportive actions. In R. Plutchik & H. R. Conte (Eds.), *Circumplex models of personality and emotions* (pp. 57-80). Washington, DC: American Psychological Association.