Ambivalence About Interpersonal Problems and Traits Predicts Cross-Situational Variability of Social Behavior

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Abstract
Multiple theoretical perspectives suggest that maladjusted personality is characterized by not only distress, but also opposing or “ambivalent” self-perceptions and behavioral lability across social interactions. However, the degree to which ambivalence about oneself predicts cross-situational variability in social behavior has not been examined empirically. Using the interpersonal circumplex (IPC) as a nomological framework, the present study investigated the extent to which endorsing opposing or “ambivalent” tendencies on IPC measures predicted variability in social behavior across a range of hypothetical interpersonal scenarios (Part 1; N = 288) and naturalistic social interactions (Part 2; N = 192). Ambivalent responding for interpersonal problems and traits was associated with measures of distress, maladaptive interpersonal tendencies, and greater variability of social behavior across both hypothetical and daily social interactions, though more consistently for interpersonal problems. More conservative tests suggested that ambivalence predicted some indexes of behavioral variability even when accounting for mean levels and squared means of social behaviors, vector length, gender, and depressive symptoms. Results suggest that processes theorized as typifying personality disorder may apply more broadly to personality maladjustment occurring outside of clinical samples.

Both traditional theories of psychopathology and modern diagnostic frameworks characterize maladjusted personalities by opposition between parts of the self or personality. For example, Freud (1961) theorized that unconscious conflicts within the personality (e.g., id vs. ego) generate anxiety and problem behaviors. At a level of more conscious self-perceptions, Rogers (1951) described how internal discrepancies between one’s ideal and actual selves may foster distress. Additionally, personality disturbance is often described as involving inconsistent mental representations of the self in relation to others (i.e., identity diffusion; Kernberg, 2005). Such opposing self-perceptions are thought to contribute not only to negative emotionality, but also to inconsistency or lability in interpersonal behavior (e.g., vacillation between warm and cold social behavior; Kernberg, 2005; Leary, 1957). The diagnostic criteria for borderline personality disorder (BPD) describe an extreme version of this process, incorporating distress, an inconsistent sense of self, impulsivity, and unstable relationships (American Psychiatric Association [APA], 2013). Variable or unintegrated self-perceptions appear in other personality disorder criteria (e.g., narcissistic, histrionic), suggesting transdiagnostic processes not circumscribed to particular personality disorders. Although the abovementioned processes are not identical, they each reflect a broader notion that opposing self-perceptions may promote distress and labile interpersonal behavior. However, little research has probed empirically whether such a process exists broadly in self-reported domains. Following review of relevant research, the present study examines “ambivalent responding” as endorsement of opposing pairs of interpersonal tendencies (e.g., self-reported dominance and submission) on the interpersonal circumplex (IPC), as well as its relations to distress and behavioral variability.

Several lines of personality research have found associations between constructs relevant to opposing self-perceptions and emotional distress. For example, individuals with low self-clarity (a self-reported clear and consistent sense of oneself) report higher depression and anxiety symptoms (Campbell...
et al., 1996) and lower relationship quality (Lewandowski, Nardone, & Raines, 2010). Self-concept differentiation—endorsing traits at different levels for different social roles—has been viewed as an expression of a fragmented self (Donahue, Robins, Roberts, & John, 1993) and correlates with depression, loneliness, and low self-esteem (Lutz & Ross, 2003). Opposing self-perceptions (i.e., endorsing self-love and self-hate) discriminate anxious from nonanxious participants (Erickson & Pincus, 2005). Similarly, individuals with BPD endorse interpersonal trait items inconsistently (Hopwood & Morey, 2007), and their self-reported identity diffusion is associated with higher distress and comorbid personality disorders (Sollberger et al., 2012). Using very different constructs, these studies link opposing or unclear self-perceptions to emotional distress, but not directly to variability of social behavior.

Other studies link distress to measures of dynamic intraindividual variability over time. For instance, day-to-day fluctuation in self-esteem (e.g., Paradise & Kernis, 2002) and fluctuating self-concept clarity (Schwartz et al., 2011) correlate with depression and anxiety. Several studies have measured day-to-day fluctuation of behavior on the IPC, which assesses dominance (vs. submission) and affiliation/agreeableness (vs. coldness or quarrelsomeness; see Figure 1). Specifically, neuroticism (Moskowitz & Zuroff, 2004) and interpersonal distress (Erickson, Newman, & Pincus, 2009) predicted variables such as “flux” of social behavior on the IPC dimensions (e.g., vacillating between dominance and submission, or between warm and cold behavior), “pulse” (variability in extremity of “vector length” or distance of behaviors from the center of the IPC), or “spin” (variability around the circle, e.g., from dominance to coldness to submission). Individuals with BPD show heightened spin (Russell, Moskowitz, Paris, Sookman, & Zuroff, 2007) relative to healthy controls. Thus, these data link distress to cross-situational interpersonal variability, but no studies have tested links between ambivalent interpersonal self-perceptions, distress, and cross-situational variability.

Previous studies have operationalized opposition or variability within the personality as the standard deviation of individuals’ items on each scale around the scale mean (Hopwood & Morey, 2007) or as having multiple “peaks” in “complex” IPC profiles (Haslam & Gurtman, 1999). However, the former method does not capture opposing interpersonal scales (e.g., dominance and submission), and the latter examines complexity as a dichotomous variable rather than as an individual difference. The vector length of an IPC profile, in contrast, is a continuous index of the variability of IPC profiles, capturing the degree to which an individual’s scores on IPC scales are pulled toward a particular IPC region (e.g., length of a vector toward warm-submission in Figure 1; Gurtman & Pincus, 2003). It represents differentiation among IPC octants (Gurtman & Pincus, 2003) and therefore may correlate inversely with endorsement of opposing IPC octants. However, no research has examined this issue, exploiting the full range of the circumplex to examine broad endorsement of opposing octants.

A means to address this issue comes from a method of assessing “ambivalent” responding developed by Scott (1966) and further discussed by Kaplan (1972). This index calculates a mean of items reflecting one side of a bipolar dimension (e.g., likable) and a mean of opposing items (e.g., unlikable), squares the mean nearer to zero, and divides this number by the

![Figure 1](image-url) The interpersonal circle with hypothetical profiles of low and high “ambivalent” responding, with high and low vector length (bold dark arrow).
mean of the other items. This method does not confound ambivalence with indifference (the middle of a bipolar scale) and outperforms other ambivalence indexes in terms of incremental scaling regardless of endorsement of more positively or negatively valenced items (Breckler, 1994). Bonanno, Notarius, Gunzerath, Keltner, and Horowitz (1998) applied this method to IPC items, creating a single measure of ambivalence about bereaved loved ones, contrasting positively (e.g., assertive, understanding) and negatively valenced IPC traits (e.g., blaming, controlling). Bonanno et al. (1998) demonstrated the utility of this method to assess ambivalence for interpersonal items, but studied ambivalence about others (not the self) and incorporated only two scales (“positive” and “negative” IPC traits) with few items. A full test of whether ambivalence about interpersonal tendencies predicts behavioral variability requires pairs of behaviors in opposition (e.g., dominant vs. submissive) around the full range of the IPC.

The present study tested whether an IPC-based index of ambivalent self-perceptions (incorporating pairs of opposing octant scores to derive a single measure) predicted intraindividual behavioral variability across a broad range of hypothetical social scenarios and a week of naturalistic social interactions. We applied the Scott (1966) method to well-validated measures of interpersonal traits (Interpersonal Adjective Scales [IAS]; Wiggins, 1995) and problems (Inventory of Interpersonal Problems-Circumplex scales [IIP-C]; Horowitz, Alden, Wiggins, & Pincus, 2000). We expected that subscales of our index (pairs of opposing octants) would correlate within and between both interpersonal traits and problems, suggesting a process transcending particular IPC octants and measures.

Hypothesizing that IPC ambivalence is maladaptive, we tested whether ambivalent self-perceptions would correlate positively with measures of distress (i.e., depressive symptoms and social anxiety) and impulsivity. Given that neuroticism predicts lower dominance and affiliation (Moskowitz & Zuroff, 2004), we expected IPC ambivalence to correlate negatively with dominance and affiliation on the IAS and IIP-C, and during a week of social interactions.

Our central hypotheses specified that ambivalent responding on the IAS and IIP-C would predict flux, pulse, and spin of social behaviors in both hypothetical scenarios (Part 1) and naturalistic daily interactions (Part 2). Additionally, we repeated these tests, controlling for other relevant variables to test incremental validity. We controlled for gender, given gender differences on some IPC measures (Gurtman & Lee, 2009); we expected female status to correlate with ambivalence, given higher distress often endorsed by women. Next, we controlled for vector length of traits and problems to make sure that this form of patterned variability would not account for effects of ambivalence on flux, pulse, and spin: we expected a negative correlation between vector length and ambivalence. Additionally, results might plausibly be explained by distress, given correlations of distress with opposing self-perceptions (Hopwood & Morey, 2007) and behavioral variability (Moskowitz & Zuroff, 2004), so we controlled for depressive symptoms. Lastly, because the mean and squared mean of behaviors often correlate with variability (Baird, Le, & Lucas, 2006), we controlled for them, ensuring that any ambivalence-behavior variability links were not simply due to low dominance or affiliation.

**PART I**

**Method**

**Participants.** Undergraduate students enrolled in a general psychology course at a large state university participated for credit (N = 288; 173 women, 115 men). This sample was used in previous research testing the construct validity of measures of interpersonal rigidity and flexibility (Erickson et al., 2009). They ranged in age from 18 to 49 (M = 20.41, SD = 3.02). The sample was 77% White, 7% Asian, 7% Black, and 4% Hispanic/Latino, with one American Indian student, 3% “other,” and two nonresponders. This convenience sample was recruited from a general psychology course including a broad range of students, and it was representative of the U.S. population with regard to (non-Hispanic) White and Asian American individuals, but underrepresented Black and Hispanic/Latino individuals.

**Procedure.** Data were collected via an Internet survey server. Participants completed demographic questions, surveys, and written interpersonal scenarios in varying orders, all on the same day.

**Task Materials.** Written hypothetical interpersonal scenarios and response options were developed by Erickson et al. (2009). Social behaviors as stimuli were taken verbatim or modified from the Checklist of Interpersonal Transactions-Revised (CLOIT-R; Kiesler, 1987; Tracey & Schneider, 1995). Each scenario described a target other person in an interpersonal act toward the self. Two scenarios represented each of the eight IPC octants of social behavior, at two levels of intensity. For example, the mild-moderate submissive scenario was “[He/she] waits for or follows your lead regarding issues to discuss or actions to pursue,” whereas “[He/she] finds it almost impossible to take the lead or change the topic of conversation” reflected extremely submissive behavior. To broaden the range of interactions, scenarios were presented twice, for interactions with a friend and an authority figure (e.g., employer or professor). Participants considered same-sex interaction partners to ensure consistency and reduce burden. In total, 32 scenarios were used (i.e., 8 types of behavior × 2 levels of intensity × 2 types of relationships).

Participants visualized a target other (e.g., friend) displaying each act and were then asked to select their most likely behavioral response from 16 response options that were inspired by the CLOIT-R, as described previously (Erickson et al., 2009). These 16 response options included one
mild-moderate intensity behavior (e.g., for dominance: “express firm personal preferences”) and a more extreme behavior (e.g., “boss him/her around or refuse to yield”) for each IPC octant. Participants were permitted to choose any of the 16 responses for each scenario. Two IPC experts categorized response options by IPC octant and intensity, achieving acceptable (kappa = .60) and then perfect (1.0) inter-rater reliability after revising five response options.

**Calculation of Variability Scores.** The computation of dimensional flux in hypothetical social behavior required assigning values on the dominance and affiliation dimensions for every response option. Based on reliably coded expert categorizations, dominance and affiliation values were assigned to each response option by IPC octant and weighted by intensity level [x, y]. For instance, the mild-moderate dominant response option was given dimensional values of [0, 1] on the IPC, whereas the extreme dominant response option (twice as far from the origin of the circle) was assigned values of [0, 2]. Response options blending dominance and affiliation were given values based upon the Pythagorean theorem (e.g., mild-moderate friendly-dominance at [.71, .71] is one unit from the circle origin).

Flux, pulse, and spin were calculated based on Moskowitz and Zuroff (2004). Dominance and affiliation flux were calculated as the standard deviation of levels of dominance or affiliation across all chosen responses. For pulse, we first calculated a point reflecting the distance from the center of the IPC (vector length) for the response chosen by the participant for each interaction. Vector length = [(dominance)² + (affiliation)²]¹/₂. We then calculated pulse as the standard deviation of vector lengths across interactions. For spin, we first calculated the IPC angular location (θ) for each response option (e.g., affiliation at 0°, warm-dominance at 45°). Dominance and affiliation were used to calculate angular location, [tan⁻¹ (affiliation/dominance) × 180/π], aiding calculation of circular variance (S₀; Mardia, 1972):

\[
S₀ = 1 - \left\{ \left( \frac{1}{n} \sum_{i=1}^{n} \cos \theta_i \right)^2 + \left( \frac{1}{n} \sum_{i=1}^{n} \sin \theta_i \right)^2 \right\}^{1/2} / n
\]

Spin (circular standard deviation) was calculated as \([-2\log_2(1-S₀)]^{1/2}\). Each index of variability was calculated separately for friend and authority figure interactions, but because our hypotheses pertained to variability broadly rather than specific relationships, and because relationship type did not consistently moderate effects, we averaged friend and authority figure indexes together prior to analyses (all ps < .005).

**Measures.**

**Interpersonal Adjective Scales (IAS).** The IAS (Wiggins, 1995) is a 64-item, eight-scale measure of IPC trait adjectives (e.g., assertive, kind, shy), using an 8-point Likert scale ranging from 1 (extremely inaccurate) to 8 (extremely accurate). The IAS has demonstrated strong psychometric and circumplex properties. The octant scales, which had alpha coefficients ranging .73 to .88, were used to derive weighted dominance and affiliation dimensional scores as overall measures of adaptive interpersonal traits. To measure ambivalence on the IAS, the octant score nearer to zero in each pair of opposing octant scales (e.g., warm-agreeable vs. cold-hearted) was squared and then divided by the opposing octant scale score, based on the Scott (1966) formula. The four resultant subscales were summed for a composite IAS ambivalence index of endorsing opposing interpersonal traits. The internal consistency of these four variables was α = .67. We also calculated a point summarizing each participant’s overall interpersonal tendency (e.g., warm-submissiveness) and distance of this point from the center of the circle, yielding vector length = [(dominance)² + (affiliation)²]¹/₂.

**Inventory of Interpersonal Problems-Circumplex Scales (IIP-C).** The IIP-C (Alden, Wiggins, & Pincus, 1990; Horowitz et al., 2000) is a 64-item, eight-octant measure of interpersonal problems (e.g., “It’s hard for me to say no to other people”) with circumplex structure. Items are measured on a 5-point scale ranging from 0 (not at all) to 4 (extremely). Octant scales (α = .78–.90) were used to calculate dominance and affiliation axis scores. Internal consistency of the four ambivalence subscales was calculated as α = .82. Vector length was calculated as well.

**Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977) Short Form (Levine, 2013).** This measure is a seven-item self-report of depressive symptoms during the past week (e.g., “I felt depressed”). Response options range from 0 (rarely or none of the time [less than 1 day]) to 3 (most or almost all the time [5–7 days]). Internal consistency of the scale in the present study was α = .80.

**Social Interaction Anxiety Scale (SIAS).** This measure of social anxiety (Mattick & Clarke, 1998) has 19 items (e.g., “I have difficulty making eye contact with others”) rated on a 5-point Likert scale ranging from 0 (not at all) to 4 (extremely). Internal consistency in this study was α = .93.

**Functional and Dysfunctional Impulsivity Scale: Dysfunctional Impulsivity Subscale.** This 12-item scale (Dickman, 1990) measures maladaptive impulsive behaviors (e.g., “I often get into trouble because I don’t think before I act”) on a 5-point scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Internal consistency was α = .86.

**Results**

**Assumptions for Multivariate Analyses.** Inspection of the data (univariate skew and kurtosis, multivariate kurtosis, his-
tograms, bivariate scatter plots) suggested that multivariate assumptions were met prior to analyses. Descriptive statistics are reported in Tables 1 and 2. Only 2.94% of data were missing in Part 1. Multiple imputation was utilized to handle missing data.

### Zero-Order Intercorrelations Between Subscales of IPC Ambivalence Indexes.

As hypothesized (see Table 1), all four ambivalence subscales calculated on opposing IAS scales correlated positively, as did the four ambivalence subscales derived from the IIP-C; furthermore, these subscales correlated between the IAS and IIP-C. Individuals prone to endorsing opposing interpersonal tendencies did so broadly, across interpersonal traits and problems. Counter to expectations, female gender was associated with lower ambivalence on the IAS ($r = -.12, p = .05$) and IIP-C ($r = -.15, p = .02$).

### Table 1 Intercorrelations and Descriptive Statistics for IAS and IIP-C Ambivalence Scales

<table>
<thead>
<tr>
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<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>IAS Assured-dominant/Unassured-submissive</td>
<td>.241</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.41 (1.19)</td>
</tr>
<tr>
<td>2</td>
<td>IAS Arrogant-calculating/Unassuming-ingenuous</td>
<td>.41</td>
<td>.24</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.40 (0.98)</td>
</tr>
<tr>
<td>3</td>
<td>IAS Warm-agreeable/Cold-hearted</td>
<td>.23</td>
<td>.24</td>
<td>1.26</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(1.16)</td>
</tr>
<tr>
<td>4</td>
<td>IAS Aloof-introverted/Gregarious-extraverted</td>
<td>.39</td>
<td>.35</td>
<td>.58</td>
<td>1.73</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(1.23)</td>
</tr>
<tr>
<td>5</td>
<td>IIP-C Domineering/Nonassertive</td>
<td>.22</td>
<td>.24</td>
<td>.36</td>
<td>.23</td>
<td>1.20</td>
<td></td>
<td></td>
<td></td>
<td>(0.65)</td>
</tr>
<tr>
<td>6</td>
<td>IIP-C Vindictive/Exploitable</td>
<td>.18</td>
<td>.20</td>
<td>.41</td>
<td>.33</td>
<td>.61</td>
<td>1.31</td>
<td></td>
<td></td>
<td>(0.66)</td>
</tr>
<tr>
<td>7</td>
<td>IIP-C Cold/Overly nurturant</td>
<td>.18</td>
<td>.17</td>
<td>.32</td>
<td>.30</td>
<td>.53</td>
<td>.65</td>
<td>1.35</td>
<td></td>
<td>(0.68)</td>
</tr>
<tr>
<td>8</td>
<td>IIP-C Socially avoidant/Intrusive</td>
<td>.37</td>
<td>.16</td>
<td>.27</td>
<td>.25</td>
<td>.56</td>
<td>.52</td>
<td>.50</td>
<td>1.43</td>
<td>(0.67)</td>
</tr>
<tr>
<td>9</td>
<td>IAS Ambivalence (total)</td>
<td>.68</td>
<td>.65</td>
<td>.67</td>
<td>.82</td>
<td>.32</td>
<td>.39</td>
<td>.34</td>
<td>.33</td>
<td>7.53 (3.23)</td>
</tr>
<tr>
<td>10</td>
<td>IIP-C Ambivalence (total)</td>
<td>.27</td>
<td>.20</td>
<td>.36</td>
<td>.75</td>
<td>.81</td>
<td>.80</td>
<td>.76</td>
<td>.76</td>
<td>.39 4.97 (2.11)</td>
</tr>
</tbody>
</table>

Note. IAS = Interpersonal Adjective Scales; IIP-C = Inventory of Interpersonal Problems Circumplex scales. Means and standard deviations are on the diagonal. All ps < .001.

### Table 2 Correlations for IAS and IIP-C Composite Ambivalence Scores and Measures of Adjustment

<table>
<thead>
<tr>
<th>Variable</th>
<th>M (SD)</th>
<th>IAS Ambivalence</th>
<th>IIP-C Ambivalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distress measures</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CES-D-SF Depression</td>
<td>6.70 (4.30)</td>
<td>.20***</td>
<td>.26***</td>
</tr>
<tr>
<td>Social Interaction Anxiety Scale (SIAS)</td>
<td>24.54 (14.23)</td>
<td>.40***</td>
<td>.40***</td>
</tr>
<tr>
<td>Dysfunctional Impulsivity</td>
<td>30.40 (8.28)</td>
<td>.14**</td>
<td>.27***</td>
</tr>
<tr>
<td>Interpersonal tendencies</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IAS dominance axis</td>
<td>0.86 (0.87)</td>
<td>−.54***</td>
<td>−.21***</td>
</tr>
<tr>
<td>IAS affiliation (&quot;nurturance&quot;) axis</td>
<td>1.30 (0.86)</td>
<td>−.61***</td>
<td>−.33***</td>
</tr>
<tr>
<td>IAS vector length</td>
<td>1.01 (0.54)</td>
<td>−.06</td>
<td>−.03</td>
</tr>
<tr>
<td>IIP-C dominance axis</td>
<td>−0.19 (0.45)</td>
<td>−.05</td>
<td>.11</td>
</tr>
<tr>
<td>IIP-C affiliation (&quot;love&quot;) axis</td>
<td>0.20 (0.41)</td>
<td>−.38***</td>
<td>−.36***</td>
</tr>
<tr>
<td>IIP-C vector length</td>
<td>0.70 (0.38)</td>
<td>−.04</td>
<td>−.24***</td>
</tr>
<tr>
<td>Mean daily SBI agreeableness</td>
<td>0.64 (0.26)</td>
<td>−.34***</td>
<td>−.25***</td>
</tr>
<tr>
<td>Mean daily SBI quarrelsome</td>
<td>−0.56 (0.27)</td>
<td>.21**</td>
<td>.20**</td>
</tr>
<tr>
<td>Mean daily SBI dominance</td>
<td>0.21 (0.26)</td>
<td>−.13†</td>
<td>−.20***</td>
</tr>
<tr>
<td>Mean daily SBI submissiveness</td>
<td>−0.29 (0.30)</td>
<td>.22**</td>
<td>.21**</td>
</tr>
<tr>
<td>Mean daily SBI vector length</td>
<td>1.05 (0.31)</td>
<td>−.27***</td>
<td>−.14*</td>
</tr>
</tbody>
</table>

Note. CES-D-SF = Center for Epidemiological Studies Depression Short Form; IAS = Interpersonal Adjective Scales; IIP-C = Inventory of Interpersonal Problems Circumplex scales; SBI = Social Behavior Inventory. ***p < .001. **p < .01. *p < .05. †p < .06.
Association with Distress Measures and Interpersonal Tendencies. If ambivalence about one’s interpersonal traits or problems reflects a maladaptive process, it should correlate with distress and low dominance and affiliation. Consistent with hypotheses, IAS and IIP-C ambivalence correlated positively with depression, social anxiety, and dysfunctional impulsivity (see Table 2). Similarly, IAS and IIP-C ambivalence correlated negatively with IAS dominance and affiliation, as well as with IIP-C affiliation. Counter to predictions, neither ambivalence index was associated with IIP-C dominance axis scores.

Predicting Cross-Situational Behavioral Variability in Hypothetical Scenarios

Overview. We conducted simple linear regressions for zero-order prediction of variability indexes by ambivalence scores, and multiple regressions that controlled for covariates (reporting correlation $r$ and semipartial correlations $sr$ as effect sizes, respectively). Effects of covariates, for which we made no hypotheses, are reported in the text below, whereas we report effects of substantive hypothesis tests in Table 3.

General Prediction. Consistent with hypotheses, both IAS and IIP-C ambivalence predicted dominance flux of expected behavior across hypothetical social interactions. Similarly, IIP-C ambivalence predicted higher affiliation flux, pulse, and spin, suggesting that individuals who endorsed opposing interpersonal problems expected more variable behavior in social scenarios; counter to expectations, IAS ambivalence did not predict these forms of variability. As expected, controlling gender did not change the pattern of relationships observed. IAS ambivalence predicted dominance flux, whereas IIP-C ambivalence predicted both forms of flux, pulse, and spin.

Controlling Vector Length. Because IPC vector length has been studied as a measure of patterned variability in IPC scales, we controlled for this variable to examine unique effects of ambivalent responding. IIP-C vector length as a covariate predicted dominance flux ($sr = .15, p < .001$) and pulse ($sr = .14, p = .015$), but vector length otherwise had no effects. IAS ambivalence predicted dominance flux even with IAS vector length controlled. With IIP-C vector length controlled, IIP-C ambivalence predicted dominance and affiliation flux and pulse, but no longer significantly predicted spin.

Controlling Depression. Because distress tends to predict behavioral variability, we tested for unique effects with depression symptoms controlled. Depression as a covariate predicted no variables ($ps > .10$), whereas IAS ambivalence marginally predicted dominance flux. IIP-C ambivalence predicted dominance flux, pulse, and spin, and marginally predicted affiliation flux.

Controlling Mean and Squared Mean Levels of Interpersonal Behavior. Means, squared mean levels, and variability of repeated measures data may correlate (Baird et al., 2006). Nevertheless, even after accounting for mean (means averaged across friends and authority figures) and squared mean levels of dominance in scenarios, both IAS and IIP-C ambivalence continued to predict dominance flux. Similarly, IIP-C ambivalence predicted pulse even with mean vector length and squared vector length of hypothetical behaviors controlled. However, this was not the case for IAS ambivalence, and neither ambivalence index predicted affiliation flux.

Table 3 Part 1: Regression Analyses for Hypothetical Interpersonal Scenarios

<table>
<thead>
<tr>
<th></th>
<th>Zero-Order (r)</th>
<th>Controlling Gender (sr)</th>
<th>Controlling Vector Length (sr)</th>
<th>Controlling Depression (sr)</th>
<th>Controlling Mean and Squared Mean (sr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dominance lux</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IAS Ambivalence</td>
<td>.13*</td>
<td>.13*</td>
<td>.13*</td>
<td>.10†</td>
<td>.13*</td>
</tr>
<tr>
<td>IIP-C Ambivalence</td>
<td>.23***</td>
<td>.23***</td>
<td>.26***</td>
<td>.20**</td>
<td>.23***</td>
</tr>
<tr>
<td>Affiliation Flux</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IAS Ambivalence</td>
<td>.04</td>
<td>.07</td>
<td>.04</td>
<td>.04</td>
<td>.01</td>
</tr>
<tr>
<td>IIP-C Ambivalence</td>
<td>.12*</td>
<td>.15***</td>
<td>.12*</td>
<td>.11†</td>
<td>.08</td>
</tr>
<tr>
<td>Pulse</td>
<td></td>
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<tr>
<td>IAS Ambivalence</td>
<td>.04</td>
<td>.06</td>
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<tr>
<td>IIP-C Ambivalence</td>
<td>.17***</td>
<td>.20***</td>
<td>.20***</td>
<td>.15*</td>
<td>.15***</td>
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<tr>
<td>Spin</td>
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<tr>
<td>IAS Ambivalence</td>
<td>.03</td>
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<tr>
<td>IIP-C Ambivalence</td>
<td>.12*</td>
<td>.14*</td>
<td>.10</td>
<td>.12*</td>
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</table>

Note. IAS = Interpersonal Adjective Scales; IIP-C = Inventory of Interpersonal Problems-Circumplex scales; sr = semipartial correlation. Flux, pulse, and spin are averaged across friend and authority figure ratings.

$***p < .001. **p < .01. *p < .05. †p < .06.$
As covariates with IAS ambivalence, mean affiliation ($sr = .04$, $p = .046$) and mean squared affiliation ($sr = -.14$, $p = .014$) predicted affiliation flux, showing an inverted-U pattern. IAS vector length ($sr = -.15$, $p = .013$) and squared vector length ($sr = -.12$, $p = .04$) predicted pulse, as did IIP-C vector length ($sr = -.13$, $p = .03$) and (marginally) squared vector length ($sr = .10$, $p = .08$), showing a U-shaped curvilinear relationship.

Thus, individuals who simultaneously endorsed opposing interpersonal self-perceptions did so broadly across traits and problems, reported poorer adjustment, and exhibited variability of imagined behavior in social interactions, though somewhat less consistently when means/squared mean levels of behaviors were controlled. To extend these effects beyond imagined situations, we examined similar processes in naturalistic daily social interactions.

**PART 2**

**Method**

**Participants.** A large number of participants from Part 1 ($N = 192$; 132 women, 57 men, 3 not providing gender) agreed to participate in an optional follow-up study (Part 2). Their mean age was 20.47 (SD = 3.32; range: 18–49). The sample included 77% White, 10% Asian, 5% Black, 3% Hispanic/Latino, one American Indian, 3% “other” participants, and 2% nonresponders.

**Procedure.** After completing Part 1, participants were invited into a week-long study of daily social interactions for course credit. Instructions required one record on the study Web site for each social interaction lasting 5 minutes and involving adjusting one’s behavior in response to an interaction partner. Participants were instructed to complete at least five records per day and were informed that their adherence may be monitored through time stamps of records. Two hundred thirty-six participants began Part 2. To ensure a reliable sample of cross-situational variability, we analyzed a priori only those with at least 25 interaction records ($N = 192$); only 1.89% of their data were missing (10.87% if all participants were included). Missing data were handled via multiple imputation procedures.

**Measures**

**Predictors.** Participants had previously completed the IAS and IIP-C.

**Social Behavior.** Participants completed Social Behavior Inventory (SBI; Moskowitz, 1994) checklists for each daily social interaction. The 46 items assess dominant (e.g., “I made a suggestion”), submissive (e.g., “I avoided taking the lead or being responsible”), agreeable (e.g., “I smiled and laughed with others”), and quarrelsome behaviors (e.g., “I confronted the other about something I did not like”). In line with Moskowitz and Zuroff (2004), we rotated four 12-item versions of the SBI (three items per subscale) across interactions to reduce “response sets.” Summing items checked (0 to 3) yielded scale subscores, which were ipsatized to control for individual differences in overall item endorsement. Flux scores were computed as standard deviations of subscales across all interactions. Vector length, pulse, and spin were calculated as in Part 1.

**Results**

**Assumptions for Multivariate Analyses.** Data screening found no violations of assumptions related to univariate and multivariate normality. Descriptive statistics are reported in Table 2.

**Associations With Mean Levels of Interpersonal Behavior.** As hypothesized, both IAS and IIP-C ambivalence correlated with higher mean SBI submissiveness and quarrelsome, as well as lower agreeableness across daily interactions (see Table 2); IIP-C ambivalence and IAS ambivalence (marginally) correlated with lower dominance, suggesting that ambivalent responses reflect a dysfunctional process.

**Predicting Behavioral Variability in Daily Social Interactions**

**General Prediction.** Regression analyses paralleled those of Part 1. We describe effects of covariates (for which we made no hypotheses) in the text, but we present effects for core substantive hypothesis tests in Table 4. The primary regressions showed that both forms of ambivalent responding predicted behavioral variability over the course of the week, although effects were more consistent for some types of variability than others. As hypothesized, IIP-C ambivalence predicted flux of agreeable, quarrelsome, dominant, and submissive behavior, as well as spin. Also as hypothesized, IAS ambivalence predicted quarrelsome flux, spin, and (marginally) pulse. Contrary to hypotheses, IIP-C ambivalence did not predict pulse and IAS ambivalence did not predict flux of agreeableness, dominance, or submissiveness.

**Controlling Gender.** Female status predicted only agreeableness flux when serving as a covariate for IAS ($sr = .16$, $p = .029$) and IIP-C ambivalence ($sr = .16$, $p = .023$). As expected, controlling gender did not impact the pattern of results notably. With gender controlled, IIP-C ambivalence predicted flux in all forms of flux and spin, but not pulse. IAS ambivalence predicted spin, flux in agreeableness and quarrelsome, and (marginally) pulse.

**Controlling Vector Length.** Even with vector length controlled on each respective (IAS or IIP-C) measure, ambivalence predicted variability of social behavior. As a covariate in
these models, IAS (sr = .17, p = .018) and IIP-C vector length (sr = .18, p = .003) each predicted only spin. However, IAS ambivalence predicted flux of quarrelsome behavior, spin, and (marginally) pulse. IIP-C ambivalence continued to predict spin and all forms of flux.

Controlling Depression. Controlling for depressive symptoms reduced several effects of ambivalence; IIP-C ambivalence no longer predicted submission flux and now marginally predicted agreeableness flux, and (marginally) pulse. IAS ambivalence predicted spin and flux in quarrelsome behavior, whereas IIP-C ambivalence predicted spin and flux in dominance, quarrelsome, and (marginally) agreeableness. In contrast, as a covariate, depression did not uniquely predict flux, pulse, or spin (ps > .10).

Controlling Mean and Squared Mean Levels of Interpersonal Behavior. Controlling for means and squared means of social behavior across the week provided the most conservative test of our effects. Effects for IAS ambivalence on flux were no longer significant, but it predicted pulse even controlling for mean (SBI) and squared mean vector length of behavior. IIP-C ambivalence continued to predict flux of quarrelsome and dominant behavior after controlling for mean and squared mean behavior levels. As a covariate with IAS ambivalence (sr = .26, p < .001) and IIP-C ambivalence (sr = .26, p < .001), mean submissiveness predicted submission flux. Similarly, mean and squared mean quarrelsomeness as covariates for both IAS (sr = .35, p < .001; sr = .27, < .001) and IIP-C ambivalence (sr = .36, p < .001; sr = .28, p < .001) predicted flux in quarrelsomeness, showing a U-shaped curvilinear relationship.

The findings for naturalistic social interactions largely replicate and extend those for hypothetical interactions. Both IIP-C and IAS ambivalence predicted several types of behavioral variability, though more consistently for the IIP-C.

**DISCUSSION**

Our goal was to investigate ambivalence about interpersonal characteristics as a dysfunctional personality process not limited to personality disorder, and to examine measurement issues, correlates, and prediction of cross-situational variability of social behavior in an unselected student sample. Using a method developed for attitude ambivalence (Kaplan, 1972; Scott; 1966), validated for its psychometric properties (Breckler, 1994), and applied to perceptions of others (Bonanno et al., 1998), we derived a composite index based on summing four ambivalence scores—using pairs of opposing interpersonal scales—per IPC measure. Our results portray opposing or ambivalent responses about one’s interpersonal tendencies as a coherent generalized tendency. The subscales were all positively correlated within interpersonal traits (IAS) and within interpersonal problems (IIP-C), and the two composite indexes had acceptable internal consistency. Moreover, IAS and IIP-C ambivalence cross-correlated.

Thus, individuals who endorse opposing interpersonal styles do so broadly, across the range of traits and problems. Whereas other operationalizations measure uncertainty about the self (Campbell et al., 1996), variability of traits across roles (Donahue et al., 1993), or opposition on individual dimensions...
not identical to the IPC (Erickson & Pincus, 2005), we found support for the idea of broad ambivalence about the interpersonal self on the nomological net of the IPC. This operational definition does not necessarily assess the type of intrapsychic conflict described in psychodynamic theories (e.g., one unconscious, affect-laden object relation defending against another one), but it nonetheless captures a meaningful process measurable via IPC self-report, and its correlates suggest it may operate as a marker of an internal maladaptive process.

Whereas some studies have concluded that opposing or “complex” IPC responses reflect only measurement error (e.g., Haslam & Gurtman, 1999), our results show substantive links of ambivalent IPC responding to maladjustment. As hypothesized, ambivalent responding about both interpersonal traits and problems correlated with measures of depressive symptoms, social anxiety, and dysfunctional impulsivity, in line with studies linking distress to measures of an unclear sense of self and variability in item responses within a trait or across roles (e.g., Campbell et al., 1996; Clifton & Kuper, 2011; Donahue et al., 1993; Hopwood & Morey, 2007). Such findings might seem unsurprising for a measure of interpersonal problems (IIP-C), but correlations of distress with ambivalence about traits (IAS) are noteworthy. Also, as hypothesized, both IAS and IIP-C ambivalence correlated negatively with affiliation across traits, interpersonal problems, and daily interactions; IAS and IIP-C ambivalence were also negatively associated with dominance across traits and daily social behaviors, but unexpectedly not with dominance of interpersonal problems. Unreported post hoc analyses suggested that all other problem types except for domineering and submissive problems were correlated with both ambivalence indexes. Future research should determine whether specific IIP-C scale content or sample-specific variation may explain the IIP-C dominance null finding. Nonetheless, although method variance may affect some findings (e.g., IAS ambivalence and IAS dominance), cross-measure correlations (e.g., IAS ambivalence and SBI dominance) transcended single measures.

Our central aim was to test whether IPC ambivalence predicts variability of imagined and naturalistic social behavior, suggesting links between “internal” and “external” expressions of ambivalence. Consistent with hypotheses, IIP-C ambivalence predicted flux in dominance and affiliation, pulse, and spin across hypothetical behaviors in standardized, imagined interpersonal scenarios; furthermore, it predicted flux in dominant, submissive, agreeable, and quarrelsome social behavior, and spin across a week of naturalistic daily social interactions (but not pulse). Thus, endorsing opposing types of interpersonal problems predicted many forms of variability of social behavior. IAS ambivalence also predicted behavioral variability, but less consistently than did the IIP-C. Specifically, IAS ambivalence predicted greater flux on the dominance dimension across hypothetical situations, as well as greater flux in quarrelsome behavior, spin, and (marginally) pulse across naturalistic social interactions, as hypothesized. However, this index did not predict the other forms of variability assessed in Parts 1 and 2, counter to hypotheses. Nonetheless, our central analyses support the hypothesis that people with opposing perceptions of their interpersonal selves experience relatively greater interpersonal vacillation from situation to situation, across both hypothetical and naturalistic social interactions.

Although the zero-order findings broadly attest to prediction of cross-situational variability by ambivalent responding on both IPC measures, ambivalence predicted variability indexes more consistently for the IIP-C than for the IAS. This may suggest that endorsing opposing types of interpersonal problems (e.g., being both too cold and too self-sacrificing) reflects a more dysfunctional process than endorsing opposing interpersonal traits. One might expect stronger prediction of variability for the IIP-C than the IAS, given that the former was explicitly designed to capture interpersonal tendencies of extreme intensity on the IPC (e.g., being domineering or overbearing; Alden et al., 1990), whereas interpersonal traits represent interpersonal tendencies of mild or moderate intensity (e.g., normal assertiveness). Thus, the stronger results for the IIP-C fit with the traditional tenet of IPC theory that more extreme interpersonal behaviors exemplify personality disturbance (Leary, 1957). Nevertheless, the associations of IAS ambivalence with distress variables (e.g., impulsivity, depression), lower mean levels of adaptive social behavior (e.g., low affiliation), and behavioral variability (e.g., spin) in daily life suggest that ambivalence even about normal-intensity interpersonal tendencies may reflect a dysfunctional process.

In addition, we reexamined our primary hypotheses in more conservative models, controlling for several relevant variables. With gender controlled, the pattern of results persisted without any effects dropping from significance (and IAS ambivalence now predicted agreeableness flux). Thus, results cannot be attributed to gender effects. As a covariate, female gender predicted higher affiliation flux, pulse, and spin in Part 1, and higher agreeableness flux in Part 2; however, men in the study unexpectedly endorsed higher ambivalence. Given higher cold-dominant problems reported by men than women (Gurtman & Lee, 2009), future research should explore whether their higher ambivalence may be due to endorsing not only high base-rate, socially acceptable (affiliative) behaviors but also higher rates of less socially desirable behavior (coldness), as well as explanations for higher behavioral variability in women.

Similarly, we controlled for vector length and found that all of the zero-order effects of ambivalence on behavioral variability measures remained significant, with the exception that IIP-C ambivalence no longer predicted spin in hypothetical interactions. These results show that vector length and ambivalent responding are distinct processes, as do their zero-order associations; ambivalence and vector length were uncorrelated for the IAS, but negatively correlated for the IIP-C, and both IAS and IIP-C ambivalence correlated negatively with SBI vector length (all effects relatively small in magnitude). In core regression analyses, vector length as a covariate predicted
dominance flux and pulse in hypothetical scenarios and spin in daily interactions, which might support the theory that it reflects a dysfunctional process, but this is inconsistent with the idea of vector length as “interpersonal rigidity” (Tracey & Rohlfing, 2010), which would imply restricted behavioral variability. On the other hand, finding a negative relationship between vector length and ambivalence makes sense if vector length simply reflects a well-differentiated IPC profile (Gurtman & Pincus, 2003). Future research should further elucidate the contexts under which each of these IPC-based indexes captures dysfunctional processes.

Controlling for depressive symptoms reduced the size of some effects, although several effects remained significant. In hypothetical scenarios, IAS ambivalence marginally predicted dominance flux, and IIP-C ambivalence predicted dominance flux, pulse, spin, and, marginally, affiliation flux. In naturalistic social interactions, IAS ambivalence predicted quarrelsome- ness flux and spin; IIP-C continued to predict flux in dominant and quarrelsome behavior and spin, and it marginally predicted agreeableness flux. It is not surprising that controlling depression reduced the size of effects, given correlations between depression and ambivalence, as well as theoretical perspectives suggesting that distress, ambivalence, and behavioral lability co-occur. In fact, it may be unusual to find situations in which individuals are ambivalent about their interpersonal tendencies and experience high variability of social behavior without also experiencing distress. If so, then controlling for depressive symptoms may constitute an overly conservative test. Nonetheless, the fact that quite a few effects persisted even with depression controlled shows that links between ambivalent IPC responding and behavioral variability are not simply due to depression; moreover, depression as a covariate was not a significant predictor of flux, pulse, or spin over and above ambivalence.

Similarly, controlling for mean and squared mean levels of social behaviors demonstrated that these factors cannot fully account for links between ambivalent IPC responding and behavioral variability. In hypothetical scenarios, both IAS and IIP-C ambivalence predicted dominance flux, and IIP-C ambivalence predicted pulse of expected behavior even when accounting for mean and squared mean vector length across situations. However, IIP-C ambivalence no longer predicted affiliation flux. In naturalistic social interactions, IAS ambivalence now only predicted pulse, and IIP-C ambivalence continued to predict flux in dominance and quarrelsome-ness (but no longer flux in agreeableness and submissiveness). As with depression, because mean/squared mean levels and variability correlated in some cases (for affiliation and vector length of hypothetical behaviors in Part 1, submissive and quarrelsome behaviors in Part 2), controlling means and squared means also removes important variability in flux/pulse and therefore may be overly conservative. This explains, in part, why effects on affiliation flux in Part 1 and submissiveness flux in Part 2 were no longer significant. Nonetheless, these results show incremental validity of ambivalence in predicting some types of behavioral variability (particularly dominance flux and pulse) beyond effects of mean and squared mean levels.

Both IPC ambivalence and IPC-based measures of behavioral variability presumably reflect processes about which respondents are not fully aware, and therefore permitted a stringent test of the idea that “internal” and “external” forms of ambivalence or inconsistency constitute linked personality processes. Extant studies have examined either the former (e.g., Hopwood & Morey, 2007) or the latter (e.g., Moskowitz & Zuroff, 2004), but the present study is the first of which we are aware to yield empirical evidence of links between opposing self-perceptions and behavioral variability. Thus, though small in magnitude, these effects are relatively novel. These characteristics are reminiscent of the DSM-5 (APA, 2013) diagnostic criteria for borderline personality disorder, in line with findings linking BPD to inconsistency in endorsing interpersonal traits (Hopwood & Morey, 2007), identity diffusion (Sollberger et al., 2012), and behavioral variability (Russell et al., 2007), although no extant studies link these features simultaneously. However, our results in a nonclinical sample suggest that such personality processes may operate broadly, outside of diagnosable personality pathology. Of course, behavioral variability is not synonymous with lability, and at what point variability becomes excessive may be questioned. Also, endorsing opposing perceptions might sometimes reflect the dialectical perspective-taking that typifies wisdom (Baltes & Staudinger, 2000); however, the correlates of behavioral variability in past research (e.g., Moskowitz & Zuroff, 2004) and IPC ambivalence in this study portray the latter as maladaptive.

**LIMITATIONS AND CONCLUSION**

Several limitations should be noted. First, as noted, the effects on variability indexes were less consistent for the IAS than the IIP-C, and the IAS index was less internally consistent; however, the pattern of zero-order correlations of IAS and IIP-C ambivalence indexes with other variables was consistent, and internal consistency does not always impact criterion validity (McCrae, Kurtz, Yamagata, & Terracciano, 2011). Second, although ambivalence temporally preceded and predicted behavioral variability in naturalistic interactions, our correlational design cannot determine causality. Third, the scenarios in Part 1 examined only same-sex interactions. Fourth, our convenience sample underrepresented African Americans and Latino/a Americans.

Overall, endorsing competing views of one’s interpersonal traits and problems predicted distress and cross-situational variability, highlighting what appears to be an important basic personality process that operates in unselected individuals, but which may possess clinical relevance. Future research should examine observable (vs. self-report) forms of behavior variability and outcomes, incorporate clinical samples, and investigate potential causal direction by testing lagged temporal effects of ambivalence on flux and experimentally manipulat-
ing ambivalence (e.g., by priming competing interpersonal motives or giving bogus, contradictory personality feedback after assessment). Finally, future research should disentangle effects of total IIP-C scores and ambivalence. We hope that ambivalent responding adds to the wealth of information IPC assessment provides for understanding personality and informing treatment.

Notes
1. On the suggestion of a reviewer, we also calculated the ambivalence index for scales 90 degrees apart for both the IIP-C and IAS. We retested our primary models with these ambivalence measures in Parts 1 and 2, finding that our standard ambivalence indexes were stronger predictors of outcomes 65% of the time. This suggests that variability related to opposing IPC self-perceptions, rather than an alternative pattern of variability, is more consistently related to cross-situational variability, as expected.

2. We controlled for depressive symptoms as a marker of distress rather than IIP-C mean scores (a commonly used measure of interpersonal distress) due to concerns about multicolinearity if both the IIP-C ambivalence index and mean scores were entered as simultaneous predictors. IIP-C ambivalence and mean scores correlated highly ($r = .72, p < .001$), which is unsurprising given that endorsing higher levels of all pairs of opposing problems will necessarily increase mean scores, although the two are not identical. IAS ambivalence also correlated with IIP-C mean ($r = .39, p < .001$).

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