TRAIT AND STATE CURIOSITY IN THE GENESIS OF INTIMACY: DIFFERENTIATION FROM RELATED CONSTRUCTS

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We examined the roles of curiosity, social anxiety, and positive affect (PA) and negative affect (NA) in the development of interpersonal closeness. A reciprocal self–disclosure task was used wherein participants and trained confederates asked and answered questions escalating in personal and emotional depth (mimicking closeness–development). Relationships between curiosity and relationship outcomes were examined using regression analyses. Controlling for trait measures of social anxiety, PA, and NA, trait curiosity predicted greater partner ratings of attraction and closeness. Social anxiety moderated the relationship between trait curiosity and self–ratings of attraction such that curiosity was associated with greater attraction among those low in social anxiety compared to those high in social anxiety. In contrast, trait PA was related to greater self–ratings of attraction but had no relationship with partners' ratings. Trait curiosity predicted positive relationship outcomes as a function of state curiosity generated during the interaction, even after controlling for state PA.

The availability of close relationships appears to be a salient factor in subjective well–being, resilience against negative events, and promotion of positive affect and physical health (Baumeister & Leary, 1995; House, Landis, & Umberson, 1988; Uchino, Cacioppo, & Kiecolt–Glaser, 1996). Thus, it is not surprising to find a proliferation of theoretical models and empirical research on individual difference factors that facilitate or inhibit the development of close relationships (e.g., Auhagen &

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Hinde, 1997; Baumeister & Tice, 1990; Buhrmester, Furman, Wittenberg, & Reis, 1988; Dill & Anderson, 1999). The purpose of this study was to examine the effects of trait and state curiosity and positive affect (PA) on self- and interaction-partner ratings of interpersonal attraction and closeness during a social interaction. Additionally, we were interested in whether these positively valenced personality and affect variables had greater utility in explaining relationship outcomes than the negatively valenced constructs of social anxiety and negative affect (NA).

CURIOSITY: FACILITATING PERSONAL GROWTH OPPORTUNITIES

Curiosity is defined as the positive emotional–motivational system oriented toward the recognition, pursuit, and self–regulation of novel and challenging information and experiences (Kashdan, 2004). The experience of discrete positive emotional states such as curiosity broadens an individual's "thought–action repertoire," which, in turn, can build intrapersonal and interpersonal resources (Fredrickson, 1998, 2001). Curiosity maintains characteristics that differentiate it from other positive affects. Curiosity energizes approach behaviors in response to seemingly unfamiliar, challenging, and meaningful environmental signals. Curiosity purportedly facilitates personal growth as a function of exploring these signals and integrating the new knowledge or resources that are inevitable by–products of approaching the unfamiliar (Kashdan, Rose, & Fincham, 2004). For example, experiencing curiosity in a social interaction can broaden one's attention to information about interaction partners and conversation topics, thus increasing one's desire to have more encounters with the person(s) of interest. An accumulation of interactions with the same person that continually induce flow–like absorption and a desire to learn more about their perspectives and experiences can be expected to lead to enduring intimate relationships. Curiosity has not been explored in the interpersonal domain.

Curiosity has been investigated in an interpersonal context because of its likely impact on responsiveness, an important ingredient in successful social interactions. Responsiveness has been defined as the "probability that one communicator responds to the communication behaviors of another" (Segrin & Abramson, 1994, p. 659; see Davis, 1982). Individuals who are more responsive generate greater reinforcement for interaction partners, whereas individuals who are less responsive are likely to reduce the quality and enjoyment of interactions. Traits that increase responsiveness can be expected to lead to increased positive interper-

sonal outcomes. Likewise, traits that increase sensitivity to rewarding features of social interactions can lead to more positive interpersonal outcomes. Low levels of curiosity can be expected to inhibit the formation of close interpersonal relationships, particularly during the initial stages of impression formation. In contrast, people interacting with highly curious individuals are likely to feel closer to them and find them more attractive relative to less curious individuals. It feels good when conversational partners listen, respond, and demonstrate interest in what we say and who we are. The present study tested hypotheses suggesting that curiosity facilitates interpersonal closeness in interactions between novel partners (i.e., strangers).

GLOBAL POSITIVE AFFECT: STRONG RELATIONSHIPS WITH SOCIAL ACTIVITY

Relative to curiosity, PA has received a great deal more empirical attention; global affect measures have been used in hundreds of studies (Watson & Clark, 1994). Despite new theory and research on curiosity, it may be less important in understanding the development of interpersonal closeness than the broader construct of trait PA. Trait PA can be defined as the relatively stable propensity to experience pleasurable engagement with the environment more frequently or intensely, or both (Watson, 1988). The comparison of curiosity and PA is also a comparison between analyses of different levels of affective data. Positive affectivity has been shown to be a higher level of analysis that branches off into various discrete emotions such as interest or curiosity (Tellegen, Watson, & Clark, 1999). Data consistently indicate a robust positive association between PA and various indices of interpersonal activities and relationships (McIntyre, Watson, Clark, & Cross, 1991; Watson, Clark, McIntyre, & Hamaker, 1992) beyond that explained by extroversion (Burger & Caldwell, 2000). Theorists have proposed a mutual interplay between global PA and social activity such that both serve to increase the frequency of pleasurable opportunities (e.g., Tellegen, 1985). Global PA also appears to influence the activation of personal resources and prosocial behaviors in "unexpected" interpersonal situations that require spontaneous action. This positive–affective infusion on behavior is proposed to lead to positive interpersonal outcomes (e.g., higher rated relationship satisfaction; Forgas, 2002). For these reasons, we tested hypotheses suggesting that global PA facilitates interpersonal closeness in interactions between novel partners.

DIFFERENTIATING CURIOSITY AND POSITIVE AFFECT FROM THE IMPACT OF NEGATIVELY VALENCED CONSTRUCTS ON RELATIONSHIP OUTCOMES

An extensive review of the literature has shown that negative characteristics are overwhelmingly stronger predictors of outcomes related to social activities, impression formation, health, major and minor life events, information processing, and self–appraisals than positive characteristics (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001). Thus, it may be the case that curiosity and PA play relatively trivial roles in predicting relationship outcomes relative to negative personality and affect variables.

Given the considerable impact of social anxiety on interpersonal behavior, we included social anxiety as a negatively valenced personality trait in predicting relationship outcomes. Excessive social anxiety, by definition, is associated with interpersonal distress, impairment, or both (American Psychiatric Association, 1994). Evidence generally shows that excessively socially anxious individuals maintain dysfunctional interpersonal and cognitive styles that interfere with their social performance and increase the likelihood of rejection (Clark & Wells, 1995; Rapee & Heimberg, 1997). Likewise, given other studies that have found various negative affective states, such as depression, to be associated with lower intimacy during social interactions (e.g., Nezlek, Hampton, & Shean, 2000), we examined the broad construct of trait NA as a predictor of relationship outcomes.

Despite the positive–negative asymmetry in prior work (Baumeister et al., 2001), on the basis of recent theory and preliminary evidence on the roles of curiosity and PA in facilitating personal growth experiences (Fredrickson, 1998; Kashdan et al., 2004), we expected positive traits to be uniquely related to positive relationship outcomes after statistically controlling for variance in negative traits. No a priori hypotheses were made concerning the unique predictive role of social anxiety and trait NA on relationship outcomes controlling for variance in positive traits.

TRAIT–STATE MODELS OF CURIOSITY AND POSITIVE AFFECT

A person can be described as being high in trait curiosity when he or she has the propensity to experience momentary curiosity under more conditions, more readily, more frequently, and for more prolonged periods of time. Similarly, a person can be described as high in PA when they experience momentary PA more frequently or intensely (Watson, 1988). State curiosity and PA tend to fluctuate over time, varying as a function of enabling and inhibiting conditions. Both state curiosity and PA are

likely to be more intense in response to cues of reward, pleasure, and excitement. Few studies have examined the trait–state models of curiosity or PA in a single study and, to the authors' knowledge, no published studies have examined the trait–state model in the context of the initial stages of intimacy development. Additionally, no published studies have directly compared the unique power of state curiosity and PA in predicting self- and partner ratings of interpersonal attraction and closeness. For these reasons, we conducted path analyses to examine the trait–state models of curiosity and PA. Specifically, *trait curiosity* was proposed to predict positive self- and interaction-partner attraction and closeness ratings indirectly through the generation of *state curiosity* during the social interaction. Likewise, *trait PA* was proposed to predict positive self- and interaction-partner ratings by its impact on *state PA* during the social interaction. To test the specificity of these models, we examined the effects of state curiosity on relationship outcomes controlling for state PA, and the effects of state PA on relationship outcomes controlling for state curiosity.

THE PRESENT STUDY

To mimic the initial process of closeness development, participants interacted with a confederate by taking turns answering and asking standardized questions that gradually increased in the level of personal disclosure necessary to answer them. To increase the internal validity of the experiment, confederates were not only trained to behave in a structured manner (neutral or friendly), but they also provided all participants with uniform verbal responses.

The present study explored the effects of dispositional curiosity and PA on interpersonal outcomes during a reciprocal self–disclosure task. Based on relevant theory, both curiosity and PA were proposed to have positive zero–order correlations with self- and partner ratings of attraction and closeness. In testing the unique variance attributed to curiosity and PA, we also examined the roles of the negatively valenced constructs of social anxiety and trait NA. All of these trait variables were examined simultaneously to extract the unique predictive utility of positive and negative personality and affective traits on relationship outcomes.

METHOD

PARTICIPANTS

Individuals aged 18 years or older were selected from an initial pool of introductory psychology students. For the purposes of another study

(Kashdan & Roberts, 2004), participants were selected on the basis of their combined score on the Social Interaction Anxiety Scale and the Social Phobia Scale (SIAS/SPS; Mattick & Clarke, 1998) administered during mass testing sessions. The high social anxiety (SA) group was randomly selected from the top 10% and the low–SA group was randomly selected from the lower 50% of the distribution. The sample included 57 females (29 high–SA) and 47 males (23 high–SA). No data were collected on the specific age or ethnicity of individual participants.

PREDICTOR MEASURES

Social Anxiety Symptomatology. The 19–item SIAS (Mattick & Clarke, 1998) was administered to assess fears in social interaction situations. The 20–item SPS (Mattick & Clarke, 1998) was administered to assess fears in social performance situations (e.g., public speaking anxiety). These two scales can be aggregated together to form a single general measure of social anxiety (Mattick & Clarke, 1998). Items were answered using a 4–point Likert scale. The alpha coefficient for the SIAS/SPS was .97. We used a dichotomous version of the SIAS/SPS based on participant selection criteria.[1]

Trait and State Positive and Negative Affect. Trait PA and trait NA were measured with the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988). Instructions asked participants to report general feelings using a 5–point Likert scale. The PANAS is a 20–item measure of two affect dimensions: PA and NA. The PANAS–PA subscale assesses activated positive emotions (e.g., excited, joyful) and the PANAS–NA subscale assesses activated negative emotions (e.g., anxious, jittery). Respective alpha coefficients for the trait PA and trait NA subscales were .72 and .86, respectively.

To assess state PA and state NA during the social interaction, participants were asked to "indicate to what extent you feel this way right now, that is, at the present moment." State PA and state NA were computed by averaging across the asking and answering portions of the social interaction task. The alpha coefficients for state PA and state NA were .91 and .87 (averaged across conditions), respectively.

Trait and State Curiosity. Trait and state curiosity was measured with the 20–item State–Trait Curiosity Inventory (STCI; Spielberger, 1979). The

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1. We also conducted all analyses using social anxiety as a continuous variable (SIAS/SPS). All findings were virtually identical to those using social anxiety as a dichotomous variable. For the sake of simplicity, we report only dichotomous variable findings in the main text and tables.

10-item STCI–Trait assesses general tendencies to learn new things and experience feelings of interest (e.g., "I am curious"; "I am stimulated"). The 10-item STCI–State instructions ask participants to "indicate how you feel right now; that is, at this moment". State curiosity was computed by averaging across the asking and answering portions of the social interaction task. Respondents used a 4–point Likert scale. The alpha coefficients for trait and state curiosity were .76 and .86 (averaged across conditions), respectively.

EXPERIMENTAL OUTCOME MEASURES

Interpersonal Relationship Variables. At the end of the interaction, measures of interpersonal attraction and perceived closeness were taken from both confederates (rating feelings about the participant) and participants (rating feelings about the confederate).

To rate interpersonal attraction, participants completed the six–item Interpersonal Judgment Scale (IJS; Byrne, 1971). An index of attraction was based on two items assessing the degree to which individuals "get along" and "would like to work together."[2]

Participants rated items on a 9–point Likert scale. The two–item IJS is considered one of the standard measures of interaction dynamics, with excellent construct validity (e.g., Heimberg, Accera, & Holstein, 1985). The alpha coefficients for the participants' and confederates' IJS scores were .85 and .97, respectively.

To rate how close individuals felt to one another as a result of the interaction, participants completed the one–item Inclusion of Other in the Self Scale (IOS; Aron, Aron, & Smollan, 1992). Respondents were provided with a series of seven circles representing "self" and "partner" that gradually increased in their degree of overlap. The overlapping circles represented degrees of interpersonal closeness. The IOS has construct validity similar to more comprehensive relationship measures (e.g., Aron et al., 1992).

PROCEDURE

Pre–Experimental Measures. Participants were asked to complete the SIAS/SPS, PANAS, and STCI–Trait scales prior to the experiment.

Social Interaction Task. To standardize the social task, the same male

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2. Supplementary analyses using the entire six–item Interpersonal Judgment Scale of attraction (e.g., rating others' intelligence, morality, and how interesting they are; alpha coefficient = .90) led to virtually identical results for all statistical tests.

and female research assistants enacted confederate roles for all participants in same–sex interactions. Same–sex interactions were conducted to reduce the potential confounds of heterosocial skills and dating–related variables (e.g., lower social–evaluative concerns as a function of dating frequency). Confederates were blind to group membership and were trained to provide consistent friendly or neutral social behavior. Confederates were also trained to provide ratings on their feelings of attraction and closeness to participants. To increase the ecological validity of confederate ratings and to reduce the likelihood of comparisons between participant interaction partners, confederates conducted no more than one experiment per day. On the basis of pilot work, confederates reported little difficulty detailing their differential feelings toward interaction partners. Thus, it was believed that the current experiment provided a good balance between strong internal validity (i.e., scripted performances) and the availability of data from both interaction partners. Training involved mock interactions between confederates and graduate students, and feedback from the primary author.

Upon completing self–report questionnaires, participants were led into another room. Participants were asked to wait patiently while the other student in the study, in actuality the confederate, was brought into the room. Participants and confederates were provided the role of either answering or asking a series of five questions that gradually increased in the emotional content and level of personal disclosure necessary to answer them. Immediately afterward, participants and confederates switched roles, such that the individual who previously asked all of the questions then served as the responder to the questions. The five questions, in order of presentation, were as follows:

"If you could invite anyone, living or dead, for dinner and conversation, who would it be and why?"

"Is there anything you find disturbing about immortality? If not, why not?"

"If a crystal ball would tell you the truth about any one thing you wished to know concerning yourself, life, the future, or anything else, what would you want to know?"

"Is there something that you've dreamed of doing for a long time? Why haven't you done it?"

"When did you last cry in front of another person? By yourself?"

The first question is objectively more impersonal than the emotional and

personal disclosure necessary to answer the final two questions. Each of the confederates scripted responses was approximately 1 minute in length. All participants and confederates took part in both asking and answering the series of questions. An equal number of participants from high- and low–SA groups, and gender within groups, were randomly assigned and counterbalanced to tasks.

Post assessment. Immediately after each of the answering and asking conditions, participants and their confederate interaction partners completed questionnaires according to "their feelings and state of mind during the prior interaction." Questionnaires included state PA and STCI–State. Once the entire interaction was completed, participants and interaction partners completed attraction and interpersonal closeness questionnaires relating to their appraisal of the social interaction.

Examining the Fidelity of Confederate Behavior. Two research assistants with no knowledge of the purpose of the study were trained to code videotapes of confederate interaction behavior. Raters were trained via didactic sessions, sample videotapes, and feedback from the investigator (T.K.). To examine the fidelity of confederate roles, trained coders used 7–point Likert scales for five items: "Degree to which the confederate committed to their scripts," "How attentive were they to their partner?" "How animated was their posture during the interaction?" "How animated was their voice during the interaction?" and "How friendly were they during the interaction?" All ratings were independently conducted.

OVERVIEW OF DATA ANALYSIS

In order to understand the basic relationships among the variables under study, we began by examining zero–order correlations among individual difference variables and relationship outcomes. Because we used two trained confederates for 104 participant interactions, it was necessary to examine the interdependency within the confederates' ratings. We conducted preliminary tests on the nonindependence of our data or the degree to which the specific confederate interaction partner influenced the relationship outcome variables. Relationship outcomes were regressed on confederate interaction partners while statistically controlling for the effects of predictor variables (i.e., social anxiety, curiosity, and PA; Kenny, Kashy, & Bolger, 1998). The degree of nonindependence in relationship outcomes determined the appropriate choice of statistical analysis. If significant differences on relationship outcome variables were a function of which confederate interacted with participants, nested modeling techniques would be appropriate (Kenny et al., 1998).

RESULTS

PRELIMINARY ANALYSES

Examining Uniformity of Confederate Behavior. Interrater agreement between independent observer ratings was assessed using Intraclass Correlations (Shrout & Fleiss, 1979). An acceptable intraclass reliability coefficient of .73 was found between the two observers for the aggregate of manipulation check items. Averaging independent raters' scores indicated that the degree to which confederates committed to their scripts was 6.76 (SD = .38) on a 7–point scale. Ratings of confederate behaviors had no relationship with trait measures of curiosity, PA, or NA (ps > .25). Likewise, high- and low–SA groups failed to differ on any ratings of confederate behavior (ps > .15). Thus, confederates were quite uniform in their level of friendliness and engagement across participants.

Zero–Order Correlations for Relationship Outcomes and Individual Difference Variables. As reported in Table 1, trait curiosity had a moderate, positive relationship with trait PA (r = .54), and a strong positive relationship was found between state curiosity and state PA (r = .81).[3] Results suggest that curiosity and PA are related, but by no means redundant. These constructs have much greater overlap when assessed over a shorter time span.[4] Of relevance to our thesis, trait curiosity had a positive relationship with both self- and partner–rated attraction [rs = .18 (trend) and .26, respectively] and closeness (rs= .23 and .25, respectively). In contrast, trait PA was related only to self–rated attraction (r = .29) and closeness (r = .22), and trait NA and social anxiety were related only to self–rated attraction (rs= –.19 and –.20, respectively). Thus, curiosity was the only individual difference variable to be related to all rela-

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3. Due to moderate to large correlations between some of the predictors in our regression analyses, multicollinearity was examined using collinearity diagnostics. For all five dimensions, conditioning indices were less than 20.4, and for only one dimension were there two variance proportions that were greater than .50 (.89 for trait PA and .55 for trait curiosity). On the basis of suggested criteria for multicollinearity (see Tabachnick & Fidell, 2001), our data provide evidence that multicollinearity was not a problem.

4. Two items of the original PANAS PA scale, "interested" and "attentive," are potentially confounded with the construct of curiosity. However, analyses of curiosity and the PA scale without these two items were virtually identical to all reported findings. For example, trait curiosity had similar correlations to the 10–item and 8–item PA scale, r = .54 and .51, respectively and state curiosity had similar correlations to each of the state versions of these scales, r = .82 and .79, respectively. For the sake of parsimony, other analyses are not reported.

TABLE 1. Zero–Order Correlations for Interpersonal Relationship Variables and Individual Difference Predictors

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	M	SD
1. Partner Attraction (IJS)	1.0											11.40	3.42
2. Partner Closeness (IOS)	.82***	1.0										3.03	1.36
3. Self–Rated Attraction (IJS)	.19$^+$	.14	1.0									12.97	2.62
4. Self–Rated Closeness (IOS)	.27**	.22*	.39***	1.0								3.30	1.31
5. SIAS/SPS^a	-.09	-.11	-.20*	-.14	1.0							46.91	32.71
6. STCI Trait	.26**	.25**	.18$^+$	.23*	-.19$^+$	1.0						24.72	4.29
7. STCI State	.37***	.34***	.58***	.36***	-.20*	.52***	1.0					28.24	5.35
8. Trait PA	.13	.11	.29**	.22*	-.34***	.54***	.40***	1.0				33.13	6.87
9. State PA	.34***	.30**	.50***	.30**	-.29**	.44***	.81***	.55***	1.0			32.10	8.16
10. Trait NA	-.08	-.14	-.19*	-.12	.52***	-.03	-.17	-.15	-.27**	1.0		19.82	6.02
11. State NA	-.18$^+$	-.19$^+$	-.11	-.20*	.51***	-.09	-.09	-.19$^+$	-.11	.44***	1.0	28.41	8.89

Note. Correlations are for all participants (n = 104). ^{a}Social anxiety was a dichotomous variable (high vs. low social anxiety) as a function of the SIAS/SPS. IJS = Interpersonal Judgment Scale; IOS = Inclusion of Other in the Self Scale. $^+$ $p \le .06$; *$p < .05$; **$p < .01$; ***$p < .001$.

tionship outcome variables.[5] Nonetheless, because social anxiety and NA have shown relationships to indices of social activity in prior research, social anxiety, curiosity, PA, and NA were entered simultaneously in primary analyses. Despite the brevity of our interaction task (~10 minutes), partner and confederate ratings of closeness and attraction had small positive relationships. Thus, there was some evidence for the ecological validity of confederate ratings.

Nonindependence of Data and Gender Effects. The design of our experiment completely confounds the influence of gender and confederate interaction partners (one male and one female confederate for all same–sex interactions) on outcomes. Thus, we cannot parse confederate gender differences, participant gender differences, or whether differences between confederates and participants are due to specific confederates. However, we examined whether our data were independent and whether gender had main or interaction effects on relationship outcomes.

A dummy-coded variable reflecting confederate gender was used to test relations with interpersonal relationship variables. To test the nonindependence of data, we regressed participant ratings and all predictors (i.e., social anxiety, trait curiosity, and trait PA, trait NA) on confederate ratings of closeness and attraction. We conducted *t* tests between each of the confederates on the residual variance (Kenny et al., 1998). Results indicated that the confederates failed to differ in accounting for the residual variance in closeness and attraction ratings (ps = .14 and .20, respectively). Based on these results, regression models were used to test hypotheses.

Using the same dummy–coded variable for gender, we found no differences for any of the relationship outcome variables (ps ranged from .22 to .55). There were also no gender differences on any of the individual difference predictor variables (ps ranged from .20 to .92). Finally, no

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5. Zero–order relationships were similar in the high- and low-SA groups for trait curiosity and interaction partner ratings of attraction (low–SA, r = .23; high–SA, r = .27), perceived closeness (low–SA, r = .24; high–SA, r = .24), and self–ratings of perceived closeness (low–SA, r = .23; high–SA, r = .18). The only apparent group difference was for self–ratings of attraction (low–SA, r = .30; high–SA, r = –.01). Likewise, there were few apparent group differences for correlations among trait and state PA and NA and interpersonal relationship variables. The only apparent group differences were between trait NA and partner ratings of attraction (low–SA, r = .16; high–SA, r = –.22) and closeness (low–SA, r = .08; high–SA, r = –.29), and between state NA and self–ratings (low–SA, r = .05; high–SA, r = –.28) and partner ratings (low–SA, r = .00; high–SA, r = –.28) of closeness. These findings support collapsing across groups, thereby increasing the statistical power of regression analyses.

TABLE 2. Contributions of Individual Difference Variables to Confederate Partner
Ratings of Intimacy to Participants: Regression Analyses

Variable	Partner Rated Attraction				Partner Rated Closeness			
	R^2_{ch}	*t* test	β	*pr*	R^2_{ch}	*t* test	β	*pr*
Social Anxiety[a]		−.07	−.01	−.01		−.06	−.01	−.01
Trait PA		−.28	−.03	−.03		−.57	−.07	−.06
Trait NA		−.64	−.07	−.06		−1.20	−.14	−.12
Trait Curiosity		2.36*	.27	.23*		2.45*	.28	.24*
R^2 Total	.07				.08[+]			

Note. Degrees of freedom were 99 for all *t* tests. No interaction effects were significant. Attraction was measured with the Interpersonal Judgment Scale (Byrne, 1971) and closeness was measured with the Inclusion of Other in the Self Scale (Aron et al., 1992). [a]Social anxiety was a dichotomous variable (high SA vs. low SA) as a function of the SIAS/SIPS; Mattick & Clarke[comma here] 1998). [+]$p = .07$; *$p < .05$; **$p < .01$; ***$p < .001$.

interaction effects were found between gender and any of the predictor variables for relationship outcomes (except for the Gender × Trait Curiosity interaction on participant attraction; $p = .15$, all $ps > .55$). Thus, gender was ignored in subsequent analyses.

PRIMARY ANALYSES

Regression analyses were used to determine the unique predictive utility of individual difference variables on interpersonal relationship variables. All individual difference predictors (social anxiety, trait PA, trait NA, and trait curiosity) were included simultaneously. This procedure controlled for shared variance among predictors. We also examined interaction terms between social anxiety (i.e., the sample selection criterion) and individual difference variables in the second step. Only significant or marginally significant interaction terms were retained in models. The goal of these analyses was to examine the unique utility of trait curiosity in predicting relationship outcomes compared to more widely researched personality and affect constructs.

Testing Utility of Individual Difference Variables in Predicting Interaction-Partner Ratings of Interaction. As Table 2 shows, trait curiosity was the only significant individual difference predictor of partner–rated attraction, $t(99) = 2.36$, $p = .02$, and partner–rated closeness, $t(99) = 2.45$, $p = .02$. No interaction effects between social anxiety and predictor variables were significant ($ps > .60$). Thus, social anxiety (and our sampling procedure) had a minimal impact on partner ratings of interpersonal outcomes.

As a caveat to our findings, the omnibus tests for the entire model failed to reach significance for partner–rated attraction (R^2 = .07, p = .11) or closeness (R^2 = .08, p = .07). However, regression models with only trait curiosity significantly predicted both partner–rated attraction, $F(1, 102)$ = 7.29, R^2 = .07, p = .008, and partner–rated closeness, $F(1, 102)$ = 6.83, R^2 = .06, p = .01. Thus, curiosity predicted greater attraction and closeness as rated by confederate interaction partners, even after controlling for shared variance with social anxiety and trait PA and NA.

Testing Utility of Individual Difference Variables in Predicting Self–Ratings of Interaction. As Table 3 shows, trait–PA, $t(98)$ = 2.08, p = .04, was significantly associated with greater self–rated attraction of interaction partners, and trait curiosity was a near–significant predictor, $t(98)$ = 1.92, p = .058. However, the trend for curiosity was subsumed by a Curiosity × Social Anxiety interaction, $t(98)$ = –1.90, p = .06. Although curiosity was marginally associated with greater self–rated attraction, this main effect was moderated by social anxiety (our selection criterion).[6] We decomposed the interaction by conducting regression analyses for each social anxiety subgroup separately. In the low social anxiety group, higher levels of curiosity were associated with significantly greater self–ratings of attraction, $F(1, 50)$ = 4.77, R^2 = .09, p = .03. In contrast, in the high social anxiety group, curiosity had no relationship with self–ratings of attraction (p = .97). As will be discussed later, although post hoc, this finding fits with theory on the joint roles of curiosity and anxiety in understanding subjective well–being (Spielberger & Starr, 1994). Overall, trait PA and curiosity moderated by social anxiety each predicted greater self–rated attraction to partners, even after controlling for shared variance with other individual difference variables. In contrast to self–rated attraction to partners, all individual difference factors, as main effects or in interaction with social anxiety, failed to predict self–rated closeness (see Table 3).

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6. Given that the association between curiosity and self–rated attraction was moderated by social anxiety, on an exploratory basis we tested whether trait NA or PA moderated the effects of trait curiosity on relationship outcomes. In each of the cases, the interaction term was not statistically significant (ps > .20). The only exception was the Trait Curiosity × Trait NA interaction on self–rated attraction, $t(98)$ = –2.80, p = .006. The nature of the interaction was similar to the Trait Curiosity × Social Anxiety interaction on self–rated attraction, such that curiosity had a stronger effect among individuals who were low in trait NA compared to those who were high in trait NA.

TABLE 3. Contributions of Individual Difference Variables to Self–Ratings of Intimacy
to Interaction–Partners: Regression Analyses

Variable	Self–Rated Attraction				Self–Rated Closeness			
	R^2_{ch}	*t* test	β	*pr*	R^2_{ch}	*t* test	β	*pr*
Social Anxiety [a]		1.80	1.06	.18		−.27	−.03	−.03
Trait–PA		2.08*	.24	.21		.90	.11	.09
Trait–NA		−1.62	−.18	−.16		−.70	−.08	−.07
Trait Curiosity		1.92[+]	.59	.19		1.40	.16	.14
Curiosity × SA		−1.90[+]	−1.12	−.19				
R^2 Total	.14**				.07			

Note. Degrees of freedom were 98 for *t*–tests for self–rated attraction as a result of including the marginal Curiosity × Social Anxiety interaction effect. Degrees of freedom were 99 for *t* tests for self–rated closeness. No other interaction effects were significant for either outcome variable. Attraction was measured with the Interpersonal Judgment Scale (Byrne, 1971) and perceived closeness was measured with the Inclusion of Other in the Self Scale (Aron et al., 1992). [a]Social anxiety was a dichotomous variable (high vs. low social anxiety) as a function of the Social Interaction Anxiety Scale/Social Phobia Scale (SIAS/SPS; Mattick & Clarke, 1998). [+]$p \leq .06$; *$p < .05$; **$p < .01$; ***$p < .001$.

TRAIT–STATE MEDIATIONAL MODELS OF CURIOSITY AND PA

Our trait–state models suggest that the effects of trait curiosity and trait PA on interpersonal outcomes are indirect and are mediated through the level of state curiosity and state PA generated during the social interaction (see Spielberger & Starr, 1994). The results reported above indicate that curiosity was positively related to partner–rated attraction and closeness (zero–order correlations and regression analyses) and to self–rated attraction (zero–order correlations and regression analyses) and closeness (zero–order correlation). Trait PA was positively related to self–rated attraction (zero–order correlations and regression analyses) and closeness (zero–order correlation). Following the guidelines of Baron and Kenny (1986), we conducted analyses to determine whether three necessary conditions were met to demonstrate mediation of each of these effects.

Mediation of the Effects of Trait Curiosity. Condition 1, requiring that trait curiosity be associated with state curiosity, was supported by the correlations reported in Table 1. Condition 2, requiring that trait curiosity be significantly associated with self- and interaction-partner attraction and closeness ratings, was partially supported by the regression analyses reported earlier. Specifically, curiosity was a significant predictor of greater partner ratings of attraction and closeness, and self–rated closeness (see Table 1), and there was a trend for self–rated attraction (*p*

= .058). Condition 3, requiring that significant relationships between trait curiosity and interpersonal outcomes be reduced after controlling for state curiosity during the social interaction, is reported in Tables 4 and 5. As can be seen, respective relationships between trait curiosity and partner–rated attraction and closeness were reduced to nonsignificant levels after controlling for state curiosity ($ps > .36$). Similar findings were found for self–rated closeness ($p = .61$), and the trend between trait curiosity and self–rated attraction was marginally reduced upon controlling for state curiosity. Furthermore, upon controlling for trait curiosity, state curiosity retained significant relationships with self- and interaction-partner ratings of attraction and closeness ($ps < .01$). These results suggest that the effect of trait curiosity on relationship outcomes was a function of state curiosity generated during the social interaction. State curiosity appeared to be a more robust predictor of these outcomes than trait curiosity.

To further test the relative importance of state curiosity, we examined the relationship between state curiosity and interpersonal outcomes, controlling for state PA. The results are summarized in Tables 4 and 5. Controlling for shared variance with state PA, state curiosity was a unique predictor of self-rated attraction and closeness and had a marginal trend in predicting partner ratings of attraction and closeness. Thus, state curiosity during the social interaction exhibited effects on relationship outcome variables above and beyond the large shared variance with state PA.

Mediation of the effects of trait PA. Condition 1, requiring that trait PA be associated with state PA, was supported by the correlations reported in Table 1. Condition 2, requiring that trait PA be associated with self- and partner attraction and closeness ratings, received mixed support. Regression analyses revealed that trait PA was associated with greater self–ratings of attraction, $F(1, 102) = 9.43$, $R^2 = .09$, $p = .003$, and closeness, $F(1, 102) = 5.12$, $R^2 = .05$, $p = .026$, but no relationships were found with partner ratings. Condition 3, requiring that significant relationships between trait PA and self-rated relationship outcomes be reduced after controlling for state PA during the social interaction, was supported by the regression analyses reported in Table 5. Respective relationships between trait PA and self–rated attraction and closeness were both reduced to nonsignificant levels after controlling for state PA ($ps > .47$). Furthermore, upon controlling for trait PA, we found that state PA retained significant relationships with self–ratings of attraction, $t(101) = 4.66$, $p = .001$, and closeness, $t(101) = 2.22$, $p = .029$. These results suggest that the effect of trait PA on self–rated relationship outcomes was a function of state PA generated during the social interaction.

To further test the relative importance of state PA, we examined the re-

TABLE 4. Effects of Potential Mediating Variables on Partner Ratings of Intimacy

	Partner Ratings of Attraction					Partner Ratings of Closeness				
Potential Predictor and	*B*	*SE B*	β	*t* test	*p*	*B*	*SE B*	β	*t* test	*p*
Mediator Variables										
Trait Curiosity, Controlling for State Curiosity	.07	.09	.09	0.82	.413	.03	.04	.10	0.91	.368
Trait PA, Controlling for State PA	−.04	.06	−.08	−0.73	.466	−.02	.02	−.08	−0.71	.479
State Curiosity, Controlling for Trait Curiosity	.10	.03	.33	3.02	.003	.03	.01	.29	2.67	.009
State Curiosity, Controlling for Trait PA	.12	.03	.38	3.79	.000	.05	.01	.36	3.50	.001
State Curiosity, Controlling for State PA	.09	.05	.29	1.80	.076	.04	.02	.30	1.82	.072
State PA, Controlling for State Curiosity	.02	.03	.10	0.65	.515	.00	.01	.06	0.36	.717

TABLE 5. Effects of Potential Mediating Variables on Self Ratings of Intimacy

Potential Predictor and Mediator Variables	Self Ratings of Attraction					Self Ratings of Closeness				
	B	SE B	β	t test	p	B	SE B	β	t test	p
Trait Curiosity, Controlling for State Curiosity	-.10	.06	-.16	-1.72	.088	.02	.03	.06	0.52	.605
Trait PA, Controlling for State PA	.02	.04	.03	0.27	.790	.02	.02	.03	0.72	.476
State Curiosity, Controlling for Trait Curiosity	.16	.02	.66	7.04	.000	.04	.01	.33	3.04	.003
State Curiosity, Controlling for Trait PA	.13	.02	.55	6.19	.000	.04	.01	.32	3.21	.002
State Curiosity, Controlling for State PA	.13	.03	.52	3.66	.000	.04	.02	.36	2.21	.029
State PA, Controlling for State Curiosity	.01	.02	.08	0.54	.591	.00	.01	.01	0.03	.973

lationship between state PA and interpersonal outcomes while controlling for state curiosity. The results are summarized in Tables 4 and 5. Controlling for shared variance with state curiosity, state PA failed to predict self- or partner ratings of attraction and closeness ($ps > .51$). Thus, in contrast to the unique predictive utility of state curiosity, upon controlling for shared variance state PA failed to predict any relationship outcomes.

DISCUSSION

The present laboratory study examined the roles of curiosity and PA and social anxiety and NA in the earliest stages of closeness development between strangers. We directly compared the discrete emotional–motivational system of curiosity to the more broad–based domain of PA as primary ingredients in the process of building interpersonal resources. Additionally, on the basis of prior work showing the stronger role of "bad" traits over "good" traits (Baumeister et al., 2001), we also examined the power of positively valenced traits (curiosity and PA) compared to the negatively valenced traits of social anxiety and general NA in predicting relationship outcomes. Overall, our findings supported the role of curiosity in predicting positive interpersonal outcomes, even after statistically controlling for social anxiety, PA, and NA. The results suggested that dispositional curiosity was uniquely associated with greater partner ratings of attraction and closeness, and that among low SA individuals dispositional curiosity was associated with greater self–ratings of attraction. In contrast, trait PA was related only to self–ratings of attraction, NA was not related to any relationship outcomes, and there were no main effects of social anxiety on relationship outcomes.

UNIQUE POWER OF CURIOSITY IN PREDICTING RELATIONSHIP OUTCOMES

The present study provides some evidence that processes associated with curiosity contribute to the genesis of intimacy. Curiosity uniquely predicted partner-rated attraction and perceived closeness, even after controlling for more widely studied personality and affect constructs. Curiosity also predicted greater self–rated attraction, but this finding was qualified by an interaction with social anxiety; highly curious and low SA individuals reported greater attraction than individuals with other combinations of curiosity and social anxiety. As a post-hoc alternative interpretation, this finding fits relevant theory speculating that optimal well–being derives from the interactive influence of curiosity and anxiety "drives" (Spielberger & Starr, 1994). High appetitive motivation

for novelty and challenge (curiosity) and low avoidance motivation (so-cial anxiety) can be expected to lead to greater exploration of unfamiliar and challenging contexts. Greater subjective feelings of intimacy were more likely for individuals both high in curiosity and low in social anxi-ety. These individuals may be more likely to sustain approach behavior when conflicted about potentially rewarding, anxiety–provoking situa-tions such as sharing personal information with new people. An in-crease in social approach behaviors, such as being responsive and asking questions, can lead to more novel information about one's part-ner, and thus to greater feelings of pleasure and attraction. Nonetheless, because social anxiety was used to select a sample of high SA and a "normal" range of socially anxious individuals, our findings for curiosity must be interpreted cautiously.

Theoretical and empirical work suggests that feeling curious more fre-quently, readily, and intensely sets the stage for opportunities to expand one's knowledge base, repertoire of skills, and social resources as a func-tion of exploring and integrating novel experiences (Fredrickson, 1998; Kashdan et al., 2004). Although preliminary, curiosity appears to facili-tate interpersonal closeness between parties, a harbinger for expanding one's social resources. Future work should continue to explore the influ-ence of curiosity on social interaction behavior varying in novelty, complexity, uncertainty, and conflict.

On the basis of prior empirical work on the positive affective and moti-vational qualities associated with curiosity (e.g., Kashdan, 2002; Kashdan et al., 2004), we expected curiosity to be associated with posi-tive experiences as rated by both the self- and interaction-partners. The exploratory behaviors presumably associated with curiosity in an inter-personal context can be expected to facilitate rewarding experiences for oneself and one's partner. Tendencies to be responsive in interpersonal situations, such as initiating task–relevant replies and expressing inter-est in the partner's dialogue, are likely to reward both parties (Davis, 1982). Highly curious individuals obtain the novel information they crave, and their interaction partners may feel respected and validated due to the active engagement by their partner in what they say and do. Being curious and responsive is likely to increase the subjective quality of interaction partners' experiences and their efforts to enable future in-teractions. Despite the appeal of these suggestions, the appetitive relationship processes linking curiosity to relationship outcomes have yet to be examined.

Comparing and Contrasting Curiosity and PA in Predicting Relationship Outcomes . One of the strengths of the current study was in differentiat-ing curiosity from the more global construct of PA. Interestingly, in con-trast to curiosity, which was related to self- and partner feelings and per-

ceptions, PA was associated only with one's own feelings of attraction. Despite the need for further research on the differentiation of curiosity and PA, our data suggest that curiosity facilitates interpersonal closeness more strongly by affecting both parties in initial social interactions.

To further explore the influence of curiosity in initial interpersonal encounters, we tested a path model positing that effects would be mediated by state curiosity. Individuals high in trait curiosity were expected to experience state curiosity more frequently and intensely during novel and challenging situations. Our path model posited that state curiosity would be a stronger facilitator than trait curiosity in the building of pleasurable interpersonal experiences for both the self- and interaction-partners. This conceptual model was compared to the equally plausible model that global trait and state PA facilitate positive interpersonal outcomes. Our results suggest that curiosity, in contrast to global PA, is indeed the driving force behind increased attractiveness and perceived closeness ratings between self- and interaction-partners. Trait curiosity was observed to have an indirect effect on interpersonal outcomes as a function of state curiosity generated during the social interaction. The effects of state curiosity remained at even after conservatively controlling for state PA during the social interaction (trends for two of the four outcomes). In contrast, trait PA predicted only self–ratings of attraction. Moreover, the effect of state PA on relationship outcomes was reduced to near zero after controlling for state curiosity during the social interaction. Consequently, insofar as highly curious individuals engage in more curious behaviors and experiences, they are more likely to exhibit positive appraisals of interaction partners, experience interpersonal closeness, and facilitate positive appraisals and feelings of closeness by their interaction partners. Given the moderate associations between curiosity and PA and their differential prediction of interpersonal outcomes, our findings converge with reviews suggesting that curiosity and PA are conceptually related but distinct constructs (Kashdan, 2004; Zuckerman, 1994). Perhaps the most intuitive approach is the hierarchical arrangement of curiosity as a discrete lower order factor of the broad domains of positive affectivity and appetitive motivation. On the basis of accumulating data, curiosity appears to be unduly neglected and understudied compared to the exalted status of PA in the field of psychology.

COMPARING POSITIVE AND NEGATIVE VALENCED TRAITS IN PREDICTING RELATIONSHIP OUTCOMES

In contrast to the curiosity findings, there was no evidence for the utility of the two negatively valenced or "bad" traits in predicting relationship outcomes. Baumeister and colleagues (2001) provided a comprehensive

examination of the greater role of negative over positive experiences, events, and traits in predicting various psychosocial outcomes. Their review indicates that the positive–negative asymmetry effects are strongest in the field of impression formation, such that "negative information receives more processing and contributes more strongly to the final impression than does positive information" (pp. 323–324). It should be noted that none of the studies in their review investigated curiosity, and several had limited ecological validity. Specifically, most of the studies had participants evaluate hypothetical persons or provide judgments on the behavior of hypothetical individuals in hypothetical interpersonal situations. In contrast, we had participants engage in an experimental interaction that mimicked the process of intimacy development. Although participants interacted with confederates, after a debriefing session, none of our participants guessed our deception tactics or study purpose. We can attest only to the greater power of curiosity (positive trait) over negatively valenced traits in the current study. However, we suggest that future work comparing the differential power of "good" and "bad" characteristics continue to use more ecologically valid approaches.

LIMITATIONS AND FUTURE DIRECTIONS

Despite significant findings and comparisons between alternative constructs and models, the present study had some limitations. One of the drawbacks of our study was that curiosity was measured only by self–report, and we cannot determine the observable qualities of curiosity—for example, facial expressions or reciprocal elicitation of self–disclosure—deemed desirable by interaction partners. Similarly, without open–ended questions, it remains to be seen what curious individuals attended to, how they interpreted interpersonal behaviors and processes, and their beliefs about what made their partners desirable and the interaction interesting. Second, for the purpose of another study (Kashdan & Roberts, 2004), our sample was selected based on social anxiety scores. Nonetheless, as mentioned, analyses indicated no social anxiety group differences on variables of interest. Additionally, social anxiety was included as a main and interaction effect in our analyses, providing a conservative test of hypotheses. Although these analyses are helpful, they certainly do not fully allay concerns about the impact of our selection criteria on generalization to other samples. Another question concerns whether unmeasured variables such as perceived physical attraction and extroversion, would have had a significant influence on intimacy ratings.

Finally, all confederate partners conformed to a specific scripted dialogue. It remains to be seen whether similar findings will be obtained

from unscripted, ecological interactions. Yet, despite the brevity of the interaction, some convergence was found between participants and confederate intimacy ratings. All findings should be considered preliminary pending replication. Although our findings are supportive of the unique role of curiosity in predicting relationship outcomes, causal inferences are qualified by the use of correlational data.

A final caveat relates to our use of the PANAS. The PANAS taps only activated positive emotional states, ignoring varying degrees of less activated pleasurable states (e.g., grateful or serene). The authors of this instrument recognized this limitation and renamed their "Positive Affect" dimension "Positive Activation," and they devised the PANAS–X to tap a greater range of positive affects (Watson & Clark, 1994). There is merit in exploring the influence of these other discrete positive–affective states on interpersonal phenomena.

It should be stressed that the present study was not designed to test the role of curiosity in relationship development. Longer prospective studies can explore processes associated with curiosity that may predict the development of friendships and romantic relationships and the maintenance of passion in established long–term relationships. Although the present study focused on same–sex social events, additional work might focus on different types of relationships (e.g., family, friends, potential romantic partners, enemies, mentors–mentees) and different contextual factors (e.g., work, group settings, different ethnicity of interaction partner).

CONCLUSION

Considering the unique utility of dispositional curiosity in predicting positive partner ratings of attraction and closeness, the interactive influence of curiosity and social anxiety in predicting self–ratings of attraction, and interpersonally generated state curiosity in predicting positive self and partner interpersonal ratings, curiosity appears to be important in enabling interpersonal closeness. Furthermore, it was promising to find the value of curiosity to be more important in the initial, lasting impressions of social interactions than the negatively valenced attributes of social anxiety and general NA. The comparative role of human strengths and vices in social interactions and relationships remains an interesting line of further inquiry. In the final analysis, our findings show that curiosity appears to be neglected and understudied in comparison to the recent attention given to other personality dimensions and the global domain of PA. We hope that our present findings will lead to further exploration of the possible mechanisms and qualities associated with curiosity in the interpersonal domain.

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