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When curiosity breeds intimacy: Taking advantage of intimacy opportunities and transforming boring conversations

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Abstract

Curious people seek knowledge and new experiences. In three studies, we examined whether, when, and how curiosity contributes to positive social outcomes between unacquainted strangers. Study 1 showed that curious people expect to generate closeness during intimate conversations but not during small-talk; less curious people anticipated poor outcomes in both situations. We hypothesized that curious people underestimate their ability to bond with unacquainted strangers during mundane conversations. Studies 2 and 3 showed that curious people felt close to partners during intimate and small-talk conversations; less curious people only felt close when the situation offered relationship-building exercises. Surprise at the pleasure felt during this novel, uncertain situation partially mediated the benefits linked to curiosity. We found evidence of slight asymmetry between self and partner reactions. Results could not be attributed to physical attraction or positive affect. Collectively, results suggest that positive social interactions benefits from an open and curious mindset.

Keywords

curiosity; friendship; intimacy; self-disclosure; self-expansion; positive affect

At a party, Lucy sits next to Paul to meet someone new. She asks Paul about what he does in his free time. Paul says he enjoys cooking for friends. Lucy's eyes widen as she probes for details—what's the most exotic dish you've made? What makes a great chef? What else in life are you passionate about? Lucy continues to ask questions and learns about Paul's interests. Lucy's behavior is typical of a very curious person. After a lengthy conversation, would we expect very curious people to feel close to partners? Are these feelings reciprocated? Does social context matter? Researchers typically ignore curiosity in the formation and maintenance of close relationships.

Everyone experiences moments when interested or curious (Berlyne, 1967; Izard, 1977); where people differ is the frequency, intensity, length, and scope of these experiences. Curious people tend to recognize and pursue knowledge and new experiences, possess an

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open and receptive attitude toward targets of their attention, and show a greater willingness to manage the novelty and uncertainty that might arise (Kashdan, 2004). To the extent that people engage in these behaviors regularly, curiosity contributes to exploration, discovery, growth, and achievement. Most theoretical and empirical work on curiosity has narrowly focused on school, work, sports, and art. Several scientists proposed that individual difference variables reflecting curiosity also relate to positive relationship outcomes (Kashdan & Fincham, 2004; McCrae, 1996; Sorrentino & Roney, 2000).

Curiosity is generally a positive emotional experience (Izard, 1977; Silvia, 2006) but the appraisals and consequences can be distinguished from general positive affect (Silvia & Kashdan, 2009). Curiosity can also be distinguished from the broad personality dimension termed openness to experience. Openness to experience is composed of several facets including curiosity, aesthetic appreciation of art, having a vivid imagination and fantasy life, daydreaming, high valuation of emotional experiences and intellectual activities, and a preference for unconventional political, social, and religious views (McCrae & Costa, 1997). The diverse facets of openness partially account for the low reliability and construct validity compared with other Big Five personality dimensions (John & Srivastava, 1999). People can be high in openness, being imaginative and liberal in their political views, yet they may be reluctant to intentionally challenge and expand themselves. Curiosity might be appropriately characterized as a “mechanism of action (cognitively, emotionally, and/or behaviorally) whereas openness is more of a state of mind” (pp. 126-127, Kashdan, 2004). Regardless of the conceptual distinctions, little is known about how either dimension influence relational outcomes.

Relationships as a Source of Novelty and Personal Growth

According to the self-expansion model of relationships (Aron & Aron, 1997), a primary reason for human beings doing much of what they do is to increase knowledge and experiences concerning the self, other people, and the world. One of the best ways to accomplish these ends is to enter into close relationships. The early phase of romantic relationships involves an intense sharing of information, experiences, and resources with partners (Aron, Paris, & Aron, 1995; Reis & Shaver, 1988). When someone is willing to integrate what a partner shares, this process is characterized as self-expansion and has strong salutary effects for both the person and the relationship (Aron & Aron, 1997). Expanding oneself by being in a close relationship is similar to a shared bank account where each person has access to the other's money. When we are in a relationship that offers self-expansion opportunities, besides feeling closer to our partner, we become linked to them—their qualities become part of us. Several studies show that greater self-expansion corresponds to greater relationship satisfaction and commitment (e.g., Aron, Norman, Aron, McKenna, & Heyman, 2000; Graham, 2008).

During relationship formation, considerable tension exists as partners manage heightened novelty and uncertainty (Berger, 1979). A lack of curiosity and intolerance for uncertainty might interfere with relationship development. To reduce the uncertain probability of forming a relationship, a less curious person seeks premature closure about other people—relying heavily on expectations, early impressions, and stereotypes (Kruglanski & Webster, 1996). Conversely, curiosity might override the burden that negative emotions places on information processing. Instead of avoiding or escaping the tension of novel, uncertain social situations—which exhausts finite attention and physical stamina—exploration becomes the dominant response. Curious people show a strong tendency to engage in tension producing situations that offer self-expansion opportunities (Silvia, 2006; Spielberger & Starr, 1994). When profoundly aware and curious, a person is able to be responsive to the disclosures of other people and enjoy this intimacy generation process

regardless of any negative thoughts and emotions (Shapiro et al., 2004). When situations afford little possibility of self-expansion, curious people tend to find them initially aversive because of a low tolerance for boredom. However, curious people possess the ability to self-generate interest in situations that are initially under stimulating (Sansone & Smith, 2000).

Situations Matter

Situations differ in their potential rewards for a curious person - an important point because the desirability of potential partners rests on expected relationship rewards. Consider two common situations for an initial encounter among unacquainted strangers. One facilitates intimacy where people listen to, reciprocate, and build on self-disclosures. Information being shared helps each person “get to know” and value the other. Such an optimal situation ought to override individual differences in curiosity. That is, there should be minimal differences in the social outcomes of high and low curious people in intimacy producing situations.

Conversely, consider mundane small-talk with relatively few personal disclosure opportunities. Small-talk allows one to “break the ice.” However, these initial conversational platforms often terminate before self-disclosure begins. People do not find small-talk interesting (Aron, Melinat, Aron, Vallone, & Bator, 1997) and tend to withdraw or disengage quickly. However, sometimes people are motivated to continue such a social interaction. When there is a reason to persist, two options emerge: experience distress or regulate reactions to create positive social outcomes. Regulatory interventions can be focused on altering one's own behavior, another person's behavior, or the situation. Studies show that tedious, mundane activities can be transformed into interesting and rewarding activities (e.g., Isaac, Sansone, & Smith, 1999; Sansone, Weir, Harpster, & Morgan, 1992). Trapped in a boring conversation, for instance, a person might intentionally alter the content by redirection, playfulness, or self-disclosure (i.e., injecting new content). In addition, attentional resources can be devoted to searching for novelty in the seemingly boring or familiar (Langer, 1989).

People differ in their ability to execute these “interest self-regulatory” strategies. We suspect that curious people are more motivated and skilled at them; they might transform small-talk by increasing the likelihood of interest, engagement, and closeness for both partners. Transformations that are unexpected, following a period of minimal disclosure and enjoyment, might be particularly rewarding. The most intense, prolonged positive experiences arise when there is an element of uncertainty (Bar-Anan, Wilson, & Gilbert, 2009; Berns, McClure, Pagnoni, & Montague, 2001; Wilson, Centerbar, Kermer, & Gilbert, 2005). While theoretically plausible, this model has yet to be tested in social interactions.

Current Studies

The current research program sought to build on the few studies showing that curiosity is associated with greater positive emotions and greater closeness when socializing with an unacquainted stranger—as rated by self, partner, and trained observers (Kashdan & Roberts, 2004, 2006). We examined how people varying in curiosity expect to perform in social situations (Study 1) and what happens in actual social situations between unacquainted strangers (Studies 2 and 3). This approach allowed us to determine whether discrepancies exist between perceived and actual performance. Prior research shows that people often make errors in predicting how they will respond to emotional events (Wilson & Gilbert, 2003) including overestimations of how intense negative events will be and neglecting coping skills. Highly curious people show an aversion to boredom (Loewenstein, 1994). We expected curious people's aversion to boredom to lead to an underestimation of their ability to transform social situations to be interesting. Highly curious people possess high self-

efficacy for coping with intense novelty, even if these events cause them to feel anxious, however, their perceived ability to cope with under-stimulating situations might be less ingrained (Silvia, 2006; Spielberger & Starr, 1994). That is, they are presumably less aware of their ability to cope with boredom.

In Studies 2 and 3 we examined the role of curiosity in the development of closeness between unacquainted strangers following intimate or small-talk conversations (Aron et al., 1997). Our approach allowed us to test whether people with greater curiosity feel close to their partners and in turn, if partners show reciprocal reactions. In addition to these "main effect" questions, we evaluated whether conversation type (small-talk or intimate) altered closeness. Intimate, optimally designed situations for gradual, reciprocal self-disclosure ought to be beneficial to everyone (regardless of curiosity). Informed by prior work, we hypothesized that highly curious people transform small-talk conversations and in doing so, create particularly positive social environments for them and their partners.

Study 1: Curiosity and Anticipated Social Outcomes

In this study, people projected their views of how they would behave during conversations with strangers. Using vignettes, people imagined an initial encounter that resembled small-talk or an intimate conversation. We hypothesized that highly curious people expect to generate strong bonds with other people during an intimate conversation but underestimate their ability to cope with and "transform" mundane, small-talk into interesting events. Hypotheses fit with the dominant appraisals and behavioral tendencies defining high levels of trait curiosity, and knowledge about affective forecasting errors.

Method

Participants—Undergraduate students (N=98) enrolled in psychology courses at George Mason University and received research credit for participation. There were 64 women (65.3%) and the sample was ethnically diverse: Caucasian (60.2%), African-American (12.2%), Asian-American (11.2%), Middle-Eastern (7.1%), Hispanic (5.1%), and other categories (4.1%). Ages ranged from 18 to 48 years, with a mean of 22.13 (SD = 2.86).

Procedure—Each participant read three vignettes, imagining themselves in a conversation and how they and their partners would respond. In each vignette the time frame was 45 minutes of conversation, and the situation was the same, talking to an unacquainted stranger sitting nearby on the first day of class. In both vignettes, the class instructor gave instructions for the participant (and the rest of the class) to find a stranger and try to get to know them by playing a sharing game with a stack of index cards with questions on them. The participant was to read the top card aloud, answer and, in turn, their partner was to answer the same question; taking turns answering first or second. What differed between vignettes were the conversation topics. In the *intimacy* vignette, the participant and their partner had cards that required gradual increases in self-disclosure to answer the questions (mimicking a relationship building exercise). In the *small-talk* vignette, the participant and their partner took turns answering questions that were rather superficial and did not prompt self-disclosure (e.g., "Do you read a newspaper often and which do you prefer? Why?"). Vignettes mimicked social interaction conditions used in social interaction experiments (Aron et al., 1997). To allow for within-person comparisons, the third vignette was a filler narrative about seeing a friend on campus. The order of vignettes was counterbalanced with 51 participants receiving the intimate disclosure condition first and 47 receiving the small-talk condition first; the filler vignette separated the other two. Participants read each vignette twice and imagined themselves in the situation before opening an envelope with questions to complete.

Measures

Trait measures: Prior to reading the vignettes, participants completed several personality measures. Participants completed the 7-item Curiosity and Exploration Inventory (CEI; Kashdan, Rose, & Fincham, 2004); ratings were made from 1 (strongly disagree) to 7 (strongly agree). The CEI assesses two components of curiosity: tendencies to seek out novel and challenging experiences (Exploration) and the ability to experience flow-like engagement (Absorption). The combined total score was used (α = .71). Construct validity has been shown in several factor-analytic, daily diary, and laboratory studies (e.g., Kashdan & Steger, 2007; Litman & Silvia, 2006; Silvia, 2005).

Vignette ratings: After reading vignettes, participants completed questions on how they expected to behave in terms of felt closeness, attentional focus, execution of self-regulatory strategies, and state curiosity. The closeness items asked how close and connected they expected to feel to partners by the end of the interaction and how they think partners would respond (to the same items).

Participants rated 11 items that assessed self-regulatory strategies designed to initiate or maintain interest in the conversation. Factor analytic results (principal axis factoring with promax rotation and an examination of eigenvalues and scree plot) revealed support for a two-factor model of self-regulatory strategies, with seven transformation effort items and four “unexpected-behavior” items. Specifically, the seven items reflected effortful attempts to disclose more, encourage partners to disclose, openly express feelings about the interaction, search for interesting aspects of partner, and inject humor (transformation efforts; α = .86 and .89 for intimacy and small-talk vignettes, respectively). The remaining four items reflected attempts to behave in unexpected ways and be provocative (α = .85 and .79 for intimacy and small-talk vignettes, respectively).

Results

Influence of Curiosity and Social Context on Closeness—To assess within- and between-person effects of trait curiosity and social context on closeness, we used a mixed design regression procedure (for analytic details, see Judd & McClelland, 1989). We statistically controlled for order effects. To assess between-person effects, the first model regressed the average of participants' closeness ratings (divided by the square root of 2) on trait curiosity (a continuous variable). People with greater trait curiosity reported greater closeness with partners, B = .05, t (95) = 1.98, p = .05, and expected partners to report greater closeness with them, B = .06, t (94) = 2.24, p = .03.

Following Judd and McClelland (1989), the second model regressed the difference of participants' closeness ratings (divided by the square root of 2) on trait curiosity. As hypothesized, there was a significant Curiosity × Condition interaction on closeness ratings, B = -.04, t (95) = -2.28, p = .03. Examination of the interaction (see Figure 1- top panel) revealed that highly curious people expected greater closeness in the intimacy compared to small-talk condition whereas low curious people reported minimal expected closeness across conditions. A similar Curiosity × Condition interaction was found on partner-rated closeness, B = -.04, t (93) = -2.42, p = .02 (see Figure 1-bottom panel).

Influence of Curiosity and Situation on Interest Self-Regulatory Strategies—As for why curious people expected to socialize well, we examined the effects of trait curiosity and social context on interest self-regulatory strategies (controlling for order effects). Following Judd and McClelland (1989), to examine the effects of trait curiosity, we regressed the average of participants' interest self-regulatory strategies (divided by the square root of 2) on trait curiosity. People with greater trait curiosity predicted use of greater

transformation efforts, $B = .74$, $t(95) = 5.42$, $p < .001$, and provocative and unexpected behaviors, $B = .47$, $t(95) = 4.18$, $p < .001$, during interactions.

Discussion

Given hypothetical situations, highly curious people discriminated between intimate and small-talk conversations as they expected to bond better with partners during intimate conversation. Less curious people expected a lack of closeness regardless of situation. These findings fit with appraisals at the core of curiosity–people feel curious when they believe there is a high potential for novelty and possess the skills to cope with this novelty (Silvia, 2005). Highly curious people show greater interest in investigating new, uncertain situations because of strong novelty and strong coping appraisals (Silvia, 2008). An implicit assumption is that to avoid feeling bored, curious people disengage from situations that are low in novelty potential. Yet, another option is to modify thoughts and behaviors or the situation to create interest where initially there is none (Sansone & Smith, 2000). Consistent with this self-regulatory framework, upon expecting a disinteresting situation, highly curious people expected to act in provocative, playful ways to transform the situation and the mood of themselves and their partners.

A limitation of this study was the focus on expected social behavior. Therefore, the next study investigated actual behavior. We hypothesized that people with greater trait curiosity underestimate their ability to generate social bonds and cope with mundane situations and less curious people underestimate their ability to capitalize on ideal relationship building situations. Comparisons to Study 1 findings can determine the presence of discrepancies between social expectations and performance.

Study 2: Curiosity and Initial Social Encounters

In this study we examined whether curiosity influences closeness during initial social encounters. Our social interaction task lasted 45 minutes to provide sufficient time for curious people to actively transform small-talk to be more interesting. People find it extremely rewarding when conversation partners are responsive and interested in them (e.g., Gable et al., 2004). Thus, greater curiosity should be characteristic of more desirable social partners.

Social situations might moderate hypothesized effects. Highly curious people, with their need for novelty, are likely to regulate interest during small-talk interactions instead of passively suffering from boredom (Sansone & Smith, 2000). If successful, the partners of highly curious people would be beneficiaries of these transformational efforts. In contrast to small-talk, in situations that facilitate intimacy, high and low curious people might behave similarly. Because the reciprocal sharing of personal information is facilitated by the situation, and does not require an astute partner asking probing questions, trait curiosity should be less important in predicting closeness between partners.

Finally, we tested potential mechanisms that might account for hypothesized Curiosity × Situation interactions. Greater curiosity might lead to greater closeness as a function of directing attention to external reward cues including partners and their disclosures (Berlyne, 1967; Kashdan, 2004). In addition, highly curious people were expected to self-generate interest by creating engaging and playful conversations, and finding mutually shared interests.

Method

Participants—Participants were 90 undergraduate students (45 women) at the University at Buffalo, State University of New York. To minimize the potential confound of romantic

interest, participants were required to be in a stable romantic relationship. We had an ethnically diverse sample: Caucasian (75.9%), Asian-American (10.3%), African-American (8%), Hispanic (2.3%), and a few reporting other categories (3.4%). Ages ranged from 18 to 35 years, with a mean of 19.38 (*SD* = 2.23).

Measures—To evaluate the validity of the experimental conditions, participants completed post-interaction questions concerning self-disclosure of information and feelings. Similar to Study 1, curiosity was measured with the 7-item CEI (Kashdan et al., 2004; α = .78). Ratings of closeness were measured with the Inclusion of Other in the Self Scale (IOS; Aron, Aron, & Smollan, 1992). The IOS consists of 7 overlapping circles, representing self and partner, with gradually increasing degrees of overlap.[1] Two measures assessed model covariates. Participants were asked how physically attracted they were to partners using a 7-point Likert scale and positive affect was measured with the trait Positive and Negative Affect Schedule (Watson, Clark, & Tellegen, 1988) (α = .85).

Participants also completed measures of potential mediators. Using a 5-point Likert scale, other-directed attention was assessed with 4 of 5 items of the other-focus subscale of the Focus of Attention Questionnaire (Woody, Chambless, & Glass, 1997); an item assessing attention to "physical surroundings" was dropped because it had no bearing on attention toward partners. We added two items addressing attention to partners (i.e., focus on partner's comments and what I was learning about partner) to create a 6-item scale (α = .65). Participants rated their use of interest self-regulatory strategies (12 items; α = .92) and whether their partner did the same (12 items; α = .93) using 6-point Likert scales (Miller, deWinstanley, & Carey, 1996). Six items focused on initiating and maintaining interest/enjoyment in the conversation and six items on responsiveness to partners.

Procedure—Eight to sixteen participants were scheduled per session and completed questionnaires before and after the social interaction (adapted from Aron et al., 1997; see Kashdan & Roberts, 2007 for additional data). All trait questionnaires were completed prior to the interaction. The task was analogous to meeting a stranger for the first time. Dyads were created by randomly matching participants with opposite sex partners after ensuring that partners were unacquainted. Each dyad was randomly assigned to one of two 45-minute "getting acquainted" interactions that occurred with four to six dyads together in a single room, mimicking a social gathering. Instructions provided by the experimenters were identical; participants were informed that their goal was to get close to their partner by taking turns sharing information. Each dyad was handed a set of instructions and three sets of index cards with questions. They were told to take turns reading a question aloud to have their partner respond and, in turn, the reader would respond to the same question. This order would be reversed for each question.

Of the 90 participants, 42 were assigned randomly to the closeness-generating task, where they shared personal information with increasing levels of disclosure within each set of cards and over the three sets. They spent 15 minutes asking questions from each level before being asked by the experimenters to continue to the next set of questions. Set 1 questions included: "What would constitute a 'perfect' day for you?" Set 2 questions included: "What is the greatest accomplishment of your life?" Set 3 questions included: "When did you last cry in front of another person? By yourself?" This task was designed to increase the depth of information shared. The other 48 participants were assigned to the small-talk task where they asked each other superficial questions over the three sets such as: "What is your

[1]As a second measure, we modified the IOS to ask participants how close they felt to their partners compared with ongoing, existing relationships in their everyday life (Berscheid, Snyder, & Omoto, 1989); allowing for a personally meaningful reference point. Similar results were found and thus, are not reported.

favorite holiday? Why?" After 15 minutes, participants moved to the next set but the emotional depth of the questions remained similar. After the 45 minutes, partners were separated to complete post-interaction measures (including potential mediating mechanisms and outcomes).

Results

Preliminary Analyses—The questions evaluating the validity of the manipulation showed that, compared to the small-talk condition, participants in the intimacy condition were more likely to disclose information about their innermost selves, $t(88) = 3.63$, $p < .001$, disclose personally important experiences and events, $t(88) = 2.05$, $p < .05$, and openly express feelings about partners, $t(88) = 2.17$, $p < .05$.

Overview of Data Analytic Procedures—Our data had a multilevel structure with 90 participants (Level 1) nested within 45 dyads (Level 2). We used SPSS mixed modeling for analyses. To account for the variance associated with each participant's dyad, Level-2 equations treated Level-1 individual difference variables as fixed effects and intercepts as random effects (Campbell & Kashy, 2002; Kenny, Kashy, & Cook, 2007). Level 1 continuous variables were grand-mean centered. Curiosity was measured on a continuum in all analyses.

To analyze the dyadic data, we used the actor-partner interdependence model (APIM; Kenny et al., 2007). Cases were distinguishable by gender and thus, actor and partner effects were estimated from a single analysis. Actor effects reflect the degree that a person's score on a predictor variable influences that same person's score on an outcome (within-person effects). Partner effects reflect the degree to which a person's score on the predictor variable influence the partner's level of the outcome (between-person effects). Of interest was whether condition (Level-2 between-dyad variation) moderated the effect of trait curiosity (Level-1 between-person variation) on closeness generated during interactions. We also examined other-directed attention and interest self-regulatory strategies as possible mediators. In the absence of significant main or interaction effects, gender is not discussed.

Primary Analyses

Do highly curious people generate greater closeness with strangers, and how important is context?: We hypothesized that highly curious people and their partners would experience greater closeness across interactions whereas less curious people would only generate these experiences in intimate interactions. We found evidence for condition as a moderator of trait curiosity effects on closeness for actors, $\beta = .60$, $t(81) = 1.90$, $p = .03$, and partners, $\beta = .65$, $t(84) = 2.04$, $p = .02$.

To evaluate the form of interactions, we examined simple effects (slopes and intercepts) and plotted the data (see Aiken & West, 1991). As shown in the top panel of Figure 2, actors experienced strong levels of closeness in the intimacy condition regardless of curiosity. In the small-talk condition, only actors with high trait curiosity experienced strong closeness, $\beta = .50$, $t(81) = 2.16$, $p = .02$. There was evidence of divergent partner effects. As shown in the bottom panel of Figure 2, partners experienced stronger closeness when interacting with less trait curious people in the intimacy condition, $\beta = -.43$, $t(82) = -1.89$, $p = .03$; there were no significant partner effects in the small-talk condition.

Does other-directed attention or use of interest regulatory strategies mediate the Curiosity × Condition effects on closeness?: We examined two potential mediators: other-directed attention and interest self-regulatory strategies (see Bauer & Curran, 2005 for analytic steps). Other-directed attention (mediator) was significantly related to trait

curiosity, $r = .26$, $p < .05$, and actor and partner closeness outcomes (dependent variables), rs = .28 and .31, ps < .01, but not the Trait Curiosity × Condition interaction (independent variable); failing to satisfy the conditions for mediation.

Self-rated interest self-regulatory strategy (mediator) was significantly related to trait curiosity and closeness outcomes (dependent variables), rs from .26 to .32, ps < .01. In addition, the actor Trait Curiosity × Condition interaction (independent variable) significantly predicted interest self-regulatory strategies, $\beta = 1.84$, $t(66) = 2.06$, $p = .02$. In the small-talk condition, actors with greater trait curiosity used more interest self-regulatory strategies, $\beta = 2.21$, $t(71) = 3.49$, $p < .001$; there were no significant actor effects in the intimacy condition. However, results from a bootstrapping approach (Preacher, Rucker, & Hayes, 2007) failed to provide support for mediation.

Construct specificity: To demonstrate that effects were specific to trait curiosity, physical attraction ratings, trait positive affect, and Positive Affect × Condition effects were added to models. The actor Trait Curiosity × Condition interaction effect, $\beta = .87$, $t(80) = 2.26$, $p = .02$, and partner Trait Curiosity × Condition interaction effect, $\beta = .57$, $t(79) = 1.79$, $p = .04$, remained in predicting closeness. Moreover, positive affect effects failed to reach statistical significance.[2]

Discussion

Supporting the validity of our manipulation, the average person experienced greater closeness in the intimacy compared with small-talk interaction. As hypothesized, the situation moderated the relation between trait curiosity and closeness generated during an initial social encounter. People with greater trait curiosity experienced strong closeness in both the intimacy and small-talk interactions, whereas less curious people only developed closeness in the intimacy condition.

Study 2 ruled out possible artifacts by showing that curiosity effects could not be accounted for by physical attraction to partners or covariation with positive affect. We failed to find support for proposed mediating mechanisms, other-directed attention and interest self-regulatory strategies, suggesting other mechanisms are responsible for the positive experiences of highly curious people.

An important strength of this study was the investigation of self and partner perspectives. There was asymmetry between self and partner ratings of closeness, suggesting that curiosity mostly enhanced self-rated closeness. Interestingly, partners of less curious people were most sensitive to context. The greatest closeness was reported by partners of less curious people in the intimacy condition. One rationale is that curiosity can be overly relied upon in a situation such that a person fails to recognize that the context and need changed over the course of a social interaction (Linley, Willars, & Biswas-Diener, 2010). Curiosity can be taken too far if insufficient consideration is given to the partner's energy level, interests, and desire for intimacy.

[2]We ran similar dyadic analyses with a 7-item state version of the CEI. Participants responded according to their present moment feelings using a 7-point Likert scale ($\alpha = .76$ for pre-interaction and .81 for post-interaction) and there was a strong positive correlation with trait curiosity, $r = .66$ (pre-interaction) and .55 (post-interaction). We refer to post-interaction curiosity as interpersonally generated as it refers to curiosity experienced during the interaction. Results showed evidence for actor effects with interpersonally generated curiosity associated with greater closeness, $t(71) = 2.80$, $b = .56$, $p = .004$, and partner rated closeness, $t(63) = 1.83$, $b = .36$, $p = .04$. Additionally, the actor pre-interaction State Curiosity × Condition interaction effect was statistically significant, $t(79) = 2.24$, $b = .72$, $p = .02$. Specifically, in the small-talk condition, people with greater initial curiosity reported greater closeness in the small-talk condition, $t(81) = 2.37$, $b = .48$, $p = .01$; no significant effects were found in the intimacy condition. Due to space limitations, we do not go into greater detail but additional data on state curiosity are available from the first author.

As an alternative explanation, less curious people are less interested in learning new information and might only feel close to strangers when placed in an optimal situation where reciprocal sharing of personal information is facilitated. The rare, surprising pleasure of creating intense intimacy in only 45 minutes might have been observable and contagious (Hatfield, Cacioppo, & Rapson, 1994). If highly curious people are primarily guided by intrapersonal motives such as enhancing their own mood and stimulation level and less curious people are primarily guided by social motives to understand, appreciate, and care for other people, partners might have been more likely to satisfy their need for belonging after socializing with less curious people in the intimacy condition. In a similar vein, the information pursuing behaviors of highly curious people might be viewed positively by some people and negatively by others. For instance, asking questions and probing deeply can be viewed as invasive, annoying, and selfish. These heterogeneous reactions might explain why partners of highly curious people only experienced moderate closeness. We address these potential mechanisms in the next study.

Study 3: Initial Social Encounters—Replication and Extension

In an attempt to show that the phenomenon documented in Study 2 was robust, methodological improvements were introduced. Although the IOS has good predictive validity (e.g., Aron et al., 1992) might be suboptimal for partitioning variance in person-situation interactions. Thus, we used a more comprehensive measure of positive social interactions. To ensure findings are more than retrospective, summary judgments, we conducted assessments during the interaction. Finally, we supplemented self-reports with a behavioral measure of closeness.

We explored three potential mechanisms that might account for the benefits of being curious in the small-talk condition. Highly curious people might be surprised by the pleasures of an uncertain social situation with an unknown person in a seemingly mundane small-talk situation. Unexpected, novel pleasures experienced with partners are often attributed to stable aspects of partners and the relationship (Strong & Aron, 2006). Thus, attribution processes might account for felt closeness during initial encounters. Motives for social behavior might also explain curiosity findings. Highly curious people might be primarily guided by the intrapersonal desire for novelty, stimulation, and mood enhancement and less so by the desire for friendship and acceptance. The presence of intrapersonal motives in the absence of intimacy motives might be evident to partners of the highly curious (explaining why partners did not fully reciprocated feelings of closeness).

Method

Participants—Participants were 106 undergraduate students (53 cross-sex pairs) at George Mason University in stable romantic relationships. The sample was ethnically diverse: Caucasian (53.8%), Asian-American (21.7%), African-American (9.4%), Middle-Eastern (4.7%), Hispanic (4.7%), and other categories (4.7%). Ages ranged from 18 to 49 years, with a mean of 22.11 (SD = 5.79).

Initial Measures—To assess trait curiosity, we again administered the 7-item Curiosity and Exploration Inventory (CEI; Kashdan et al., 2004) (α = .74). To address construct specificity, we measured trait positive affect with the PANAS (Watson et al., 1988).

Social Interaction Measures

Perceived closeness: At 15 minutes into the interaction and the end of the interaction, participants completed a 9-item measure of closeness and acceptance, intimacy, and enjoyment during the social interaction (e.g., “I felt close and connected to my partner”, “I

felt accepted by my partner", "I enjoyed the interaction"). Factor analysis (principal axis factoring with promax rotation and an examination of eigenvalues and the scree plot), yielded a one factor solution; for both versions, this factor accounted for greater than 60% of the variance. Thus, we aggregated the 9 items to form our central dependent variable of closeness (α's = .92 to .94). For this outcome to be on the same metric as the closeness variable in Study 2, we divided the aggregate by 9 so scores ranged from 1 to 7.

Behavioral index of closeness: At the end of the interaction, we asked people if they wanted to provide an email address to be shared with partners. This led to a binary dependent variable of interest in a potential relationship.

Perceived partner behavior: To evaluate the visibility of trait curiosity, participants rated their partner's behavior during the interaction on a 9-point scale from "not at all" to "completely". Ratings were made for the following four behaviors: curious and interested, open and disclosing, tolerant and accepting, and energetic (α = .79).

Partners evaluated how much they and their partners were responsible for making the interaction enjoyable and interesting, and contributing and maintaining the conversation. Using these four items, participants provided percentages for how much of the interaction was due to partner efforts (α = .79).

Surprising pleasure: Participants rated their surprise at how pleasurable the interaction tended to be on a 9-point scale from "not at all" to "completely".

Motives: Participants also rated several statements about the motives for their behavior and motivation during the interaction on a 9-point scale from "not at all characteristic" to "completely characteristic". Three statements reflected intrapersonal motives: satisfy desire to obtain new information, improve mood, and showcase strengths (α = .71). Three statements reflected social motives: desire to develop a friendship, be accepted, and obtain good social standing and positive attention (α = .75).

Procedure—The major difference from the procedures in Study 2 was the inclusion of interim assessments (including measures of attributions and surprising pleasure) with different measures. After finishing each set of questions, participants completed surveys on a clipboard. This allowed for momentary thoughts and feelings to be reported with minimal recall bias. Other measures were included at the end of the interaction (including measures of motives).

Results

Overview of Data Analytic Procedures—Our data had a multilevel structure with 106 participants (Level 1) nested within 53 dyads (Level 2). Similar to study 2, we used SPSS mixed modeling with curiosity on a continuum in all analyses.

Primary Analyses

Is curiosity visible to partners?: Partners viewed more curious actors as behaving in curious, open, tolerant, and energetic ways during the interaction, β = .39, $t(96) = 3.50$, $p < .001$.

How important is context to understand how curious people generate closeness with strangers?: Experimental condition moderated the effects of trait curiosity on perceived closeness during interactions as reported by actors, β = 4.07, $t(85) = 2.05$, $p = .02$, and partners, β = 4.22, $t(89) = 2.10$, $p = .02$. In the small-talk condition, actors with greater trait

curiosity experienced greater closeness, β = 3.12, t (90) = 2.54, p = .005; there were no significant actor effects in the intimacy condition. As shown in the top panel of Figure 3, both low and high trait curious people experienced similar levels of closeness in the intimacy condition. In the small-talk condition, only high trait curious people experienced high levels of closeness. There was evidence of convergent partner effects; see the bottom panel of Figure 3.

The same findings, albeit slightly stronger, were found for felt closeness at the end of the interaction (replicating Study 2). Experimental condition moderated the effects of trait curiosity on closeness felt by actors, β = 4.44, t (95) = 2.37, p = .01, and partners, β = 4.88, t (96) = 2.59, p = .005. These results show the stability of the findings during interim and retrospective assessments. Because these results reflect the same pattern as Figure 3, for brevity, details are not reported.

Using our behavioral measure, highly curious people were more likely to leave an email address to get in touch with partners again, t (92) = 2.83, p = .003; no significant partner effects were found. However, experimental condition moderated actor effects, t (86) = 3.44, p = .001, and partner effects, t (92) = 2.48, p = .01. Actors with greater trait curiosity were more likely to leave an email in the small-talk condition, t (93) = 2.83, p = .005, and less likely in the intimacy condition, t (93) = 2.15, p = .02. Moreover, partners were more likely to leave an email when interacting with people with greater trait curiosity in the small-talk condition, t (87) = 1.85, p = .04, but less likely in the intimacy condition, t (91) = -1.71, p < .05.

Do unexpected, surprising outcomes mediate the Curiosity × Condition effects on closeness?: The Trait Curiosity × Condition interaction effect (independent variable) predicted actor surprise (mediator), β = .54, t (91) = 2.62, p = .005; no partner effects were found. Actors with greater curiosity were more surprised by felt closeness in the small-talk condition, β = .26, t (89) = 2.09, p = .02; there were no significant actor effects in the intimacy condition. Testing mediated moderation with a bootstrapping approach (Preacher et al., 2007), we found support for partial mediation, Z = 2.19, p = .03.

Do attributions for positive aspects of interaction mediate the Curiosity × Condition effects on closeness?: The Trait Curiosity × Condition interaction effect predicted partner attributions, β = .44, t (91) = 2.19, p = .02; no actor effects were found. In the small-talk condition, partners were more likely to attribute positive aspects of the conversation to the efforts of people with greater curiosity, β = .44, t (89) = 2.70, p = .004; there were no significant partner effects in the intimacy condition. However, a bootstrapping approach (Preacher et al., 2007) failed to show evidence of mediation.

Do motives for socializing mediate the Curiosity × Condition effects on closeness?: We established that highly curious people view small-talk as more enjoyable for themselves and reap similar rewards as less curious people during interactions designed for relationship building. Partners often do not reciprocate these feelings. As a possible mechanism, we hypothesized that highly curious people possess weaker social motives and stronger intrapersonal motives. Mundane social situations should benefit from interest enhancement strategies. However, in intimate situations, a subset of highly curious people might be viewed as less appealing when guided by selfish motives.

We found evidence for condition as a moderator of trait curiosity on actors' intrapersonal motives, β = -1.93, t (98) = -1.81, p = .04, and social motives, β = -2.44, t (95) = -2.16, p = .02. To make sense of these findings, we decomposed these interactions. In the small-talk condition, people with greater trait curiosity endorsed stronger intrapersonal motives, β =

1.51, $t(91) = 2.34$, $p = .01$. In the intimacy condition, people with greater trait curiosity showed a trend toward weaker social motives, $t(93) = -1.69$, $\beta = -1.66$, $p < .05$. However, we found no support for motives as a mediator.

Construct specificity: To examine the specificity of trait curiosity effects, trait positive affect and Positive Affect × Condition effects were added to models. For felt closeness during interactions, the actor Trait Curiosity × Condition interaction effect, $\beta = 4.21$, $t(80) = 2.15$, $p = .02$, and partner Trait Curiosity × Condition interaction effect, $\beta = 3.84$, $t(85) = 1.94$, $p = .03$, remained; for felt closeness after interactions, the actor Trait Curiosity × Condition effect, $\beta = 4.67$, $t(92) = 2.54$, $p = .005$, and partner Trait Curiosity × Condition effect, $\beta = 4.47$, $t(94) = 2.42$, $p = .01$, remained. In contrast, positive affect effects failed to reach statistical significance.

Discussion

Replicating Study 2 results, we found situations are important to understanding whether curious people are more successful at generating positive social interactions. In small-talk situations, people with greater curiosity attempt to self-regulate interest by transforming situations, enabling positive reactions for them and their partners. In situations with extensive opportunities for intimacy or relationship building, most people feel closer to each other during the interaction and in retrospective evaluations— regardless of a person's curiosity level. As validity for measuring curiosity with the CEI, across interactions, partners observed that people reporting greater scores frequently acted open, tolerant, energetic, and exploratory during the interaction.

Diverging from Study 2, partners were similar to highly curious actors in that both felt particularly close during and after small-talk conversations compared with intimate conversations. Part of the reason highly curious people generated positive experiences from small-talk was their unexpected level of pleasure in this situation. The pleasures of uncertainty appear to enhance felt closeness to partners. This fits with our interpretation of the discrepancy between Studies 1 and 2: highly curious people possess strong abilities to transform uninteresting situations into more interesting ones. However, they underestimate their ability to cope with boring situations (see Wilson et al., 2005). Considering that people often use anticipated emotions to determine what decision to make, the aversion to boredom that characterizes people with greater curiosity might lead them to avoid social situations that they can tolerate and even transform into enjoyable ones from which they derive profound meaning.

Other mechanisms linked to the social behavior of curious people were attributions and social motives. Partners were more likely to attribute interesting, enjoyable aspects of conversations in the small-talk condition to the actions of highly curious people. Thus, the interest-self-regulatory skills of highly curious people are visible to others. Curious people report that their social behavior is motivated by a desire to explore, enhance their own mood, and wield strengths. These motives presumably guide them to transform potentially uninteresting situations to be more rewarding. On average, less curious people are guided by a distinct set of motives. Although these variables characterize the social behavior of people with greater curiosity, they did not function as mediators of interpersonal closeness.

Perhaps the most counter-intuitive finding from Study 2 was that people with greater curiosity did not contribute to greater felt closeness by partners in the intimacy condition. People enjoy being appreciated for their unique characteristics and react positively when people are attentive to their passions and interests (e.g., Gable et al., 2004). In two laboratory studies at separate universities, we replicated the finding that situations matter and add to our understanding of personality. Ideal, positive social situations render

personality traits less important. Our evidence suggests that the stronger social motives of less curious people lead them to be as successful as more curious people in terms of feeling close and enjoying themselves, and getting partners' to feel the same in such ideal situations.

General Discussion

Positive initial encounters are the first step in the development of meaningful, lasting relationships. Certain personality traits lead people to behave in ways that increase the likelihood of positive social interactions. In several studies, we investigated the possibility that curiosity is important to this process even though it is not, by definition, an interpersonally oriented dimension. To be comprehensive in our exploration, we attended to the perceptions and behaviors of people high in curiosity, the partners they interact with, and situations that might alter the influence of curiosity on social environments. Our results indicate that being curious is relevant to creating positive social interactions, a relationship that would be obscured without explicitly addressing context dependencies.

Why should curiosity be useful in the development and maintenance of positive social interactions and relationships? Each of the studies provided insight into the social benefits of being a curious person. Study 1 found that highly curious people expect to capitalize on intimacy opportunities, generating closeness between themselves and their partners. Although highly curious people expected small-talk situations to constrain their ability to generate closeness, they did expect to strategically alter the interest and positivity of the situation. Studies 2 and 3 found that in actual social interactions, highly curious people report strong closeness to partners, regardless of whether they are in situations that foster intimacy (when the need to belong is easily satisfied) or small-talk situations (requiring greater effort to gain positive outcomes). These effects could not be attributed to physical attraction or global positive affect.

As for being the partner of a highly curious person, we found mixed results. In Study 2, partners felt closer to less curious people after the intimacy conversation, and in Study 3, partners felt closer to highly curious people during and after the small-talk conversation. Thus, in Study 3, highly curious people and their partners felt the same way, enjoying the intimate conversation but developing even greater closeness following small-talk. We believe this is a result of the transformative efforts of highly curious people and the unexpected pleasures that result. Compared with others in the small-talk conversation, highly curious people appear to create conversations that are more interesting and enjoyable for them and their partners. We asked people if they wanted to give their email address to the experimenter who would subsequently give it to their partner. This behavioral index implies a large commitment of trying to develop a real-world relationship. Following small-talk interactions, highly curious people and their partners were particularly interested in trading emails suggesting a positive exchange that was distinct from what happened in the intimacy condition. The fact that we found a significant effect using a single item outcome might mean that a more comprehensive behavioral assessment might reveal a stronger, more robust effect.

Unexpected, uncertain pleasures appear to be more intense and last longer (Bar-Anan et al., 2009; Berns et al., 2001; Wilson et al., 2005). Based on this work, personality traits linked to seeking out novelty and embracing uncertainty should be linked to positive social outcomes. We presented the first set of studies to address the pleasures of uncertainty in the social world. Interest self-regulatory strategies were hypothesized to be an explanatory mechanism such that people with greater curiosity actively transform social situations that are not inherently interesting. In conversations manipulated to be intimate, these behaviors are unnecessary (Sansone & Smith, 2000); hence, our hypothesis that social context would serve

as a moderating variable. With the exception of Study 2, we found evidence that highly curious people attempt to transform social interactions by searching for novelty and acting on it, wielding their strengths, and engaging in a range of zestful, playful, stimulating, mood enhancement strategies. However, several mechanisms that characterize the social behavior of curious people failed to mediate relationships with generated closeness. It would have been useful if we videotaped interactions and used behavioral observation data to clarify behavioral mechanisms that might account for these relationships.

The current studies extend the boundaries of curiosity, often viewed as relevant to achievement, work, and other intrapersonal domains (Deci & Ryan, 2000; Kashdan & Fincham, 2004). Consistent with other studies on interpersonal affect and closeness (e.g., Kashdan & Roberts, 2004, 2006), greater curiosity appears to increase opportunities for satisfying the need to belong. Our findings converge with theory suggesting that people with greater curiosity show greater effort and progress in attempts to modify initially tedious or unappealing activities (Sansone, Weir, Harpster, & Morgan, 1992). Highly curious people appear to capitalize on potential rewards and growth opportunities by being agents of change. These behaviors, in turn, influence the expansion of their own as well as other people's social resources. That is, dispositional curiosity might facilitate the self-expansion process in relationship beginnings and the maintenance of passionate excitement in long-term relationships (Aron et al., 2000; Carson, Carson, Gil, & Baucom, 2007; Graham, 2008). Future work can examine whether being open and curious toward relationship partners prevents the complacency and mindless scripts that contribute to declining relationship satisfaction after only a few years after committing to a lifetime partnership (Lucas, Clark, Georgellis, & Diener, 2003). Initial evidence suggests that boredom is a substantial contributor to relationship dissatisfaction over a 9-year period (Tsapelas, Aron, & Orbuch, 2009). We suspect that cultivating curiosity in the context of relationships leads to more resilient long-term relationships but await future longitudinal research to test this claim.

Limitations, Future Directions and Conclusions

Throughout this article, we implied that curiosity shapes relationship processes and outcomes. As an adjunct to existing work on exploration and relationships (Bowlby, 1988; Elliot & Reis, 2003), we were interested in how personality operates to influence people in particular social contexts. There is a theoretical rationale for this focus. Dispositional curiosity and the preference for and ability to cope with novelty have been linked to biologically based, approach oriented, motivational systems that are visible in early infancy (Berg & Sternberg, 1985; Depue & Collins, 1999). Certainly, future work can test the bi-directionality of this relationship. Being in a relationship where partners provide a safe haven and autonomy support for explorations appear to increase a person's curiosity and motivation to take risks to expand the self (Feeney, 2004; La Guardia & Patrick, 2008). Given the role of attachment processes in exploration (Bowlby, 1969; Mikulincer, 1997), there is merit in examining the effects of parent-child and adult romantic relationships on the expression of curiosity. Even if there are neurobiological roots to dispositional curiosity, personality continues to show plasticity in the second half of life (Roberts, & Mroczek, 2008). Past and existing relationships probably play a role in this trajectory.

Additional work is needed on the potential aversive effects of excessive social curiosity (e.g., voyeurism, nosiness), which might explain the relative asymmetry between actor and partner social reactions. There is a lack of evidence as to whether strengths such as curiosity have “tipping points” or non-linear effects on social outcomes. In contrast to experimentally manipulated dyads (Studies 2 and 3), in naturally occurring relationships, partners are likely to be more receptive and flexible about the amount of curiosity and exploration directed toward them. When friends or lovers are freely chosen, partner-directed curiosity is likely to be endearing and might even predict the longevity and quality of the relationship. Future

research can examine how the effects of curiosity on partners vary as a function of relationship type. The current work suggests there are parameters when curiosity goes awry. A better understanding of when strengths are underplayed or overplayed provides a dynamic element missing from superficial suggestions to aim for greater strength use (Linley et al., 2010).

Despite the use of multiple methods, ranging from vignettes to experimental social interactions, without manipulating curiosity, it remains unclear whether felt closeness, interest self-regulatory strategies, and social motives are causally related. Unfortunately, interactions can only be manipulated for novelty and stimulation with major sacrifices to ecological validity (e.g., confederates). We collected reactions from actual social interaction partners to map person and situational influences (Kenny et al, 2007). Although people who are open and curious possess a behavioral repertoire relevant to transforming social situations to be interesting, this only served as a mediator in one of three studies. A caveat to these and several other results is the use of scales developed ad hoc for this research. Moreover, our tests of mediation failed to address temporality, as mechanisms were measured at the same time point as outcomes. Nonetheless, the current studies add depth to the phenomenology of how curious people think and behave in social situations. The convergence across methodological approaches conducted at different universities increases confidence in our findings. Addressing construct specificity with gender, physical attraction, and positive affect does not rule out other relevant, unmeasured variables that account for links between curiosity and positive social outcomes; this includes sociability and extraversion which in combination with curiosity, might be the ideal personality configuration to predict positive social outcomes.

The current studies focused on the role of curiosity in novel social situations. During relationship beginnings, curiosity and openness are particularly relevant because people are reasonably worried about being rejected. Uncertainty is high and although this might lead to the most intense, profound pleasures, it is also a springboard for excessive social anxiety. What might be most important are perceptions of partners' curiosity. Prior findings suggest that openness and curiosity are more visible to other people than other widely established personality traits (Carney, Colvin, & Hall, 2007).

Future studies might assess the role of curiosity in both novel and familiar social situations. Such research can lead to an understanding of the role of curiosity in everyday social life. Intentionally searching for new information in partners, and pursuing new experiences with partners, might serve as a natural, healthy intervention in existing, long-term relationships.

The current studies identify curiosity as a neglected ingredient in understanding positive social behavior and outcomes. Future research is needed to determine whether people high and low in curiosity differ in their efforts and success in maintaining successful relationships. To best understand the conditions for positive relationships, consideration must be given to the dynamic interplay between personality, situations, and social contexts. The current research is one of many to suggest erroneous conclusions if scientists only focused on a subset of these contributors to social functioning.

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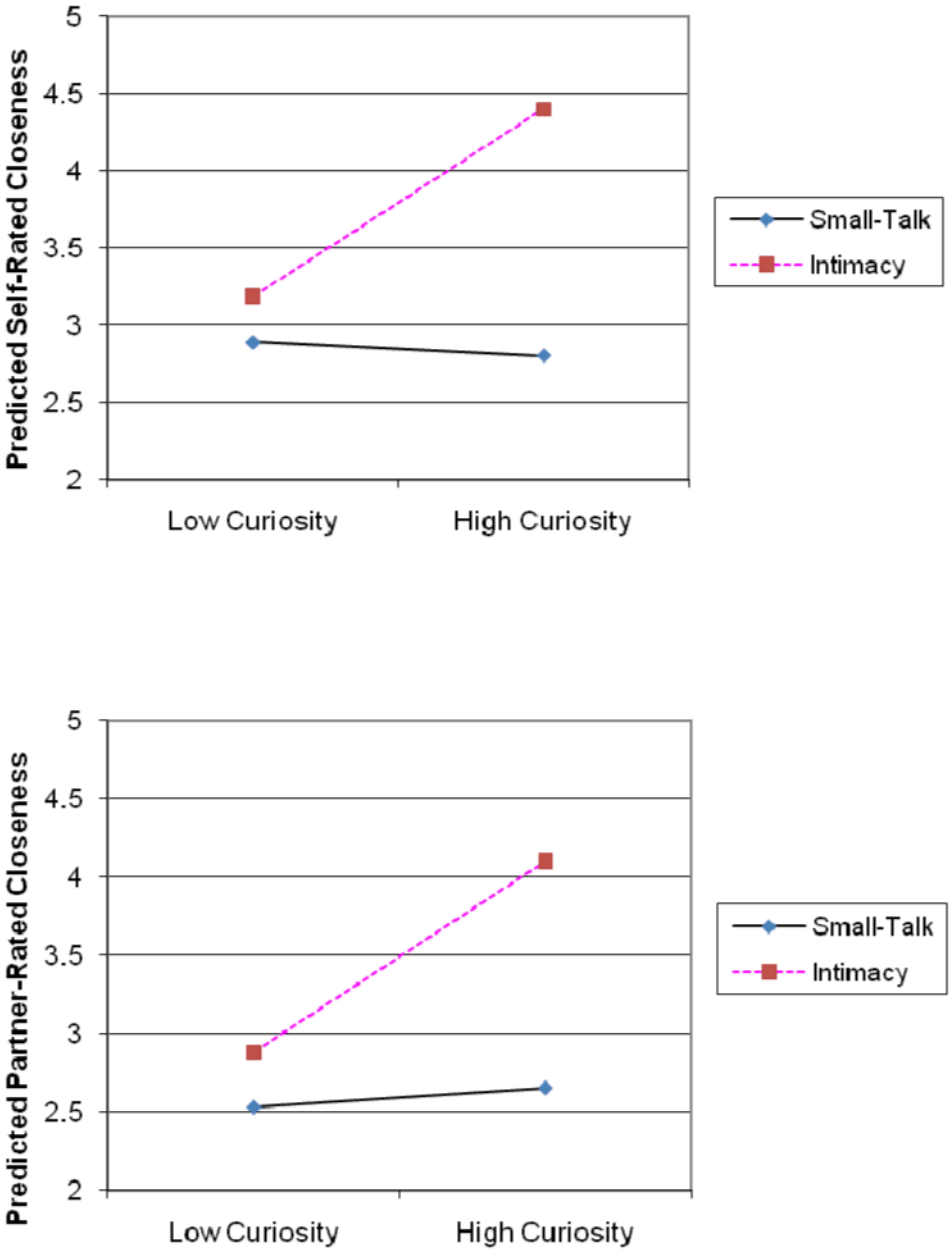

Figure 1. Trait Curiosity × Situation Interaction on Expected Interpersonal Closeness Notes
High and low CEI scores were defined as −1 and +1 standard deviations from the mean, respectively.

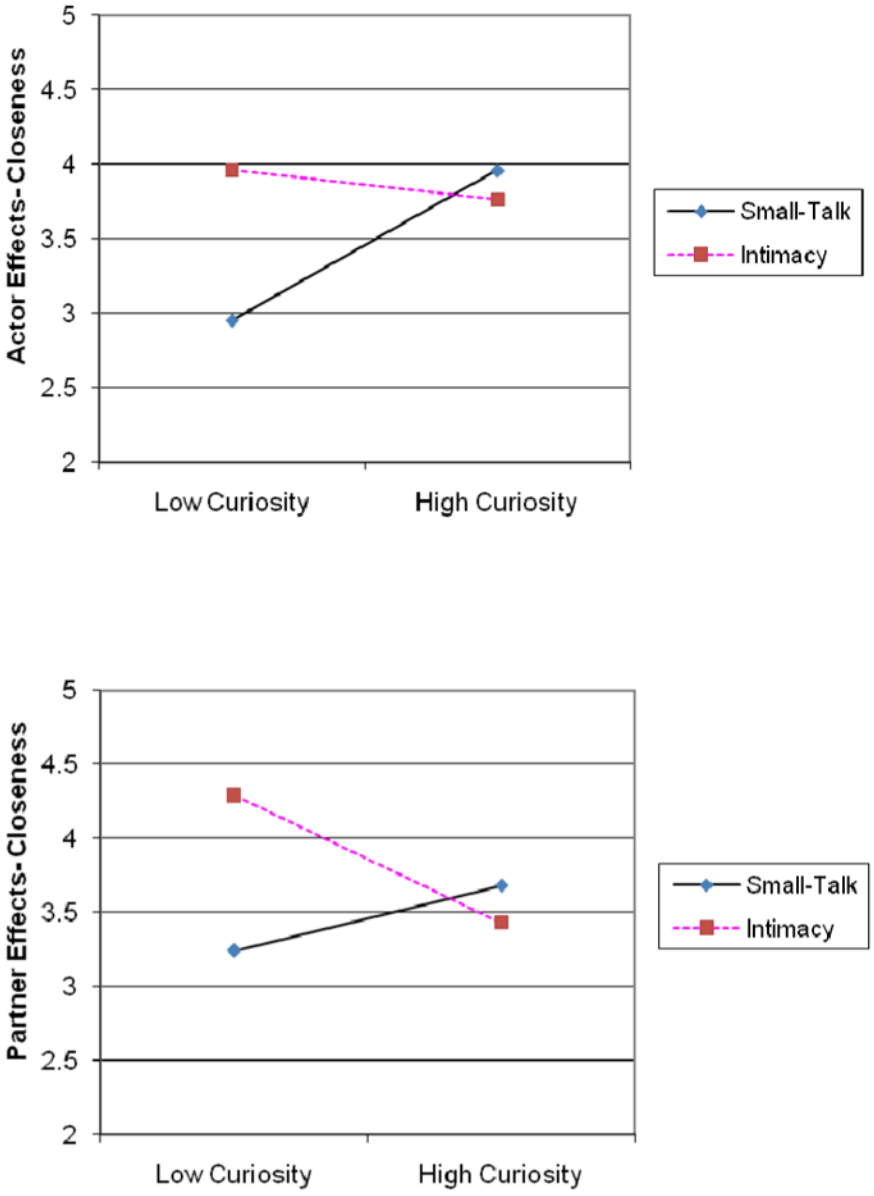

Figure 2. Trait Curiosity × Situation Interaction on Interpersonal Closeness (Study 2) Notes
Hypotheses were addressed by the actor-partner interdependence model with actor and partner main and interaction effects entered simultaneously. High and low curiosity was defined as −1 and +1 standard deviations from the mean, respectively.

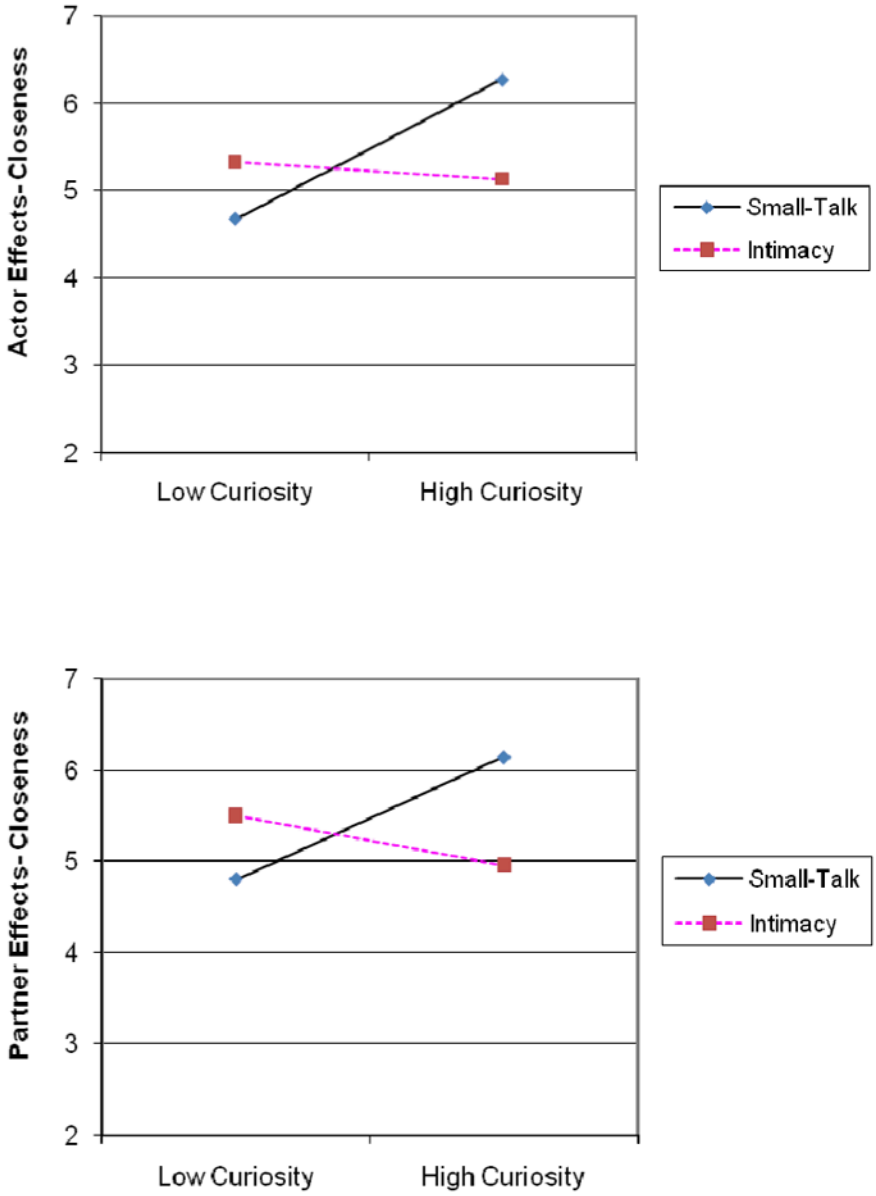

Figure 3. Trait Curiosity × Situation Interaction on Interpersonal Closeness (Study 3) Notes
Hypotheses were addressed by the actor-partner interdependence model with actor and partner main and interaction effects entered simultaneously. High and low curiosity was defined as −1 and +1 standard deviations from the mean, respectively.