A Transactional Approach to Social Anxiety and the Genesis of Interpersonal Closeness: Self, Partner, and Social Context

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It remains unclear whether social anxiety interferes with the generation of closeness during initial encounters. We addressed the question of whether perceived closeness between strangers differs as a function of dyad characteristics (i.e., self and partner levels of social anxiety) and social context. We conducted an experiment with 90 participants randomly assigned to either a 45-minute personal disclosure or small-talk dyadic conversation. Multilevel modeling results yielded a 3-way interaction, such that the effect of social anxiety on closeness generated during the interaction was moderated by social anxiety reported by interaction partners and social context. In the personal disclosure condition, perceived closeness was greatest when the most socially anxious individuals interacted with each other. In the small-talk condition, perceived closeness was greatest when the least socially anxious individuals interacted with each other. Across conditions, partners with substantial differences in social anxiety (i.e., mixed dyads) reported relatively less closeness than partners with similar levels of social anxiety. Social anxiety effects were not attributable to depressive symptoms or physical attraction to partners. These findings suggest that neglecting specific qualities of interaction partners and social situational factors may lead to spurious conclusions in understanding interpersonal outcomes related to social anxiety.

Social anxiety is characterized by distress about social situations for fear of potential rejection or scrutiny by others. It often is examined as a personality trait, as research supports the existence of a continuum from an absence of social fear, to varying degrees of shyness and social anxiety, to more intense clinically impairing social fears (Chavira, Stein, & Malcarne, 2002; Davidson, Hughes, George, & Blazer, 1994; Heiser, Turner, & Beidel, 2003). Regardless of whether it is examined as a disorder or personality trait, it is important to recognize that social anxiety is wedded to social context. Consideration of social context in empirical research would significantly enhance understanding of the nature of social anxiety and conditions that enable and inhibit adaptive intra- and interpersonal outcomes.

According to dominant cognitive theories (Clark & Wells, 1995; Rapee & Heimberg, 1997), social anxiety symptoms are activated by the onset of perceived social-evaluative situations, typified by social interactions and performances. Compared to their less socially anxious peers, high socially anxious individuals exhibit significant interpersonal distress and impairment (Davidson et al., 1994; Schneier et al., 1994; Wenzel, Graff-Dolezal, Macho, & Brendle, 2005). Yet, the majority of published studies have failed to find objective performance deficits in socially anxious individuals (Stravynski & Amado, 2001). Instead, socially anxious individuals devalue their performance compared to ratings obtained by interaction partners and objective raters (Alden & Wallace, 1995; Hope, Sigler, Penn, & Meier, 1998; Rapee & Lim, 1992; Spurr & Stopa, 2003; Woody, 1996). Despite our extensive knowledge on the discrepancy between self- and observer ratings, surprisingly little is known about whether, how, and when social anxiety affects social interaction *outcomes* such as the development of closeness during initial interpersonal encounters.

Three important sources of variance have been neglected in the study of social anxiety in social situations: interaction partners, the interaction between self and interaction partners, and social context (Kenny, 1994; Mischel, 1968). A long history of evidence challenges the assumption that behaviors and symptoms associated with social anxiety have cross-situational stability (e.g., Mischel & Peake, 1982; Mischel & Shoda, 1995). Social behavior is likely to differ as a function of different social partners and contexts. There is evidence that social context is an important factor in understanding the

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physiological and behavioral reactions of high socially anxious individuals (e.g., Thompson & Rapee, 2002; Turner, Beidel, & Larkin, 1986). Specifically, the situational demands of impromptu speeches versus social interactions, and noncontingent versus contingent interactions, lead to different emotions and cognitions. Data also indicate that social anxiety and self-presentation concerns are greater in opposite-sex compared to same-sex interactions (e.g., Leary et al., 1994; Turner et al., 1986) and for high socially anxious men, physiological reactions are elevated over the course of a stressful task when observed by women, but not by men (Larkin, Ciano-Federoff, & Hammel, 1998). Additionally, the perceived social status of partners (see Leary & Kowalski, 1990) and the size and composition of a social audience (e.g., Carron, Estabrooks, Horton, Prapavessis, & Hausenblas, 1999; Seta & Seta, 1996) influence the degree to which social anxiety is experienced in social and evaluative situations. Despite these valuable findings, the vast majority of studies include a single social context, preventing examinations of contextual influences. Even less attention is afforded to the interplay between the degree of social anxiety of self and interaction partners. Consideration of these sources of variance can serve to enhance the prediction of when and why social anxiety leads to adverse interpersonal outcomes.

There are a vast number of interaction partner, social contextual factors, and social outcomes that could be examined to extend the social anxiety literature. Our selection of variables was based on theory and data on social anxiety and activity. It has been suggested that social anxiety is a product of evolutionary adaptation to warn individuals about social rank and potential ostracism (Trower & Gilbert, 1989). Humans have a pervasive need to develop and maintain relationships with others, and they suffer psychological pain when needs for belongingness are unsatisfied (Baumeister & Leary, 1995). Earlier in evolutionary history, the chance for survival against predators and natural elements was maximized by group living, and though no longer necessary for survival, the presence of positive social interactions and relationships is the most prominent characteristic of individuals with satisfying and meaningful lives (e.g., Myers & Diener, 1995). During social interactions, socially anxious individuals must strike a delicate balance between the need to feel a sense of belonging (i.e., appetitive motive) and the desire to avoid rejection (i.e., aversive motive).

Based on this work, our primary outcome was mutual feelings of closeness during initial dyadic encounters. This outcome was viewed as an index for satisfying situation-specific belongingness needs. To extend work on social anxiety, we were interested in the degree of social anxiety of each interaction partner and their interactive influence on closeness. With an interest in the contextual determinants of behavior, we measured social anxiety with the Social Interaction Anxiety Scale (Mattick & Clarke, 1998) because items reflect social fears that are specific to interpersonal interactions. As for social context, we were interested in the intimacy of conversational topics. Conversations involving personal disclosure often provide opportunities to feel close to strangers due to the reciprocal sharing of intimate information, shared feelings of mutual liking, and positive responsiveness to self-disclosures. These interactions are a necessary precursor to developing friendships and romantic relationships (e.g., Dunbar, 1996). In contrast, small-talk conversations are a more difficult, albeit indispensable, stepping-stone to more intimate conversations and possible friendships. These two social contexts represent different trajectories to satisfying the need to belong, as measured by mutual feelings of closeness. Our experiment was a proxy for these initial social encounters.

Our hypotheses were based on prior work in interpersonal closeness, attraction, similarity, and anxiety. It is reinforcing to be with someone with similar interests and proclivities (Byrne, 1971). Supporting this model, two studies found judgments of similarity to mediate relations between social anxiety and interpersonal liking (Heimberg, Accera, & Holstein, 1985; Papsdorf & Alden, 1998).[1] As a result, we hypothesized that interaction partners with substantial differences in social anxiety (i.e., mixed dyads) would experience less closeness than social interaction partners with similar levels of social anxiety (i.e., similar dyads). In addition, we were interested in the potential moderating role of social context, specifically conversations reflecting small-talk compared to personal disclosure.

With particular relevance to encounters with strangers, individuals desire an equitable balance, such that personal costs invested in a social interaction are tolerated because considerable social benefits are expected in return. Individuals tend to like others when rewards, such as enjoyment and self-esteem enhancements, outweigh costs, such as anxiety and energy expenditure (Kelley & Thibaut,

[1] For the two studies on social anxiety and interpersonal attraction, one used confederate interaction partners (Papsdorf & Alden, 1998) and the other used a "bogus stranger" paradigm where participants rated someone they were led to believe they were going to meet (Heimberg et al., 1985). It remains questionable as to how interpersonal attraction/closeness can be adequately examined in artificial interactions with confederates rating closeness even though their performance was partially scripted. Similarly, findings with the "bogus stranger" paradigm have questionable relevance to ecological social activity.

1978). In social and evaluative situations, high socially anxious individuals allocate substantial attentional resources to project a favorable impression on others and defend against thoughts and feelings concerning rejection (Eysenck, 1997). These efforts at self-control are draining, depleting the limited personal resources available for any given social or nonsocial endeavor (Muraven & Baumeister, 2000). Research has found self-presentation concerns to be less pronounced when interacting with familiar individuals (Leary et al., 1994) and social anxiety is mitigated when feelings of security and cohesion are more prominent in social situations (Carron et al., 1999). One interpretation of these findings is that attempts to control and manage others' perceptions of the self are minimized when there is less need to compete for attention, status, and approval. We suspect that social situations requiring less impression management, and thus, less resource utilization (e.g., energy, skills, demonstrations and offerings of social value), are perceived as more equitable (i.e., ratio of costs to benefits) and lead to greater feelings of closeness. Thus, in the present study we expected high socially anxious individuals interacting with other high socially anxious individuals in the disclosure task to feel a strong sense of closeness. Because low socially anxious individuals (by definition) have fewer self-presentation concerns, the perceived ratio of costs to benefits (i.e., equity) in the disclosure and small-talk conditions is expected to be less salient. Thus, it was hypothesized that high socially anxious individuals interacting with high socially anxious individuals would exhibit greater closeness than their low socially anxious peers.

Contrary to predictions in the disclosure condition, there was no reason to expect particularly strong levels of closeness between high interacting with high socially anxious individuals in the small-talk condition. During small-talk, individuals are less likely to reciprocate personally meaningful information, recognize and appreciate similarities, and minimize the uncertain outcome of whether their social rank and position is at risk (if the interaction is a failure). High socially anxious individuals tend to believe that their own actions and unattractiveness inhibit their ability to capture the social attention and interest of others (Hope, Heimberg, Juster, & Turk, 2000). Although small-talk offers few opportunities to exhibit one's attractiveness, it is an invaluable stepping-stone to more satisfying, engaging, and meaningful discourse. However, high socially anxious individuals tend to be submissive, unassertive, and emotionally inexpressive so as to prevent social mishaps (Wells, 1997). With this prevention mentality, instead of pursuing social rewards and aspirations, high socially anxious individuals are narrowly focused on protection, safety, and the avoidance of negative outcomes. For high socially anxious individuals interacting with high socially anxious partners, small-talk is expected to evoke safety behaviors that interfere with opportunities to get to know partners, and feelings of security, leading to minimal closeness. There is no reason to expect the small-talk condition to adversely affect interactions between low socially anxious individuals interacting with low socially anxious partners.

Finally, there is a robust relation between social anxiety and depression. More than half of individuals with a lifetime diagnosis of social anxiety disorder have met criteria for a mood disorder (T. A. Brown et al., 2001). Social anxiety and depression share cognitive, behavioral, and interpersonal characteristics (Beuke, Fischer, & McDowall, 2003; Mineka, Watson, & Clark, 1998), and both are characterized by an affective profile of high negative affect and low positive affect (Brown, Chorpita, & Barlow, 1998; Kashdan, 2004). Thus, with respect to their extensive conceptual overlap, to examine specificity, secondary analyses examined the variance in outcomes attributable to depressive symptoms.

Method

PARTICIPANTS

Participants were 97 undergraduate college students. We received a list of all students required to obtain research credit for their psychology courses. All students completed a screening battery that included the question, "Are you currently in a monogamous romantic relationship?" Using a random number generator, we randomly contacted and recruited participants who answered "yes" to reduce the potential confound of romantic interest in interaction partners. This strategy was designed to minimize the likelihood that participants would be motivated primarily to regulate their behavior with romantic/sexual outcomes in mind, as the social cognitions, behaviors, and emotions in romantic relationship contexts are qualitatively different than other social contexts (Reis, Collins, & Berscheid, 2000). In our design we scheduled an even number of men and women for different time slots and upon arrival, participants were randomly assigned to opposite-sex partners for the dyadic task. Cross-sex pairs could not be created with some participants due to the arrival of uneven numbers of men and women during the study administration. Thus, 7 participants did not complete the dyadic task. The final sample of 90 students included 45 women and 45 men. The average age of participants was 19.4 (SD = 2.2), identifying themselves as European American

(n = 66, 73.3%), Asian American (n = 9, 10%), African American (n = 8, 8.9%), Hispanic American (n = 2, 2.2%), and 5 individuals refused to answer.

PREDICTOR MEASURES

Social anxiety. The 19-item Social Interaction Anxiety Scale (SIAS; Mattick & Clarke, 1998) assessed the degree to which individuals typically experience heightened anxiety when socializing with others (α = .88). Every individual's social anxiety was measured via self-report. With an interest in dyadic social interactions, we refer to the social anxiety status of each individual by the terms *social anxiety–self* and *social anxiety–partner.*

OUTCOME MEASURES

Interpersonal closeness. Interpersonal closeness was operationalized by the aggregation of two interrelated items. The single item Inclusion of Other in the Self Scale (IOS; Aron, Aron, & Smollan, 1992) consists of seven overlapping circles, representing self and partner, with gradually increasing degrees of overlap. Despite its brevity, the IOS has similar psychometric properties (e.g., 2-week test-retest of .85–.86 for family, friend, and romantic relationships) and predictive validity for the longevity of romances to more time- and resource-intensive scales (Aron et al., 1992; Aron & Fraley, 1999). A modified, single-item IOS also asked participants how close they felt to their partners in comparison to all of their other existing relationships in everyday life (an ecologically valid reference point; Berscheid, Snyder, & Omoto, 1989). These measures have been used and validated in several studies involving individuals who are not in existing relationships (e.g., Aron et al., 1992; Chen & Welland, 2002; Fraley & Aron, 2004). Factor analytic results with principal components extraction and varimax rotation supported a single factor solution. One factor accounted for 77.92% of the variance, only one eigenvalue was greater than one, an inspection of the scree plot supported a one-factor solution, and both factor loadings were equivalent to .88. Thus, the two items were aggregated (α = .72).

COVARIATES

Physical attraction to partner. After the interaction, all participants were asked how physically attracted they were to their interaction partner using a 9-point Likert scale. An individual may be more willing to be engaged in interactions with partners perceived to be high in physical attractiveness; thus, this variable was included to test whether social anxiety findings could be attributed to physical attraction between partners.

Depressive symptoms. The 21-item Beck Depression Inventory (BDI-II; Beck, Steer, & Brown, 1996) assessed the depressive symptom severity over the past 2 weeks (α = .91). This inventory was included to test the specificity of social anxiety findings.

PROCEDURE

Students were told that the study involved completing questionnaires before and after taking part in a social interaction task with another participant that was not unlike meeting a stranger for the first time. For the purposes of another study, they also completed questionnaires the following day.

Matching procedure and social interaction task. During the pre-interaction assessment period, to ensure participants would be interacting with strangers, experimenters privately asked each participant whether they knew any of the other individuals on the day of the experiment. There were no cases in which participants knew other participants. Next, experimenters created dyads by randomly matching participants with members of the opposite sex. Opposite-sex interactions were conducted because they evoke greater self-presentation concerns (Alden, Teschuk, & Tee, 1992; Leary et al., 1994) and the content tends to be more focused on intimacy and relationship development (Robins, 1987) than same-sex interactions. Thus, opposite-sex interactions are more meaningful to the constructs under study, namely, the role of social anxiety in the development of closeness during initial encounters.

Dyads were created at random (not on the basis of social anxiety), and participants were randomly assigned to a personal disclosure and relationship-building condition or a comparison small-talk condition. After participants completed pre-interaction questions, they were led into another room for the social interaction. Large classrooms were carefully prepared with pairs of desks facing one another in each corner to provide adequate distance between dyads to allow privacy but enough background noise to mimic conversations in public settings. Several desks were placed between dyads to ensure physical distance and privacy (pilot work indicated that this strategy minimized participant concerns that other dyads could hear each others' conversations). Approximately four dyads were run simultaneously in a given room.

The instructions were identical for each condition and were read to all participants after being paired and seated. The focal instructions were as follows:

> This is a study of interpersonal closeness, and your task, which we think will be quite enjoyable, is simply to get close to your partner. We believe that the best way for you to get close

> to your partner is for you to share with them and for them to share with you. Of course, when we advise you about getting close to your partner, we are giving advice regarding your behavior in this task only, we are not advising you about your behavior outside of this task.
>
> In order to help you get close we've arranged for the two of you to engage in a kind of sharing game. Your sharing time will be for 45 minutes, after which time we ask you to fill out a set of questionnaires about your experience. (Aron et al., 1997, p. 374)

Each dyad was given three sets of index cards labeled Set 1, 2, and 3 (with 12 questions in each set). Participants were instructed to begin with the first index card of Set 1 such that one member read the question aloud and answered it and, in turn, the second member answered the same question. Participants took turns answering questions first or second. There were no other guidelines to allow for a more naturalistic interaction.

In the personal disclosure condition, the "tasks called for self-disclosure or other intimacy-associated behaviors; the intensity of these tasks gradually increased, both within sets and over the three sets" (Aron et al., 1997, p. 366). This condition was designed to mimic the process of intimacy wherein individuals gradually reciprocate personal disclosure. To ensure that all participants engaged in each intensity level of intimacy tasks associated with Sets 1, 2, and 3, every 15 minutes the experimenter asked all dyads to move on to the next set. An example from Set 1 was "What would constitute a perfect day for you?", from Set 2 was "What is your most treasured memory?", and from Set 3 was "Tell your partner something that you like about them already." The emotional depth and personal disclosure of information, focusing on the self and relationship between interaction partners, became objectively more intense with each subsequent series (and activities within series).

In the small-talk condition, the questions required minimal personal self-disclosure and the content had nothing to do with the ongoing relationship between partners. An example from Set 1 was "If you could invent a new flavor of ice cream, what would it be?", from Set 2 was "What did you do this summer?", and from Set 3 was "What foreign country would you most like to visit? What attracts you to this place?". The emotional depth of task questions failed to escalate over the course of the interaction task and was to some degree superficial (see Aron et al., 1997, for evidence that the questions in the two conditions lead to different levels of closeness).

Postassessment. At the end of the experiment, each set of partners was separated and sent to opposite sides of the room. Participants were reminded that questionnaires were confidential and were asked to complete them according to "their feelings and state of mind during the interaction." For the present study, post-interaction questions focused on interpersonal closeness, direction of attentional focus, and self-presentation concerns.

Manipulation check. The success of experimentally inducing intimate or superficial conversations was examined with three post-interaction questions. Using 9-point Likert scales (from 1 to 9), participants rated the extent to which they disclosed information about their innermost self, disclosed personally important experiences and events, and openly expressed their feelings about their partner. Higher scores were expected in the personal disclosure than the small-talk condition.

Results

PRELIMINARY ANALYSES

Table 1 shows the descriptive data of all variables and the relations between variables at the individual level. The distribution of our social anxiety scale was acceptable in terms of skewness (.81; $SE = .25$) and kurtosis (.30; $SE = .50$), suggesting that social anxiety was normally distributed in our sample. Using z-score comparison of means, Social Interaction Anxiety Scale (SIAS) scores in our sample were higher than a nonclinical sample of 482 college students and 315 community members, zs = 2.35 for each sample (Mattick & Clarke, 1998).

The mean score for our measure of closeness was lower than the mean score across three other studies designed to experimentally manipulate closeness between strangers, 3.82, $z = -.40$ (Aron et al., 1992). It is not surprising that our mean score is lower than the findings of Aron et al., as our mean col-

TABLE 1 Means and Standard Deviations and Zero-Order Correlations for Multilevel Modeling Variables

	1	2	3	4	*X* (*SD*)	Possible Score Range
1 Social anxiety	1.0				22.16 (12.00)	0–76
2 Depressive symptoms	.52***	1.0			11.19 (8.95)	21–84
3 Physical attraction to partner	.19	−.06	1.0		5.89 (1.93)	1–9
4 Interpersonal closeness	−.17	−.21	.29**	1.0	6.43 (2.86)	2–14

Note. $n = 90$.
$^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$.

lapses across the disclosure and small-talk conditions. Thus, our findings are comparable to existing data from other studies, with the mean score indicative of a normative level of closeness.

Social anxiety had a negative, albeit nonsignificant relation with self-reported closeness, $r = -17$, $p = .11$, and no relation with partner ratings of closeness, $r = -.07$, $p = .49$. Perceived physical attraction was associated positively with interpersonal closeness during the interaction in multilevel modeling analyses (discussed below), $t(88) = 3.01$, $p = .003$, $d = .64$. Thus, physical attraction was included as a covariate in all models. In contrast, we failed to find significant gender main or interaction effects.

Upon conducting comparisons between men and women with a series of linear regression models, we failed to find significant gender differences in social anxiety, or gender main effects or Gender × Condition interaction effects on closeness and physical attraction ratings. Upon examining differences on demographic and predictor variables (including covariates) between experimental conditions, no significant differences were found.

OVERVIEW OF ANALYTIC TECHNIQUES

Testing the independence of data. The data were nested with individual participants at the lower level, nested in social interaction dyads at the upper level. Using hierarchical linear modeling (with HLM 5.04; Raudenbush, Bryk, Cheong, & Congdon, 2000), we conducted an intraclass correlation to test the contribution of dyad effects to interpersonal closeness. In an empty model (random intercept and no predictor variables), dyad accounted for 34% of the variance in interpersonal closeness. These results indicated that our data were nonindependent and best represented by a two-level model with participants nested in dyads. Data were subsequently analyzed using a multilevel modeling approach.

Manipulation check. Using HLM 5.04 with a random intercept and experimental condition as the lone predictor, compared to the small-talk condition, participants in the personal disclosure condition were more likely to disclose information about their innermost self, $t(88) = 3.63$, $p = .001$, $d = .77$, disclose personally important experiences and events, $t(88) = 1.95$, $p = .05$, $d = .42$, and openly express feelings about their partner, $t(88) = 1.94$, $p = .05$, $d = .41$. These findings confirm that the personal disclosure condition was effective in facilitating greater intimate disclosure than the small-talk condition.

Testing main and interaction effects with HLM. The primary goal of our study was to examine whether self-ratings of social anxiety were related to interpersonal closeness during the social task. Additionally, we were interested in whether social anxiety effects were moderated by partner social anxiety levels and social context. Interpersonal closeness ratings served as the primary dependent measures (see Appendix for details on equations). Analyses were conducted with HLM 5.04 (Raudenbush et al., 2000). In HLM 5.04, degrees of freedom for all between-person main and interaction effects are derived from the number of sample participants. Predictor variables were grand-mean centered. All variables included in multilevel models were examined simultaneously, such that each effect adjusts for the variance accounted for by other model components. We report significance levels and the effect size of each main and interaction effect to convey the magnitude of relations (transforming *t* tests into Cohen's *d*; Cohen, 1988).

INITIAL ROLE OF SOCIAL ANXIETY IN PREDICTING INTERPERSONAL CLOSENESS

Initial multilevel models separately examined main effects for social anxiety–self and social anxiety–partner as predictors of interpersonal closeness before estimating interaction terms. Similar to preliminary findings (see Table 1), there were no significant main effects for social anxiety on interpersonal closeness as rated by self ($p = .16$, $d = .30$) or partner ($p = .84$, $d = .04$). Thus, there was no empirical support for a direct relation between social anxiety and closeness generated in dyads.

UNIQUE PREDICTORS OF INTERPERSONAL CLOSENESS

Our primary model examined the unique main and interactive effects of social anxiety–self and social anxiety–partner and social context on mutual feelings of interpersonal closeness (see Appendix). The final model is shown in Table 2. A three-way Social Anxiety–Self × Social Anxiety–Partner × Social Context interaction on closeness was found ($p = .05$, $d = .43$).[2] We decomposed this interaction by separately examining two-way Social Anxiety–Self × Social Anxiety–Partner interactions in each social context. Predictors were centered to reduce multicollinearity (Aiken & West, 1991). Although social anxiety was examined dimensionally, and partici-

[2] We also had each participant return the day after the social interaction task to evaluate their feelings of closeness to partners (using the same measures). There was a strong degree of convergence between interpersonal judgments immediately after the interaction and the subsequent day, $r = .77$, $p < .001$. The use of subsequent day ratings of interpersonal closeness did not affect our results. These data indicate the stability of interpersonal closeness ratings over a 24-hour period and provide evidence against the threat of mood-congruent biases to account for our findings (i.e., completing measures immediately after an emotion-laden interaction).

TABLE 2 Hierarchical Linear Modeling of Social Anxiety and Social Context Effects on Interpersonal Closeness

Predictors	*B*	*SE*	*t* test	*df*	Cohen's *d*
Physical attraction to partner	.48	.13	3.77***	81	.84
Social anxiety–self (SA-S)	−.20	.05	−3.67***	81	.82
Social anxiety–partner (SA-P)	−.11	.09	−1.15	81	.26
Social context	−1.69	1.40	−1.20	81	.27
SA-S × SA-P	−.00	.00	−.20	81	.04
SA-S × Social Context	.02	.03	.86	81	.19
SA-P × Social Context	−.01	.05	−.28	81	.06
SA-S × SA-P × Social Context	.01	.00	1.92*	81	.43

Notes. $n = 90$. All p values were two-tailed. The magnitude of relationships was examined by transforming t tests into Cohen's d effect sizes (Cohen, 1988).
*$p = .05$; ***$p < .001$.

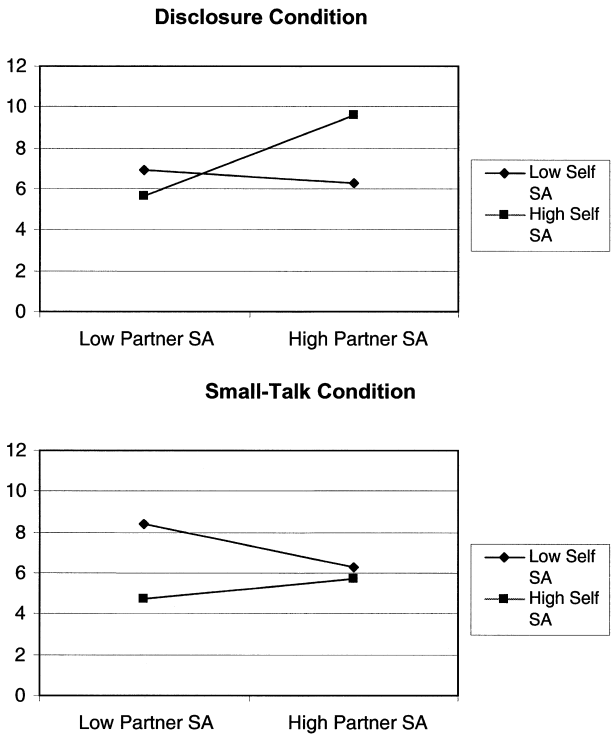

FIGURE 1 Self × Partner Social Anxiety Status on mutual feelings of interpersonal closeness as a function of social context. *Note.* $n = 48$ and 42 for the disclosure and small-talk conditions, respectively. High social anxiety and low social anxiety were defined as +1 and −1 standard deviations from the mean, respectively. All predictor variables were grand-mean centered.

pants were not recruited by social anxiety status, we refer to high and low socially anxious individuals to elucidate the nature of interactions. In the disclosure condition, a significant Social Anxiety–Self × Social Anxiety–Partner interaction was found, $t(43) = 2.59$, $p = .01$, $d = .79$. Specifically, high socially anxious individuals interacting with high socially anxious partners reported greater mutual closeness than other combinations of interaction partners. In the small-talk condition, a moderate-sized, albeit nonsignificant, Social Anxiety–Self × Social Anxiety–Partner interaction was found, $t(37) = 1.28$, $p = .21$, $d = .42$. Specifically, low socially anxious individuals interacting with low socially anxious partners reported greater mutual closeness than all other combinations of interaction partners. The nature of the three-way interaction is shown in Figure 1. Overall, closeness ratings were greater in the disclosure compared to the small-talk condition and across both social contexts, mixed dyads (with partners differing substantially in social anxiety) reported relatively less mutual closeness compared to interaction partners with similar levels of social anxiety.

Specificity of social anxiety effects. Focusing on our final model with the entire sample (see Table 2 and Figure 1), depressive symptoms, as measured by the BDI-II, were included to test the specificity of social anxiety effects. After adjusting for self- and partner-rated depressive symptoms, the three-way Social Anxiety–Self × Social Anxiety–Partner × Social Context was minimally reduced, $t(79) = 1.83$, $p = .07$, $d = .41$ (reduced from $d = .43$). As an additional test of specificity, we tested multilevel models with depressive symptom instead of social anxiety components. In contrast to the aforementioned social anxiety findings, depressive symptom main and interaction effects accounted for little variance. Thus, our findings on interpersonal closeness were specific to social anxiety, and the three-way interaction between self and partner social anxiety and social context remained after adjusting for shared variance with depressive symptoms and physical attraction to interaction partners.

Discussion

We provided an innovative approach to social anxiety by examining multiple sources of variance to predict closeness generated during initial encounters. Following a long history of theory and research in social and personality psychology (e.g., Kenny, 1994; Mischel, 1968; Mischel, & Peake, 1982), we examined four sources of variance: self, partner, the interaction between self and partner, and social context. Our results supported the need for this approach, as we found an illuminating three-way interaction between the social anxiety severity of self and partner and social context on feelings of closeness (as rated by each interaction partner). In the disclosure condition, compared to all other dyad

combinations, perceived closeness was greatest when the most socially anxious individuals interacted with each other. In the small-talk condition, compared to all other dyad combinations, perceived closeness was greatest when the least socially anxious individuals interacted with each other. In general, partners differing substantially in social anxiety (i.e., mixed–dyads) reported relatively less closeness than partners with similar levels of social anxiety. With an absence of prior data on this transactional approach to studying social anxiety, we provide theoretically based post-hoc explanations for findings.

Based on bivariate correlations, participants' social anxiety had nonsignificant, negative relations with their own ratings of interpersonal closeness, and near-zero relations with partner ratings of closeness. These findings fit with the majority of studies on social anxiety and interpersonal functioning. Previous researchers have concluded that high and low socially anxious individuals do not perform differently in social interactions, but instead the distorted negative perceptions of high socially anxious individuals lead to distress in social situations (e.g., Clark & Wells, 1995; Rapee & Heimberg, 1997). Our data suggest that adding other variables to the equation clarifies potentially spurious nonsignificant relations between social anxiety and interpersonal closeness. In our study, mutual closeness within a dyad varied as a function of the social anxiety status of each partner and the social context.

Our social anxiety findings for the entire sample fit with relevant theory. There is robust work demonstrating that similarity in personality traits, interests, and values increase the likelihood of liking (Byrne, 1971). Across the full sample, low socially anxious individuals interacting with low socially anxious partners experienced the greatest levels of closeness. Consistent with previous studies (Leary & Kowalski, 1995), low socially anxious individuals might be less likely to doubt their social ability and more likely to adopt an acquisitive style in their social lives, pursuing social rewards such as intimacy, approval, and laughter. In a related model, Trower and Gilbert (1989) argued that low socially anxious individuals tend to operate assertively and cooperatively during interactions, providing reassurance and social attention to others in order to satisfy the primary social goal of forming and maintaining significant and satisfying relationships. Arguably, there appears to be a sense of social compatibility when low socially anxious individuals interact with one another that increases the rate of intimacy development.

Although we did not record the content of conversations, it is interesting to speculate as to why the lowest levels of mutual closeness were found for mixed-dyads. There is reason to believe that the low closeness for mixed-dyads is a function of the divergent perceptions, goals, interests, and behaviors of high and low socially anxious individuals. Whereas low socially anxious individuals tend to have acquisitive goals and be cooperative, high socially anxious individuals tend to be in a protective mode, primarily concerned with avoiding social threat. Being in a defensive mode leads to submissive and disengaged behavior (e.g., talking very little, nodding obsequiously) in order to be innocuous and avoid rejection and ostracism (Trower & Gilbert, 1989). Unfortunately, defensive and protective behaviors interfere with the ability to be a pleasant, responsive interaction partner. Moreover, individuals differ in their tendencies to express emotions and self-disclose, with extraverted individuals tending to disclose more than introverted individuals (Carpenter & Freese, 1979), and lonely individuals tending to disclose inappropriately, too much and too soon (Davis & Franzoi, 1986). Self-disclosure is a central component of liking and intimacy (see Collins & Miller, 1994, for review). There is merit in examining the temporal unfolding of self-revelations, emotional expressiveness, and closeness over the course of interaction as a function of social anxiety, and the experiences and actions of each interaction partner. Our approach in the present investigation is merely a beginning to how these relations can be explored.

To further inform our understanding of social anxiety and interpersonal closeness, we examined the interplay of partners in different social contexts. Findings in our small-talk conversation condition mirrored the pattern found for the entire sample and fit with the more gregarious, assertive, and socially confident prototype of low socially anxious individuals. However, the pattern among different dyads diverged in the disclosure condition. Why would high socially anxious interacting with high socially anxious partners generate greater levels of closeness than all other dyads in the self-disclosure condition? The first plausible reason is that the pleasures of positive social activity are rare for these individuals, due to social escape/avoidance behavior, but highly desired as evidenced by their social fears as opposed to social indifference. After the initial alleviation of excessive anticipatory anxiety, high socially anxious individuals may have been more willing to capitalize on a rare opportunity for positive social activity. Over the course of a 45-minute disclosure task, a great deal can be learned about partners, and it is reinforcing to be with someone with similar interests and proclivities (Byrne, 1971), and even shared anxiety (Schachter, 1959). Second, high socially anxious individ-

uals may have been more sensitive to the anxiety expressed by their anxious partners, nullifying their own impression-management concerns, and allowing more cognitive resources to be devoted to the closeness-generating task. Interpersonal attraction and closeness may have been facilitated by downward social comparisons to their high socially anxious partners (i.e., no longer feeling like a subordinate member of the social hierarchy; Trower & Gilbert, 1989). Third, high socially anxious individuals were likely to have based interpersonal judgments on experiences at the end of the interaction as opposed to encoding the entire sequence from excessive anticipatory anxiety to the 45-minute habituation process (Fredrickson & Kahneman, 1993). Using multiple measurements over the course of interactions may have led to very interesting temporal patterns of closeness as opposed to our use of a post-interaction index. Fourth, high socially anxious individuals may exhibit low positive expectancies and personal goals for social interactions, particularly with novel strangers. Consequently, any positive feelings experienced toward the interaction and partners may be a surprising pleasure, whereas low socially anxious individuals are likely to begin with higher standards for their goals, performance, and desires. There is merit in testing these competing falsifiable hypotheses.

We can only speculate as to how our findings may generalize to everyday social activity. Our structured social interaction task sacrificed ecological validity, and because noncontingent social interactions elicit greater social anxiety than contingent social interactions, social fears can be expected to be greater in real-world, open-ended interactions. Beyond interactions within existing romantic and close relationships, there are few opportunities for intimate self-disclosure in everyday living (e.g., occupational and academic settings). As a result, individuals who are more adept at handling small-talk and transforming mundane topics into more interesting conversations can be expected to have stronger social ties and more positive social experiences. It is likely that low socially anxious individuals are more effective at using interest self-regulatory strategies (i.e., ways to induce interest in self and others such as injecting humor into conversations and introducing provocative topics), making casual conversations more enjoyable for all parties, and thus, exhibit greater adaptability to different situational demands. We suspect that these self-regulatory strengths provide a rationale for how small-talk can lead to strong feelings of closeness. In contrast, it is likely that the social status and rejection concerns of high socially anxious individuals render them less tolerant of ambiguous social activity and more dependent on intimate interactions. Interactions involving confiding self-disclosures can provide evidence of social acceptance, which is desperately desired by high socially anxious individuals. We suspect that high socially anxious individuals are less flexible in their social behaviors and needs, and thus, are more dependent on being in an optimal situation where the need to belong and the need to maintain or enhance their social status can both be obtained (e.g., intimate interaction with another high socially anxious individual). Each of these falsifiable hypotheses can be tested using more ecologically valid methodologies.

Despite a reliance on self-report measures, social anxiety status and interpersonal closeness outcomes were cross-validated by using the ratings of both members of each dyad (self and partner). Variables correlated with social anxiety may account for effects on closeness because we did not manipulate social anxiety or pair various permutations of high and low socially anxious participants. We did, however, demonstrate that social anxiety findings were not attributable to depressive symptoms or physical attraction to partners. Self-report questionnaires can be expected to be more efficient at assessing the subjective components of social anxiety. Structured clinical interviews would have been a valuable supplement to assess functional impairment. Despite using a less than optimal assessment strategy, the SIAS scores of our "high socially anxious" group (mean = 34.16) were comparable to scores that reliably detect individuals suffering from excessive social anxiety (i.e., SIAS scores $\geq$ 34 provide excellent sensitivity and specificity in categorizing individuals with SAD; E. J. Brown et al., 1997; Heimberg, Mueller, Holt, Hope, & Liebowitz, 1992). Thus, we believe our study has some generalizability to a socially anxious population. It also should be noted that the scores of our "low socially anxious" group (mean = 10.16) were comparable to scores one standard deviation below the mean of a large nonclinical undergraduate sample (n = 482; SIAS = 8.9) (Mattick & Clarke, 1998). However, replication with clinical samples is necessary. Another limitation of the present study was less than desirable statistical power (Type II error). Yet, despite inflated Type II error, we continued to find a theoretically meaningful three-way interaction.

Other methodological and sampling issues need to be considered in interpreting results from this study. Despite support for the importance of social anxiety, our design does not allow us to infer causality in the development of closeness during initial encounters. Continuous self-report assessments of anxiety and closeness during interactions, and be-

havioral coding by independent observers, could establish the time line between social anxiety of self and partner, and closeness. These methodological advancements could provide pertinent information on possible bidirectional relations and causality. In addition, our sample was restricted to individuals in romantic relationships. Although this limits the generalizability of our findings, data indicate that social cognitions and behaviors differ as a function of romantic and nonromantic social contexts (see Reis et al., 2000), and our sampling strategy was designed to minimize this potential confound. Furthermore, issues related to intra- versus interracial interactions could not be adequately addressed because of the small percentage of minority ethnic groups in our sample. There is reason to believe that the valence of prior social activity with members of ethnic groups can have a significant impact on social anxiety in an interracial interaction (Plant & Devine, 2003). Moderating variables related to ethnicity and gender, and romantic versus nonromantic social situations, should be considered in future transactional studies of social anxiety.

The current study suggests that the study of social anxiety and interpersonal closeness is enhanced by examining the dynamics between self and partner social anxiety severity, and social situational factors. Our provocative findings are indicative of how neglect of partner and contextual variables can lead to spurious conclusions in the study of social anxiety. Although preliminary, we found evidence for an enabling condition in which high socially anxious individuals were able to generate positive interpersonal outcomes (i.e., engaging in reciprocal, intimate disclosures with other high socially anxious individuals). Future applications of this transactional approach may uncover other enabling factors that lead to positive outcomes for high socially anxious individuals. Subsequent inquiry is needed on explanatory mechanisms for variability in the interpersonal and intrapersonal outcomes of socially anxious individuals.

Appendix

Multilevel Modeling Equations

Data were analyzed using an HLM approach with participants at the lower level nested within dyads at the upper level. Interpersonal closeness outcomes were predicted by equations that accounted for variance within and between dyads (adjusting for dependencies among each set of participants interacting as a dyad). The equations to examine the three-way Social Anxiety–Self × Social Anxiety–Partner × Social Context interaction on interpersonal closeness were as follows:

Lower-level:

$$\begin{aligned} Y_{ij} = {} & b_{0j} \\ & + b_{1j}(\text{Physical Attraction}) + b_{2j}(\text{Social Anxiety–Self}) \\ & + b_{3j}(\text{Social Anxiety–Partner}) + b_{4j}(\text{Social Context}) \\ & + b_{5j}(\text{Social Anxiety–Self} \times \text{Social Anxiety–Partner}) \\ & + b_{6j}(\text{Social Anxiety–Self} \times \text{Social Context}) \\ & + b_{7j}(\text{Social Anxiety–Self} \times \text{Social Anxiety} - \text{Partner} \\ & \quad \times \text{Social Context}) + r \end{aligned}$$

Upper-level:

$$\begin{aligned} b_{0j} &= g_{00} + u_{0j} \\ b_{1j} &= g_{10} \\ b_{2j} &= g_{20} \\ b_{3j} &= g_{30} \\ b_{4j} &= g_{10} \\ b_{5j} &= g_{20} \\ b_{6j} &= g_{30} \\ b_{7j} &= g_{20} \\ b_{8j} &= g_{30} \end{aligned}$$

In the lower-level equation, Y is individual i's Interpersonal Closeness in the jth dyad, b_{0j} is the intercept (i.e., average Interpersonal Closeness for the average dyad with average scores on each predictor), and b_{1j} to b_{4j} refer to the main effects for physical attraction to partner, social anxiety–self, social anxiety–partner, and social context, respectively, b_{5j} to b_{7j} refer to two-way interactions, whereas b_{8j} refers to the three-way Social Anxiety–Self × Social Anxiety–Partner × Social Context interaction of primary interest. As the final component of the lower-level equation, r refers to random error. The upper-level equation accounts for the influence of dyad with b_{0j} indicative of a random intercept model (i.e., u_{0j} refers to the unique error of each dyad), and main and interaction effects treated as fixed effects (b_{1j} to b_{8j}). Together, these equations examine each participant's interpersonal closeness ratings based on the main and interactive effects of social anxiety–self and social anxiety–partner, experimental condition, and the variance associated with participants' experimentally assigned dyad.

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