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Social Anxiety and the Generation of Positivity During Dyadic Interaction:**Curiosity and Authenticity are the Keys to Success**

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Abstract

What drives positive affective and interpersonal experiences during social interaction?

Undergraduates with high ($n = 63$) or low ($n = 56$) trait social anxiety (SA) were paired with unfamiliar low SA partners in a 45-minute conversation task. Throughout the task, participants and their conversation partners completed measures of affiliative goals, affect, curiosity, authenticity, and attentional focus. Both affective and interpersonal outcomes were assessed. Dyadic analyses revealed that participants' affiliative goals during the social interaction predicted positive outcomes for both themselves and their partners, although the link between affiliative goals and positive affect was weaker for participants with high SA. Mediation analyses demonstrated that adopting affiliative goals may promote more positive outcomes by increasing participants' curiosity and felt authenticity. Taken together, results illuminate the pathways through which people with varying levels of trait SA may derive interpersonally generated positive affect and positive social outcomes, with implications for clinical theory and practice.

Keywords: social anxiety; positive emotions; relationship formation; affiliation; dyad.

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Curiosity and Authenticity are the Keys to Success

Social interaction is essential to human survival and flourishing. People interact with others to trade resources, acquire information, meet emotional needs, and pursue idiosyncratic interpersonal goals. For these reasons, social relationships are often a source of joy, fulfillment, and positivity that promote enhanced well-being and life satisfaction. However, for people with high levels of trait SA, including those with social anxiety disorder (SAD), social interactions tend to elicit interpersonal pain and distress while also inhibiting the generation of positivity and the experience and expression of positive emotions. Although SA has been reliably associated with diminished positive affect (PA) and deficits in associated positive and interpersonal outcomes across a variety of contexts, less is known about the underlying cognitive and motivational variables that may promote or inhibit these positivity deficits.

Positive Emotions and Interpersonal Experiences in Social Anxiety

Diminished PA uniquely distinguishes SAD from the other anxiety disorders. Clark and Watson's (1991) seminal tripartite model of anxiety and depression postulated that lower PA was primarily implicated in mood disorders rather than anxiety, with higher negative affect being a feature of both anxiety and mood, and autonomic arousal primarily implicated in anxiety disorders. However, research has revealed that SAD is the only anxiety disorder associated with high trait NA and *low* trait PA (e.g., Clark & Watson, 1991; Brown, Chorpita, & Barlow, 1998).

But how, and why, does elevated SA contribute to deficits in hedonic functioning? Our understanding of the answer to this question is still in its infancy (e.g., Farmer et al., 2014). Research has shown that hedonic deficits among those with elevated levels of trait SA or a clinical diagnosis of SAD are widespread across a variety of contexts. For example, socially

anxious individuals report fewer and less intense positive emotions and more anger than non-anxious individuals across both social and non-social situations (Kashdan & Collins, 2010). These deficits in positive emotions may be more than a by-product of anxious avoidance resulting in limited exposure to opportunities for pleasurable experiences. Indeed, socially anxious individuals tend to respond less enthusiastically to the good news of romantic partners and are less likely to share good news with their loved ones (Kashdan, Ferssizidis, Farmer, Adams, & McKnight, 2013). This pattern of decreased positive functioning extends beyond affect; individuals with higher SA report lower perceptions of intimacy and closeness in peer, friend, and romantic relationships (Alden & Taylor, 2004; Kashdan, 2007), and decreased approach behaviour during interaction with others (Heerey & Kring, 2007).

These intriguing findings raise questions about why socially anxious individuals may be experiencing less PA, closeness, and positive interpersonal experiences despite the presence of appropriate opportunities. Do socially anxious individuals simply fail to seize the social and interpersonal opportunities that would be expected to generate experiences of pleasure and closeness, or do they also fail to derive pleasure and closeness from interpersonal encounters in the same way that non-anxious individuals do?

Social Rank and Affiliation

Evolutionary models of SA suggest that there are two distinct motivational systems that guide interpersonal behaviour: one that is sensitive to perceptions of social rank and dominance, and one that is concerned with relational affiliation and safety (Trower & Gilbert, 1989). The rank system attends to one's status within the social hierarchy with the goal of reducing the potential for injuries to oneself and the group as a result of competition for resources. The affiliation system promotes approach toward loved and trusted others, enhancing cooperation

within the group. Theorists have suggested that social anxiety reflects both a tendency to over-utilize the rank system (commonly associated with negative outcomes such as anxiety and negative affect) and a tendency to under-utilize the affiliation system (Aderka, Weisman, Shahr, & Gilboa-Schechtman, 2009; Weisman, Aderka, Marom, Hermesh, & Gilboa-Schechtman, 2011). The under-utilization of the affiliation system has been speculated to play a key role in positivity deficits and decreased approach motivations (Blay, Keshet, Friedman, & Gilboa-Schechtman, 2021; Gilboa-Schechtman, 2020; Weisman et al., 2011).

Cognitions and Motivations Associated with Affiliative Drive

One key process involved in affiliative drive is *curiosity*, a pleasant appetitive motivational state that has been linked to interpersonal goal pursuit and seeking new experiences (Kashdan, Rose, & Fincham, 2004). Curiosity is posited to be a mechanism through which one can interpret a novel or uncertain situation as an opportunity for learning, rather than as personally threatening – a stance that facilitates both approach behaviour and pleasurable emotional experiences (see Kashdan & Roberts, 2006). Some researchers have defined curiosity as a motivated state that orients people toward the pursuit of information and rewards, which enhances new learning and memory consolidation (Gruber & Ranganath, 2019). Studies by Kashdan and colleagues have demonstrated that higher trait SA is associated with lower curiosity (Kashdan, 2007) and that greater state curiosity in socially anxious undergraduates is associated with greater PA during social interaction (Kashdan & Roberts, 2006). Curiosity may therefore serve as a means for individuals to better attend to their partners and to capitalize on opportunities to connect and bond with them, resulting in greater quality of interaction and opportunities to experience PA.

Research has also demonstrated that *authenticity* (one's sense of behaving genuinely) may be an important mechanism through which people express their affiliative drive within interpersonal contexts, which enables them to attribute positive interpersonal outcomes to their own genuine efforts (i.e., their "real" selves) rather than pre-rehearsed safety behaviours, which create a false social façade (Plasencia, Alden, & Taylor, 2011). Indeed, SAD participants instructed to reduce safety behaviour use during interactions with confederates experienced increased authenticity and subsequent PA as well as elevated desire for future interaction (Plasencia, Taylor, & Alden, 2016). Like curiosity, behaving in a genuine or authentic manner may enable individuals to prioritize connecting with other people rather than attempting to manage one's impression in the eyes of others. As a result, it may be easier to develop internal attributions for successful encounters, foster a more stable and positive sense of self, and derive greater pleasure from personal interactions with others.

Finally, *self-focused attention* (SFA; see Hope, Gansler, & Heimberg, 1989; Spurr & Stopa, 2002) may also play an important role in inhibiting affiliative drive and the capacity to derive pleasure from social interaction (Woody, 1996; Woody, Chambless, & Glass, 1997). In one study, greater SFA during a laboratory-based social threat induction partially mediated the relation between trait SA and lower state PA (Kashdan & Roberts, 2004), suggesting the inverse may be true as well (i.e., adopting affiliative goals leads to reduced SFA which in turn elevates PA). Higher SFA has also been linked to poorer interpersonal outcomes, with conversation partners of more self-focused high SA individuals reporting lower feelings of engagement in conversation (Heerey & Kring, 2007). Thus, high SFA may interfere with individuals' ability to attend to positive interpersonal outcomes (e.g., a friendly smile) that can subsequently generate

positive emotions, as well as inhibiting them from deploying prosocial behaviour that may contribute to the positive experience of conversation partners.

Present Study and Hypotheses

The present study was designed to examine, first, the extent to which affiliative interpersonal goals may influence positive emotional and interpersonal outcomes during a dyadic interaction between strangers. Second, we investigated whether trait SA might moderate relations between affiliative motivation and positive emotional and interpersonal outcomes for participants and their interaction partners. To this end, we expected that adopting strategies designed to promote activation of the affiliation system would especially benefit higher SA individuals, who tend to under-utilize that system in the absence of such strategies. Finally, we examined the potential roles of curiosity, authenticity, and SFA in mediating the relationship between affiliative goals and subsequent emotional and interpersonal outcomes.

High and low socially anxious (HSA, LSA) undergraduates were paired with unfamiliar LSA undergraduate partners in the lab to complete a structured interaction task and assigned to one of two conditions in which they were instructed to pursue either affiliation-related or impression management-related social goals during the interaction. Self-report data were collected from both participants and partners. We predicted that: (1a) participants instructed to pursue affiliative goals would experience greater PA and more positive interpersonal outcomes; (1b) the benefits of affiliative social goals on PA and interpersonal outcomes would be stronger for HSA than LSA participants because adopting such goals would help to activate inhibited but otherwise intact motivational and affective systems among HSAs; and (1c) the positive impact of affiliative social goals would extend to interaction partners' reported outcomes. We also predicted that: (2a) the relation between an affiliative mindset and positive outcomes would be

mediated by greater self-reported curiosity and authenticity as well as lower self-focused attention; (2b) the mediating relationship would be significant for both participant and partner outcomes; and (2c) the mediating relationships would be stronger for HSA than LSA participants, implying that the mediating effects of adopting an affiliative mindset on downstream positive outcomes would be particularly robust when an under-utilized system is disinhibited.

Method

Participants

Undergraduate participants were recruited for the study in exchange for course bonus credits. Participants with high and low levels of trait SA were preselected based on their scores on the Social Interaction Anxiety Scale (SIAS; described below), which was completed at the start of term. Those who scored in the top and bottom 25% of the distribution, respectively, comprised the HSA and LSA groups. All dyads were arranged to match same-gender identification (i.e., male-male or female-female) to reduce the influence of variables unique to different-gender interactions (e.g., Asher & Aderka, 2020). Dyads consisted of a “primary participant,” who was either HSA or LSA, and a “partner participant,” who was always LSA, resulting in both HSA-LSA and LSA-LSA dyads. Eligible LSA participants were randomly assigned through the recruitment software to the primary or partner role.

A total of 119 same-gender dyads participated in the study. The sample consisted of predominantly female pairings (78.2%) with an average age of 19.83 years ($SD = 3.38$). The majority of the sample identified as heterosexual (79.8%), with 3.4% identifying as gay or lesbian, 9.2% bisexual, and 7% as unidentified or other. All participants identified as cisgender. Sixty-three dyads consisted of HSA-LSA pairings, and 56 were LSA-LSA. Forty two percent of

participants identified as Caucasian, 20.2% East Asian, 20.2% South Asian, 5.0% Southeast Asian, 5.0% Middle Eastern, and 7.6% other (African, Hispanic, Caribbean, Indigenous).

Condition Assignment

After primary and partner participants completed initial questionnaires in separate rooms, primary participants were randomly assigned to one of two conditions, while partner participants received no additional instructions. Primary participants assigned to the *affiliation* condition were instructed to adopt the goal of “becoming close” with their partner, whereas those assigned to the *impression management* control condition were instructed to adopt the goal of “making a good impression” on their partner. We expected the affiliation condition to enhance affiliative goals relative to the control condition, which was designed to promote a rank-oriented mindset. Prior to the conversation, primary participants in both conditions completed a brief visualization exercise in which they imagined themselves implementing an approach to interaction consistent with the instructed goal (see Supplemental Materials for detailed instructions and manipulation script).

Social Interaction Task

The conversation task itself relied on the procedures outlined by Aron, Melinat, Aron, Vallone, and Bator (1997). Participants sat across from one another and were provided with 33 ordered slips of paper, each containing a question or a task (e.g., “Would you like to become famous?” or “Name three things you and your partner appear to have in common”). We included all of Aron et al.’s (1997) original 36 slips except for 3 items (“What is your most terrible memory?”; “When did you last cry in front of another person? By yourself?”; “Of all the people in your family, whose death would you find most disturbing? Why?”). These were excluded due to concerns raised by our institution’s research ethics board reviewers that the items would elicit

high levels of participant distress. Participants were instructed to complete all slips one at a time and in the order provided. Both members answered each slip, alternating who spoke first.

To facilitate repeated measurement of key constructs over time, the interaction was divided into three 15-minute segments. Participants were provided with one-third of the slips in each segment, during which they were given 15 minutes to converse. Participants were encouraged to continue discussing any item as long as they wished and were informed that they did not need to complete all slips before time elapsed. Following each segment, the experimenter interrupted participants and separated them into different rooms to complete questionnaires. Prior to returning the participants to the same room, primary participants in each condition were reminded of their assigned goals for the conversation. After completing all three 15-minute segments (45 minutes total), participants were administered a final battery of questionnaires, debriefed, and remunerated. Study duration was approximately 90 minutes. Please refer to Figure S1 in the supplemental materials for a graphical depiction of the study procedure.

Self-Report Measures

Trait Social Anxiety and State Positive Affect

The *Social Interaction Anxiety Scale* (SIAS; Mattick & Clarke, 1998) was used to measure trait SA and select eligible HSA and LSA participants and LSA partners, as described above. Respondents answer 20 questions in Likert-response format on typical experiences of anxiety during social encounters (e.g., “I become tense if I have to talk about my feelings”). In the current study, the SIAS demonstrated excellent internal consistency (Cronbach’s $\alpha = .94$). The *Positive and Negative Affect Schedule* (PANAS; Watson, Clark, & Tellegen, 1988) was used to measure participant and partner state affect throughout the study. This 20-item measure consists of two subscales assessing positive and negative affect (PA and NA). In this study, our

analyses of interest focused only on the PANAS PA subscale (e.g., “inspired”, “determined”), which had excellent internal consistency (Cronbach’s $\alpha = .88$ to $.91$ across time). The SIAS and PANAS are both commonly used measures with well-established validity and reliability.

Interpersonal Goals

In order to verify that our manipulation was indeed priming affiliation- or impression-oriented mindsets for primary participants (manipulation check), we developed the *Interpersonal Goals Questionnaire* (IGQ), a 10-item measure with ratings on a 5-point scale ranging from 1 (never) to 5 (always). Five items were designed to correspond with the impression management goals of the control condition (e.g., “I tried to present myself in a positive light”), and 5 items were designed to measure affiliation goals (e.g., “I tried to get to know the other person”). Primary participants completed this questionnaire three times, with each point of measurement referring retrospectively to the preceding portion of the conversation task, while partner participants completed the measure once at the end of the conversation task. An exploratory factor analysis on primary participants’ data conducted on the average score of all time-points using principal axis factoring with direct oblimin rotation supported a 2-factor solution. The full list of items and communalities, as well as the pattern matrix, are available as Supplemental Material (Table S1). The affiliation and impression management subscales demonstrated good internal consistency for both primary participants (T1 $\alpha = .81$, T2 $\alpha = .88$, T3 $\alpha = .88$ for affiliation, and T1 $\alpha = .81$, T2 $\alpha = .83$, T3 $\alpha = .86$ for impression management) and partners ($\alpha = .80$ for affiliation, $.88$ for impression management).

Hypothesized Mediators

Self-report measures of curiosity, authenticity, and SFA were completed by primary participants during the two breaks between each 15-minute segment of the conversation task.

State curiosity was assessed with the *Melbourne Curiosity Inventory-State Version* (MCI; Naylor, 1981). The MCI consists of 20 items presented in Likert-response format assessing current feelings of curiosity (e.g., “I want to know more”). The MCI has demonstrated good to excellent internal consistency and convergent validity with other measures of curiosity (Boyle, 1983). In this sample, the MCI demonstrated excellent internal consistency (Cronbach’s $\alpha = .93$ to $.94$). State authenticity was measured with the *Self-Experience Questionnaire* (SEQ; Plasencia, et al., 2011, a brief 4-item measure in 7-point Likert response format assessing the degree to which respondents felt authentic or artificial during a social interaction (e.g., “I felt genuine during the conversation”). The SEQ has been found to significantly correlate with more comprehensive measures of authenticity (Plasencia et al., 2011). In this study the SEQ demonstrated acceptable to good internal consistency (Cronbach’s $\alpha = .73$ to $.86$). Finally, SFA was measured using the *Focus of Attention Questionnaire* (FAQ; Woody, 1996), a 10-item measure which consists of two subscales assessing self-focused attention (e.g., “I was focusing on what I would say or do next”), and other-focused attention. We analyzed only the self-focused subscale, which demonstrated good reliability (Cronbach’s $\alpha = .80$ to $.84$).

Interpersonal Outcome Measures

Various well-established interpersonal outcome measures were administered post-conversation to all participants. The *Desire for Future Interaction Scale* (DFI; Coyne, 1976) is an 8-item self-report measure assessing the degree to which respondents would like to interact again with their social partner in the future (e.g., “would you like to meet this person again?”). The DFI demonstrated excellent internal consistency in the present study (Cronbach’s $\alpha = .93$). The *Inclusion of Other in Self Scale* (IOS; Aron, Aron, & Smollan, 1992), a single-item pictorial measure, assessed how close respondents felt to their partners. They were instructed to choose

between 7 images of two circles representing “self” and “other” that vary in their degree of overlap. The IOS is highly correlated with other scales of relationship closeness and has been found to be a highly reliable measure of closeness in relationships (Gachter, Starmer, & Tufano, 2015). Finally, participants’ perceptions of the quality of their interactions were assessed using the *Quality of Interaction Scale* (QI; Berry & Hansen, 1996). The QI, which has been used reliably in prior dyadic studies of SA (e.g., Heerey & Kring, 2007), assesses perceptions of smoothness and intimacy of a social interaction and the satisfaction drawn from that interaction (e.g., “how much did you enjoy the interaction). The scale is comprised of 11 items rated on an 8-point scale, and demonstrated good internal consistency in this sample (Cronbach’s $\alpha = .89$).

Demographics

All participants completed a demographics questionnaire to measure age, ethnicity, marital status, sexual orientation, familiarity with English, and the nature of any previous contact with the participant with whom they were partnered. The order of questionnaires within each block throughout the study was randomized with the exception of the measure of state PA, which was always completed first in order to capture potentially short-lasting affective states as contiguously as possible to the conversation.

Data Analytic Plan and Data Preparation

Data Analytic Approach

Preliminary ANOVAs were conducted to test the effects of the experimental manipulation. To reduce family-wise error, the positive outcome variables were combined to form a composite latent outcome variable that included PA, desire for future interaction, perceived closeness, and quality of interaction. This latent variable, which we labelled “positive outcomes,” demonstrated good model fit when subjected to a confirmatory factor analysis for

both the primary participant, $\chi^2(2) = 1.40, p = .497$; CFI = 1.00; RMSEA = .000; $pclose = .590$, and for the partner, $\chi^2(2) = 0.44, p = .803$; CFI = 1.00; RMSEA = .000; $pclose = .849$. All standardized factor loadings were $> .52$. Hypotheses were then tested separately for the positive outcomes composite variable and PA alone with structural equation modeling (SEM) in AMOS v.21. To test hypothesis 2, the three hypothesized mediators were assessed simultaneously within a model examining the positive outcomes composite as the outcome variable, and a second model examining PA as the outcome. Mediator variables were entered from break 2, and outcome variables were measured at conversation end. For mediation and moderated-mediation analyses, since AMOS only provides total indirect effects for the entire model, custom estimands (Gaskin, 2016) were used to test each of the discrete indirect paths in the models following the product-of-coefficients approach outlined by Preacher and Hayes (2008). Bootstrapping with 2000 samples was conducted, and lower and upper boundaries of the estimates were calculated using bias-corrected 95% confidence intervals.

Statistical Power

Sample size for the study was determined by a desired minimum power of .8 for mediation tests. We expected medium effect sizes in both the alpha and beta paths of our mediation models. These effect size estimates are based on Kashdan's (2007) meta-analysis of the impact of SA on PA ($r = -.36$) as well as Alden and Taylor's (2011) treatment study showing that interpersonal-based CBT had large effects on a composite measure of positive social functioning relative to waitlist in patients with SAD (partial eta squared = .20). We used Fritz and MacKinnon's (2007) empirical estimates of sample sizes required for mediation with bias-corrected bootstrap tests. Thus, we estimated that a sample size of at least 71 was required to

detect significance when both the α path and the β path were associated with medium effects (13% of variance).

Data Screening

A total of 123 dyads participated in the study. Two participants were excluded from subsequent analyses due to terminating the study early and failing to complete outcome questionnaires, one was excluded due to an encoding error that resulted in no questionnaire data being retained, and one mixed-gender dyad was mistakenly recruited and excluded.

The final sample consisted of 119 dyads. There were no missing data or impossible values for any of the dyads, except for one set of partner ratings that failed to record. Data screening as recommended by Kline (2008) indicated no significant univariate violations of normality (all skewness < 3 and kurtosis < 10). All outlying data points exceeding 3 SDs from the mean or identified by Mahalanobis distance tests were deemed plausible and retained in subsequent analyses.

Results

Group Comparisons at Baseline

Among primary participants, collapsing across conditions, the HSA group had a mean SIAS score of 55.48 ($SD = 8.97$), and the LSA group had a mean SIAS score of 13.09 ($SD = 5.81$). An SIAS score of 43 is the recommended cutoff score indicative of clinical levels of SA (Mattick & Clarke, 1998). Across anxiety group status, as expected, HSA participants reported significantly lower baseline PA, $t(117) = 3.11, p = .002, d = 0.58$. There were no significant anxiety group differences in how well the participants knew each other prior to the study or their age (all t 's $< 1.29, p$'s $> .21$). Most participants reported having never met their partner ($n = 107$), with remaining participants reporting single or brief prior interactions ($n = 12$). Examining

baseline differences between conditions while collapsing across anxiety group status, there were no differences in age, levels of trait SA, how well participants knew each other prior to the study, or PA (all t 's < 1.80, all p 's > .07).

Manipulation Check

To test whether the manipulation impacted participants' conversation goals in expected ways, we conducted two separate 2 (anxiety status) by 2 (condition) ANOVAs, one each assessing primary participants' self-reported impression management and affiliation goals from the Interpersonal Goals Questionnaire. Average scores were calculated across the three time points for analysis. These analyses are outlined in the Supplemental Materials. Taken together, these analyses suggested that the manipulation did not affect affiliative or impression management social goals during the social interaction task in the expected manner. Additional follow-up analyses revealed the manipulation had no discernable impact on any of the study variables. Correlation analyses revealed that self-reported IGQ affiliative and impression management goals averaged across time-points were significantly positively correlated with one another ($r = .50, p < .01$), suggesting that both types of goals were held by participants simultaneously, irrespective of condition assignment.

Modified Data Analytic Approach

We therefore modified our data analytic plan to use the continuous subscale score from the affiliation subscale of the IGQ as our predictor of hypothesized outcomes instead of the categorical condition variable. As a result, modified hypotheses were tested using self-reported affiliative social goals collapsed across the two conditions, with the expectation that holding greater affiliative social goals would be associated with greater positive experiences during the interaction. In testing our modified hypotheses, we used the Actor-Partner Interdependence

Model (APIM; Cook & Kenny, 2005), which allowed us to account for the reciprocal influences of participants' and partners' behaviour. Thus, we examined the effects of primary participants' affiliative goals on hypothesized outcomes while controlling for partner's self-reported affiliation goals in all models. Due to the missing data from one partner participant, our dyadic data analyses were based on a sample size of 118.

To test modified hypothesis 1, primary participants' self-reported affiliative goals were averaged across all time points and this average score was used as the predictor variable. To test modified hypothesis 2 and ensure appropriate temporal sequencing in the mediation models, the measure of primary participants' affiliative goals at break 1 was used as the predictor variable, scores on mediator variables were taken from break 2, and measures of outcome variables were used from the end of the conversation. Partners' affiliative goals were always measured at the end of the conversation.

Effects of State Affiliative Social Goals on Positive Outcomes

Descriptive statistics for study variables collapsed across conditions are presented in Table 1, while correlations between study variables are in Supplemental Materials (Table S2). There was a small but significant negative correlation between primary participants' social anxiety group status and self-reported affiliative social goals averaged across all time-points ($r = -.19, p = .038$).

A structural model predicting the latent positive outcomes composite was created following the APIM approach, as shown in Figure 1a. Information regarding model pathway estimates and model trimming is provided in Supplemental Materials.

The model demonstrated good model fit, $\chi^2(3) = 1.68, p = .642$; CFI = 1.00; RMSEA = .000; $pclose = .737$, accounting for 47% and 49% of positive outcomes and partner's positive

outcomes, respectively. Significant pathways indicated that primary participants' HSA status contributed to diminished positive outcomes for both themselves ($\beta = -.20, p = .004$) and their partners ($\beta = -.13, p = .048$). Consistent with modified hypotheses 1a and 1c, the extent to which primary participants held affiliative social goals during the social interaction predicted greater positive outcomes for both themselves ($\beta = .60, p < .001$) and their partners ($\beta = .26, p = .015$). Similarly, the extent to which partners held affiliative goals strongly predicted their own positive outcomes ($\beta = .63, p < .001$) as well as the positive outcomes for participants ($\beta = .19, p = .005$). Contrary to modified hypothesis 1b, there was no significant interaction of affiliative social goals and SA in predicting positive outcomes for either primary participants ($\beta = -.01, p = .955$) or partners ($\beta = -.02, p = .830$). Outcome error term covariance in the model indicated a significant correlation between outcomes for primary participants and partners ($r = .47, p < .001$).

Next, we conducted a similar APIM analysis examining participant and partner PA alone as the outcome variables. The model (Figure 1b) had good fit, $\chi^2(3) = 1.68, p = .642$; CFI = 1.00; RMSEA = .000; $pclose = .737$, and accounted for 35% of the variance in primary participants' PA, and 23% of the variance in partners' PA. SA group status negatively contributed to PA experienced by the primary participants ($\beta = -.22, p = .003$), and had a significant negative impact on the PA experienced by partners ($\beta = -.17, p = .037$). Again, supporting modified hypothesis 1a, primary participants' affiliative social goals significantly contributed to their own increased PA ($\beta = .73, p < .001$); however, contrary to modified hypothesis 1c and the previous model, this did not extend to partners' PA ($\beta = .07, p = .595$). Unlike in the previous model, a significant interaction between affiliative social goals and SA group status predicted primary participants' PA ($\beta = -.37, p = .002$). However, in contrast to modified hypothesis 1b, the results indicated that affiliative social goals had *less* impact on PA

for HSA than LSA participants. This interaction effect did not extend to partners' PA ($\beta < .01$, $p = .979$). As with primary participants, partners' affiliative goals predicted their own PA ($\beta = .44$, $p < .001$), but did not impact that of primary participants' PA ($\beta = -.04$, $p = .579$). As in the first model, outcome error term covariance in the model indicated a significant correlation between outcomes for primary participants and partners ($r = .30$, $p = .002$).

Mediating Variables

As seen in Figure 2a, a model predicting positive outcomes with all three mediators included had good fit, $\chi^2(5) = 6.41$, $p = .269$; CFI = 0.99; RMSEA = .049; $p_{close} = .425$. The model predicted 53% of the variance in positive outcomes for primary participants and 50% for partners. There was a significant total effect of primary participants' affiliative goals on positive outcomes, $B = .47$, $p < .001$, 95% CI [.27, .63], and a significant total effect of anxiety group on positive outcomes, $B = -.22$, $p = .007$, 95% CI [-.37, -.05]. Similarly, there was a significant total effect for primary participants' affiliative goals on partners' positive outcomes, $B = .17$, $p = .014$, 95% CI [.04, .33], and for anxiety group on partners' positive outcomes, $B = -.15$, $p = .023$, 95% CI [-.27, -.02]. Significant indirect effects of affiliative goals on positive outcomes were observed for primary participants through increased authenticity, $B = .22$, $p = .002$, 95% CI [.09, .36], and through increased curiosity, $B = .29$, $p = .001$, 95% CI [.13, .48], but not through SFA, $B = .00$, $p = .424$, 95% CI [-.01, .05]. No indirect effect of primary participants' affiliation on partner positive outcomes were observed through curiosity, $B = .10$, $p = .100$, 95% CI [-.02, .25], SFA, $B = .00$, $p = .626$, 95% CI [-.05, .01], or authenticity, $B = .15$, $p = .076$, 95% CI [-.02, .35]. Tests of our moderated mediation hypothesis are described below.

A second model was tested to examine PA alone as the outcome variable (Figure 2b). Model fit was identical to the previous model, and the model accounted for 44% of the variance

in participants' PA, and 24% of the variance in partners' PA. Results revealed a significant total effect of primary participants' affiliative goals on PA, $B = .33, p < .001, 95\% \text{ CI } [.17, .48]$, and a significant total effect of anxiety group on PA, $B = -.26, p = .006, 95\% \text{ CI } [-.42, -.08]$. No total effect was seen for primary participants' affiliative goals on partners' PA, $B = .01, p = .940, 95\% \text{ CI } [-.16, .17]$. However, a significant total effect of anxiety group on partners' PA was observed, $B = -.19, p = .019, 95\% \text{ CI } [-.36, -.03]$. Significant indirect effects of primary participants' affiliative goals on their own PA were found through increased curiosity, $B = .65, p < .001, 95\% \text{ CI } [.32, 1.12]$. Neither authenticity, $B = .25, p = .075, 95\% \text{ CI } [-.03, .57]$, nor SFA, $B = .00, p = .623, 95\% \text{ CI } [-.03, .09]$, emerged as significant indirect pathways. In contrast to the previous model, examining indirect effects of primary participants' affiliation on partners' PA revealed a significant indirect effect of authenticity, $B = .32, p = .046, 95\% \text{ CI } [.01, .79]$, but not through curiosity $B = -.06, p = .613, 95\% \text{ CI } [-.39, .21]$ or SFA, $B = -.01, p = .535, 95\% \text{ CI } [-.15, .05]$.

Analyses testing whether any of the proposed mediating pathways were moderated by anxiety status (hypothesis 2c) revealed that the magnitude of the indirect effect did not differ between the HSA and LSA groups for any of the mediators for either the primary participants or the partners, irrespective of whether the outcome was the positive composite score or PA alone. Next, we used a custom estimand (Gaskin, 2016) in AMOS to determine whether there was a statistically significant difference in the magnitude of the observed indirect effects between HSA and LSA groups (hypothesis 2c). Results revealed that the magnitude of the indirect effect did not differ between the HSA and LSA groups for curiosity, $B = -.01, p = .916, 95\% \text{ CI } [-.38, .32]$, authenticity, $B = -.08, p = .633, 95\% \text{ CI } [-.48, .26]$, or SFA, $B = .01, p = .673, 95\% \text{ CI } [-.07, .10]$ when predicting primary participants' positive outcomes. Similarly, no evidence of moderated mediation was found for affiliative social goals on partner positive outcomes through curiosity, $B = .13, p = .398, 95\% \text{ CI } [-.17, .42]$, authenticity, $B = .12, p = .435, 95\% \text{ CI } [-.20, .50]$, or SFA, $B = .00, p = .935, 95\% \text{ CI } [-$

.08, .10]. Similar results were obtained when examining moderated mediation for the models with PA as the outcome variable. Specifically, for participant PA, the magnitude of the indirect effect did not differ between the LSA and HSA groups for curiosity, $B = -.49$, $p = .183$, 95% CI [-1.21, .12], authenticity, $B = -.23$, $p = .409$, 95% CI [-.77, .24], or SFA, $B = .02$, $p = .915$, 95% CI [-.17, .26]. Similarly, for partner PA, no group differences were observed in the magnitude of indirect effects for curiosity, $B = .04$, $p = .985$, 95% CI [-.66, .58], authenticity, $B = .44$, $p = .170$, 95% CI [-.09, 1.17], or SFA, $B = .00$, $p = .861$, 95% CI [-.25, .22].

Discussion

The present study was designed to enhance our understanding of the cognitive mechanisms that may fuel positive emotional and interpersonal experiences during dyadic social encounters in high vs. low SA participants. Results demonstrated that overall levels of PA increased on average from conversation start to end for HSA and LSA participants alike, supporting the idea that social contexts that promote intimacy and inhibit avoidance have the potential to increase access to interpersonal and emotional rewards. However, as expected, participants with high trait SA experienced reduced PA and less positive social outcomes than their low SA counterparts. The negative impact of participants' SA also carried over to their conversation partners, predicting lower partner ratings of PA and less positive social outcomes overall. These findings highlight the role of SA in inhibiting positive emotional and interpersonal outcomes for both members of the dyad during one-on-one social interactions.

In partial support of hypothesis 1, we found that holding more affiliative social goals in mind during the conversation enhanced participants' own PA as well as their own and their partners' ratings of social outcomes overall, though the relationship between affiliative goals and increased PA was statistically weaker for HSA than LSA participants. It is possible that the capacity of high trait SA individuals to experience PA may be limited by a hypoactive affiliation

system, which may be subject to biological constraints or inhibited by a competing and hyperactive rank system, as suggested by evolutionary theories (Trower, & Gilbert, 1989; Weisman et al., 2011). However, recent research suggests that affiliation and rank motivations may operate independently, even among people with high SA (Blay et al., 2021). Our results suggest that the detrimental effects of SA could be offset, at least in part, by adopting affiliative goals during social interaction, as those who oriented themselves toward affiliation experienced both personal and interpersonal benefits. If results could be generalizable to patients with SAD, it may be useful to discern the level of patients' affiliative motivations in advance of social encounters for establishing an idiosyncratic motivational profile, which may enhance case conceptualization and provide helpful targets for intervention (Blay et al., 2021).

In partial support of hypothesis 2, the impact of participants' affiliative social goals on their own positive outcomes was partially mediated by both curiosity and authenticity, but only curiosity emerged as a significant mediator when examining PA alone. Interestingly, and in contrast with hypothesis 2, although the overall association between affiliative goals and positive outcomes was stronger for participants with lower rather than higher levels of trait SA, the significant mediators of this association – curiosity and authenticity – exerted similarly robust effects for both high and low socially anxious individuals, suggesting that they represent key processes that function as the “interpersonal glue” of affiliative engagement, irrespective of SA status. Thus, positive emotional and interpersonal experiences may be attainable for individuals with higher levels of trait SA when they are able to adopt curious and/or authentic motivations for social interaction, highlighting the importance of effective strategies to bolster these motivations.

With respect to curiosity, results of the present study suggest that adopting affiliative goals may help to promote an inquisitive mindset about other people – a view that is consistent with a social approach orientation in which social interaction may be viewed as an opportunity to acquire new information and new learning about other people and, in turn, feel more connected and derive more pleasure from the interaction. As anxiety increases, it may be more difficult to maintain higher levels of state curiosity, though it is important to note that HSA status in this study was not associated with reduced curiosity, in contrast with previous research (Kashdan et al., 2004). A variety of factors may have contributed to this non-significant association, including our use of a non-clinical sample. The structured nature of the task may have also played a role by alleviating some of the anxious arousal that is thought to be antagonistic to curiosity (Spielberger & Starr, 1994). Nonetheless, results suggest the potential importance of both affiliative goals and curiosity as potential targets for interventions designed to boost positive outcomes. Helping individuals attend to what is novel in a social situation, or highlighting the novelty of their internal experiences may help to boost their levels of state curiosity (Kashdan, et al., 2004), which could have positive downstream effects on both affective and interpersonal outcomes (Kashdan, 2009). Moreover, framing behavioural experiments during treatment in terms of information acquisition, discovery, and exploration rather than solely as opportunities for disconfirmation of threatening interpretations may promote curiosity, facilitate a sense of mastery, and enhance positive outcomes. For example, rather than setting up an experiment to test (and ideally disconfirm) the idea that “if I give this speech, the audience will laugh at me,” patients may also benefit from explicit efforts to use the experiment as an opportunity for them to discover what they can learn about their strengths, their emotional

reactions, and aspects of the experience that may be interesting and novel for them (see Gruber & Ranganath, 2019; Taylor, Lyubomirsky, & Stein, 2017).

As noted above, authenticity also emerged as a significant mediator of the relationship between participants' affiliative goals and their own positive outcomes, though authenticity did not contribute to enhanced PA on its own when affect was uncoupled from the composite measure of positive outcomes. Moreover, as expected, HSA group status was associated with reduced authenticity overall. These findings support prior work on SA showing that operating in accordance with one's true self helps to improve social-relational outcomes (see Plasencia et al., 2016). Individuals with SAD often intentionally engage in self-concealment and other subtle avoidance and self-protective behaviours designed to hide their true self from others (see Moscovitch, 2009; Rodebaugh, 2009), with a variety of negative consequences. Maintaining affiliative social goals may encourage individuals to adopt a stance towards the interaction that is inconsistent with self-concealment, thus allowing individuals to behave in a more genuine fashion (see Moscovitch et al., 2013). In turn, this may promote perceptions of a higher quality of interaction and greater feelings of closeness, while also leaving participants with increased desire to engage in future interactions.

Unexpectedly, and in contrast to hypothesis 2, neither participant curiosity nor participant authenticity mediated the path from affiliative goals to *partner* outcomes, although participant authenticity did directly contribute to partner PA. Since theoretical models presume that diminished levels of authentic disclosure and curiosity obstruct meaningful relationship formation, especially among high SA individuals (e.g., Cuming & Rapee, 2010; Kashdan, McKnight, Fincham, & Rose, 2011), we predicted that enhanced levels would promote more favourable interpersonal and emotional partner ratings. It is possible that the positive impact of

authenticity on partner PA contributes to longer-term perceptions of positive relationship quality that do not emerge in a single encounter with a stranger, thus requiring a longitudinal design or an already-established close relationship to detect in the laboratory. Another possibility is that participants' self-reported levels of curiosity and authenticity are not readily discerned by conversation partners. More sensitive research designs in future studies could integrate subjective experience with coded behaviour. Research incorporating such behavioural data may help to generate an enhanced understanding of the observable (and potentially trainable) actions that individuals could adopt to facilitate their own and others' positive interpersonal and emotional experiences, with potential for the development of more targeted interventions (see Taylor et al., 2017).

Contrary to hypothesis 2, SFA played no discernable role in explaining positive social or affective outcomes. This finding is interesting in light of the wealth of research supporting the role of SFA in SA (see Spurr & Stopa, 2002), and some evidence that SFA may inhibit the experience and/or expression of positive emotions through increased state anxiety (e.g., Kashdan & Roberts, 2004). However, to our knowledge, few studies have specifically examined whether SFA is directly or indirectly linked to positive emotional functioning; this warrants further investigation. It may be that the role of SFA in interpersonal interactions pertains more to the experience of negative outcomes such as anxiety symptoms and negative affect.

Limitations and Future Directions

Although the dyadic framework in the present study enabled us to begin to disentangle the reciprocal influence of SA on interpersonal and emotional experiences of self and others, it remains unclear whether findings would generalize from the standardized context of our design to real-life social interactions with partners who may have characteristics that differ from those

recruited here, including opposite-gender interactions, and/or romantic partner engagements. Further, it is unclear whether these results would generalize to online interactions (e.g., synchronous video chat), which has become an essential form of social communication, especially during the ongoing COVID-19 pandemic. Replication and extension are required to understand how modifications to various contextual and demographic variables may impact processes and outcomes.

Moreover, to amplify potential effects of social anxiety, conversation partners were intentionally selected to have low rather than average levels of social anxiety, which may have reduced external validity and generalizability to a typical encounter with a stranger. Further, the present study relied on an analogue group of high anxious undergraduate participants; though predominantly young in age, the sample was ethnically diverse, consisting of participants from diverse cultural backgrounds. Although the HSA group reported levels of trait SA that exceeded the clinical cut-off on a well-established symptom measure, it is unclear whether results would generalize to community-based individuals with a clinical diagnosis of SAD whose functional impairment and interpersonal characteristics may differ on dimensions other than symptom levels alone. Moreover, trait SA was assessed up to several weeks in advance of the study, and stability of trait anxiety levels over time was not assessed.

Another limitation was that the experimental manipulation appeared to have no differential impact on participants' conversation goals across the two conditions. It may be that modifying conversational goals requires a stronger manipulation than brief task instructions, particularly within the context of a potentially stressful and complex social task. Alternatively, the structured nature of the task may have limited the potential for participants to deviate widely from the assigned topics, suggesting that the manipulation may have been more successful within

the context of an unstructured conversation. As there are insufficient existing data to support how affiliative social goals can be most effectively promoted within the context of a brief manipulation, future studies could examine whether the goal of promoting affiliation is better served by manipulating more specific and concrete targets such as authenticity and curiosity.

As noted above, this study relied solely on self-report outcomes and on a newly developed measure of affiliative social goals. It would be beneficial to assess the construct validity of this measure, and to determine the behavioural manifestations of affiliative social goals in order to establish which, if any, observable behaviours may be linked with participant and partner outcomes. This may be particularly interesting, as this study did not assess partner perceptions and appraisals of the primary participant's level of affiliative motivations or social performance. Further, a larger sample may have improved our ability to detect significant effects, particularly if mediation and moderated-mediation effect sizes were small. Future studies should use creative, well-powered designs to replicate and extend our findings and enable detection of smaller effect sizes. Finally, the impact of affiliative goals differed depending on whether the dependent variable was the composite measure of social outcomes or PA alone, suggesting the need for future research to disentangle these effects and enhance our understanding of how PA may be both related to and distinct from positive interpersonal outcomes more generally.

Both basic and applied clinical research in SAD are moving toward the recognition that simply targeting symptom reduction may be insufficient for promoting positive emotional and interpersonal functioning. It seems likely that several of the newly emerging techniques in the treatment of SAD are already capitalizing on ways to promote curiosity, authenticity, and affiliative motivation. For example, Alden and Trew (2013) found that instructing individuals to engage in kind acts yielded increased PA sustained over four weeks in social anxious

participants. In their study, it is likely that self-determined kind acts served to promote affiliative goals. Moreover, Alden and colleagues (2018) found that incorporating a relational focus into CBT for SAD resulted in increased satisfaction with social relationships. Similarly, some researchers have begun to investigate the impact of positive activity interventions in SAD by incorporating techniques such as strengthening commitment to personal values, increasing prosocial behaviours, and focusing on connection with others (Taylor et al., 2017). These activities have high conceptual overlap with affiliation and authenticity. Future research would benefit from integrating basic and applied research, to identify mechanisms of change and improve intervention techniques.

Conclusion

These limitations notwithstanding, the present study highlights important processes in the generation of positivity in interpersonal interactions for individuals across the SA spectrum. Results demonstrated that: (a) holding affiliative social goals confers emotional and interpersonal benefits to people and their interaction partners, irrespective of levels of trait SA; (b) such benefits are slightly more modest for those with high trait SA; and (c) curiosity and authenticity may be important mechanisms through which affiliative social goals operate to influence people's own positive affect and positive interpersonal outcomes during dyadic social interaction. Future research is needed to replicate and extend these novel findings and investigate whether and how they could be leveraged to improve clinical interventions and outcomes for SAD.

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Table 1

Descriptive Statistics [M (SD)] for Measured Variables between Groups Collapsed Across Conditions

	LSA (<i>n</i> = 56)	HSA (<i>n</i> = 63)	HSA – LSA Difference (<i>d</i>)	Partner (<i>n</i> = 118)
Predictor Variables				
SIAS scores	13.09 (5.81)	55.48 (8.97)	6.52*	13.81 (6.23)
Baseline Positive Affect	25.73 (7.97)	21.43 (7.12)	0.57*	25.95 (7.84)
Affiliation Goals (Break 1)	21.88 (2.53)	20.75 (2.99)	0.41*	-
Affiliation Goals (Overall)†	22.55 (2.35)	21.56 (2.75)	0.39*	21.85 (2.79)
Impression Management Goals (Overall)†	18.19 (3.77)	18.49 (3.80)	0.08	17.69 (3.71)
Mediator Variables				
Curiosity (Break 2)	54.30 (12.56)	52.25 (13.60)	0.16	53.22 (13.71)
Curiosity (Overall)†	52.76 (11.61)	51.67 (11.71)	0.09	52.60 (12.02)
Authenticity (Break 2)	13.32 (1.36)	11.65 (2.55)	0.82*	12.77 (1.82)
Authenticity (Overall)†	12.93 (1.23)	11.43 (2.30)	0.81*	12.57 (1.80)
Self-Focused Attention (Break 2)	7.63 (2.01)	11.35 (4.50)	1.07*	7.93 (2.51)
Self-Focused Attention (Overall)†	7.86 (1.85)	11.83 (4.09)	1.25*	8.00 (2.26)
Outcome Variables				
Post-Task Positive Affect	35.14 (9.72)	29.24 (7.96)	0.66*	32.46 (9.52)
Desire for Future Interaction	33.25 (6.10)	29.81 (7.13)	0.52*	31.00 (7.05)
Quality of Interaction	72.20 (8.48)	65.44 (12.37)	0.64*	70.43 (9.66)
Perceived Closeness	4.14 (1.21)	3.48 (1.42)	0.50*	4.08 (1.39)

† Mean of all time-points collected; LSA = Low Social Anxiety; HSA = High Social Anxiety; SIAS = Social Interaction Anxiety Scale; * $p < .05$

Figure 1

Conceptual Diagrams of the Models Predicting (a) Positive Outcomes Composite Scores (Consisting of Desire for Future Interaction, Quality of Interaction, Closeness, and Positive Affect), and (b) Positive Affect Alone for Both Primary Participants and Partners.

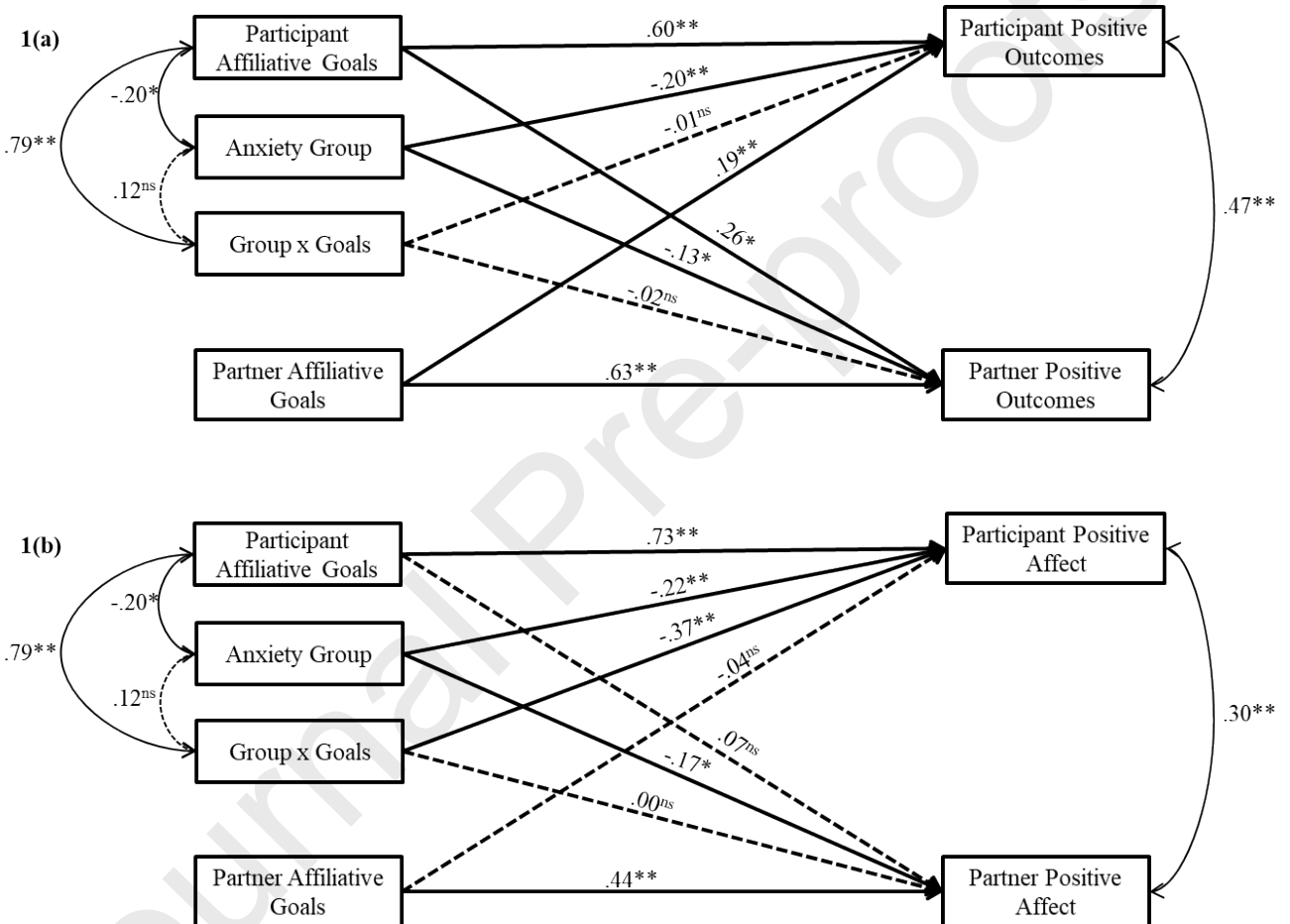
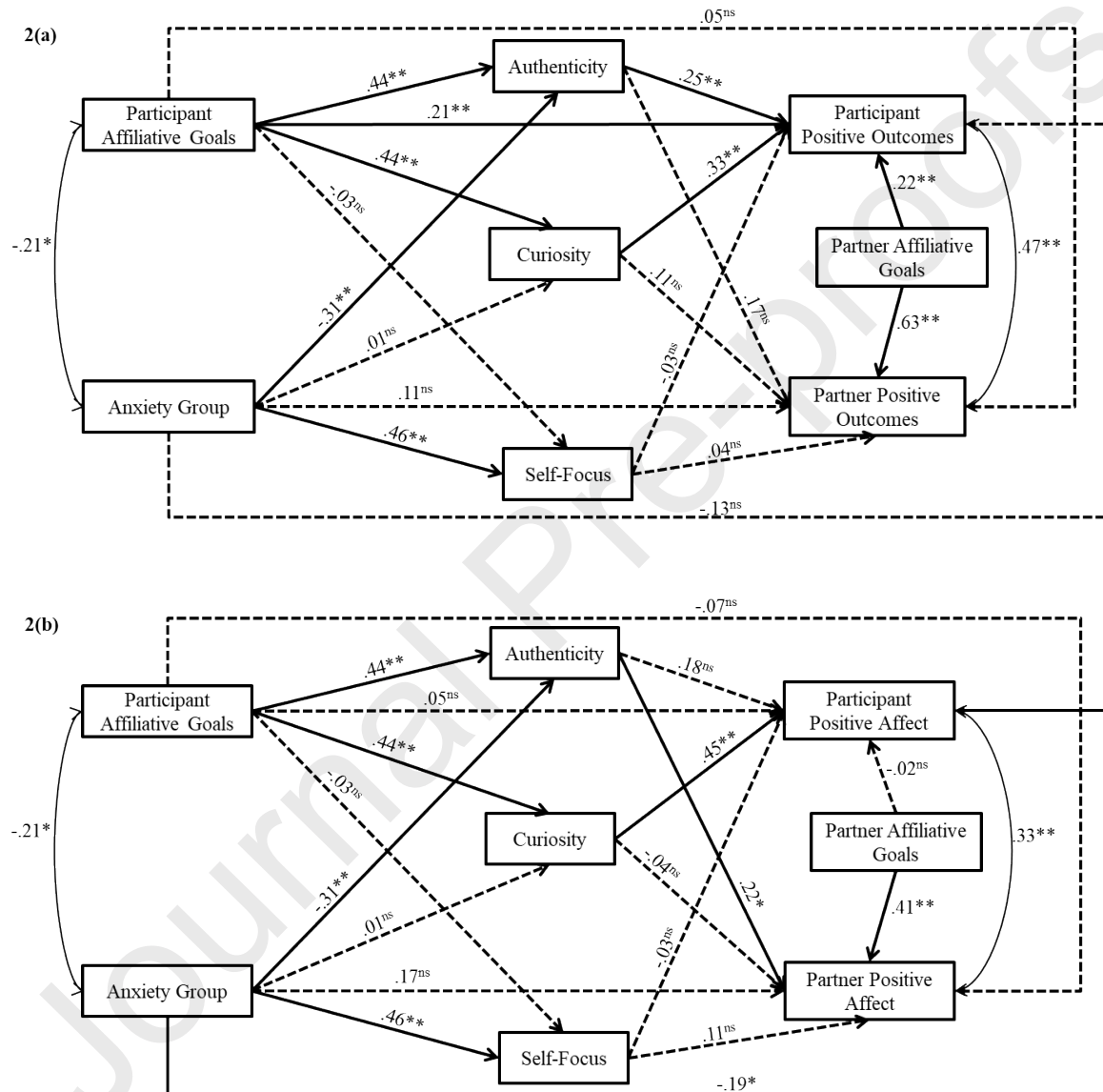


Figure 2

Conceptual Diagrams of the Mediation Models Predicting (a) Positive Outcomes Composite Scores (Consisting of Desire for Future Interaction, Quality of Interaction, Closeness, and Positive Affect) and (b) Positive Affect Alone for Both Primary Participants and Partners.



Note. Pathways represent standardized estimates, dashed lines represent non-significant pathways. Moderated mediation was examined via a custom estimand (Gaskin, 2016) in Amos. As described in text, no significant moderated mediation effects were observed, indicating that the mediators exerted similar effects for both SA groups across all participant and partner outcomes.

* $p < .05$; ** $p < .01$.

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Highlights

- High and low socially anxious participants interacted with low anxious dyads
- Social anxiety predicted less positive social outcomes, less positive affect
- Affiliative social goals predicted more positive social and affective outcomes
- Curiosity and authenticity mediated relations between affiliation and outcomes
- Dyadic analyses enabled disentangling of participant and partner effects