Published in final edited form as:
J Abnorm Psychol. 2014 November ; 123(4): 715–724. doi:10.1037/abn0000015.

Self and Friend's Differing Views of Social Anxiety Disorder's Effects on Friendships

Thomas L. Rodebaugh, **Michelle H. Lim**, **Katya C. Fernandez**, **Julia K. Langer**, **Jaclyn S. Weisman**, **Natasha Tonge**, **Cheri A. Levinson**, and **Erik A. Shumaker**
Department of Psychology, Washington University in St. Louis.

Abstract

Social anxiety disorder is known to be associated with self-report of global friendship quality. However, information about specific friendships, as well as information beyond self-report, is lacking. Such information is crucial, because known biases in information processing related to social anxiety disorder render global self-ratings particularly difficult to interpret. We examined these issues focusing on diagnosed participants (n = 77) compared with community control participants (n = 63). We examined self-report regarding global (i.e., overall) friendship quality and a specific friendship's quality; in addition, we examined friend-report of that friendship's quality. Results suggested that social anxiety disorder has a negative impact on self-perception of friendship quality for a specific friendship, but that this effect is less evident as reported by the *friends*. Specifically, social anxiety disorder was associated with a tendency to report worse friendship quality in comparison to friend-report, particularly in participants who were younger or had less long-lasting friendships. However, friend-report did show clear differences based on diagnostic group, with friends reporting participants with social anxiety disorder to be less dominant in the friendship and less well-adjusted. Overall, the findings are consistent with results of other studies indicating that social anxiety disorder has a strong association with self-ratings of impairment, but that these ratings appear out of proportion with the report of observers (in this case, friends).

Keywords

Social anxiety; social anxiety disorder; friendship; relationship quality; social support; interpersonal factors

People with social anxiety disorder (SAD) report global friendship satisfaction that is significantly lower than that reported by people without the disorder (Schneier et al., 1994). Further, in national epidemiological samples, SAD shows a robust relationship with global friendship impairment over and above other mental disorders, more general relationship quality, and a variety of demographic variables (Rodebaugh, 2009; Rodebaugh, Fernandez, & Levinson, 2012). Available data thus support the possibility that SAD, as well as higher

Correspondence should be addressed to Thomas L. Rodebaugh, 1 Brookings Drive, Campus Box 1125 Psychology Building, Washington University, Saint Louis, MO 63130. rodebaugh@wustl.edu.
Michele H. Lim is now at Swinburne University of Technology. Erik A. Shumaker is now at the VA Boston Healthcare System. Katya C. Fernandez is now at the University of California, Berkeley.

social anxiety more generally (e.g., La Greca & Harrison, 2005; Starr & Davila, 2008), has a special relationship with friendship impairment. Multiple studies indicate that poorer friendship quality can contribute to harmful outcomes, including earlier mortality (Giles, Glonek, Luszcz, & Andrews, 2005; Kroenke, Kubzansky, Schernhammer, Holmes, & Kawachi, 2006; Steptoe, Shankar, Demakakos, & Wardle, 2013). Factors that impair friendship quality are thus of considerable interest.

Existing findings, however, are limited by a twin reliance on (a) *self*-report of (b) *global* friendship quality. High levels of social anxiety are associated with a tendency to exaggerate negative personal characteristics and to underestimate social performance (Moscovitch, Orr, Rowa, Reimer, & Antony, 2009; Rapee & Lim, 1992). It seems plausible that this exaggeration may be more pronounced in general versus specific ratings, because ratings of specific friendships have clearer referents (a single friendship) in comparison to global ratings, in which negative biases may lead participants with higher social anxiety to focus only on less satisfying friendships. Overall, then, the reliance on *self*-report of *global* friendship quality makes it plausible that (a) friends of people with SAD may see less impairment, and (b) people with SAD may report global impairment despite not reporting impairment in a specific friendship. On the other hand, numerous studies indicate that strangers and peers perceive individuals with higher social anxiety in a negative manner (e.g., Creed & Funder, 1998), which would suggest that self-reported global friendship impairment might not be due only to exaggerated negative self-impressions, but may instead reflect interpersonal patterns that would be detectable in specific friendships, as well as within the report of specific friends.

We aimed to address the lack of evidence in the literature regarding SAD and specific friendships. Our study focused on participants diagnosed as having the generalized (or clearly nonspecific) subtype of SAD versus community control participants. Although friendship has received limited research attention in adults, theories have been advanced that emphasize such factors as liking and psychological closeness as central to friendship (cf. Tooby & Cosmides, 1996). We therefore focused on measures of both liking and psychological closeness, using both self- and friend-report.

We hypothesized that SAD would be associated with self-report of friendship impairment, yet might also contribute to exaggerated self-report of this impairment. Thus, we expected that SAD would predict self-report of both global and specific impairment (i.e., of friendships in general and of a specific friendship). Whether diagnosis should predict impairment within friend-report is unclear from the literature, and thus we had no specific hypothesis in that regard. However, we did predict that diagnosis would be more strongly predictive of self-report than friend-report. Further, we expected that diagnosis would predict self-report of friendship quality above and beyond friend-report (i.e., unique effects of social anxiety on self-report), reflecting potential bias in reporting associated with social anxiety. Similarly, we expected that diagnosis would predict global ratings above and beyond self-report ratings of a specific friendship.

Because so little is known regarding SAD and friendship, we also examined several hypotheses that are less directly supported by the literature, but appeared intuitively

plausible. We speculated that length of friendship might be a significant moderating variable, with longer friendships showing lesser effects for SAD, and thus included that variable in initial analyses. This hypothesis is indirectly supported by the finding that the negative interpersonal effects of chronic social anxiety may be ameliorated over time (Voncken & Dijk, 2013). We also considered what other aspects of friendship might be affected by SAD, other than quality. Accordingly, we examined exploratory hypotheses that diagnosis would relate to perceptions of dominance in the friendship, both from the point of view of self-report and friend-report (e.g., as suggested by typical correlates to social anxiety as well as evolutionary theories of social anxiety; Gilbert, 2001).

Method

Participants

Participants included those who we refer to as *primary* and their friends, where *primary* indicates participants who were recruited based on likely diagnosis. Primary participants included individuals from two samples drawn from the same source (the community) and containing largely identical measures. Most individuals in Sample 1 (n = 28) were previously reported on in regard to a behavioral economics task (Rodebaugh et al., 2013). Some data regarding liking of a close friend was reported in this previous publication, but not in regard to differences between diagnostic groups. Here, however, we report regarding only those participants who reported they currently had a friend with whom they were not in a romantic relationship. These participants are included to reduce bias associated with the recruitment of Sample 2, which focused specifically on established relationships (see below).

Data from Sample 2 (primary participant n = 112, friend n = 82) have not been previously reported in any published study. Participants in Sample 2 were included only if they reported having a current non-romantic friend. Across both samples, all participants either (a) were diagnosed with generalized SAD (GSAD; n = 77) via structured interview (see below), (b) displayed no evidence of having SAD (NOSAD; n = 63), or (c) were friends of participants in the diagnostic groups (see **Procedure**) (n = 82). Neither the GSAD nor NOSAD participants in the two samples showed a tendency to differ across samples regarding relationship quality or social anxiety severity (ps > .10).

Demographic characteristics of the primary participants and friends are displayed in Table 1. Friends were much more often of the same gender (83%), with no significant variation of proportions of same gender versus opposite gender pairings across diagnostic group (p = .241). Neither primary participant gender nor friendship composition was considered further because of the smaller number of (a) men and (b) opposite-gender friendships included in the study.

Participants with GSAD were recruited through advertisement of the study via newspaper, television, internet, flyers posted in public areas, and flyers sent to local clinics in a Midwestern metropolitan area. Participants in the NOSAD group were selectively recruited from a volunteer registry such that the NOSAD group would be demographically equivalent to the GSAD group. Notably, however, the efforts toward matching the entire sample was

not successful in matching age for the sample analyzed here; NOSAD participants were somewhat younger. All hypothesis tests below involving diagnostic comparisons were therefore conducted with the full sample as well as a sample in which the five eldest GSAD participants were removed to produce age equivalence; no substantive differences were noted beyond those attributable to sample size alone. We therefore report results regarding the full sample.

In Sample 2 exclusively, participants were only invited to participate if they currently had a friend or romantic partner whom they could bring for a study session; the inclusion of Sample 1 was partially designed to offset the biases in recruiting created by this requirement (e.g., restricting the sample only to those participants who either could bring in a friend at all, or felt comfortable enough to do so). Participants in both samples (including friends) were excluded if they were currently intoxicated (at any laboratory session), psychotic, manic, or acutely suicidal, or displayed any other psychological problem in need of immediate treatment. GSAD and NOSAD participants were excluded from Sample 2 if they had evidence of substance use problems in the past 60 days. This added exclusion appeared necessary because Sample 2 participated in a longer study with a wider variety of tasks than Sample 1. Participants in both samples received between $10 and $15 for each hour of participation to compensate for their time and effort.

Measures

Participants reported how many years and months they had been friends; the primary participant's report was analyzed on the metric of years. In addition, participants completed the following measures. Additional and varying (i.e., across samples and respondents) measures and activities were completed, but not reported here. Relevant internal consistencies are reported in Table 2.

The *Sternberg Intimacy Scale (SIS*; Sternberg, 1990 as cited in Tzeng, 1993) is a 15-item measure of emotional and psychological intimacy. The measure was developed as part of a measure of a theory of romantic love. However, the items in this version are not specific to romantic love (e.g., *I am actively supportive of [person]'s well-being*). Sternberg's later version of this scale (Sternberg, 1997), appears too strongly worded for the purpose of measuring intimacy as a result of friendship. This measure was selected because it appeared to assess both liking and psychological closeness. Due to a clerical error, one of the items (*[person] is able to count on me in times of need*) was omitted from administration. That item notwithstanding, the version used here was described by Tzeng (1993) as having good internal consistency and factor validity, as well as good convergent relationships with related measures, such that our accidental omission of one item appears unlikely to strongly affect validity. The internal consistency for the SIS items was excellent for primary participants and friends.

The *Liking Scale (LS*; Rubin, 1970) assesses the degree to which the respondent likes the person in question with 13 items (e.g., *[the person] is one of the most likable individuals I know*). Rubin (1970) reported that the scale showed expected moderate correlations with measures of romantic love in a sample of romantic partners. This measure was selected because of its overt focus on liking, which we expected to be an important aspect of

friendship quality. The internal consistency for the Liking Scale items was very good for primary participants and friends.

The *Inclusion of the Other in the Self Scale (IOS*; Aron, Aron, & Smollan, 1992) is a single item capturing degree of interpersonal interconnectedness. Respondents select the picture that best represents their relationship from a set of 7 increasingly overlapping circles. Aron et al. (1992) reported good test-retest reliability, convergent validity, and discriminant validity. Aron and colleagues (1992) found that the IOS correlated with feelings of closeness and frequency of contact, making it useful for our intent to focus on psychological closeness.

The *Relationship Satisfaction Scale* was created for this study to provide a global assessment of recent (over the past 6 months) happiness with a specific friendship. Participants were asked to rate the following items on a 1 to 9 scale with anchors specific to each question, with higher values indicating greater happiness or closeness: (a) *Over the past 6 months, have you become closer or less close to your friend?* (b) *Right now (today) how happy are you with your relationship with your friend?* (c) *Over the past 6 months, how happy have you been with your relationship with your friend?* (d) *Think of your friend for a moment. How do you feel?* Internal consistency was good for primary participants and friends.

The *Multidimensional Scale of Perceived Social Support (MSPSS*; Zimet, Dahlem, Zimet, & Farley, 1988) is a 12-item measure assessing social support. The scale employs a 1 (*very strongly disagree*) to 7 (*very strongly agree*) Likert-type scale. Zimet et al. (1988) report that the total scale has good internal consistency and test–retest reliability. Studies have confirmed the three-subscale structure of the MSPSS, in addition to demonstrating strong factorial validity (Zimet, Powell, Farley, Werkman, & Berkoff, 1990). In this study, we used the four-item friend subscale, for which internal consistency was excellent, as a measure of general friendship quality.

The *Beck Depression Inventory-II* (BDI-2; Beck, Steer, & Brown, 1996) is a 21-item, frequently-used self-report instrument that measures depressive symptoms. The BDI-2 has exhibited good construct validity (e.g., Dozois, Dobson, & Ahnberg, 1998). The BDI-2 had excellent internal consistency and was used in this sample to test the alternative hypothesis that any effects for SAD were actually due to depression; friends did not complete this measure.

The *dominance item* was created for this study, along with two other items. Of the three items (assessing dominance, emotional involvement, and control), all intended to provide exploratory characterization of the relationships, only the dominance item showed clear validity and is analyzed in this study. The single dominance item inquired: *In your friendship, who do you think is more dominant?* (from 1, *I am much more dominant*, to 7, *My friend is much more dominant*). Focusing on the correlations among the three items in self-report and friend-report in the complete data, the dominance item correlated inversely across reporter ($r = -.54$, $p < .001$) (i.e., when self-rating indicated less dominance for the primary participant, the friend rating was more likely to indicate more dominance for the friend). The dominance item was the only item to show this pattern, which indicated that

only this item showed some agreement between reporters. The dominance item also showed correlations with the other exploratory items that supported its validity overall; for example, within each reporter type it correlated with self-perceived control (rs > .23, ps < .02), and across reporter type it showed similar inverse relationships with control (r < −.21, ps < .06), such that participants who reported that they controlled the relationship less had friends who reported the participants were less dominant. Given this evidence of validity, the dominance item was examined in this study.

Diagnostic Measures, Training, and Reliability

Diagnosis was derived from a two-stage process in both samples using the following interviews. The *Mini International Neuropsychiatric Interview Version 5.0.0* (MINI; Sheehan et al., 1998) was used primarily in Sample 1. It is a brief diagnostic instrument that assesses SAD along with numerous other common psychological disorders and compares favorably to lengthier measures (Sheehan et al., 1998). The MINI version used for this study has been modified since the Sheehan et al. (1998) publication to assess DSM-IV criteria. In this study, the MINI was used to assess mental disorder diagnoses overall for friends; it was also one step of the diagnostic algorithm for a diagnosis of GSAD vs. NOSAD in Sample 1.

The *Structured Clinical Interview for DSM-IV (SCID-IV-TR*; First, Spitzer, Gibbon & Williams, 2002) was used in Sample 2. The SCID is a semi-structured interview that assesses current and lifetime DSM-IV disorders, including the mood and anxiety disorders, psychosis, and substance use disorders, and is generally considered to be the gold-standard instrument for the assessment of Axis I psychopathology defined in the DSM-IV. For this study, the SCID was abridged to assess current mood- and anxiety-related psychopathology, with past symptoms only assessed as needed to render current diagnoses (e.g., past mood episodes, past panic attacks).

The *Liebowitz Social Anxiety Scale* (LSAS; Liebowitz, 1987) is a clinician-administered interview that assesses anxiety and avoidance of a host of social situations. The LSAS consists of 24 items (i.e., social fears) that are assessed on a 0 to 3 Likert-type scale ranging from *None* to *Severe* for anxiety and *Never* to *Usually* for avoidance. The LSAS is able to distinguish between patients meeting criteria for GSAD, non-generalized SAD, and controls without SAD (Mennin et al., 2002). A total score at or above 60 suggests a diagnosis of GSAD and a score below 30 suggests no diagnosis of SAD.

Diagnostic training—Initial diagnostic interviews for each sample were conducted by the first author, a clinical psychologist with previous training on various structured clinical interviews as well as the LSAS. Subsequent interviews were conducted by all but two authors (JSW and NT); all interviewers had completed clinical psychology PhD training or were graduate students in clinical psychology who completed introductory training with the SCID (e.g., practice interviews). All interviewers also read and consulted the manual for the LSAS (Liebowitz, 2003). The first author reviewed diagnostic interviews from each rater until no discrepancy in diagnosis was noted, as well as additional interviews as needed (e.g., to resolve difficult diagnostic issues).

Diagnostic algorithm—Participants were judged to have GSAD if both the MINI (Sample 1) or SCID (Sample 2) and LSAS (using the cut-off of 60 or more derived by Mennin, et al., 2002) agreed on GSAD as a diagnosis. Notably, the LSAS was used in both samples in an identical manner. Participants were judged to be in the NOSAD group if they did not meet criteria for SAD on the MINI or SCID and met the cut-off for no SAD (an LSAS score < 30) derived by Mennin et al. (2002). Participants who met one criterion but not the other (e.g., GSAD diagnosis on the SCID but an LSAS of 50) were excluded.

Diagnostic reliability—Two of the current authors (JLK, Sample 1; JSW, Sample 2) reviewed video footage for 26 randomly selected cases, representing at least 10% of each sample's interviewed participants, as part of a broader rating of reliability for assignment to diagnostic group that included the possibility of participants who were not rated as meeting criteria for the GSAD or NOSAD groups. That is, the rater assessed a broader pool of participants including those not participating in this study. Agreement on diagnostic group was 100%.

Procedure

Participants in Sample 1 completed diagnostic interviews (including the MINI and LSAS) followed by self-report measures of demographic information and friendship quality, as well as other tasks not described here (see Rodebaugh, et al., 2013). Participants in Sample 2 completed diagnostic interviews (including the SCID and LSAS) in one session, followed by a behavioral economic task not described here. These participants then took home a packet of self-report measures, including measures assessing friendship. Most of these participants (n = 82) then brought a friend to a second session, during which the friend completed interviews, provided self-report of friendship quality among other constructs, and participated in dyadic interactions with the primary participant. Data regarding these other tasks will be published separately.

Data analytic procedure—Missing data were estimated using MI performed in Amelia II (Honaker, King, & Blackwell, 2006–2008). Overall, the data used for MI included all totals used in analyses below, along with diagnostic group, gender, age of primary participants and their friends, and a variety of other demographic and psychological variables not reported here, but which plausibly could assist in imputation; a full list of variables included is available from the first author. We imputed totals and not the entire set of items due to the sample size. We examined diagnostics of ways that imputation might fall short of properly representing the likely values of the missing data; please see Honaker et al. for details. Diagnostics indicated that MI was successful.

Tests were conducted in Mplus 7.1 (Muthén & Muthén, 1998–2012). Models using the IOS were conducted using the WLSMV estimator; when the IOS was not included in a model, the Satorra-Bentler chi-square, appropriate for multivariate nonnormal continuous data, was used (referred to as MLM in Mplus; Muthén & Muthén, 1998–2012). A single factor solution for the friendship quality variables was examined for each perspective (primary participant and friend). However, because the purpose of the study was not to determine the factor structure of friendship quality measures, it was decided a priori to conduct exploratory

tests as needed to find a factor structure that fit well to serve the primary purpose of testing group effects with the smallest number of tests feasible. We consulted the following fit indices to determine global model fit: (a) Tucker-Lewis incremental fit index (TLI) (Tucker & Lewis, 1973), (b) comparative fit index (CFI) (Bentler, 1990), (c) root mean square error of approximation (RMSEA) (Steiger & Lind, 1980), and (d) the standardized root mean square residual (SRMR) (Bentler, 1995; Jöreskog & Sörbom, 1981). To determine a good fit of the model to the data, the following values were used: TLI and CFI ranging from .95 to 1, RMSEA below .06, and SRMR below .08 (Hu & Bentler, 1999). When comparing nested models, we examined relative fit as well as chi-square difference tests.

Effects are reported as Cohen's *d* when feasible (obtained from the estimates Mplus provides under the STDY heading). We included years of friendship (as reported by the primary participant), as well as the interaction of that variable with diagnostic group, in all initial analyses. When these variables clearly did not predict (*p*s > .10), they were dropped from subsequent tests to conserve power. We focus primarily on effects reaching a level of traditional statistical significance (i.e., $p < .05$), but when trend effects ($p < .10$) were bolstered by associated effects that were statistically significant, we interpret such effects cautiously.

Results

Initial Analyses

Table 1 shows the comparisons (in the complete, not MI data) between GSAD and NOSAD primary participants and their friends across demographics, diagnoses, social anxiety, intimacy, inclusion of other in the self, liking, relationship satisfaction, and friendship social support scores. Table 2 depicts zero-order correlations (again, in the complete data) among social anxiety severity and friendship-related variables. We also include depressive symptoms measured by the BDI-2 in Table 2. Versions of these tables using MI data can be obtained from the first author. As seen in Table 2, the strongest effect for social anxiety severity was its correlation with global social support from friends, indicating that the current sample shows the expected differences by diagnosis concerning global friendship impairment. For purposes of comparison with further results, the displayed correlation of −.48 is equivalent to a Cohen's *d* of 1.09; the Cohen's *d* for the correlation of diagnosis with global social support from friends in the MI data (estimated using Mplus) was .96.

Factor Structure

A well-fitting factor structure that was identical in primary participants and friends was achieved by a two-factor solution in which self-report loaded on one factor, friend-report loaded on another, and the IOS was removed from the model (primarily because it did not load on the friend-report factor). This factor structure fit very well once the individual measures were permitted to correlate across reporter (e.g., because of residual correlations due to use of the same measures) (CFI = .99, TLI = .98, RMSEA = .04, SRMR = .04). The resulting structure (with predictors added) is presented in Figure 1. Each variable loaded on its factor significantly, and the two factors correlated moderately before predictors were

added (r = .30, p = .034). Initial tests were therefore conducted with the overall friendship quality factors as well as the IOS, which was tested separately.

Diagnosis Effects: Self- and Friend-Report

In an initial model, diagnosis, years of friendship (rated by primary participant), and their interaction were used to predict the self-report and friend-report friendship quality factors. The results using these predictors are given in Figure 1. Diagnosis was coded such that GSAD = 1 and NOSAD = 2; a positive estimate for diagnosis therefore indicated support of the hypothesis that GSAD impaired friendship quality. In partial support of hypothesis, diagnosis predicted *both* self- and friend-report of friendship quality. Years of friendship was also a significant predictor for self-report of friendship quality, with a similarly-sized, albeit nonsignificant effect for friend-report of friendship quality. For self-report the interaction between diagnosis and years of friendship neared significance. In a separate model using the IOS, neither diagnosis nor its interaction with years of friendship showed any tendency to predict self- or friend-report IOS (ps > .13), although years of friendship did trend toward predicting self-report IOS (b^* = .54, p = .060). We thus did not consider the IOS further.

Strength of diagnostic effect across reporter type—Because neither years of friendship nor the interaction between diagnosis and years of friendship predicted friend report, these were removed as predictors of this variable; the resulting model continued to fit well (CFI = .96, TLI = .94, RMSEA = .06, SRMR = .06). To test the hypothesis that the effect of diagnosis was stronger for self-report versus friend-report, as implied by the size of the coefficients, we compared the model with significant predictors to a model in which the effects of diagnosis on self- and friend-rating latent variables were constrained to be equal. The overall model suggested that adding that constraint resulted in slightly worse relative fit (CFI = .95, TLI = .92, RMSEA = .07, SRMR = .06). The corresponding chi-square difference test, which had to be conducted separately for each multiply imputed dataset due to limitations of how Mplus handles multiple imputation when using the MLM estimator, was in four of five cases statistically significant (ps ranged from .013 to .035), with the final test trending toward significance (p = .070). The bulk of the evidence thus supported the notion that the effects of diagnosis were stronger for self-report than friend-report.

Differences between self- and friend-report in each diagnostic group: Given the general finding that the effects of diagnosis were stronger for self-report than friend-report, we examined whether self- and friend-report differed within each group, focusing on individual measures (primarily because measurement invariance could not be tested; please see **Discussion**). In the NOSAD participants, constraining the means of the measures across reporter resulted in a chi-square test that trended toward significance, $\chi^2(3) = 6.97$, p = .073, indicating marginally-reduced fit when means were constrained to be equal. The unconstrained means showed a mixed pattern, with friends sometimes showing nonsignificantly higher ratings (for liking and satisfaction), but NOSAD primary participants showing nonsignificantly higher intimacy ratings versus the friend rating. In contrast, for GSAD participants the chi-square test was statistically significant, $\chi^2(3) = 8.25$, p = .041, indicating that constraining the means produced worse fit. As also indicated by

Table 1, GSAD participant self-ratings were numerically lower than friend-reported ratings of intimacy, liking, and satisfaction. Thus, as originally hypothesized, GSAD participants showed self-friend discrepancy in rating the friendship such that GSAD participants were consistently more negative than their friends. This pattern was not present for NOSAD participants.

Uniqueness of diagnosis effects—In follow-up models, for each factor (i.e., self-report of friendship quality and friend-report of friendship quality), the other factor was added as a predictor to determine whether the observed effects of diagnosis were unique to the type of report being examined. When self-report was an additional predictor of friend-report, the effect of diagnosis on friend-report was not significant (d = .31, p = .293). In contrast, the effect of diagnosis on self-report remained significant when friend-report was included as a predictor (d = .79, p = .005).Thus, the diagnostic effect on self-report could not be accounted for by friend-report of friendship quality.

Test for effects above and beyond depressive symptoms—In an additional follow-up model, level of depressive symptoms as measured by the BDI-2 was included as an additional predictor of each factor, along with diagnosis and, for the self-report factor, years of friendship and the interaction of diagnosis and years of friendship. For the self-report factor, the effect for the BDI-2 was small, although in the expected direction of higher depression being nonsignificantly related to lower friendship quality (b^* = −.11, p = .405). Conversely, the effect of diagnosis remained significant, despite a reduction in size (d = .74, p = .022). Thus, the effects of diagnosis were not better explained by level of depressive symptoms. For friend-report, however, both the BDI-2 (b^* = −.26, p = .294) and diagnosis (d = .11, p = .765) were nonsignificant when both were entered as predictors.

Unique effects of diagnosis on global ratings—Recall that we hypothesized that global ratings would show effects of diagnosis above and beyond specific ratings. We therefore tested models in which global report of social support from friends was included, and was predicted by both diagnosis and self-report of friendship quality of a specific friendship, as measured by the latent variable described above. The friend-report latent variable was also included as a predictor, in case friend-report captured additional variance related to global social support. Years of friendship and its interaction with diagnosis were initially included, but dropped because they were clearly nonsignificant (ps > .10). Diagnosis did have an effect on global social support from friends, above and beyond both self- and friend-report regarding the specific friendship (d = .83, p < .001). The self-report factor also predicted global social support from friends (b^* = .41, p < .001), but the friend-report factor did not (b^* = −.02, p = .854). In contrast, when this model was altered such that the self-report factor was predicted by diagnosis, years of friendship, the interaction between years of friendship and diagnosis, and the global friendship rating, only the global rating (b^* = .50, p < .001) and years of friendship (b^* = .57, p = .014) significantly predicted self-report regarding a specific friendship. The interaction effect showed a trend (b^* = −.40, p = .091; see also below), and diagnosis showed no significant effect (b^* = .20, p = .141). As hypothesized, then, diagnosis showed effects on global ratings above and beyond specific

self-report, but diagnosis did not predict specific self-report above and beyond global ratings.

Diagnosis Effects on Dominance Ratings

In a separate model, diagnosis, years of friendship, and their interaction were used to predict self- and friend-rating of dominance in the relationship (with the dominance ratings permitted to correlate). Partially in support of hypothesis, diagnosis alone predicted friend-report only of dominance (d = .74, p = .020), such that friends of GSAD participants reported that they (the friends) were more dominant in the relationship in comparison to friends of NOSAD participants. The effect on self-reported dominance was nonsignificant, although in the expected opposing direction (d = −.29, p = .309). Other predictors were not significant (ps >.150). The effect for friend-report dominance was maintained when level of depressive symptoms, measured by the BDI-2, was added as a predictor.

Post-Hoc Tests

Tests of self-report interaction effect across each outcome—Given the trend effect for the interaction between years of friendship and diagnosis, we examined whether the moderation hypothesis for years of friendship was supported in any individual measure, as well as whether age might be the more important variable (as suggested by an anonymous reviewer). We examined a model in which diagnosis, age, years of friendship, and the two interactions with diagnosis were used to predict each individual measure. We expected to remove clearly nonsignificant predictors to avoid having multiple, highly-correlated predictors predicting a given outcome. Age and its interaction showed no tendency to predict liking, but when those variables were removed, the interaction of diagnosis with years of friendship was a statistically significant predictor of self-reported liking (b^* = −.41, p = .027). The direction of the effect was such that the diagnosis effect tended to be less pronounced with more years of friendship. In contrast, the years of friendship interaction showed no tendency to predict intimacy and relationship satisfaction. When diagnosis, age, and their interaction were used to predict those variables, the interaction was statistically significant in each case (b^*s < −.54, ps < .03). The diagnosis effect for these variables was less pronounced for older individuals. Notably, the strength of the diagnosis effect also corresponded to the level of discrepancy between the effect of diagnosis on self and friend report. For example, when a model in which diagnosis's prediction of self and friend report was constrained to be equal for intimacy and relationship satisfaction, these constraints resulted in worse fit for participants 35 years of age or younger $\chi^2(2) = 6.41$, p = .041, but not for those older than 35, $\chi^2(2) = 1.83$, p = .401.

Tests of friend-report diagnosis effect across each outcome: For the purpose of guiding future research, we examined whether a diagnosis effect (whether moderated by years of friendship or not) was present more strongly in any individual friend-report measure than for the friend-report factor. The strongest diagnosis effect was noted for friend-reported liking (d = .77, p = .01). Effects for satisfaction (d = .38, p = .251) and intimacy (d = .08, p = .803) were smaller and nonsignificant, although in the same direction. Further, the effect on liking was rendered nonsignificant if either self-reported liking or self-reported depressive symptoms were added to the model (ps > .20). To further explore effects on liking, we

examined individual items on the Liking Scale, as rated by friends, in complete data (because MI could not be performed for individual items). Diagnosis was significantly related to ratings of the following items from the Liking Scale: *I think ___ is unusually well adjusted*, *I would highly recommend ___ for a responsible job*, *Most people would react very favorably to ____ after a brief acquaintance*, and *I think that ___ is one of those people who quickly wins respect* (*p*s < .05). However, only the item regarding adjustment retained a clearly statistically significant effect for diagnosis ($p = .018$) when depression symptoms (measured by the BDI-2) were added as a competing predictor. In contrast, depressive symptoms proved to be a stronger predictor for the item regarding a responsible job, and effects were equivocal for the remaining items, with neither diagnostic group nor depressive symptoms showing a clearly significant effect (*p*s > .05). No other single items from the measure showed a significant difference in relation to diagnosis. For example, item 7, *I think that ___ and I are quite similar to each other*, was rated nearly equivalently by friends in each group ($d = .05$, $p = .821$).

Discussion

We tested the hypothesis that SAD has a negative impact on friendship quality in terms of specific friendships. In self-report from our primary participants, it was clearly the case that quality of a specific friendship was associated with SAD, which corroborates multiple findings regarding self-report of friendship quality in general in adolescent, clinical, and epidemiological samples (La Greca & Lopez, 1998; Rodebaugh, 2009; Rodebaugh, et al., 2012; Schneier, et al., 1994; Starr & Davila, 2008). Post hoc tests suggest these effects were stronger for participants who were younger or had newer relationships, which may suggest that aging or persistence of relationships may reduce the effects of SAD. Associations with friend-report were less evident: Such effects were neither pervasive nor unique (above self-report of friendship quality or depression). On the whole, the results suggest that the weaker effects on friend-report were due to a greater negative discrepancy between self- and friend-report being associated with social anxiety. Participants with GSAD (versus NOSAD) were more likely to be more pessimistic in their ratings compared to their friends, particularly when the participants were younger or had newer relationships.

Although the smaller association with friend-report may be counterintuitive, it is consistent with findings regarding biases noted in the introduction (e.g., Rapee & Lim, 1992). The result is also consistent with one of the few other similar tests of report from friends in an analog study of generalized anxiety disorder: The friends in this study showed no significant differences in ratings of friendship quality across groups (Eng & Heimberg, 2006). Although the lack of a significant difference is a weak form of evidence, this finding at least raises the possibility that putative interpersonal disorders may not show effects in the report of others that might be expected based on interpersonal theories. In comparison, our study demonstrated an initially medium-sized effect that was rendered nonsignificant either by the additional predictor of self-report friendship quality or depression. Post-hoc tests isolated the most robust effect to liking, and further to a specific item referring to the target's adjustment, rather than feelings of liking per se. An additional strong difference in friend rating by diagnosis was found: GSAD friends reported being more dominant in the friendship compared to NOSAD friends.

On the whole, then, our results suggest that friends of participants with GSAD notice clear differences in the friendships. They are likely to view a GSAD friend as less dominant and less well-adjusted than a NOSAD friend. However, these admittedly cross-sectional findings suggest that GSAD may have limited impact on friend satisfaction and intimacy (or other items related to liking) despite the fact that friends clearly notice some correlates of GSAD. These results are consistent with other findings suggesting that the interpersonal impairment conferred by social anxiety is more evident in initial interactions and may diminish with greater familiarity (Voncken & Dijk, 2013).

The study reported here must be taken in conjunction with its limitations. Larger samples would have been preferable, particularly in regard to report from friends; more data from men would also have been preferable, and deserves careful attention in future work. Our data analytic strategy resulted in the estimation of much missing data; however, we know of no evidence that restricting the sample to participants who would invite a friend to participate would increase validity of results above the validity achieved through MI. We believe our strategy provided a good balance between obtaining friend ratings without restricting analysis only to those participants who were successful in recruiting friends to the study, which could have biased the results. Future studies using different recruitment techniques (e.g., involving multiple friends; not requiring friends to come into the lab at all) will be useful in clarifying the meaning of our results. Findings regarding single items (e.g., dominance) should be treated as preliminary. It would have been ideal to include a clinical control group (e.g., depressed individuals) or a longitudinal component. It remains possible, for example, that the direction of effects hypothesized is not correct (e.g., as suggested by an anonymous reviewer, it remains possible that friendship quality produces social anxiety symptoms), or that apparent null effects cross-sectionally mask true causal effects over time.

Finally, but importantly, we were unable to test for measurement invariance. Any comparison of group means without establishment of method invariance is inherently questionable. Knowing this fact, we compared the three scale totals of the measures rather than a single factor mean because it seemed less plausible to us that *all three* of these partially distinct measures would be strongly affected by the *same type* of measurement invariance. It was thus reassuring to see the same pattern of findings for the GSAD group across each measure, but this finding does not rule out that lack of measurement invariance could explain part or all of the effect observed. This issue deserves careful attention in future research.

Ultimately, however, the current study presents the only example we know of in which friend-report is examined regarding SAD and friendships, and we believe it thus represents an essential contribution to this area of study. Nevertheless, in retrospect it would have been useful to gather more information regarding the *characteristics* of the friendships, above and beyond quality alone, such as how the friendship was established or in what context the friends typically interacted. We would similarly have preferred to collect more information from primary participants regarding the number of friends they had, what they wished was different regarding their friendships, and how the rated friendship compared to their other friendships.

In regard to future work, we would be particularly interested in what aspect of existing friendships might explain the overall pattern of results regarding global ratings, specific ratings, and ratings by friends. More particularly, it is of interest that diagnosis predicted global ratings above and beyond specific ratings, but not vice versa. Global social support is well-known as an important predictor for health, up to and including survival versus death (Giles, et al., 2005; Kroenke, et al., 2006; Steptoe, et al., 2013), leading to an interest in improving global social suport. Strengthening specific friendships might appear to be an obvious target for improving more global perceptions of social support. Indeed, the current results would also suggest such an intervention, because social support and specific friendship quality were clearly related. Yet, the impact of diagnosis remained above and beyond specific friendship quality, raising the question of what factors influence ratings of social support above and beyond qualities of specific relationships. Plausible additional factors include potential negative qualities of other friendships not observed here (e.g., might GSAD participants feel trapped in negative relationships with friends whom they were not inclined to bring to the lab?) and qualities of friendships overall, such as number of friends or frequency of interaction with friends. Determining how SAD leads to such perceptions of low social support and how these perceptions can be ameliorated represents a clear intersection between mental health and public health more generally.

Previous findings with SAD, although definitive in their depiction of its association with self-perception of global friendship quality, have neither provided a clear indication of how people with SAD view their specific friendships, nor indicated how friends view the relationship. We found clear evidence that SAD is associated with self-report of impairment in specific friendships, consistent with the hypothesis that SAD is a fundamentally interpersonal disorder (e.g., Alden & Taylor, 2010). However, we found little evidence that friends experienced the same level of friendship impairment, despite them seeing differences between GSAD and NOSAD participants. Current cognitive behavioral treatment for SAD focuses, in part, on helping people with SAD see that they come across better than they expect they will (Clark & Wells, 1995; Heimberg & Becker, 2003). The current study provides support for the validity of this message in the context of specific friendships.

Acknowledgments

Research support: MH090308 (NIMH) to Thomas L. Rodebaugh and UL1 RR024992 (NIH) to Washington University. Thanks to the many research assistants who helped conduct this research, with particular thanks to Andrea Temkin and Marilyn Piccirillo.

References

Alden, LE.; Taylor, CT. Interpersonal processes in social anxiety disorder. In: Beck, JG., editor. Interpersonal processes in the anxiety disorders: Implications for understanding psychopathology and treatment. Washington, DC: American Psychological Association; 2010. p. 125-152.

Aron A, Aron EN, Smollan D. Inclusion of Other in the Self Scale and the structure of interpersonal closeness. Journal of Personality and Social Psychology. 1992; 63:596–612.

Beck, AT.; Steer, RA.; Brown, GK. Beck Depression Inventory-II Manual. San Antonio, TX: The Psychological Corporation; 1996.

Bentler PM. Comparative fit indexes in structural models. Psychological Bulletin. 1990; 107:238–246. [PubMed: 2320703]

Bentler, PM. EQS: structural equations program manual version 5.0. Los Angeles: BMDP Statistical Software; 1995.

Clark, DM.; Wells, A. A cognitive model of social phobia. In: Heimberg, RG.; Liebowitz, MR.; Hope, DA.; Schneier, FR., editors. Social phobia: Diagnosis, assessment, and treatment. New York: Guilford Press; 1995. p. 69-93.

Creed AT, Funder DC. Social anxiety: From the inside and outside. Personality and Individual Differences. 1998; 25:19–33.

Dozois DJA, Dobson KS, Ahnberg JL. A psychometric evaluation of the Beck Depression Inventory-II. Psychological Assessment. 1998; 10:83–89.

Eng W, Heimberg RG. Interpersonal correlates of generalized anxiety disorder: Self versus other perception. Journal of Anxiety Disorders. 2006; 20:380–387. [PubMed: 16564440]

First, MB.; Spitzer, RL.; Gibbon, M.; Williams, JBW. Structured Clinical Interview for DSM-IV-TR Axis I Disorders, Research Version, Patient Edition With Psychotic Screen (SCID-I/P W/ PSY SCREEN). New York: Biometrics Research, New York State Psychiatric Institute; 2002.

Gilbert P. Evolution and social anxiety: The role of attraction, social competition, and social hierarchies. Psychiatric Clinics of North America. 2001; 24:723–751. [PubMed: 11723630]

Giles LC, Glonek GFV, Luszcz MA, Andrews GR. Effect of social networks on 10 year survival in very old Australians: The Australian longitudinal study of aging. Journal of Epidemiology & Community Health. 2005; 59:574–579. [PubMed: 15965141]

Heimberg RG, Becker RE. Cognitive-behavioral group therapy for social phobia. Journal of Contemporary Psychotherapy. 2003; 33:147–148.

Honaker, J.; King, G.; Blackwell, M. Amelia II: A program for missing data (Version 1.2–17). Authors; 2006–2008.

Hu LT, Bentler PM. Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. Structural Equation Modeling-a Multidisciplinary Journal. 1999; 6:1–55.

Jöreskog, KG.; Sörbom, D. LISREL V: Analysis of linear structural relationships by the method of maximum likelihood. Chicago: National Educational Resources; 1981.

Kroenke CH, Kubzansky LD, Schernhammer ES, Holmes MD, Kawachi I. Social networks, social support, and survival after breast cancer diagnosis. Journal of Clinical Oncolology. 2006; 24:1105–1111.

La Greca AM, Harrison HM. Adolescent peer relations, friendships, and romantic relationships: Do they predict social anxiety and depression? Journal of Clinical Child and Adolescent Psychology. 2005; 34:49–61. [PubMed: 15677280]

La Greca AM, Lopez N. Social anxiety among adolescents: Linkages with peer relations and friendships. Journal of Abnormal Child Psychology. 1998; 26:83–94. [PubMed: 9634131]

Liebowitz MR. Social phobia. Modern Problems of Pharmacopsychiatry. 1987; 22:141–173. [PubMed: 2885745]

Liebowitz, MR. Guidelines for using the Liebowitz Social Anxiety Scale (LSAS). New York: 2003.

Mennin DS, Fresco DM, Heimberg RG, Schneier FR, Davies SO, Liebowitz MR. Screening for social anxiety disorder in the clinical setting: Using the Liebowitz Social Anxiety Scale. Journal of Anxiety Disorders. 2002; 16:661–673. [PubMed: 12405524]

Moscovitch DA, Orr E, Rowa K, Reimer SG, Antony MM. In the absence of rose-colored glasses: Ratings of self-attributes and their differential certainty and importance across multiple dimensions in social phobia. Behaviour Research and Therapy. 2009; 47:66–70. [PubMed: 19012879]

Muthén, LK.; Muthén, BO. Mplus user's guide. Seventh, editor. Los Angeles, CA: Muthén & Muthén; 1998–2012.

Rapee RM, Lim L. Discrepancy between self- and observer ratings of performance in social phobics. Journal of Abnormal Psychology. 1992; 101:728–731. [PubMed: 1430614]

Rodebaugh TL. Social phobia and perceived friendship quality. Journal of Anxiety Disorders. 2009; 23:872–878. [PubMed: 19556099]

Rodebaugh TL, Fernandez KC, Levinson CA. Testing the effects of social anxiety disorder on friendship quality across gender and ethnicity. Cognitive Behaviour Therapy. 2012; 41:130–139. [PubMed: 22428540]

Rubin Z. Measurement of romantic love. Journal of Personality and Social Psychology. 1970; 16:265–273. [PubMed: 5479131]

Schneier FR, Heckelman LR, Garfinkel R, Campeas R, Fallon BA, Gitow A, Liebowitz MR. Functional impairment in social phobia. Journal of Clinical Psychiatry. 1994; 55:322–331. [PubMed: 8071299]

Sheehan DV, Lecrubier Y, Sheehan KH, Amorim P, Janavs J, Weiller E, Dunbar GC. The Mini-International Neuropsychiatric Interview (M.I.N.I): The development and validation of a structured diagnostic psychiatric interview for DSM-IV and ICD-10. Journal of Clinical Psychiatry. 1998; 59(Suppl 20):22–33. [PubMed: 9881538]

Starr LR, Davila J. Differentiating interpersonal correlates of depressive symptoms and social anxiety in adolescence: implications for models of comorbidity. Journal of Clinical Child and Adolescent Psychology. 2008; 37:337–349. [PubMed: 18470771]

Steiger, JH.; Lind, JC. Statistically-based tests for the number of factors; Paper presented at the Psychometric Society; Iowa City, IA. 1980.

Steptoe A, Shankar A, Demakakos P, Wardle J. Social isolation, loneliness, and all-cause mortality in older men and women. Proceedings of the National Academy of Sciences of the United States of America. 2013; 110:5797–5801. [PubMed: 23530191]

Sternberg RJ. Construct validation of a triangular love scale. European Journal of Social Psychology. 1997; 27:313–335.

Tooby, J.; Cosmides, L. Friendship and the banker's paradox: Other pathways to the evolution of adaptations for altruism. In: Runciman, WG.; Smith, JM.; R. Dunbar, IM., editors. Evolution of social behaviour patterns in primates and man. Vol. 88. New York, NY, US: Oxford University Press; 1996.

Tucker LR, Lewis C. A reliability coefficient for maximum likelihood factor analysis. Psychometrika. 1973; 38:1–10.

Tzeng, OCS. Measurement of love and intimate relations: Theories, scales, and applications for love development, maintenance, and dissolution. Westport, CT: Praeger Publishers/Greenwood Publishing Group; 1993.

Voncken MJ, Dijk KFL. Socially anxious individuals get a second chance after being disliked at first sight: The role of self-disclosure in the development of likeability in sequential social contact. Cognitive Therapy and Research. 2013; 37:7–17. [PubMed: 23355754]

Zimet GD, Dahlem NW, Zimet SG, Farley GK. The Multidimensional Scale of Perceived Social Support. Journal of Personality Assessment. 1988; 52:30–41.

Zimet GD, Powell SS, Farley GK, Werkman S, Berkoff KA. Psychometric characteristics of the Multidimensional Scale of Perceived Social Support. Journal of Personality Assessment. 1990; 55:610–617. [PubMed: 2280326]

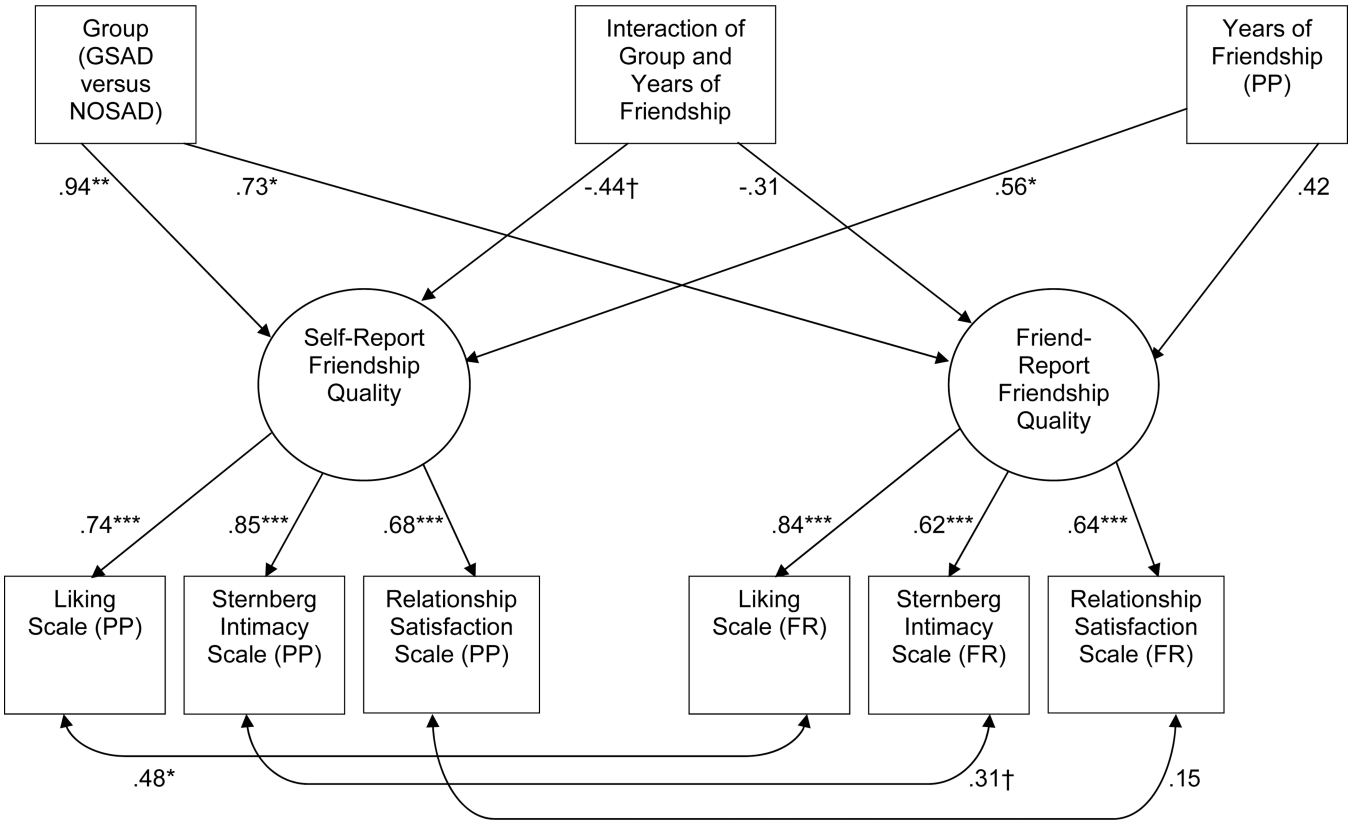

Figure 1.

Factor structure and prediction model. GSAD = generalized social anxiety disorder group; NOSAD = no social anxiety disorder group; PP = primary participant; FR = friend. Parameters given for group are the partially standardized estimates, equivalent to Cohen's *d*. Positive estimates for group are in the direction of hypothesis (higher social anxiety leads to impairment). Factor loadings and other prediction paths are fully standardized parameters. Error terms and the correlation between latent factors (r = .21, p = .190) are not shown for simplicity. Fit for the model as shown (including predictors) was excellent (CFI = .97, TLI = .95, RMSEA = .05, SRMR = .04). †p < .10, *p < .05, **p < .01, ***p < .001.

Table 1

Frequencies and Descriptive Statistics (Sample 1 and Sample 2 combined) for GSAD and NOSAD Primary Participants and their Friends

	Primary Participants (*n* = 140)		Friends (*n* = 82)	
	GSAD (*n* = 77)	**NOSAD (*n* = 63)**	**GSAD (*n* = 47)**	**NOSAD (*n* = 35)**
Age	39.62 (14.05)	34.59 (12.58)	37.43 (14.39)	39.91 (15.34)
Women	55 (71.40%)	42 (66.70%)	33 (42.90%)	23 (65.70%)
Ethnicity				
White	42 (54.50%)	43 (68.30%)	21 (27.3%)	19 (5.90%)
Asian	2 (2.60%)	3 (4.80%)	2 (4.30%)	1 (2.90%)
Black	27 (35.10%)	16 (25.40%)	21 (44.70%)	12 (35.30%)
Hispanic	1 (1.30%)	1 (1.60%)	2 (4.30%)	1 (2.90%)
Multiracial	5 (6.50%)	1 (1.60%)	1 (2.10%)	2 (5.90%)
American Indian	1 (1.30%)	-	-	-
Pacific Islander	-	-	2 (4.30%)	-
Diagnoses				
Major Depressive Disorder or Dysthymia	33 (42.86%)	2 (3.17%)	5 (10.64%)	0 (0%)
Generalized Social Anxiety Disorder	77 (100%)	0 (0%)	5 (6.50%)	0 (0%)
Social Anxiety Disorder	0 (0%)	0 (0%)	0 (0%)	1 (2.86%)
Generalized Anxiety Disorder	19 (24.68%)	2 (3.17%)	3 (6.38%)	2 (5.71%)
Post-Traumatic Stress Disorder	12 (15.58%)	0 (0%)	0 (0%)	1 (2.86%)
Obsessive Compulsive Disorder	9 (11.69%)	1 (1.59%)	2 (4.26%)	1 (2.86%)
Panic Disorder or Agoraphobia	11 (14.29%)	0 (0%)	2 (4.26%)	2 (5.71%)
Friendship Duration in Years	11.78 (9.37)	10.08 (7.31)	-	-
Liebowitz Social Anxiety Scale	89.26 (16.59)	12.00 (7.90)	-	-
Global Social Support (Friends)	17.39 (6.79)	23.65 (3.82)	-	-
Relationship Satisfaction Scale	27.49 (6.92)	29.51 (4.46)	29.84 (4.66)	31.00 (4.22)
Inclusion of Other in the Self	3.58 (1.98)	3.74 (1.76)	4.14 (1.67)	4.12 (1.57)
Sternberg Intimacy Scale	98.80(23.08)	108.16 (16.38)	106.65 (16.88)	107.26 (18.09)
Liking Scale	82.46 (21.95)	90.81 (17.56)	88.91 (18.49)	93.62 (15.44)
Dominance	4.16 (1.39)	3.76 (1.05)	3.50 (1.620)	4.36 (1.30)

Note. Global Social Support (Friends) = Friendship social support subscale from the Multidimensional Scale of Perceived Social Support. Participants rated the Hispanic ethnicity category separately; the other ethnicity categories total to the number of participants in the sample. Some minor variation in sample sizes occurred because of transient missing data; the Dominance item was not asked in Sample 1 and thus has more missing data (e.g., 32 fewer participants among primary participants, of which 28 were not asked the question). Other than an age difference between GSAD and NOSAD participants (see text) there were no significant differences between diagnostic groups on the above demographic variables, *p*s> .25.

J Abnorm Psychol. Author manuscript; available in PMC 2015 November 01.

Table 2

Zero Order Correlations (Sample 1 and Sample 2 combined) Comparing Social Anxiety, Depression, Intimacy, Inclusion of the Other in the Self, Liking, Relationship Satisfaction, and Global Social Support from Friends for Primary Participants and Friends

	LSAS PP	**Sternberg Intimacy Scale PP**	**Sternberg Intimacy Scale FR**	**IOS PP**	**IOS FR**	**Liking Scale PP**	**Liking Scale FR**	**Relationship Satisfaction Scale PP**	**Relationship Satisfaction Scale FR**	**Global Social Support (Friends) PP**	**Depressive Symptoms (BDI-2)**
LSAS PP	(.99)	−.19*	−.01	−.01	.02	−.16	−.13	−.16	−.10	−.48**	.67**
Sternberg Intimacy Scale PP		(.95)	.27*	.43**	.14	.62**	.15	.58**	.13	.38**	−.16
Sternberg Intimacy Scale FR			(.94)	.17	.37**	.12	.57**	.21	.43**	.13	−.05
IOS PP				(−)	.21	.24**	.08	.34**	.07	.12	.02
IOS FR					(−)	−.06	.18	.09	.20	.04	−.01
Liking Scale PP						(.92)	.30**	.52**	.23*	.35**	−.20*
Liking Scale FR							(.89)	.19	.55**	.04	−.22*
Relationship Satisfaction Scale PP								(.85)	.25*	.42**	−.21*
Relationship Satisfaction Scale FR									(.81)	.08	−.27*
Global Social Support (Friends) PP										(.93)	−.47**
Depressive Symptoms (BDI-2)											(.94)

Note: Due to missing data, *n* varies from 75 to 140 across correlations. PP = Primary Participant, FR = Friend, LSAS = Liebowitz Social Anxiety Scale score, IOS = Inclusion of the Other in the Self; BDI-2 = Beck Depression Inventory-II. Values on the diagonal indicate internal consistency coefficients; these are not possible to calculate for the IOS.

* $p < 0.05$,

** $p < 0.01$.