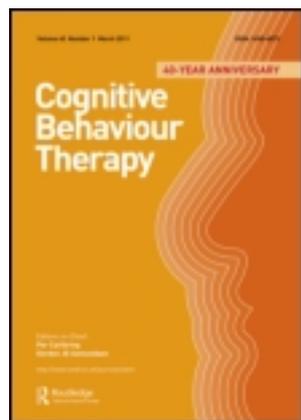


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### Testing the Effects of Social Anxiety Disorder on Friendship Quality Across Gender and Ethnicity

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# Testing the Effects of Social Anxiety Disorder on Friendship Quality Across Gender and Ethnicity

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**Abstract.** Previous research suggests that social anxiety disorder (SAD) has a specific relationship with impairment in friendship quality; however, potential moderators of this relationship have not been tested. The current study examines whether the specific effect of SAD on friendship quality is stable or varies across gender and ethnicity in a large epidemiological dataset. Results indicate that the underlying construct of friendship quality differed slightly but significantly between men and women; as a result, effects of SAD were tested in men and women separately. After partially constraining friendship quality across ethnic groups, our results indicated that the relationship between SAD and friendship quality remained robust in all groups. In addition to replicating the finding that SAD specifically relates to perceived friendship quality, the current study highlights the need to test whether underlying constructs such as friendship quality are consistent across the groups that make up heterogeneous samples. *Key words:* social anxiety disorder; social phobia; interpersonal processes; friendship

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## Introduction

Strong friendships are arguably one of the defining features of positive functioning. Hartup and Stevens (1997) present a review of the effects of friendships, highlighting the general conclusion that having friends is associated with a sense of well-being across the lifespan. Before the age of 12, friendship quality<sup>1</sup> predicts lower rejection and victimization for girls, and higher global self-worth and social competence, as well as fewer internalizing problems, for both girls and boys (e.g., Rubin et al. 2004). Hussong (2000) found that, among high school boys, positive friendship qualities (in the absence of negative friendship qualities) predicted positive emotional adjustment (i.e., positive affect). Similarly, Buote et al. (2007) found that higher levels of friendship quality predicted higher levels of university adjustment in a sample of first-year university students. Finally, a longitudinal study conducted by

Bagwell et al. (2005) found evidence that positive friendship features (e.g., intimacy, companionship, affection, etc.) were positively associated with self-esteem. Having strong friendships may be both a sign and cause of positive well-being, and even the mere presence of friends can make difficult life circumstances seem more bearable: when a friend is present, a hill seems less steep (Schnall, Harber, Stefanucci, & Proffitt, 2008).

The fear and avoidance inherent in social anxiety disorder (SAD) suggests that SAD should have a measurable impact on the positive domain of friendship because of difficulties establishing or maintaining new acquaintanceships. Even putting aside outright avoidance, abundant evidence (e.g., Kashdan & Wenzel, 2005; Meleshko & Alden, 1993; Voncken, Dijk, de Jong, & Roelofs, 2010) has established that social anxiety results in judgments on the part of

observers and interaction partners that could interfere with making new friends. More generally, reviews of the literature have suggested that SAD tends to confer two primary interpersonal problems: (a) problems with assertion and (b) constraints in expressing warmth and positivity (Alden & Taylor, 2004). Importantly, for the current context, it seems likely that constraints in warmth may be related to the global impairment in the positive domain that is the focus of this special issue. With our colleagues, we have recently provided some evidence that problems with warmth specifically in friendships are related to social anxiety (Fernandez & Rodebaugh, 2011; Rodebaugh, Klein, Yarkoni, & Langer, 2011). Although this evidence suggests a plausible, specific path from SAD to friendship impairment through impairment in the positive domain, it should be noted that, until recently, evidence for a specific effect of SAD on friendships was lacking.

Schneier et al. (1994) provided the clearest early evidence that SAD is related to impairment in friendships (e.g., fewer friends and less satisfaction regarding friendships), among other forms of interpersonal impairment. However, Schneier et al.'s results did not rule out alternative accounts: for example, it might be that symptoms of other comorbid mental disorders, perhaps most plausibly depression, might account for much of the impairment observed. Nor were Schneier et al.'s results conclusive as to whether the impairments detected were due specifically to problems in friendships, as opposed to interpersonal functioning more generally. A study by Whisman, Sheldon, and Goering (2000) was the first to test the *specificity* of the effect of SAD on friendship impairment, and found very limited evidence for this effect. SAD was related to reporting having no close friends, but not to impairment in close friendships for those who had them. Because the outcome measure was a single item with five response options regarding *close* friends in particular, it was impossible to distinguish people who were truly isolated and had no friends at all from those who had *friends* but simply no *close friends*.

One of us (Rodebaugh, 2009) provided tests of friendships overall using two large epidemiological datasets, the National Survey of American Life (NSAL; Jackson et al., 2004)

and the National Comorbidity Survey Replication (NCS-R; Kessler et al., 2004; Kessler & Merikangas, 2004). Although Rodebaugh's hypothesis was that SAD would show a relationship with friendship quality, the results were more definitive than expected: only SAD, of all mental disorders available, showed a specific effect on friendship quality once a correction for multiple tests was applied. The reported tests remained quite general, however, and a variety of additional tests seemed warranted. For example, Rodebaugh (2009) collapsed ethnic categories into white versus non-white: this choice is debatable and seems worth revisiting. In addition, Rodebaugh did not test any moderation effects that might qualify the main effect. Several such potential effects suggest themselves, perhaps most pressing the possible moderating effects of gender and ethnicity.

The possible moderation effects of gender and ethnicity are multifaceted. First, it is important to note that Rodebaugh (2009) estimated latent variables of friendship and family relationship quality without testing whether those latent variables were consistent across the variety of groups (i.e., gender and ethnicity) represented in each dataset. Differences in how relationships are perceived or evaluated could result in significant variation in factor loadings and item thresholds across groups, resulting in violations of factorial invariance. It is often assumed that the friendships of men and women differ in important ways, and there is at least some evidence that the strong gender differences observed in childhood peer relationships may extend into adulthood (De Goede, Branje, & Meeus, 2009; Maccoby, 1990). Such differences might generate different factor weights across gender for the construct of friendship quality. Similarly, ethnic groups may, in part, index cultural distinctions that might include differences in how friendship quality is experienced, although we have been unable to find any direct support for such a possibility.

It also remains possible that SAD has differential relationships with friendship quality across groups. For example, there might be an interaction between SAD and ethnicity, such that some ethnic groups might be relatively protected from friendship impairment due to SAD. In more collectivist

subcultures (Markus & Kitayama, 1991), SAD might have less of an impact on friendship quality because the members of that subculture might make more of an effort to be inclusive. To the extent that ethnicity serves as an indicator of such cultural factors, the original findings may not hold in some ethnic groups.

Oyserman, Coon, and Kimmelmeier (2002) review the tendency among social scientists to assume that most minority ethnic groups in the USA are more collectivistic (and less individualistic) than whites (or European Americans). The reality appears to be more complex. Oyserman et al. (2002) conducted a meta-analysis comparing ethnic groups within the USA and found evidence for several conclusions regarding collectivism and individualism. First, Asian Americans were more collectivistic than European Americans ( $d = .39$ ), as well as slightly less individualistic; these differences were generally small, with only one effect approaching a medium size. Second, African Americans were more individualistic than European Americans, but not different in terms of collectivism. A final conclusion that is particularly relevant for this paper is that Latino Americans were somewhat more collectivistic but no less individualistic than European Americans. Because we were unable to examine Asian Americans in the current study, Latino participants were the only group in our sample that would likely display an effect for collectivism compared to whites, such that SAD would have less of an impact on friendship quality for Latino participants. We had no comparable hypothesis regarding gender, because although the view that friendships differ between men and women is ubiquitous, we have been unable to find clear and consistent evidence regarding the ways such differences might affect evaluations of friendship quality or SAD's relationship with friendship quality.

To test the possibility that gender and ethnicity might moderate the effects found by Rodebaugh (2009), we re-examined his findings. We focused on the NCS-R because it had the virtue of wider-ranging assessment of psychopathology. In addition, the NCS-R, unlike the NSAL, also includes sizeable representation of the three largest ethnic groups in the USA (whites, African Americans, and Hispanics). After testing whether

the original results held, we examined whether the items used to assess friendship quality had a different factor solution across gender and ethnicity. The ultimate intent was to determine whether the specific effect of SAD on friendship quality was stable across groups.

## Methods

### Overview

Most methods, including the nature of the dataset used and basic modeling procedures, are identical to those used in Rodebaugh (2009). Differences from the original study are highlighted, but readers are referred to the original study for more detail.

### Datasets

The public-release version (released 7 April 2008) of the NCS-R was used. Notably, the release used here was more recent than the one used by Rodebaugh (2009).

*The NCS-R* is the replication of the original National Comorbidity Survey (e.g., Kessler et al., 2004; Kessler & Merikangas, 2004). The present study focuses only on the participants in the NCS-R who completed at least part of the friend or family section of the social network questions (maximum  $N = 5284$ ). Major findings from this dataset have appeared widely in the literature (e.g., Kessler, Chiu, Demler, Merikangas, & Walters, 2005).

### Measures

*World Mental Health Composite International Diagnostic Interview (WMH-CIDI)*. The NSAL and NCS-R used the WMH-CIDI to assess mental disorders using the criteria in the fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (American Psychiatric Association, 1994). The development of this fully structured interview has been described in detail (Kessler & Üstün, 2004). The 12-month diagnosis variables were used in analyses. The disorders and symptoms that showed at least a tendency to predict friendship quality ( $p < .05$ ) in Rodebaugh (2009) were included in the final models.<sup>2</sup>

*Family relationship quality items* included assessment of family (not including romantic partner) relationship quality, using primarily Likert-type scales ranging from 4 (e.g., *Very Often* to *Never*) to 7 (e.g., *Nearly everyday* to *Never*) response options. Rodebaugh (2009)

found evidence of good factor structure for the positively worded items, which referred to frequency of contact, availability of help from family members for serious problems, and possibility of talking with relatives about worries.

*Friendship relationship quality items* are similar to the family items, and Rodebaugh (2009) found evidence for good factor validity for these items. Items (i.e., Items 1–3) were *How often do you talk on the phone or get together with friends*, *How much can you rely on your friends for help if you have a serious problem*, and *How much can you open up to your friends if you need to talk about your worries*. Of the available friendship items in the dataset, these items focus most on the positive aspects of friendship (other items assess conflict and demands; these items reduced factor validity when included in models). Overall, the available items are similar to those used in the available studies that find a relationship between friendship quality and positive functioning because they primarily assess closeness and supportiveness (*cf.* review by Hartup & Stevens, 1997). Moreover, when tested in all available data in the NCS-R (pairwise *ns* ranged from 5251 to 5274), each of these items has positive, significant correlations ( $ps < .001$ ) with items included in the NCS-R that assessed feeling confident, optimistic, happy, and full of life during the past month.

*Demographic items* included gender, age, marital status (married/cohabitating, previously married, and never married), years of education (0–11 years, 12 years, 13–15 years, or 16 years or more), work status (employed, unemployed, not in labor force), and a poverty index (household income divided by poverty threshold, derived from 2001 census data, rounded to a whole number). Both gender and ethnicity were included in analyses via multiple-group factor analyses; the other variables were included in tests of prediction of friendship quality (e.g., the replication of Rodebaugh, 2009, and the final models reflected in Table 1).

### **Data analytic plan**

*Missing data and data coding.* Missing data estimation for categorical and continuous variables (not available for Rodebaugh's 2009 study) was used for any participant

who provided at least partial data for the friend or family items. Variables were recoded to facilitate interpretation of results. For example, diagnostic variables were coded such that 1 indicated presence and 0 indicated absence.

*Analyses.* All analyses were conducted in the Mplus program (version 6.1, Muthén & Muthén, 1998–2010) using the robust weighted least squares estimator (referred to as WLSMV in Mplus) with missing data estimation. This estimator is appropriate for ordered categorical data; all Likert-type items with seven or fewer responses, as well as demographic variables represented by categories, were analyzed as categorical. Global model fit was evaluated using the (a) Tucker–Lewis incremental fit index (TLI; Tucker & Lewis, 1973), (b) comparative fit index (CFI; Bentler, 1990), and (c) root mean square error of approximation (RMSEA; Steiger & Lind, 1980). The magnitudes of these indices were evaluated with the aid of recommendations by Hu and Bentler (1999). Essentially, for (a) and (b), values of .90 and above were considered adequate, whereas values of .95 or above were considered very good; for (c) and (d) values of .08 and below were considered adequate and .05 or less very good.

Analyses were conducted in the following order. First, to ensure stability of previous results despite updates in the dataset and statistical software, the prediction analysis in Rodebaugh (2009) was replicated, in which friendship quality was predicted by mental disorders and related symptoms, family relationship quality, and demographic variables (i.e., the analysis represented in Table 3 of that study). Second, the factor structure of the friendship items was tested for invariance and at least partially invariant solution was sought (described in more detail in the “Invariance method” section). Finally, we tested the path from SAD to friendship quality across groups.

*Invariance method.* In testing invariance of factor structures across groups, we used the methodology proposed by Muthén (1989a, 1989b) and since elaborated on in the Mplus manual (Muthén & Muthén, 1998–2010) as a guide. We used the WLSMV estimator for difference testing between the constrained (i.e., invariant) and unconstrained models. When the  $\chi^2$  difference test indicated significant

decrements in fit related to imposing invariance at the level of  $p < .05$ , we considered the tested groups separately (for gender) or attempted to find a partially invariant structure in which one or more loadings or thresholds were constrained across groups (for ethnicity). We included the family items in all analyses.

We examined invariance first at the level of gender and then at the level of ethnicity. We attempted to find at least a partially invariant solution at the highest level possible. By *partially invariant* we mean a solution for the set of items loading on a factor that contains at least one item that has an invariant factor loading across the relevant groups; we attempted to impose invariance for as many loadings and thresholds as possible to provide greater certainty that the factor being estimated was in fact the same across groups (Reise, Widaman, & Pugh, 1993). In the analyses below we focus on the constraint of friendship items only, because additional analyses in which we attempted to constrain the family items as well as the friendship items were unsuccessful. Final models were thus run with family items not held to a partially invariant structure.

## Results

### *Basic replication*

The analyses reported by Rodebaugh (2009) for SAD predicting friendship quality were replicated completely; SAD was the only significant predictor of friendship quality after correction for multiple tests.

### *Gender invariance*

Results of tests in the NCS-R rejected invariance in the friendship items and family items across gender. The test included 5284 individuals (3051 women and 2233 men). The  $\chi^2$  difference test indicated that the factor solution was not invariant across gender ( $\Delta\chi^2[16, N = 5284] = 234.63, p < .001$ ). Examination of the friendship items revealed that loadings for friendship items were all slightly different for men (standardized loadings: .51, .89, .87, respectively) than women (standardized loadings: .56, .93, .84, respectively). Although thresholds also differed between groups, we do not interpret these

because the meaning of differing thresholds is unclear when factor loadings also differ.

In follow-up tests, no partially invariant model for the friendship items was feasible because no single factor loading for the friendship items could be constrained ( $ps < .05$  for each  $\chi^2$  difference test). It should be noted, however, that model fit for the completely invariant model retained adequate to excellent fit (CFI = .98, TLI = .98, RMSEA = .07), which might suggest that the rejection of invariance was due primarily to the amount of power for a test of invariance across very large groups. We opted to take the most conservative approach for further testing: therefore, because the factor structure of friendship items was not invariant across gender, men and women were subsequently analyzed separately.

### *Ethnic invariance*

We utilized the same methods for testing the factor structure of the friendship items across ethnic groups as we did for testing the items across gender.

Our test of invariance across ethnicity in the sample of men from the NCS-R included a total of 1701 non-Latino whites, 201 Hispanics (Latinos), and 220 African Americans. Again, the factor structure was clearly not invariant across groups ( $\chi^2[32, N = 2122] = 95.20, p < .001$ ). Examining the unconstrained results suggested that factor loadings for all of the friendship items might be constrained, along with thresholds for Items 2 and 3 (but not thresholds for Item 1). Indeed, a partially invariant structure in which only Item 1 thresholds were allowed to vary fits well (CFI = .98, TLI = .97, RMSEA = .08) and no worse than the completely unconstrained model ( $\chi^2[11, N = 2122] = 10.72, p = .380$ ).

Similarly, for women the factor structure was clearly not invariant across ethnic groups ( $\chi^2[32, N = 2883] = 79.84, p < .001$ ; non-Latina white  $n = 2211$ ; African American  $n = 382$ ; Hispanic/Latina  $n = 290$ ). Examination of the unconstrained model suggested that all factor loadings might be constrained, but that thresholds could only be constrained for item 3. The resulting model had strong fit (CFI = .99, TLI = .98, RMSEA = .06) and no worse fit than the unconstrained model ( $\chi^2[8, N = 2883] = 11.41, p = .179$ ).

### Test of prediction path across groups

We tested invariance of the prediction of friendship quality by SAD diagnosis across groups separately for men and women, with all predictors showing a tendency to predict friendship impairment in Rodebaugh's (2009) study included in the models. These predictors included demographic characteristics, several mental disorders, and one related symptom (panic attack). We attempted to constrain the regression parameters across ethnic groups, with the exception of family relationship quality, which was modeled as a latent variable that was not even partially invariant across groups. For the men, all predictors could be constrained to be invariant; that final model had excellent fit ( $CFI = .97$ ,  $TLI = .96$ ,  $RMSEA = .04$ ) and fit no worse than the model in which all regression parameters were allowed to vary between groups ( $\chi^2[22, N = 2122] = 32.70$ ,  $p = .066$ ). Similarly, for women, most predictor parameters could be constrained, with the exception of poverty. With all other predictors constrained across groups, the model had excellent fit that was identical to the model fit for men ( $CFI = .97$ ,

$TLI = .96$ ,  $RMSEA = .04$ ), as well as fit no worse than the model in which all regression parameters were allowed to vary between groups ( $\chi^2[20, N = 2883] = 29.23$ ,  $p = .083$ ).

The resulting standardized regression coefficients are displayed in Table 1. In interpreting this table, several facts must be kept in mind. First, the standardized coefficients provided for categorical variables are *partially standardized*, such that the effect is that of the standard deviation change in the predicted variable given a change (upwards) in category. The fully standardized coefficient is only given for continuous predictors, because the standard deviation of the predictor is meaningful for these variables. It should be noted that because the size of the variance of friendship quality was allowed to vary by ethnic group (and the standard deviation of some predictors also varied), there are small differences in the numerical value of the standardized coefficient in each ethnic group. Because the unstandardized parameters could be constrained across group, these differences should not be meaningful. Thus, the standardized coefficient for the

Table 1. Standardized coefficients for the predictors in the final models based on white respondents

Predictor	Original parameter	Parameter for men	Parameter for women
SAD	-0.28***	-0.38***	-0.33***
Panic attack	0.14**	0.01	0.12*
Major depressive disorder	-0.14**	-0.08	-0.18**
Dysthymic disorder	-0.24**	-0.27	-0.23*
Generalized anxiety disorder	-0.16*	-0.35**	-0.06
Adult separation anxiety disorder	-0.20*	-0.12	-0.31*
Alcohol abuse	0.20*	0.09	0.14
Marital status	-0.20***	-0.25***	-0.17***
Age	-0.12***	-0.17***	-0.06***
Years of education	0.12***	0.13***	0.12***
Ratio of income to poverty	0.12***	0.12***	0.07**, 0.16*, .30***

Notes. The original parameter column reprints the parameters found in the analyses conducted by Rodebaugh (2009). All diagnoses and symptoms refer to the past 12 months. Due to convergence issues, only predictors that at least showed a tendency to predict friendship quality in Rodebaugh (2009) are included here. For categorical predictors, coefficients indicate the effect on the latent variable in contrasting adjacent categories. For continuous predictors (age, poverty), the completely standardized coefficient is given. Family relationship quality was also in the model, but was not partially invariant across groups; its parameter was, therefore, not constrained and not reported here. Except for poverty, the results for non-Latino whites are given. Because of different standard deviations across groups, there are small numerical differences between ethnic groups. The full results are available from the first author. For ratio of income to poverty in women, the parameter was not constrained across groups in this sample and, therefore, all three values are reported; the highest value is for Latinas and the lowest for non-Latina white women. Marital status was coded as 3 = married/cohabitating, 2 = divorced/widowed/separated, 1 = never married. Years of education was coded as 1 = less than 12 years, 2 = 12 years, 3 = 13–15 years, 4 = 16 years or more. Ratio of Income to poverty is the household income divided by 2001 Census poverty threshold, rounded to nearest whole number (higher = less impoverished). \*\*\* $p < .001$  (and significant after correction for multiple tests), \*\* $p < .01$ , \* $p < .05$ .

largest group (non-Latino whites) is presented in the table.<sup>3</sup> Statistical significance was judged based on the standard used in Rodebaugh (2009) of  $p < .001$ ; this appeared the most liberal standard that could be defended, given that the current results represent additional tests in the same dataset.

A final important piece of information to keep in mind regarding Table 1 is that although the results for men and women are presented side-by-side, it remains true that the analyses were conducted separately, and the current results indicate that friendship items were interpreted differently by men and women. Caution should, therefore, be taken in interpreting Table 1 as representing gender differences in effects, because any such differences are compounded by the fact that the meaning of friendship quality appears to differ across gender. At the same time, however, the differences demonstrated are, at the very least, candidates for future tests in which a partially invariant factor for friendship quality can be estimated.

With those caveats in mind, there remain several interesting findings in Table 1. First, the result for SAD is consistent with that reported by Rodebaugh (2009). The size of the effect for both men and women appears somewhat larger than originally estimated for the entire sample. A trend toward an effect for major depressive disorder appears to be limited to women, whereas a trend toward an effect for generalized anxiety disorder appears to be limited to men. Although SAD showed the only effect for a mental disorder or related symptom that was significant after correction for multiple tests, it should also be noted that it was nearly matched in men by generalized anxiety disorder and nearly matched in women by adult separation anxiety disorder.

## Discussion

This study re-examined the results of Rodebaugh (2009), who found that SAD was the only mental disorder to specifically impair friendships. We tested the degree to which this effect was consistent across gender and ethnic groups. Our overall finding was that friendship quality items had differential importance across gender, such that we decided to test the effects of SAD separately

in men and women. Our further tests determined that the relationship between SAD and friendship quality was robust in all groups examined. The apparent size of the effect was larger in each group than seen in Rodebaugh (2009), plausibly because the current models are more appropriate (i.e., due to use of missing data estimation and more appropriate modeling of partial invariance across groups).

Results regarding gender and friendship quality are notable for several reasons. First, related investigations (e.g., Hawthorne, 2006, among many others) have generally proceeded under the assumption that participants from different groups interpret questions regarding friendship and social support consistently. Our results suggest that this may not be the case. At the same time, it must be noted that the model in which friendship variables were completely constrained across gender continued to fit adequately to excellently, which suggests that the differences found here might be of little clinical importance. However, similar results were also obtained in regard to ethnic groups; those tests involved much smaller groups and, therefore, less power to detect departures from absolute fit. Further, because our assessment of friendship quality was limited to the relevant items in the NCS-R, it remains plausible that power to detect gender or ethnicity variance in responding to friendship quality items could be higher in much smaller samples that include more thorough assessment. Our results regarding differences between groups on friendship quality items serve as a caution to researchers who assume that relationship quality questions have the same meaning across groups: that assumption may not be warranted and requires further testing. In a search of the literature, we found a lone instance in which authors carefully considered factorial invariance across ethnicity of a social support measure (in a sample of women): they found it necessary to remove most of the items in the original scale to achieve adequate factorial invariance (Wong, Nordstokke, Gregorich, & Pérez-Stable, 2010). Clearly, this area requires further attention.

Several effects on friendship quality were observed to remain consistent across groups. Having more years of education was related to better friendship quality; however, we expect

that this effect is actually an indirect effect for such factors as (a) years of exposure to large groups of same-age peers and (b) having more time during young adulthood available to spend with friends (e.g., instead of at a full-time job), among other factors. Being older related slightly to lower friendship quality, plausibly because other types of relationships (e.g., spouse and family) tend to predominate for individuals as they move out of young adulthood. Consistent with that hypothesis, as well as notable in its own right, is the fact that marital status related to friendship quality such that being married or cohabitating (vs. being divorced or separated, vs. never having been married) was associated with having *lower* friendship quality.<sup>4</sup> Presumably this finding is due primarily to people who are currently married being more likely to invest time in their marriage than friendships. It is notable that SAD continued to predict friendship quality despite the fact that SAD is likely to be more common at younger ages *and* has an association with less likelihood of being married (e.g., Ruscio et al., 2008): people with SAD, as a group, appear to have worse friendship quality despite the fact that demographic predictors alone would predict people with SAD to experience *better* friendship quality. Family relationship quality significantly predicted friendship quality as well, in every model tested, which suggests that there is a general tendency for individuals to have a consistent level of relationship quality across relationship type. SAD was alone among the mental disorders in having a consistent effect.

The final models showed some differences across gender; these differences may be interpreted with caution as a guide to further study. Generalized anxiety disorder showed nearly as strong an effect on friendship quality (although not significant after correction for multiple tests) as SAD, but only for men. This finding might be explained by the observed tendency for at least friendships among *adolescent* women to be seen as higher in friendship quality when the friends co-ruminate (i.e., worry together; e.g., Starr & Davila, 2009). It may be that the worry inherent in generalized anxiety disorder might have limited impact for friendships among women given the relative acceptance of co-rumination, whereas for men worry might

more prominently and negatively affect friendships. It might be fruitful to study the friendships of men with generalized anxiety disorder in particular. On a similar note, the current results suggest that if depression were to have an effect on perceived friendship quality in any group, it is more likely to be women. We have no immediate explanation for this effect, however, and we must concede that the apparent difference might instead be due to greater power for detecting this effect among women, who are much more likely to experience major depressive disorder (e.g., Kuehner, 2003).

The limitations of this study include the nature of the sample: an archival dataset that, although large and diverse, contained only limited assessment of friendship quality. Although we were able to model differences between the three largest ethnic groups in the USA, we would have preferred to include more groups and finer-grained measurements of factors that might affect interpretation of friendship quality. Importantly, we expect that most, if not all, of the effects found here are actually more powerfully modeled using continuous variables: for example, SAD's effects might be better modeled as severity of social anxiety.

Closer examination and more specific tests within one of the datasets used by Rodebaugh (2009) further supports the original finding that SAD has a specific impact on friendships. We submit that it is time to examine friendship quality in greater detail among people with and without SAD, including the viewpoint of the friends in question. Such study could lead to more detailed treatment protocols that incorporate interventions to improve friendships in individuals with SAD (*cf.* Alden & Taylor, 2011, for an interpersonal approach that might be used or adapted). It may be tempting to view impaired friendship quality as secondary to other problems conferred by problematic social anxiety. However, multiple studies have found that quality of friendship influences as basic an outcome as how long people survive (i.e., mortality) in vulnerable groups, such as breast cancer survivors (Kroenke, Kubzansky, Schernhammer, Holmes, & Kawachi, 2006) and older adults (Giles, Glonek, Luszcz, & Andrews, 2005). Friendship quality may be an issue of

quality of life, but the emphasis on life may be stronger than generally acknowledged.

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## Notes

1. The data analyzed concern *self-report* of friendship quality, but we do not preface each instance of "friendship impairment" or "friendship quality" with the word *perceived*, even though it might be considered appropriate: we know of no clear way to measure friendship quality that does not involve self-report in some form.
2. We initially intended to include all diagnoses and related symptoms originally used, but it became clear that this was untenable due to complexities of the resulting models across multiple groups (and the fact that some groups had very few individuals diagnosed with the relevant disorders), which resulted in convergence problems. As a result, several mental disorders that showed no tendency to predict friendship quality are not included here, whereas the symptoms of panic attack, which did show such a tendency, are included.
3. Full standardized coefficients for each group are available from the first author.
4. This effect is consistent with that in Rodebaugh (2009), but was described incorrectly (i.e., in the opposite direction) in the text of that manuscript. The effect shown in the table of that manuscript, however, was correct.

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