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THE EFFECTS OF WORRY ON DISCREPANCY BETWEEN REPORTED
INTERPERSONAL PROBLEMS IN FRIENDSHIP DYADS

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Abstract

The present study examined the relationship between estimation of interpersonal problems and worry. More specifically, the study examined if individuals who worry more either overestimate their interpersonal problems or both over- and underestimate their interpersonal problems. One hundred and ninety participants signed up with an identified friend and completed a series of questionnaires: the GAD-Q-IV, PSWQ, IMI-IIA, SSQ-6, FQQ, and IIP-64. Results showed that when examining overall interpersonal problems and discrepancy scores between friends, participants who worried more tended to overestimate their negative interpersonal impact on their friend. Additionally, worry was associated with overestimation of hostile-submissive, vindictive, cold, submissive, exploitable, and overly-nurturant impact on friends. Finally, participants who worried more overestimated the overall irritation in the friendship. These findings suggest that a positive linear relationship exists between higher levels of worry and overestimation of interpersonal problems.

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Interpersonal relationships are a fundamental part of everyday life. These relationships can vary in levels of closeness and are often times established by common ground. Theory and evidence suggest that many people struggle with interpersonal relationships as interpersonal problems are a common reason people seek psychotherapy (Horowitz, Rosenberg, & Bartholomew, 1993). In particular, it has been reported that persons with generalized anxiety disorder (GAD) have increased problems in their interpersonal relationships (Borkovec, Newman, Pincus, & Lytle, 2002; Eng & Heimberg, 2006, Erickson & Newman, 2007; Newman & Erickson, 2010).

The goal of the present study is to examine the link between GAD and disrupted interpersonal functioning, specifically in terms of misconceptions of perceived social impact that is thought to interfere with healthy social functioning. First, this paper outlines theory and research on the relationship between interpersonal functioning and psychological health. Next, this paper explores how deficits in interpersonal functioning are related to GAD. Finally, the findings of the current study, which explored the relationship between worry and disrupted social functioning, are presented and discussed.

Interpersonal Functioning and Psychological Health

Studies have found that strong and well-established interpersonal relationships can have several health and psychological benefits. For example, Thomas, Goodwin, & Goodwin (1985) classified social support as satisfying relationships in which each individual is able to confide in the other. The authors found that participants who had strong social support from their relationships had lower uric acid and cholesterol levels and higher and better functioning immune systems than participants who had poorer social support. Furthermore, a study conducted by Arnetz, Theorell, Levi, Kallner, and Eneroth (1983) had individuals participate in a

social activation program that involved groups with common interests involved in physical activities to avoid social isolation. Over the course of the six month program, participants showed less of a decline in testosterone levels, an increase in estradiol and dehydroepiandrosteron levels, and a stable level of growth hormones compared to those who did not participate in the program. Overall, this suggests the presence of a buffering effect of social support and interpersonal contact.

Conversely, a negative interpersonal relationship is related to psychological as well as physiological risks. Specifically, a negative interpersonal relationship in which there is little emotional and practical support and confiding can increase the incidents of cardiovascular heart disease and activate feelings of worry and anxiety (De Vogli, Chandola, & Marmot, 2007; House, Landis, & Umberson, 1988).

Interestingly, the actual strength of interpersonal relationships may be less impactful on physical and psychological functioning than perceptions of support. According to a theory by Cohen and Wills (1985), psychological distress is unlikely to be reduced if another's actions are not perceived as being supportive. However, if another's actions are perceived as supportive, even if not intended to be, a buffering effect exists. In general, an effective social support network helps reduce psychological distress. This idea is known as the stress-buffering model of social support (Cohen & Wills), and has received some empirical support. For example, a study conducted by Levy and colleagues (Levy et al., 1990) researched the amount of perceived emotional support from a spouse or intimate other and perceived social support from doctors by breast cancer patients during surgery. Results showed that higher natural killer cell activity was associated with higher emotional support and perceived social support from others, indicating that perceived social support plays an important role in healthy functioning.

Disrupted Interpersonal Functioning

A negative, unhealthy social relationship can be due to problems in interpersonal functioning. Interpersonal problems are among the most common complaints that patients report during clinical interviews (Horowitz, 1979). A social cognitive approach to understanding interpersonal problems suggests that because people think about social situations differently, they react to these situations in idiosyncratic ways.

Specifically, interpersonal expectations play a role as a person interprets how others react to them and as they decide how they will respond to those reactions (Horowitz, Rosenberg, & Bartholomew, 1993). Interpersonal problems can be due to a conflict between a person's desire to express a behavior and the feared consequences of expressing that behavior given their expectations. Therefore, it follows that if an individual has faulty expectations of a given interpersonal situation, this may lead to a disrupted interpersonal response. Such conflicts can arise from interpersonal learning history and more importantly, attachment history (Horowitz et al.). In order to better understand the conflicts that can lead to interpersonal problems, it is important to first outline the ways in which attachment can influence social expectancies.

Bartholomew & Horowitz (1991) examined individuals' adult attachment styles based on children's early attachment experiences. These researchers proposed a model based on Bowlby's (1977) idea that children internalize early attachment experiences and use the internal representations to judge the image of both self and others. The image of the self can be positive or negative (the self is or is not worthy of love and support), as can the image of the other (the other is seen as trustworthy or unreliable). How individuals view themselves and others is associated with different attachment styles. For example, a positive view of the self and others is

associated with secure attachment, whereas a negative view of the self and others is associated with fearful attachment.

More importantly, different attachment styles can in turn lead to different types of interpersonal problems. For example, a secure attachment implies being comfortable with intimacy and having a friendly orientation to others, whereas a fearful attachment implies being uncomfortable with intimacy and being cold and socially avoidant (Bartholomew & Horowitz, 1991).

It is possible that problems including an unhealthy history of interpersonal interactions, as well as disrupted attachment, may in fact lead to faulty expectations in interpersonal relationships, which may then fuel some of the interpersonal difficulties seen in a range of disorders, including GAD. Next, we will focus on specific interpersonal problems associated with GAD.

Interpersonal Problems and GAD

Worry is the main defining characteristic of a person with GAD. A recent seminal theory suggests that for individuals with GAD, worry may serve as a strategy to avoid emotional experiences (Borkovec, Alcaine, & Behar, 2004). In fact, many individuals with GAD report worrying about superficial topics as a distraction from unwanted emotional topics (Borkovec & Roemer, 1995). The content of what the deeper emotional topics and experiences may be has yet to be empirically established, but research has shown that one possible topic is interpersonal relationships.

As previously mentioned, research has consistently demonstrated that individuals with GAD experience heightened interpersonal problems (Borkovec et al., 2002; Eng & Heimberg, 2006; Erickson & Newman, 2007; Newman & Erickson, 2010). Numerous studies have reported

a high level of comorbidity between social phobia and GAD (Borkovec, Abel, & Newman, 1995; Brawman-Mintzer, Lydiard, Emmanuel, Payeur, Johnson, Roberts, et al., 1993; Newman, Przeworski, Fisher, & Borkovec, 2010), suggesting that there may be considerable overlap in terms of deficits in social functioning. As such, interpersonal problems may be a great cause of concern and worry for individuals with GAD.

Furthermore, individuals with GAD report a greater number of worrisome topics than do those without GAD (Roemer, Molina, & Borkovec, 1997), and there is substantial evidence to suggest that many of these topics are interpersonal in nature. For example, Roemer and colleagues found that interpersonal issues with family and couple relationships represent the most frequent content area of worry topics for individuals with GAD. In addition, Breitholtz, Johansson, and Ost (1999) found that social embarrassment, acceptance, interpersonal confrontation, and concern about others are also frequently reported topics of worrisome thought in individuals with GAD. Moreover, Borkovec, Robinson, Pruzinsky, and DePree (1983) showed evidence that social-evaluative situations represent the area of most concern for worriers. Together, these studies demonstrate that interpersonal concerns, above and beyond other life events, fuel the majority of worrisome topics for persons with GAD.

In addition to frequently worrying about interpersonal problems, studies have found that persons with GAD do in fact experience more interpersonal problems than those without GAD. For example, individuals with GAD have been found to display over nurturance and intrusiveness in their relationships and rigid interpersonal styles (Pincus & Borkovec, 1994). Marital problems are also highly associated with GAD. Studies have shown that of all the Axis I disorders, GAD was among the most highly associated with increased marital distress (Whisman,

2007; Whisman, Sheldon, & Goering, 2000). Furthermore, wives with GAD reported significantly poorer marriage quality than wives without GAD (McLeod, 1994).

Given these findings, it is clear that individuals with GAD do in fact experience greater interpersonal difficulties than those without GAD. This suggests that frequently encountering these types of difficulties may reinforce extant social/interpersonal worries and therefore lead to the maintenance of GAD (Newman, Castonguay, Borkovec, Fisher, & Nordberg, 2008).

Therefore, it is imperative to establish a more solid understanding of the ways in which worry is associated with interpersonal functioning.

Awareness of Interpersonal Problems

Also important to our understanding of interpersonal difficulties in GAD are studies suggesting that these individuals lack awareness of the interpersonal impact they have on others, which can lead to relationship difficulties (Newman, Castonguay, Borkovec, & Molnar, 2004). For example, Eng and Heimberg (2006) studied interpersonal difficulties reported by persons with GAD in terms of how well they matched with their friends' perceptions of these difficulties. In this study, subjects with GAD and an identified friend each rated the quality of their interpersonal relationship using the Social Support Questionnaire (SSQ-6), the Inventory of Interpersonal Problems (IIP-64), and the Friendship Quality Questionnaire (FQQ). The results of the study indicate that subjects with GAD reported significant overall interpersonal problems, which their friends did not confirm. However, this study only looked at differences in overall levels of reported problems between these two groups, and did not explore level of discrepancy within each friendship dyad specifically.

In a similar vein, a study conducted by Erickson and Newman (2007) involved subjects with GAD interacting in a social setting with confederates. The subjects with GAD and the

confederates then both rated their perceptions about the quality of the interaction using the Impact Message Inventory – IIA (IMI-IIA) as the main questionnaire. In this study, the discrepancy between each dyad was measured. The results showed that subjects with GAD either highly over- or underestimated their negative (hostile-submissive) interpersonal impact as compared to the perceptions of confederates.

Goals and Hypotheses

The present study aims to further understand the connection between worry and perceptions of interpersonal functioning. The study will be a replication, extension, and combination of Eng and Heimberg's (2006) study and Erickson and Newman's (2007) study. Together, these studies suggest that individuals with GAD demonstrate an impoverished understanding of both their impact on others as well as the quality of their friendships. However, whereas Erickson and Newman found a bidirectional split (i.e., either over- or underestimating these problems), Eng and Heimberg did not examine whether there are specific subgroups within GAD with different types of biased appraisal of impact, but did find a positive relationship between overestimation of overall interpersonal functioning and GAD. Clearly more research is needed to further understand the nature of these misconceptions of interpersonal problems and their relationship to worry.

Therefore, the goal of the current study is to examine the consistency (or inconsistency) of perceptions of interpersonal problems in friendship dyads by having each member of a friendship pair report their level of perceived interpersonal difficulty with their friend, and then comparing the two. Furthermore, this study purports to explore the nature of these discrepancies as they relate to worry.

There are two opposing hypotheses for the study. Given the results of Eng and Heimberg's (2006) study, the first hypothesis is that there will be a positive relationship between level of overestimation and worry, such that higher levels of overestimation will be associated with higher levels of worry. The second hypothesis, based on the findings of Erickson and Newman (2007), is that there will be a curvilinear relationship between discrepancy and worry, in that over- and underestimation of interpersonal problems will both increase as worry levels increase.

Method

Participants

One hundred and ninety participants (139 females; M age = 20.55 years, SD = 1.24 years) were recruited through advanced level psychology courses at the Pennsylvania State University. The ethnic distribution of participants was 82.2% Caucasian, 5.2% African American, 4.7% Asian, 3.1% Latino(a), 2.1% Middle Eastern, 1.6% Native American, .5% South Asian, and .5% mixed race (Chinese and Caucasian).

In order to participate in the study, students were informed that they were required to sign up with a friend. This friend could either be a classmate or a friend outside of class who would serve as a volunteer. Students of the psychology classes were given extra credit as compensation for their participation in the research. Volunteers who were not in either of the psychology classes did not receive extra credit.

Measures

Generalized Anxiety Disorder Questionnaire IV. (GAD-Q-IV; Newman et al., 2002). The GAD-Q-IV is a 14-item self-report questionnaire reflecting the criteria for GAD as specified in the *Diagnostic and Statistical Manual for Mental Disorders, 4th Edition*, (DSM-IV; American

Psychiatric Association, 2000). An internal consistency (Cronbach's alpha = .94) and 2-week retest reliability shown in 92% of participants maintaining a consistent diagnosis are strong. The measure has shown good sensitivity of 83% and specificity of 89% with a cut off of 5.7 to optimize the balance between the two. Construct validity was determined by a structured interview with a kappa agreement of .67. Additionally, the measure is more strongly correlated with worry and fear of relaxation than depression, panic, traumatic stress, and social anxiety (Newman et al., 2002).

Penn State Worry Questionnaire. (PSWQ; Meyer, Miller, Metzger, & Borkovec, 1990). The PSWQ is a 16-item self-report inventory that measures excessiveness, duration, and uncontrollability of worry. Items are scored on a 5-point Likert-type scale from “not at all typical” to “very typical.” The measure has shown a strong internal consistency coefficient of .91 (Meyer et al., 1990) and a 2-10 week test-retest reliability ranging from .74 to .93 (Molina & Borkovec, 1994). The measure also demonstrated convergent and discriminant validity and distinguished GAD from other anxiety disorders (Brown, Antony, & Barlow, 1992).

Impact Message Inventory IIA, Octant Scale Version. (IMI-IIA; Kiesler & Schmidt, 1993). The IMI-IIA is unique in that it assesses a person's covert reactions evoked during interpersonal interactions in others (Wiggins, 1982). The measure consists of 56 items reflecting feelings, urges, and perceived evoking messages a person experiences during interpersonal interactions. The items are scored on a 4-point Likert-type scale from “not at all” to “very much so” The measure is organized according to orthogonal dimensions of dominance vs. submissive and friendly vs. hostile. Items are divided into eight scales (octants): dominant, hostile-dominant, hostile, hostile-submissive, submissive, friendly-submissive, friendly, and friendly-dominant. The scales do not overlap in terms of items, but octant scales do overlap. For example, dominant,

hostile-dominant, and friendly-dominant impacts share in common that a person's behavior appears powerful or influential, but differ in how the dominance is shown. Additionally, as one moves around the circle from one scale to the opposing scale (at 180 degree angle), there is a decreasing correlation. For example, hostile-dominant impacts are more strongly correlated with dominant impacts and less correlated with friendly-dominant. The measure has demonstrated circumplex structure (Kiesler & Schmidt, 1993) and a Cronbach's alpha from .60 to .90 (Schmidt, Wagner, & Kiesler, 1999).

Social Support Questionnaire - Six Item Version. (SSQ-6; Sarason, Sarason, Shearin, & Pierce, 1987). The SSQ-6 is a six-item self-report questionnaire that measures perceived social support and how satisfied one is with the amount of support in a friendship. The items are measured on a 6-point Likert-type scale ranging from "very satisfied" to "very dissatisfied." The SSQ-6 can be substituted for the original SSQ-27 (Sarason, Levine, Bashman, & Sarason, 1983) due to both being similar with internal consistency and correlations with other variables related to the concept of perceived social support. The internal consistency coefficient of the SSQ-27 is .97 for satisfaction and .90 to .93 for satisfaction for the SSQ-6. The items on the original SSQ-27 (Sarason et al., 1983) have shown a relationship with a variety of personality and social competence variables (Sarason et al., 1983) and the SSQ-6 showed similar correlations (Sarason et al., 1987).

Friendship Quality Questionnaire. (FQQ; adapted from Berry, Willingham, & Thayer, 2000). The FQQ is a 5-item self-report measure scored on a 9-point Likert-type scale ranging from "not at all" to "very much." Three items ("Compared to other friendships you've had, to what extent do you consider yourself to be close to your friend?"; "Compared to other friendships you've had, how important is this friendship to you?"; and "How important is it that

the two of you remain close friends?") assess the closeness of a friendship. The remaining two items ("How much does your friend 'get on your nerves'?"; and "Compared to other friendships, how much conflict do you have with your friend?") assess irritation with a friend. The internal consistencies were both strong with coefficients for closeness and irritation at .82 and .84, respectively (Berry et al.). The FQQ also has two subscales that measure overall levels of perceived closeness (FQQ-C) and irritation (FQQ-I) in the friendship.

Inventory of Interpersonal Problems-Sixty-Four Item Version. (IIP-64; Horowitz, Alden, Wiggins, & Pincus, 2000). The IIP-64 is a self-report questionnaire that measures the difficulties that people encounter in their interpersonal relationships on a 5-point Likert-type scale from "not at all" to "extremely." The questionnaire consists of 64 items: 39 items refer to interpersonal behaviors that are hard for people to express and 25 items refer to behaviors that people express too often. The items of the IIP-64 are divided into eight scales (octants) that assess types of interpersonal problems, including: domineering, vindictive, cold, socially inhibited, submissive, exploitable, overly-nurturant, and intrusive. The internal consistencies for each scale are: .69 for domineering, .70 for vindictive, .83 for cold, .89 for socially inhibited, .87 for submissive, .77 for exploitable, .83 for overly-nurturant, and .71 for intrusive (Leising, Rehbein, & Eckardt, 2009).

Procedure

As previously stated, in order to participate in the study, students of the psychology classes had to sign up with a friend. The friend could be either a classmate or a friend outside of class. Each participant was assigned a unique ID number that served as their subject number and a code number that served as their pair number. A pair of friends would be assigned the same code number.

Each participant was sent an e-mail with detailed instructions of how to complete the survey. Participants were provided the link to the survey through PsychData, were told that the survey would take 30-40 minutes to complete, and were informed that the survey needed to be completed within two weeks. The e-mail also included each participant's unique ID and code numbers. Upon clicking on the link for the survey, participants entered their ID and code numbers. Once the information was entered, participants continued to answer a series of questionnaires.

In total, participants completed seven questionnaires. First, participants completed the GAD-Q-IV (Newman et al., 2002) and the PSWQ (Meyer et al., 1990) to assess for levels of anxiety and worry. Next, participants completed five questionnaires to assess for interpersonal problems in relationships. Participants completed the SSQ-6 (Sarason et al., 1987), IMI-IIA (Kiesler & Schmidt, 1993), FQQ (Berry et al., 2000), and the IIP-64 (Horowitz et al., 2000). In order to determine the level of consistency between participants' perception of their own interpersonal functioning and their friends' perceptions, the IIP-64 was completed twice. Participants completed the questionnaire once for themselves and once based on their perception of their friend's interpersonal difficulties.

Results

Based on an a priori power analysis, it was determined that a sample size of at least 160 participants was required to observe a medium between-groups effect size (Cohen's $f = .30$) with an α -level of .05 and power of .80 (Faul, Erdfelder, Lang, & Buchner, 2007). This would allow for analyses to be run on 80 friend pairs.

Worry and Overall Interpersonal Problems

In order to estimate worry, participants filled out the PSWQ and the GAD-Q-IV for themselves. The scores were normally distributed, suggesting that there was a normal range of worry across participants. In order to determine the relationship of overall reported interpersonal problems and worry, we first looked at the IIP-64 total scores. We wanted to determine whether overall reported problems demonstrated a positive linear relationship (as in Eng & Heimberg, 2006) or a curvilinear relationship (as in Erickson & Newman, 2007). It was determined that hierarchical multiple regression was the most appropriate analysis given that we were testing for either a linear or a curvilinear (or U-shaped) relationship.

First, in order to test the relationship between overall reported interpersonal problems and PSWQ scores, we first entered the IIP-64 total scores, followed by the quadratic term (squared total scores), using the PSWQ as the dependent variable. We found that the linear model was the best fit for the data, $F(1,188) = 60.14, p < .001$ as the overall model became non-significant once the quadratic term was entered. Specifically, the IIP-64 total score predicted PSWQ scores, $\beta = .221, t = 7.76, p < .001$ (see Figure 1). Next, we ran the same analyses using GAD-Q-IV scores as the dependent variable. Again, we found that the linear model was the best fit for the data, $F(1,188) = 41.70, p < .001$. Specifically, the IIP-64 total score predicted GAD-Q-IV scores, $\beta = .043, t = 6.46, p < .001$. Together, these findings suggest that there is an overall pattern for participants with greater worry to report higher levels of overall interpersonal problems, and no curvilinear relationship.

We next tested for a relationship between worry and overall scores on the IMI-IIA (specific quadrants as well as the overall affiliation/control scales), the SSQ-6 total, and the FQQ (FQQ-I and FQQ-C scales). We found no significant relationship between these overall scores and worry, suggesting that they are not clear predictors of worry levels.

Calculating Discrepancy Scores

In order to determine over- and underestimation of interpersonal problems, discrepancy scores were calculated for each measure. For the FQQ (FQQ-I and FQQ-C scales) and the SSQ questionnaires, each participant's score on the surveys were subtracted from friend's scores to determine the level of discrepancy between friends in evaluating their relationship. For the IIP-64, discrepancy was calculated by subtracting how the friend rated the participant from how the participant rated themselves in terms of specific interpersonal problems.

Worry and Discrepancy Within Friendship Dyads

To test Hypotheses 1 and 2, we aimed to determine whether there was a linear versus curvilinear relationship between discrepant reports of interpersonal problems within friendship dyads and worry. A curvilinear relationship would suggest that over- and underestimation of negative interpersonal impact would increase as worry increases, whereas a linear relationship would suggest that only overestimation increases with worry (or only under-estimation increases). In order to test for these relationships, we again used hierarchical multiple regression. We first entered the discrepancy score, followed by the quadratic term (squared discrepancy score) for each of our interpersonal measures, using the PSWQ and GAD-Q-IV as the dependent variables.

We first looked at the IIP-64 discrepancy scores. There was no relationship between discrepancy scores on the overall IIP-64 ($p > .05$). We therefore looked within each of the 8 quadrants of measure. We first examined the hostile-submissive (FG) quadrant given this was the quadrant in which Erickson and Newman (2007) found a curvilinear relationship. For the IIP-64-FG, we found that the linear model was significant $F(1,188) = 19.42, p < .001$, but the overall model became non-significant once the quadric term was entered. Specifically, the IIP-64-FG

discrepancy score predicted PSWQ scores, $\beta = .63$, $t = 4.41$, $p < .001$ (see Figure 2). For the GAD-Q-IV, we found that the linear model was significant $F(1,188) = 9.57$, $p < .001$, but the overall model again became non-significant once the quadric term was entered. Specifically, the IIP-64-FG discrepancy score predicted GAD-Q-IV scores, $\beta = .103$, $t = 3.09$, $p < .001$. Given these findings, we determined that a positive linear relationship exists between IIP-64-FG discrepancy scores and worry, suggesting that the tendency to over-report one's hostile-submissive impact on others was predictive of greater worry levels.

We then looked at other quadrants within the IIP-64. We found that discrepancy scores also significantly predicted PSWQ scores for the vindictive (BC), cold (DE), submissive (HI), exploitable (JK), and overly-nurturant (LM) quadrants of the IIP-64. In each of these analyses, it was determined that a linear model, as opposed to a curvilinear model, was the best fit for our data (see Table 1). We also found that discrepancy scores significantly predicted GAD-Q-IV scores for the vindictive (BC) and cold (DE) quadrants of the IIP-64. In both of these analyses, it was also determined that a linear model, was the best fit for our data (see Table 2).

Next, we looked at the discrepancy scores on the FQQ-I and the FQQ-C scales. There was no relationship between worry and discrepancy scores on the FQQ-C ($p > .05$). However, there was a relationship between worry and discrepancy scores on the FQQ-I. For the FQQ-I, we found that the linear model was significant $F(1,188) = 7.23$, $p < .01$, but the overall model became non-significant once the quadric term was entered. Specifically, the FQQ-I discrepancy score predicted PSWQ scores, $\beta = .295$, $t = 2.69$, $p < .01$ (see Figure 3). However, the FQQ-I was not significantly associated with GAD-Q-IV scores. Finally, we found no relationship between the SSQ-6 and worry levels.

Discussion

As outlined above, numerous studies have identified a link between GAD and heightened interpersonal problems, such that these individuals may lack awareness of the impact they have on others (e.g., Eng & Heimberg, 2006; Erickson & Newman, 2007; Newman et al., 2004). Before the current study, this link had been explored in terms of overall discrepancy levels of reported problems between persons with GAD and their friends (Eng & Heimberg), and specific differences in ratings of interpersonal interactions with a confederate (Erickson & Newman). The aim of the current study was to replicate and extend previous findings by examining specific differences in perceived interpersonal impact within friendship dyads in relation to worry. Specific hypotheses for the current study were that: 1) there would be a positive linear relationship between level of overestimation and worry, as found in Eng and Heimberg; or 2) that there would be a curvilinear relationship between discrepancy and worry, in that both over- and underestimation of interpersonal problems would increase as worry levels increase, as found in Erickson and Newman.

First, the current study replicated previous research findings in that higher levels of worry were associated with higher levels of reported interpersonal problems on the overall IIP-64. However, when looking at overall scores on the IMI-IIA, SSQ-6, and FQQ, no significant relationship with worry was found. This suggests that worry is not playing a role in how people estimate overall friendship quality, social support, and feelings evoked during a social interaction with their friend.

In terms of specific hypotheses about discrepancies within friendship dyads, the current study found support for Hypothesis 1, in that a positive linear relationship was found between level of *over*-estimation of interpersonal problems and worry, such that higher levels of overestimation increased as worry levels increased. Specifically, higher worry levels were

associated with overestimation of one's hostile-submissive, vindictive, cold, submissive, exploitable, and overly nurturing impact on the identified friend. Additionally, higher worry levels were associated with overestimation of overall levels of irritation in the friendship. Because a linear relationship was found to fit the data better than a curvilinear relationship, Hypothesis 2 was not supported.

Comparison with Eng and Heimberg (2006)

The current study replicates Eng and Heimberg's (2006) findings in that we both found a positive linear relationship between overestimation of reported interpersonal problems and worry. However, Eng and Heimberg did not look at specific quadrants of the IIP-64 and just examined overall interpersonal problems. Additionally, Eng & Heimberg did not measure discrepancies within specific friendship dyads, but instead looked at overall differences between individuals with GAD and friends of these individuals. The current study is an extension of Eng and Heimberg's study as we examined specific quadrants of the IIP-64 and additionally found overestimation of specific interpersonal problems within specific friendship dyads. Again, findings show that for individuals high in worry, their friends are not supporting their beliefs about the type of interpersonal problems they report in their interactions.

Comparison with Erickson and Newman (2007)

Because Hypothesis 2, based on Erickson and Newman's (2007) findings, was not supported, several differences can be drawn between the current study and Erickson and Newman's study. First, Erickson and Newman found both over- and underestimation of the hostile-submissive impact as worry increases, whereas we only found overestimation to be associated with worry. Second, we also found a positive linear relationship between overestimation and worry in the additional quadrants of the IIP-64, including vindictive, cold,

submissive, and overly nurturant interpersonal problems. It is possible that we found only overestimation to be associated with worry due to some specific methodological differences. For instance, Erickson and Newman used a confederate to produce a social interaction whereas we had participants chose a friend to participate in the study with them. Therefore, the current study looked at a different way of interacting because it examined friends who already knew each other on a more personal level than a confederate would. Also, friends tend to select one-another. It is therefore possible that this increased closeness could lead to friends describing each other as having a more positive interpersonal impact than would a stranger. Additionally, whereas Erickson and Newman had subjects and confederates rate a single social interaction, we had participants rate their experience of their friends *overall*. Again, it is possible that this could lead to friends reporting an overall more positive experience of each other when all interactions are taken into consideration. Therefore, the most important finding is that individuals high in worry may be catastrophizing their experiences by believing they negatively impact their friends in a range problematic ways. However, this suggests the possibility that people with GAD may overestimate their negative impact on friends and may both over and under-estimate their negative impact on acquaintances.

Implications for Treatment

Given that findings show that individuals with high levels of worry tend to overestimate their negative impact in specific areas of interpersonal functioning, this suggests important implications for treatment. Importantly, these individuals see themselves as functioning in problematic ways, and individuals with specific types of interpersonal problems tend to respond differently to treatment (Alden & Capreol, 1993). For example, individuals who are hostile-dominant do not respond well to psychodynamic treatment due to the personality traits of being

narcissistic, displaying difficulty with intimacy, and being controlling (Strupp & Binder, 1984). On the other hand, individuals who are friendly-submissive may respond better to psychodynamic treatment as they have the personality characteristic of being more open to self-exploration in therapy sessions (Orlinsky, Grawe, & Parks, 1994). Additionally, both individuals who are hostile-dominant or friendly-submissive have different relationships with their therapists. Individuals who are hostile-dominant have a problem being on the same page as their therapist and agreeing with the therapist (Saunders, Howard, & Orlinsky, 1989) whereas individuals who are friendly-submissive have a positive productive relationship with their therapist (Orlinsky, 1994). Therefore, the extent to which individuals with GAD see themselves as fitting these criteria may influence their expectations in their relationship with their therapists, such as the way they perceive their interactions in therapy and/or respond to their therapists.

Equally important as identifying the appropriate approach to treatment for specific interpersonal problems, it is also important to tailor treatment to individuals' unique interpersonal problems (Foltz, Morse, & Barber, 1999). Individuals who perceive themselves as overly nurturant in their interpersonal problems are going to have different areas of focus during treatment than individuals who perceive themselves as hostile in their interpersonal problems.

Additionally, with the findings of the current study that people with high levels of worry tend to overestimate their interpersonal impact on others, treatment should focus on the ways these individuals catastrophize their interactions and the fact that their friends are not confirming these negative beliefs. Also, given that individuals with GAD do in fact experience more difficulty in interpersonal relationships, it is possible that these problems may not be due exclusively to having a rigid interpersonal style, but more the *belief* that one has this impact on others. Moreover, overestimation of these problems leads to difficulties with interpreting social

feedback (Erickson and Newman, 2007). As such, perhaps extant problems are the result of efforts to mend perceived rifts, and exacerbated by a refusal to incorporate feedback that they may in fact be exaggerating these problems. Therefore, treatment could usefully focus on helping these individuals to interpret social and interpersonal feedback more effectively.

Contribution to Field of Psychology

Before the current study was conducted, there were two opposing findings in the literature about level of estimation (either overestimation or both over- and underestimation) of interpersonal problems and their association with worry. The current study was conducted in order to better understand this association and learn how people who worry estimate their interpersonal problems. These current findings shed light on the relationship between overestimation of interpersonal problems and worry, and have important implications for treatment. Following these findings, future research could focus on why persons with GAD overestimate their interpersonal problems. Additionally, with finding overestimation of specific interpersonal problems (i.e. hostile submissive, vindictive, cold, submissive, exploitable, and overly nurturant), future research and treatment could better focus on the different types of interpersonal problems and overestimation. With such a high level of comorbidity between social phobia and GAD (Borkovec et al., 1995; Brawman-Mintzer et al., 1995; Newman et al., 2007), it is very important to better understand the relationship between estimation of interpersonal problems and worry such that people with GAD can begin to understand their interpersonal problems in that they tend to overestimate their negative interpersonal impact.

Limitations

A number of limitations in the study should be addressed. First, participants chose a friend to sign up with for the study. Therefore, it is possible that participants could have chosen a

friend who is more receptive and thus more likely to view them in a positive light (Eng and Heimberg, 2006). Some friends may choose not to see negative personality traits in their friend and because a relationship exists, the friends have a general mutual liking of each other. Also, friends may not be reporting interpersonal problems accurately due to a social desirability bias. However, given that individuals with GAD tend to have problems even in their close friendships, it was useful to understand the potential discrepancy within these relationships.

Second, we did not gather information regarding the duration of each participant's relationship with his or her friend. We assume that friends who have known each other longer also know each other better and on a more personal level, and that they are more likely to self-disclose more information with each other. However, Eng and Heimberg (2006) discuss that people who worry more may disclose less with their friend and therefore, their friend is not aware of their interpersonal problems. The lack of self-disclosure can be why people who worry perceived themselves to have greater interpersonal problems that their friends did not confirm. Self-disclosure is one of the most important aspects of a relationship (Derlega, Metts, Petronia, & Morgulis, 1993) and contributes to a sense of intimacy, which is essential to a relationship succeeding (Prager, 2000; Reis & Shaver, 1988). Additionally, self-disclosure is positively associated with relationship stability (Sprecher, 1987) and relationship satisfaction (Meeks, Hendrick, & Hendrick, 1998). Therefore, individuals who worry more and disclose less can have more problems in their interpersonal relationships. Future studies may want to include a measure of self-disclosure to help determine the type of relationship that exists between two friends.

Third, the study did not assess for potentially confounding disorders in participants. It is likely that a number of individuals with GAD also have another disorder (Breslau & Davis, 1985) and numerous studies have reported a high level of comorbidity between GAD and

depression (Kessler, DuPont, Berglund, & Wittchen, 1999; McGonagle, Liu, Swartz, & Blazer, 1996; Noyes, 2001). Just like individuals with GAD, individuals who are depressed have problems in their interpersonal relationships (Lewinsohn, Biglan, & Zeiss, 1976; Weissman & Paykel, 1974) and are less socially skillful (Lewinsohn, Weinstein, & Shaw, 1969; Libet & Lewinsohn, 1973). Furthermore, in a group interaction, individuals with depression were rated more negatively by others (Youngren & Lewinsohn, 1980). In a study conducted by Coyne (1976), participants interacted with individuals who were depressed or non-depressed on a telephone. Participants were more hostile and rejecting toward individuals who were depressed and less likely to want to interact with them in the future. Therefore, future studies should also include a measure of depression because individuals who are depressed might have a negative impact on interpersonal relationships.

Lastly, there were significantly more women in this study than men. A study conducted by Lippa (1995) found that men and women report different types of interpersonal problems. Specifically, men tend to report more interpersonal problems with being domineering, vindictive, and cold, whereas women tend to report more interpersonal problems with being exploitable, submissive, and overly nurturant. Additionally, women tend to focus on and invest in their interpersonal relationships (Crick & Zahn-Waxler, 2003) and to define themselves based on their close relationships (Cross and Madson, 1997). Therefore, future studies should attempt to have a good representation of both men and women to be able to take into account their different interpersonal problems and styles.

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problematic interpersonal behavior. *Journal of Abnormal Psychology*, 89, 333–341.

Table 1

IIP-64 Discrepancy Scores Predicting a Positive Linear Relationship with PSWQ Scores

IIP-64 Quadrant	<i>F</i> -value	β -value	<i>t</i> -value
Vindictive (BC)	20.41	.771	4.52
Cold (DE)	14.23	.624	3.78
Submissive (HI)	16.83	.508	4.10
Exploitable (JK)	11.42	.501	3.38
Overly nurturant (LM)	10.66	.482	3.27

Note. All *F*- and *t*-scores were significant at the $p < .01$ level.

Table 2

IIP-64 Discrepancy Scores Predicting a Positive Linear Relationship with GAD-I-IV Scores

IIP-64 Quadrant	<i>F</i> -value	β -value	<i>t</i> -value
Vindictive (BC)	16.87	.160	4.12
Cold (DE)	7.79	.106	2.79

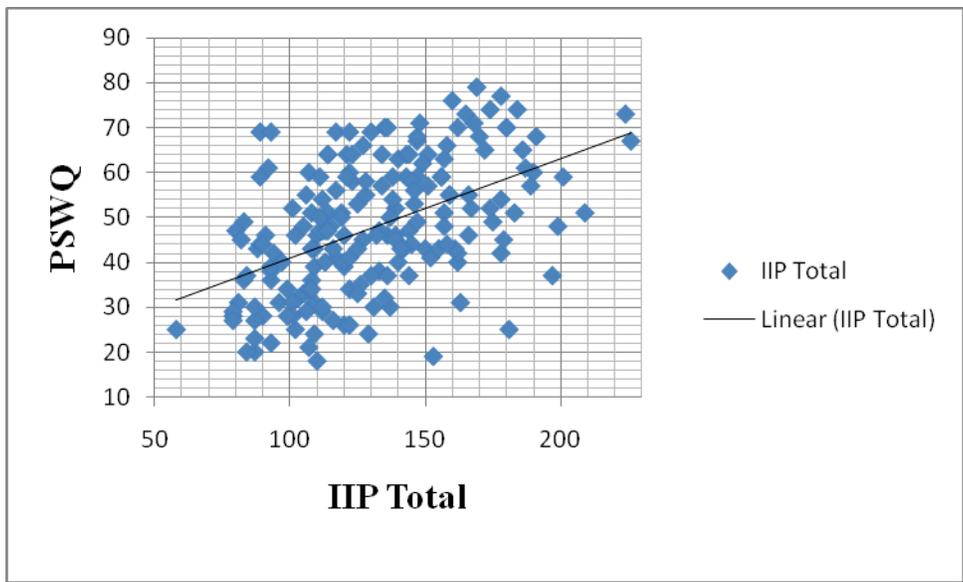
Note. All *F*- and *t*-scores were significant at the $p < .01$ level.

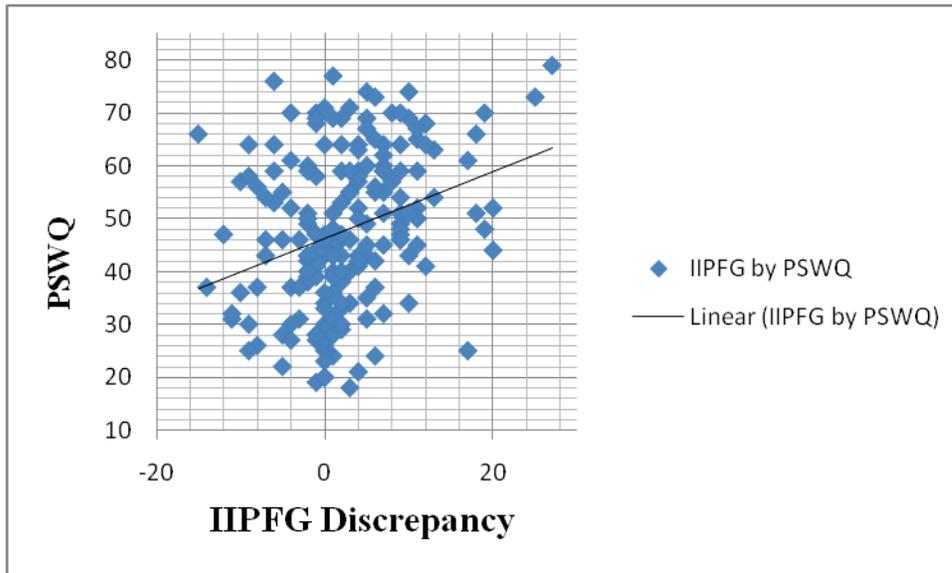
Figure Captions

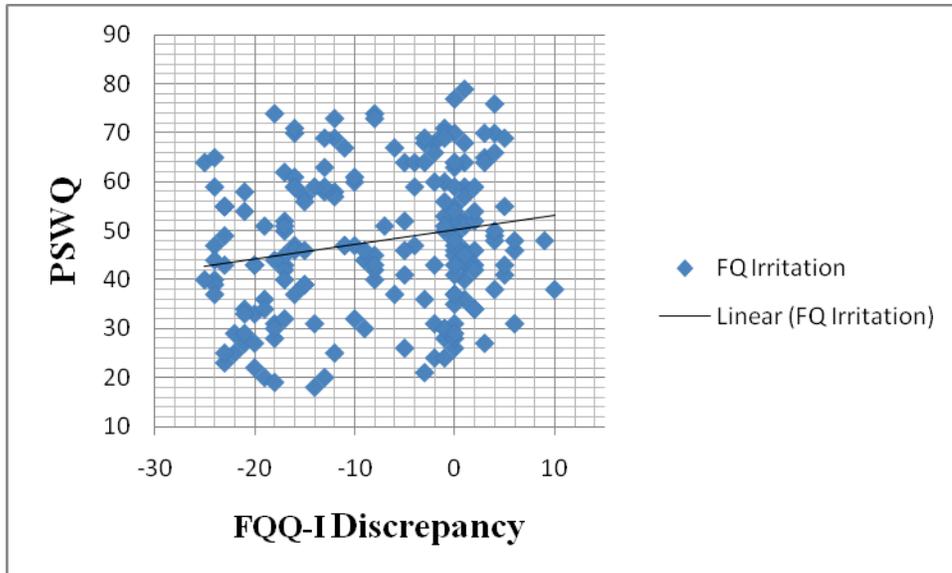
Figure 1. IIP-64 Total Scores Predicting PSWQ Scores.

Figure 2. IIP-64 Hostile-Submissive Discrepancy Scores Predicting PSWQ Scores.

Figure 3. FQQ-I Discrepancy Scores Predicting PSWQ Scores.







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Relevant Course Work

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Introduction to Abnormal Psychology

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Introduction to Cognitive Psychology

Research Methods in Psychology

Adolescent Psychology

Introduction to Clinical Psychology

Senior Seminar in Psychology: Psychology of Gender

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Rhetoric and Composition

Effective Writing: Writing in the Social Science

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Deptford Reach, London, England

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- Center that helps people rebuild lives that have been damaged by homelessness, mental illness, drug or alcohol abuse and social exclusion. Spoke with and wrote reports on the progression of people with various psychological disorders and problems to be placed in newsletters and the center's website. Worked reception and intake of incoming clients. Ran and organized social activities for the clients.

Lab of Michelle G. Newman, Ph.D., Director of Clinical Training, Pennsylvania State University

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Activities

Lion Ambassadors

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Dance Marathon

- 46 hour event raising \$7.49 million dollars for pediatric cancer. Member of the morale committee that is responsible for dancer safety and well-being. Committee member 2006-2009.

LEAP Mentor

- Six week summer program at Penn State. Led a group of 24 freshmen and helped to make their transition into Penn State easier. Summer 2007.

Fresh START Team Leader

- Largest day of service at Penn State for students new to Penn State. Led a group of 10 freshmen in a day of service. 2007-2008.