

Interpersonal correlates of generalized anxiety disorder: Self versus other perception[☆]

Winnie Eng^a, Richard G. Heimberg^{b,*}

^a College of Staten Island, The City University of New York, New York, NY, USA

^b Adult Anxiety Clinic, Department of Psychology, Weiss Hall, Temple University,
1701 North 13th Street, Philadelphia, PA 19122-6085, USA

Received 12 October 2004; received in revised form 20 December 2004; accepted 5 February 2005

Abstract

The present investigation examined the interpersonal functioning of undergraduate students who met self-report criteria for generalized anxiety disorder (GAD), both as they perceive it and as perceived by their self-nominated friends. Forty-eight participants who met self-report criteria for GAD endorsed greater global severity of interpersonal problems on the 64-item version of the Inventory of Interpersonal Problems [Horowitz, L. M., Alden, L. E., Wiggins, J. S., Pincus, A. L. (2000). *Inventory of Interpersonal Problems: Manual*. San Antonio, TX: The Psychological Corporation] than 53 control participants. However, friends of GAD participants did not attribute significantly greater interpersonal problems to them than did friends of control participants. GAD participants reported less secure attachment to their parents than control participants but reported similar levels of attachment to peers and perceived social support. Furthermore, there were no significant differences between the friends of the GAD participants and friends of the control participants on ratings of their friendships quality. Findings are discussed in the context of their relevance to the etiology, maintenance, and treatment of GAD.

© 2005 Elsevier Inc. All rights reserved.

Keywords: Generalized anxiety disorder; Worry; Friends; Interpersonal

[☆] The data reported herein come from the first author's doctoral dissertation, completed under the supervision of the second author.

* Corresponding author. Tel.: +1 215 204 1575; fax: +1 215 204 5184.

E-mail address: heimberg@temple.edu (R.G. Heimberg).

Recent studies suggest that persons with generalized anxiety disorder (GAD) may experience significant difficulties in interpersonal functioning. An examination of prevalent worry themes (Dugas, Gagnon, Ladouceur, & Freeston, 1998), comorbid social anxiety (Brown, Campbell, Lehman, Grisham, & Mancill, 2001), insecure attachment relationships (Cassidy, 1995; Zuellig, Newman, Kachin, & Constantino, 1997) and marital dissatisfaction (Whisman, Sheldon, & Goering, 2000) suggests the importance of this area of study. However, no published research to date has compared the interpersonal difficulties reported by persons with GAD to how they are perceived by others in their interpersonal world. The present study assessed how young men and women meeting self-reported criteria for GAD describe their current interpersonal difficulties. These data were compared to close friends' reports of participants' interpersonal problems and the perceived quality of their friendships. In addition, specific patterns of interpersonal relatedness, characterized by attachment orientation and perceived social support, were investigated as potential correlates of GAD. It was hypothesized that participants with self-reported GAD would show higher levels of interpersonal problems than non-anxious participants. Close friends were expected to describe the GAD group as having greater interpersonal problems than friends of persons in the control group, with accompanying negative evaluations of the quality of their friendship. It was also hypothesized that the GAD group would report lower levels of attachment security to both parents and peers than the non-anxious group based on previous research.

The sample consisted of 48 undergraduate psychology students classified as meeting criteria for GAD and 53 as controls on the basis of their self-report scores on the Generalized Anxiety Disorder Questionnaire for DSM-IV (GAD-Q-IV; Newman et al., 2002). Participants were also asked to provide consent and information towards recruiting a "close friend" to complete a confidential packet of questionnaires that was sent via postal mail. Only one friend per participant was recruited, and no specific instructions were given regarding whether the person should be a personal friend or romantic partner. Of the 67 friends who returned completed questionnaires, thirty-five were friends of GAD participants, and 32 were friends of control participants.

Participants also completed a battery of self-report questionnaires measuring the excessiveness, duration and uncontrollability of their worry (Penn State Worry Questionnaire, PSWQ; Meyer, Miller, Metzger, & Borkovec, 1990), their interpersonal functioning (Inventory of Interpersonal Problems: 64-item version, IIP-64, Horowitz, Alden, Wiggins, & Pincus, 2000), attachment security (Inventory of Parent and Peer Attachment; IPPA, Armsden & Greenberg, 1987), and perceived social support (Social Support Questionnaire-Six Item Version; SSQ-6, Sarason, Sarason, Shearin, & Pierce, 1987). Friends of the participants completed two self-report questionnaires. The IIP-64-Other is a modified version of the IIP-64 used to assess the friends' perception of the participants interpersonal difficulties. The Friendship Quality measure (adapted

from Berry, Willingham, & Thayer, 2000) assesses the importance (“Closeness”) and conflictual nature (“Irritation”) of their friendship with the participant.

There were no statistically significant differences between the GAD and control groups in terms of gender [$\chi^2(1, N = 101) = 1.39, p = .24$], age [$t(99) = -0.49, p = .63$], annual family income [$\chi^2(2, N = 100) = 3.76, p = .15$] or ethnicity [$\chi^2(1, N = 101) = 0.01, p = .94$]. The full participant sample included 101 students (70 female, 69.3%), with a mean age of 19.19 years. Fifty-three (52.5%) described themselves as Caucasian, 27 (26.7%) as African–American, 6 (5.9%) as Asian or Asian–American, 3 (3.0%) as Hispanic, and 12 (11.9%) as “mixed” or “other” ethnicity. No statistically significant differences were found between friend groups for gender [$\chi^2(1, N = 67) = 0.26, p = .61$]¹, annual family income [$\chi^2(2, N = 61) = 4.34, p = .12$], or ethnicity [$\chi^2(1, N = 62) = 0.28, p = .44$]. There were differences in age [$t(65) = -2.58, p = .01$]; GAD-friends were older [$M = 20.40, S.D. = 2.35$] than control-friends [$M = 19.12, S.D. = 1.58$]. To examine the possible contribution of age differences within the GAD-friends and control-friends, a series of Pearson product moment correlations were calculated between friend’s age and the dependent measures. All correlations were nonsignificant (r s ranging from -0.19 to 0.22), allowing further analyses to proceed without controlling for friend’s age. The full sample of 67 friends included 46 (68.7%) female students, with 45 (67.2%) describing themselves as Caucasian, 15 (22.4%) as African–American, 2 (3.0%) as Asian or Asian–American, and 2 (3.0%) as Hispanic, and 3 (4.5%) as “mixed” or “other” ethnicity.

An independent-sample t -test was performed to examine group differences in pathological worry. Group differences were found on the PSWQ [$t(99) = -9.01, p < .001$], with the GAD group scoring higher [$M = 58.79, S.D. = 9.18$] than the control group [$M = 39.94, S.D. = 11.56$]. PSWQ scores of the GAD group were similar to those of other GAD analogue samples (Molina & Borkovec, 1994) although they were somewhat below the cut-off score that most accurately classified treatment-seeking persons with GAD and community controls in a receiver operating characteristics analysis (Fresco, Mennin, Heimberg, & Turk, 2003). Scores of the current control group were similar to the community norms for the PSWQ provided by Ford, Gillis, and Haaga (1995).

To test the hypothesis that individuals with (self-reported) GAD would demonstrate more interpersonal problems than control participants, group differences on the IIP-64 total and subscale scores were examined via nine Bonferroni-corrected t -tests ($p = .05/9 = .0055$). As predicted, GAD participants showed higher scores on the overall measure of interpersonal problems, as well as on the Nonassertive, Overly Accommodating, Self-Sacrificing and Intrusive/Needy subscales of the IIP-64. Cohen’s (1977) d for these significant comparisons was moderate to large. Although not significant following the Bonferroni

¹ Degrees of freedom vary for demographic comparisons because of data missing from friends’ self-reports.

Table 1

Mean Inventory of Interpersonal Problems (IIP-64) total and subscale scores for GAD and control groups

| IIP-64 subscale | GAD, <i>n</i> = 48 | | Control, <i>n</i> = 53 | | <i>t</i> | <i>p</i> | <i>d</i> |
|----------------------|--------------------|-------|------------------------|-------|----------|----------|----------|
| | <i>M</i> | S.D. | <i>M</i> | S.D. | | | |
| Domineering | 53.08 | 12.24 | 50.96 | 9.45 | −0.98 | .330 | 0.19 |
| Vindictive | 53.90 | 11.00 | 50.40 | 7.49 | −1.88 | .063 | 0.38 |
| Cold | 51.79 | 8.77 | 50.43 | 9.11 | −0.76 | .448 | 0.15 |
| Socially Inhibited | 58.44 | 14.16 | 52.25 | 8.97 | −2.65 | .009 | 0.53 |
| Nonassertive | 59.08 | 12.64 | 51.26 | 10.83 | −3.35 | .001 | 0.67 |
| Overly Accommodating | 59.19 | 11.25 | 47.21 | 10.20 | −5.61 | <.001 | 1.13 |
| Self-Sacrificing | 58.29 | 10.58 | 47.08 | 8.53 | −5.88 | <.001 | 1.18 |
| Intrusive | 55.85 | 10.73 | 49.58 | 8.84 | −3.22 | .002 | 0.65 |
| Total | 57.83 | 9.79 | 49.77 | 8.91 | −4.33 | <.001 | 0.87 |

Note: GAD, generalized anxiety disorder, d.f., 99. Cohen's (1977) *d* effect size conventions, small = 0.20, medium = 0.50, large = 0.80.

correction ($p = .009$), the GAD group also reported higher scores than the control group on the Socially Inhibited subscale. This difference corresponds to a moderate effect (see Table 1).

The GAD group was hypothesized to report less satisfaction with, but not necessarily a fewer number of, social supports than the control group. An independent-sample *t*-test revealed no group differences on the SSQ-number of friends scale [GAD: $M = 4.13$, S.D. = 1.86; control: $M = 4.07$, S.D. = 1.52; $t(99) = -0.17$, $p = .87$]. Contrary to prediction, a Mann–Whitney *U*-test² on the SSQ-satisfaction scale also failed to reveal group differences [GAD: median = 5.25, $M = 5.07$, S.D. = 0.80; control: median = 5.33, $M = 5.23$, S.D. = 0.71; $z = -1.21$, $p = .23$].

Group differences were found for IPPA-parent security scores [$t(96) = 2.47$, $p = .02$], with the GAD group scoring lower [$M = 92.57$, S.D. = 24.12] than the control group [$M = 104.04$, S.D. = 21.84]. However, no differences were found for IPPA-peer security scores [$t(97) = 0.33$, $p = .74$].

To assess the degree of interpersonal problems the participants exhibited to others, group differences on total and subscale scores of the IIP-64-Other were examined via nine Bonferonni-corrected *t*-tests ($p = .05/9 = .0055$). Ratings of interpersonal problems by friends of the GAD participants were not significantly different from those reported by friends of the control participants, and effect sizes for these differences were small (Table 2).

² Preliminary analyses investigating the normality of the distribution of SSQ-satisfaction scale scores showed that they were not normally distributed (i.e., they were negatively skewed and leptokurtic). Thus, the non-parametric Mann–Whitney *U*-test was used to examine group differences on this subscale.

Table 2

Mean Inventory of Interpersonal Problems (IIP-64) total and subscale scores for GAD-friend and control-friend groups

| IIP-64 subscale | GAD-friends, <i>n</i> = 35 | | Control-friends, <i>n</i> = 32 | | <i>t</i> | <i>p</i> | <i>d</i> |
|----------------------|-------------------------------|-------|-----------------------------------|-------|----------|----------|----------|
| | <i>M</i> | S.D. | <i>M</i> | S.D. | | | |
| Domineering | 54.26 | 12.63 | 55.13 | 12.16 | 0.29 | .78 | 0.07 |
| Vindictive | 57.00 | 11.34 | 52.69 | 8.93 | −1.72 | .09 | 0.43 |
| Cold | 57.46 | 12.19 | 53.03 | 10.82 | −1.57 | .12 | 0.39 |
| Socially Inhibited | 55.26 | 10.36 | 51.88 | 9.08 | −1.42 | .16 | 0.35 |
| Nonassertive | 57.89 | 10.45 | 52.56 | 11.42 | −1.99 | .05 | 0.49 |
| Overly Accommodating | 54.40 | 10.23 | 51.47 | 10.49 | −1.16 | .25 | 0.29 |
| Self-Sacrificing | 54.17 | 9.01 | 50.66 | 10.60 | −1.47 | .18 | 0.36 |
| Intrusive | 55.69 | 9.74 | 53.88 | 11.83 | −0.69 | .50 | 0.17 |
| Total | 57.26 | 9.68 | 53.13 | 9.950 | −1.72 | .09 | 0.43 |

Note: GAD, generalized anxiety disorder, d.f., 65. Cohen's (1977) *d* effect size conventions, small = 0.20, medium = 0.50, large = 0.80.

No significant differences were found between the friend groups on the brief measure of friendship quality (FQ) [Closeness: $t(65) = -0.86$, $p = .39$; Irritation: $t(65) = -0.22$, $p = .83$].

The current study found that participants with self-reported GAD endorsed greater global severity of interpersonal problems than control participants, as well as being more distressed by problems of nonassertiveness, over-accommodation, self-sacrificing behaviors, and intrusiveness or neediness. They also reported marginally greater problems with social inhibition. A closer look at the IIP-64 items reveals that participants felt a subjective sense of being exploitable and helpless, endorsing difficulties being firm with people and letting others know that they are angry for fear of hurting other people's feelings. They reported low self-esteem and a preference not to risk other people's disapproval. They wanted to be close to others but tended to become compliant and deferential in relationships. These interpersonal styles are likely to elicit additional negative emotional experiences, which may further challenge the individual's ability to modulate or express their own affect, needs, or fears (Mennin, Turk, Heimberg, & Carmin, 2004). Furthermore, the intrusiveness and neediness endorsed by the GAD participants, which may be characterized as more friendly-dominant behaviors, indicate that they want to be close to others but may try too hard to be intimately involved in another person's life. GAD participants reported that they have poor interpersonal boundaries, putting other's needs before their own and feeling too responsible for other people's problems. This is consistent with the findings of Pincus and Borkovec (1994), who reported an overly nurturant and intrusive subset of GAD patients in a cluster analysis.

Given the high comorbidity between GAD and social anxiety disorder (Brown et al., 2001), it was surprising to see that the participants did not report greater social inhibition than the controls. The IIP-64 social inhibition subscale taps

difficulties initiating and joining social activities as well as fears of social embarrassment. It is likely that the analog nature of the present sample accounts for the report of relatively mild subjective social fears and related interpersonal problems. A follow-up study comparing the social fears and interpersonal contexts of individuals with GAD to those with social anxiety is currently underway to more fully understand the unique interpersonal experiences of individuals with GAD.

Analyses were conducted to incorporate concepts from attachment theory in the examination of GAD participants' interpersonal difficulties. According to Bowlby (1969) and Ainsworth, Blehar, Waters, and Wall (1978), children's and adolescent's dyadic-parental relationships strongly influence their internal views of the world, which, in turn, influence their ability to relate to others. As hypothesized, the GAD group reported less security of attachment to parents than the control group, marked by lower levels of trust, poorer communication, and greater feelings of alienation. However, contrary to expectations, there were no differences in security of attachment to peers. Furthermore, the GAD and control groups reported similar number and quality of social supports. Although insecure attachment to parents is theoretically consistent with worry symptoms, it does not appear to reduce the degree of social support reported by GAD participants.

Close friends of the participants were invited to provide information on the quality of their relationship with the participants and on the perceived interpersonal difficulties of the participants. Contrary to our hypothesis, friends of GAD and control participants perceived their relationships to be similarly close and relatively unmarked by irritation. Although the GAD participants reported having greater interpersonal difficulties than the control participants, their friends did not find their behaviors to be more problematic than did friends of the control participants.

Given that a majority of GAD patients have been reported to worry about relationships (Dugas et al., 1998), these results may be seen as surprising. However, there are several possible interpretations of the findings that GAD participants perceived themselves to have greater difficulties than controls while the friends of both groups did not differ in this way. One possible conclusion is that participants with GAD have less insight into others' reactions, holding more "unrealistic" views of themselves than their friends do. They may ruminate over the quality of their relationship and worry that their problematic behaviors may have a negative impact on the relationship. An alternative explanation is that the GAD participants may have shared less of themselves with their friends. Thus, they may have experienced problems in interpersonal relationships, but their friends may never have been made aware of these problems. A third possibility is that GAD participants and their close friends engage (as all friends do) in a range of complementary interpersonal responses, adopted to maintain a homeostatic relationship. These responses may be mutually reinforcing, such that the participant who exhibits friendly and submissive behavior may have a close friend who gives more dominating advice and support, further eliciting and reinforcing

submissive behavior. Ultimately, it will be important to examine the interpersonal styles and problems of the friends as well as the participants to test this theory of complementarity.

It is important to stress the preliminary nature of this study. These results are clearly limited by the cross-sectional design and use of a student sample who may have a shorter history of interpersonal relationships than many community or clinical samples. Interpersonal patterns and psychopathology of friends were not assessed, and participants may have chosen friends who were more receptive or more likely to view them in a positive light. Follow-up research employing multiple methods of assessment of interpersonal behavior, such as observational studies with objective raters, is warranted. Furthermore, since no other comparison groups were utilized, the patterns reported may not be specific to GAD.

The results of the present study are encouraging, as it appears likely that individuals with GAD have the resources to form close friendships that are valuable for both partners. Explorations of disrupted relationships with parents as well as a view of the self as overly accommodating should be fruitful. Hopefully, the efforts of clinicians working with GAD clients will continue to be informed and enhanced by ongoing research on interpersonal processes.

References

- Ainsworth, M. D., Blehar, M. C., Waters, E., & Wall, S. (1978). *Patterns of attachment: A psychological study of the strange situation*. Hilldale, NJ: Erlbaum.
- Armsden, G. C., & Greenberg, M. T. (1987). The Inventory of Parent and Peer Attachment: Individual differences and their relationship to psychological well-being in adolescence. *Journal of Youth and Adolescence*, 16, 427–545.
- Berry, D. S., Willingham, J. K., & Thayer, C. A. (2000). Affect and personality as predictors of conflict and closeness in young adults' friendships. *Journal of Research in Personality*, 34, 84–107.
- Bowlby, J. (1969). *Attachment and Loss, Attachment* (vol. 1). New York: Basic Books.
- Brown, T. A., Campbell, L. A., Lehman, C. L., Grisham, J. R., & Mancill, R. B. (2001). Current and lifetime comorbidity of the DSM-IV anxiety and mood disorders in a large clinical sample. *Journal of Abnormal Psychology*, 110, 585–599.
- Cassidy, J. (1995). Attachment and generalized anxiety disorder. In: D. Cicchetti, & S. Toth (Eds.), *Rochester symposium on developmental psychopathology: Emotion, cognition and representation* (pp. 343–370). Rochester, NY: University of Rochester Press.
- Cohen, J. (1977). *Statistical power analysis for the behavioral sciences*. New York: Academic Press.
- Dugas, M. J., Gagnon, F., Ladouceur, R., & Freeston, M. H. (1998). Generalized anxiety disorder: A preliminary test of a conceptual model. *Behaviour Research and Therapy*, 36, 215–226.
- Ford, G. T., Gillis, M. M., & Haaga, D. A. (1995). Normative values for the Beck Anxiety Inventory, Fear Questionnaire, Penn State Worry Questionnaire, and Social Phobia and Anxiety Inventory. *Psychological Assessment*, 7, 450–455.
- Fresco, D. M., Mennin, D. S., Heimberg, R. G., & Turk, C. L. (2003). Using the Penn State Worry Questionnaire to identify individuals with generalized anxiety disorder: A receiver operating characteristic analysis. *Journal of Behavior Therapy and Experimental Psychiatry*, 34, 285–293.
- Horowitz, L. M., Alden, L. E., Wiggins, J. S., & Pincus, A. L. (2000). *Inventory of Interpersonal Problems: Manual*. San Antonio, TX: The Psychological Corporation.

- Mennin, D. S., Turk, C. L., Heimberg, R. G., & Carmin, C. (2004). Regulation of emotion in generalized anxiety disorder. In: M. A. Reinecke, & D. A. Clark (Eds.), *Cognitive therapy over the lifespan: Evidence and practice* (pp. 60–89). New York: Cambridge University Press.
- Meyer, T. J., Miller, M. L., Metzger, R. L., & Borkovec, T. D. (1990). Development and validation of the Penn State Worry Questionnaire. *Behaviour Research and Therapy*, 28, 487–495.
- Molina, S., & Borkovec, T. D. (1994). The Penn State Worry Questionnaire: Psychometric properties and associated characteristics. In: G. C. L. Davey, & F. Tallis (Eds.), *Worrying: Perspectives on theory, assessment and treatment* (pp. 265–283). Chichester, UK: John Wiley & Sons.
- Newman, M. G., Zuellig, A. R., Kachin, K. E., Constantino, M. J., Przeworski, A., Erickson, T., et al. (2002). Preliminary reliability and validity of the Generalized Anxiety Disorder Questionnaire-IV: A revised self-report diagnostic measure of generalized anxiety disorder. *Behavior Therapy*, 33, 215–233.
- Pincus, A. L., & Borkovec, T. D. (1994, June). *Interpersonal problems in generalized anxiety disorder: Preliminary clustering of patients' interpersonal dysfunction*. Paper presented at the annual meeting of the American Psychological Society, New York.
- Sarason, I. G., Sarason, B. R., Shearin, E. N., & Pierce, G. R. (1987). A brief measure of social support: Practical and theoretical implications. *Journal of Social and Personal Relationships*, 4, 497–510.
- Whisman, M. A., Sheldon, C. T., & Goering, P. (2000). Psychiatric disorders and dissatisfaction with social relationships: Does type of relationship matter? *Journal of Abnormal Psychology*, 109, 803–808.
- Zuellig, A. R., Newman, M. G., Kachin, K. E., & Constantino, M. J. (1997, November). *Differences in parental attachment profiles in adults diagnosed with generalized anxiety disorder, panic disorder, or non-disordered*. Paper presented at the annual meeting of the Association for the Advancement of Behavior Therapy, Miami, FL.