

Quality of life in the anxiety disorders: A meta-analytic review

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Abstract

There has been significant interest in the impact of anxiety disorders on quality of life. In this meta-analytic review, we empirically evaluate differences in quality of life between patients with anxiety disorders and nonclinical controls. Thirty-two patient samples from 23 separate studies ($N=2892$) were included in the analysis. The results yielded a large effect size indicating poorer quality of life among anxiety disorder patients vs. controls and this effect was observed across all anxiety disorders. Compared to control samples, no anxiety disorder diagnosis was associated with significantly poorer overall quality of life than was any other anxiety disorder diagnosis. Examination of specific domains of QOL suggests that impairments may be particularly prominent among patients with post-traumatic stress disorder. QOL domains of mental health and social functioning were associated with the highest levels of impairment among anxiety disorder patients. These findings are discussed in the context of future research on the assessment of quality of life in the anxiety disorders.

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Keywords: Quality of life; Anxiety disorders; Health; Social functioning; Family; Work; Meta-analysis

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Epidemiological research suggests that anxiety disorders have the highest overall prevalence rate among psychiatric disorders, with a 12-month rate of 18.1% and a lifetime rate of 28.8% (Kessler, Berglund et al., 2005; Kessler, Chiu, Demler, & Walters, 2005). The estimated costs associated with anxiety disorders in 1990 were \$46.6 billion, accounting for 31.5% of total expenditures in that year for mental health (DuPont et al., 1996). In addition to the high prevalence and high cost of the anxiety disorders, anxiety disorders have a substantial negative impact on quality of life (QOL; Gladis, Gosch, Dishuk, & Crits-Christoph, 1999; Mendlowicz & Stein, 2000). QOL, broadly defined, refers to aspects of life that make it fulfilling and worthwhile and extends beyond anxiety symptoms themselves to include patients' subjective well-being and life satisfaction (Angermeyer & Kilian, 1997). Accordingly, the assessment of QOL in the anxiety disorders incorporates patients' subjective views of their life circumstances including perceptions of mental health, physical health, social and family relationships, functioning at work, and functioning at home (DuPont et al., 1996).

Although investigations of QOL in anxiety disorders remain less frequent than investigations of QOL in other disorders (Hansson, 2002), there is evidence of marital and financial problems in patients with panic disorder (Weissman, 1991), impairment in education and relationships in patients with social phobia (Schneier et al., 1994; Stein & Kean, 2000), high rates of public financial assistance and diminished subjective well-being in patients with post-traumatic stress disorder (PTSD; Warshaw, Fieman, Pratt, & Hunt, 1993; Zatzick et al., 1997), role limitations in patients with obsessive–compulsive disorder (OCD; Hollander, Kowan, Stein, & Broatch, 1996; Koran, Thienemann, & Davenport, 1996), and high rates of divorce and disability in patients with generalized anxiety disorder (GAD; Blazer, Hughes, George, Swartz, & Boyer, 1991). These findings suggest that anxiety disorders negatively impact many functional areas that may contribute to QOL. The impact of anxiety disorders on QOL also appears to be robust in that it is independent of symptom severity, demographic variables, somatic health, and diagnostic comorbidity (Cramer, Torgersen, & Kringlen, 2005; Markowitz, Wiessman, Ouellette, Lish, & Klerman, 1989; Rapaport, Clary, Fayyad, & Endicott, 2005; Strine, Chapman, Kobau, & Balluz, 2005).

Few studies have compared differences in QOL between the anxiety disorders. Although it has been suggested that overall QOL is most compromised in patients with panic disorder and PTSD (Hansson, 2002), there is some evidence indicating that different anxiety disorders impact some domains of QOL differentially. Previous studies have highlighted specific impairment in vitality, physical health, and mental health among individuals with PTSD (Schonfeld et al., 1997), physical health and nonprescription drug use for individuals with panic disorder (Lochner et al., 2003; Schonfeld et al., 1997), family life and activities of daily living in individuals with OCD (Lochner et al., 2003), and social and leisure activities, relationships, and activities outside occupation among individuals with social phobia (Lochner et al., 2003; Quilty, Ameringen, Mancini, Oakman, & Fervolden, 2003).

Epidemiological and clinical studies demonstrating the negative impact of anxiety disorders on QOL continue to accumulate. As a result, there is a clear need for succinct reviews of this vast body of literature. Numerous qualitative reviews of published studies examining the impact of anxiety disorders on QOL have been offered. For example, Mendlowicz and Stein (2000) reviewed studies (obtained via MEDLINE and PsycLIT citations from 1984 to 1999) that have investigated QOL in patients with panic disorder, social phobia, PTSD, GAD, and OCD and concluded that the anxiety disorders significantly compromise QOL. Other qualitative reviews of QOL in anxiety disorders have reached similar conclusions (e.g., Maddux, Delrahim, & Rapaport, 2003; Mogotsi, Kaminer, & Stein, 2000; Schneier & Pantol, 2006). However, to our knowledge, there has not been an attempt to quantify this literature. A quantitative description of this literature could allow for stronger inferences to be made regarding the impact of anxiety disorders on QOL. A quantitative analysis of this literature could also be a useful starting point for making more meaningful comparisons of QOL between anxiety disorders and other psychiatric conditions. Thus, the present study offers a meta-analysis of the literature on the impact of anxiety disorders on QOL. Specifically, anxiety disorder patients are compared with nonclinical controls on overall QOL. The different anxiety disorder diagnoses are also compared on specific QOL domains. Lastly, we examine differences in each QOL domain collapsing across the anxiety disorders. It was predicted that anxiety disorder patients would report significantly more deficits in mental health than other QOL domains.

1. Methods

1.1. Selection of studies

We identified appropriate studies by conducting searches in both PsychINFO and PubMed in June, 2006. We conducted 6 separate searches in each database and limited the search criteria to words that appeared in the title of the

study. The searches were: 1) “social phobia” and “quality of life,” 2) “panic disorder” and “quality of life,” 3) “post-traumatic” and “quality of life”; “PTSD” and “quality of life,” 4) “generalized anxiety” and “quality of life,” 5) “obsessive compulsive” and “quality of life”; “OCD” and “quality of life,” and 6) “anxiety” and “quality of life.” These search procedures identified 67 unique (i.e., not overlapping between the separate searches or databases) studies. Studies were excluded if they were not printed in English, were not empirical (i.e., a review), and did not utilize a measure that was explicitly referred to as a measure of QOL. Studies were also excluded from the meta-analysis if there was no diagnosis of an anxiety disorder or the diagnosis was not clearly defined, means and SD were not provided, not able to be calculated from data provided, or not provided after contacting the corresponding author. As outlined in Table 1, these criteria limited the original 67 studies down to 23 studies consisting of thirty-two distinct patient samples with 2892 participants. Seventeen of these patient samples were not matched to a nonclinical control sample within the same study; for these, the nonclinical control samples from the original normative studies of the measure were used. Across patient samples, 61.1% were female, with a mean age of 39.70 (SD=9.75) years; across control samples, 58.8% were female, with a mean age of 40.32 (SD=8.80) years. Neither age nor sex differed between patient and control samples, p 's > .05.

1.2. Data analytic methods

Data were analyzed using Comprehensive Meta-Analysis v.2.2 software. For each comparison of a patient vs. control sample, we calculated Cohen's d . A d value of 0.0 indicates no difference between patient and control samples; conventionally, 0.2, 0.5, and 0.8 are taken to represent small, medium, and large effects, respectively (Cohen, 1988). We also calculated the 95% confidence interval (CI), statistical significance (p), and within-group heterogeneity (Q_{within}) for each effect size estimate. Effect size estimates are considered significantly different from one another when their 95% CI's do not overlap; for additional clarification of differences between effect size estimates, we calculated the mixed-effects between-group heterogeneity (Q_{between}). An initial test of homogeneity of variance indicated heterogeneity across samples, $Q_{\text{within}}(34)=207.08$, $p < .001$; therefore, random-effects models were used.

Studies varied greatly according to sample size (patient groups ranged in size from 11–521); this creates a risk that a small, outlying sample will exert disproportionate influence over the mean effect size. In order to minimize this risk, we weighted effect size estimates by sample size (Rosenthal, 1991).

To test the so-called “file drawer effect” (the probability that unpublished null results would eliminate the obtained results), for each significant result we computed the “fail-safe N ” (FSN) or the number of null results that would be needed to overturn a significant result. For the present analyses, we examined the number of studies that would make $p > .05$. Generally, if the FSN is greater than or equal to 5 times the number of studies in the analysis plus 10 (FSN > $5k + 10$), the obtained results are considered robust against the file drawer effect (Rosenthal, 1991).

Many studies provided scores on several measures of QOL, or several subscales of a QOL measure. To minimize the likelihood that studies with multiple data points would exert a disproportionate influence over the total results, we calculated the mean score for each sample. Therefore, a study of 5 QOL measures for panic disorder patients and controls would yield 1 effect size estimate (the mean effect size for panic disorder patients vs. controls). A study of 5 QOL measures for panic disorder patients, OCD patients, and controls would yield 2 effect size estimates (the mean effect size for panic disorder patients vs. controls, and the mean effect size for OCD patients vs. controls). This left 33 patient samples, each of which was associated with an average effect size estimate vs. a nonclinical control group.

Because we were also interested in examining whether anxiety disorders were associated with greater difficulty in specific aspects of QOL, we also categorized QOL subscales into 5 categories: (a) physical health, (b) mental health, (c) work, (d) social, and (e) home and family. Categorization was conducted by the first and last author, with discrepancies resolved until there was 100% agreement. QOL subscales not fitting one of these categories were excluded from this analysis (although they were used in the overall analyses described above). If two or more QOL subscales from the same study using the same patient sample fit into the same category, these were averaged. Therefore, a study of panic disorder patients with 2 physical health subscales and 1 mental health subscale would yield 2 effect size estimates, 1 for physical health and 1 for mental health. A study of panic disorder and OCD patients with 2 physical health subscales and 1 mental health subscale would yield 4 effect size estimates (the mean

Table 1
Study, anxiety disorder, sample size, and QOL measure used for each study included in the meta-analysis

Study sampled	Anxiety disorder	<i>N</i> for anxiety group	<i>N</i> for control group	QOL measure
Akdede, Alptekin, Akvardar, and Kitis, (2005)	OCD	23	22	Quality of Life Scale Brief Form
Bobes et al. (2001)	OCD	36	9151	SF-36
Bourland et al. (2000)	GAD	59	19	Quality of Life Inventory Life Satisfaction Index
Candilis et al. (1999)	Panic	73	3251	SF-36
Eguchi et al. (2005)	Panic	50	–	SF-12
Eng, Coles, Heimberg, and Safren (2001)	Social phobia	25	–	Quality of Life Inventory
Ettigi, Meyerhoff, Chirban, Jacobs, and Wilson (1997)	Panic	84	2474	SF-36
Grabe et al. (2000)	OCD	15	3958	Satisfaction with Life Scale
	Subclinical OCD	51	–	–
Hollifield, Katon, Skipper, and Chapman (1997)	Panic	62	61	SF-36
Jacobs, Davidson, Gupta, and Meyerhoff (1997)	Panic	69–73	–	SF-36
Jones, Ames, Jeffries, Scarinci, and Brantley (2001)	GAD	41	164	SF-36
Koran et al. (1996)	OCD	60	2474	SF-36
Lochner et al. (2003)	OCD	123	–	Disability Profile
	Social phobia	49	–	Leibowitz Self-rating
	Panic	46	–	Disability Scale
				Social Adjustment Scale
Luo, Fones, Thumboo, and Li (2004)	Any	119	–	SF-36
Meeske, Ruccione, Globe and Stuber (2001)	PTSD	11	39	SF-36
Owen et al. (1997)	Panic	69	–	SF-36
Paunovic and Öst (2004)	PTSD	53	100	Swedish Quality of Life Inventory
Rapaport et al. (2005)	PTSD	139	67	Quality of Life Enjoyment and Satisfaction Questionnaire
	Panic	302	–	–
	Social phobia	358	–	–
	OCD	521	–	–
Rapaport, Endicott, and Clary (2002)	PTSD	140	–	SF-36 Quality of Life Enjoyment and Satisfaction Questionnaire
Safren et al. (1997)	Social phobia	44	–	Quality of Life Inventory
Simon et al. (2002)	Panic	33	–	SF-36
	Social phobia	33	–	–
Wetherell et al. (2004)	GAD	36	32	SF-36
	GAD+comorbid axis I	39	–	–
Wittchen, Carter, Pfister, Montgomery, and Kessler (2000)	GAD	33	3764	SF-36
	GAD+comorbid depression	40	–	–

Note: Studies in the final sample utilized 11 different quantitative measures of quality of life: Medical Outcomes Survey Short Form-36 (SF-36; Ware, 1993), Medical Outcomes Survey Short Form-12 (SF-12; Ware, Kosinski, & Keller, 1996), Quality of Life Inventory (Frisch, Cornell, Villanueva, & Retzlaff, 1992), Swedish Quality of Life Inventory (Paunovic & Öst, 2004), Quality of Life Enjoyment and Satisfaction Questionnaire (Endicott, Nee, Harrison, & Blumenthal, 1993), Lancashire Quality of Life Profile (Oliver, (1991–1992), Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985), Leibowitz Self-rating Disability Scale (Schneier et al., 1994), Disability Profile (Schneier et al., 1994), Quality of Life Scale Brief Form (Eser & Fidaner, 1999), and the Life Satisfaction Index (Wood, Wylie, & Sheapor, 1969).

physical health effect size for panic disorder patients, the mean mental health effect size for panic disorder patients, the mean physical health effect size for OCD patients, and the mean mental health effect size for OCD patients).

2. Results

2.1. Preliminary analyses

Across patient samples, 61.1% were female, with a mean age of 39.70 (SD=9.75) years; across control samples, 58.8% were female, with a mean age of 40.32 (SD=8.80) years. Neither age nor sex differed between patient and control samples, (p 's > .05). QOL effect size estimates did not correlate significantly with the mean age of the patient sample ($r=0.29$, $p=.148$) or the percentage of female participants in the patient sample ($r=-0.27$, $p=.145$).

Effect size estimates are depicted in Table 2. Across all 33 comparisons, there was a large and robust effect size indicating poorer QOL among anxiety patients vs. controls; significant heterogeneity across studies was also detected. We first examined, for methodological reasons, whether our use of normative control samples for those studies lacking a control group influenced the results. The 16 comparisons ($N=1821$) using the studies' own control groups ($d=1.16$, 95% CI=0.98–1.34, $p<.001$, FSN=2622, $Q_{within}=60.94$, $p<.001$) did not differ from the 17 ($N=972$) for which we used a normative sample ($d=1.45$, 95% CI=1.18–1.71, $p<.001$, FSN=6327, $Q_{within}=227.60$, $p<.001$) ($Q_{between}=3.02$, $p=.082$), suggesting that it was appropriate to combine these two kinds of comparison.

Two of the studies comprising three samples (Grabe et al., 2000; Wittchen et al., 2000) used epidemiological samples; the remainder used treatment-seeking clinical samples. The three epidemiological samples ($N=93$, $d=1.43$, 95% CI=1.19–1.67, $p<.001$, FSN=139, $Q_{within}=2.64$, $p=.266$) did not differ from the 30 using clinical samples ($N=2700$, $d=1.30$, 95% CI=1.12–1.48, $p<.001$, FSN=14,160, $Q_{within}=291.10$, $p<.001$) ($Q_{between}=0.07$, $p=.039$). One of the epidemiological samples (Grabe et al., 2000) involved OCD patients; this study ($N=20$, $d=1.12$, 95% CI=0.68–1.56, $p<.001$) did not differ from the 5 studies of treatment-seeking OCD patients ($N=721$, $d=1.11$, 95% CI=0.58–1.64, $p<.001$, FSN=301, $Q_{within}=54.03$, $p<.001$) ($Q_{between}=0.00$, $p=.972$). Similarly, the two epidemiological GAD samples (Wittchen et al., 2000) ($N=73$, $d=1.53$, 95% CI=1.30–1.76, $p<.001$) did not differ from the 4 treatment-seeking GAD samples ($N=175$, $d=1.24$, 95% CI=0.79–1.70, $p<.001$, FSN=101, $Q_{within}=10.61$, $p=.014$) ($Q_{between}=1.22$, $p=.268$). Thus, it was considered appropriate to combine clinical and epidemiological samples for the present analyses.

2.2. Overall quality of life

Examination of each primary anxiety diagnosis is depicted in Table 2. No diagnosis was associated with significantly poorer QOL (compared to control samples) than was any other diagnosis ($Q_{between}=1.73$, $p=.885$). Across all anxiety disorders, large effect sizes were noted, indicating substantially poorer QOL compared to control conditions. The effect size estimate for each anxiety disorder was considered robust against the “file drawer effect” based on FSN > $5k+10$. Significant heterogeneity (Q_{within} value) was noted across the anxiety disorders.

Next, we examined the impact of comorbid Axis I conditions on QOL in anxiety disorders. Only two studies (Wetherell et al., 2004; Wittchen et al., 2000) described anxious samples with known comorbidity. Both of these

Table 2

Effect size estimates for overall quality of life for samples of anxiety disorders compared to control samples

Diagnosis	No. of samples	N	d	95% CI	FSN	Q_{within}
SP	5	496	1.60**	0.68–2.52	393	130.20**
PTSD	4	343	1.46**	1.32–1.60	324	10.81*
GAD	6	248	1.35**	1.04–1.65	378	15.75*
PD	11	846	1.28**	1.04–1.52	2186	71.78**
Anxiety	1	119	1.22**	1.03–1.41	— ^a	— ^a
OCD	6	741	1.11**	0.66–1.57	395	54.03**
All studies	33	2793	1.31**	1.14–1.48	17130	297.00**

SP = social phobia. PTSD = post-traumatic stress disorder. GAD = generalized anxiety disorder. PD = panic disorder. Anxiety = any anxiety disorder diagnosis. OCD = obsessive-compulsive disorder. CI = confidence interval. FSN = fail-safe N .

* $p<.05$. ** $p<.001$.

^a Could not be computed due to the low number of studies.

Table 3

Effect size estimates for specific domains of quality of life studies across anxiety disorders compared to control samples

Domain	No. of samples	<i>N</i>	<i>d</i>	95% CI	FSN	Q_{within}
Physical health	23	2912	0.88**	0.74 – 1.02	4244	93.25**
Mental health	25	4980	1.28**	1.11 – 1.46	11123	201.14**
Work	8	365	0.94**	0.66 – 1.22	380	33.60**
Social	22	1154	1.26**	1.12 – 1.40	8000	96.05**
Home and family	5	435	0.68**	0.42 – 0.93	135	16.19*

CI = confidence interval. FSN = fail-safe *N*.**p* < .05. ***p* < .001.

samples had a primary diagnosis of GAD; one (Wittchen et al., 2000) was diagnosed with a secondary diagnosis of major depressive disorder; the other (Wetherell et al., 2004) was diagnosed with any Axis I condition as a secondary diagnosis. To minimize heterogeneity across samples, these 2 studies were compared to the 4 remaining studies of GAD without a comorbid diagnosis listed. The two studies (*N* = 79) with comorbid diagnoses (*d* = 1.40, 95% CI = 1.11–1.70, *p* < .001) did not differ significantly from the 4 studies (*N* = 169) with GAD as the sole diagnosis (*d* = 1.35, 95% CI = 0.89–1.82, *p* < .001, FSN = 152, Q_{within} = 14.14, *p* = .003) ($Q_{between}$ = 1.21, *p* = .545).

Table 4

Effect size estimates for specific domains of quality of life studies of specific anxiety disorders compared to control samples

	Diagnosis	No. of samples	<i>N</i>	<i>d</i>	95% CI	FSN	Q_{within}
Physical health	SP	2	391	0.35	–0.16–0.87	–	5.69*
	PTSD	2	150	1.13*	0.49–1.77	– ^a	3.01
	GAD	5	189	1.05**	0.74–1.36	187	12.67*
	PD	9	743	0.94**	0.76–1.12	869	26.93*
	Anxiety	1	119	0.82**	0.63–1.00	– ^a	– ^a
	OCD	4	640	0.75**	0.47–1.04	87	9.07*
Mental health	SP	2	391	0.60**	0.39–0.81	– ^a	0.02
	PTSD	3	290	1.57**	1.42–1.72	239	1.20
	GAD	5	189	1.59**	1.36–1.83	394	6.85
	PD	10	815	1.38**	1.21–1.56	2344	32.24**
	Anxiety	1	119	1.40**	1.21–1.59	– ^a	– ^a
	OCD	4	640	0.85*	0.23–1.47	99	43.14
Work	SP	2	407	1.10	–0.26–2.45	–	14.06**
	PTSD	2	192	1.09**	0.86–1.33	– ^a	0.56
	GAD	0	407	–	–	– ^a	– ^a
	PD	2	348	0.61**	0.36–0.85	– ^a	3.81
	Anxiety	0	0	–	–	– ^a	– ^a
	OCD	2	644	0.96*	0.27–1.64	– ^a	4.82*
Social	SP	2	391	1.12*	0.48–1.77	– ^a	8.54*
	PTSD	3	203	1.53**	1.18–1.88	115	3.93
	GAD	4	148	1.51**	1.29–1.74	217	3.73
	PD	8	705	1.24**	1.02–1.47	1382	36.92**
	Anxiety	1	119	1.29**	1.10–1.48	– ^a	– ^a
	OCD	4	640	0.98**	0.59–1.38	146	17.37*
Home and family	SP	1	358	0.54**	0.28–0.80	– ^a	– ^a
	PTSD	2	192	0.83*	0.07–1.59	– ^a	10.95*
	GAD	0	0	–	–	–	– ^a
	PD	1	302	0.49**	0.22–0.76	– ^a	– ^a
	Anxiety	0	0	–	–	–	– ^a
	OCD	1	521	0.71**	0.45–0.97	– ^a	– ^a

SP = social phobia. PTSD = post-traumatic stress disorder. GAD = generalized anxiety disorder. PD = panic disorder. Anxiety = any anxiety disorder diagnosis. OCD = obsessive-compulsive disorder. CI = confidence interval. FSN = fail-safe *N*.

p* < .05. *p* < .001.^a Could not be computed due to the low number of studies.

2.3. Specific domains of quality of life

Table 3 shows mean effect size estimates for each of the 5 sampled QOL domains (physical health, mental health, work, social, home and family) across all anxiety-disordered samples compared to control samples. Each domain was associated with significant and robust effects, indicating impaired QOL. There was significant heterogeneity across the QOL domains ($Q_{\text{between}}=30.35, p<.001$); examination of 95% CIs shows that mental health and social functioning were rated as more impaired than was physical health.

Table 4 shows, for each anxiety disorder, mean effect size estimates for each of the sampled QOL domains. With few exceptions, each anxiety disorder was associated with large and significant effect sizes vs. control samples. In many cases, the small number of samples (<3) precluded calculation of FSN; however, where it could be calculated, it was robust for each significant effect size estimate. Significant heterogeneity across studies was found in many of the analyses. For physical health, social phobia was not associated with significant impairment although there were no significant differences among the anxiety disorders ($Q_{\text{between}}=7.36, p=.195$). For mental health, however, there was a significant difference across the anxiety disorders ($Q_{\text{between}}=64.62, p<.001$). Although all effect size estimates were significant and in the medium to large range, the effect size for social phobia was significantly lower than were those for PTSD, GAD, panic disorder, and mixed anxiety. For work, social phobia was not associated with a significant effect size estimate, although the effect size was in the large range and there were no significant differences among the anxiety disorders ($Q_{\text{between}}=0.82, p=.845$). The 95% CI for these 2 studies was rather large, which might be attributable to differences between the studies. One study, with an effect size of 0.44 (Rapaport et al., 2005) was substantially larger ($N=358$) than was the other study, with an effect size of 1.82 (Lochner et al., 2003) ($N=49$), and included a greater proportion of women, more closely resembling the epidemiology of social phobia (40% female in the Rapaport study vs. 19% female in the Lochner study). The Rapaport study also had its own control group, whereas for the Lochner sample the original norm group for the measure was used. PTSD was associated with a significantly larger effect size estimate than was panic disorder. For social, there were no significant differences among the anxiety disorders ($Q_{\text{between}}=7.93, p=.160$), and all effect sizes were large. For home and family, there were no significant differences among the anxiety disorders ($Q_{\text{between}}=1.88, p=.597$). PTSD was associated with a large effect size, whereas social phobia, panic disorder, and OCD were associated with medium effect sizes.

3. Discussion

There has been growing research interest on the impact of anxiety disorders on QOL. Epidemiological surveys, clinical studies, and qualitative literature reviews suggest that QOL impairments reported by anxiety disorder patients are substantial and may be comparable to QOL impairments observed in other psychiatric conditions (Candilis et al., 1999; Mendlowicz & Stein, 2000). The present meta-analytic investigation examined the impact of anxiety disorders on QOL by comparing anxiety disorder patients with nonclinical controls. Across multiple comparisons, with multiple measures of QOL, the results revealed a large effect size indicating poorer overall QOL among anxiety patients versus controls. Although these findings should be interpreted with caution given that the nonclinical comparison samples likely consist of both true controls (those screened for anxiety disorders) and analogue controls (those without a diagnosis of an anxiety disorder), the findings do suggest that the subjective views of patients with anxiety disorders regarding the value of their life circumstances including perceptions of health, social relationships, occupation, and home and family life are significantly lower than those without anxiety disorders.

Relatively few studies have examined differences in QOL between anxiety disorders. Preliminary evidence does suggest that QOL may be most compromised in patients with panic disorder and PTSD (Hansson, 2002). However, the present findings revealed that no anxiety disorder diagnosis was associated with significantly poorer overall QOL than was any other anxiety disorder diagnosis. Although these meta-analytic findings suggest that overall QOL impairment may be equivalent across the anxiety disorders, it has been suggested that QOL in patients with anxiety disorders may be multidimensional (Mendlowicz & Stein, 2000). For example, consideration of the symptom profile of panic disorder would predict more impairment in domains relating to medication or mobility outside the home (i.e., agoraphobia). However, the symptom profile of social phobia may reveal more impairment in social relationships. Consistent with a dimensional view of QOL, we compared anxiety disorder patients on specific QOL dimensions of physical health, mental health, social activities, work, and home and family. For QOL related to social and home and family domains, there were no significant differences among the anxiety disorders. However, social phobia was not found to be

significantly associated with QOL impairment in physical health. QOL in mental health was significantly lower for those with PTSD, GAD, panic disorder, and mixed anxiety. For work, social phobia was not associated with a significant effect size estimate, although the effect size was in the large range and PTSD was associated with a larger effect size estimate than panic disorder.

Although the comparative analysis of differences in specific domains in QOL in the present study should be interpreted with caution given the low number of samples for many of the specific anxiety disorders, the findings do hint at possible differences between the anxiety disorders, with patients with PTSD reporting more QOL impairment and patients with social phobia reporting relatively less QOL impairment. These suggestive findings seem to fit well with recent research. For example, Rapaport et al. (2005) found that 59% of patients with PTSD have severe impairment in QOL (two or more standard deviations below community norm) versus 21% of patients with social phobia. However, these findings must also be considered in the context of differences in the conceptualization of QOL depending on the measurement instrument. Some QOL measures (i.e., Medical Outcomes Survey Short Form-36; Ware, 1993) focus more on health concerns whereas other instruments (i.e., Quality of Life Enjoyment and Satisfaction Questionnaire; Endicott et al., 1993) consider degree of enjoyment and satisfaction with life central to the QOL construct. The marked differences in the thematic content in measures of QOL highlight that no one definition of QOL is universally accepted (Gill & Feinstein, 1994) and these measurement differences should be taken into consideration when examining differences in QOL between the anxiety disorders.

The present study also examined differences in QOL dimensions of physical health, mental health, social activities, work, and home and family collapsing across the anxiety disorders. The findings revealed that mental health and social functioning were associated with the largest effect sizes. The finding of elevated QOL impairment in mental health in the anxiety disorders is not particularly surprising as assessment of QOL often includes consideration of impairments that are influenced by disease. The elevated QOL impairment in mental health may then represent overlap between functional impairment that is implied by an anxiety disorder diagnosis. The finding of elevated QOL impairment in social functioning is consistent with recent findings. For example, Cramer et al. (2005) found that specific anxiety disorder diagnoses had the most impact on contact with friends in a large population sample. Converging studies have also shown that patients with anxiety disorders score significantly lower on measures of social support compared with healthy controls (e.g., Torgrud et al., 2004). QOL impairment in the social domain in anxiety disorder patients could potentially contribute to the etiology of comorbid psychiatric conditions (i.e., major depression). Therefore, anxiety disorder patients may benefit from psychosocial treatments that more actively incorporate exposure to social interactions into the treatment plan.

The present investigation offers quantitative evidence demonstrating that anxiety disorders are associated with significant QOL impairment. Although improvements in QOL among anxiety disorder patients should be considered an indicator of good treatment outcome, there remains a paucity of research examining the impact of treatments on QOL in the anxiety disorders. There is some evidence that pharmacological (Pollack, Otto, Worthington, Manfro, & Wolkow, 1998; Stein, Fyer, Davidson, Pollack, & Witt, 1999) and cognitive-behavioral treatment (Moritz et al., 2005; Safren, Heimberg, Brown, & Holle, 1997; Tenney, Denys, van Meegen, Glas, & Westenberg, 2003; Telch, Schmidt, Jaimez, Jacquin, & Harrington, 1995) leads to improvements in QOL in patients with OCD, panic disorder, and social phobia. However, there is evidence suggesting that even after successful treatment, scores on measures of QOL for anxiety disorder patients remain lower than those of the normal population (e.g., Safren et al., 1997). Low QOL may also represent a risk factor for relapse after successful treatment among anxiety disorder patients. Future research in the treatment of anxiety disorders would benefit from greater attention to QOL as an outcome variable.

Despite the growing literature examining the impact of anxiety disorders on QOL, many questions remain unanswered. For example, it is not yet clear if anxiety disorder patients with comorbid psychiatric conditions have significantly poorer QOL than those without psychiatric comorbidity. The present study did show that for patients with GAD, comorbid Axis I conditions did not appear to significantly impact quality of life. However, prior studies have found lower levels of QOL to be associated with comorbid depression in anxiety disorder patients (e.g., Lochner et al., 2003; Stein & Kean, 2000). It is also not yet clear which treatment modality (i.e., pharmacological vs. psychosocial) results in more QOL improvements in anxiety disorder patients. What is clear, however, is that anxiety disorders are debilitating and associated with increased costs (Creed et al., 2002; Davidson, 1996). Treatments that more directly target QOL could have great implications for offsetting unnecessary costs as well as substantially improving the QOL of patients with anxiety disorders.

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*Indicates studies used in the meta-analysis.

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