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The association of interpersonal distress with negative mental health outcomes in people with a diagnosed anxiety disorder: a meta-analytic review

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Abstract

Empirical research has suggested the association between interpersonal dysfunctions and anxiety disorders. However, no previous meta-analysis has estimated the extent to which these relational issues are related to negative mental health in anxiety disorders. This study aimed to conduct a systematic review and meta-analysis to evaluate the correlation between interpersonal distress and negative mental health outcomes in people with a diagnosed anxiety disorder. We performed a systematic search in PsycINFO and PubMed, based on Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) criteria, including studies reporting estimates of the associations between interpersonal distress and negative (non-relational) mental health outcomes in people with diagnosed anxiety disorders. Using multilevel meta-analytic models, we estimated a pooled correlational (*r*) effect size, accounting for variability at the within-effect-size, between-effect-size, and between-study level. We identified 18 eligible articles, reporting 43 effect sizes from 2,998 subjects. The multilevel models showed a significant association between interpersonal distress and mental health in people with a diagnosed anxiety disorder (r=0.37, 95% confidence interval [CI] [0.28, 0.52], d=0.84). We found significant heterogeneity around the estimations ($Q(42)$=463.29, p<.001) but failed to find significant moderators of the association. Interpersonal distress has a moderate-to-large correlation with non-relational mental health outcomes in people with diagnosed anxiety disorders. More research would be necessary to determine putative moderators of this association.

Key words: anxiety disorders, systematic review, interpersonal distress, negative mental health outcomes, meta-analysis.

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Introduction

Interpersonal processes have been hypothesized as a main trigger and source of anxiety (Durand & Barlow, 2006; Kiesler, 1996; Sullivan, 1953). Consistently, maladaptive interpersonal processes have been proposed as a key factor both in the etiology and maintenance of anxiety disorders (Beck, 2010; Borkovec *et al.*, 1998; Horowitz, 2004; Malivoire *et al.*, 2020; Segrin, 2001). Empirical research has provided support for this basic theoretical assumption. Anxiety symptoms have been related to higher degrees of perceived loneliness and lack of social support (Okruszek *et al.*, 2020; Wang *et al.*, 2018). Furthermore, when compared with healthy controls, patients with a diagnosed anxiety disorder present higher levels of impairment in social functioning (Saris *et al.*, 2017) and lower relationship quality (Leach *et al.*, 2013; McLeod, 1994). Additionally, having an anxiety disorder has been associated with greater marital distress (Whisman, 2007) and overall social distress (Starr *et al.*, 2014).

In the past literature, there has been a particular emphasis on distress in interpersonal problems (Borkovec *et al.*, 2002; Coyne *et al.*, 2019; Gómez Penedo *et al.*, 2017; Gómez Penedo *et al.*, 2021; Przeworski *et al.*, 2011; Swee *et al.*, 2021; Uhmann *et al.*, 2010). Interpersonal problems are defined as persistent, recurrent difficulties in relationships with others that cause distress at the individual level (Horowitz, 2004). According to interpersonal theory, interpersonal distress arises when individuals are unable to satisfy core interpersonal motives, particularly motives related to agency and communion (Horowitz, 2004). Agency motives involve the need for competence, influence, and differentiation from others, whereas communion motives reflect needs for closeness, belonging, and interpersonal connection. From this perspective, interpersonal problems emerge when there is a discrepancy between desired and achieved relational outcomes (Horowitz, 2004). The repeated frustration of these interpersonal motives is thought to generate interpersonal distress and has been proposed as an important contributor to psychological suffering and psychopathology. Consequently, examining the association between interpersonal distress and mental health outcomes among individuals with anxiety disorders may provide valuable insights into the role of interpersonal functioning in the development and maintenance of anxiety-related difficulties (Gómez Penedo & Flückiger, 2023).

The most widely used instrument for assessing interpersonal dysfunction is the Inventory of Interpersonal Problems-Circumplex (IIP-C), which defines these relational difficulties in terms of behav-

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ioral excesses or inhibitions (Alden *et al.*, 1990; Horowitz *et al.*, 2000). Grounded on interpersonal theory (Horowitz, 2004), the IIP-C assumes that interpersonal dysfunctional behaviors are divided into eight subtypes organized within a circumplex model: (being too) Dominant/Controlling, Vindictive/Self-Centered, Cold/Distant, Socially Avoidant, Non-assertive, Exploitable/Overly Accommodating, Overly-Nurturant, and Intrusive/Needy. Aggregating the degree of distress at each of the eight interpersonal problems (*i.e.*, IIP-C subscales) provides an overall measurement of general interpersonal distress.

Overall interpersonal distress assessed by the IIP-C has been associated with anxiety severity (Mackintosh *et al.*, 2018; Shafiei *et al.*, 2022; Viana & Stevens, 2013) and with overall symptomatic severity in pre-treatment samples of patients diagnosed with anxiety disorders (Lorentzen *et al.*, 2015; Paivio & Bahr, 1998). Furthermore, patients with a diagnosed anxiety disorder showed greater interpersonal distress when compared with healthy controls (Eng & Heimberg, 2006; Tonge *et al.*, 2020) or general population data (Kachin *et al.*, 2001; Stangier *et al.*, 2006; Uhmann *et al.*, 2010; Zilcha-Mano *et al.*, 2015).

Although previous systematic reviews and meta-analyses had demonstrated the association of other relational variables with anxiety disorders, such as loneliness (Teo *et al.*, 2013; r=.38), there has been no prior meta-analytic synthesis that specifically assesses the relationship between interpersonal distress and negative mental health outcomes in people suffering from anxiety. Taking into account the extensive burden of anxiety disorders worldwide (GBD 2019 Diseases and Injuries Collaborators, 2020), especially after the impacts of the COVID-19 pandemic (*e.g.*, COVID-19 Mental Disorders Collaborators, 2021; Schafer *et al.*, 2022), more resources to improve anxiety prevention, treatment, and rehabilitation are paramount. A more robust comprehension of the role of interpersonal distress in anxiety, grounded on meta-analytic evidence, would enhance the understanding of anxiety disorders and facilitate the development of prevention and treatment strategies addressing them.

In the present study, the term "negative mental health outcomes" refers to indicators of psychological distress and maladjustment associated with anxiety disorders. The included outcomes encompassed a broad range of indicators of psychological maladjustment, including symptom severity, functioning, well-being, maladaptive beliefs, self-esteem, psychiatric comorbidity, and maladaptive personality traits. Although maladaptive personality traits differ from symptom-based measures in being relatively stable individual characteristics, they were included because they represent clinically relevant indicators of psychological maladjustment and have been consistently associated with anxiety-related psychopathology. Throughout the manuscript, we use the term "negative mental health outcomes" to distinguish these variables from interpersonal or relational constructs, which were examined separately as indicators of interpersonal distress. For the purposes of this review, we define relational constructs as variables that directly assess interpersonal functioning or interpersonal difficulties. Although some outcomes (*e.g.*, shame or guilt) may contain interpersonal elements and reflect concerns about social evaluation, they were classified as mental health outcomes because they primarily assess individual emotional and cognitive experiences rather than interpersonal functioning itself. In addition, these constructs are commonly examined as symptomatic manifestations of anxiety-related psychopathology and therefore extend beyond the domain of interpersonal relationships.

This study

In alignment with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Page *et al.*, 2021). The current study aimed to provide a systematic review and meta-analytic synthesis to estimate the association between interpersonal distress and negative mental health outcomes in adult individuals diagnosed with anxiety disorders. We hypothesized that interpersonal distress would be positively associated with negative mental health outcomes, presenting a medium omnibus correlation significantly different from zero. In addition, we explored whether study and sample characteristics moderated this association. Given the limited prior literature available to guide predictions regarding moderators, these analyses were considered exploratory. The present review focused specifically on adult populations diagnosed with anxiety disorders. This decision was guided by the characteristics of the available literature, which is predominantly based on adult samples, and by the aim of maximizing comparability across included studies. The aims of this meta-analysis were pre-documented at the Open Science Foundation (OSF; https://osf.io/5zcen/?view_only=fa15dbbbbf6e4fd080f1463e769bf64e).

Methods

Meta-analytic search strategy, study selection, and data collection

In this study, we conducted a systematic search through PsycINFO and PubMed databases for all the published studies until September 2025, reporting estimates of the associations of interpersonal distress and negative mental health outcomes in people with a diagnosed anxiety disorder. The search string included the terms "interpersonal problems", "interpersonal distress", "interpersonal dysfunction", and "anxiety" and included peer-reviewed publications and dissertations.

Paper eligibility criteria included empirical studies i) having a sample either diagnosed with anxiety disorders or drawn from a general clinical population in which at least 70% of participants presented anxiety disorders; this threshold was adopted to allow the inclusion of studies with predominantly anxiety-disorder samples while avoiding an overly restrictive focus on diagnostically pure populations, consistent with previous meta-analytic research in the field (Gómez Penedo & Flückiger, 2023); ii) focusing on an adult population (*i.e.*, $\bar{x}$ age >18 years); iii) presenting quantitative data; iv) measuring at least one negative mental health outcome; v) using a measure of interpersonal distress (*e.g.*, IIP; grosse Holtforth *et al.*, 2006; Horowitz *et al.*, 2000); vi) providing an association between interpersonal distress and negative mental health outcomes such as overall psychological distress, depression, anxiety, or functioning (*i.e.*, as an inverted measure of clinical severity); and vii) having enough quantitative information to calculate effect sizes. We included studies in English, German, and Italian. Single-case studies were not included in the meta-analysis. We also included measures of overall psychological distress, depression severity, anxiety severity, functioning, well-being, pathological personality traits, pathological beliefs, self-esteem, and comorbidity.

The Figure 1 flowchart provides an overview of the extraction procedure. The search provided 1,549 records, while four extra papers were included based on the check of the reference lists of other published papers and systematic reviews.

To determine eligibility, the first two raters (the first and second

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authors of the paper) review the study titles and abstracts of all the records. Studies with disagreement between raters were included in the further screening steps. Then, full texts of potentially eligible papers were independently reviewed by the two raters to determine final eligibility (90% agreement). Disagreements at this stage were discussed with the last author of the paper, who operated as a supervisor of the meta-analysis, and then addressed by achieving consensus among the raters and the supervisor. Effect size extraction was performed again independently by the two raters based on the paper's full text (82% agreement). Disagreements were also discussed with the third author of the meta-analysis and addressed by consensus. Methods and procedures of the study were also pre-documented at OSF in the link presented above.

Calculation

We coded Pearson's *r* (*i.e.*, correlation coefficient) representing the degree of association between interpersonal distress and negative mental health. To estimate the pooled *r* coefficient, we computed random-effects meta-analytic models addressing within-effect size (level 1), between-effect size (level 2), and between-study (level 3) variability (Assink & Wibbelink, 2016) using the *R* package *metafor* (Viechtbauer, 2010). To determine heterogeneity in the effect sizes across the different levels, we used *Q* and I^2 statistics.

Correlational effect sizes were coded to represent the direction of higher distress – worse mental health. If several effect sizes were reported within a study, they were all coded and included within the multilevel model. Other measures of effect size reported (*e.g.*, Cohen's *d*) were converted into *r* coefficients to perform the analyses. Distribution of the effect sizes and their within-effect-size and within-study variability were illustrated using a multilevel forest plot (Fernández-Castilla *et al.*, 2020). To examine possible publication bias, we will use a funnel diagram, plotting the standard error (vertical axis) and each study's effect sizes (horizontal axis) (Fernández-Castilla *et al.*, 2020).

Before conducting the three-level models, we used Fisher's *z* transformation of the *r* coefficients to address the expected lack of normal distribution of the effect sizes (Viechtbauer, 2010). To enhance comprehension, once the multilevel models were conducted, we transformed the findings back into *r* coefficients. To interpret the size of the association, we used empirically derived benchmarks for small (r=.12), medium (r=.24), and large correlations (r=.41) (Lovakov & Agadullina, 2021).

If enough information is available, we will conduct a sensitivity

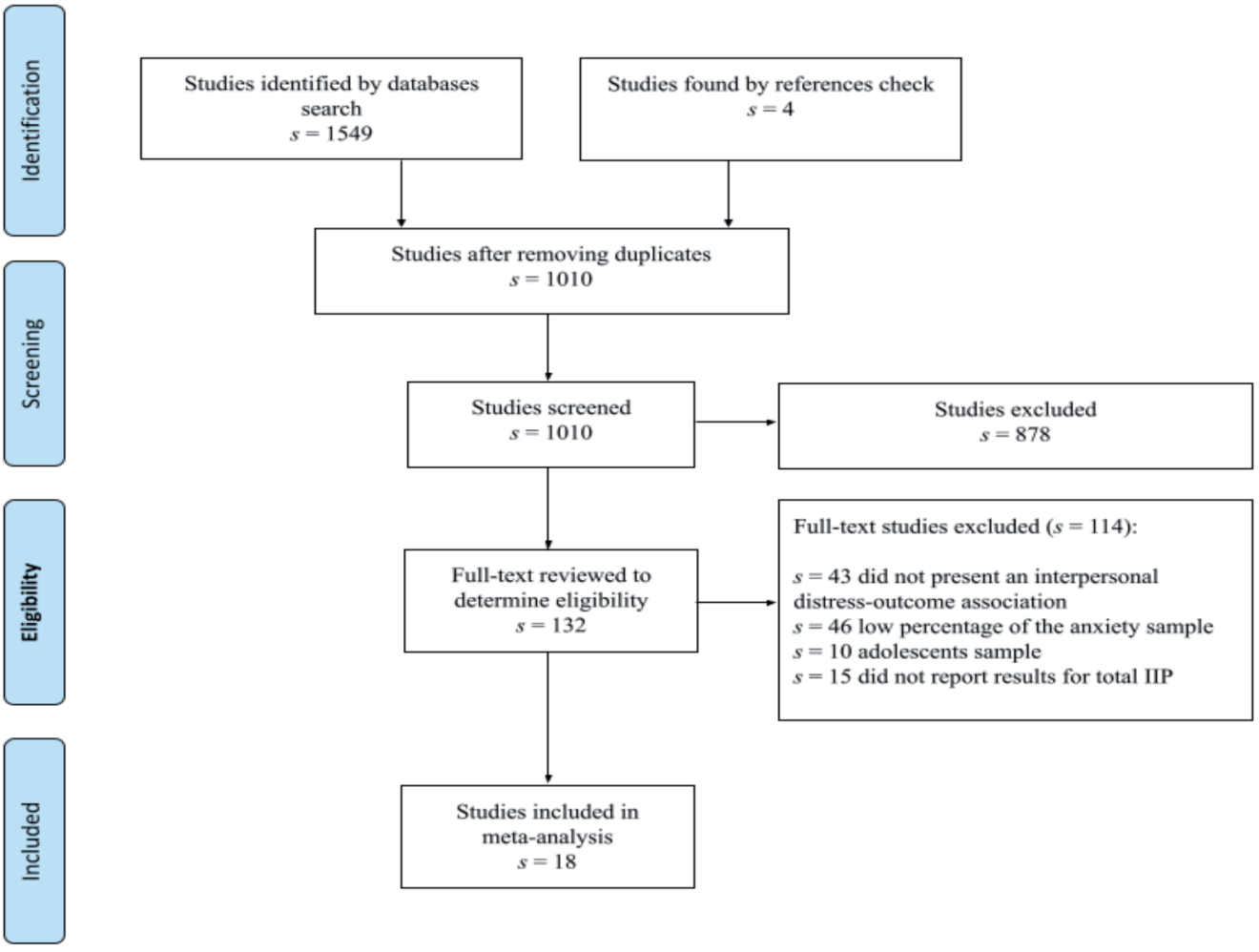


Figure 1. Flowchart of the screening process in accordance with the PRISMA criteria.

analysis to test if the interpersonal distress and mental health outcomes association is moderated by i) baseline interpersonal distress level in the sample and ii) type of sample (*i.e.*, intervention sample *vs.* non-intervention sample).

Results

The 18 studies meeting the inclusion criteria for the meta-analysis reported 43 effect sizes of the association between interpersonal distress and negative mental health from a total of 2,998 subjects. Table 1 presents descriptive data from the studies included in the meta-analysis. All the studies were peer-reviewed and were conducted either in North America or Europe. Most of the studies were focused on samples with either social anxiety/phobia (38.8%) or generalized anxiety disorder (44.4%). Most of the studies included subjects with comorbid disorders (55.5%), while only 27.7% included cases with personality disorders. Consistent with the eligibility criteria, all included studies were conducted with adult samples. Furthermore, 66.6% of the studies were intervention trials evaluating psychotherapeutic treatments. Details of the effect sizes extracted are provided in Table 2. Using the interquartile range (IQR) method (Walfish, 2006), we did not find any outliers in the effect sizes extracted.

Interpersonal distress as a covariate of negative mental health outcomes in people with diagnosed anxiety disorders

In Figure 2, we presented a multilevel forest plot showing the distribution of the effect sizes within studies, including confidence intervals accounting for sampling variance and within-study variability. The three-level meta-analytic model showed a significant association between interpersonal distress and mental health outcomes in subjects with a diagnosed anxiety disorder, γ_{000}=.39, *SE*=0.05, 95% confidence interval (CI) [0.28, 0.52], $t(42)$=7.16, p<.001, d=.84. The exploration of a multilevel funnel plot showed no evidence of publication bias (Figure 3).

The Q-test showed significant heterogeneity around the estimations of the model, $Q(42)$=463.29, p<.001. The I^2s of the model showed that 3.67% of the variance was explained by within-study variability, while 12.16% of the variance was explained by between-study variability. To check for the significance of the within- and between-study variance, we conducted two separate two-level models, excluding each source of variance and comparing them with the full three-level model. Likelihood-ratio tests showed significant variance at both the within-study level, $\chi^2(1)$=44.39, p<.001, and the between-study level, $\chi^2(1)$=13.62, p<.001.

Table 1. Main characteristics of the studies meeting inclusion criteria for the meta-analysis (n=18).

Authors	Country	IIP version	Mean (or ranged) age	Female gender proportion (%)	Main diagnoses or proportion of AD	Includes substance/ alcohol abuse	Includes comorbidity	Includes personality disorders	Patients with personality disorders (%)	Intervention sample
Borkovec *et al.*, 2002	USA	IIP-64	37.14	65.2	GAD	No	No	No	-	Yes
Eng & Heimberg, 2006	USA	IIP-64	19.20	69.3	GAD	No	No	No	-	No
Erickson *et al.*, 2023	USA	IIP-32	19.56	76	GAD	No	No	No	-	No
Frandsen *et al.*, 2020	Denmark	IIP-64	31.30	70.1	SAD	No	Yes	Yes	8.8	Yes
Kachin *et al.*, 2001	USA	IIP-64	21.00	72	SP	No	No	No	-	No
Lilliengren *et al.*, 2017	Sweden	IIP-32	19-35: 80.0% 36-60: 11.2% >60: 8.8%	60.9	GAD	Yes	Yes	Yes	55.8	Yes
Lorentzen *et al.*, 2015	Norway	IIP-64	38.40	63	PD: 34% Agoraphobia: 7% SAD: 33% GAD: 23%	No	Yes	Yes	82	Yes
Mackintosh *et al.*, 2018	UK	IIP-32	40.30	59.5	AD	No	Yes	No	-	Yes
Nordahl *et al.*, 2024	Norway	IIP-32	34.29	79.3	GAD	No	No	No	-	No
Schuster *et al.*, 2021	Germany	IIP-64	35.20	55	SAD	No	No	Yes	27	Yes
Shafiei *et al.*, 2022	Iran	IIP-64	31.5	58	GAD	No	No	No	-	Yes
Stangier *et al.*, 2006	Germany	IIP-64	31.70	46	SP	No	Yes	No	-	Yes
Strand *et al.*, 2023	Norway	IIP-64	30.4	46.2	SAD	No	No	No	-	Yes
Swee *et al.*, 2021	USA	IIP-64	28.00	39	SAD	No	Yes	No	-	Yes
Tonge *et al.*, 2020	USA	IIP-32	37.20	70.1	SAD	No	Yes	No	-	Yes
Uhmann *et al.*, 2010	Netherlands	IIP-64	41.60	67	GAD	No	Yes	No	-	Yes
Viana & Stevens, 2013	USA	IIP-64	18.63	79	AD	No	Yes	No	-	No
Zilcha-Mano *et al.*, 2015	USA	IIP-64	38.90	68	PD	No	Yes	Yes	51	Yes

IIP, Inventory of Interpersonal Problems; AD, anxiety disorders (non-specific); GAD, generalized anxiety disorder; SAD, social anxiety disorder; SP, social phobia; PD, panic disorder.

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Table 2. Details of effect size reported (k=43) within the studies of the meta-analysis (n=18).

Author, year	Outcome	n	Reported ES	r
Borkovec *et al.*, 2002*	Overall functioning composite factor	69	*r*=−.29**	.29
Eng & Heimberg 2006	Generalized anxiety disorder (*n*=48) *vs.* controls (*n*=53)	101	*d*=0.87	.40
Erickson *et al.*, 2023	Worry (PSWQ-A)	40	*r*=.49	.49
Frandsen *et al.*, 2020	Comorbidity (*n*=29) *vs.* no comorbidity (*n*=299)	328	*d*=0.33	.16
Kachin *et al.*, 2001	Generalized social phobia (*n*=30) *vs.* control (*n*=30)	60	*r*=.75	.75
Kachin *et al.*, 2001	Non-generalized social phobia (*n*=30) *vs.* control (*n*=30)	60	*r*=.60	.60
Lilliengren *et al.*, 2017	Effect of comorbid Axis I disorder	215	γ=0.19	.19
Lorentzen *et al.*, 2015	Symptom severity (SCL-90)	167	*r*=.55	.55
Lorentzen *et al.*, 2015	Symptoms severity (GAF symptoms subscale)	167	*r*=−.11**	.11
Lorentzen *et al.*, 2015	Problems in functioning (GAF functioning subscale)	167	*r*=−.18**	.18
Mackintosh *et al.*, 2018	Self-compassion	72	*r*=−.19**	.19
Mackintosh *et al.*, 2018	Anxiety severity (HADS)	72	*r*=.32	.32
Mackintosh *et al.*, 2018	Depressive severity (HADS)	72	*r*=.30	.30
Nordahl *et al.*, 2024	Study 1 - Anxiety (BAI)	135	*r*=.55	.55
Nordahl *et al.*, 2024	Study 1 - Depression (PHQ)	135	*r*=.53	.53
Nordahl *et al.*, 2024	Study 1 - Worry (PSWQ)	135	*r*=.46	.46
Nordahl *et al.*, 2024	Study 1 - Metaworry (AnTI)	135	*r*=.58	.58
Nordahl *et al.*, 2024	Study 2 - Anxiety (BAI)	56	*r*=.36	.36
Nordahl *et al.*, 2024	Study 2 - Depression (PHQ)	56	*r*=.51	.51
Nordahl *et al.*, 2024	Study 2 - Worry (PSWQ)	56	*r*=.29	.29
Nordahl *et al.*, 2024	Study 2 - Metaworry (AnTI)	56	*r*=.62	.62
Schuster *et al.*, 2021	Shame (TOSCA)	495	*r*=.49	.49
Schuster *et al.*, 2021	Guilty (TOSCA)	495	*r*=.10	.10
Shafiei *et al.*, 2022	Worry to avoid negative emotional (CAQ)	415	*r*=.53***	.53
Shafiei *et al.*, 2022	Worry to create positive contrast (CAQ)	415	*r*=.47***	.47
Shafiei *et al.*, 2022	Worry creates and sustains negative emotion (CAQ)	415	*r*=.55***	.55
Shafiei *et al.*, 2022	Discomfort with emotional shifts (CAQ)	415	*r*=.51***	.51
Shafiei *et al.*, 2022	Negative emotions to avoid negative contrasts (CAQ)	415	*r*=.63***	.63
Shafiei *et al.*, 2022	Generalized anxiety (GAD-7)	415	*r*=.63***	.63
Stangier *et al.*, 2006	SAD (*n*=50) *vs.* general population data (*n*=1332)	50	*r*=.14	.14
Strand *et al.*, 2023	Fear of negative evaluation	52	*r*=.46	.46
Strand *et al.*, 2023	Depression (BDI)	52	*r*=.26	.26
Strand *et al.*, 2023	Social phobic cognitions	52	*r*=.31	.31
Strand *et al.*, 2023	Metacognitions (MCQ-30)	52	*r*=.53	.53
Swee *et al.*, 2021	Social anxiety (LSAS)	95	*r*=.74	.74
Tonge *et al.*, 2020	SAD (*n*=102) *vs.* no SAD (*n*=83)	185	*d*=.70	.33
Uhmann *et al.*, 2010	Anxiety disorders *vs.* general population data	47	*r*=.08	.08
Uhmann *et al.*, 2010	Generalized anxiety disorder *vs.* general population data	87	*r*=.05	.05
Viana & Stevens, 2013	Worry (BMWS)	144	*r*=.21***	.21
Viana & Stevens, 2013	Trait anxiety (STAI)	144	*r*=.34***	.34
Viana & Stevens, 2013	Anxiety severity (BSI)	144	*r*=.25***	.25
Viana & Stevens, 2013	Depression severity (BSI)	144	*r*=.27***	.27
Zilcha-Mano *et al.*, 2015	Panic disorder *vs.* general population data	186	*r*=.18	.27

PSWQ-A, Penn State Questionnaire – Anxiety; SCL-90, Symptom Check-List 90; GAF, global assessment of functioning; HADS, Hospital Anxiety and Depression Scale; BAI, Beck Anxiety Inventory; PHQ, Patient Health Questionnaire; AnTI, Anxious Thoughts Inventory; TOSCA, Test of Self-Conscious Affect; CAQ, Contrast Avoidance Questionnaire; GAD-7, generalized anxiety disorder-7; SAD, social anxiety disorder; BDI, Beck Depression Inventory; MCQ-30, Metacognitions Questionnaire-30; LSAS, Liebowitz Social Anxiety Scale; BMWS, Brief Measure of Worry Severity; STAI, State-Trait Anxiety Inventory; BSI, Brief Symptom Inventory; *due to lack of pre-treatment information for this study, we used post-treatment contemporaneous associations between interpersonal problems and the negative mental health measure; **effect size needs to be inverted to have the right direction; ***aggregated rs were used from the subscale level; γ, standardized multilevel coefficient.

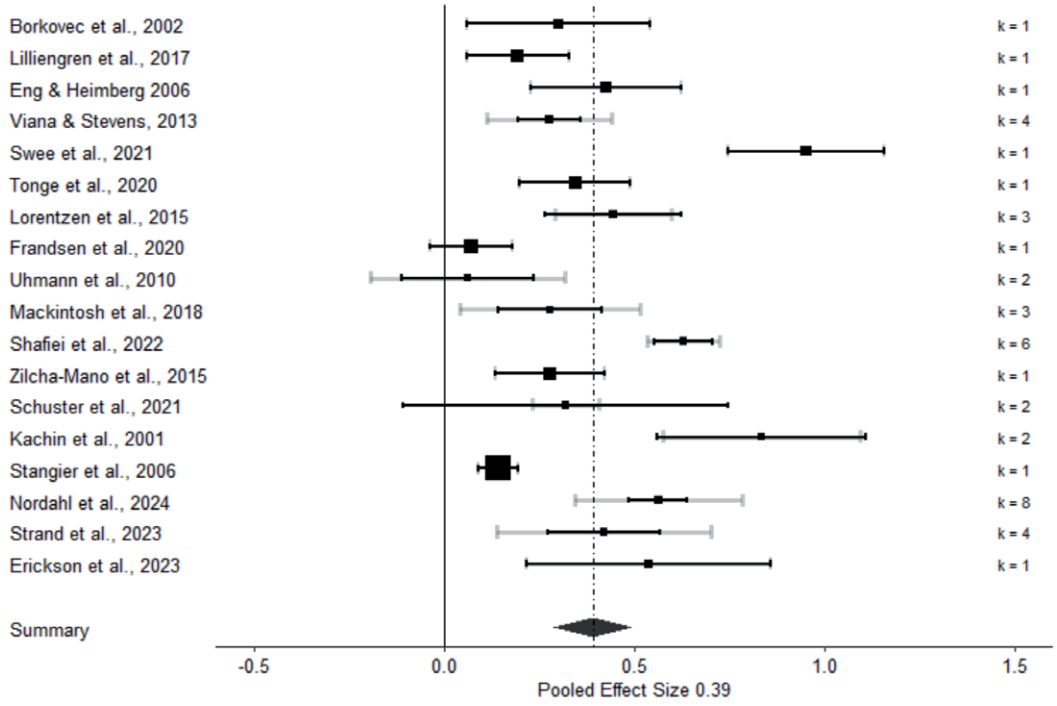


Figure 2. Forest plot of the aggregated effect sizes (r). The grey CI represents within-effect-size variability grounded on the sampling variance (level 1), while the black CI represents within-study variability (level 2).

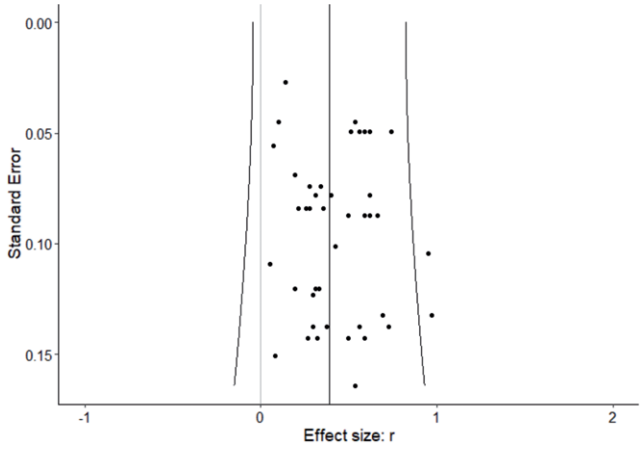


Figure 3. Multilevel funnel plot of aggregated effect sizes (k=43) within studies (s=18).

Moderators of interpersonal distress and mental health outcomes association

Moderation analysis showed no significant interactive effects of baseline interpersonal distress on the interpersonal distress and mental health outcomes association, γ_{001}=0.03, *SE*=0.06, 95% CI [−0.08, 0.15], *t*(29)=0.5, *p*=.62, *d*=.05. Furthermore, there was not a significant moderation effect of the type of sample (*i.e.*, intervention sample *vs.* non-intervention sample) on the estimated effect size, γ_{001}=−0.08, *SE*=0.08, 95% CI [−0.22, 0.07], *t*(41)=−1.08, *p*=.28. Finally, because post-treatment data were scarce, we were unable to examine whether measurement timing (pre- *vs.* post-treatment) moderated the association between interpersonal distress and mental health outcomes.

Discussion

The aim of this study was to provide a first systematic review and meta-analytic synthesis, estimating the correlation between interpersonal distress and mental health outcomes in people diagnosed with anxiety disorders. Multilevel meta-analytic models showed that interpersonal distress was significantly correlated with mental health outcomes in subjects with anxiety disorders. Despite the significant heterogeneity observed across studies, the multilevel moderation analysis did not present evidence of significant moderators of the estimated association.

Previous theoretical developments and empirical research have supported an association between interpersonal dysfunction and anxiety (*e.g.*, Okruszek *et al.*, 2020; Wang *et al.*, 2018), being hypothesized as a main factor in anxiety disorders (*e.g.*, Beck, 2010; Horowitz, 2004; Malivoire *et al.*, 2020; Newman *et al.*, 2013; Westra, 2012). However, in the literature, there was no prior meta-analysis synthesizing the degree of the association between interpersonal distress and mental health outcomes in people with a diagnosed anxiety disorder. The results of this meta-analysis provide evidence of a significant correlation between interpersonal distress and negative mental health outcomes in people who suffer from anxiety disorders, showing that people presenting greater interpersonal distress tend to also have more negative mental health outcomes. Grounded on empirically derived criteria (Lovakov & Agadullina,

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2021), the estimation of the association (r=.37) is interpreted as having a moderate-to-large effect size.

The results of this meta-analysis are in line with several non-meta-analytic empirical studies associating anxiety disorders with relational factors such as social functioning (average r=.23; Saris *et al.*, 2017), relationship quality (r=.03-0.6; Priest *et al.*, 2013), marital distress (average r=.14; Whisman, 2007), and social distress (r=.16-.18; Starr *et al.*, 2014). The aggregated effect size of the association between interpersonal distress and negative mental health outcomes in anxiety disorders (r=.38) has been comparable with other meta-analyses studying the association of anxiety disorders with maladaptive relational features such as loneliness (r=.38; Teo *et al.*, 2013) and relational aggression (r=.22; Marshall *et al.*, 2015).

More relevant for this paper, the present meta-analysis provides an evidence-based estimate that supports the specific association between interpersonal distress and negative mental health in patients with anxiety disorders (*e.g.*, Borkovec *et al.*, 2002; Gómez Penedo *et al.*, 2017; Gómez Penedo *et al.*, 2021; Swee *et al.*, 2021; Uhmann *et al.*, 2010). Although these findings might suggest that interpersonal distress might be a risk factor for a greater severity within anxiety disorders, the correlational nature of the studies included in the meta-analysis prevents us from making those inferences. Thus, the results of the study should be interpreted in terms of an association between interpersonal distress and mental health outcomes in people with a diagnosed anxiety disorder, without suggesting a specific unilateral causal relationship between them (Cain *et al.*, 2015). This interpretation is in line with the interpersonal pathoplasticity theory, which suggests a mutual and bidirectional (*i.e.*, nonetiological) influence between interpersonal dysfunctions and psychopathological syndromes (Przeworski *et al.*, 2011).

Beyond the causal directionality in the targeted association, this meta-analysis suggests the relevance of incorporating interpersonal distress within the comprehension and case conceptualization of subjects with anxiety disorders. Previous meta-analyses have shown that baseline interpersonal problems predict psychotherapy outcome in patients with depressive and anxiety disorders (Gómez Penedo & Flückiger, 2023). Similar findings have been reported in a recent multilevel meta-analysis focused on depression, showing a medium-to-large association between interpersonal distress and mental health outcomes that do not directly assess interpersonal functioning (Gómez Penedo *et al.*, 2025). Furthermore, baseline interpersonal distress and indices have been positioned as a meaningful moderator of differential treatment effects when treating anxiety disorders (*e.g.*, Gómez Penedo *et al.*, 2019; Newman *et al.*, 2017). Consistently, this meta-analysis suggests that when treating patients with anxiety disorders, it might be important to consider their overall interpersonal distress and explore how it might be related to patient-specific core symptoms and reason for consultation (Horowitz, 2004). The present findings may have implications not only for case conceptualization but also for psychotherapeutic practice. The observed association suggests that interpersonal distress is linked to indicators of psychological maladjustment. Consequently, assessing interpersonal distress during treatment planning may help clinicians identify difficulties that contribute to the maintenance of symptoms and impaired functioning. Furthermore, these findings are consistent with previous research indicating that interpersonal characteristics can influence psychotherapy processes and outcomes in anxiety disorders (*e.g.*, Gómez Penedo *et al.*, 2017; Gómez Penedo *et al.*, 2019; Newman *et al.*, 2017). From this perspective, interventions targeting interpersonal functioning may represent valuable therapeutic components when working with individuals experiencing anxiety disorders. Future research should further investigate whether reductions in interpersonal distress contribute to improvements in mental health outcomes and whether interpersonal variables can help inform treatment selection and personalization.

An additional implication of these findings concerns the prevention of anxiety-related psychopathology. If interpersonal distress contributes to the emergence or maintenance of psychological maladjustment, interventions aimed at reducing interpersonal distress or preventing the development of interpersonal difficulties may represent promising avenues for prevention. Although the present findings do not permit causal conclusions, they highlight the potential value of further investigating interpersonal distress as a target for both treatment and prevention efforts, ultimately contributing to a reduction in the broader societal burden associated with anxiety disorders.

This meta-analysis has several limitations. To define interpersonal distress, we have circumscribed it to the overall total score of the IIP, a self-reported measure of interpersonal problems (Horowitz *et al.*, 1988; Horowitz *et al.*, 2000). Although the IIP is the most widely spread measure to assess interpersonal problems, other instruments to measure interpersonal dysfunction and/or other sources to assess them (*i.e.*, significant others, therapists, *etc.*) might provide alternative perspectives on patients' interpersonal distress. Furthermore, this study was focused only on overall interpersonal distress, while other indices of interpersonal dysfunction (*i.e.*, interpersonal dimensions or interpersonal octants; Horowitz *et al.*, 1988; Horowitz *et al.*, 2000) were not incorporated in this systematic review and meta-analysis. While for future research it will be valuable to explore the association of these other indices with negative mental health outcomes, it will be necessary to have more primary studies to synthesize their effects within a future meta-analysis.

A further limitation concerns the heterogeneity of the mental health outcomes included in this review. The meta-analysis combined symptom-based measures, indicators of functioning and personality characteristics. Although all these variables were conceptualized as clinically relevant indicators of psychological maladjustment, future research may benefit from examining these domains separately to determine whether interpersonal distress is differentially associated with distinct types of mental health indicators.

An additional limitation concerns the age range of the included samples. The present meta-analysis focused exclusively on adults; consequently, the present findings cannot be generalized to adolescents, children, or older adult populations. Given the developmental differences in interpersonal functioning and the expression of anxiety-related symptoms across the lifespan, future primary studies should examine these associations in other age groups. As the evidence base grows, future meta-analytic syntheses may be able to determine whether the magnitude or nature of these associations differs across developmental stages. Moreover, the exploration of moderators was also limited based on the small sample size at the study level and the lack of reports of relevant information from putative moderators. In the context of the significant heterogeneity observed around the estimated pooled effect size, it will be relevant to identify meaningful moderators of the effects. Nevertheless, to address this issue, more primary studies providing information about possible moderators would be needed.

An important limitation concerns the clinical heterogeneity of the included samples. More than half of the studies included participants presenting psychiatric comorbidity, and a subset of studies also included individuals with personality disorders. This inclu-

sion strategy was adopted to maximize the representativeness of the available evidence, as anxiety disorders frequently co-occur with other psychiatric conditions and personality pathology in routine clinical settings. Nevertheless, both comorbidity and personality pathology are known to be associated with interpersonal functioning and may have contributed to the magnitude of the observed associations. Because information regarding these characteristics was not consistently reported across studies, we were unable to conduct reliable moderator analyses. Consequently, the present findings should be interpreted as reflecting the association between interpersonal distress and mental health outcomes in clinically heterogeneous populations with anxiety disorders rather than in diagnostically pure anxiety samples. Future research should systematically report comorbidity and personality pathology to enable more precise examinations of their potential moderating role.

Another limitation concerns the geographical distribution of the studies included in the meta-analysis. Most of the available evidence originated from North American and European countries, limiting the cultural diversity of the samples. Future research should examine whether the association between interpersonal distress and mental health outcomes remains consistent across different cultural contexts and geographical settings.

Despite these limitations, this study estimated the correlation between interpersonal dysfunction and negative mental health in patients with anxiety disorders, showing a moderate-to-large association. The findings support the relevance of evaluating interpersonal distress in these syndromes and further explore their clinical implications for anxiety in future research.

Conclusions

This meta-analysis provides a first quantitative synthesis showing a moderate-to-large association between interpersonal distress and negative mental health outcomes in individuals with anxiety disorders. The findings support the clinical relevance of assessing interpersonal distress and incorporating it into case conceptualization when treating anxiety disorders. Nevertheless, the substantial heterogeneity observed across studies and the lack of significant moderators underline current limitations in the literature and the need for better-characterized primary studies. Future research should prioritize longitudinal designs, broaden the assessment of interpersonal functioning, and systematically report relevant clinical and methodological variables to clarify under which conditions interpersonal distress is most strongly associated with mental health outcomes in anxiety disorders.

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