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DOCTORAL SCHOOL „ EVIDENCE BASED PSYCHOLOGICAL ASSESSMENT AND INTERVENTIONS”

Ph.D. THESIS RESUME

SPECIFIC AND NONSPECIFIC FACTORS IN PSYCHOPATHOLOGY. IMPLICATIONS FOR ANXIETY AND DEPRESSION DISORDERS

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(2) All the Tables and Figures are numbered within the corresponding chapter or subchapter of the thesis.

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Keywords: Irrational beliefs, outcome expectations, therapeutic alliance, response expectancies, psychological distress, emotional disorders.

CHAPTER I. THEORETICAL BACKGROUND

1.1. Introduction and research topic

1.1.1. Mental disorders and psychological distress

Mental disorders are highly prevalent worldwide and affect people across all regions of the world (Steel et al., 2014). Mental illness is the leading cause of disability worldwide and is the fifth leading cause of the total global disease burden (Whiteford et al., 2013). Moreover, if we account for the additional burden of mental disorders as a risk factor for suicide, mental illness climbs from the fifth to third position (Ferrari et al., 2014). Often, mental disorders have an early age of onset and are associated with significant societal costs (Kessler et al., 2009). A recent report from the World Economic Forum projects that over the next two decades, mental illness will account for over half of the economic burden that is associated with non-communicable diseases and more than a third of global lost economic output (Bloom et al., 2011).

Psychological distress is widely considered to be an indicator of the mental health of a population in public health studies, epidemiological studies, and population surveys; it also serves as an outcome measure in intervention studies and clinical trials (Drapeau, Marchand, & Beaulieu-Prévost, 2011; Kessler et al., 2002). On the one hand, psychological distress functions as an emotional disturbance that may impact the social functioning and daily living of affected individuals (Wheaton, 2007). On the other hand, a high level of psychological distress is a diagnostic criterion for most psychiatric disorders (e.g., post-traumatic stress disorder, obsessive-compulsive disorder); with an impairment in daily living, it is a marker of the severity of symptoms in other disorders (e.g., major depression, social phobia) (Philips, 2009). According to the Diagnostic and Statistical Manual of Mental Disorders, 5th edition (*DSM–5*; American Psychiatric Association [APA], 2013), "mental disorders are usually associated with significant distress in social, occupational, or other important activities" (APA, 2013, p. 20).

1.1.2. The specific versus nonspecific mechanisms underlying psychological interventions

Although research has consistently found that psychotherapy is an effective treatment method for psychological disorders (e.g., Huhn et al., 2014; Hunsley, Elliott, & Therrien, 2014), indicating which factors contribute to effectiveness of psychotherapy has been the source of a long-standing debate. On one side of the debate are the advocates of the empirically supported treatments who claim that treatments are analogues of medical treatments in that efficacy is attributed to their respective specific ingredients, which are usually presented in treatment manuals (e.g., Crits-Christoph, 1997; DeRubeis, Brotman, & Gibbons, 2005). On the other side of the debate are those who stipulate that the common factors or techniques that are common to all forms of therapy, such as the healing context, the working alliance, hope for improvement, and belief in the rationale for treatment and in the treatment itself, are the important therapeutic aspects of counseling and psychotherapy (e.g., Ahn & Wampold, 2001; Frank, 1961).

1.1.3. Rational and irrational beliefs

Rational and irrational beliefs are central constructs in Rational Emotive Behavior Therapy (REBT), one of the first forms of cognitive-behavioral therapy (CBT), founded by Albert Ellis in 1955. REBT theory has evolved from its first presentation in a formal publication (Ellis, 1955). However, the ABC framework is still seen as the core of REBT theory, although it evolved itself. A refers to various activating events, be them negative (e.g., a family fight) and/or positive (e.g., passing a difficult exam). C refers to various consequences, including key human responses like affective state (i.e., subjective feelings, physiological arousal, action tendencies) and overt behaviors. B refers to our beliefs. In a modern version (see David, in press), the meaning of B is defined based on cognitive sciences developments to refer to our information processing, be it consciously accessible (e.g., thoughts/beliefs) and/or unconscious information processing (e.g., implicit associations). Some consciously accessible information processing can appear in the form of descriptions (e.g., "The room is full of people") and inferences (e.g., "They do not like me."), often called thoughts, while others appear in the from of appraisal/evaluations (e.g., "They must like me and it is awful if they do not like me.") often called beliefs (David, in press).

1.1.3.1. Rational and irrational beliefs types

After initially proposing 11 irrational belief types (Ellis, 1962), subsequent developments in REBT (Ellis & Bernard, 1985) assigned these types of irrational beliefs to four categories: demandingness, awfulizing (or catastrophizing), frustration intolerance (or low frustration tolerance), and global evaluation (or overgeneralization). Demandingness refers to absolutistic/inflexible requirements expressed in the form of "musts," "shoulds" and "oughts" (e.g., "She must do what I want or I will not accept the divorce."). Awfulizing (i.e., catastrophizing) refers to the evaluation of an event as "the worst thing possible" (e.g., "It is awful to be left by my wife."). Frustration intolerance (i.e., low frustration tolerance) refers to the evaluation of the situation as something that one "cannot stand" (e.g., "I cannot stand being left by my wife."). Global evaluation (i.e., overgeneralization) can refer to one's own person (e.g., self-downing, "I am worthless."), other persons (other-downing, "My wife is worthless."), and/or the life situation (life-downing, "Life is totally unfair.") For further details on these categories, see David, in press.

The rational alternative beliefs in REBT are: flexible and accepting thinking (i.e., preference, "I prefer and I am doing my best to be loved by my wife, but I accept that it might not happen."), a nuanced evaluation of badness (i.e., badness, "It is bad, but not the worst thing possible."), frustration tolerance (i.e., high frustration tolerance, "I can tolerate it even if I do not like it."), and unconditional acceptance (i.e., of myself, others, and life, "I unconditionally accept myself/others/life, although some specific aspects, such as my behavior, may be more or less good.").

1.1.3.2. Rational and irrational beliefs measures

A recent review of irrational belief measures (Terjesen, Salhany, & Sciutto, 2009) identified 14 English language measures and seven non-English language measures of irrational beliefs. The most commonly used early instruments that were based on the 11 types of irrational beliefs initially proposed were the Irrational Beliefs Test (IBT; Jones, 1968), and the Rational Behavior Inventory (RBI; Shorkey & Whiteman, 1977). Later,

Malouff and Schutte (1986) developed the Irrational Belief Scale (IBS) in response to the criticisms of the earlier scales (e.g., combined cognitive and affective items). Whereas the theoretical basis remained the same, the IBS separated cognition-related items from affect-related items, thus increasing the discriminant validity of the subscales. A new generation of irrational beliefs measures was developed to assess the four types of irrational beliefs outlined in the updated REBT theory (Ellis & Bernard, 1985). These instruments share the following characteristics: (a) they contain non-contaminated items (i.e., items that assess only cognitions), (b) they include separate scores for irrational and rational beliefs, and (c) they can separate the process from the content of thought (Lindner, Kirkby, Wertheim, & Birch, 1999). Examples of this new generation of irrational belief measures include the Attitude and Beliefs Scale/General Attitude and Belief Scale and its short form (ABS/GABS; Bernard, 1990; Burgess, 1986; DiGiuseppe, Leaf, Exner & Robin, 1988; Lindner et al., 1999) and the Survey of Personal Beliefs (SPB; Kassinove, 1986).

1.1.3.3. Irrational beliefs and other cognitive constructs

The relation between irrational beliefs and other cognitive constructs has been investigated in several studies. Irrational beliefs have been related to automatic thoughts (e.g., Cristea, Montgomery, Szamoskozi, & David, 2013; Szentagotai & Freeman, 2007; Wong, 2008), dysfunctional attitudes (e.g., Cristea et al., 2013; Wong, 2008), and response expectancy (Montgomery, David, DiLorenzo, & Schnur, 2007). Usually, these studies have shown a medium to high positive association between irrational beliefs and other cognitive constructs underlying different CBT approaches or independent of these (e.g., expectancies), indicating that they are similar, related, but still distinct constructs.

1.1.3.4. Irrational beliefs and psychological distress

A large body of empirical evidence has demonstrated that irrational beliefs are related to psychological distress in both nonclinical and clinical populations. Studies have linked irrationality to general distress (e.g., Cramer, & Kupshik, 1993), exam-related distress (e.g., DiLorenzo, David, & Montgomery, 2007), surgery-related distress (e.g., David, Montgomery, Macavei, & Bovbjerg, 2005), cancer-related distress (e.g., Szentagotai, 2006), and work-related distress (e.g., van Wijhe, Peeters, & Schaufeli, 2013). Studies have also linked irrationality to more specific types of distress such as anxiety, including both state anxiety (e.g., Cramer & Buckland, 1995) and trait anxiety (e.g., Hart & Hittner, 1991), as well as more specific forms of anxiety such as test anxiety (e.g., Wong, 2008), social anxiety (e.g., Monti, Zwich, & Warzak, 1986), and public speaking anxiety (Goldfried & Sobocinski, 1975). In addition, irrationality has been linked to depression (e.g., Mezo & Short, 2012), both state anger (e.g., David, Schnur, & Belloiu, 2002) and trait anger (e.g., Martin & Dahlen, 2004), and guilt (e.g., Kassinove & Eckhardt, 1994).

1.1.4. Response expectancy and outcome expectation

Response expectancies are anticipantions of automatic subjective and behavioral responses to particular situational cues, and their effect are a form of self-fulfilling prophecy (Kirsch & Lynn, 1999). Kirsch (1985) has hypothesized that response expectancies are: sufficient to cause nonvolitional outcomes (e.g., anxiety, depression),

not mediated by other psychological variables, and self-confirming. A specific category of response expectancies is considered to be outcome expectations. They reflect patients' prognostic beliefs about the consequences of engaging in treatment (Constantino, Arnkoff, Glass, Ametrano, & Smith, 2011).

1.1.4.1. Outcome expectations and outcome

Narrative reviews point to patients' psychotherapy outcome expectations being fairly consistently linked to treatment outcome across various psychotherapies (e.g., Arnkoff, Glass, & Shapiro, 2002; Greenberg, Constantino, & Bruce, 2006). This association was supported in a comprehensive meta-analysis of studies published through 2009 that examined the correlation between patients' self-reported outcome expectations assessed at baseline or session 1 and posttreatment symptomatology (Constantino et al., 2011).

1.1.4.2. Change in outcome expectations during therapy

Dew and Bickman (2005) defined outcome expectancies "as a pretreatment client characteristic, i.e., as something clients bring to therapy" (p. 21). According to this understanding, which is also shared by other authors, patients' expectancies have to be assessed before treatment. However, it appears reasonable to assume that outcome expectations are continually influenced throughout the course of therapy, either by additional rationales delivered after the first session of therapy, either by therapeutic techniques that are introduced (Newman & Fisher, 2010).

1.1.4.3. Outcome expectations and patients' characteristics

Some studies have revealed demographic variables as positive correlates of outcome expectations, including being female (Hardin & Yanico, 1983) and older (Tsai, Ogrodniczuk, Sochting, & Mirmiran, 2012). Other studies have focused on the contextual variable of prior treatment experience, which was found to relate to more positive outcome expectation (MacNair-Semands, 2002; Swift, Whipple, & Sandberg, 2012). In terms of clinical variables, higher general baseline distress has been negatively related to pre- or early-treatment outcome expectation among treatment-seeking patients (Gibbons et al., 2003; Elliott, Westmacott, Hunsley, Rumstein-McKean, & Best, 2014). Specific patient symptoms also have demonstrated a negative relation to outcome expectation, including diagnostic comorbidity (Gibbons et al., 2003), depression (Smeets et al., 2008; Tsai et al., 2012), substance abuse (Constantino, Penek, Bernecker, & Overtree, 2013; MacNair-Semands, 2002), personality disorders (Constantino et al., 2013), and somatic complaints (MacNair-Semands, 2002).

1.1.4.4. Outcome expectations and therapeutic factors

Different therapist characteristics were related to outcome expectations. Anxious participants with high expectations for anxiety change had good outcomes only when hearing the treatment rationale from a warm, enthusiastic therapist (Ahmed & Westra, 2008). By contrast, patients with low expectations for anxiety change had good outcomes only when hearing the treatment rationale from a cold, less enthusiastic therapist. In a study of group CBT for insomnia (Constantino et al., 2007), patients with lower early treatment outcome expectations had better outcome expectations when perceiving their therapist as more affiliative during the first session. Perceived therapist affiliation did not matter for those patients with higher early outcome expectations. In a CBT treatment for GAD sample (Westra, Constantino, Arkowitz, & Dozois, 2011), greater therapist competence in the delivery of CBT was associated with higher subsequent patient

outcome expectations, which were in turn associated with better overall treatment outcomes.

1.1.4.5. Outcome expectations and therapeutic alliance

With the outcome expectancy-posttreatment outcome link established, another line of research has examined outcome expectation as a predictor of during-treatment process. The most extensive focus of this work has been on the quality of the therapeutic alliance. Studies of varied treatments for varied conditions have shown an association between higher pre- or early-treatment outcome expectation and better alliance quality (e.g., Gibbons et al., 2003; Constantino, Arnow, Blasey, & Agras, 2005; Tsai et al., 2012).

1.2. Identification of research gaps

1.2.1. Identified gaps in the irrational beliefs literature

Although many studies investigated REBT theory, there are no quantitative meta-analyses summarizing them; thus, it is time, after 60 years of research to integrate all the results quantitatively, so that we can understand better the status of REBT theory and its heuristic values for future research. Moreover, although the distinction between "hot" and "cold" cognitions is a key one in the general psychology theories, sometimes in Cognitive Therapy (CT; Beck, 1976 and its update in Beck, 1995) this distinction is overlooked in the name of clinical relevance. Because at the phenomenological level "cold" and "hot" cognitions are interrelated, in CT they are often treated together as "distorted cognitions" and included as such in various distorted cognitions scales/measures (e.g., Automatic Thoughts Questionnaire-Short Version; Netemeyer et al., 2002). However, the distinction can have both theoretical (e.g., what type of cognitions is a proximal mediator of emotional distress) and practical (e.g., on what type of cognitions we should mainly focus our interventions) implications; therefore, its exploration is fundamental not only for the CBT field, but also for the clinical field in general.

1.2.2. Identified gaps in the outcome expectations literature

That patients' psychotherapy outcome expectations are fairly consistently linked to treatment outcome has been supported by a meta-analysis conducted by Constantino et al. in 2011. Nevertheless, there is a discussion in the literature regarding how different criteria of treatment success can be differentiated (Schulte, 1995, 2008). Schulte (2008) found that the relation between outcome expectation and outcome depends on how outcome is conceptualized (i.e., either as posttreatment score or as change score). However, Schulte's study did not assess outcome expectations before treatment, and therefore, no conclusion regarding association between pretreatment outcome expectancy and outcome depending on how outcome is conceptualized can be made. Second, despite the extensive research on pretreatment and during therapy outcome expectations, there is scarce evidence regarding the pattern of chance (i.e., slope) in outcome expectations (Brown et al., 2014; Newman & Fisher, 2010). Third, even there is some research that centers on patient characteristics that relate to baseline or early-treatment outcome expectations, studies have not considered the relation between patient characteristics and outcome expectations at screening. It might be important to assess patients' outcome expectations at their first contact with the therapist, and more than that, to investigate what variables predict such expectations. Fourth, even the literature reviewed above

found various therapist characteristics to be related to patient outcome expectations, it would be of increased significance to explore if there is a therapist effect in how outcome expectations develop during therapy (i.e., are some therapists better than others in influencing how their patients' outcome expectations are changing during therapy), and what therapeutic and/or patient factors are significant predictors of this change.

1.3. Relevance and impact of the research topic

The meta-analysis that we will conduct will integrate quantitatively, for the first time, a large quantity of data that investigated the relationship between irrational beliefs and psychological distress. Moreover, clarifying the relation between irrational beliefs and other cognitive constructs, and investigating their contribution to public speaking anxiety and psychological distress will help us explicitly differentiate between these cognitions types and allow us to build/improve and test evidence-based interventions that target these specific constructs.

Considering the abundant evidence that different treatments produce largely equivalent outcomes (e.g., Barth et al., 2013), some researchers have stated that common treatment factors are more instrumental in affecting change than specific treatment techniques (e.g., Ahn & Wampold, 2001; Duncan, Miller, Wampold, & Hubble, 2010). Consequently, there has been a growing trend toward making "the nonspecific specific," so that common factors can be identified, taught, and utilized in order to enhance therapeutic effectiveness (Omer & London, 1988, p. 176). In this context, our outcome expectations investigation is a step further toward achieving this aim.

CHAPTER II. RESEARCH OBJECTIVES AND OVERALL METHODOLOGY

The general goal of this research project was to study the contribution of some specific and nonspecific factors to emotional distress and mental illness. As specific factors, we focused on various types of cognitions postulated to be the target of interventions in different forms of CBT, especially in REBT (i.e, irrational beliefs). Regarding nonspecific factors, we focused on treatment outcome expectations.

The **first** specific objective of our research was to summarize the quantitative findings regarding the relationship between irrational beliefs and various types of psychological distress using meta-analytic methods (**Study 1**). The **second** objective was dedicated to clarifying the relationships between irrational or evaluative beliefs and other cognitive constructs (e.g., descriptions, inferences, automatic thoughts, response expectancies), and investigating how they relate to both psychological distress and public speaking anxiety (**Study 2 and 3**). The **third** specific objective was to investigate the relation between outcome expectations and outcome in a sample of patients receiving CBT treatment for depression. Moreover, starting from the established connection between outcome expectations and outcome, the **fourth** specific objective was to analyze the shape of change in outcome expectations during therapy. The **fifth** specifc objective was to identify if there is a therapist effect in how outcome expectations change, namely if some therapists do consistently better than others in influencing their patients' outcome expectations during therapy. The **sixth** specific objective was to investigate if there is an association between initial outcome expectations (i.e., intercept) and how they change (i.e., slope). The s**eventh** specific objective was to investigate possible predictors of outcome expectations' intercept and slope. All these objectives (third to seventh) were reached in **Study 4**.

CHAPTER III. ORIGINAL RESEARCH

Study 1. Irrational beliefs and psychological distress: A meta-analysis[1]

In the development and maintenance of psychological distress, cognitive processes have been postulated as essential components since the early 1950; these processes have often been coined as Cognitive Revolution in psychology (Broadbent, 1958; Chomsky, 1959; Miller, 1956). One early researcher with an empirical and clinical interest in these processes was Albert Ellis, who proposed Rational Emotive Behavior Therapy (REBT) as an early cognitive-behavioral framework for the treatment of mental disorders (Ellis, 1955). Over the years, many studies investigated REBT and helped to refine the theory and practice of REBT based on a large number of diverse narrative reviews of empirical research (see David, Lynn, & Ellis, 2010; Haaga & Davidson, 1993). However, thus far, the quantitative findings associated with these reviews have not been summarized using meta-analytic methods.

The goal of the present investigation was to summarize the quantitative findings regarding the correlational relationship between irrational beliefs and various types of psychological distress using meta-analytic methods.

Potential moderators

Distress measure. We tested whether the effects were replicated across different distress measures. We expected that the relationship between irrational beliefs and psychological distress would be significantly different when distress was measured by scales that contain mostly emotional items (e.g., the STAI, the POMS) compared with scales that also contain other types of items such as somatic items (e.g., the BDI; see Storch, Roberti, & Roth, 2004).

Irrational beliefs measure. For each type of psychological distress (i.e., general distress, anxiety, depression, anger, guilt), we tested whether the effects were replicated across different measures of irrational beliefs, or were methodological artifacts of specific measures of the construct.

Irrational beliefs type. For each type of psychological distress (i.e., general distress, anxiety, depression, anger, guilt), we tested whether the type of irrational beliefs significantly moderated the association between irrational beliefs and psychological distress.

Self-reported versus observer-reported distress perspective. Although previous studies (e.g., Szentagotai & Freeman, 2007) have simultaneously reported associations between irrational beliefs and distress in both self-reports and observer-reports (e.g., clinician-reported studies), these studies did not examine the potentially moderating effect of these different observational perspectives.

General/core versus specific irrational beliefs. Previous studies reported associations of each general/core and specific/contextual irrational beliefs with distress (e.g., Montgomery et al., 2007). However, no studies compared general versus specific

[1] This study is under review at Psychological Bulletin. Vîslă, A., Flückiger, C., grosse Holtforth, M., & David, D. (under review). Irrational beliefs and psychological distress: A meta-analysis. ISI Impact factor 14.392

irrational beliefs as a potential moderator of the association between irrational beliefs and distress.

Naturally varying versus manipulated irrational beliefs. We expected that the association between irrational beliefs and distress would be significantly stronger in studies where irrational beliefs were not only measured but also manipulated.

Time lag between irrational beliefs and distress assessment. We tested whether the association between irrational beliefs and distress was significantly different depending on the time lag between the measurement of irrational beliefs and distress.

Stressful events. We tested the effect of whether a significant stressful event (a) was present or absent, (b) was real or experimentally induced, and (c) was personally relevant or irrelevant.

Sample characteristics. Sample characteristics such as age, gender, income, educational status, marital status, occupational status, and clinical status were tested as moderators of the association between irrational beliefs and psychological distress for each distress type.

Developer/validator status of the author(s). To test if researchers' potential conflicts of interest systematically impact the correlations between irrational beliefs and distress, we integrated a respective moderator that indicated: (a) whether researchers had originally developed or co-developed an irrational beliefs instrument, and (b) whether researchers had previously validated an irrational beliefs scale.

Publication year and country. When (i.e., publication year) and where (i.e., publication country) the study was conducted may influence the relationship between irrational beliefs and psychological distress.

(Dys)functionality of emotional responses

We have separately computed the relationship between irrational beliefs and dysfunctional negative emotions (i.e., anxiety, depression, anger, guilt), and the relationship between irrational beliefs and functional negative emotions (i.e., concern, sadness, annoyance, remorse).

Methods

Selection of Studies

To search for relevant studies, we utilized two strategies. First, potentially relevant studies were queried in the PsycINFO and Medline databases for all years covered through October 2013. We used the following search terms: "irrational beliefs," "distress," "negative feelings," "negative emotions," "anxiety," "depression," "anger," and "guilt". Second, we examined the reference sections of all articles included in the meta-analysis.

Only studies that fulfilled the following criteria were included in the quantitative investigation: (a) assessed irrational beliefs according to REBT theory, (b) assessed at least one type of psychological distress (e.g., general distress, anxiety, depression, anger, guilt), (c) researchers reported a numerical relationship between irrational beliefs and psychological distress that was amenable to meta-analytic methods. Eighty-three articles satisfied the inclusion criteria.

Coding of Studies

Coded variables included (a) study identification data (study identifier, author[s]), (b) when (i.e., publication year) and where (i.e., country) the study was conducted (e.g., the United States, France), (c) developer or validator status of the author(s), (d) sample

characteristics (e.g., sample size, mean age of participants, proportion of females, income, educational status, marital status, occupational status, clinical status), (e) irrational beliefs measure, (f) irrational beliefs type (i.e., subscales of irrational beliefs measures), (g) distress measure, (h) distress type, (i) irrational beliefs characteristics (i.e., general versus specific, measured versus manipulated, irrational beliefs reported score: total or subscale), (j) distress characteristics (i.e., self-report versus observer report, [dys]functionality of emotional responses), (k) time lag between the evaluation of irrational beliefs and distress, (l) stressful events (i.e., present versus absent, real/naturalistic versus experimentally induced, personally relevant versus not personally relevant), (m) test statistic (e.g., bivariate correlation, standardized regression coefficient, coefficient of determination), and (n) effect size.

Meta-Analytic Procedures

The correlation coefficient, *r,* was the measure of choice to assess the effect size for most analyses. A few studies (i.e., four) assessed effect sizes utilizing other statistical measures (e.g., standardized regression coefficients, coefficients of determination); these statistical values were converted to *r* (Del Re & Hoyt, 2010). Effect sizes that were not described or were reported as non-significant were set as 0.

All computations were performed on the basis of Fisher's *z* transformation of *r* before the sample effect sizes were included in our meta-analysis. The weighted mean effect sizes were converted back to *r* for interpretive purposes. In the effect size analyses, we used a random-effects model, which assumes that the studies included in this meta-analysis were sampled from a population of studies. All analyses were conducted using the R statistical software package for meta-analysis "MAc" (Del Re & Hoyt, 2010) and "metafor" (Viechtbauer, 2010).

Heterogeneity was assessed using the Q and I^2 statistics (Higgins & Thompson, 2002). To identify publication bias, asymmetry was tested based on rank correlation (Begg & Mazumdar, 1994) and regression tests (Egger, Smith, Schneider, & Minder, 1997). Furthermore, a funnel plot was examined using trim and fill procedures (Duval & Tweedie, 2000).

Results

Descriptive characteristics

Participant characteristics. The total number of participants across all 83 studies comprising 100 different samples (i.e., independent samples) was 16,110. The weighted mean age by sample size was 29.4 years (SD = 10.45), with a minimum of 12.5 years, and a maximum of 72.5 years.

Study characteristics. The 83 studies comprising the 100 different samples included in our meta-analysis were published between 1972 and 2013, with a median year of 1994. Sixty-two samples were located in the United States, 14 in Romania, seven in the United Kingdom, four in Canada, four in Australia, and one each was located in France, the United Arab Emirates, Turkey, Spain, Greece, Netherlands, Singapore, and Russia; one study included participants from both the United States and Russia.

Irrational beliefs and psychological distress measures. The most frequently used measures for irrational beliefs were the IBT (Jones, 1968) (k = 23), the SPB (Kassinove, 1986) (k = 18), the IBS (Malouff & Schutte, 1986) (k = 15), and the ABS/GABS (Bernard, 1990; Burgess, 1986; DiGiuseppe et al., 1988; Lindner et al., 1999) (k = 15). The most frequently used measures for psychological distress were the BDI (Beck, Steer,

& Brown, 1996) (k = 25), the STAI (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983) (k = 21), the POMS (McNair, Lorr, & Droppleman, 1971) (k = 10), and a single item rating (i.e., emotional items rated on a Likert scale; e.g., anxiety, depression, anger) (k = 8).

Irrational beliefs and psychological distress types. Irrational belief types were measured as follows: demandingness was measured in 40 samples, awfulizing/catastrophizing in 22 samples, frustration intolerance/low frustration tolerance in 24 samples, and global evaluation in 22 samples. The psychological distress types (i.e., negative dysfunctional emotions) were measured as followed: general distress was measured in 26 samples, depression in 47, anxiety in 44, anger in 17, and guilt in six.

Relationship between irrational beliefs and overall psychological distress

Omnibus test. The overall effect of the unconditional model analysis (K = 100) was r = .38 (95% CI = .34, .42). There was significant heterogeneity in the effect sizes (Q = 904.88, p < .001; I^2 = 89%, CI = .34 to .42), indicating that one or more study level variables might explain the variability of the effect sizes.

Publication bias. To test if the studies included in this analysis indicated any publication bias, a funnel plot (Figure 1) was generated. Significance tests of asymmetry indicated that publication bias was not present in the included studies (p > .22). The trim and fill procedure (Duval & Tweedie, 2000) estimated that the number of missing studies needed to attain complete symmetry was one; the imputed study is depicted in Figure 1.

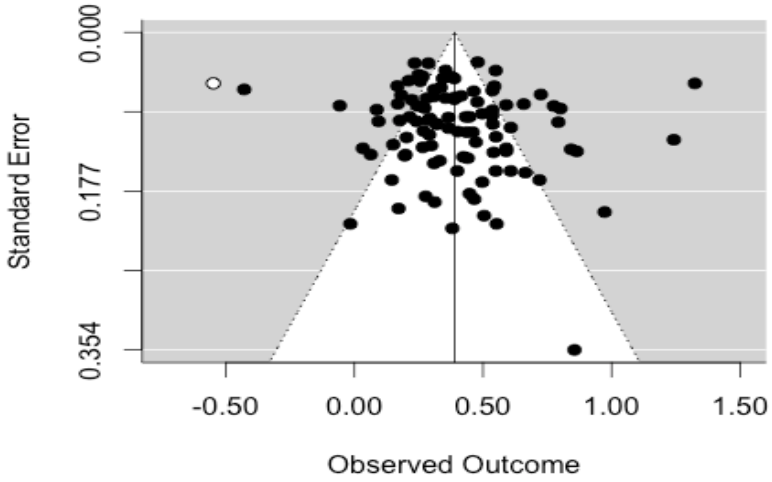

Figure 1. Funnel plot for the effect sizes of the relation between irrational beliefs and psychological distress. The vertical bar represents the weighted mean effect size. The black dots represent the studies included in the analyses. The white dot represents the study that would be needed for attaining complete symmetry.

Overall sample moderation analysis

Distress measure. The distress measure was not a significant moderator of the relationship between irrational beliefs and psychological distress on the overall sample (Q_b [4] = 9.25, p > .05).

Relationship between irrational beliefs and psychological distress types

Omnibus test. We computed the overall effect size for each psychological distress type (see Table 1). As shown in Table 1, the relationship between irrational beliefs and each distress type reached statistical significance. Moreover, there was significant heterogeneity for each distress type. Therefore, in the following sections we will include moderation analyses for each distress type.

Table 1. Overall effect sizes for different psychological distress types

Distress types	*k*	*N*	*r*	95% *CI*	*Q*	I^2
General distress	26	4,290	.36**	[.27, .44]	243.2**	89%
Depression	47	8,278	.33**	[.26, .39]	463.06**	90%
Anxiety	44	5,911	.41**	[.31, .5]	752.99**	94%
Anger	17	3,046	.25**	[.17, .32]	72.86**	76%
Guilt	6	1,270	.29*	[.02, .52]	122.15**	95%

Note. *k* is the number of effect sizes included in each analysis; ** $p < .001$, * $p < .05$

Moderation analysis within distress types

Due to the small number of studies, we could not compute moderation analyses in the case of guilt. Moreover, for income, marital status, and occupational status, there were not enough studies to test moderation in any of the psychological distress types.

Irrational beliefs measure. We did not find the irrational beliefs measure to moderate the relationship between irrational beliefs and general distress (Q_b [4] = 1.13, $p > .05$; see Table 2). However, as shown in Table 2, the irrational beliefs measure moderated the association between irrational beliefs and depression (Q_b [4] = 16.36, $p < .05$) and the association between irrational beliefs and anxiety (Q_b [4] = 12.38, $p < .05$; see Table 2).

Table 2. Irrational beliefs measure as a moderator of the irrational beliefs-psychological distress association

	Distress types		
Measures	General distress (Q = 1.13; p > .05)	Depression (Q = 16.36; *p* < .05)	Anxiety (Q = 12.38; p < .05)
IBT	.50* (k = 2)	.46** (k = 10)	.50** (k = 12)
IBS	.30* (k = 5)	.41** (k = 7)	.45** (k = 7)
ABS	.40** (k = 6)	.45** (k = 6)	.73** (k = 3)
SPB	.37* (k = 4)	.17* (k = 11)	.28* (k = 9)
Others	.33** (k = 9)	.25** (k = 13)	.29* (k = 13)

Note. IBT - Irrational Beliefs Test; IBS - Irrational Belief Scale; ABS - Attitude and Beliefs Scale; SPB - Survey of Personal Beliefs; Others - other instruments used to measure irrational beliefs beside the core ones. *k* is the number of effect sizes included in each analysis; ** $p < .001$, * $p < .05$

Irrational beliefs type. As shown in Table 3, we did not find any significant results for the type of irrational beliefs as a moderator of the association between irrational beliefs and depression (Q_b [3] = 5.81, $p > .05$), or for the association between irrational beliefs and anxiety (Q_b [3] = 0.54, $p > .05$).

Table 3. Irrational beliefs type as a moderator of the irrational beliefs-psychological distress association

	Distress types	
Irrational beliefs type	Depression (Q = 5.81; p > .05)	Anxiety (Q = .54; p > .05)
DEM	.19** (k = 8)	.32* (k = 9)
AWF/CAT	.20** (k = 7)	.30 (k = 2)
FI/LFT	.39** (k = 4)	.40* (k = 7)
GE	.20* (k = 6)	.24 (k = 2)

Note. DEM - demandingness; AWF/CAT – awfulizing/catastrophizing; FI/LFT – frustration intolerance/low frustration tolerance; GE - global evaluation. *k* is the number of effect sizes included in each analysis; ** $p < .001$, * $p < .05$

Frustration intolerance versus other irrational belief types. Variation was observed among the association between irrational beliefs and distress for different irrational belief types; frustration intolerance showed the highest association. Therefore we computed an exploratory analysis contrasting frustration intolerance and all other irrational belief types (i.e., demandingness, awfulizing, global evaluation) for each psychological distress type (see Table 4). A significant moderation effect for frustration intolerance versus all other irrational belief types was obtained in depression (Q_b [1] = 4.48, $p < .05$), anxiety (Q_b [1] = 3.97, $p < .05$), anger (Q_b [1] = 3.89, $p < .05$), and guilt (Q_b [1] = 6.37, $p < .05$), but not in general distress (Q_b [1] = 1.67, $p > .05$). As shown by the direct contrasts for psychological distress types presented in Table 4, the relationship between frustration intolerance and distress was significantly higher than the relationship between all other irrational belief types combined and distress.

Table 4. Frustration intolerance/low frustration tolerance versus other irrational belief types

	Distress types			
FI/LFT vs. Others	Depression	Anxiety	Anger	Guilt
	Q = 4.48	Q = 3.97	Q = 3.89	Q = 6.37
	p < .05	p < .05	p < .05	p < .05
FI/LFT	.38** (k = 6)	.47** (k = 9)	.30** (k = 5)	.36** (k = 3)
Others	.22** (k = 19)	.24* (k = 11)	.16** (k = 8)	.00 (k = 3)

Note. FI/LFT – frustration intolerance/low frustration tolerance; Others – other irrational beliefs types (i.e., demandingness, awfulizing/catastrophizing, global evaluation). *k* is the number of effect sizes included in each analysis; ** $p < .001$, * $p < .05$

Self-reported versus observer-reported distress. The association between irrational beliefs and depression did not significantly differ depending on whether depression was self-reported or measured from an observer perspective (Q_b [1] = .69, $p > .05$). We were not able to perform an analysis for general distress, anxiety, and anger because there were not enough studies per moderator category ($k < 2$).

General/core versus specific irrational beliefs. The relationship between irrational beliefs and psychological distress did not significantly differ depending on whether irrational beliefs were measured as being general or specific, in either general distress (Q_b [1] = .65, $p > .05$), depression (Q_b [1] = .001 $p > .05$), and anxiety (Q_b [1] = .26, $p > .05$). We were not able to perform this analysis for anger because there were not enough studies per moderator category ($k < 2$).

Naturally varying versus manipulated irrational beliefs. The association between irrational beliefs and both general distress and anxiety did not significantly differ depending on whether irrational beliefs were manipulated or merely measured (Q_b [1] = 2.91, $p > .05$ for general distress; Q_b [1] = .04, $p > .05$ for anxiety). We were not able to perform this analysis for depression and anger because there were not enough studies per moderator category ($k < 2$).

Time lag between irrational beliefs and psychological distress assessment. Because most of the studies reported that irrational beliefs and psychological distress were measured at either the same time or at different time points, we analyzed the coinciding assessment as a dichotomous moderator. These analyses indicated no significant moderation effect for all distress types: general distress (Q_b [1] = 0.58, $p > .05$), depression (Q_b [1] = 1.40, $p > .05$), anxiety (Q_b [1] = .03, $p > .05$), and anger (Q_b [1] = 0,

$p > .05$).

Stressful events. Regarding stressful events, we computed three direct contrasts: (a) stressful event present versus absent, (b) stressful event real/naturalistic versus experimentally induced, and (c) stressful event personally relevant versus not relevant. For (a), we obtained significant results in the case of depression (Q_b [1] = 7.87, $p < .05$); the association between irrational beliefs and depression was higher when a stressful event was present ($r = .67$, $p < .001$, $k = 2$) than when a stressful event was not present ($r = .30$, $p < .001$, $k = 42$). For (b), we also obtained a significant result for general distress (Q_b [1] = 4.77, $p < .05$); a higher association between irrational beliefs and general distress was reported when the stressful event was experimentally induced ($r = .55$, $p < .001$, $k = 2$) versus when the stressful event was real/naturalistic ($r = .32$, $p < .001$, $k = 7$). For (c), we did not obtain a significant moderation effect for the personal relevance of the stressful event for either anxiety or depression (Q_b [1] = 1.002, $p > .05$ for anxiety; Q_b [1] = .22, $p > .05$ for depression).

Age and gender. Age was a significant moderator of the relationship between irrational beliefs and anger (Q_b [1] = 4.57, $p < .05$, k = 11). Specifically, we found that for every unit increase in age, there was a .04 increase in the association between irrational beliefs and anger ($p < .05$). For all other psychological distress types, age was not a significant moderator. Gender was not a significant moderator in any of the psychological distress types.

Educational status. Educational status was a significant moderator of the association between irrational beliefs and distress in general distress (Q_b [1] = 4.02, $p < .05$) and anger (Q_b [1] = 15.52, $p < .05$). The association with general distress was significantly smaller in students ($r = .30$, $p < .001$, $k = 16$) compared with subjects in non-university samples ($r = .46$, $p < .001$, $k = 10$). Similarly, the association with anger was smaller in students ($r = .19$, $p < .001$, $k = 14$) compared with subjects in non-university samples ($r = .52$, $p < .001$, $k = 3$). We did not obtain significant results for depression (Q_b [1] = .57, $p > .05$) and anxiety (Q_b [1] = .18, $p > .05$).

Clinical status. The clinical status of the participants was a moderator of the association between irrational beliefs and anger (Q_b [1] = 10.62, $p < .05$). This association was higher in clinical samples ($r = .54$, $p < .001$, $k = 3$) compared with nonclinical samples ($r = .21$, $p < .001$, $k = 14$). However, clinical status was not a significant moderator in general distress (Q_b [1] = .29, $p > .05$), depression (Q_b [1] = .1, $p > .05$), or anxiety (Q_b [1] = .52, $p > .05$).

Developer/validator status of the author(s). We found that the developer/validator status of the author(s) moderated the association between irrational beliefs and psychological distress for depression (Q_b [1] = 5.97, $p < .05$) and anger (Q_b [1] = 6.01, $p < .05$). Notably, the association between irrational beliefs and depression was significantly smaller when any of the authors were a developer/validator ($r = .22$, $p < .001$, $k = 15$) versus when none of the authors were a developer/validator ($r = .38$, $p < .001$, $k = 32$). Similarly, the association between irrational beliefs and anger was significantly smaller when an author was a developer/validator ($r = .15$, $p < .05$, $k = 7$) versus when an author was not a developer/validator ($r = .33$, $p < .001$, $k = 10$). The developer/validator status of the author(s) did not moderate the association between irrational beliefs and psychological distress for either general distress (Q_b [1] = .96, $p > .05$) or anxiety (Q_b [1] = .91, $p > .05$).

Publication year and country. We did not find a significant effect for the publication year in any of the psychological distress types (Q_b [1] = 1.13, $p > .05$ for general distress; Q_b [1] = 2.97, $p > .05$ for depression; Q_b [1] = .22, $p > .05$ for anxiety; Q_b [1] = .07, $p > .05$ for anger). Because sixty-two samples from the included studies were conducted in the United States, we constructed a categorical variable, namely USA versus all other countries, to classify where the studies were conducted. With this categorization, we did not find a significant effect for the country of origin in any of the psychological distress types (Q_b [1] = .05, $p > .05$ for general distress; Q_b [1] = 3.05, $p > .05$ for depression; Q_b [1] = .13, $p > .05$ for anxiety; Q_b [1] = 2.54, $p > .05$ for anger).

(Dys)functionality of emotional responses

While the association between irrational beliefs and overall dysfunctional negative emotions (i.e., anxiety, depression, anger, guilt) was significant ($r = .34$, $p < .001$, $k = 73$), the association between irrational beliefs and overall functional negative emotions (i.e., concern, sadness, annoyance, remorse) was not significant ($r = .19$, $p > .05$, $k = 4$).

Discussion

Based on 100 independent samples gathered in 83 primary studies, conducted in 13 different countries, over the last sixty years, the present meta-analysis tested one central hypothesis within this theoretical framework, namely the relationship between irrational beliefs and psychological distress. Overall, our results corroborate a moderate (overall r = .38) but robust relationship between psychological distress and irrational beliefs. None of the considered variables were significant moderators of the relationship between the intensity of irrational beliefs and the level of distress, with the following exceptions: the irrational beliefs measure chosen in a particular study, irrational belief types (specifically frustration intolerance), stressful events providing the context of assessment, age, educational status, clinical status, and the developer/validator status of the author.

Contrary to our hypothesis, distress measures did not significantly moderate the relationship between irrational beliefs and psychological distress. Nonetheless, when split into the various types of distress, the irrational beliefs measure was a moderator for depression and anxiety, but not for general distress (the number of studies per moderator category was insufficient for an analysis of anger and guilt). Somewhat contradictory to the irrational beliefs measures, irrational belief types did not significantly moderate the association between irrational beliefs and psychological distress in the case of depression and anxiety, for which there was a sufficient number of studies to allow for moderator analyses. However, frustration intolerance emerged to have a significantly higher correlation with all distress types compared with all other irrational belief types together. Regarding stressful events providing the context for assessment, we obtained significant results for depression and general distress. Specifically, the association between irrational beliefs and depression was higher when a stressful event was present than when a stressful event was not present. Contrary to our expectations, a higher association between irrational beliefs and general distress was reported when the stressful event was experimentally induced versus when the event was real/naturalistic. Nevertheless, we cannot draw firm conclusions for both distress types based on these results as the number of studies included in each moderator category was very small, restricting the statistical power.

Educational status was a significant moderator of the association between irrational beliefs and distress for general distress and anger; as expected, the association was significantly smaller in students compared with subjects in non-university samples. The clinical status of participants was also a significant moderator; the association between irrational beliefs and anger was significantly higher in clinical samples compared with nonclinical samples. Nevertheless, this result should be interpreted with caution, as the number of clinical samples for anger was small (i.e., three). The age of participants was a significant moderator of the relationship between irrational beliefs and anger; the association between irrational beliefs and anger increases with age.

There was no indication of publication bias, either in the overall sample or subsamples. In contrast to our hypothesis, the correlation between irrational beliefs and psychological distress was significantly smaller in studies conducted by researchers who were developers/validators of an irrational beliefs scale compared with studies conducted by non-developers/non-validators. This result is somewhat counter-intuitive and may be due to developers' strict adherence to scientific standards and/or their increased investment in the development of most valid measures of irrational beliefs that are minimally "contaminated" with emotional items. Finally, an interesting result was that the association between irrational beliefs and functional negative emotions (e.g., concern, sadness, annoyance, remorse) was not significant, while the association between irrational beliefs and dysfunctional negative emotions (e.g., anxiety, depression, anger, guilt) was significant.

Limitations

Several limitations emerged in the present meta-analysis. First, despite the sporadic experimental evidence included in the meta-analysis, the presented research does not allow us to draw strong conclusions regarding the causality of the relationship between irrational beliefs and psychological distress. Because the effects under investigation were not experimentally induced, they may be influenced by other variables that were not controlled for (Little, Preacher, Selig, & Card, 2007). Second, the studies included in the meta-analysis were conducted predominantly in a Western cultural context (i.e., no included study was conducted in Asia). Therefore, future research will need to test whether these results are applicable in other cultural contexts. Third, nearly all studies included in the meta-analysis employed self-reported measures of the constructs. Consequently, future research may benefit by including measures based on observer ratings (e.g., ratings by clinicians or relationship partners) and diagnostic interviews to further control for possible self-report biases. Forth, although irrational belief, general distress, and anxiety measures usually do not overlap in content, depression measures frequently include one or two items that are conceptually close to irrational beliefs. Fifth, most studies were conducted in subclinical or nonclinical samples (i.e., persons without a clinical diagnoses). Future research will need to investigate whether comparable psychological mechanisms link irrational beliefs and psychological distress in both clinical and nonclinical samples. Sixth, studies on guilt and functional negative emotions (i.e., sadness, concern, remorse, annoyance) were not as numerous as studies on general distress, depression, anxiety, and anger. Seventh, this meta-analysis was focused on the associations between irrational beliefs and psychological distress[2] and therefore excluded

[2] In our sample, we found a k of 5 studies that also reported the rational beliefs-psychological distress association.

rational belief scales/subscales. Clearly, future research should investigate the relationship between rational and/or irrational beliefs and positive and negative emotions, as well as both functional and dysfunctional emotions simultaneously, during various activating events.

Conclusions

This meta-analysis summarizes the quantitative findings regarding the relationship between irrational beliefs and various types of psychological distress of empirical studies conducted in the past 60 years. The results show that the overall strength of the relationship between irrational beliefs and different types of psychological distress is modest; however, this relationship is robust and holds across different samples, measurements, and study design. From a clinical point of view, a better understanding of the role of irrational beliefs in various clinical conditions will aid clinicians in conducting translational research to generate and test more powerful interventions that effectively target irrational beliefs with the goal of reducing distress and improving mental health.

Study 2. Core beliefs, automatic thoughts, and response expectancies in predicting public speaking anxiety[3,4]

A distinction in cognitions targeted in various forms of Cognitive-Behavior Therapy (CBT) is between core beliefs, which are more general and not easily accessible directly (e.g., "I am a worthless person") and more specific beliefs, activated often automatically, in circumscribed situations (e.g., "They will laugh at me"). According to CBT theory (Beck, 1995; Ellis, 1994), in specific situations, core beliefs (e.g., irrational beliefs) generate, by biasing the information processing of specific activating events, more specific beliefs in the form of automatic thoughts that then generate dysfunctional feelings and behaviors. Both core and specific beliefs can be descriptions (e.g., "The room is full of people"), inferences (e.g., "They will laugh at me"), or evaluations/appraisals (e.g., "They must not laugh of me and it is awful if they do"); however, unless appraised, descriptive and inferential beliefs do not directly generate emotions, although they might generate behaviors (David, 2003; Lazarus, 1991).

Besides the cognitions traditionally addressed by CBT, a robust literature (Kirsch, 1985) illustrates the impact of response expectancies (i.e., what individuals expect regarding nonvolitional responses) on emotional outcomes. Kirsch (1990) hypothesized that response expectancies are sufficient to cause nonvolitional outcomes, not mediated by other cognitive variables, and self-confirming. However, he acknowledged the response expectancy hypothesis is no different from other hypothesized causal relations between cognition and emotional experience, such as Beck's theory, as response expectancies can be conceptualized as inferential automatic thoughts. The issue of „direct

[3] This study has been accepted for publication: Vîslă, A., Cristea, I. A., Szentágotai Tatar, A., & David, D. (2013). Core beliefs, automatic thoughts and response expectancies in predicting public speaking anxiety. *Personality and Individual Differences*, *55*(7), 856-859. doi:10.1016/j.paid.2013.06.003. ISI Impact factor: 1.861

[4] The data used in this study were previously used for master degree completion; however, the analyses included in the present study are additional to the ones included in the master dissertation.

effect" seems to be contradictory with the idea that descriptions/inferences cannot directly generate feelings, unless they are appraised (David, 2003). Thus, the role of response expectancies in the general CBT theory needs further clarification.

All these different types of dysfunctional cognitions have been associated with various measures of distress and psychopathology (e.g., David, Schnur, & Belloiu, 2002; Hofmann & DiBartolo, 2000; Szentagotai & Freeman, 2007; Schoenberger, Kirsch, Gearan, Montgomery, & Pastyrnak, 1997). Nonetheless, there are few studies looking at the ways in which combinations of these constructs relate to distress. For example, Szentagotai and Freeman (2007) found that the impact of core irrational beliefs on depressed mood was mediated by automatic thoughts. Montgomery, David, DiLorenzo, & Schnur (2007) showed that the impact of general irrational thoughts on distress was mediated by response expectancies. However, we did not find empirical studies combining all the constructs (i.e., irrational beliefs, automatic thoughts, response expectancies) and distress in the same design, even if their interrelations were theoretically discussed (see Beck, 1995; Ellis, 1994).

The aim of the present study was to clarify the relationships among broad core cognitions, situation-specific automatic thoughts, and response expectancies in regard to their relative contributions to public speaking anxiety. The relationships between these cognitive constructs have not been investigated in the context of public speaking, nor on subjects with social anxiety. We predict, based on previous literature, that the impact of more general cognitions such as irrational beliefs on public speaking anxiety is mediated by more circumscribed beliefs like negative automatic thoughts and response expectancies. The investigation of the relationship between the last two is exploratory. In order to reach our objectives we used an innovative technology based on virtual reality.

Method

Participants

Ninety-nine undergraduate students (92 females and 7 males; mean age = 20.25; SD = 8.21) took part in the study in exchange for course credit. Participants were selected if they scored 30 or more on the Liebowitz Social Anxiety Scale- Self-Report *(*LSAS-SR; Fresco et al., 2001).

Measures

Liebowitz Social Anxiety Scale, Self-Report Version (LSAS-SR; Liebowitz, 1987; Fresco et al., 2001) measures social anxiety by assessing the fear and avoidance individuals might experience in social interaction and performance situations. A cut-off point of 30 is considered indicative of a diagnosis of social phobia. We used the self-report version of the LSAS, which was translated into Romanian. Data indicate excellent reliability (Cronbach's alpha of .93).

General Attitude and Beliefs Scale, Short Form (GABS – SF; Lindner, Kirkby, Wertheim, & Birch, 1999) is a 26-item scale designed to measure general rational and irrational beliefs (mainly evaluative). The GABS-SF was adapted and validated on Romanian population (Trip, 2007), with good reliability (Alpha Cronbach = .81).

Self-Statements During Public Speaking (SSPS; Hofmann & DiBartolo, 2000) is a self-statement questionnaire that assesses fearful thoughts associated with public speaking. This brief 10-item questionnaire consists of two 5-item subscales, the Positive Self-Statements (SSPS-P) and the Negative Self-Statements (SSPS-N) subscales. The

SSPS was translated for the purpose of this study. Cronbach's alpha in this sample was .78 for the SSPS-P and .81 for the SSPS-N.

Visual Analogue Scale (VAS). A 10-cm VAS assessing expectations of anxiety before performing a speech was administered. Specifically, participants had to rate on how anxious they expected they would feel while giving the speech.

The short form of the State version of the State-Trait Anxiety Inventory (mSTAI; Marteau & Bekker, 1992) consists of 6 items selected from the original STAI. It asks participants to rate statements regarding mood in terms of their perceived intensity. Alpha Cronbach in this sample was .81.

Procedure

After signing informed consent, participants completed the GABS–SF and SSPS. Participants were told they would have to give a 3 minutes speech in front of a virtual audience on a topic to be announced to them just before the speech, and were asked to rate on how anxious they expected to feel while performing the speech (VAS). A list of speech topics on controversial social, economic, political issues (e.g., violent computer games should be banned) was constructed and each subject got a different topic. The VR environment (Grapp, 2004) consisted of a virtual audience arranged in a medium sized room (15-20 individuals), in which the participant took the position of the speaker at the podium in front. Subjective anxiety (mSTAI) was measured just before the speech. Finally, participants were required to deliver their speech.

Data Analysis

Correlation and mediational analysis were performed. For mediational analysis, we used the bootstrapping procedure for assessing indirect effects (Preacher & Hayes, 2008). Preacher and Kelley (2011)'s kappa-square (i.e., κ^2) was reported as effect size for mediation models that were found to be significant, as well as corresponding confidence intervals.

Results

Correlations between the variables considered are presented in Table 1. For mediation analysis, we used bootstrapping tests with 5000 re-samples and reported a bias corrected and accelerated confidence interval (Preacher & Hayes, 2008). Mediation is considered present when the confidence interval for the estimation of the indirect effect does not contain 0. Since this was primarily an explorative study, we alternatively tested all possible mediation models using speech-related anxiety as the outcome.

Table 1. Correlations between cognitive and emotional variable considered

Cognitive variables	*1*	*2*	*3*	*4*
General irrational beliefs (GABS-SF)	—			
Response expectancies for anxiety (VAS)	.28*	—	—	
Negative automatic thoughts (SSPS-N)	.42*	.48*	—	
Emotional variables				
Anxiety (mSTAI)	.31*	.40*	.47*	—

Note. GABS-SF - General Attitude and Beliefs Scale, Short Form; VAS -Visual Analogue Scale; SSPS-N - Self-Statements During Public Speaking, Negative Self-Statements Subscale; mSTAI - Short form of the State version of the State-Trait Anxiety Inventory; *p<.05 Bonferroni Holm corrected for multiple comparisons

The results (see Figure 1) indicated that response expectancies acted as a mediator in the relationship between general irrational beliefs and speech-related anxiety, indirect effect = .02, *SE* = .01, 95% *CI* (bias corrected and accelerated) = .008 to .053; κ^2 = .09, 95% *CI* (bias corrected) = .02 to .19. The relationship between general irrational beliefs and anxiety was also found to be mediated by negative automatic thoughts specific to public speaking, indirect effect = .04, *SE* = .01, 95% *CI* (bias corrected and accelerated) = .021 to .088; κ^2 value was .17, 95% *CI* (bias corrected) = .07 to .29. There was no evidence of mediation in the alternative models. We also tested two multiple mediation models in which mediators influence each other, based on the results of simple mediations: (1) with response expectancies as mediator 1 and negative automatic thoughts specific to public speaking as mediator 2; (2) with automatic thoughts specific to public speaking as mediator 1 and response expectancies as mediator 2. We used general irrational beliefs as predictor and speech-related anxiety as outcome. Our results (see Figure 1) showed significant mediation only when response expectancies played the role of mediator 1 and negative automatic thoughts specific to public speaking the role of mediator 2 (model 1), indirect effect = .009, *SE* = .005, 95% *CI* (bias corrected and accelerated) = .002 to .026.

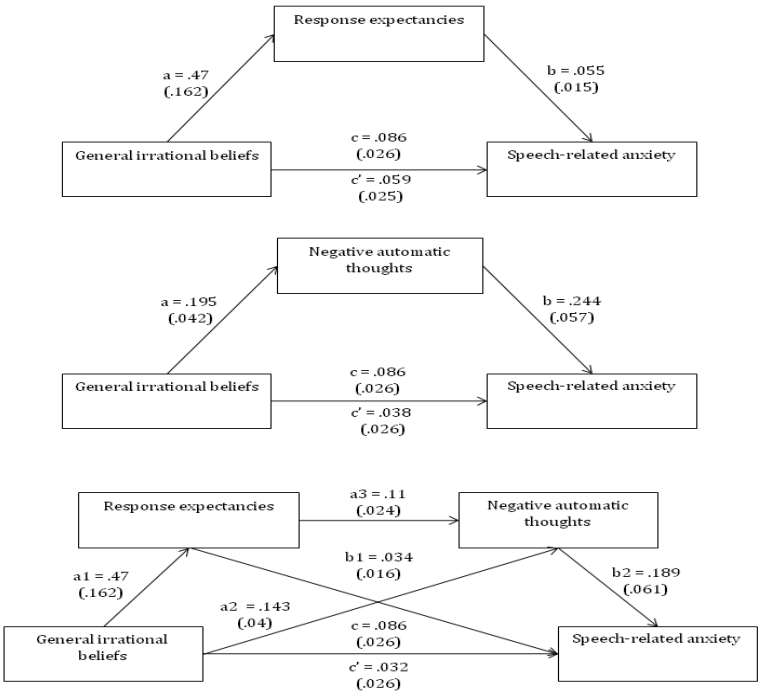

Figure 1. Simple and multiple mediation diagrams. Values are path coefficients representing unstandardized regression weights and standard errors (in parentheses).

Discussion

In line with underlying theories, previous studies (e.g. Hofmann & DiBartolo, 2000; Schoenberger et al., 1997) and our prediction, our results revealed significant associations between targeted cognitive constructs and public speaking anxiety. The associations among the cognitions were medium to high, which could suggest that they reflect related, yet distinct, processes.

Our result are consistent with the mediation analyses conducted by Montgomery et al. (2007), and Szentagotai and Freeman (2007), in which irrational beliefs affected distress via response expectancies, and automatic thoughts respectively. As shown, irrational beliefs are conceptualized as core beliefs, coded as schemas (Beck, 1995; Ellis, 1994), which are more general and not easily experienced directly. In specific stressful situations, like performing a speech, general core beliefs bias the perception of the events and thus generate specific, circumscribed beliefs, often in the form of automatic thoughts (see David et al., 2010).

An interesting result, which emerged in the multiple step mediation analysis, was that the effect of the more general, schema-type construct of irrational beliefs on public speaking anxiety was carried out through response expectancies for anxiety, which in turn primed automatic thoughts specific to public speaking that were the most proximal to anxiety. It could be argued that the automatic thoughts measured here included not only descriptive and inferential cognitions, but also evaluative ones that are essential for generating emotion.

The present study has several limitations. The most important is its cross-sectional design, which does not allow drawing causal inferences, but is nonetheless relevant for testing associations between constructs. We did measure both mediators prior to the

outcome (anxiety), but, importantly, we did not produce or measure actual changes in our mediators (response expectancies, automatic thoughts), nor in our predictor (irrational beliefs). A longitudinal experimental study, comprising an intervention to modify predictor variables, and measuring mediators significantly before measuring change in outcome would offer further, necessary information regarding causation. Secondly, our sample included significantly more women than men, not allowing for reliable gender comparisons. A more gender balanced sample would be useful for testing whether there are gender differences in the relationships between cognitive constructs and public speaking anxiety. Also, while we selected socially anxious individuals, we did not conduct a structured clinical interview to establish a clinical diagnosis. The study could be replicated on individuals with a diagnosis of social anxiety, as well as on various clinical samples in order to establish whether the identified mediational models are transdiagnostic or specific to certain anxiety problems.

In sum, we showed that for socially anxious individuals in a public speaking task, the effect of more general, schema-type cognitions on anxiety is mediated by both situation-specific automatic thoughts and response expectancies. Moreover, we evidenced a multiple mediation model with response expectancies for anxiety priming negative automatic thoughts specific to public speaking. This highlights the relationship between broader and more circumscribed cognition types in generating public speaking anxiety and could underscore Ellis's argument (Ellis, 1994) that in order to "get better" rather than just "feel better", psychological interventions should modify underlying schema-type cognitions, and not only circumscribed ones.

Study 3. The interrelations between descriptive/inferential cognitive processes, evaluative cognitive processes, and emotional distress in stressful academic settings[5]

Cognitions are one central element in cognitive-behavioral therapy (CBT), one of the most extensively researched forms of psychotherapy. However, CBT approaches differ in the relative importance ascribed to certain cognition types in generating emotions.

Rational Emotive Behavior Therapy (REBT) and Cognitive Therapy (CT) differ in the relative emphasis placed on "hot" versus "cold" cognitions (see David & Szentagotai, 2006). Beck's CT focuses primarily (but not exclusively) on "cold" cognitions, that is, mental representations of relevant circumstances, which reflect knowledge or beliefs about what is happening (Lazarus, 1991), in the forms of dysfunctional/distorted descriptions and inferences. In contrast, REBT focuses mainly (but not exclusively) on "hot" cognitions, also called appraisals or evaluative cognitions (i.e., rational and irrational beliefs), which refer to how these representations are appraised with respect to their significance for personal well-being (Lazarus, 1991) (e.g., "They must not laugh at me and if they do it is awful"; "demandingness and awfulizing" irrational beliefs).

Associations between each of these cognitive constructs and distress or psychopathology have been intensively investigated (e.g., David, Montgomery, Macavei,

[5] This study is under review at the Journal of Counseling Psychology. Vîslă, A., grosse Holtforth, M., & David, D. (under review). The interrelations between descriptive/inferential cognitive processes, evaluative cognitive processes, and emotional distress in stressful academic settings. ISI impact factor: 2.955

& Bovbjerg, 2005; David, Schnur, & Belloiu, 2002; DiLorenzo, David, & Montgomery, 2007; Mogoase & Stefan, 2013). However, only a few studies have examined the relationship between "hot" or evaluative beliefs and "cold" or descriptive/inferential beliefs with regard to their relative contributions to emotional distress (Cristea, Montgomery, Szamoskozi, & David, 2013; Montgomery, David, DiLorenzo, & Schnur, 2007; Szentagotai & Freeman, 2007; Vîslă, Cristea, Szentagotai Tatar, & David, 2013). The results of these studies seem to challenge the postulates of REBT and appraisal theory of emotion and suggest that evaluative or irrational beliefs have an indirect effect on distress through descriptions/inferences. However, upon closer examination, the scale used to assess automatic contextual beliefs, i.e., the Automatic Thoughts Questionnaire-Short Version (ATQ-SV; Netemeyer et al., 2002), contains both descriptive/inferential beliefs and evaluative beliefs. Therefore, only explicitly differentiating between descriptive/inferential beliefs and evaluative beliefs and conducting separate analyses on these constructs will allow for more appropriate conclusions to be drawn regarding the relative contribution of the different types of situation-specific cognitions in the generation of emotions. The differential investigation of these cognition types will also allow the competing theories described above to be tested. Moreover, previous studies have measured descriptions/inferences as specific beliefs and rational/irrational beliefs as core beliefs; thus, not only that it is questionable that a more general belief can mediate a more specific belief, but practically it only confirms both the REBT and CT theories that more general beliefs, in interaction with different activating events, generate specific beliefs that further generate various psychological consequences (e.g., emotions, behaviors). Therefore, to test the theory, both "cold" and 'hot" cognitions should be measured at the same level of generalizability.

The aim of the present study was to clarify the relative contributions of situation-specific descriptions/inferences and evaluations to emotional distress. We chose the period before a mandatory university exam as the specific situation studied because previous research (e.g., DiLorenzo et al., 2007, 2011) has demonstrated that this period is often perceived by an individual as very stressful and may negatively affect an individual's emotional health. The ideas presented in this section lead to the conclusion that, although descriptions and inferences may contribute to emotions, they may operate via evaluations/appraisal (i.e., rational and irrational beliefs). Therefore, we predict that descriptive/inferential beliefs will have an indirect effect on exam-related distress through evaluative beliefs.

Methods

Participants and procedure

Seventy-four undergraduate students (mean age = 24.68, SD = 7.47) took part in the study in exchange for course credit. The gender distribution was 18.9% males (n = 14) and 81.1% females (n = 60). All of the participants were recruited from classes offered by the psychology department. On the day of the midterm exam, immediately prior to the exam, students completed measures of automatic thoughts and emotional distress after providing basic demographic information. Written informed consent was obtained from all participants prior to taking part in the study in accordance with university IRB guidelines. Three trained CBT therapists (the first author and another two doctoral students from the first author's department) divided the ATQ-SV items into descriptions/inferences and evaluations by consensus (see *Appendix).*

Measures

Automatic thoughts were measured using the *Automatic Thoughts Questionnaire-Short Version (*ATQ-SV; Netemeyer et al., 2002). This instrument comprises 15 statements representing dysfunctional self-related automatic thoughts. The subject was instructed to rate these statements in terms of frequency of occurrence in their lives on a 5-point Likert scale, ranging from 1 (*never)* to 5 (*almost always)*. The ATQ was adapted for the Romanian population (Moldovan, 2007), showing excellent reliability (Cronbach's alpha = .92). Cronbach's alpha for this sample was .91. We also performed separate reliability analyses for the items that were included in the category of descriptions/inferences (Cronbach's alpha coefficient = .81) and for those included in the category of evaluations (Cronbach's alpha coefficient = .86).

Exam-related distress was assessed using the *Profile of Mood States-Short Version* (POMS-SV; DiLorenzo, Bovbjerg, Montgomery, Valdimarsdottir, & Jacobsen, 1999). This measure has 37 items and yields six subscale scores as well as a total mood disturbance score. The total score was used for these analyses. The scale has shown satisfactory reliability and validity (DiLorenzo et al., 1999). Previous studies with Romanian-speaking samples demonstrated that POMS-SV could be successfully employed for the assessment of psychological distress (David et al., 2005). In the current sample, POMS-SV had a good internal consistency, with a Cronbach's alpha coefficient of .95.

Data analysis

Correlation and mediation analyses were performed. For the mediation analyses, we used the bootstrapping procedure for assessing indirect effects (Preacher & Hayes, 2008) within the PROCESS (Hayes, 2012) mediation script for SPSS. Given the inherent difficulties of estimating effect sizes for mediation procedures, the authors recommend a standardized index called kappa-squared (i.e., κ^2; Preacher & Kelly, 2011), which represents the magnitude of the indirect effect relative to the maximum possible indirect effect, given the design of the study and the distributional particularities of the variables considered. Therefore, κ^2 was used as effect size measure for mediation models found to be significant, and the corresponding confidence intervals were computed.

Results

Descriptive data. The mean score for distress, reported on the POMS-SV, qualifies the sample as having a high level of negative emotions (M = 50.99, SD = 31.37), which is comparable with the scores obtained by DiLorenzo et al. (2007) on college students in similar real-life stressful situations (i.e., taking an exam or starting the semester).

Correlational analyses. The correlation between the cognitive variables considered and their associations with emotional distress are presented in Table I.

Table 1. Correlations between the investigated constructs

Cognitive variables	*1*	*2*	*3*
Descriptions/Inferences (ATQ-SV)	—		
Evaluations (ATQ-SV)	.85*	—	
Emotional variables			
Distress (POMS-SV)	.68*	.70*	—

Note. ATQ-SV - Automatic Thoughts Questionnaire-Short Version; POMS-SV - Profile of Mood States-Short Version. * $p < .05$ Bonferroni Holm corrected for multiple comparisons

Mediation analyses. For mediation analysis, we used bootstrapping tests with 5000 re-samples and reported a bias-corrected and accelerated confidence interval (Preacher & Hayes, 2008). We alternatively tested two possible mediation models: (1) a model in which evaluations mediate the relationship between descriptions/inferences and distress and (2) a model in which descriptions/inferences mediate the relationship between evaluations and distress. The results (see Figure 1) favored the first model, in which evaluations acted as a mediator in the relationship between descriptions/inferences and exam-related distress, indirect effect = 2.37, SE = .956, 95% CI (bias-corrected and accelerated) = .382 to 4.141; $\kappa^2 = .273$, 95% CI (bias-corrected) = .058 to .451. Moreover, the direct effect of descriptions/inferences on distress was insignificant (direct effect = 1.881, SE = .975, 95% CI (bias-corrected and accelerated) = -.062 to 3.836). The ratio of the indirect to total effect of descriptions/inferences to distress was .557, SE = .225, 95% CI (bias-corrected) = .117 to 1.011. Thus, approximately .56% of the total effect of descriptions/inferences on exam-related distress was explained by evaluations. There was no evidence of mediation in the alternative model.

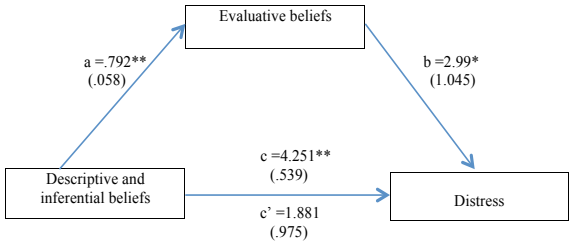

Figure 1. Simple mediation diagram: a, b, c and c' are path coefficients representing unstandardized regression weights and standard errors (in parentheses). The c path coefficient represents the total effect of descriptive/inferential beliefs on exam-related distress. The c-prime path coefficient refers to the direct effect of descriptive/inferential beliefs on exam-related distress. All significant paths were marked with ** if $p < .001$, and with * if $p < .05$

Discussion

The present study is the first to examine the associations between descriptive/inferential automatic thoughts, evaluative automatic thoughts, and exam-related distress. In line with underlying theories (Ellis, 1994; Lazarus, 1991) as well as previous studies (e.g., David et al., 2002, 2005; DiLorenzo et al., 2007; Mogoase & Stefan, 2013), the significant and medium-to-high positive associations between targeted cognitive constructs and exam-related distress confirmed our predictions. The significant and high positive correlation between descriptions/inferences and evaluations found in this study could be explained by both constructs being measured as situation-specific cognitions in the form of automatic thoughts (see also Vîslă et al., 2013). Both constructs were extracted from the same scale because there are currently no separate scales measuring these constructs. Lastly, both evaluative and descriptive/inferential beliefs were measured in the same context, a procedure that may have inflated the correlations.

Our meditational results are consistent with REBT theory (Ellis, 1994) and appraisal theory of emotions (Lazarus, 1991), in which descriptive/inferential beliefs affect distress via evaluative beliefs. Moreover, the confidence intervals for the effect size included 0.25, indicating a large effect size. Moreover, the direct effect of descriptions/inferences on distress was insignificant, which is an indicator of total mediation. However, only approximately .56% of the total effect of descriptive/inferential beliefs on exam-related distress was explained by evaluations. Moreover, in this study, the automatic thoughts questionnaire included only some of the irrational beliefs (e.g., demandingness/rigid thinking, frustration intolerance, and global evaluation). Notably, catastrophizing/awfulizing, the core irrational belief hypothesized to be involved in anxiety symptoms (Ellis, 1994), was not measured. Also, the descriptive/inferential cognitions were not related to evaluations.

Based on the theoretical standpoint of classical CBT, these results reinforce the notion that in specific stressful situations, representations (i.e., descriptive and inferential beliefs) prime underlying cognitive vulnerability factors (i.e., evaluative beliefs or appraisals), which in turn are central components of the proximal mechanism resulting in emotional distress. Along the same lines, David et al. (2002) found that emotions are more directly associated with appraisal and irrational beliefs than with attributions. The current results also support the propositions of appraisal theory of emotions (Lazarus, 1991). Despite the importance of representations as targets of personal evaluations with respect to their motivational relevance, the current results are compatible with the notion that representations may not produce emotions without first being appraised (Lazarus, 1991).

The present study has several limitations. The most important is its cross-sectional design, which does not allow any causal inferences to be made. However, the current results nonetheless provide some support for the observed associations between the tested constructs. Secondly, our sample included significantly more women than men, not allowing for reliable gender comparisons. A more gender-balanced sample would be useful for testing whether there are gender differences in the relationship between cognitive constructs and exam-related distress. Third, to test our hypotheses, we extracted both the predictor and mediator from the same scale because there are currently no separate scales measuring these constructs. Therefore, future research would be well advised to invest in constructing new scales that separately assess both situation-specific

appraisals and representations (descriptions and inferences). Forth, our sample of undergraduate students facing a mandatory university exam precludes generalization to other clinical and nonclinical samples in different stressful situations. Therefore, the results of the current study also need to be replicated in nonclinical samples as well as various clinical samples and in different stressful situations to establish the generalizability of the obtained model. Fifth, the study included only one measure of automatic thoughts and one measure of emotional distress. Consequently, it is unclear whether these results will generalize to other measures of automatic thoughts and emotional distress. Sixth, emotional distress was measured only from participant perspective; therefore, the association between automatic thoughts and outcome could vary upon who rates the emotional distress (i.e., participant, observer). Future studies are well advised to investigate this aspect.

In summary, we showed that in real-life stressful situations, such as taking an exam, how we represent the situation (i.e., the descriptive and inferential beliefs we elaborate about the situation) may significantly influence the experienced level of emotional distress through specific evaluative beliefs about ourselves, the situation, or other people. Future studies could investigate the same relationships for core beliefs to determine which type of core beliefs or schema (evaluative or descriptive/inferential) is proximal to emotional distress. Finally, in a last step, future studies could use more complex statistical models, such as serial multiple mediator models (Hayes, 2012), to test the relationship between evaluative and descriptive/inferential core beliefs (i.e., irrational beliefs and dysfunctional attitudes) and context-specific appraisals and descriptions/inferences (i.e., automatic thoughts) with regard to their relative contributions to emotional distress. These types of models would allow the mutual interplay of various potential mediators as well as their respective influences on distress to be investigated.

Study 4. Predicting depressed patients' initial outcome expectations and change in outcome expectations during therapy: A three-level growth curve approch that considers therapist effects[6]

How patients' beliefs influence psychotherapy has been a subject of interest for clinical psychologists over the last 50 years. For example, Frank (1961) posited that effective treatment requires that patients become "remoralized" - that is, develop or reacquire a belief that change is possible and that a given treatment will affect such change. "Outcome expectations" represent a person's prognostic beliefs or feelings about a treatment's personal efficacy (Constantino, Arnkoff, Glass, Ametrano, & Smith, 2011). When low, such beliefs likely reflect "demoralization"; when higher, they likely reflect "remoralization," or a belief that change is possible and that therapy can affect such change (DeFife & Hilsenroth, 2011; Frank, 1961). Research on motivation usually distinguishes a hope and a fear component of expectancies (Heckhausen, 1991). This could also be shown for patients' outcome expectancies (Schulte, 2005). The

[6] This research was supported by Scientific Exchange Programme Grant SCIEX-NMS-CH 12.319 awarded to Vîslă Andreea.

expectancies are directed not only to positive effects, the possible benefit, but also to possible negative side effects. In psychotherapy studies, however, the possible benefits are consistently considered but negative effects less (see for e.g, Schulte, 2008; Grosse Holtforth, Krieger, Bochsler, & Mauler, 2011

Usually, studies on outcome expectations ignore the fact that patients are nested within therapists. Therefore, the objectives of the present study were (1) to investigate the association between patients' outcome expectations and outcome depending on how outcome is operationalized, (2) to investigate if therapists differ in terms of effectiveness in changing their patients' outcome expectations during therapy (i.e, if some therapists are better than others, on average, in increasing their patients' outcome expectations during therapy), (3) to investigate the shape of change (i.e, slope) in outcome expectations, (4) to investigate the association between initial outcome expectations and how they change (5) to examine patient characteristics that predict initial outcome expectations variation (6) to examine if the interaction between patients' variability and therapists' variability in the initial therapeutic alliance (sessions 1-3) predicts outcome expectations' slope (i.e, how outcome expectations change) variation.

Based on previous studies presented in the theoretical background of this thesis, we expect that the association between outcome expectations and outcome will significantly differ depending on how outcome is operationalized. Second, we expect that some therapists will be better than others, on average, in increasing their patients' outcome expectations during therapy. Third, we expect time will have only a linear relationship with outcome expectations, in the sense that outcome expectations will increase during therapy. Forth, we expect initial outcome expectations will negatively correlate with how outcome expectations change, in the sense that patients and therapists with high initial hope values will tend to have weak slopes, and patients and therapists with low initial hope values will tend to have strong slopes. Prediction of initial outcome expectations and change in outcome expectations with the variables proposed is exploratory; therefore, no explicit hypotheses have been made.

Methods

Participants and procedure

Patients. After obtaining approval from the local ethics committee, the patients were recruited in the context of a randomized controlled trial on psychotherapy for depression (Grosse Holtforth, Krieger, Altenstein, Dörig, & Meisch, under review) via local media and web-based advertisements. Of the 631 individuals initially screened for eligibility, 143 were included for treatment at the university-based psychotherapy outpatient clinic. The patients' average age was M = 40.6 (SD = 11.4) years and 81 (56.6 %) were female.

Therapists. A total of 24 therapists provided treatment in this study. Each therapist provided an equal amount of therapies in both conditions and the average caseload per therapist was M = 5.96 (SD = 2.66; range = 1-13). The therapists' mean age was M = 31.2 (SD = 5.2; range = 22-45) years and 21 (87.5 %) were female.

Treatment

The two treatment conditions delivered in the randomized controlled trial were both manualized psychotherapies. Details regarding treatment rationale and specific therapy tasks are reported elsewhere for Cognitive-Behavioral Therapy (Beck, Rush, Shaw, & Emery, 1979; Hautzinger, 2003) as well as for Exposure-based Cognitive

Therapy for Depression (Hayes, Beevers, Feldman, Laurenceau, & Perlman, 2005). The treatments were limited to 22 sessions that were delivered over 26 weeks on average.

Assessments

Outcome expectations. Patients' outcome expectancy and treatment evaluation (perceived suitability) were assessed using Patients' Therapy Expectation and Evaluation (PATHEV; Schulte, 2005). The PATHEV consists of three subscales: Hope of Improvement (four items), Fear of Change, or Fear of Side Effects (three items), and Suitability (four items). For our analyses, we only used the Hope of Improvement subscale. The four items of the subscale are (see also Appendix): "I'm afraid I can't even be helped by psychotherapy." (Item 1), "I believe my problems can finally be solved" (Item 4), "Even with therapy, my problems will not change very much" (Item 5), "Actually, I'm rather skeptical about whether treatment can help me." (Item 9), with items 1, 5, and 9 reversed. Patients rate the items using a 5-point Likert-scale from 1 (*absolutely wrong*) to 5 (*absolutely right*). Hope for improvement was measured at four time points: screening, pretreatment, session seven, and session 14.

Therapeutic alliance. An adapted version of the Bern Post-Session Reports for Patients and Therapists, short form 2000 (BPSR-Patient/Therapist; Flückiger, Regli, Zwahlen, Hostettler, & Caspar, 2010) was built for the purpose of the present study. For the present analyses, we only used the early phase of therapy alliance scores (session 1-3) reported by patient and therapist.

Outcome. Depression symptoms were assessed after the treatment (post) with the Beck Depression Inventory - II (BDI-II; Hautzinger, Keller, & Kühner, 2006). The German BDI-II has previously been shown to have satisfactory internal consistency (α = .89 and .93) and test-retest reliability (r_{tt} = .78), good convergent and discriminant validity, as well as a good sensitivity to change (Kühner et al., 2007).

Statistical analyses

In analyzing the data, we used bivariate correlations and growth curve modeling. All analyses were conducted using the R statistical software packages "multilevel" (Bliese, 2013) and "nlme" (Pinheiro, Bates, DebRoy, Sarkar, & R Core Team, 2013). We also used the R statistical software package "lattice" (Sarkar & Deepayan, 2008) for generating plots. Both analytical and simulation results show that growth models are typically characterized by much higher levels of statistical power than comparable traditional methods applied to the same data (e.g., Muthén & Curran, 1997).

Data analysis was conducted in five steps, following the recommendations of Bliese and Ployhart (2002). First, we started by examining the nature of the dependent variable (i.e., hope for improvement), and determine whether it randomly varies among patients and therapists. Second, we were interested in examining the form of the relationship between time and hope. Basically, we wanted to know whether hope generally increases, decreases, or shows some other type of relationship with time. Third, we attempted to determine whether the relationship between time and hope is constant among patients and therapists or whether it varies on a patient-by-patient and therapist-by-therapist basis (choice of model type). Fourth, we modeled complex error structures, i.e., we determined weather one's model fit improves better by incorporating (a) an autoregressive structure with serial correlations and (b) heterogeneity in the error structures. Fifth, we tested possible predictors of hope intercept and slope.

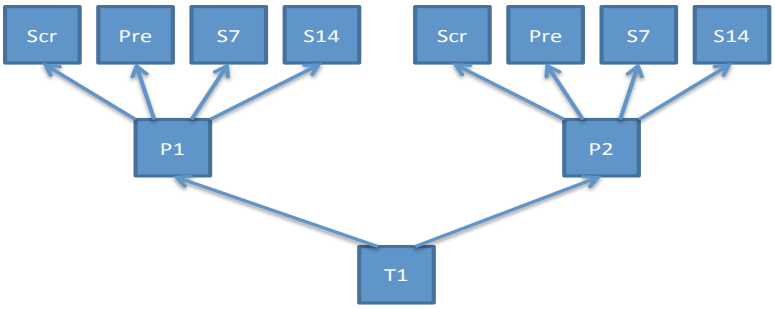

Figure 1. Nested data structure (assessment-, patient- and therapist-level); Scr – screening; Pre – pretreatment; S7 – session 7; S14 – session 14.

Results

The association between outcome expectations and outcome

Table 1 shows the results regarding the association between hope for improvement and outcome. As shown, we did not find that the association between outcome expectations and outcome depends on how outcome is operationalized (i.e., either as BDI post or as BDI change), but on when outcome expectations were measured. Moreover, the association between outcome expectations and outcome was significant only at session 7 and session 14, but not at screening and pretreatment.

Table 1
Association between outcome expectations and outcome

	Outcome	
PATHEV	BDI post	BDI change
Hope for improvement screening	-.01 (N = 115)	.06 (N = 115)
Hope for improvement pretherapy	-.17 (N = 120)	-.03 (N = 120)
Hope for improvement session 7	-.34** (N = 118)	-.19* (N = 118)
Hope for improvement session 14	-.39** (N =114)	-.29* (N = 114)

Note. PATHEV - Patients' Therapy Expectation and Evaluation; BDI - Beck Depression Inventory – II. * $p \leq .05$; ** $p \leq .001$

Growth model analysis results

Step 1: Determining weather the dependent variable is hierarchic

In Figure 2, we can observe that patients (i.e, the first 30) differ in the relationship they show between their hope for improvement scores and time; the same can be observed in the case of therapists (Figure 3). It appears as though there is considerable variability both in overall levels of hope at screening and in how hope changes over time. After estimating a null model (**model$_{1)}$** and calculating the ICC on both patient and

therapist level, we found that indeed the data are hierarchic/nested: the within variance (ICC1= .61 for patients; ICC1= .09 for therapists) was smaller than the between variance (ICC2 = .85 for patients; ICC2 = .68 for therapists) for both patients and therapists. The ICC1 value of .61 indicates that 61% of the variance in any individual reporting of hope can be explained by the properties of the patient who provided the rating; the ICC1 value of .09 indicates that 9% of the variance in any individual reporting of hope can be explained by the properties of the therapist that conducted the therapy. Therefore, based on the ICC values presented above, we can conclude that hope measured at four time points (screening, pretreatment, session seven, and session 14; level-1) is nested in patients (N = 143; level-2), which are nested in their therapists (N = 24; level-3).

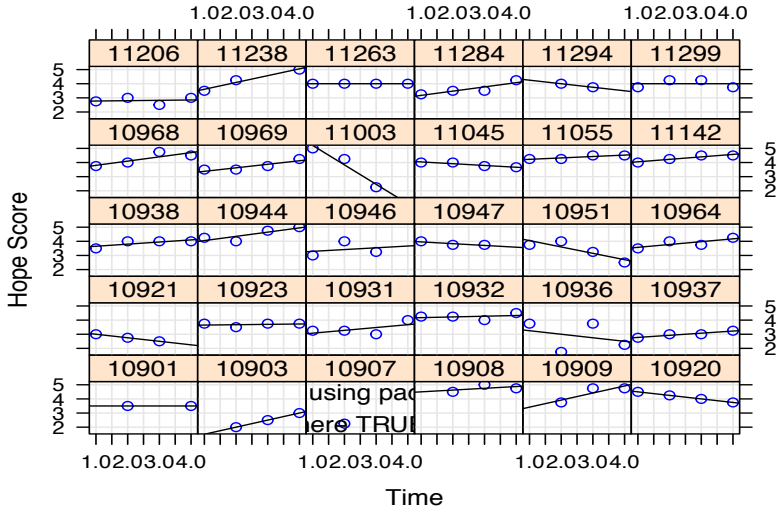

Figure 2. Visual inspection of the growth structure for the first 30 patients.

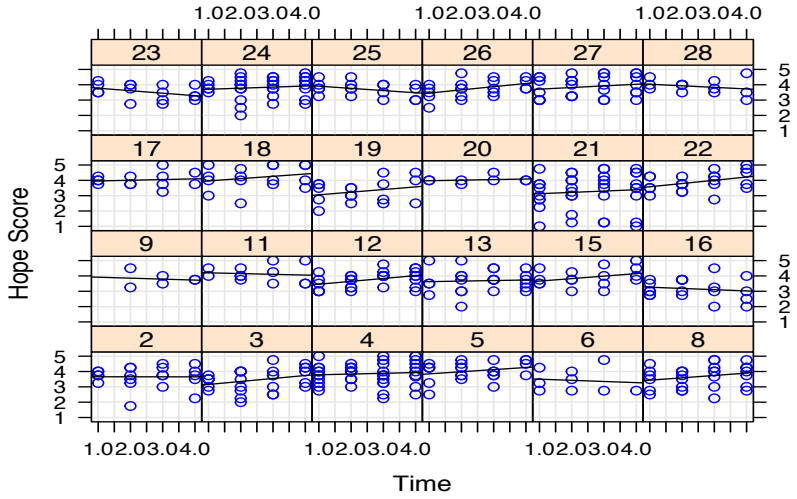

Figure 3. Visual inspection of the growth structure for the therapists.

Step 2: Identification of the model degree

The plot of the first 30 individuals shows no clear pattern in how hope for improvement score is changing over time, but the analysis might identify an overall trend among the 143 respondents. Therefore, we modeled the fixed relationship between time and the hope score (**model$_2$**). We found time only has a linear relationship with hope (Coeff. = 1.965, *SE* = .714, *t* = 2.752, *p* < .05), but not quadratic (Coeff. = .137, *SE* = .714, *t* = .191, *p* > .05) or cubic (Coeff. = - .502, *SE* = .714, *t* = - .703, *p* > .05).

Step 3: Choice of model type

The first step in progressing from a regression model to a growth model via model comparisons is to establish a simple model without any random effects to serve as a baseline. We started with the simple regression model (**model$_1$**) and progressively added complexity in terms of random effects. At each step, we compared log likelihood ratios (deviances) between models to aid decisions about including specific terms. In step two, we determined whether the fit of data could be improved by adding a random intercept term to the baseline model (**model$_2$**). We used ANOVA function since it is a generic function used to contrast alternative models and can be used to compare –2 log likelihood values (i.e., deviances) between model$_1$ and model$_2$. The likelihood ratio of 224.78 is significant on two degree of freedom associated with the fixed versus random intercept (p < .0001). Thus, we can conclude that the model that allows patients to randomly vary in terms of their initial hope values (random-intercepts model) fits the data better than does a model that fixes the intercept to be constant across patients. In step three, we determined whether there is significant slope variation among patients. A model with a random slope for time was estimated (**model$_3$**). The comparison of model$_2$ and model$_3$ returns a log likelihood value of 31.98. This value is significant (p < .0001) and indicates that the model with the random slope (random-intercepts-and-slopes model) fits the data significantly better than does the model without the random slope. The correlation between the slope and intercept is - 0.235 for patients and - 0.031 for therapists. The negative correlation indicates that patients and therapists with high initial hope values tend to have weak slopes, and patients and therapists with low initial hope values tend to have strong slopes. The random-intercepts-and-slopes model provides a more appropriate description of the data than the regression model.

Step 4: Model complex error structures

In modeling complex error structures, the way we controlled for these effects was to (a) examine the residuals and determine whether they show evidence of autocorrelation or heteroscedasticity, and (b) include terms to account for the nature of the autocorrelation and heteroscedasticity in the final model if we found evidence of these effects in the residuals. We started to model complex error structures by accounting for autocorrelation (**model$_4$**). The log likelihood difference between model$_3$ and model$_4$ is 2.49. This difference is not significant (p > .05), indicating that model$_4$ is not better fit than model$_3$. We can impose still further restrictions on the error variance-covariance matrix by examining whether the errors associated with hope score are homoscesdastic across time. A descriptive inspection of the variance hope score across measurement time points indicates that variance does not systematically increase or decrease across measurement time points. Therefore, because we did not find an evidence of heteroscedasticity in the residuals, we did not include it in the final model.

As suggested by Bliese and Ployhart (2002), we continued our analyses by adding

predictors of intercept and slope variability. The reported explained variances are based on pseudo-R^2, i.e., the proportional reduction in variance components of the conditional models in comparison to the unconditional model without predictors (unconditional model minus conditional model divided by unconditional model; Raudenbush & Bryk, 2002).

Step 5: Prediction of hope intercept variation

Hope intercept predicted by pre-therapy depression severity and number of previous depressive episodes. When entered as single predictors, pre-therapy depression severity (Coeff. = -.154, *SE* = .07, *t* [118] = - 2.206, *p* = .029; pseudo-R^2 = .05), but not number of previous depressive episodes (Coeff. = - .045, *SE* = .043, *t* [103] = - 1.042, *p* >.05) were significant predictors of hope intercept (**model$_5$**). A high level of pre-therapy depression severity is associated with low level of hope intercept. By including depression severity in the model we explain 5% variance in patient level (level-2).

Hope intercept predicted by number of Axis I and Axis II comorbidities. When entered as single predictors, neither do number of Axis I comorbidities (Coeff. = .005, *SE* = .067, *t* [118] = .068, *p* > .05), nor the number of Axis II comorbidities (Coeff. = - .019, *SE* = .088, *t* [118] = - .210, *p* > .05) were significant predictors of hope intercept.

Hope intercept predicted by demographic factors. When entered as single predictors, none of the demographic factors tested (age [Coeff. = -.004, *SE* = .004, *t* [118] = - .931, *p* >.05], gender [Coeff. = .084, *SE* = .101, *t* [118] = .834, *p* >.05], marital status [Coeff. = .008, *SE* = .068, *t* [110] = .123, *p* >.05], educational status [Coeff. = .016, *SE* = .055, *t* [113] = .295, *p* >.05]) was a significant predictor of hope intercept.

Hope intercept predicted by therapeutic context (previous experience with psychotherapy and medication). When entered as single predictors, previous experience with psychotherapy (Coeff. = -.217, *SE* = .103, *t* [110] = - 2.114, *p* = .037; pseudo-R^2 = .005), but not medication at pre-treatment (Coeff. = .061, *SE* = .103, *t* [118] = .593, *p* >.05) were significant predictors of hope intercept. The model that includes previous experience with psychotherapy (**model$_6$**) differs only from model$_3$ in that it includes a new fixed effect, previous experience with psychotherapy. Having previous psychotherapy experience is associated with smaller hope intercept than not having psychotherapy experience at all. Moreover, by including previous experience with psychotherapy in the model we only explain 0.5% variance in patient level (level-2).

Step 6: Slope of hope prediction

Regarding slope of hope, we predict it by using aggregated initial therapeutic alliance scores (sessions 1, 2, 3) reported by both patients and therapists. For each patient and therapist reporting, we used both patients' (level-2) and therapists' (level-3) estimates of therapeutic alliance. Therefore, we tested the interaction between patient variability to alliance (i.e., the within-therapist alliance) and therapist variability to alliance (i.e., the between-therapist alliance) for both patient and therapist reporting. As predicted, the interaction between patient variability to alliance and therapist variability to alliance reported from patient perspective proved to be a significant predictor of slope of hope (Coeff. = -.91, *SE* = .56, *t* [284] = .06, *p* = .019; **model$_6$**), while the interaction between patient variability to alliance (i.e., the within-therapist alliance) and therapist variability to alliance (i.e., the between-therapist alliance) reported from therapist perspective was not (Coeff. = .03, *SE* = .101, *t* [355] = - 2.182, *p* > .05).

Discussion

The present research is one of the few studies that investigated the shape of change in expectations regarding treatment's personal efficacy, and the first who examined therapist effect in outcome expectations. It is also the first who tested predictors of outcome expectations' slope. There are the positive outcome expectations (i.e., hope for improvement) that were the focus of the present research. Future research should try to replicate our results on negative outcome expectancies (i.e., fear of change or fear of side effects).

First, we found that the relation between outcome expectations and outcome does not depend on how outcome is operationalized (i.e., either as BDI post or as BDI change), but on when outcome expectations are measured. When outcome expectations were measured at mid-treatment (i.e., session 7 and session 14), the association between outcome expectations and outcome was significant, while the association between outcome expectations and outcome at screening and pretreatment was not. This could mean that as patients move forward in therapy, their outcome expectations become more relevant for outcome. Second, we found that the within-therapist variance (i.e, patients nested in the same therapist) was smaller than the between-therapist variance (i.e., patients from different therapists), which is an indicator of the fact that the data are nested. Results indicated that approximately 9% of the variance in any individual reporting of hope can be explained by the properties of the therapist that conducted the therapy, and 61% of the variance in any individual reporting of hope can be explained by the properties of the patient who provided the rating. Third, we found time only has a linear relationship with hope, in the sense that hope increases during therapy. Forth, we found a negative correlation between hope intercept and slope for both patients and therapists. The negative correlation indicates that patients and therapists with high initial hope values tend to have weak slopes, and patients and therapists with low initial hope values tend to have strong slopes. Fifth, depression severity and previous psychotherapy experience to be significant predictors of hope intercept (i.e., hope at screening). A high level of pre-therapy depression severity predicted a low level of hope for improvement at screening. Regarding previous psychotherapy experience, contrary to what we have expected, we found that having previous experience with psychotherapy predicts lower hope for improvement at screening. Sixth, we found that when reported by patient, the interaction between patient variability to alliance and therapist variability to alliance significantly predicted the slope of hope. On the other hand, when reported by therapist, the interaction did not predict the slope.

Expectations regarding treatment outcome is a variable measured from patient perspective. Therefore, it was to be expected that another patient-reported variable would predict outcome expectations' slope, and less probable that a therapist-reported variable to do so. Future studies are well advised to identify therapist attributes and therapist techniques and test them as potential predictors of outcome expectations' slope or in interaction with patient characteristics. In the present study for example, therapist experience could not be considered a potential predictor of outcome expectations' slope because therapists did not significantly differ regarding this characteristic. On the other hand, future studies can identify therapist techniques by observing and coding the video sessions.

Limitations

Besides the strengths of the present study such as the investigation of outcome expectations' change during therapy (i.e., slope) and the search for a therapist effect, the present study has several limitations. First, our homogeneous sample of Caucasian patients with major depression precludes generalization to patients with other diagnoses or from other ethnicities. A second limitation is that the study included only one measure of outcome expectations, one measure of outcome, and one measure of therapeutic alliance. Consequently, it is unclear whether these results will generalize to other measures of outcome expectations, outcome, and alliance. Third, outcome was measured only from patient perspective; the association between outcome expectations and outcome could vary upon who rates the outcome (i.e., patient, clinician, observer). Therefore, future studies are well advised to investigate this aspect.

Therapeutic implications

Based on the results we obtained (see also Constantino, Ametrano, & Greenberg, 2012), we can draw some theoretical implications and suggest possible guideline to be followed by therapists. First, giving the reliable association between outcome expectations and outcome, we suggest that is important and perhaps necessary to assess outcome expectations and to address them explicitly. Our second clinical suggestion builds on the first; the assessment of outcome expectations should occur as early as possible (if possible, from the first contact of patient with the therapist), and should be continued all over the therapy. It seems to be important to assess patients' expectations regarding treatment's personal efficacy at screening because they may inform therapists of how their patients' outcome expectations will change during therapy. Therapists could assess outcome expectations either by scales or at least informally through dialogue (Constantino et al., 2012). Third, clinicians can also assess symptom severity, as well as previous psychotherapy experience to help them forecast efficiently those patients who might be entering therapy with low-treatment outcome expectations. Forth, therapists should invest more in building a strong initial therapeutic alliance and avoid alliance ruptures as possible (see Westra, Constantino, & Aviram, 2011), with the aim of increasing their patients' outcome expectations during therapy.

To conclude, the present study was designed to longitudinally examine patients' prognostic beliefs about treatment's personal efficacy, and to investigate patients' and therapists' variables that might explain initial outcome expectations and how they change during therapy. The present study also tried to untangle the patient and therapist variance in the therapeutic alliance, and study their interactive influence on outcome expectations' change during therapy. Using longitudinal multilevel models (i.e., growth modeling), we also searched for a therapist effect in how outcome expectations develop during therapy.

CHAPTER IV. GENERAL DISCUSSIONS AND IMPLICATIONS

The present thesis aimed at investigating the contribution of some specific and nonspecific factors to emotional distress and mental illness. As specific factors, we focused on different types of congnitions postulated to be the target of interventions in different forms of CBT, especially in REBT (i.e, irrational beliefs). Regarding nonspecific factors, we focused on patients' predictive expectations about a treatment's personal efficacy. As mental illness categories, we focused on investigating the contribution of these specific and nonspecific factors in anxiety and depression disorders.

Specifically, we inspected each line of research in congruence with its specific gaps in knowledge as presented in Chapter 1 of this thesis.

4.1. Theoretical, methodological, and clinical advances

The general goal of this research project was to investigate the contribution of some specific and nonspecific factors to emotional distress and mental illness. We reached these objectives by considering the theoretical, methodological, and clinical concerns to which current irrational beliefs and outcome expectations literature is confronted, as expressed in Chapter 1 and 3 of this thesis. As a consequence of this general objective, our results contribute with theoretical and clinical advances to the literature.

The theoretical level

From a theoretical viewpoint, we enlist in each study the main contributions in this respect. Study 1 was a meta-analysis which integrated quantitatively, for the first time in the literature, the empirical studies that investigated the relationship between irrational beliefs and psychological distress. Based on 100 independent samples gathered in 83 primary studies, conducted in 13 different countries, over the last sixty years, the results of the present meta-analysis show that the overall strength of the relationship between irrational beliefs and different types of psychological distress (e.g., general distress, anxiety, depression, anger, guilt) is modest; however, this relationship is robust and holds across different samples, measurements, and study design.

The second study was designed to investigate the interrelationships between general irrational beliefs, automatic thoughts specific to public speaking, response expectancy regarding anxiety, and public speaking anxiety. The results stress the importance of both general and specific cognitive constructs to public speaking anxiety. Moreover, the findings highlight the effect of the more general, schema-type construct of irrational beliefs on public speaking anxiety was carried out through more specific constructs such as response expectancies for anxiety, which in turn primed automatic thoughts specific to public speaking that were the most proximal to anxiety.

The third study has first of all theoretical implications, since based on the theoretical standpoint of classical CBT, the results obtained reinforce the notion that in specific stressful situations, representations (i.e., descriptive and inferential beliefs) prime underlying cognitive vulnerability factors (i.e., evaluative beliefs or appraisals), which in turn are central components of the proximal mechanism resulting in emotional distress.

The fourth study of this thesis had multiple research questions. The answers to these questions, based on the results obtained, have multiple theoretical implications. Therefore, we found that first, outcome expectations are changing linearly, in the sense that they increase during therapy, a process similar to Frank's (1961) concept of "remoralization"; that is, during therapy, patients develop or reacquire a belief that change is possible and that a given treatment will affect such change. Moreover, we found that therapists make a difference in affecting this change, in the sense that some therapists are better than others in influencing how their patients' outcome expectations are changing during therapy. An important theoretical implication of this study is that we tested predictors of outcome expectations' intercept (i.e., outcome expectations at screening) and slope (i.e., how outcome expectations are changing over the time). We found depression severity and previous psychotherapy experience to predict outcome expectations' intercept, and the interaction between patient variability and therapist

variability to early therapeutic alliance to significantly predict outcome expectations' slope when reported by patient, but not when reported by therapist.

The methodological level

There are some methodological implications that arise as a consequence of the results obtained in this research. A result of the meta-analysis was that the relationship between irrational beliefs and psychological distress depends on what irrational beliefs measure was employed. In general, we observed that the relationship was stronger when old measures containing emotional items versus new measures that do not contain emotional items were employed. A second methodological implication of this meta-analysis stresses the importance of considering researcher allegiance as a moderator variable in conducting meta-analyses. Even the results we obtained regarding this moderator variable were in the opposed direction as expected, they have serious implications that need to be taken in consideration by future meta-analyses. A third methodological implication consists in considering the relevance of the induced stressful event when designing studies that aim to measure irrational beliefs. The results obtained in the third study have also methodological implications. Because most of the time researchers and clinicians consider descriptions/inferences and evaluations interchangeable, and consequently combine them in a unitary score (e.g., Automatic Thoughts Questionnaire-Short Version; Netemeyer et al., 2002) within related measures, in order to clarify their relative contribution to emotional distress, we delineated the items belonging to each category. Regarding methodological implications of the fourth study, we stress (1) the importance of considering a therapist effect (i.e., patients are nested in therapists), and (2) the importance of disentangling between the patients' variability and therapists' variability in the therapeutic alliance.

The clinical level

Without further enlisting the objectives and results of each study, we name several of the most important clinical advances we found along this research project. All studies conducted have important clinical implications.

The first study corroborates a moderate (overall r = .38) but robust relationship between irrational beliefs and different types of psychological distress. These results imply irrational beliefs are an important construct in general distress, anxiety, depression, anger, and guilt that need to be addressed in clinical interventions. The second and the third study have common clinical implications. Both of them had as research question what types of cognitions are more proximal to emotional distress (i.e., core or specific beliefs, descriptive/inferential or evaluative beliefs). The answer to this research question have important clinical implications in terms of informing the clinicians on what types of cognitions they should mainly focus their interventions in order for their clients to get better, not just to feel better. The fourth study has important clinical implications. First of all, giving the reliable association between outcome expectations and outcome, we suggest that is important and perhaps necessary to assess outcome expectations and to address them explicitly. Our second clinical suggestion builds on the first; the assessment of outcome expectations should occur as early as possible, and should be continued all over the therapy. Therapists could assess outcome expectations either by scales or at least informally through dialogue (Constantino et al., 2012). Third, clinicians can also assess symptom severity, as well as previous psychotherapy experience to help them forecast efficiently those patients who might be entering therapy with low outcome expectations.

Forth, therapists should invest more in building a strong initial therapeutic alliance and avoid alliance ruptures as possible (see Westra et al., 2011), with the aim of increasing their patients' outcome expectations during therapy.

4.2. Limitations and future directions

The research presented in this paper has clear limitations. We have discussed specific limitations related to each study in the discussion section. However, we summarize them here for having a general overview, and we suggest some possible future directions that desearve to be followed in future studies.

First, despite the sporadic experimental evidence included in the meta-analysis, the presented research does not allow us to draw strong conclusions regarding the causality of the relationship between irrational beliefs and psychological distress. Because the effects under investigation were not experimentally induced, they may be influenced by other variables that were not controlled for (Little et al., 2007). Furthermore, longitudinal analyses will allow for a better understanding of the potentially etiopathogenetic nature of irrational beliefs (David et al., 2010). Second, regarding a stressful event providing the context for assessment, most of the studies did not induce a stressful event (approximately 80%) at all. For those studies in which a stressful event was induced, the stressful event was personally relevant in approximately half. Third, only a small number of studies reported the marital status, occupational status, and income of the participants; therefore, we were unable to test the role of these variables as potential moderators in the association between irrational beliefs and distress. Fourth, the studies included in the meta-analysis were conducted predominantly in a Western cultural context (i.e., no included study was conducted in Asia). Therefore, future research will need to test whether these results are applicable in other cultural contexts, such as in Asian or African cultures, considering the increasing evidence that basic cognitive and motivational processes vary across populations (Henrich, Heine, & Norenzayan, 2010). Fifth, nearly all studies included in the meta-analysis employed self-reported measures of the constructs. Consequently, future research may benefit by including measures based on observer ratings (e.g., ratings by clinicians or relationship partners) and diagnostic interviews to further control for possible self-report biases. Sixth, most studies were conducted in subclinical or nonclinical samples (i.e., persons without a clinical diagnoses). Future research will need to investigate whether comparable psychological mechanisms link irrational beliefs and psychological distress in both clinical and nonclinical samples. Seventh, studies on guilt and functional negative emotions (i.e., sadness, concern, remorse, annoyance) were not as numerous as studies on general distress, depression, anxiety, and anger. Therefore, our knowledge on these types of emotions is limited. Eight, this meta-analysis was focused on the associations between irrational beliefs and psychological distress and therefore excluded rational belief scales/subscales. Clearly, future research should investigate the relationship between rational and/or irrational beliefs and positive and negative emotions, as well as both functional and dysfunctional emotions simultaneously, during various activating events.

The next two studies (Study 2 and 3) have common limitations. First, they have a cross-sectional design, which does not allow drawing causal inferences, but is nonetheless relevant for testing associations between constructs. Longitudinal experimental studies, comprising an intervention to modify predictor variables, and measuring mediators significantly before measuring change in outcome would offer

further, necessary information regarding causation. Second, in both samples, participants were more women than men, not allowing for reliable gender comparisons. A more gender balanced sample would be useful for testing whether there are gender differences in the relationships between cognitive constructs investigated and both emotional distress and public speaking anxiety. Also, in study 2, while we selected socially anxious individuals, we did not conduct a structured clinical interview to establish a clinical diagnosis. Therefore, both studies need to be replicated in nonclinical samples as well as various clinical samples and in different stressful situations to establish the generalizability of the obtained model. A limitation specific just for Study 3 was that we extracted both the predictor and mediator from the same scale because there are currently no separate scales measuring these constructs. Therefore, future research would be well advised to invest in constructing new scales that separately assess both situation-specific appraisals and representations (i.e., descriptions and inferences).

Besides the strengths of the Study 4 such as the investigation of outcome expectations' change during therapy (i.e., slope) and the search for a therapist effect, the study has also one specific limitation. Our homogeneous sample of Caucasian patients with major depression precludes generalization to patients with other diagnoses or from other ethnicities. Second, all studies included only one measure for each investigated construct; therefore, it is unclear whether these results will generalize to other measures. Third, outcome was measured only from participant/patient perspective; the association between investigated constructs and outcome could vary upon who rates the outcome (i.e., participant/patient, clinician, observer). Therefore, future studies are well advised to investigate this aspect.

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APPENDIX
AUTOMATIC THOUGHTS QUESTIONNAIRE – SHORT VERSION *(*ATQ-SV)

Descriptions and inferences:
I don't think I can go on. (Item 2)
Nothing feels good anymore. (Item 4)
I can't get started. (Item 6)
What's wrong with me? (Item 7)
I'll never make it. (Item 9)
My future is bleak. (Item 13)
It's just not worth it. (Item 14)
I can't finish anything. (Item 15)

Evaluations:
I'm no good. (Item 1)
I'm so disappointed in myself. (Item 3)
I can't stand this anymore. (Item 5)
I'm worthless. (Item 8)
I feel so helpless. (Item 10)

Something has to change. (Item 11)
There must be something wrong with me. (Item 12)

PATIENTS' THERAPY EXPECTATION AND EVALUATION (PATHEV)
Hope for improvement subscale

I'm afraid I can't even be helped by psychotherapy. (Item 1)
I believe my problems can finally be solved. (Item 4)
Even with therapy, my problems will not change very much. (Item 5)
Actually, I'm rather skeptical about whether treatment can help me. (Item 9)