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Predictors of Change in Patient Treatment Outcome Expectation During Cognitive-Behavioral Psychotherapy for Generalized Anxiety Disorder

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Positive patient-rated psychotherapy outcome expectation at pre- or early treatment is associated with posttreatment improvement. However, there is limited research on patients' *change* in outcome expectation across therapy and participant factors that predict both pretreatment outcome expectation and expectation change. The present study aimed to examine (a) the overall trajectory of change in patients' outcome expectation from pretreatment through treatment's end; (b) baseline patient characteristics as predictors of their pretreatment outcome expectation; (c) early change in general self-efficacy (controlling for baseline patient characteristics, early change in symptoms, and treatment condition) as predictor of expectation change; and (d) therapist effects on patients' outcome expectation change. For patients with generalized anxiety disorder (N = 80) receiving variants of cognitive-behavioral therapy, outcome expectation was assessed at pretreatment, Session 5, Session 10, and posttreatment. Using multilevel models with repeated assessments, we found outcome expectation to linearly increase from pre- to posttreatment. When controlling for other patient characteristics at intake, higher depression severity was associated with lower pretreatment outcome expectation. When controlling for baseline patient characteristics, early reduction in generalized anxiety disorder–symptoms and global severity, and treatment condition, an increase in early general self-efficacy was associated with a less steep increase in outcome expectation over the therapy. We also found between-therapist differences in their patients' average outcome expectation change. Results shed additional light on various participant characteristics that influence patients' pretreatment outcome expectation and expectation change through therapy.

Clinical Impact Statement

Question: This article examined patients' change in outcome expectation across cognitive-behavior therapy for generalized anxiety disorder, as well as participant factors that are associated with both pretreatment outcome expectation and expectation change. ***Findings:*** On average, patients' outcome expectation becomes more positive over time. Moreover, the degree of such change is influenced by several baseline and early treatment patient factors and by the therapist themselves. ***Meaning:*** Therapists should consider assessing outcome expectation throughout cognitive-behavior therapy for generalized anxiety disorder and pay attention to baseline patient characteristics (i.e., demographic and clinical variables) and their early change in general self-efficacy, as these might be important clinical indicators of both patients' pretreatment outcome expectation level and expectation change. In addition, therapists should "know thyself," as they may differ in their ability to foster positive expectancy change for their average patient (which could bear on clinical practices and training needs). ***Next Steps:*** Future research needs to replicate the current findings and extend them by investigating therapist-level characteristics and/or actions that might explain why some therapists do a significantly better job than others of facilitating positive patients' outcome expectation. This latter focus would contribute to developing more effective evidence-based therapist trainings.

Keywords: outcome expectation change, CBT for GAD, patient characteristics, therapist effects, self-eficacy change

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Expectations influence peoples' perceptions and they are an important motivator and determinant of behavior (Bandura, 1977; Rotter, 1954). Patients entering treatment vary in their expectation regarding the likelihood that it will help reduce their symptoms or improve their functioning (i.e., outcome expectation; Borkovec & Nau, 1972; Constantino, 2012). Conceptually, the more positive a patient's expectation about treatment outcomes, the more likely it is they will benefit from it (Kirsch, 1985; Wampold & Imel, 2015). Empirically, this notion was supported in a comprehensive meta-analysis of 81 independent samples, in which more positive patient-rated outcome expectation at pre- or early treatment was associated with better posttreatment outcome across varied treatments and diagnoses (weighted r = .18; 95% confidence interval [CI: .14, .22]; Constantino et al., 2018).

Although the aforementioned meta-analysis focused on studies that measured outcome expectation at baseline or early therapy only, expectations are not static concepts; they can be adapted through new information (Kirsch, 1985). In psychotherapy, views toward treatment can change, for better or worse, such as when patients are presented with therapeutic rationales and/or are exposed to different techniques (Constantino & Westra, 2012; Newman & Fisher, 2010). Despite this clinical wisdom, relatively few studies have investigated shifts or changes in patients' outcome expectation across a course of treatment, with most of them only examining change over a limited time that does not extend from baseline through the entirety of treatment. Among those that have examined such change, two studies have revealed a linear increase in outcome expectation during treatment; one study was conducted on patients receiving cognitive-behavioral therapy (CBT) for generalized anxiety disorder (GAD; Newman & Fisher, 2010) and the other on patients receiving CBT for depression (Vîslă et al., 2019). Still another study showed a quadratic pattern (i.e., a slightly inverted U-shape curve) to patients' outcome expectation during CBT and/or psychotropic medication treatment for anxiety disorders, indicating that while expectancy increased early, it then leveled and started to decrease later (Brown et al., 2014). Moreover, although not focusing explicitly on the shape of change in outcome expectation over therapy, another study examined longitudinal associations between outcome expectation, therapeutic alliance, and worry during variants of CBT for GAD and found that outcome expectation influenced subsequent changes in therapeutic alliance and worry (Constantino et al., 2020). Although these few studies indicate different shapes of outcome expectation change within patients, they clearly converge on showing that outcome expectation is malleable. Thus, in order to better understand expectancy change patterns, more research is needed, with a focus on critical points during psychotherapy.

Moreover, given that pretreatment or early treatment outcome expectation robustly predicts treatment outcome (Constantino et al., 2018) and that outcome expectation changes over time (Brown et al., 2014; Newman & Fisher, 2010; Vîslă et al., 2019), it seems clinically important to investigate factors that contribute to patient's pretreatment outcome expectation and their change across therapy. The more clinicians understand such factors, the more effectively they can capitalize on the therapeutic value of outcome expectation at both treatment's outset and as therapy evolves (Constantino et al., 2018; Vîslă et al., 2019). Several patient variables, measured predominantly at pretreatment, have shown some relation to their pretreatment or early treatment outcome expectation level. Demographic variables, including being female (Cohen et al., 2015; Hardin & Yanico, 1983; Vîslă et al., 2019) and older (Collins & Hyer, 1986; Tsai et al., 2014), relate to more positive pretreatment or early treatment outcome expectation. In terms of clinical variables, lower early treatment outcome expectation has been predicted by higher global symptom severity (Connolly Gibbons et al., 2003; Elliott et al., 2015; Safren et al., 1997), specific symptom severity (Cohen et al., 2015; Constantino et al., 2014; Smeets et al., 2008; Tsai et al., 2014), and diagnostic comorbidity (Connolly Gibbons et al., 2003; Safren et al., 1997). Even though these findings provide information about potential correlates with outcome expectation, there is little replication of significant findings and few examinations of the relative strength of associations within multivariate models (Constantino et al., 2016; Vîslă et al., 2019).

When assessing predictors of later outcome expectation or outcome expectation change, studies are quite limited. However, among the few that examined predictors of later outcome expectation, one study investigated during-treatment correlates of *posttreatment* outcome expectation (i.e., a prognostic belief about maintaining one's treatment gains after completing therapy; Constantino et al., 2016). The authors found that patients with less severe baseline depression, higher session 3 outcome expectation, more general hope during treatment, and a greater reduction in interpersonal problems over treatment predicted higher posttreatment outcome expectation. For one study that examined predictors of the *shape of change* in outcome expectation, Vîslă and colleagues (2019) found that the absence of previous depressive episodes increased the slope of patients' outcome expectation during therapy for depression; notably, neither therapeutic alliance quality nor early change in symptoms predicted change in outcome expectation. This finding confirmed the results of a previous study looking at session-by-session change, which found that outcome expectation predicted symptoms and related functioning, but not the other way around (Brown et al., 2014). Therefore, it seems plausible that variables other than symptom change may explain change in patients' outcome expectation during therapy.

From a social–cognitive perspective, it is possible that one's *general* self-efficacy, or their belief in their abilities to perform a specific action required to attain a desired outcome (Bandura, 1977) or to deal effectively to a variety of stressful situations (Schwarzer & Jerusalem, 1995); could facilitate the more *treatment-specific* belief of outcome expectation. That is, having a high or improving sense of global self-efficacy could associate with believing that one can make use of the therapeutic intervention before them in order to meet their personal treatment targets. Supporting this idea, not only has research demonstrated that self-efficacy can change during therapy (Brown et al., 2014) but also there is health psychology research demonstrating that general self-efficacy beliefs are positively associated with individuals' expectation regarding the consequences of engaging in physical activity (i.e., psychical activity outcome expectation; Luszczynska et al., 2005). Although this association has yet to be tested directly for self-efficacy and *psychotherapy* outcome expectation, there is at least some indirect evidence that increased self-efficacy perceptions during psychotherapy may positively influence this prognostic patient belief.

From a relational perspective, inasmuch as therapy involves multiple interactants, it makes sense that therapist variables can

also influence patients' outcome expectation. In one study focused on CBT for GAD, greater observer-rated therapist competence in delivering the CBT techniques was associated with more favorable subsequent patient outcome expectation (Westra, Constantino, Arkowitz, et al., 2011). In addition, several studies have demonstrated that the therapist's provision of a compelling treatment rationale relates to higher subsequent outcome expectation (Ahmed & Westra, 2009; Ametrano et al., 2017). In addition to there being therapist differences in specific actions like competence and rationale provision, there is also a robust literature that points to there being overall between-therapist effectiveness differences in their average patient's treatment outcomes (for a meta-analysis of this so-called *therapist effect*, see Johns et al., 2019). Accordingly, it would also make sense that therapists can differ on their ability to cultivate outcome expectation in their patients. To this point, a few studies have revealed such between-therapist differences; that is, there are therapists that show higher average levels of outcome expectation across their patients in comparison to other therapists (Vîslă et al., 2019). However, more research is needed across different therapy contexts (e.g., brief/ long or individual/group therapy) to further establish and understand this expectancy-centered therapist effect.

In light of the aforementioned gaps in the literature, the present study aimed to examine (a) the overall trajectory of change in patients' outcome expectation from pre- to posttreatment in variants of CBT for GAD; (b) baseline patient characteristics (i.e., demographic and clinical characteristics) as associates of their pretreatment outcome expectation; (c) early change in general self-efficacy (controlling for baseline patient characteristics, early change in GAD-symptoms and global severity, and treatment condition) as associate of outcome expectation change; and (d) therapist effects on patients' outcome expectation change. Based on the literature reviewed, we expected women more than men and older participants to report higher pretreatment outcome expectation. Moreover, given that social support has been found to relate to treatment entry and engagement (Kelly et al., 2010), we explored if individuals who are in a relationship (and could therefore experience more support while engaged in therapy) show higher pretreatment outcome expectation than those not in a relationship. Furthermore, because in the present study the educational status of participants was relatively high (almost 60% had a least a bachelor's degree) compared to other studies that did not evidence a significant association between education and outcome expectation (Vîslă et al., 2019 study on patients with major depression in which 39% of participants had a university degree), we explored whether the educational status of individuals with GAD influenced their outcome expectation. In terms of clinical variables, and largely consistent with the extent literature, we expected higher worry intensity and depression severity to predict lower pretreatment outcome expectation. That all said, whereas previous findings provide information about potential correlates with outcome expectation, it remains that there are mixed results and little replication; therefore, here we explored the *relative strength* of these associations in multivariate analyses (Hypothesis 2). Given theoretical assumptions of a relation between perceived self-efficacy and outcome expectation (Bandura, 1977, 2018), and some evidence coming from a study conducted outside therapy (Luszczynska et al., 2005), we hypothesized an association between patients' early change in general self-efficacy and change in their treatment outcome expectation over therapy (controlling for baseline patient characteristics, early change in GAD-symptoms and global severity, and treatment condition; Hypothesis 3). Finally, based on preliminary previous evidence of therapist effects on patients' outcome expectation (Vîslă et al., 2019), we hypothesized that that some therapists compared to others would evidence higher average outcome expectation change across their patients (Hypothesis 4).

Method

Setting

This study reflects a novel reanalysis of data from a randomized controlled trial (RCT) comparing a *prolonged focus on change* (PFC) condition versus a *state of the art* (SOTA) condition for GAD (Flückiger et al., 2021; ClinicalTrials.gov Identifier: NCT03079336; study protocol in Flückiger et al., 2018). Both conditions were based on a widely used CBT approach, Mastery of your Anxiety and Worry package (MAW-package; Craske & Barlow, 2006; Zinbarg et al., 2006). The MAW-package for GAD typically consists of psychoeducation, relaxation training and/or mindfulness exercises, cognitive restructuring, as well as imagery and in vivo situational exposure. In both conditions, treatment consisted of 16 sessions plus three booster sessions within 12 months, with the only difference being that in the PFC condition, the focus on changes in the check-in phase of each session was prolonged. Results revealed that PFC condition showed faster symptom reduction in worry over therapy (i.e., linear change) and a decelerated change (quadratic change) until 12-month follow up in comparison to the SOTA implementation (Flückiger et al., 2021).

Participants

Patients

Of 343 individuals initially screened for trial eligibility, 80 were included for treatment at the Psychotherapy Outpatient Clinic of the University of Zurich's Department of Psychology (for more details about the selection procedure see Flückiger et al., 2021). Participants were included in the study if they (a) fulfilled the diagnostic criteria for GAD based on the structured interview for *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (*DSM–5*; Black & Grant, 2014); (b) were 18 years of age or older, (c) had sufficient knowledge of German language, and (d) agreed to the informed consent. Participants were excluded for the following reasons: (a) they had a score of 2 or higher on the suicide item of the Beck Depression Inventory–Second Edition (BDI-II; Beck et al., 1996) and/or were found to have active suicidal plans during the diagnostic screening interview, (b) they were currently taking medication for the treatment of a psychotic or bipolar disorder, or (c) they were currently receiving treatment from a professional psychotherapist. Prescribed medications for anxiety or depressive disorders did not exclude participants, provided the dosage had remained constant for at least 1 month. The presence of a comorbid mental disorder did not result in exclusion if GAD was in the foreground according to the severity rating of the Diagnostic Interview for *DSM* diagnoses. The mean age of the included sample (N = 80) was 31.4 years (SD = 11.0 years). All patient were White, and 75% identified as women and 25% as men. The

majority were generally well-educated (57.5% with a bachelor's degree), middle class (mean of $81,000 annual household income), and indicated a high comorbidity rate with other psychological disorders (58%; 41% a comorbid anxiety disorders and 14% a comorbid depression disorder). For the complete patient characteristics at intake, see Flückiger et al. (2021).

Therapists

A total of 20 graduate-level psychologists were recruited from local postgraduate CBT training centers. Therapists and supervisors were trained according to the most recent version of the MAW-package by an initial 16-hr workshop presented by one of the coauthors of the MAW-package (i.e., Richard Zinbarg; Craske & Barlow, 2006; Zinbarg et al., 2006). In addition, therapists participated in 2-hr study supervision in small groups on a biweekly basis. Most therapists attended additional individualized CBT supervision, as part of their postgraduate training protocol (200 hr supervision and 600 hr practice-based workshop are required to obtain a psychotherapy license in Switzerland). Therapists were crossed over the two treatment conditions and each therapist treated four patients, two in the PFC condition and two in the SOTA condition (ABAB design)[1]. The mean age of the 20 therapists was 30.9 years (*SD* = 6.9 years), and 90% identified as women and 10% as men.

For additional context training and practice context in Switzerland, the usual training for psychotherapists follows three phases: basic training (masters in psychology), postgradual training (psychotherapy) and further training. Postgradual training takes roughly four years and has to be completed within six years, consisting of: 400 units of theory of the chosen method, 100 units of transdisciplinary (generic) theory, 150 units of self-awareness training, 150 units of supervision (single and group setting), and 2 years at 100% of practice in psychotherapy inpatient and outpatient clinics. Further training has to be followed continuously and should add up to 500 hr over 4 years. In Switzerland, psychotherapy is not included in general public insurance (this will be changed starting 2022), though voluntary supplement insurance can partly include psychotherapy treatment (https://www.europsyche.org/situation-of-psychotherapy-in-various-countries/switzerland/).

Measures

Outcome Expectation

Patients' outcome expectation was assessed using the Hope of Improvement subscale of the Therapy Expectation and Evaluation scale (PATHEVH; Schulte, 2005). This subscale includes four items rated from 1 (*absolutely wrong*) to 5 (*absolutely right*): "I'm afraid I cannot 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), and "Actually, I'm rather skeptical about whether treatment can help me" (Item 9). Items 1, 5, and 9 are reversed-scored prior to summing all items. The possible score range is 4 to 20, with higher scores reflecting more positive outcome expectation. PATHEVH scales have been substantiated by factor analysis, and the subscales show satisfactory reliability in depressed and anxious samples (Schulte, 2005, 2008; Vîslă et al., 2019). Subscale Cronbach's alpha for the current sample was .82 at pretreatment, .81 at session 5, .84 at session 10, and .76 at posttreatment.

Patients' Baseline Characteristics

From the diagnostic interviews (described later), we extracted patient demographic variables (i.e., age, gender, marital status, educational status) and information regarding their presenting comorbidities. For the present analyses (discussed later), marital status (close partnership = 1 and no close partnership = 0) and presence of comorbidity (comorbidity = 1 and no comorbidity = 0) were transformed to categorical variables. Educational status, rated from 1 (*no education*) to 7 (*PhD studies*), was considered as continuous in the analyses.

General Self-Efficacy

General self-efficacy was measured using the General Self-Efficacy Scale (GSE; Schwarzer & Jerusalem, 1995), which contains 10 items rated from 1 (*not at all true*) to 4 (*exactly true*), yielding a total score between 10 and 40. Example of items are "It is easy for me to stick to my aims and accomplish my goals" (Item 3), "Thanks to my resourcefulness, I know how to handle unforeseen situations" (Item 5), and "When I am confronted with a problem, I can usually find several solutions" (Item 8). The GSE scale, originally developed in German and then translated to multiple languages, has shown very good psychometric properties across various countries (Luszczynska et al., 2005). Cronbach's alpha for the current sample was .85 at pretreatment and .88 at Session 5.

Global Symptom Severity

The 9-item German short version of the Symptom Checklist-K-9 (SCL-K-9; Klaghofer & Brähler, 2001) was used to assess general psychological distress. Answers are provided on a 5-point scale, ranging from 0 (*symptom not present*) to 4 (*experienced distress induced by symptom very high*), with higher scores indicating higher psychological distress. This brief nine-item version of the seminal SCL-K-90 (Derogatis & Fitzpatrick, 2004) showed good psychometric characteristics, comparable to those obtained on the 90-item version of the scale (Petrowski et al., 2019). Cronbach's α for the current sample was .57 at pretreatment and .68 at Session 5.

Specific Symptom Severity

Worry was assessed using the Penn State Worry Questionnaire (PSWQ; Meyer et al., 1990). The PSWQ is a 16 item self-report measure of the frequency and intensity of worry. Items are rated on a scale from 1 to 5, with higher scores indicating greater worry (range = 16 to 80). The PSWQ has shown strong internal consistency, as well as convergent and discriminant validity (Brown et al., 1992; Meyer et al., 1990). Cronbach's α for the current sample was .82 at screening (baseline), pretreatment, and Session 5. *Anxiety* was assessed using the Beck Anxiety Inventory (BAI; Beck et al., 1988), a 21-item self-report questionnaire that assesses

[1] One exception was a therapist who provided treatment to just two patients and another one who provided treatment to six patients (the last therapist took over the two patients from the therapist that was able to provide treatment to just two patients). These two therapists were still crossed over conditions, meaning that both of them treated patients in both conditions. The analyses in the current paper were computed on the actual collected data where the within-therapist factor was treated as 2 therapies by one therapist and 6 therapies by the other therapist.

the severity of anxiety symptoms on a 4-point Likert-type scale ranging from 0 (*not at all*) to 3 (*severely*). Total scores can range from 0 to 63, with higher scores representing greater anxiety. The BAI has shown high internal consistency (α = .92; Beck et al., 1988). Cronbach's alpha for the current sample was .83 at pretreatment and .90 at Session 5. *Depression symptoms* were assessed using the aforementioned German version of the BDI-II (Beck et al., 1996), a widely used 21-item measure. The scale ranges from 0 to 3, with higher scores reflecting more depression (range = 0 to 63). 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). Cronbach's α for the current sample was .85 at screening (baseline), and .86 at pretreatment and session 5.

Procedure

A local ethics committee approved the parent randomized controlled trial and subsequent secondary data analysis. All patients received written information about the study and informed consent was obtained prior to intake assessment. Participants were recruited via e-mail distribution lists and local media, and were diagnosed by trained interviewers administering the German structured interview section for *DSM–5* (Margraf et al., 2017). Patients were included in the study if a GAD diagnosis was indicated by all three evaluations (self-evaluation, phone screening, structured interview). Interrater agreement of the GAD-diagnoses of structured interview was 95%; in the few cases where there was disagreement, the participants were excluded from the study. More detailed information regarding recruitment and screening procedures, patient flow, and therapy assignment can be found in Flückiger et al. (2021). For the purposes of the current study, patients completed the PATHEVH at pretreatment, Session 5, Session 10, and posttreatment; the PSWQ and BDI-II at screening (baseline), pretreatment, and Session 5; and the GSE, SCL-K-9, and BAI at pretreatment and Session 5.

Data Analysis

As these data are nested, a three-level random effects, restricted-maximum likelihood model was fit (with repeated assessments modeled as Level 1, patients as Level 2, and therapists as Level 3; Bolger & Laurenceau, 2013). Outcome expectation was modeled as random factor to allow for generalization beyond particular therapists/patients (Serlin et al., 2003). We started with a simple regression model and progressively added complexity in terms of random effects. At each step, we compared log likelihood ratios between models to aid decisions about including specific terms. To contrast alternative models, we used analysis of variance because it is a generic function that can be used for comparing –2 log likelihood values (i.e., deviances). Data were analyzed using hierarchical linear modeling. These models provide a flexible analysis of change over time and allow individuals to vary in where they start (random intercept) and how they change (random slope; Curran et al., 2010). Moreover, hierarchical linear models are typically characterized by higher levels of statistical power than comparable traditional methods applied to the same data, with the total number of person-by-time observation playing an important role in the model estimation and statistical power (Raudenbush & Bryk, 2002). To obtain correct standard errors and draw correct statistical inferences, the need for incorporating into the statistical models of both autocorrelation and heteroscedasticity was tested. Furthermore, these models can be estimated in the presence of partially missing data, with data missing at random not biasing the parameter estimates (DeShon et al., 1998). To examine multicollinearity, we computed the associations between proposed predictors (Table S3 in the online supplemental materials). There were no differences between the therapy conditions on any pretreatment assessment. Outcome expectation also did not vary by therapy condition. However, there were significant differences between conditions in early change in general self-efficacy and anxiety, but not in early change in general psychological distress, worry, or depression severity. Therefore, analyses were conducted by collapsing across treatment conditions; however, in the conditional model we controlled for treatment condition.

To answer our research questions, we first examined the shape of the relation between time and outcome expectation by comparing a linear, quadratic, and cubic shape of change (Hypothesis 1). Second, using a random intercept and random slope model (i.e., repeated assessments nested in patients and patients nested in their therapists), we predicted outcome expectation intercept (centered as outcome expectation at pretreatment) using baseline patient characteristics (i.e., demographic and clinical variables; Hypothesis 2). Third, we predicted outcome expectation linear slope using the early change in generalize self-efficacy (i.e., pretreatment to Session 5), while controlling for baseline patient characteristics, early change in GAD-symptoms and global severity (i.e., change in worry, anxiety, depression, and general psychological distress; i.e., pretreatment to Session 5), and treatment condition (Hypothesis 3). The reported explained variances are based on pseudo-R^2; that is, the proportional reduction in variance components of the conditional models in comparison to the unconditional model without predictors (Raudenbush & Bryk, 2002). Fourth, we investigated how much variance in patients' outcome expectation change can be attributable to the variability between therapists using the intraclass correlation coefficient (ICC; Hypothesis 4). The R "multilevel" package (Bliese, 2016) was used for computing the ICCs, the "nlme" package (Pinheiro et al., 2017) for conducting the growth models, and the "lattice" (Sarkar, 2008) and "ggplot2" (Wickham, 2016) packages for plotting graphs.

Results

Sample Descriptive Statistics

The current sample descriptive statistics are provided in Table S1 (in the online supplemental materials). Clinical and nonclinical benchmark scores from the extant literature are provided in Table S2 (in the online supplemental materials). A bivariate correlation matrix of the variables used in the multilevel regression analyses is presented in Table S3 (in the online supplemental materials).

Shape of Change in Outcome Expectation (Hypothesis 1)

A linear change of outcome expectation indicated best model fit (β = 7.39, *SE* = 2.82, *t* = 2.62, *p* = .009; see Figure S1 in the online supplemental materials) in comparison to quadratic (β = −4.14, *SE* = 2.82, *t* = −1.47, *p* = .14) or cubic (β = −1.68, *SE* = 2.82, *t* =

−.59, p = .55) change. Specifically, at pretreatment, the average outcome expectation score was 15.50, which then increased by 7.39 units each time period during the therapy.

Predictors of Pretreatment Outcome Expectation (Hypothesis 2)

To determine the level of nonindependence in our data (i.e., repeated measures nested in patients), we estimated a null model and calculated the ICC at patient and therapist level. Patients explained a significant proportion of the variance in outcome expectation scores, ICC = .580, $F(79, 211) = 6.023$, $p < .001$ (Figure S2 in the online supplemental materials), as did therapists, ICC = .093, $F(19, 271) = 2.484$, $p < .001$ (Figure S3 in the online supplemental materials). When contrasting different models, the model allowing patients/therapists to randomly vary in terms of pretreatment outcome expectation values (random-intercepts model) fit the data better than a model fixing the intercept to be constant across patients/therapists (log likelihood value = 113.36, $p < .0001$). We next determined whether there was significant slope variation among patients/therapists. A model with a random slope for time was estimated. The comparison of random-intercepts model with random-intercepts-and-random-slopes model returned a log likelihood value of 19.92 ($p < .0001$), indicating that the model with random slopes fit the data better than the model without the random slopes. Furthermore, we investigated if the model fit improved when incorporating autocorrelation and heteroscedasticity into the unconditional model with time as the only predictor (at Level 1). Results showed that incorporating (a) an autoregressive structure with serial correlations and (b) heterogeneity in the error structures into the random intercept and slope model did not improve the model fit ($p > .05$); therefore, the analyses were conducted without incorporating these terms.

When each baseline patient-level characteristics were entered in individual-predictor models, only educational status had a significant influence on the variance in outcome expectation intercept ($\gamma = -.456$, $SE = .198$, $t(58) = -2.292$, $p = .025$; pseudo-R^2 = .057); that is, higher educational status was associated with lower outcome expectation intercept. This model fit the data better (Bayesian Information Criterion [BIC] = 1345.418) than the unconditional model (i.e., random-intercepts-and-slopes model without predictors; BIC = 1349.944) and explained 6% of the variance in outcome expectation intercept at the patient level. Furthermore, when running a multipredictor model where all baseline patient-level characteristics were entered simultaneously (Table 1), depression severity was the only significant predictor of outcome expectation intercept ($\gamma = -.091$, $SE = .043$, $t(25) = -2.130$, $p = .043$); that is, higher baseline depression predicted lower outcome expectation intercept. The multivariate model explained 10% of the variance in outcome expectation intercept at the patient level, and the model (BIC = 1206.2) fit the data better than the individual-predictor model testing educational status alone (BIC = 1345.418) and the unconditional model (BIC = 1349.944).

Predictors of Linear Change in Outcome Expectation (Hypothesis 3)

When entered in individual-predictor models, baseline patient-level characteristics, early change in general self-efficacy, and early change in GAD-symptoms and global severity did not predict linear changes in outcome expectation (for slope: $p > .06$). When these variables were entered together in a multivariate model, change in general self-efficacy predicted outcome expectation slope (Table 1). Specifically, an increase in general self-efficacy from pretreatment to session 5 predicted a less steep increase in patients' outcome expectations over therapy ($\gamma = -.123$, $SE = .054$, $t(148) = -2.068$, $p = .040$; pseudo-R^2 = .166). The other variables were not significant predictors of outcome expectation slope. This model explained 17% in outcome expectation slope variance at patient level.

Table 1
Results of the Unconditional Model With Time as the Only Predictor and Conditional Model Predicting Outcome Expectation Intercept (i.e., Pretreatment Outcome Expectation) and Slope (i.e., Change From Pre- to Posttreatment)

Parameters	Unconditional growth model γ (*SE*)	Conditional growth model γ (*SE*)
Fixed effects		
Intercept	14.960 (.301)***	11.906 (3.312)**
Linear slope	0.382 (.122)*	0.776 (.971)
Age		0.022 (.047)
Gender		1.835 (.957)
Marital status		0.292 (1.014)
Education		−0.256 (.288)
PSWQ, baseline		0.066 (.045)
BDI-II, baseline		−0.091 (.043)*
Comorbidity		−0.001 (.808)
GSE change[a]		0.043 (128)
SCL-K-9 change		0.069 (.113)
PSWQ change		0.026 (.041)
BAI change		−0.069 (.062)
BDI-II change		−0.018 (.072)
Treatment condition		0.158 (.782)
Age × Time		0.008 (.019)
Gender × Time		0.596 (.409)
Marital Status × Time		0.424 (.410)
Education × Time		0.038 (.113)
Comorbidity × Time		−0.294 (.339)
GSE Change × Time		−0.108 (.052)*
SCL-K-9 Change × Time		−0.042 (.046)
PSWQ Change × Time		−0.010 (.017)
BAI Change × Time		0.012 (.026)
BDI-II Change × Time		−0.002 (.028)
Random effects		
Level 1		
Residual	2.226 (1.492)*	2.350 (1.533)*
Level 2		
Intercept	5.586 (2.364)*	5.782 (2.405)*
Linear slope	.631 (.794)*	0.736 (.858)*
Covariance	−.322	−0.567*
Level 3		
Intercept	.0,001 (.013)*	0.282 (.531)*
Linear slope	.0,001 (.009)*	0.068 (.260)*
Covariance	−.002	−0.839*

Note. PSWQ = Penn State Worry Questionnaire; BDI-II = Beck Depression Inventory - Second Edition; GSE = General Self-Efficacy Scale; SCL-K-9 = Symptom Checklist-K-9; BAI = Beck Anxiety Inventory.[a] Change for GSE, SCL-K-9, PSWQ, BAI, and BDI-II was calculated by subtracting session 5 scores from pretreatment scores.
* $p < .05$. ** $p < .001$. *** $p < .0001$.

Therapist Effect (Hypothesis 4)

As already mentioned before, therapists explain a significant proportion of the variance in patients' outcome expectation change, ICC

= .093, $F(19, 271) = 2.484$, $p < .001$ (Figure S3 in the online supplemental materials). To further test for potential therapist effects within the ABAB-therapist design, we explored a model that integrated a linear time component across the patients by each therapist at Level 2 (Figure S4 in the online supplemental materials). The result of this model indicated that the variability in outcome expectation between-patients nested in the same therapists; ICC(1) = .047 was comparable to the variability in outcome expectation between-patients nested in different therapists; ICC(2) = .22; $F(19, 60) = .819$, $p = .676$). Moreover, the results of these models indicated no systematic difference in the growth of outcome expectation between the first and the fourth therapy within therapists for linear change ($\beta = -1.57$, $SE = 2.39$, $t = .66$, $p = .514$), but showed a difference for quadratic change ($\beta = -4.85$, $SE = 2.39$, $t = -2.03$, $p = .046$).

Discussion

The present study adds to the small research base in examining change in patients' outcome expectation from pre- to posttreatment. Moreover, it expands the research on correlates of early outcome expectation, and is one of the few studies examining predictors of outcome expectation change over therapy. Our findings indicated a significant linear growth in patients' outcome expectation over treatment (Hypothesis 1). These findings are consistent with Newman and Fisher (2010) and Vîslă and colleagues (2019), but inconsistent with Brown and colleagues (2014). The divergent findings might be due to different methods used to assess outcome expectation and/or different approaches/format of the treatment the patients received. Brown and colleagues assessed patients' outcome expectation every session (in CBT and/or psychotropic medication for anxiety disorder, with 8 sessions included in the analyses), whereas in Newman and Fishers' study, change was measured from session four until session seven (in a 14-session CBT for GAD). In Vîslă and colleagues study, outcome expectation was measured at four time points (i.e., screening, pretreatment, session 7, and session 14 in a 22-session group CBT for depression), which was more comparable to the present study. It might be that more frequent assessments may offer a more comprehensive picture of the outcome expectation change process. It might also be that different treatment approaches/formats impact growth in patient' outcome expectation at different time points during the treatment. Moreover, we should note that Newman and Fisher studied change in a composed expectancy/credibility score (Newman & Fisher, 2010). Although expectancy and credibility might be related constructs (Constantino, Coyne, et al., 2019), each has been shown to explain a unique portion of variance in outcome (Smeets et al., 2008).

A few previous studies investigated change in patients' outcome expectation, but most of them not until the end of treatment. In the current study, we found that patients' outcome expectation increased from pretreatment to Session 5, and then continued to increase until session 10 and, to some degree, until posttreatment (Hypothesis 1). The increase in the early treatment sessions might be expected given that the psychoeducation about the intended treatment is introduced together with therapeutic rationales as the patients are continually being introduced to different CBT techniques. Patients' engagement with the therapeutic techniques later in therapy might enhance their belief in the treatment being able to reduce their symptoms; arguably, this might be more powerful in influencing views toward treatment when compared to simply hearing a credible therapeutic rationale (Kazdin & Wilcoxon, 1976). We must note, however, that linear change is *the average estimated pattern in our sample*, and as with any change pattern across a sample, there is variability around the pattern, which means that some patients will show different shapes of outcome expectation change (as illustrated in Figure S1 in the online supplemental materials). In this vein, linear patterns of change can also be disrupted by other clinical processes. For example, in a study that also investigated CBT for GAD, Westra, Constantino, and Aviram (2011) showed that outcome expectation during therapy decreased *following alliance ruptures* and this effect was especially strong for patients who started with low outcome expectation (i.e., low outcome expectation was a risk factor for waning outcome expectation in the face of alliance ruptures). It will be important for future research to continue to uncover the contexts in which OE is likely to wane (vs. simply continue to increase), as this has important implications for clinical responsiveness.

When baseline patient-level characteristics were entered separately into analyses (Hypothesis 2), only *educational status* predicted pretreatment outcome expectation; specifically, higher educational status was associated with lower pretreatment outcome expectation. Contrary to these findings, another study that investigated demographic factors as associates of outcome expectation did not find an influence of patient educational status on their initial treatment outcome expectation (Vîslă et al., 2019). However, the two studies differ in the investigated population (individuals with major depression vs. individuals with GAD), as well as in how educational status was included in the analyses (as a categorical vs. continuous variable), which might explain the differences in results. Although speculative, it could be that more educated patients are less influenced by the prospect of being helped by a psychosocial intervention. For this subgroup, perhaps other factors are more central to predicting better outcomes, such as a higher quality alliance, as has been shown in the treatment of depression (Constantino, Coyne, et al., 2017). Therefore, future research is needed to better understand the role of education, process variables, and their interactions in CBT for GAD.

Alternatively, though speculative, more educated individuals might have had the opportunity to engage in treatment prior to this study, whether through access to college/academic counseling centers or proximity to peers who have engaged to therapy, as compared to their counterparts with less formal education/potential access. Relatedly, seeking a further psychotherapy may also be associated to the insight that the previous treatment was less successful than hoped. Moreover, when baseline patient-level characteristics were entered simultaneously in a multipredictor model, *depression severity* was the only significant predictor of outcome expectation intercept, with high baseline depression being associated with less positive initial treatment outcome expectation. This result is consistent with the literature on correlates of patient' outcome expectation at baseline or early in treatment, which find negative associations with symptom severity including depression (Smeets et al., 2008; Tsai et al., 2014; Vîslă et al., 2019). This finding might reflect the idea that depression centrally involves a state of demoralization or a general feeling of hopelessness and negative expectation for change (DeVellis & Blalock, 1992). Interestingly, this is the first study to replicate depression severity as

predictor of initial outcome expectation in a GAD sample. However, given that the results are not consistent across model types (single and multivariate), the results should be interpreted cautiously and replicated in other GAD samples.

Change in treatment outcome expectation (Hypothesis 3) was predicted by early change in patients' general self-efficacy (controlling for baseline patient characteristics, early change in GAD-symptoms and global severity, and treatment condition). Specifically, an increase in general self-efficacy from pretreatment to Session 5 predicted a less steep increase in patients' treatment outcome expectations over therapy. This finding is in contrast to similar research in health psychology that indicated the opposite relation (Luszczynska et al., 2005). Thus, future research will need to focus on possible differences in efficacy and belief associations in different treatment contexts. Moreover, given that when entered in individual predictor model, general self-efficacy did not significantly predict outcome expectation change during therapy, our exploratory multipredictor results should be interpreted cautiously. Their preliminary status being acknowledged, if replicated by future research, these results might suggest that an increase in a general sense of self-efficacy to deal with various stressful life events at the beginning of the therapy, as patients are introduced to the treatment rationale and begin to use change techniques, might foster their (unrealistic) trust that they can handle their own problems without further therapy, which might, in turn, promote a decrease in the belief that only *treatment* will promote any positive change.

Furthermore, similar with what was found in previous studies, change in specific and global symptoms did not predict change in treatment outcome expectation in the current study (Brown et al., 2014; Vîslă et al., 2019). That said, although none of the baseline patient-level characteristics investigated in this study predicted change in patients' treatment outcome expectation, the present study did not assess previous experience with psychotherapy, a variable that has been found to predict change in outcome expectation. Therefore, future research might want to control for previous number of treatment episodes, and/or treatment experiences, relative to self-efficacy and the development of outcome expectation. Our analyses on patient-level predictors of expectancy change were mostly exploratory. Thus, our results should be interpreted cautiously. Before making firm clinical recommendations, the results need to be replicated in other studies of correlates of expectancy change.

Looking at the therapist effect (Hypothesis 4), results showed that therapists themselves explain a significant proportion (9%) of the variance in patients' outcome expectation change scores. These results are consistent with the findings of Vîslă and colleagues (2019) and Constantino, Aviram, and colleagues (2020) that also showed therapists differences in their patients' outcome expectation. Moreover, these results are consistent with previous findings from clinical trial and naturalistic data, showing that 5–10% of outcome variance can be explained by differences between the therapists (Firth et al., 2019; Johns et al., 2019; Kim et al., 2006). Thus, these findings point to the need for investigating differences between therapists not only at the level of outcomes, but also regarding associated therapy processes (Constantino, Boswell, et al., 2017). However, although this is an important step to follow, it might not be enough, and future research should investigate therapist-level characteristics and/actions that might explain why some therapists do a significantly better job than others of facilitating positive patients' outcome expectation. Such research could contribute to developing more effective evidence-based therapist trainings, and ultimately contribute to enhancing patient outcomes (Constantino, Boswell, et al., 2017; Constantino, Vîslă, et al., 2019).

Their preliminary status acknowledged, the present results do have important clinical implications. The results suggest that a continuous monitoring of patients' outcome expectation from pretreatment through the entirety of therapy may give useful clinical insight as to how patients are perceiving their treatment and its likely utility (for which waxing and waning is likely to occur, which may signal important processes to attend to in the therapy work). Although we are aware that it might not be feasible for clinicians to monitor outcome expectation with standardized measures, they can, however, at a minimum, check in with verbal assessments of outcome expectation, as discussed in the Coyne et al. (2019) case study. Or, they can use even simple single items, perhaps integrating them into routine outcome tools that are becoming more commonplace for ongoing feedback and clinical responsiveness (as discussed in the Muir et al., 2019). Using this information, clinicians may respond more appropriately to low or decreasing levels of outcome expectation using evidence-based, expectancy-enhancing strategies. For example, before starting to use any therapeutical techniques, therapists might offer a nontechnical review of the research findings on the treatment's effectiveness and use persuasion tactics regarding the likely efficacy of psychotherapy, especially when delivering a treatment rationale. Moreover, therapists might help prepare patients for relationship tensions that may occur later in therapy, while explicitly discussing their possible effect on treatment beliefs, personalize outcome expectancy-enhancing statements based on patient experiences and strengths (e.g., "You have already come so far by admitting to yourself and others that you have a problem. This suggests a strong desire to change."), and be especially affiliative, supportive, and empathic with low early patient outcome expectation (Constantino et al., 2012; Constantino et al., 2018).

Related to these results, clinicians may need to be especially attentive to patient pretreatment outcome expectation when working with highly educated patients, as we found higher education to be associated with lower initial outcome expectation. In addition, clinicians could see baseline high depression severity as a risk factor for patients' low initial outcome expectations, which could be explained by demoralization or a general feeling of hopelessness (DeVellis & Blalock, 1992). Furthermore, constantly evaluating patient general self-efficacy in dealing with challenging everyday situations, as well as their actual abilities and strengths in dealing with these challenges in and outside therapy, might offer therapists an idea about whether patients have developed realistic self-efficacy (or not) in dealing with their problems, which might help them avoid a drop in patients' positive outcome expectation.

The present findings on therapist effects in outcome expectation (paired with the relatively smaller impact of patient characteristics) may support the need for focused therapist training on influencing/cultivating patients' outcome expectation. In line with the expectancy-enhancing strategies presented above, such training could start with an overview of the research in this area. Clinicians can then be trained to assess outcome expectation and track it over time (e.g., training to use verbal assessments, single item questions, or brief measures) and

assess markers of lowered outcome expectation (including, e.g., missing sessions or resisting the therapist's suggestions). Starting from the identified markers, clinicians can be trained to respond contextually when outcome expectation is either low or unrealistic (for more training directions and a more detailed overview on the ones included here, see Constantino, Vîslă, et al., 2019).

The present study has several limitations. First, our homogeneous sample of White patients with primary GAD limits generalizability. Second, the study included only one measure of each of the relevant variables. Third, all measures were retrospective self-reports allowing for memory biases (Shiffman et al., 2008), and correlations between measures may be artificially inflated due to shared method variance. Therefore, future research may include also observer and clinician-rated measures, as well as more ecological assessments that capture in-the-moment emotions and experiences. Fourth, we measured outcome expectation one time before treatment start and three times during treatment. Future research may use session-by-session assessments (even in the form of single items) to capture outcome expectation change in more detail and/or investigate the optimal number of measurements necessary to maximize reliability of change estimates. Fifth, the patient variables measured in this study explained only a small part of the variance in initial outcome expectation and expectation change. Therefore, future studies need to replicate these findings, and then test additional predictors at the patient and therapist level, or the interaction between these two levels. Such variables could represent change in other patient process variables during the therapy, therapist's characteristics and responsiveness (Stiles & Horvath, 2017; Wu & Levitt, 2020); and dyadic interactions (Constantino et al., 2020). Limitations aside, the present study contributed to the much-needed information on the pattern of change in patient outcome expectation, as well as on participant correlates of both early positive outcome expectation and outcome expectancy trajectory of change during treatment.

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