Outcomes of Student Trainee-Delivered Cognitive Behavioral Therapy (CBT) on Internalizing Symptoms, CBT Skills, and Life Satisfaction

Allison Peipert[1] · Natalie Rodriguez-Quintana[2] · Lorenzo Lorenzo-Luaces[1]

Abstract

Increased quality of life (QoL) is rated by patients as a primary factor in determining recovery from psychopathology. Cognitive behavioral therapies (CBTs) are the most well-researched psychotherapies for internalizing disorders and appear effective at reducing symptoms even when delivered by trainees. Existing research suggests that the effects of CBTs on QoL are more modest than their effects on symptoms. However, little is known about the effects of trainee-delivered CBT on life satisfaction, a subjective measure of QoL. We analyzed data from 93 clients treated by students ($n = 23$) in a graduate-level training clinic using an intent-to-treat approach, completers case analyses, and random forest imputation. Across methods of handling missing data, improvements in anxiety, depression, and CBT skills were more marked than improvements in QoL. Exploratory analyses suggested baseline life satisfaction was the strongest predictor of end-of-treatment life satisfaction. Future research should explore alternatives to "standard" CBT for clients with low life satisfaction.

Keywords Cognitive behavioral therapy · Life satisfaction · Quality of life · Trainees · Internalizing disorders

✉ Lorenzo Lorenzo-Luaces
lolorenz@iu.edu

1 Department of Psychological and Brain Sciences, Indiana University Bloomington, 1101 E 10th Street, Bloomington, IN 47405, USA

2 Department of Psychiatry, University of Michigan, Ann Arbor, USA

Outcomes of Student Trainee-Delivered CBT on Symptoms and Life Satisfaction

Depression and anxiety are the leading causes of disability worldwide (James et al., 2018; Kessler & Wang, 2008). Research has demonstrated the negative impact that anxiety and depression have on subjective assessments of quality of life (QoL; Olatunji et al., 2007; Rapaport et al., 2005; Wells & Sherbourne, 1999).

Some of the most widely studied evidence-based psychotherapies for mood and anxiety disorders are cognitive behavioral therapies (CBTs). CBTs can refer to interventions which employ cognitive or behavioral strategies, or a combination of the two (DeRubeis & Lorenzo-Luaces, 2017). CBTs have demonstrated efficacy in randomized controlled trials (RCTs) for mood and anxiety disorders and are also efficacious across a range of conditions beyond "internalizing" disorders (Butler et al., 2006). Currently, RCTs are considered a "gold standard" for establishing treatments as empirically-supported, but effectiveness in clinical settings and cost-effectiveness are important considerations (Chambless & Hollon, 1998). Existing research supports the effectiveness of CBTs in clinical settings (Gibbons et al., 2010; Westbrook & Kirk, 2005) though the "real-world" efficacy may be somewhat lower than the RCT findings, owing in part to differences in entry criteria (Lorenzo-Luaces et al., 2018; Westen & Morrison, 2001) and differences in quality of the therapy (Westen & Morrison, 2001; Wiltsey Stirman et al., 2015). Research also supports the cost-effectiveness of CBTs as a stand-alone treatment or in combination with medication when compared to usual care, bibliotherapy, or community referral (Brettschneider et al., 2015).

Despite evidence for the efficacy, effectiveness, and cost-effectiveness of CBTs, certain knowledge gaps remain. First, CBTs and other psychotherapies appear to be more effective at treating symptoms than improving QoL (Hofmann et al., 2014; Widnall et al., 2020). While improvements in psychosocial functioning and in symptoms are highly correlated (Brenes, 2007; Rodriguez et al., 2005; Vázquez et al., 2015), many patients experience improvements in symptoms but not in objective psychosocial functioning (e.g., employment, good interpersonal relationships) and life satisfaction. Life satisfaction is a measure of subjective well-being and has been defined as "a conscious cognitive judgement of one's life in which the criteria for judgement are up to the person" Pavot & Diener 1993). Life satisfaction is a predictor of patient-reported impairment (Al-Windi, 2005) and future relapse (Vittengl et al., 2021). Past research demonstrates that areas such as well-being and QoL are central to the patients' perspective of recovery. Specifically, when patients are asked to rate the factors that are most important in determining "remission," they indicate subjective well-being and positive mental health as being at least as or more important than the absence of symptoms in determining remission (Zimmerman et al., 2006). Some researchers attribute greater success of CBTs with improving symptoms over subjective well-being to the fact that classic CBT does not directly address broader factors that affect QoL including social connections, positive affect, and day-to-day positive functioning (Bolier et al., 2013; Chakhssi et al., 2018; Sin & Lyubomirsky, 2009; Widnall et al., 2020).

In addition to limits of CBTs to improve functioning, the field also struggles with a dissemination and implementation gap wherein many individuals with internalizing disorders do not receive CBTs. As part of the effort to increase access and address barriers to mental health care, paraprofessionals (e.g., nurses without specialty training in CBT) or community health workers (e.g., including lay counselors) are being trained to provide mental health services, including brief psychotherapy (Montgomery et al., 2010; Richards et al., 2016). As such, it is important to consider the effectiveness of evidence-based care delivered by nonexperts, including student trainees. Previous studies demonstrate that student trainees can effectively implement CBT. Forand et al. (2011) assessed the effectiveness of CBT to treat mood and anxiety disorders delivered primarily by predoctoral interns. Recovery and improvement rates in the study were comparable to outcomes reported from outpatient settings and RCTs (Forand et al., 2011; Hiltunen et al., 2013; Öst et al., 2012). The authors also reported medium to large effect sizes for CBT delivered by trainees on anxiety and depression, comparable to those reported in non-trainee delivered CBT effectiveness studies. In a sample of patients presenting mainly with anxiety or depression and treated by student trainees, Öst et al. (2012) found improvement outcomes similar to efficacy trials (see also Hiltunen et al., 2013). When compared, the symptom-specific treatment effect sizes provided by Öst and colleagues are consistently larger than that of treatment-related changes in QoL. These studies demonstrate that student trainees can effectively deliver CBT; however, most CBT outcome studies analyze symptom measures, and results typically focus on metrics of symptom reduction (e.g., response and remission). Previous research suggests symptom reduction is not the only outcome important to patients (Zimmerman, 2006), and other outcomes, such as skill acquisition and QoL, could be informative measures of change that are not symptom-focused. Studies with student trainees that do compare the effects of CBT on symptoms versus other measures of QoL indicate greater repair of symptoms than QoL; however, less is known about how change in cognitive skills compares to symptom and QoL change. The present study aims to replicate prior findings (e.g., Hiltunen et al., 2013; Öst et al., 2012) that symptoms improve more than measures of QoL, specifically life satisfaction, in a US sample. We also built on previous works by including a measure of CBT skills in our analyses, to benchmark changes in life satisfaction against changes in other outcomes that go beyond symptom reduction. Finally, we explore predictors of life satisfaction at baseline and throughout treatment.

The present study aims to assess changes in life satisfaction compared to changes in symptoms following student-delivered CBT in an academic training clinic. We aimed to (a) measure the rate of response, remission, and reliable and clinically significant change in measures of symptoms, CBT skills, and life satisfaction; (b) measure the rates of continuous change in symptoms, CBT skills, and life satisfaction; and (c) explore baseline and process predictors of improvements in life satisfaction. We expected that compared to findings from the published literature on the efficacy and effectiveness of CBTs, trainees will have outcomes similar to that of professionals: symptom reduction will be greater than corresponding increases in life satisfaction.

Methods

Data

Study procedures were approved by the institution's Human Subjects & Institutional Review Board, and all clients signed informed consent to have their data used for research. Data were collected in a small CBT research and training clinic at a large Midwestern university between the years of 2012 and 2019. The clinic serves the training needs of a clinical psychology training program accredited by the American Psychological Association (APA) and Psychological Clinical Science Accreditation System (PCSAS). The program is based on a clinical science model wherein students are trained to integrate advancing scientific knowledge with clinical application and dissemination. Most services were provided by a graduate student in their 2nd–5th year in the program. The clinic serves as an in-house practicum and is a training requirement for all students at some point in the program, depending on training needs. Students were supervised by a doctoral-level CBT practitioner director who assigned clients to the student clinician based on current caseload and fit to the student's training needs. Supervision was provided for 1–2 h on weekly group basis, along with bi-weekly peer supervision, based on availability. All students in their first year of CBT practicum also completed a weekly or bi-weekly 2-h didactic course covering basic CBT theory and concepts as well as basic psychotherapy skills.

Eligibility

Potential new clients that initiate contact with the clinic received a follow-up call to conduct a semi-structured phone screening interview. The purpose of the phone interview is to determine the potential client's eligibility for clinic services. The clinic provides services primarily for adults with depression and anxiety. Clients were determined not eligible for services if they experienced problems that fell outside the scope of the clinic, for example, if they experienced psychosis, a symptom presentation characterized primarily by externalizing behaviors (e.g., heavy alcohol use) or other behaviors (e.g., eating disorders). Clients were also determined not eligible for services if their presenting problem indicated a higher level of care was needed, such as in the case of severe suicidality or mania. Those who were not appropriate to receive services through the clinic were referred to other local clinical services.

Procedures

Following the phone interview, the potential new client was placed on a waiting list pending an available therapist. When a therapist is available, a 2–3-h intake session is scheduled. Average time between waitlist and intake in the clinic was 67.5 days (SD = 92.3). The intake includes collection of demographic information, various

symptom checklists covered in detail below, and a diagnostic semi-structured interview (i.e., the Diagnostic Interview for Anxiety, Mood, and Obsessive–Compulsive and Related Neuropsychiatric Disorders from 2018 to 2019, prior to that, the Structured Clinical Interview for DSM-5). Diagnostic decisions were made in collaboration with the clinic supervisor. Feedback sessions were scheduled post-intake to provide diagnostic feedback and treatment plans. Successive treatment sessions were conducted on a weekly basis for approximately 50 min per session. Treatment was guided by the client's primary diagnosis or presenting problem using a case formulation approach (Persons, 2012). The clinic utilized various CBT manuals, which may have prioritized: safety behavior reduction and behavioral experiments for worry (Dugas & Robichaud, 2007), in vivo exposure and cognitive restructuring for social anxiety (Hope et al., 2010), interoceptive exposure and cognitive restructuring for panic and agoraphobia (Barlow & Craske, 2006), and, for depression, behavioral activation (BA; Martell et al., 2010) or cognitive restructuring (Greenberger et al., 2015). Therapists sometimes borrowed from other treatment modalities, for example, interpersonal effective and emotion regulation (Linehan, 2014). Apart from the intake structure and general manualized approach, treatment was conducted naturalistically. For example, termination was a mutually agreed-upon decision, usually preceded by reducing the frequency of therapeutic contact.

Outcome Measures

Beck Depression Inventory-II (BDI-II; Beck et al. 1996). Depressive symptoms were assessed with the BDI-II at intake, termination, and throughout treatment. The BDI-II is a 21-item self-report measure that presents respondents with items assessing symptoms of depression (e.g., sadness) on a 4-point scale of increasing severity from 0 (e.g., "I do not feel sad") to 3 (e.g., "I am so sad or unhappy that I can't stand it"). Responses are summed on a 0–63 scale with higher scores indicating more severe symptoms. Prior research supports the reliability and validity of the BDI-II in assessing depression symptoms (Erford et al., 2015). The measure appeared to be an internally consistent assessment of depression at baseline (alpha = 0.93).

    Beck Anxiety Inventory (BAI; Beck & Steer, 1990). Anxiety symptoms were assessed with the BAI at intake, termination, and periodically throughout treatment. The BAI is a 21-item self-report measure that presents respondents with items on a 4-point scale measuring anxiety symptoms (e.g., nervousness) in increasing severity from 0 ("Not at all") to 3 ("Severely—it bothered me a lot"). Responses are summed to a 0–63 scale with higher scores indicated more severe symptoms. The BAI is widely used to assess anxiety symptoms and research supports its reliability and validity (Bardhoshi et al., 2016). The measure appeared to be an internally consistent assessment of anxiety at baseline (alpha = 0.93).

    Satisfaction With Life Scale (SWLS; Diener et al., 1985). Life satisfaction was assessed with the SWLS at intake, session 5, session 10, and termination. The SWLS is a 5-item self-report measure that presents respondents with items on a 7-point scale measuring their level of agreement or disagreement with global statements about their life (e.g., "In most ways, my life is close to my ideal"), with options ranging from 1

("Strongly disagree") to 7 ("Strongly agree"). Responses are summed on a 5–35 scale with higher scores indicating greater life satisfaction. The SWLS is widely used (Pavot & Diener, 1993) to assess overall life satisfaction and research supports its reliability and validity. The measure appeared to be an internally consistent assessment of life satisfaction at baseline (alpha = 0.86).

Competencies of Cognitive Therapy Skills Self Report (CCTS; Strunk et al., 2014). CBT skills were measured with the Competencies of Cognitive Therapy Skills Self-Report (CCTS) between the years 2014 and 2019. Prior to then, CBT skills were not routinely assessed in the clinic. The CCTS was collected at intake, session 2, session 5, session 8, and termination. The CCTS is a 29-item self-report measure that assesses the degree of skill use over the past 2 weeks across three primary areas of cognitive therapy: behavioral strategies, reevaluating automatic thoughts, and schema/core beliefs (e.g., "I made an effort to evaluate my negative thoughts by considering just the facts"). Respondents are asked to rate each item using a 7-point Likert scale with options ranging from 1 ("not at all") to 7 ("completely"). Responses to the CCTS are summed on a 29–203 scale with higher scores indicating greater cognitive therapy skill competence. The CCTS appeared to be an internally consistent assessment at baseline (alpha = 0.98).

Missing Data

The sample consisted of 93 total clients, 67 of which completed CBT treatment. We considered a client a completer if they had a scheduled and documented termination session. Treatment termination was generally a mutual decision between client and student therapist based on reported symptoms and therapeutic progress. Additional reasons for treatment termination may have been present but were not reported in this dataset (e.g., client moving, clinic closing for the summer). Twenty-six clients (28%) did not have a termination session and thus did not have scores on our variables of interest (i.e., SWLS, BDI-II, BAI, CCTS). This rate of missing data is consistent with reported drop out across other studies of CBT clinics and CBT effectiveness (Fernandez et al., 2015; Hans & Hiller, 2013). Missing data on baseline demographics was low (0–2%). Missingness of the CCTS was more common in the total sample given the gap before CBT skills were routinely assessed. To illustrate this, 57 (61%) clients had a baseline and at least one post-baseline CCTS, whereas all 93 clients had a baseline and at least one post-baseline BAI. We analyzed the datausing completers ($n = 67$) and using an intent to treat approach in which we used last observation carried forward (LOCF) imputation ($N = 93$). We also used a random forest imputation approach (see the "Data Analysis" section). Given the differences in missingness between the CCTS and other variables, the CCTS was not included in the random forest imputation nor was it included in analyses in which we use predictions from variables collected throughout the treatment process.

Data Analysis

Analyses were conducted using IBM SPSS Statistics for Windows, Version 27.0 and R software (R Core Team, 2019). All analyses were performed using three different approaches to treating missing data. First, we used an intent-to-treat approach (ITT) with last-observation-carried-forward (LOCF) imputation. Under this approach, whatever last score a client provided on a measure is treated as their "final" score on that measure. Second, we used a singly imputed dataset derived from random forests imputation (Tang & Ishwaran, 2017). Finally, we also used a completers case sample, including only those who had baseline and termination values. For ease of interpretation, the ITT and random forests imputed dataset (henceforth referred to as "ITT dataset" and "imputed dataset") results are reported in this paper and results for the completers sample can be found in Appendix 6, 7 and 8. Going forward, all last observation or termination reports will be referred to as "end of treatment."

Continuous outcomes. Effect sizes for within-group change were calculated for all 4 measures by dividing the mean change from baseline to last observation by the pooled standard deviation of the difference scores, corrected for upward bias using Hedges' g (Hedges, 1981). Uncontrolled effect sizes (i.e., treatment effect sizes calculated in the absence of a control group) have some limitations but provide a method to compare change across the different measures and other published study outcomes.

Binary outcomes. Rates of response and remission were calculated using baseline and end of treatment scores across measures of symptoms and life satisfaction. Response was defined as a decrease (or increase in the case of positive outcomes) by at least 50% of the initial baseline score achieved at last observation. Remission was defined as achieving a score below (or above in the case of positive outcomes) a cutoff for a diagnosis or normative data. The following cutoffs were used for remission: BDI-II < 14, BAI < 8, and SWLS > 19. There was no "remission" cut-off for the CCTS; therefore, CCTS response was calculated but not remission.

Reliable and clinically significant change was calculated using Jacobson & Truax's reliable change index (RCI; Jacobson & Truax, 1991) and criteria for clinically significant change. RCI was calculated using pre- and post-treatment BDI-II, BAI, SWLS, and CCTS scores in order to determine if the magnitude of change in individual scores was sufficient, relative to the standard deviation and reliability of the measures, to claim it was unlikely to be due to chance. Clinically significant change was calculated using Method C proposed by Jacobson et al. 1984 to establish whether an individual's final score across each measure achieved a clinically significant cut-point (towards "normal"). This method ascertains whether an individual has moved at least halfway between the mean of a clinical group (here, the descriptive statistics of the current sample) and the mean of a healthy reference group. For reference groups, we used the means and standard deviations of the normative population data reported by Roelofs et al. (2013) on the BDI-II, Gillis et al. (1995) for the BAI, an online sample of healthy respondents on the CCTS (Howard et al. 2021), and Hinz et al. (2018) for the SWLS. Individual subject change across the 4 measures were divided into 4 categories: (1) reliable deterioration ("deterioration"),

(2) no reliable change from baseline to end of treatment ("no change"), (3) reliable improvement that did not reach a clinically significant threshold ("reliable improvement"), and (4) reliable improvement that did achieve a clinically significant threshold ("reliable and clinically significant improvement").

To ascertain whether change in depression, anxiety, and CBT skills were greater than change in life satisfaction, we compared treatment response (vs. not), treatment remission (vs. not), and reliable and clinically significant improvement (vs. not) on the BDI-II, BAI, and CCTS to that of the SWLS using a series of McNemar tests. The McNemar test determines if the differences between two proportions (e.g.,

Table 1 Demographic characteristics of clinic sample	N (%)
Gender	
Male	27 (29%)
Female	66 (71%)
Age	
Mean (SD)	26.6 (10.7)
Race/ethnicity	
White	74 (80%)
Black	5 (5%)
Asian	5 (5%)
Hispanic/Latinx	5 (5%)
Mixed/others	4 (4%)
Education	
Pre-college	6 (6.5%)
Some college or vocational school	50 (53%)
College	22 (24%)
Graduate degree	15 (16%)
Current student	71 (76%)
Sexual orientation	
Heterosexual	73 (79%)
Bisexual	7 (8%)
Homosexual	3 (3%)
Others	9 (10%)
Relationship status	
Single, separated, or divorced	43 (46%)
Dating	28 (30%)
Engaged, co-habitating, or married	21 (23%)
Previously received treatment	68 (73%)
Diagnosed with a mood disorder	23 (25%)
Diagnosed with anxiety-related disorder	26 (28%)
Diagnosed with other (e.g., stress-related)	7 (7%)
Diagnosed with comorbid mood/anxiety disorder	34 (37%)

clients classified as reliably and clinically significantly improved on the BDI-II vs. SWLS) is statistically significant at $p < 0.05$.

Predictors of life satisfaction. Exploratory analyses were conducted to assess for clinical and demographic predictors of life satisfaction (see Table 1) at baseline and post-treatment. To assess which variables were reliable predictors of life satisfaction, we performed Akaike information criterion (AIC) based backwards selection from 1,000 bootstraps in the imputed dataset using the "bootStepAIC" package in R (Austin & Tu, 2004). To explore predictors of life satisfaction pre-treatment, we conducted one bootstrapped AIC-based backwards regression using the demographics variables from Table 1 (with the exception of assigned diagnostic category) as well as the clinical variables BDI-II and BAI. To explore predictors of life satisfaction at post-treatment, we conducted another bootstrapped AIC-based backwards regression using the same demographics predictors from Table 1 as well as the baseline clinical variables BDI-II, BAI, and SWLS. To make it to the final model, a variable had to be selected 60% of the time. We report the final models from the backwards selection process.

Results

The sample consisted of 93 clients. Clients completed an average of 12 CBT sessions (median = 10, SD = 10, range = 0–48, IQR = 16–3.5). Demographic information is presented in Table 1. For additional information on the clinic demographics, see Lake et al. (in press). The sample was mostly white (80%), female (66%), and identified as heterosexual (79%). Most clients had at least some college education (94%), as most were current students (77%), and had received previous treatment (73%). Table 2 has mean BDI-II and BAI scores at intake, which suggest overall moderate levels of depression and anxiety. Twelve (13%) clients had at least mild

Table 2 Mean pre- and post-treatment scores and uncontrolled effect sizes for clients undergoing trainee-delivered CBT across ITT and imputed datasets

	N	Pre mean (SD)	Post mean (SD)	Effect size (95% CI)
ITT				
SWLS	90	17.7 (7.3)	20.8 (7.8)	0.41 (0.26–0.56)
BDI-II	88	24.0 (11.0)	16.8 (11.8)	0.63 (0.43–0.83)
BAI	93	16.30 (10.5)	8.7 (9.9)	0.74 (0.55–0.94)
CCTS	57	98.4 (28.4)	128.4 (41.5)	0.83 (0.48–1.17)
Imputed				
SWLS	93	17.7 (7.2)	22.2 (6.2)	0.66 (0.47–0.85)
BDI-II	93	23.8 (10.8)	12.4 (7.8)	1.27 (1.01–1.53)
BAI	93	16.3 (10.5)	7.0 (6.4)	0.99 (0.75–1.22)

Note: *SD* standard deviation, *CI* confidence interval, *SWLS* Satisfaction With Life Scale, *BDI-II* Beck Depression Inventory II, *BAI* Beck Anxiety Inventory, *CCTS* Competencies of Cognitive Therapy Skills, *ITT* intent-to-treat

depression, 15 (16%) clients had at least mild anxiety, 60 (65%) clients had at least both mild depression and anxiety, and 6 (6%) had neither depression nor anxiety. Given the level of symptom overlap for the sample on the BDI-II and BAI measures at intake, all participants were included in analysis across both measures, as the BDI-II and BAI both measure internalizing problems.

Treatment Improvements and Continuous Metrics

Post-treatment scores are presented in Table 2. As can be seen in the table, generally the decreases in anxiety and depression and increases in CBT skills were more pronounced than life satisfaction. For example, at the start of treatment, the mean BDI-II score for the ITT sample was 24.0 (SD = 11.0), and the mean score at end of treatment was 16.8 (SD = 11.8, g = 0.63, 95% CI = 0.43–0.83). By way of contrast, at the start of treatment, the mean SWLS was 17.7 (SD = 7.3), and the mean score at end of treatment was 20.8 (SD = 7.8, g = 0.41, 95% CI = 0.26–0.56). As expected, given the use of LOCF imputation, the ITT scores appear to show more modest improvement than the data which were imputed via random forests. For the remainder of the study results, all reported outcomes are consistent across both the ITT and imputed datasets.

Response and Remission

Rates of response and remission for symptom measures and life satisfaction are presented in Fig. 1. Of note some clients, 16 (17%) on BDI, 18 (19%) on BAI, and 36 (39%) on SWLS had relatively low symptoms and therefore were already below threshold for remission at baseline. Remission and response for symptom measures and remission for life satisfaction were relatively comparable
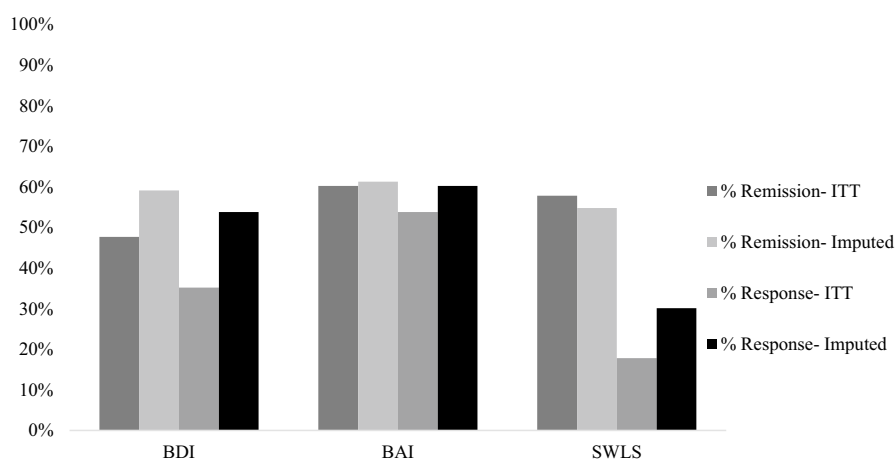

Fig. 1 Rates of response and remission for clients undergoing trainee-delivered CBT across ITT and imputed datasets

in both datasets. However, response on the SWLS was much lower. For example, responses on the BDI-II and BAI in the ITT samples were 35.2% and 53.8%, respectively, whereas response for SWLS only occurred in 17.8% of cases. These differences in response were statistically significant in that a greater proportion of clients demonstrated response from pre- to post-treatment in depression (McNemar, $p = 0.006$), anxiety (McNemar, $p < 0.001$), and CBT skills (McNemar, $p = 0.004$) than life satisfaction. Rates of remission on the SWLS appear relatively high, by contrast (ITT: 57.8% IMP = 54.8%). Despite statistically significant differences in response between the SWLS, BDI-II, and BAI, differences between the measures in remission were not significant (ps > 0.13). Putting together the baseline SWLS scores along with the low rates of continuous and categorical change suggests that life satisfaction scores at baseline averaged below "neutral" but did not demonstrate much change throughout the course of treatment.

Reliable and Clinically Significant Change

Rates of reliable and clinically significant change are presented in Table 3. Clients demonstrated greater rates of reliable and clinically significant change for symptomatology and CBT skills compared to life satisfaction. For example, in the ITT sample, 35% and 42% of clients demonstrated reliable improvement or reliable and clinically significant change on the BDI-II and BAI, respectively. In contrast, only 18% of clients demonstrated some form of reliable improvement in the SWLS. These differences in reliable and clinically significant change were statistically significant in that a greater proportion of clients demonstrated reliable and

Table 3 Rates of change from pre- to post-treatment for clients undergoing trainee-delivered CBT across ITT and imputed datasets

ITT	N	Reliable deterioration	No reliable change	Reliable improvement	Reliable and clinically significant change
SWLS	90	0 (0%)	74 (82.2%)	4 (4.4%)	12 (13.3%)
BDI-II	88	0 (0%)	57 (61.3%)	5 (5.6%)	26 (29.5%)
BAI	93	1 (1.1%)	53 (57.0%)	6 (6.5%)	33 (35.5%)
CCTS	57	7 (12.3%)	19 (33.3%)	1 (1.8%)	30 (52.6%)
Imputed	**N**	**Reliable deterioration**	**No change**	**Reliable improvement**	**Reliable and clinically significant change**
SWLS	93	1 (1.1%)	66 (71.0%)	10 (10.8%)	16 (17.2%)
BDI-II	93	1 (1.1%)	31 (33.3%)	20 (21.5%)	41 (44.1%)
BAI	93	0 (0%)	48 (51.6%)	8 (8.6%)	37 (39.8%)

Note: *SD* standard deviation, *CI* confidence interval, *SWLS* Satisfaction With Life Scale, *BDI-II* Beck Depression Inventory II, *BAI* Beck Anxiety Inventory, *CCTS* Competencies of Cognitive Therapy Skills, *ITT* intent-to-treat

Taken together, all our change metrics suggested that there is greater change in symptoms and CBT skills than in SWLS

clinically significant change in depression (McNemar, $p < 0.01$), anxiety (McNemar, $p < 0.001$), and CBT skills (McNemar, $p < 0.001$) than life satisfaction.

Predictors of Change

The backwards selections process identified demographic and clinical variables associated with post-treatment SWLS (see Table 4) and pre-treatment SWLS (see Table 5). The post-treatment SWLS model accounted for 67.7% and 52.5% of the variance in the ITT and imputed data, respectively, and significantly predicted last observation life satisfaction scores (ITT: F $(5,80) = 33.48$, $p < 0.001$; Imputed: F $(5,87) = 19.25$, $p < 0.001$). The only consistent predictor of post-treatment SWLS across the ITT and imputed datasets was baseline SWLS. In the ITT dataset, identifying as female, rather than male, and identifying as a sexual minority, as opposed to heterosexual, were predictive of greater end of treatment life satisfaction, but these were not observed to be significant predictors in the imputed dataset. Similarly, lower baseline depression severity was predictive of end of treatment life satisfaction in the imputed dataset, but not in the ITT dataset.

Given that baseline SWLS was the strongest predictor of post-treatment SWLS, we also explored predictors of baseline SWLS using the bootstrapped AIC-based backwards selection. These regression results are presented in Table 5. The model accounted for 39.9% and 38.1% of the variance in the ITT and imputed data, respectively, and significantly predicted last observation life satisfaction scores (ITT: F

Table 4 Exploratory multiple regression analysis of predictors of life satisfaction change for clients undergoing trainee-delivered CBT from ITT and imputed data

Predictor	B	SE	β	t	p	Sig
ITT data ($N = 86$)						
Constant	7.89	2.46		3.20	0.00	
Baseline BDI-II	−0.06	0.05	−0.08	−1.01	0.32	
Baseline SWLS	0.82	0.09	0.77	9.60	0.00	**
Single (vs. in a relationship/married)	1.95	1.08	0.13	1.80	0.08	
Sexual minority	2.57	1.23	0.14	2.09	0.04	*
Female (vs. male)	2.60	1.18	0.15	2.20	0.03	*
Imputed data ($N = 93$)						
Constant	16.30	2.28		7.15	0.00	
Baseline BDI-II	−0.12	0.05	−0.21	−2.32	0.02	*
Baseline SWLS	0.51	0.08	0.59	6.43	0.00	**
Single (vs. in a relationship/married)	1.39	0.96	0.11	1.45	0.15	
Sexual minority	2.13	1.18	0.14	1.80	0.08	
Female (vs. male)	1.75	1.07	0.13	1.64	0.10	

Note: *ITT* intent-to-treat, *B* unstandardized beta, *SE* standard error, *β* standardized beta, *Sig.* significance, *SWLS* Satisfaction With Life Scale, *BDI-II* Beck Depression Inventory-II; sexual minority identifies as lesbian, gay, bisexual, or "others"

*$p < 0.05$. **$p < 0.01$

Table 5 Exploratory multiple regression analysis of predictors of baseline life satisfaction for clients undergoing trainee-delivered CBT from ITT and imputed data

Predictor	B	SE	β	t	p	Sig
ITT data ($N=85$)						
Constant	24.91	2.34		10.64	0.00	
Baseline BDI-II	−0.33	0.06	−0.50	−5.61	0.00	**
Age	−0.07	0.06	−0.10	−1.15	0.25	
Ethnic minority (vs. non-Hispanic White)	−2.84	1.76	−0.15	−1.62	0.11	
Single (vs. in a relationship/married)	−3.14	1.36	−0.22	−2.31	0.02	*
Sexual minority	−3.40	1.57	−0.20	−2.17	0.03	*
Female (vs. male)	2.24	1.51	0.14	1.48	0.14	
Imputed data ($N=93$)						
Constant	25.24	2.27		11.12	0.00	
Baseline BDI-II	−0.33	0.06	−0.50	−5.77	0.00	**
Age	−0.08	0.06	−0.12	−1.37	0.18	
Ethnic minority (vs. non-Hispanic White)	−2.66	1.58	−0.15	−1.68	0.10	
Single (vs. in a relationship/married)	−2.28	1.26	−0.16	−1.81	0.07	
Sexual minority	−3.52	1.54	−0.20	−2.29	0.03	*
Female (vs. male)	2.67	1.39	0.17	1.92	0.06	

Note: *ITT* intent-to-treat, *B* unstandardized beta, *SE* standard error, *β* standardized beta, *Sig* significance, *SWLS* Satisfaction With Life Scale, *BDI-II* Beck Depression Inventory-II; sexual minority identifies as lesbian, gay, bisexual, or "others"

*$p < 0.05$. **$p < 0.01$

$(6,78) = 8.65$, $p < 0.001$; Imputed: F $(6,86) = 8.81$, $p < 0.001$). The results suggest that baseline BDI-II and identifying as a sexual minority, as opposed to heterosexual, predicted lower baseline SWLS across both datasets.

Discussion

The present study aimed to compare changes in life satisfaction to changes in depression symptoms, anxiety symptoms, and CBT skills following trainee-delivered CBT. Data were collected in a research and training clinic over a 7-year period, and pre- and post-treatment scores were used to calculate the magnitude of within-group improvements, rates of response and remission, and rates of reliable and clinically significant change. The sample consisted primarily of students with depression or anxiety, most of which had a history of past treatment.

Symptom measures suggested medium-large changes on the BDI-II, BAI, and CCTS across ITT and imputed datasets. In contrast, changes on the SWLS were small to medium. Categorical outcomes showed a similar pattern: life satisfaction did not change as much as depression, anxiety, and CBT skills. Thus, our results suggest that trainee-delivered CBT, like expert-delivered CBT, can be associated with reduction in depression and anxiety and improvements in CBT skills and life satisfaction but CBT may be more effective at decreasing symptoms of depression

and anxiety than improving life satisfaction. Exploratory analyses assessed possible predictors of changes in life satisfaction as well as baseline correlates of life satisfaction. Our preliminary analyses suggested that end-of-treatment SWLS was primarily predicted by higher baseline SWLS, highlighting the prognostic value of baseline SWLS. When we explored predictors of baseline SWLS, lower baseline depression severity and identifying as a sexual minority predicted lower baseline life satisfaction scores across both datasets. This is consistent with previous literature that demonstrates sexual minorities report lower life satisfaction compared to heterosexual individuals (Powdthavee & Wooden, 2015).

Limitations and Strengths

The most notable study limitation is the lack of a control group. Given the data were collected as part of routine care, pre- and post-treatment changes cannot be causally attributed to trainee-delivered CBT and may be related to regression to the mean, the natural passage of time, and spontaneous recovery. This limitation is common in effectiveness and practice-based research, including prior research on well-being in CBT delivered in routine care settings (Widnall et al., 2020). Similarly, another result of using clinic outcomes is attrition and missing data, especially for the CCTS which was not measured throughout the entire study period. It is common in psychology clinics for clients to discontinue services (Wierzbicki & Pekarik, 1993), and effectiveness studies and other studies of CBT clinic outcomes have reported dropout rates similar to the rate of missing data observed in the present sample (Fernandez et al., 2015; Hans & Hiller, 2013). A third limitation is the lack of diversity of the clinic sample. Clients were predominantly white, female, heterosexual, and current students. In the exploratory analysis, sexual orientation was associated with life satisfaction scores, but the sample size of persons identifying as sexual minorities (i.e., lesbian, gay, bisexual, or "other") was low ($n = 19$). Future studies should explore the replication of life satisfaction predictors within a more diverse sample of clients. Despite these limitations, we conducted one of the largest analyses of life satisfaction changes in trainee-delivered CBT. Clients had a range of internalizing disorders, though they were treated with "disorder-specific" CBT approaches.

Implications

Our outcomes align with other published research suggesting CBT has a greater impact on symptoms of depression and anxiety than on subjective QoL (Hofmann et al., 2014; Widnall et al., 2020). Given that QoL is an important patient-rated outcome and a predictor of relapse (Vittengl et al., 2021), these finding highlight the need to reconsider existing treatments. One option for improving QoL may be acutely adapting CBT approaches for clients with low life satisfaction, given that it is such a robust predictor of end-of-treatment SLWS. For example, positive CBT (P-CBT) incorporates traditional CBT with focus on strengths

and increasing positive features rather than decreasing the negative experiences of mental disorders (Bannink, 2017). In a recent comparison of P-CBT and traditional CBT in patients with MDD, Geschwind et al., 2019 found that P-CBT yielded large effects on depression scales, positive affect, negative affect, and subjective happiness, though other measures of subjective QoL were not included. Besides negative affect, however, the effects of P-CBT were not significantly greater than those of traditional CBT. Positive CBT has been related to lower rates of dropout and greater treatment preference than traditional CBT (Geschwind et al., 2019, 2020). Positive affect treatment (PAT) is another CBT-based intervention with potential to target low subjective well-being. PAT targets increasing the experience of positive affect by focusing on components of reward learning and experience (Craske et al., 2016). A recent RCT compared the effects of PAT to a negative affect treatment (NAT) resembling traditional CBT in participants with moderate-severe depression and anxiety (Craske et al., 2019). Outcomes demonstrated PAT was significantly more effective than NAT at increasing positive affect, decreasing negative affect, decreasing symptoms of anxiety and stress, and decreasing suicidal ideation, though other measures of well-being were not measured. Future research should explore the effects of PAT on life satisfaction and other measures of subjective QoL.

Another consideration might be alternative treatment approaches altogether for clients with low life satisfaction, such as positive psychology interventions (PPIs). PPIs focus on improving well-being and positive functioning through a variety of interventions targeting savoring experiences, gratitude, kindness, positive relationships, and hope and meaning (Schueller & Parks, 2014). Meta-analyses have concluded that PPIs can effectively improve well-being and decrease depressive symptomatology (Bolier et al., 2013; Chakhssi et al., 2018). In a clinical trial of PPI and CBT, both interventions were effective at reducing depression symptomatology and increasing well-being, and no significant differences were found between the two interventions across all outcome measures (Chaves et al., 2017). Though not statistically significant, the effect sizes for well-being measures, including life satisfaction, were consistently larger for PPI compared to CBT.

A final consideration could be the addition of adjunctive treatments for those with low life satisfaction following a full course of treatment for anxiety and/or depression. For example, well-being therapy (WBT) is a psychotherapeutic well-being-enhancing intervention meant to be delivered in the residual phase of treatment and can serve as a relapse-prevention strategy or additional component to traditional CBT practice (Fava, 1999; Ruini & Fava, 2012). WBT spans 8–12 sessions and targets six dimensions of positive functioning and well-being: autonomy, environmental mastery, personal growth, purpose in life, self-acceptance, and positive relationships. Small RCTs have demonstrated efficacy with WBT in decreasing residual symptoms of depression and anxiety, increasing subjective well-being, and decreasing rate of relapse when used in a combined CBT package (G. A. Fava et al., 1998a, 1998b; Giovanni A. Fava et al., 1998a, 1998b). More research is needed to demonstrate the effectiveness of WBT on life satisfaction and utility of WBT in clinical practice.

Future Directions

Future research should further evaluate predictors of life satisfaction, life satisfaction change, and potential targets for treatment. Individuals with low QoL may be a group at risk for poor treatment outcomes so should be monitored more extensively.

Appendix 1: Completers-only results

Table 6 Mean pre- and post-treatment scores and uncontrolled effect sizes for clients undergoing trainee-delivered CBT in completers

Completers	N	Pre mean (SD)	Post mean (SD)	Effect size (95% CI)
SWLS	53	18.2 (7.0)	23.0 (6.9)	0.69 (0.43–0.95)
BDI-II	46	23.3 (11.3)	9.9 (8.2)	1.29 (0.91–1.68)
BAI	53	14.9 (9.5)	6.0 (6.3)	1.05 (0.71–1.40)
CCTS	29	94.8 (27.7)	152.2 (32.8)	1.86 (1.16–2.57)

Note: *SD* standard deviation, *CI* confidence interval, *SWLS* Satisfaction With Life Scale, *BDI-II* Beck Depression Inventory II, *BAI* Beck Anxiety Inventory, *CCTS* Competencies of Cognitive Therapy Skills, *ITT* intent-to-treat

Table 7 Rates of response and remission for clients undergoing trainee-delivered CBT in completers

Completers	N	Response (%)	Remission (%)
SWLS	53	16 (30.2%)	37 (69.8%)
BDI-II	46	30 (65.2%)	34 (73.9)
BAI	53	34 (64.2%)	37 (69.8%)
CCTS	29	16 (55.2%)	–

Note: *SD* standard deviation, *CI* confidence interval, *SWLS* Satisfaction With Life Scale, *BDI-II* Beck Depression Inventory II, *BAI* Beck Anxiety Inventory, *CCTS* Competencies of Cognitive Therapy Skills, *ITT* intent-to-treat

Table 8 Rates of change from pre- to post-treatment for clients undergoing trainee-delivered CBT among completers

ITT	N	Reliable deterioration	No reliable change	Reliable improvement	Reliable and clinically significant change
SWLS	53	0 (0%)	37 (69.8%)	4 (7.5%)	12 (22.6%)
BDI-II	46	0 (0%)	16 (30.2%)	5 (10.9%)	25 (54.3%)
BAI	53	0 (0.0%)	29 (54.7%)	2 (3.7%)	22 (41.5%)
CCTS	29	2 (6.9%)	0 (0.0%)	1 (3.4%)	26 (89.7%)

Note: *SD* standard deviation, *CI* confidence interval, *SWLS* Satisfaction With Life Scale, *BDI-II* Beck Depression Inventory II, *BAI* Beck Anxiety Inventory, *CCTS* Competencies of Cognitive Therapy Skills, *ITT* intent-to-treat

Declarations

Conflict of Interest The authors declare no competing interests.

References

Al-Windi, A. (2005). The relations between symptoms, somatic and psychiatric conditions, life satisfaction and perceived health. A primary care based study. *Health and Quality of Life Outcomes, 3*(1), 28. https://doi.org/10.1186/1477-7525-3-28

Austin, P. C., & Tu, J. V. (2004). Bootstrap methods for developing predictive models. *The American Statistician, 58*(2), 131–137. https://doi.org/10.1198/0003130043277

Bannink, F. (2017). Positive CBT in practice. In C. Proctor (Ed.), *Positive psychology interventions in practice* (pp. 15–28). Springer International Publishing. https://doi.org/10.1007/978-3-319-51787-2_2

Bardhoshi, G., Duncan, K., & Erford, B. T. (2016). Psychometric meta-analysis of the english version of the Beck anxiety inventory. *Journal of Counseling & Development, 94*(3), 356–373. https://doi.org/10.1002/jcad.12090

Barlow, D. H., & Craske, M. G. (2006). *Mastery of your anxiety and panic: Workbook*. Oxford University Press, USA. https://books.google.com/books?id=eWESDAAAQBAJ

Bolier, L., Haverman, M., Westerhof, G. J., Riper, H., Smit, F., & Bohlmeijer, E. (2013). Positive psychology interventions: A meta-analysis of randomized controlled studies. *BMC Public Health, 13*(1), 119. https://doi.org/10.1186/1471-2458-13-119

Brenes, G. A. (2007). Anxiety, depression, and quality of life in primary care patients. *Primary Care Companion to the Journal of Clinical Psychiatry, 9*(6), 437–443. https://doi.org/10.4088/pcc.v09n0606

Brettschneider, C., Djadran, H., Härter, M., Löwe, B., Riedel-Heller, S., & König, H. H. (2015). Cost-utility analyses of cognitive-behavioural therapy of depression: A systematic review. *Psychotherapy and Psychosomatics, 84*(1), 6–21. https://doi.org/10.1159/000365150

Butler, A. C., Chapman, J. E., Forman, E. M., & Beck, A. T. (2006). The empirical status of cognitive-behavioral therapy: A review of meta-analyses. *Clinical Psychology Review, 26*(1), 17–31. https://doi.org/10.1016/j.cpr.2005.07.003

Chakhssi, F., Kraiss, J. T., Sommers-Spijkerman, M., & Bohlmeijer, E. T. (2018). The effect of positive psychology interventions on well-being and distress in clinical samples with psychiatric or somatic disorders: A systematic review and meta-analysis. *BMC Psychiatry, 18*(1), 211. https://doi.org/10.1186/s12888-018-1739-2

Chambless, D. L., & Hollon, S. D. (1998). Defining empirically supported therapies. *Journal of Consulting and Clinical Psychology, 66*(1), 7–18. https://doi.org/10.1037//0022-006x.66.1.7

Chaves, C., Lopez-Gomez, I., Hervas, G., & Vazquez, C. (2017). A comparative study on the efficacy of a positive psychology intervention and a cognitive behavioral therapy for clinical depression. *Cognitive Therapy and Research, 41*(3), 417–433. https://doi.org/10.1007/s10608-016-9778-9

Craske, M. G., Meuret, A. E., Ritz, T., Treanor, M., Dour, H., & Rosenfield, D. (2019). Positive affect treatment for depression and anxiety: A randomized clinical trial for a core feature of anhedonia. *Journal of Consulting and Clinical Psychology, 87*(5), 457–471. https://doi.org/10.1037/ccp0000396

Craske, M. G., Meuret, A. E., Ritz, T., Treanor, M., & Dour, H. J. (2016). Treatment for anhedonia: A neuroscience driven approach. *Depression and Anxiety, 33*(10), 927–938. https://doi.org/10.1002/da.22490

DeRubeis, R. J., & Lorenzo-Luaces, L. (2017). Recognizing that truth is unattainable and attending to the most informative research evidence. *Psychotherapy Research, 27*(1), 33–35. https://doi.org/10.1080/10503307.2016.1252072

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment, 49*(1), 71–75. https://doi.org/10.1207/s15327752jpa4901_13

Dugas, M. J., & Robichaud, M. (2007). *Cognitive-behavioral treatment for generalized anxiety disorder: From science to practice*. Routledge. https://books.google.com/books?id=bLGqfBtyMcoC

Erford, B. T., Johnson, E., & Bardoshi, G. (2015). Meta-analysis of the English version of the Beck depression inventory–second edition. *Measurement and Evaluation in Counseling and Development, 49*(1), 3–33. https://doi.org/10.1177/0748175615596783

Fava, G. A. (1999). Well-being therapy: Conceptual and technical issues. *Psychotherapy and Psychosomatics, 68*(4), 171–179. https://doi.org/10.1159/000012329

Fava, G. A., Rafanelli, C., Cazzaro, M., Conti, S., & Grandi, S. (1998). Well-being therapy. A novel psychotherapeutic approach for residual symptoms of affective disorders. *Psychological Medicine, 28*(2), 475–480. https://doi.org/10.1017/S0033291797006363

Fava, G. A., Rafanelli, C., Grandi, S., Conti, S., & Belluardo, P. (1998b). Prevention of recurrent depression with cognitive behavioral therapy: Preliminary findings. *Archives of General Psychiatry, 55*(9), 816–820. https://doi.org/10.1001/archpsyc.55.9.816

Fernandez, E., Salem, D., Swift, J. K., & Ramtahal, N. (2015). Meta-analysis of dropout from cognitive behavioral therapy: Magnitude, timing, and moderators. *Journal of Consulting and Clinical Psychology, 83*(6), 1108–1122. https://doi.org/10.1037/ccp0000044

Forand, N. R., Evans, S., Haglin, D., & Fishman, B. (2011). Cognitive behavioral therapy in practice: Treatment delivered by trainees at an outpatient clinic is clinically effective. *Behavior Therapy, 42*(4), 612–623. https://doi.org/10.1016/j.beth.2011.02.001

Geschwind, N., Arntz, A., Bannink, F., & Peeters, F. (2019). Positive cognitive behavior therapy in the treatment of depression: A randomized order within-subject comparison with traditional cognitive behavior therapy. *Behaviour Research and Therapy, 116*, 119–130. https://doi.org/10.1016/j.brat.2019.03.005

Geschwind, N., Bosgraaf, E., Bannink, F., & Peeters, F. (2020). *Positivity Pays off: Clients' Perspectives on Positive Compared with Traditional Cognitive Behavioral Therapy for Depression*. https://doi.org/10.1037/pst0000288

Gibbons, C. J., Fournier, J. C., Stirman, S. W., DeRubeis, R. J., Crits-Christoph, P., & Beck, A. T. (2010, 2010/09/01/). The clinical effectiveness of cognitive therapy for depression in an outpatient clinic. *Journal of Affective Disorders, 125*(1), 169–176. https://doi.org/10.1016/j.jad.2009.12.030

Gillis, M. M., Haaga, D. A. F., & Ford, G. T. (1995). *Normative values for the Beck anxiety Inventory, Fear Questionnaire, Penn State Worry Questionnaire, and Social Phobia And Anxiety Inventory*. American Psychological Association. https://doi.org/10.1037/1040-3590.7.4.450

Greenberger, D., Padesky, C. A., & Beck, A. T. (2015). *Mind over mood, second edition: Change how you feel by changing the way you think*. Guilford Publications. https://books.google.com/books?id=F0p2CgAAQBAJ

Hans, E., & Hiller, W. (2013). *Effectiveness of and Dropout from Outpatient Cognitive Behavioral Therapy for Adult Unipolar Depression: A Meta-Analysis of Nonrandomized Effectiveness Studies*. https://doi.org/10.1037/a0031080

Hedges, L. V. (1981). Distribution theory for glass's estimator of effect size and related estimators. *Journal of Educational Statistics, 6*(2), 107–128. https://doi.org/10.3102/10769986006002107

Hiltunen, A. J., Kocys, E., & Perrin-Wallqvist, R. (2013). Effectiveness of cognitive behavioral therapy: An evaluation of therapies provided by trainees at a university psychotherapy training center. *PsyCh Journal, 2*(2), 101–112. https://doi.org/10.1002/pchj.23

Hinz, A., Conrad, I., Schroeter, M. L., Glaesmer, H., Brähler, E., Zenger, M., Kocalevent, R.-D., & Herzberg, P. Y. (2018). Psychometric properties of the satisfaction with life scale (SWLS), derived from a large German community sample. *Quality of Life Research, 27*(6), 1661–1670. https://doi.org/10.1007/s11136-018-1844-1

Hofmann, S. G., Wu, J. Q., & Boettcher, H. (2014). Effect of cognitive-behavioral therapy for anxiety disorders on quality of life: A meta-analysis. *Journal of Consulting and Clinical Psychology, 82*(3), 375–391. https://doi.org/10.1037/a0035491

Hope, D. A., Heimberg, R. G., & Turk, C. L. (2010). *Managing social anxiety: A cognitive-behavioral therapy approach*. Oxford University Press. https://books.google.com/books?id=Lomgcx-fvUcC

Howard, J., De Jesús-Romero, R., Peipert, A., Riley, T. N., Rutter, L. A., & Lorenzo-Luaces, L. (2021). The significance of anxiety symptoms in predicting psychosocial functioning across borderline personality traits. *PLoS ONE, 16*(1), e0245099. https://doi.org/10.1371/journal.pone.0245099

Jacobson, N. S., & Truax, P. (1991). Clinical significance: A statistical approach to defining meaningful change in psychotherapy research. *Journal of Consulting and Clinical Psychology, 59*(1), 12–19. https://doi.org/10.1037//0022-006x.59.1.12

James, S. L., Abate, D., Abate, K. H., Abay, S. M., Abbafati, C., &, et al. (2018). Global, regional, and national incidence, prevalence, and years lived with disability for 354 diseases and injuries for 195 countries and territories, 1990–2017: A systematic analysis for the Global Burden of Disease Study 2017. *The Lancet, 392*(10159), 1789–1858. https://doi.org/10.1016/S0140-6736(18)32279-7

Kessler, R. C., & Wang, P. S. (2008). The descriptive epidemiology of commonly occurring mental disorders in the United States. *Annual Review of Public Health, 29*, 115–129. https://doi.org/10.1146/annurev.publhealth.29.020907.090847

Krendl, A. C. & Lorenzo-Luaces, L. (2021). Identifying discrete drop-off points that contribute to mental health treatment noncompliance in a university training clinic. Manuscript submitted for publication.

Lake, A. J., Rodriguez-Quintana, N., Lewis, C. C., & Brothers, B. M. (in press). Adressing diversity: Clinical assessment and outcomes in a psychology training clinic. *Training and Education in Professional Psychology*.

Linehan, M. M. (2014). *DBT skills training handouts and worksheets, second edition*. Guilford Publications. https://books.google.com/books?id=-YAaBQAAQBAJ

Lorenzo-Luaces, L., Zimmerman, M., & Cuijpers, P. (2018). Are studies of psychotherapies for depression more or less generalizable than studies of antidepressants? *Journal of Affective Disorders, 234*, 8–13. https://doi.org/10.1016/j.jad.2018.02.066

Martell, C. R., Dimidjian, S., Herman-Dunn, R., & Lewinsohn, P. M. (2010). *Behavioral activation for depression: A clinician's guide*. Guilford Publications.

Montgomery, E. C., Kunik, M. E., Wilson, N., Stanley, M. A., & Weiss, B. (2010). Can paraprofessionals deliver cognitive-behavioral therapy to treat anxiety and depressive symptoms? *Bulletin of the Menninger Clinic, 74*(1), 45–62. https://doi.org/10.1521/bumc.2010.74.1.45

Olatunji, B. O., Cisler, J. M., & Tolin, D. F. (2007). Quality of life in the anxiety disorders: A meta-analytic review. *Clinical Psychology Review, 27*(5), 572–581. https://doi.org/10.1016/j.cpr.2007.01.015

Öst, L.-G., Karlstedt, A., & Widén, S. (2012). The effects of cognitive behavior therapy delivered by students in a psychologist training program: An effectiveness study. *Behavior Therapy, 43*(1), 160–173. https://doi.org/10.1016/j.beth.2011.05.001

Pavot, W., & Diener, E. (1993). Review of the satisfaction with life scale. *Psychological Assessment, 5*(2), 164–172.

Persons, J. B. (2012). *The case formulation approach to cognitive-behavior therapy*. Guilford Publications. https://books.google.com/books?id=UQCjq8P02lgC

Powdthavee, N., & Wooden, M. (2015). Life satisfaction and sexual minorities: Evidence from Australia and the United Kingdom. *Journal of Economic Behavior & Organization, 116*, 107–126. https://doi.org/10.1016/j.jebo.2015.04.012

Rapaport, M. H., Clary, C., Fayyad, R., & Endicott, J. (2005). Quality-of-life impairment in depressive and anxiety disorders. *American Journal of Psychiatry, 162*(6), 1171–1178. https://doi.org/10.1176/appi.ajp.162.6.1171

Richards, D. A., Ekers, D., McMillan, D., Taylor, R. S., Byford, S., Warren, F. C., Barrett, B., Farrand, P. A., Gilbody, S., Kuyken, W., O'Mahen, H., Watkins, E. R., Wright, K. A., Hollon, S. D., Reed, N., Rhodes, S., Fletcher, E., & Finning, K. (2016). Cost and outcome of behavioural activation versus cognitive behavioural therapy for depression (COBRA): A randomised, controlled, non-inferiority trial. *The Lancet, 388*(10047), 871–880. https://doi.org/10.1016/S0140-6736(16)31140-0

Rodriguez, B. F., Bruce, S. E., Pagano, M. E., & Keller, M. B. (2005). Relationships among psychosocial functioning, diagnostic comorbidity, and the recurrence of generalized anxiety disorder, panic disorder, and major depression. *Journal of Anxiety Disorders, 19*(7), 752–766. https://doi.org/10.1016/j.janxdis.2004.10.002

Roelofs, J., van Breukelen, G., de Graaf, L. E., Beck, A. T., Arntz, A., & Huibers, M. J. H. (2013). Norms for the Beck depression inventory (BDI-II) in a large Dutch community sample. *Journal of Psychopathology and Behavioral Assessment, 35*(1), 93–98. https://doi.org/10.1007/s10862-012-9309-2

Ruini, C., & Fava, G. A. (2012). Role of well-being therapy in achieving a balanced and individualized path to optimal functioning. *Clinical Psychology and Psychotherapy, 19*(4), 291–304. https://doi.org/10.1002/cpp.1796

Schueller, S. M., & Parks, A. C. (2014). The science of self-help. *European Psychologist, 19*(2), 145–155. https://doi.org/10.1027/1016-9040/a000181

Sin, N. L., & Lyubomirsky, S. (2009). Enhancing well-being and alleviating depressive symptoms with positive psychology interventions: A practice-friendly meta-analysis. *Journal of Clinical Psychology, 65*(5), 467–487. https://doi.org/10.1002/jclp.20593

Strunk, D. R., Hollars, S. N., Adler, A. D., Goldstein, L. A., & Braun, J. D. (2014). Assessing patients' cognitive therapy skills: Initial evaluation of the competencies of cognitive therapy scale. *Cognit Ther Res, 38*(5), 559–569. https://doi.org/10.1007/s10608-014-9617-9

Tang, F., & Ishwaran, H. (2017). Random forest missing data algorithms. *Statistical Analysis and Data Mining: The ASA Data Science Journal, 10*(6), 363–377. https://doi.org/10.1002/sam.11348

Vázquez, C., Rahona, J. J., Gómez, D., Caballero, F. F., & Hervás, G. (2015). A national representative study of the relative impact of physical and psychological problems on life satisfaction. *Journal of Happiness Studies, 16*(1), 135–148. https://doi.org/10.1007/s10902-014-9501-z

Vittengl, J. R., Jha, M. K., Minhajuddin, A., Thase, M. E., & Jarrett, R. B. (2021). Quality of life after response to acute-phase cognitive therapy for recurrent depression. *Journal of Affective Disorders, 278*, 218–225. https://doi.org/10.1016/j.jad.2020.09.059

Wells, K. B., & Sherbourne, C. D. (1999). Functioning and utility for current health of patients with depression or chronic medical conditions in managed, primary care practices. *Archives of General Psychiatry, 56*(10), 897–904. https://doi.org/10.1001/archpsyc.56.10.897

Westbrook, D., & Kirk, J. (2005). The clinical effectiveness of cognitive behaviour therapy: Outcome for a large sample of adults treated in routine practice. *Behaviour Research and Therapy, 43*(10), 1243–1261. https://doi.org/10.1016/j.brat.2004.09.006

Westen, D., & Morrison, K. (2001). *A multidimensional meta-analysis of treatments for depression, panic, and generalized anxiety disorder: An empirical examination of the status of empirically supported therapies* http://doi.org/https://doi.org/10.1037/0022-006X.69.6.875.

Widnall, E., Price, A., Trompetter, H., & Dunn, B. D. (2020). Routine cognitive behavioural therapy for anxiety and depression is more effective at repairing symptoms of psychopathology than enhancing well-being. *Cognitive Therapy and Research, 44*(1), 28–39. https://doi.org/10.1007/s10608-019-10041-y

Wierzbicki, M., & Pekarik, G. (1993). A meta-analysis of psychotherapy dropout. *Professional Psychology: Research and Practice, 24*(2), 190–195. https://doi.org/10.1037/0735-7028.24.2.190

Wiltsey Stirman, S., Gutner, A., & C., Crits-Christoph, P., Edmunds, J., Evans, A. C., & Beidas, R. S. (2015). Relationships between clinician-level attributes and fidelity-consistent and fidelity-inconsistent modifications to an evidence-based psychotherapy. *Implementation Science, 10*(1), 115. https://doi.org/10.1186/s13012-015-0308-z

Zimmerman, M., McGlinchey, J. B., Posternak, M. A., Friedman, M., Attiullah, N., & Boerescu, D. (2006). How should remission from depression be defined? The depressed patient's perspective. *American Journal of Psychiatry, 163*(1), 148–150. https://doi.org/10.1176/appi.ajp.163.1.148