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The Effects of Using Clinical Support Tools to Prevent Treatment Failure

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The Effects of Using Clinical Support Tools to Prevent Treatment Failure

Tiffany Washington

A dissertation submitted to the faculty of
Brigham Young University
in partial fulfillment of the requirements for the degree of

Doctor of Philosophy

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ABSTRACT

The Effects of Using Clinical Support Tools to Prevent Treatment Failure

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Doctor of Philosophy

To date, outcome research suggests that providing clinicians with patient progress feedback and problem-solving tools is effective in improving therapeutic outcome for clients who are predicted to have a negative treatment outcome. To expand upon this body of research, the current study examined the efficacy of using these problem-solving tools (Clinical Support Tools; CST) to reduce the risk of treatment failure and enhance positive outcome with 118 clients who were not identified as at-risk for a negative outcome. Results of this study indicated that the intervention failed to lower the rate of becoming an at-risk case or to enhance treatment outcome. A possible explanation for the null results observed is poor treatment compliance. Based on the findings of this study, the CST cannot be recommended as an intervention across the broad range of clients who enter treatment. However, qualitative analysis results reflect positive indicators for continued research with at-risk cases.

Keywords: treatment outcomes, treatment failure, patient deterioration, feedback, psychotherapy quality assurance

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The Effect of Using Clinical Support Tools to Prevent Treatment Failure

For most individuals seeking therapy, treatment has been shown to be beneficial, making treatment efficacy and accountability easy to determine within this group. For 5 to 10% of therapy-seeking individuals it is suggested that treatment exacerbates symptoms, leaving clients with less functionality than they had prior to entering treatment (Lambert & Bergin, 1994; Lambert & Ogles, 2004). There is also a substantial number of individuals who do not show decreased functionality, but who do not show improvement either (approximately 30-40%) (Hansen, Lambert, & Forman, 2002). These individuals often require significantly more resources and treatment, suggesting that neither positive outcome nor cost-effective treatment is guaranteed in these situations.

Another concern associated with treatment outcome is that individuals in naturalistic treatment settings might not be remaining in therapy long enough to positively respond to the interventions established. Orlinsky, Grawe, and Parks (1994) reviewed 156 articles and found that 64% of the studies showed a positive relationship between treatment length and outcome. Dose-reponse research by Hansen and Lambert (2003) suggests that a dose of 15 to 19 sessions of psychotherapy is needed to reach a modest 50% improvement rate. In a review of other treatment dosage (number of sessions attended by patients) literature Hansen and Lambert (2002) summarized that 13-18 sessions of therapy were needed to alleviate psychiatric symptoms across various treatment types and patient diagnosis. They further compared these findings to their study of treatment dosage in naturalistic settings. Their results showed that individuals in naturalistic settings attend between 3-5 sessions of psychotherapy. This information would suggest that most individuals are not receiving adequate therapeutic benefit. Session attendance as well as the previously mentioned dilemmas have caused problems for many interested in

providing effective treatments for mental health and spurred much research in the area of psychotherapy evaluation in recent years.

In order to maximize the rate of positive outcomes, Lambert and colleagues embarked on a program of research aimed at reducing patient deterioration rates, and increasing treatment duration. The study embarked upon here grows out of this line of research.

Previous Findings from the Current Line of Research

To determine the effects of providing progress feedback to therapists, Lambert, Whipple, Smart, Vermeersch, Nielsen and Hawkins (2001) provided feedback to therapists of patients who were randomly assigned to two groups; treatment (progress feedback) or treatment as usual control (TAU) groups. This feedback was administered through graphs with color-coded progress markers corresponding to messages describing a patient's development, with yellow and red flags indicating cases at risk for treatment failure. Findings suggested that progress feedback was only helpful for the subset of clients (18%) who were predicted to be treatment failures. A replication study (Lambert, Whipple, et al., 2002) also showed the positive findings reported in the first study and the fact that progress feedback was only helpful for cases that received a yellow or red warning message.

Despite producing statistically significant and clinically meaningful change in cases at risk for deterioration (also called Not-On-Track and alarm-signal clients), it was apparent that Not-On-Track clients (NOT), on average, did not return to a state of normal functioning. As a consequence, Whipple et al. (2003) proposed and tested a problem-solving strategy (Clinical Support Tools; CSTs) for further enhancing outcomes for Not-On-Track clients. The Clinical Support Tool intervention seeks to provide clinicians with a problem-solving strategy for use with NOT clients. To ascertain the areas of distress in need of further stratagems, clients were

given clinical support tool measures. Through the use of a decision tree (Appendix A, Figure 4), therapists were provided with suggestions such as diagnostic reformulation, medical referral, therapeutic alliance improvement stratagem, and therapeutic motivation and client social support strengthening (Whipple et al., 2003).

The decision tree was devised based on research suggesting that these variables are important in predicting client outcome (Bordin, 1979; Hettema, Steele, & Miller, 2005; Martin, Garske, & Davis, 2000; Nezelek & Allen, 2006; Pilkonis, Imber, & Rubinsky, 1984). Clients taking the CST measures, which include assessments used to identify problem areas, may display problems in each of these areas or in a multitude of combinations from meeting cut scores in all domains to meeting cut scores in one or none. When an individual in the Whipple et al. (2003) study reached a cut score on the measurement tools, the therapist was directed to address possible concerns within that domain. The support tool suggests that the therapist engaging in treatment with that client consider implementing an intervention, as the decision tree demonstrates.

Replication studies have addressed the efficacy of modified versions of the CST with at-risk clientele (Bailey, 2010; Harmon, et al 2007; Slade, Lambert, Harmon, Smart, & Bailey, 2008). More specifically, these recent studies have been looking at the impact that repeated CST administration, elapsed time between assessment and feedback, and variations on the CST measure have on clients.

Design features within previous Lambert feedback studies have shared eight common procedures.

- (a) each included consecutive cases seen in routine care regardless of client diagnosis or co-morbid conditions (rather than being disorder

specific); (b) random assignment of clients to experimental (feedback) and control conditions was made in all but one of the studies; (c) psychotherapists provided a variety of theoretically guided treatments, with most adhering to cognitive behavioral and eclectic orientations and fewer representing psychodynamic and experiential orientations; (d) a variety of clinicians were involved—post-graduate therapists and graduate students each accounted for about 50% of clients seen; (e) therapists saw both experimental (feedback) and control cases, thus limiting the likelihood that outcome differences between conditions could be due to therapist effects; (f) the outcome measure as well as the methodology rules/standards for identifying signal-alarm clients (failing cases) remained constant; (g) the length of therapy (dosage) was determined by client and therapist rather than by research design or arbitrary insurance limits; and (h) client characteristics such as gender, age, and ethnicity were generally similar across four of the studies and came from the same university counseling center [exception; (Hawkins, Lambert, Vermeersch, Slade & Tuttle , 2004) was older, more disturbed, and treated in a hospital-based outpatient clinic.] (Lambert & Vermeersch, 2008).

Rationale for Current Study

Although the CST intervention has not been applied with all clients within Lambert and colleagues' body of research, Miller and colleagues devised a feedback support tool that is currently being utilized in routine care to enhance treatment outcomes across all participating

clients. The Session Rating Scale (SRS) is a 4 question feedback tool that focuses attention on the therapeutic alliance. Unlike the CST, the SRS does not address the other three predictors of therapeutic outcome (social support, motivation for therapy, and life events). This measure is provided near the end of each therapy session by the therapist with the purpose to assess and discuss the therapeutic alliance and strengthen that relationship if necessary. This tool is applied under the general theory that the relationship between the client and therapist has a consistent effect on treatment outcome (Martin, Garske, & Davis, 2000). By strengthening the therapeutic alliance, Miller and colleagues suggest that therapists will, in fact, enhance outcome, particularly with at-risk treatment populations. Miller as well suggests that the use of this tool as a preventative measure decreases the number of sessions necessary to reach positive outcomes (Miller, Duncan, Brown, Sorrell & Chalk, 2006).

To date, this assumption has not been tested in controlled research but its clinical use is becoming more widespread. The value of measuring the alliance with all clients at every session would seem to have considerable potential for preventing treatment failure, especially when one considers that therapists' perception of the alliance has a low correlation with clients' perceptions (Dawes, 1989; Grove & Meehl, 1996; Grove, Zald, Lebow, Snitz & Nelson, 2000; Hannan et al., 2005). Using the CST intervention in a similar manner as the SRS, the current study examines the utility of the CST with a large client base that includes On-Track as well as Not-On-Track clients. Because of the length of the CST, which includes a 40 items self-report measure (Assessment for Signal Clients; ASC-40), it cannot be employed the way the SRS is used, and its application in this study was on a one-time basis, rather than at every session as is the case with the SRS.

This study is not a comparative inquiry into the methods and tools being used by Miller and colleagues and the Lambert group, but an extension of the research previously examined by Lambert and colleagues with the CST intervention. To date, research examining the CST intervention has focused exclusively on patients that have responded negatively to treatment during the course of therapy (NOT cases). Numerous individuals in clinical practice have raised the question of why CSTs have not been employed across the entire sample of clients undergoing treatment. Since NOT cases consist of approximately 25% of the treated samples, it would seem like an arbitrary limitation of their use and effect. Since CST are helpful for the NOT cases, might they also be helpful to a majority of patients? Although previous CST studies have suggested that CST feedback shows limited effect with On-Track (OT) cases (Shimokawa, Lambert & Smart, 2010), perhaps the use of CSTs across the entire treated sample could reduce the likelihood that a patient would become a NOT case. If the goal of such problem solving methods is to make treatment more efficacious for some clients, then perhaps there is a preventive benefit of feedback protocols when extended to a more generalized subject group. Hence, the research question has been raised, can the CST be useful as a preventative intervention across the entire population of those participating in psychotherapy?

Methods

Participants

Clients. Participants in this study consisted of 403 clients seeking treatment for personal problems from approximately October 2008 through April 2009 at the Brigham Young University Counseling and Career Center (CCC). A total of 563 clients were tracked for the study, with a 99% consent rate. Of the clients who had previous counseling at the center, 129 were excluded from the study to eliminate carryover effects. An additional 28 were excluded

from study due to lack of compliance (never showed for treatment), and three were excluded due to failure to provide informed consent.

Individuals involved in this study were college students attending the University. The clients from the CCC ranged in age from 19 to 60 years ($M = 24$ years, $SD = 4.77$) and were 56% female, and 87% Caucasian. Diagnosis of individuals involved in the study was determined through clinicians' judgments as a part of routine care at the counseling center. During the intake process, all new clients presenting for treatment received a consent form asking for their participation in the study, thus participation was voluntary. These individuals were randomly assigned to treatment groups as described in the Design section of this paper. All identifying information was removed and replaced with control numbers, to maintain client anonymity. Identity-related data was stored in a secure area in the Center where only authorized research personnel or therapists associated with the study had access to this information.

Therapists. The 50 clinicians involved in this study were of varying levels of training from masters level counselors (20 pre-doctoral graduate students) to post doctoral university faculty (30). Theoretical approaches to treatment varied among clinicians. All therapists participating in the study provided treatment to clients in both experimental and control groups based on random assignment of patients.

Instruments

Outcome Questionnaire-45. The Outcome Questionnaire (OQ-45; Lambert et al., 2004) is a self-report measure containing 45 items. Each item contributes to a Total Score, and to one of three subscales, reflecting the three domains of functioning, which Lambert (1983) asserted to be critical to the continuous assessment of outcome, namely 1) subjective discomfort (intrapsychic functioning), 2) interpersonal relationships, and 3) social role performance. Items

are scored on a five-point Likert-type scale, with possible responses ranging from ‘never’ to ‘almost always.’ In most cases, ‘never’ corresponds with an item score of zero and ‘almost always’ corresponds to an item score of four. Nine of the 45 items are reversed scored in an attempt to capture well-being or positive functioning. A ‘never’ response on these nine items corresponds to the maximum item score of four. Each subscale score is acquired by summing all corresponding item scores. A Total Score, reflecting the patient’s general level of self- perceived distress, may also be obtained by summing the three subscale scores. The Total Score may range from 0 to 180, higher scores indicating greater perceived distress.

The advantages of using the OQ-45 include its brevity, low cost, simplicity of use, and psychometric qualities. The items contained within the OQ-45 were designed to reflect those symptoms and problems which are most frequently encountered in clinical practice. Computer-aided scoring software (OQ-Analyst) has been developed in order to facilitate rapid, accurate scoring, as well as easily understood feedback regarding the patient’s progress.

Clinical and normative cutoff scores for the OQ-45 were established, based on formulae proposed by Jacobson and Truax (1991; Lambert et al., 2004). Previous research indicates that a Total Score of 64 or greater is representative of a dysfunctional or clinical population. A score of 63 or lower, then, is representative of a functional or normative population. A Reliable Change Index (RCI; Jacobson et al., 1991) of 14 points was calculated. Until a patient’s Total Score is 14 points or more lower than the original OQ-45 Total Score, one cannot confidently state that the difference in the patient’s score is not attributable to measurement error. Thus, a patient’s Total Score must: 1) drop below the clinical cutoff score of 64, and, 2) drop a minimum of 14 points before the patient may be considered Recovered. A patient whose Total Score has

dropped 14 or more points, but has not yet dropped below 64, may be considered Improved (i.e. the Total Score has changed reliably), but not yet Recovered.

The OQ-45 has been found to have adequate reliability and validity in various settings, including clinical and normative populations. Over three weeks, the Total Score of the OQ-45 was found to have an adequate test-retest reliability (four-week interval, $r = .82$) and high internal consistency ($\alpha = .93$; Lambert et al., 2004). The OQ-45 has been reported to have adequate concurrent validity coefficients ranging from .55 to .88 with (listed in alphabetical order) the Beck Depression Inventory (BDI) (Beck, Ward, Mendelson, Mock & Erbaugh, 1961), the Friedman Well-Being Scale (Friedman, 1994), the Inventory of Interpersonal Problems (IIP) (Horowitz, Rosenberg, Baer, Ureno & Villaseñor, 1988), the SF-36 Medical Outcome Questionnaire (Ware, Kosinski & Keller, 1994), the Social Adjustment Scale (SAS) (Weissman & Bothwell, 1976), the State-Trait Anxiety Inventory (STAI) (Spielberger, Gorsuch & Lushene, 1970; Spielberger, 1983), the Symptom Checklist 90-Revised (SCL-90-R) (Derogatis, 1983), the Taylor Manifest Anxiety Scale (TMA) (Taylor, 1953), the Zung Self-Rating Anxiety Scale (ZAS) (Zung, 1971), and the Zung Self-Rating Depression Scale (ZSRDS) (Zung, 1965) (all significant at $p < .01$) (Lambert et al., 2004). In concordance with Tryon's (1991) criteria for assessment items, the OQ-45 was found to be sensitive to change in patients who had received treatment, and remained stable in individuals in a non-treatment sample (Vermeersch, Lambert & Burlingame, 2002; Vermeersch, Whipple, Lambert, Hawkins, Burchfield & Okiishi, 2004). Furthermore, the OQ-45 has been used to track large samples of patients in treatment over time, wherein a typical longlinear relationship was observed (Finch, Lambert & Schaalje, 2001).

In relation to accurately predicting treatment failures, two methods (rational and empirical) have shown to be particularly effective in predicting final treatment outcomes (OQ

total scores at termination). The rational method accomplishes this goal through developing predictions of outcome derived from the difference between the intake OQ-45 score and the score at any given session. The function of the *rational* method is derived from algorithms that use information regarding the patient's early response to treatment, the dose response relationship, and the reliability of the OQ-45 (Lambert, Whipple Bishop et al., 2002; Lambert, Morton et al., 2004). Further detail defining the rational method can be found in Lambert, Whipple, Bishop, et al. (2002) and Spielmans (2006).

In contrast, the *empirical* method utilizes expected recovery curves for making predictions about final treatment outcomes. The OQ total scores of 11,492 individuals with two or more OQ administrations from various clinical settings across the US were used to develop the standard recovery curves (Finch et al., 2001). Based on the severity of distress, the full range of OQ total scores (0 to 180) were divided into 50 distinct groups. These groups were then rank ordered by initial OQ total scores, and hierarchical linear modeling techniques were used to estimate the recovery curve for each of the OQ score groups. Tolerance intervals allowing for the identification of OQ total scores outside of the upper and lower limits of tolerance intervals for each given session were calculated. Two sets of tolerance intervals were established for the mean OQ scores at each session to identify unexpected change in progress in both positive and negative directions. These two-tailed intervals were set at 68% and 80%. These intervals provided cutoff scores at each session for identifying 16% and 10% of the patients who were likely to fail in therapy or drop out prematurely. The details of the establishment of the expected recovery curves are described in the article by Finch et al. (2001). Through these signal-alarm detection methods, Lambert and colleagues have been able to identify up to 100% of deteriorated patients before termination occurs.

Currently, the feedback system has been computerized with the “OQ-Analyst.” The OQ-Analyst provides immediate feedback at the beginning of each therapy session as patients fill out the OQ before meeting with their therapist. Clinicians receive all of the earlier OQ-45 scores graphically, as well as the patient’s responses to several critical items (e.g., suicide potentiality), the patient’s subscale scores, and the patient’s current OQ total score in relation to various norm scores (i.e., community norm, outpatient norm, and inpatient norm), as well as alarm-signal feedback.

Clinical Support Tool intervention. The Clinical Support Tool consists of a decision tree, a brief self-report measure, and suggested interventions directed to the therapist for problem-solving. This intervention is packaged within a treatment manual (Lambert, Bailey, et al., 2007). The self-report measure is named the Assessment for Signal Clients (ASC).

The primary purpose of this intervention is to provide clinicians with an empirically based problem-solving strategy to use on NOT clients. By tracking certain domains of interest and providing timely feedback to therapists concerning their clients’ progress, the CST intervention gives therapists the ability to intervene prior to treatment failure. The clients responses may indicate problems on only one, multiple or even all of the CST domains. Accordingly, each domain has an associated cut score that suggests the need for therapist attention and suggestions for interventions to be considered by the therapist through the use of the decision tree (see Appendix A, Figure 4). By using the decision tree, clinicians are directed to suggested interventions and conceptual considerations to utilize when addressing the CST domains that are flagged.

As previously mentioned, the domains included in the CST are the therapeutic alliance, social support, motivation for therapy, and life events. The selection of these domains was based on psychotherapy literature highlighting factors that influence treatment outcome.

Therapeutic alliance. Following the theoretical constructs postulated by Bordin (1979), Safran (1996, 2002), and Luborsky (1996), created the markers for therapeutic alliance rupture and reconstruction adopted for the CST intervention. In 1979, Bordin expanded the concept of therapeutic alliance to address not only psychoanalytic theory but all psychotherapy. Bordin conceptualized the division of therapeutic alliance into three interrelated areas: agreement on goals, collaboration in therapeutic tasks, and the strength or warmth attributed to the human relationship between the therapist and the client. Luborsky reiterated this theory in the development of the Revised Helping Alliance Questionnaire (HAQ-II) (Luborsky et al., 1996). Like Bordin, the HAQ-II measures the same three aspects of the alliance: the therapeutic bond, shared goals, and agreement on therapeutic tasks. It is postulated that these areas of alliance are the target areas for defining treatment deterioration associated with alliance. In fact, Safran suggests that these observations of client/therapist relationship assess relational strain that may need to be repaired (Safran & Muran, 1996). Utilization of these therapeutic alliance tenets have been instrumental in the development of improved treatment outcomes through the mending of these “alliance ruptures” (Safran, Muran, Samstag & Stevens, 2002).

Some researchers would suggest that psychological improvements are more likely attributed to early positive changes in therapy (Crits-Christoph, Gibbons & Hearon, 2006) rather than relationship variables. Others, however, provide very specific findings regarding the alliance’s relation to outcome. Such theorists argue that the therapist contribution to the alliance outweighs the contribution by the client (Baldwin, Wampold & Imel, 2007). Safran et al. (1996)

further suggest that many treatment failures are, in fact, related to ruptures in the therapeutic relationship. The body of knowledge addressing therapeutic alliance enhancement was the reason why therapeutic alliance was the first domain addressed on the decision tree. In keeping with this body of research, the CST model utilizes the three therapeutic alliance areas: therapeutic bond, shared goals, and agreement on therapeutic tasks to guide clinician feedback and patient inquisition.

Social support. Conservative estimates of treatment involvement indicate that patients spend less than 1% of their waking hours in psychotherapy sessions. Whipple et al. (2003) noted that clients are more often dependent on their social network as a central means of coping with stressors. In a review of more than 100 published studies, Lambert (1992) and Lambert and Barley (2001) estimated the size of impact that various predictors made on outcome and estimated that extra-therapeutic factors (including client characteristics) are responsible for 40% of the change in psychotherapy patients. These factors are separate from therapy techniques (estimated at 15%), common factors (30%) and expectancy/placebo effects (15%) and consist of all interaction the client has outside of therapy.

Consequently, predictors of poor treatment outcome can be associated with a patient's inability to initiate or maintain therapy gains due to inadequate social support networks. Monroe, Imhoff, Wise and Harris (1983) suggest that a patient's reported severity of symptoms can be directly related to adequacy of social support. They further state that this can be correlated with the mediation of stressful life events and the development of psychological symptoms. Therapists are capable of intervening in these situations by identifying what social support resources a patient has that can be put to use to achieve a better treatment outcome (Bankoff &

Howard, 1992). ASC questions and intervention strategies focus on detection and providing recommendations to enhance these support systems.

Motivation for treatment. According to Drum and Baron (1998), a patient's final outcome could be predicted and enhanced by assessing his/her readiness to change, and matching it with appropriate therapeutic interventions. Similarly, Pelletier, Tuson, and Haddad (1997) concluded that when clients perceived their motivation for therapy to be more self-determined, they were more likely to experience less tension, less distraction, and more positive moods during therapy. Motivated clients considered therapy to be more important. They reported higher levels of satisfaction with therapy and had stronger intentions of continuing in therapy. When clients perceived their motivation to be less self-determined, they showed the opposite pattern of associations. These findings were corroborated by Gordon (1976); Kanfer and Grimm (1978); Mendonca and Brehm (1983); Miller, Benefield, and Tonigan, (1993); Patterson and Forgatch, (1985).

These findings suggest that deviations from an expected treatment response may be due to the possibility that a patient has entered psychotherapy with a less than favorable motivation. Studies performed by Deci and Ryan (1985) delineated different types of motivation and outlined various consequences that are associated with these varied motivation types. They predicted which therapeutic conditions could hinder or facilitate clients' motivation to change. Deci and Ryan (1985) also suggested that a client's motivation type at a particular point in therapy may change to a different type depending on situational influences, such as therapeutic changes.

Another explanation of motivation to change was discussed by Prochaska and Norcross in 2003. They propose five distinct stages representing varying degrees of readiness for change

in therapy: Precontemplation, Contemplation, Preparation, Action, and Maintenance. Similar to the Deci et al.'s (1985) findings, Prochaska et al. (2003) reported that therapy technique, even therapeutic orientations, can be altered to facilitate positive treatment motivation. For example, Prochaska and DiClemente (2005), recommended that using consciousness-raising interventions (e.g., observations, interpretations, etc.) and dramatic relief (e.g., psychodrama or Gestalt two-chair to raise emotions) are helpful in guiding clients from the Precontemplation to Contemplation stages. Other researchers such as Petrocelli (2002) also suggested that providing clients with feedback on their stage of change can help intensify positive change.

DeJong and Miller (1995) also feel that motivation for treatment can be modified by the clinician's approach to therapy. They suggest asking clients key questions that direct focus on the client's personal strengths. This establishes a strengths perspective (Saleeby, 1992), which helps to guide treatment in a direction that marshalls those strengths to engender positive change in a client's life. This also establishes a respect of the client's views on life. By incorporating more of the client in the treatment process the client's self-determined motivation increases, which according to Pelletier et al. (1997) facilitates a more positive outlook on therapy.

Given that final outcome can be predicted and enhanced by assessing a patient's readiness to change and matching it with appropriate therapeutic interventions (Prochaska et al., 1992), the CST intervention elicits information about a client's readiness to change and provides suggestions to bring positive changes about.

Life events. Another factor found to account for negative therapeutic outcome are negative life events. Wise (2003) reported that negative response in therapy could be attributed to unanticipated acute factors such as extra-therapeutic stressors. In the Wise (2003) study, extra-therapeutic stressors were present in 23 of 25 (92%) negatively responding patients. The

acute stressors were categorized as medical stressors ($n = 7$; e.g., neurological symptoms, injury, and pain), family stressors ($n = 6$; e.g., divorce, death in family, family conflict), occupational stressors ($n = 6$; e.g., job termination, denial of benefits), and legal stressors ($n = 4$; e.g., eviction, jail sentence, and harassment). These findings suggest the abrupt nature of the negative response process. Given these findings, assessing stressful life events at the onset of a person's symptoms was thought to be a helpful addition to include in the CST problem-solving strategy.

Assessment of signal clients. The ASC (Lambert, Bailey, Kimbal et al., 2007) is a 40-item, self-report measure of psychological functioning related to the four domains described above: therapeutic alliance, motivation for change, social support, and life events. As discussed above the four domains selected grew out of previous research to determine which domains were most likely to identify reasons why a client signals as a NOT case. Similar to the OQ-45, items were measured on a 5-point Likert scale 0 = never, 1 = rarely, 2 = sometimes, 3 = frequently, 4 = almost always. In addition to individual item scores, subscale scores could be calculated for each of the included domains, but no total score is calculated..

Reliability estimates based on pilot testing (Bailey, 2008) showed satisfactory subscale reliability; alliance subscale ($\alpha = .91$), social support ($\alpha = .79$), motivation ($\alpha = .81$), and life events subscale ($\alpha = .62$). With the exception of life events, this reliability was consistent with expectations due to the nature of the measure's attempts to be brief and avoid redundancy rather than cluster multiple items around specific life events. The life events subscale should be viewed as an attempt to represent discrete and independent life events rather than a continuous-variable construct. The reason for this rationale and the likelihood of poor reliability in this domain surrounds the concept that discrete life events should not necessarily be summed up in a total score. The ASC attempted to identify specific events for the purpose of informing therapists

about them, rather than provide therapists with information about accumulated life events. Thus, results of this domain should be conceptualized and treated based on item response. The internal consistency reliability for the test as a whole is α value (.82). Given that subscale scores are meant to be interpreted individually, overall internal consistency was judged to be an issue of less concern. Regarding the measure's validity, its development proceeded based on data from earlier studies (Whipple, et al., 2003; Harmon, et al., 2006; Slade, et al., 2008) but it should be noted that these validity data are limited at this time.

Procedures

Prior to the study's inception, two twenty-minute training sessions were held to instruct and answer questions clinicians had regarding use of the CST intervention manual. At this time, the therapist requirements for the study were outlined, and all clinicians present were provided with a CST intervention manual. Additional manuals and study requirements were provided for therapists not in attendance. The author was also consistently available for therapist inquiry and feedback throughout most of the time that data were collected. The author's availability made it possible to collect utilization checks and to facilitate the fidelity of study procedures.

Upon admittance to the Brigham Young University Counseling Center (CCC) and giving consent to participate, clients were randomly assigned to one of two groups: individuals being tracked for negative outcome who were given the ASC if and when they became off-track (Delayed CST Feedback Group; DFB); or to CST as a preventative intervention. These latter respondents underwent a second random assignment to separate clients into two groups, a therapist feedback condition (Preventative CST Feedback Group; PFB) and a progress feedback condition (No CST Feedback Group; TAU). It is important to note that currently at the CCC standard care includes the routine administration of the Outcome Questionnaire (OQ-45;

Lambert et al., 2004) prior to each treatment session through the use of a handheld computer. Thus TAU for all clients seen at the CCC includes immediate OQ-45 progress feedback through the OQ Analyst program. All study participants received some form of therapist feedback, thus study comparisons were made between CST enhancement on a staggered basis, and therapists receiving information on client progress. It is noted that therapists were encouraged but not explicitly required to access this progress feedback.

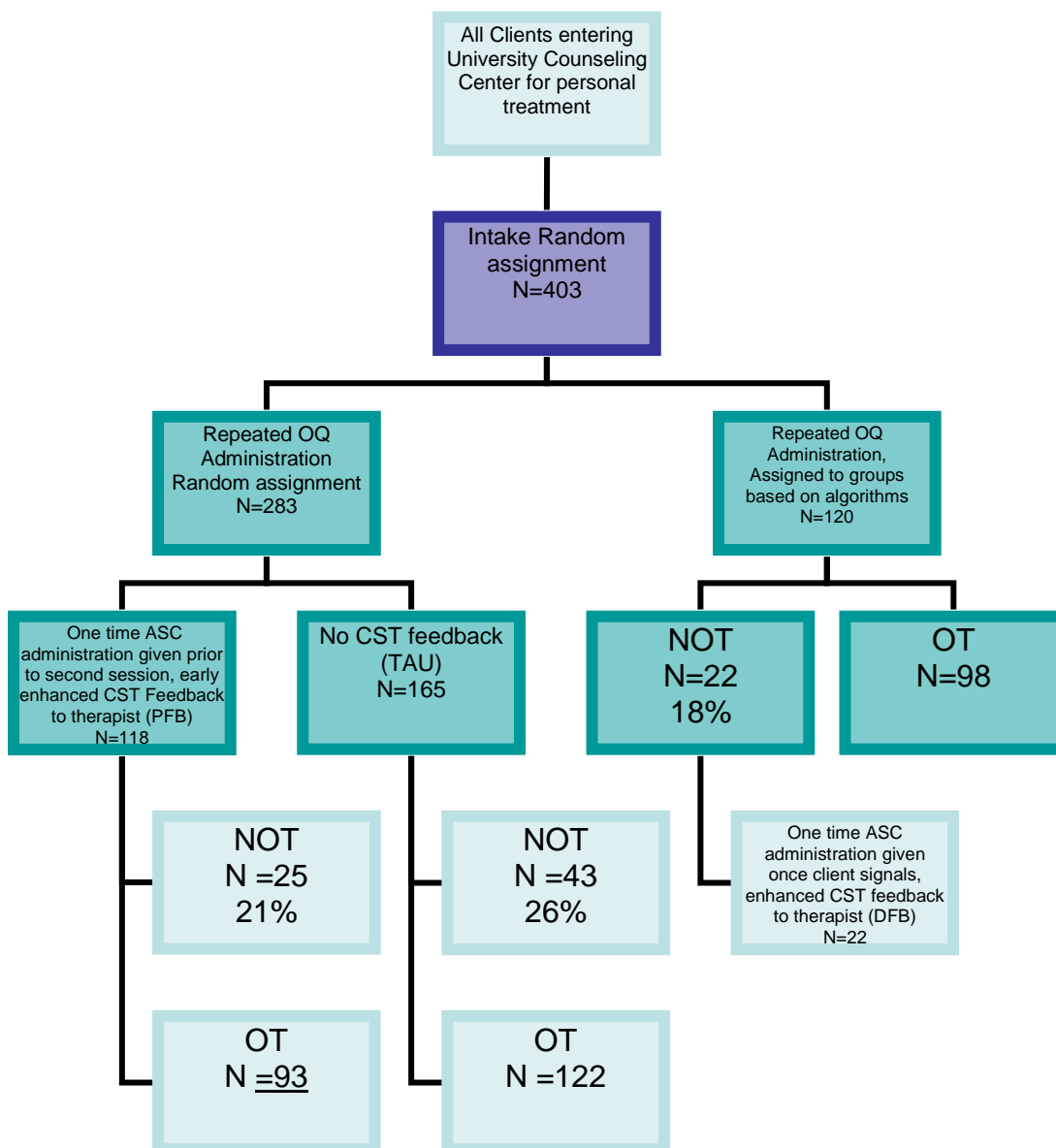


Figure 1. Research Design-Assignment to Experimental Groups

Once randomization was complete, the ASC questionnaire and subsequent CST intervention were provided to NOT clients in the DFB group, and all participants in the PFB group. Administration of the ASC was performed by clinic receptionists at one of two times: Either prior to the second therapy session (PFB), or directly after the client began signaling within the at-risk range on the OQ-45 (DFB). This information was both electronically and manually presented to the therapist immediately after ASC administration (electronically) or on the same day as ASC administration (manually). On the evening prior to ASC administration, clinicians were presented with an electronic notification that an ASC identified client would be taking the questionnaire the following day. This was done to help clinicians prepare themselves to observe ASC feedback and utilize the manualized treatment model. Although utilization of the Clinical Support Tool was encouraged, this was not mandatory.

Utilization was monitored through frequent communication with clinicians and a utilization checklist. The utilization checklist was provided electronically and manually one week after ASC feedback was presented. This form can be found in Appendix A; Figure 2.

Therapists of participants administered the ASC received feedback in the form of ASC subscale cut scores and item cut-scores that suggest possible problem areas. The feedback sheet administered to therapists included several sections designed to maximize effective communication to the therapist for utilizing the information clinically. The sheet included all of the clients' domain scores in the right hand corner, and in the body of the sheet each domain was listed with the clients' alerted responses listed below the critical domain headings (see Appendix A, Figure 3 for sample). Also included was the decision tree (see Appendix A, Figure 4) indicating where needed interventions could be found within the manual. Of added benefit was

the direct electronic linkage between the feedback sheet and correlated manual intervention suggestions.

As stated previously, the Clinical Support Tool Manual was made available in electronic and hardcopy form. Within the manual an explanation of ASC scores, the problem solving decision tree, and intervention suggestions were provided.

Hypotheses

The hypothesized generated for study suggested that the results would show: 1) Clients who received the preventative CST intervention would have better outcomes than clients not provided preventative CST intervention, 2) Client's provided CST intervention as a preventative treatment would show a smaller ratio of NOT to OT clients compared to the DFB group and TAU group, and 3) NOT clients who received the CST intervention would have better outcomes than NOT clients not provided CST intervention, and 4) Clients in the PFB group and DFB group would show a higher number of therapy sessions attended.

Results

The final sample included 403 participants who 1) received the experimental CST intervention at onset of treatment (PFB, $n = 118$); 2) received the experimental CST intervention upon alarm-signal (DFB, $n = 120$); or 3) received the progress feedback only (TAU, $n = 165$). Giving a mathematical derivation of effect size $f = .20$. The study sample showed a fairly equal proportion of participants within each group. Further randomization of the study is discussed below. There was also an even distribution of males and females, however racial groups were not equally represented. Further illustration of descriptive statistics of the population sample can be found in Table 1. Descriptions of pre and post OQ score means, session attendance, and change score means within the PFB, DFB and TAU groups can be found in Table 2. NOT

participant pre and post OQ score means, session attendance and change score means can also be found in Table 3.

A univariate analysis of variance (ANOVA) was conducted to determine whether the PFB, DFB, and TAU groups differed with regard to initial (intake) OQ score, a measure of initial disturbance. Results failed to reach statistical significance at the .05 level of confidence ($F(2, 403) = .250$) suggesting randomization of study participants was probably successful (see Table 4). As an added statistical control, however, the initial OQ was treated as a covariate in the analyses to examine the difference in pre-post change between groups.

ANCOVAs were performed to determine if a significant difference could be found between PFB, DFB, and TAU groups in relation to final OQ, total number of sessions attended, and OQ change scores. Results failed to reach statistical significance at the .05 level of confidence (see Table 5).

ANCOVAs were performed on NOT cases to further determine if a significant difference could be found among PFB, DFB, and TAU groups in relation to final OQ, total number of sessions attended, and OQ change scores. Results failed to reach statistical significance at the .05 level of confidence (see Table 6). That said, mean change scores for PFB (1.76, $SD = 17.47$), DFB (.05, $SD = 23.37$) and TAU (5.67, $SD = 19.07$) indicated a trend towards greatest improvement in clients who were exposed to the Clinical Support Tool intervention (improvement follows a downward trend in OQ scores, thus positive change scores suggest deterioration).

Calculation of the NOT to OT ratios showed a PFB group ratio of 21.19%, a DFB ratio of 18.33%, a TAU ratio of 26.06%, and a TAU and DFB combined ratio of 22.81%. A chi-square analysis of the distribution of final OQ scores was performed to determine whether there was a

significant difference in outcome between PFB, DFB and TAU groups. Results failed to reach statistical significance at the .05 level, ($\chi^2(2, N = 403) = .987, p > .05$), suggesting no between group difference were detected.

When observing clinical significance classifications, NOT cases alone showed percentages of deterioration to decrease respectively between the PFB, DFB and TAU groups (16%, 27.27%, and 34.88%). Although the PFB deterioration percentage was significantly lower than that of the DFB and TAU groups (half the TAU deterioration percentage and slightly more than half of the DFB percentage), PFB cases experienced the largest percentage of insignificant change and the least improvement/recovery. In contrast, NOT cases in the DFB group had the lowest percentage of insignificant change and an improvement/recovery percentage that was almost double of that of the other two groups (see Table 7). However, due to the small sample of NOT cases in Table 7, the percentages vary widely and can not be very trustworthy. In contrast, the NOT/OT combined clinical significance classifications have a larger sample size, thus the results are probably more reliable.

When patients who do not enter treatment in the clinical range are excluded from the analysis of clinically significant change, CST utilization appears to produce a lower percentage of deterioration and higher percentages of recovery. Results also indicate that delayed CST feedback has the greatest positive effect on treatment outcome. The DFB group had the highest percentage of improvement and recovery compared to the PFB and TAU groups. Findings also showed that the DFB group had the smallest percentage of insignificant change and the lowest deterioration percentage. Although the preventative group did not meet expectation of overall greater positive impact, results within the clinical sample show fewer deteriorations and a greater number of recovered cases in comparison to the TAU group.

Analysis of utility checks showed that less than 31% (43/140) of the 140 client/ therapist pairs eligible for feedback (118 PFB + 22, NOT cases) actually responded. Of the 43 who responded to the utility questionnaire confirming they received the CST clinician report, about 7 percent (3) of the individuals reported that they did not review the feedback. Of those 93% ($n = 40$) that indicated they did review the feedback, approximately half of the therapists reported that they used the manual (51%, $n = 22$), but only 51% ($n = 22$) of individuals who received the feedback reported finding a way to apply it. Nearly a fourth of the individuals who reviewed the feedback (20%, $n = 8$) did not find the feedback helpful. These results combined with the supposition that those who did not reply to the questionnaire did not comply with treatment protocol, suggest a serious problem with the value/acceptance of the CST intervention for the cases they worked with.

Discussion

Efficacy research on psychotherapy is an area of growing interest. However, the APA Task Force (2006) noted that one of the “most pressing research needs” in evidence-based practice is to “provide clinicians with real-time patient feedback to benchmark progress in treatment and clinical support tools to adjust treatment as needed” (p. 278). The purpose of this body of work was developed in an attempt to answer this call to arms and attempt to improve therapeutic outcome. Thus far, correlative studies suggest that clients benefit from test interpreted feedback (Goodyear, 2001; Hansen et al., 1997). In fact, patient-focused research suggests that providing progress information has yielded significant improvement in treatment outcome (Dawes, 1989; Ægisdóttir et al., 2006; Grove et al., 1996; Grove et al, 2000) but that the most dramatic effects are found with patients who are predicted to leave treatment with a negative outcome (Shimokawa et al., 2010).

Through research using progress feedback as well as problem-solving aides with patients who were not on track, Lambert and colleagues found significant improvement in enhancing the positive outcomes and reducing deterioration rates in patients predicted to have negative-responder outcomes. The improvements in outcome found within the negative responder population by the Lambert team lead to the current study, which was devised to evaluate the benefits of a clinical support tool intervention (CST) with on-track and not-on-track clients alike. Relying on the concept that a preventative intervention might enhance outcomes across treatment populations, it was hypothesized that the problem-solving intervention would reduce the rate of individuals who went off-track during treatment as well as improve positive treatment outcomes and reduce deterioration rates. It was expected that NOT clients in the preventative CST condition would have the most positive outcomes compared to the NOT patients in the other two conditions, but that clients in the preventative group would have the lowest proportion of signal-alarm cases (NOT). Differences in session attendance were also expected, with CST intervention groups attending a greater number of sessions.

Study results related to the reduction of the proportion of clients who went off-track failed to be statistically significant. Of the 118 clients whose therapists received the CST intervention after the first session of treatment, 21% eventually were identified as off-track for a positive outcome. In contrast, 26% of the progress feedback (TAU) and 18% of the delayed CST feedback clients went off track. In the past five studies done at the BYU CCC, the identification rate ranged from 11% to 29% (Shimokawa, et al., 2010, Table 1). So the proportions found in the current study are near the middle of the range of the typical study but certainly do not suggest that early and universal use of the CST made clients less vulnerable to going off-track.

Although statistical results examining the impact of interventions on improving mental health found no significant differences among groups, observations of mean scores and clinical significance tracking would suggest that the preventative CST intervention was less beneficial to treatment outcome than delayed CST feedback. For example, the deterioration rate in the treatment-as-usual condition was 35% compared with a rate of 21% found in the combined CST conditions. At times, preventative feedback results indicated improvement/recovery percentages that were below those of the TAU group. These findings conflict with the previous body of research with NOT cases that showed an average 3.6 OQ total point difference between CST intervention and OQ feedback (Shimokawa et al., 2010).

Although this study did not support preventative utilization of the CST intervention, examination of NOT case means appear to point to findings in the direction of previous studies that indicated outcome benefit with NOT cases from using the CST intervention (Shimokawa et al., 2010). As previously stated, all implications reported should be treated with caution in that the statistical analysis failed to support significance tracking observations. Even though analysis of covariance failed to find statistically significant benefit from CST intervention, the comparison of combined NOT and OT client change scores and final OQ means showed individuals in the DFB group having the greatest degree of change and lowest final OQ score mean. However, it is important to note that NOT mean change scores differed from previous research findings in that previous research (Harmon et al., 2007) showed OQ score improvement rather than the smaller continued treatment decline observed in this study.

Examining clinically significant change of NOT cases alone, results indicated lower deterioration rates in the PFB, DFB and TAU groups respectively. These findings encourage further study of the CST intervention, particularly the abbreviated ASC as a beneficial tool to

NOT cases over providing alert feedback alone. In fact looking at the data suggests that individuals within the PFB group had a higher percentage of inhibition of psychological deterioration during psychotherapy. That being said, the PFB cases experienced the largest percentage of insignificant change and the least improvement/recovery. This information suggests that preventative feedback could be useful in inhibiting further decline in treatment, yet seems to negatively affect movement towards positive outcome in treatment non-responders. Given that a naturalist approach was taken towards CST utilization, it is unclear how clinicians interpreted the CST treatment protocols. It is possible that some therapists might have hyper-focused on the manualized treatment and continued to administer domain-related protocols beyond what was clinically relevant. This reasoning could explain the initial benefit and then treatment stagnation. That said, these postulations about observations seen are only speculative given the reliability problems associated with the small N analyzed for the NOT treatment groups. It is also of note that change score means of NOT cases indicated average decline in outcome between initial OQ scores and final OQ scores. This was a finding that was not seen in previous studies (Shimokawa et al., 2010). Further research of preventative CST utilization with NOT cases is warranted to verify the results observed.

Interestingly, the findings lean towards the suggestion that support tool value is most apparent when addressed closest to time of crisis. It is possible that decline is more apparent then, and that clinicians are more motivated to make changes in treatment and are more likely to be compliant with CST interventions. It is also important to note that the premise of the CST intervention is to identify and assist therapists and clients with issues that address treatment failure. Thus, observations of most benefit occurring in the DFB group correlate with the original design of the CST intervention. This information would suggest that continued study of

CST preventative utilization might benefit from adjusting questionnaire and feedback topics to those aimed at treatment planning rather than problem-solving failing psychotherapy. For example, assessing and alerting clinicians to an individual's poor social supports and building a plan to deal with this problem from the start of therapy might be helpful in developing a preventative framework for devising initial treatment plans or formulating approaches towards establishing a positive therapeutic alliance.

Another area of interest addressed in this study was treatment dosage. Previous research suggests that early termination inhibits the client's opportunity for treatment to take effect. Shimokawa et al. (2010) found that individuals who terminated treatment prior to five sessions showed significantly more deterioration and less improvement than individuals who had enough time for feedback to (individuals who attended more than 5 sessions). Their findings show that when comparing early and late treatment termination, the odds ratio of reliable worsening/deterioration for the early terminator was 2.24, versus a clinically significant improvement odds ratio of 0.21. These findings emphasize the need to keep NOT patients in treatment longer. Part of the CST intervention design was to do just that. By alerting therapists to client distress and providing problem-solving suggestions for individualized case target domains, it is expected that the client's investment in treatment will be facilitated. This, in turn, leads to treatment extension. Based on this dose-response theory, it was expected that preventatively providing CST feedback would increase treatment dosage through early targeting of domains that lead to treatment failure. Findings failed to show statistical significance among groups in relation to treatment dosage. However, observation of dosage means showed a higher treatment length average in clients in the PFB group compared to individuals in the DFB and TAU groups.

Change score findings also provide interesting information as it relates to the ASC specificity research. This study is in part a follow-up analysis of a study performed by Bailey et al. (2010). The Bailey et al. (2010) study was intended to test the effects of repeated administration of the CST intervention on a weekly basis with NOT clients. It also relied on an earlier version of the ASC as a tool to measure areas that might need to be addressed with NOT clients. Like the results from the current study, results from the Bailey project showed no significance between experimental and control groups. Based on the findings of that study, some suggestions were made for improving future studies of the abbreviated ASC measure, such as simplifying the feedback sheet, improving therapist comprehension and utilization of the CST intervention, and decreasing the number of ASC administrations per patient. Attempts were made to follow these study recommendations, yet results yielded similar findings to the previous study. Feedback sheets were simplified by eliminating the graphs, and an interactive electronic version of the feedback sheet was also provided to improve feedback and intervention utility. A one time administration of the ASC was also implemented. Tutorials on tool use were presented, and study administrators made themselves available for assistance with intervention utilization. However, treatment utility suggested findings similar to those seen in the Bailey study (2010). Given this information, target areas for further research are treatment compliance and possibly assessment sensitivity.

Although utility checks were performed in the current study to insure appropriate utilization of feedback by therapists, use of the treatment protocols recommended was not mandatory. It is not guaranteed that clinicians followed protocols as instructed. Analysis of utility checks showed that less than 31% (43/140) of the 140 client/ therapist pairs eligible for feedback (118 PFB + 22, NOT cases) actually responded. Of the 43 who responded to the utility

questionnaire confirming they received the CST clinician report, about 7 percent (3) of the individuals reported that they did not review the feedback. Of those 93% ($N = 40$) that indicated they did review the feedback, approximately half of the therapists reported that they used the manual (51%, $N = 22$), and only 51% ($N = 22$) of the individuals who received the feedback reported finding a way to apply it. Nearly a fourth of the individuals who reviewed the feedback (20%, $N = 8$) did not find the feedback helpful.

Given that 29% of the individuals who were administered the ASC reviewed the feedback (40/140), and of those individuals who reviewed the feedback only 51% reported applying the manualized interventions, these findings suggest two separate problems with the methodology. First, the failure to get clinicians to comply with the research protocol by responding to inquiries about their use of the CSTs reflects that more needed to have been done to engage therapists in the study. The second problem is that clinicians did not engage in the research protocol as instructed due to either lack of interest in the treatment interventions provided and/or because they found the research material or instructions of how to effectively use the research material difficult or unhelpful. This second problem is more serious and raises questions about the training methods used to inform clinicians of how to effectively use the CST materials or the CST material itself. It is interesting to note that the number of individuals that found the feedback helpful ($n = 32$) was higher than the number of individuals who reported applying the protocol ($n = 22$). Comments recorded on the utility checks suggest that some of this variability is related to clients stopping treatment before the clinician had an opportunity to implement the strategies, or they had not yet had an opportunity to begin implementing the treatment when asked to respond to the utility check. Given this information other factors could

have contributed to the lack of treatment application other than research methodology or intent to comply. Clinicians might need more time than expected to begin CST interventions.

In any case, it is unlikely that the treatment intervention was adequately applied by therapists in the current study. However, similar compliance problems occurred in the Bailey (2010) study, suggesting that there may be a general problem with getting therapist adherence in both naturalistic studies and routine care. This suggests that therapist in future studies may need to be more carefully selected and that more extensive training on how to use the CST as a treatment planning tool is needed.

It was noted in the initial proposal for this study that it was to be conducted in a naturalistic setting, minimizing controls and mandated interventions. Because the independent variable's implementation could not be verified, it can not be concluded that the enhanced CST intervention is not effective simply because of the null results found in the statistical analysis. This suggests that on a broader perspective more needs to be done to facilitate therapist compliance in routine care where there is not likely to be any check on their compliance.

The other possible limitation is that this is the sixth CST study performed at the CCC where the data were collected. Most therapists at the clinic are familiar with the experimental treatment protocol and have utilized the manualized treatment a number of times. Given this information, therapists could have inadvertently begun to implement the experimental model within TAU practice. Qualitative observations, when verbally reinforcing utility checks, showed some therapists reporting that the CST manual helped some clinicians reframe how they approached treatment in general. Such comments, although supportive of the experimental protocol, would suggest a blending of treatment approaches occurring across experimental and control groups alike. This possible carryover behavior could have decreased significance

between experimental and control groups. This information would also provide support for the suggestion that the CSTs do in fact enhance therapeutic outcome. That said, carryover effects were not an area of concern for most studies in this body of research (Harmon et al., 2007; Slade et al., 2008; Shimokawa et al., 2010; Whipple, 2003) indicating that this is not a likely factor to explain the failure to reach statistical significance in this study. However, it may be a good idea to reevaluate CST with clinicians not previously exposed to the manual to ensure a true control group.

Given the above methodological concerns or possible explanations, some may question the robustness of any conclusion from this study. While these methodological concerns may constitute limitations, each decision was carefully weighed in designing the study in a manner likely to generate meaningful conclusions. Scientific methods in empirical research encourage scientists to move past failed efforts by probing each failed effort for new hypotheses and ideas. In the case of this study, the lack of significant results suggests the need to improve the methodology in specific ways to address the issues already detailed.

The following may be considered in designing similar studies in the future:

- Enact experimental controls which will ensure that therapists consistently review progress feedback. Encouraging or even mandating consistent checking of progress feedback is likely to bring about positive change. This is particularly important considering the apparent difficulty in obtaining compliance in the present study. Ways to do this would be to:
 - create compliance incentives such as offering a monetary reward when clinicians accurately utilize manualized treatments,

- revising the utility check to solicit explanations of how therapists used the CST intervention,
 - develop a more interactive and in-depth intervention training session,
 - quiz clinicians on knowledge of CST intervention utility prior to onset of study,
 - administer utility checks to experimental and control groups alike to compare treatment protocols and rule out carry over effects,
 - provide incentives and rewards for demonstration of comprehension of CST protocol,
 - provide a larger gap between feedback sheet administration and utility check to give clinicians more time to consider and implement CST interventions. This will allow clinicians enough time to give meaningful responses to the utility check.
- Given the possibility of carryover effects due to familiarity with treatment protocol, it would be beneficial to perform a comparison study within another treatment facility to observe effects of CST intervention with an unexposed population of clinicians.
 - In that this is the second study that has failed to show significance with the ASC measure, it is possible that some of the questions selected for the abbreviated measure have decreased sensitivity. It might be helpful to include an experimental group that receives the extended CST questionnaire to rule out test sensitivity as a possible contributing factor to null results. Another option would be to run additional pilot studies with different questions selected for each domain to compare sensitivity levels of different questions.
 - Another option to consider would be to delay administration of the preventative CST until after the second or third session of treatment to give clinicians more time to collect a

more comprehensive history, thus providing them with more client information to consider when selecting an appropriate intervention tool. This would also provide more time for development of the therapeutic relationship, thus making that domain of feedback more relevant. Utility check comments suggested that therapeutic alliance markers were at times unrealistically high due to the fact finding nature of the first session.

Although results did not support outcome enhancement between experimental and TAU groups, findings did lean towards previous study results suggesting the benefit that the CST model has with NOT clients. It is hoped that future research will continue to provide more information on the utility of the CSTs within the field of preventative intervention and treatment in general.

Tables

Table 1

Characteristics of Clients from Study

	Total Participants
Clients/therapists N	403/50
Mean Age (SD)	24.26 (4.77)
Females %	56.0
Caucasians %	87.4
Mean Dosage (SD)	3.91 (3.18)
Mean Intake OQ (SD)	67.78 (24.70)
Mean Final OQ (SD)	61.95 (23.49)
Mean Δ (SD)	-5.83 (16.47)
NOT ^a <i>n</i> (%)	90 (22.33)

Note. ^aNOT = Clients whose progress was identified by OQ-45 algorithms as being Not-On-Track.

Table 2

Means, Standard Deviations, and Effect Sizes for Pre and Post Outcomes by Treatment Group

On-Track and Not-on-Track Sample – Feedback Type (N = 403)									
	CST Fb Preventative (n = 118)			CST Fb Delayed ^a (n =120)			TAU ^b (n = 165)		
	Pre-	Post-	ES(d)	Pre-	Post-	ES(d)	Pre-	Post-	ES(d)
M	66.47	61.46	.21	68.05	61.05	.29	68.54	62.96	.23
(SD)	(24.48)	(24.18)		(24.81)	(23.15)		(24.89)	(23.35)	
Δ		-5.01			-7.00			-5.57	
(SD)		(13.38)			(17.83)			(17.46)	
On-Track and Not-on-Track Sample – Total Number of Sessions (N = 403)									
	CST Fb Preventative (n = 118)		CST Fb Delayed (n =120)		TAU (n = 165)				
	M	(SD)	M	(SD)	M	(SD)			
	4.04	(3.24)	3.82	(3.60)	3.88	(2.79)			

Note. ^a Delayed treatment refers to administration of CST intervention at session following alert of participant Not-on-Track status. ^bThe usual standard of care at the CCC is immediate electronic OQ-45 therapist feedback.

Table 3

Means, Standard Deviations, and Effect Sizes for Pre and Post Outcomes by Treatment Group

Not-on-Track Sample – Feedback Type											
(n = 90)											
CST Fb Preventative			CST Fb Delayed ^a				TAU ^b				
(n = 25)			(n =22)				(n = 43)				
	Pre-	Post-	ES(d)	Pre-	Post-	ES(d)	Pre-	Post-	ES(d)		
M	72.44	74.20	-.07	72.18	72.23	(22.04)	-.00	68.12	73.52	(21.85)	-.24
(SD)	(22.67)	(24.71)		(23.46)			(22.38)				
Δ		1.76			.05				5.67		
(SD)		(17.47)			(23.37)				(19.07)		
Not-on-Track Sample – Total Number of Sessions											
(n = 90)											
CST Fb Preventative			CST Fb Delayed				TAU				
(n = 25)			(n =22)				(n = 43)				
M	7.24		6.73				5.79				
(SD)	(2.62)		(5.01)				(3.02)				

Note. ^a Delayed treatment refers to administration of CST intervention at session following alert of participant Not-on-Track status. ^b The usual standard of care at the CCC is immediate electronic OQ-45 therapist feedback.

Table 4

Results of Analysis of Variance for On-Track and Not-On-Track Patients by Treatment Conditions

All Study Participants N= 403								
Independent variable	CST Fb Preventative n =118		CST Fb Delayed n =120		TAU n =165		<i>F</i>	<i>p</i>
	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)		
First OQ score of all study participants	66.47	(24.48)	68.05	(24.81)	68.54	(24.89)	.250	.779
First OQ score of NOT participants	72.44 n = 25	(22.67)	72.18 n = 22	(23.46)	68.12 n = 43	(22.38)	.385	.682
First OQ score of OT participants	64.86 n = 93	(24.82)	67.12 n = 98	(25.80)	68.68 n = 122	(22.74)	.602	.548

Table 5

Results of Analysis of Covariance for All Patients by Treatment Conditions

Independent variable	All Study Participants N= 403						<i>F</i>	<i>p</i>
	CST Fb Preventative <i>n</i> =118		CST Fb Delayed <i>n</i> =120		TAU <i>n</i> =165			
	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)		
Final OQ score	61.46	(24.18)	61.05	(23.15)	62.96	(23.35)	.451	.637
Total # of sessions	4.04	(3.24)	3.82	(3.60)	3.88	(2.79)	.227	.797
Δ	-5.01	(13.38)	-7.00	(17.83)	-5.57	(17.46)	.451	.637

Note. ^aCovariate for final OQ score and change in OQ score is the first OQ score, measured at initiation of treatment. Values in parentheses indicate standard deviations.

Table 6

Results of Analysis of Covariance for Not-On-Track Patients by Treatment Conditions

Independent variable	Total Not-On-Track Patients <i>n</i> =90						<i>F</i>	<i>p</i>
	CST Fb Preventative <i>n</i> =25		CST Fb Delayed <i>n</i> =22		TAU <i>n</i> =43			
	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)		
Final OQ score	74.20	(24.71)	72.23	(22.04)	73.52	(21.85)	.398	.673
Total # of sessions	7.24	(2.62)	6.73	(5.01)	5.79	(3.02)	1.38	.257
Δ	1.76	(17.47)	.05	(23.37)	5.67	(19.07)	.398	.673

Note. ^aCovariate for final OQ score and change in OQ score is the first OQ score, measured at initiation of treatment. Values in parentheses indicate standard deviations.

Table 7

Clinical Significance Classification of On-Track and Not-on-Track Patients by Treatment Conditions

All Study Participants N=403						
Clinical Significance	NOT n = 90			OT n = 313		
	CST Fb Preventative n = 25	CST Fb Delayed n = 22	TAU n = 43	CST Fb Preventative n = 93	CST Fb Delayed n = 98	TAU n = 122
Worsened /Deteriorated	4 (16%)	6 (27.27%)	15 (34.88%)	1 (1.08%)	2 (2.04%)	1 (.82%)
No Change	17 (68%)	9 (40.91%)	20 (46.51%)	71 (76.34%)	66 (67.35%)	88 (72.13%)
Improved /Recovered	4 (16%)	7 (31.82%)	8 (18.6%)	21 (22.58%)	30 (30.61%)	33 (27.05%)
NOT and OT cases combined N = 403						
Clinical Significance	CST Fb Preventative n = 118	CST Fb Delayed n = 120	TAU n = 165			
Worsened /Deteriorated	5 (4.24%)	8 (6.66%)	16 (9.70%)			
No Change	88 (74.58%)	75 (62.50%)	108 (65.45%)			
Improved /Recovered	25 (21.19%)	37 (30.83%)	41 (24.85%)			
NOT and OT excluding non-clinical sample n = 234						
Clinical Significance	CST Fb Preventative n = 70	CST Fb Delayed n = 69	TAU n = 95			
Worsened/Deteriorated	2 (2.86%)	1 (1.45%)	4 (4.21%)			
No Change	47 (67.14%)	38 (55.07%)	57 (60%)			
Improved/Recovered	22 (31.43%)	30 (43.48%)	34 (35.79%)			
Recovered ^a	20(28.57%)	21(30.43%)	25 (26.32%)			

Note. ^a The numbers in this row are a subsample of the row above, thus the column does not add up to 100%.

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Appendix A

Supplementary Figures

Dear Therapist,

Approximately a week ago, your client took the ASC as part of a current research study sponsored by the CCC. We are interested to know what action was taken on your part in the treatment of the client. Please reply to this form and include your responses below.

Client Initials: JD
Client ID: 000000000

	YES	NO
I have studied the feedback sheet.	—	—
I have studied the information in the manual as indicated by the feedback sheet.	—	—
I have applied this information to my treatment of this particular client.	—	—
I found this information helpful.	—	—

Notes/Comments:

Thank you!

CCC Research Team
1521 WSC
ccc_research@byu.edu

Figure 2. Utility check

Name: Doe, John ID: 0000000 Session Date: 12/25/2008 Session: 1 Clinician: Smith, Jane Clinic: BYU-CCC Diagnosis: Unknown Diagnosis Instrument: ASC	<table border="1"> <thead> <tr> <th>Subscales</th> <th>Current Scores</th> <th>Alerts</th> </tr> </thead> <tbody> <tr> <td>Therapeutic Alliance:</td> <td>43</td> <td></td> </tr> <tr> <td>Social Support:</td> <td>46</td> <td></td> </tr> <tr> <td>Motivation:</td> <td>37</td> <td></td> </tr> <tr> <td>Life Events:</td> <td>37</td> <td></td> </tr> </tbody> </table>	Subscales	Current Scores	Alerts	Therapeutic Alliance:	43		Social Support:	46		Motivation:	37		Life Events:	37	
Subscales	Current Scores	Alerts														
Therapeutic Alliance:	43															
Social Support:	46															
Motivation:	37															
Life Events:	37															
Therapeutic Alliance: 3. I thought the suggestions my therapist made were useful. Slightly Agree 4. I felt like I could trust my therapist completely. Neutral 5. I was willing to share my innermost thoughts with my therapist. Neutral 9. My therapist seemed to be glad to see me. Slightly Agree 10. My therapist and I seemed to work well together to accomplish what I want. Neutral 11. My therapist and I had a similar understanding of my problems. Slightly Disagree	Social Support:															
Motivation: 28. I have no desire to work out my problems. Slightly Disagree 30. Through therapy I am taking more responsibility for changing my life. Neutral 31. I am in therapy because someone is requiring it of me. Neutral	Life Events:															

REMINDER: THE USER IS SOLELY RESPONSIBLE FOR ANY AND ALL DECISIONS AFFECTING PATIENT CARE. THE OQÅ®-A IS NOT A DIAGNOSTIC TOOL AND SHOULD NOT BE USED AS SUCH. IT IS NOT A SUBSTITUTE FOR A MEDICAL OR PROFESSIONAL EVALUATION. RELIANCE ON THE OQÅ®-A IS AT USERÅ'S SOLE RISK AND RESPONSIBILITY. (SEE LICENSE FOR FULL STATEMENT OF RIGHTS, RESPONSIBILITIES & DISCLAIMERS)

Figure 3. Sample CST feedback for therapists

Clinical Support Tools Decision Tree

Not-On-Track Feedback Cases

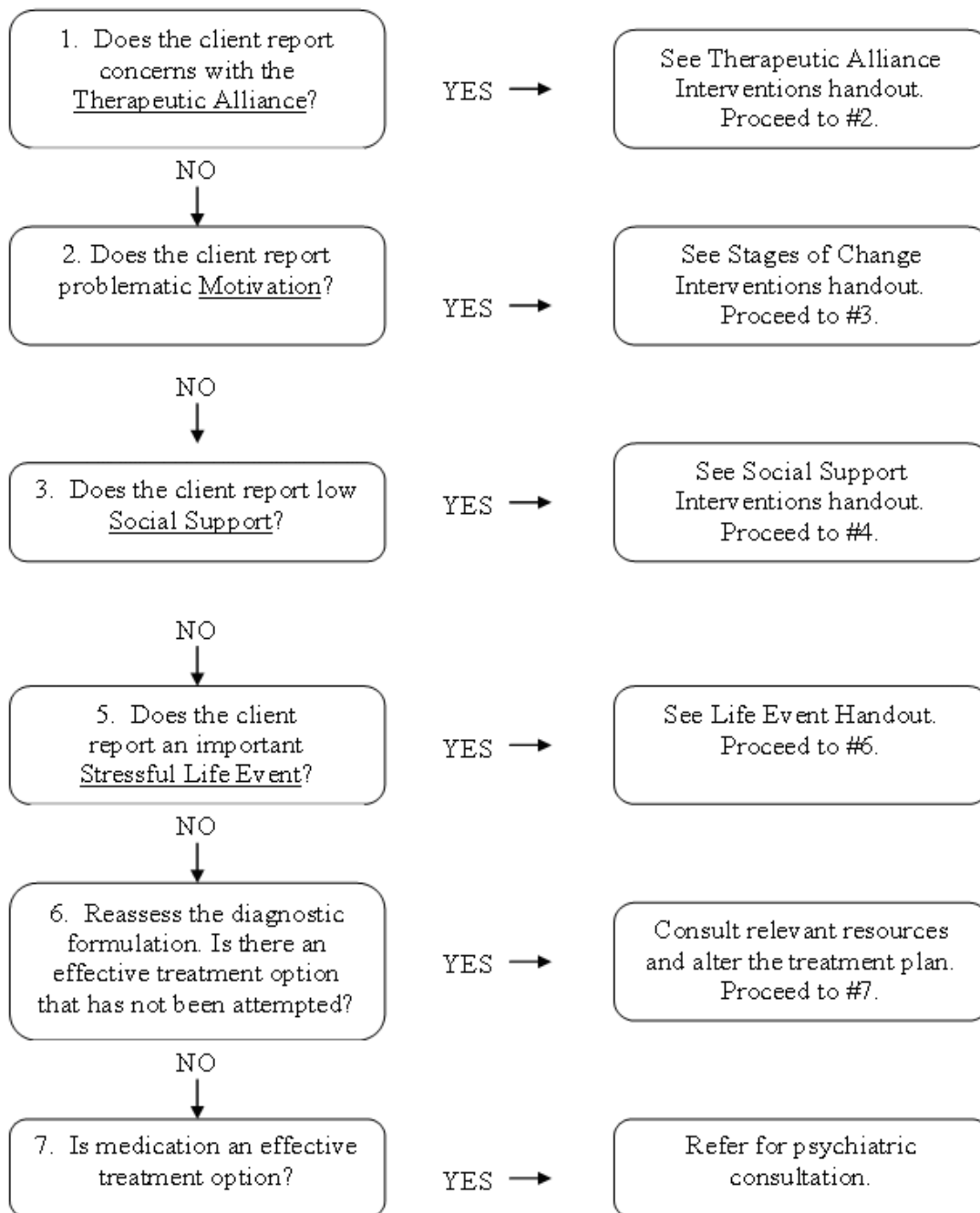


Figure 4. Decision Tree from CST Manual