**Background**

While there is evidence that psychotherapy is effective for a majority of people, research consistently shows that some people do not achieve positive outcomes over the course of treatment (Finch, Lambert, & Schaalje, 2001). Studies have estimated that 30-50% of clients fail to respond to treatment, with 5-10% of clients deteriorating, or reliably worsening, during treatment (Lambert & Ogles, 2004). Further, clinicians overestimate the change they are inducing in their clients (Walfish, McAlister, O’donnell, & Lambert, 2012), consistently failing to predict negative outcomes in their own clients and underestimating the incidence of negative outcomes in general (Hannan et al., 2005).

Routine outcome monitoring (ROM) aims to address this clinician blind spot and reduce negative outcomes by capturing client progress at regular intervals throughout treatment, ideally at every session, and providing that information back to the treating clinician in real-time, allowing the clinician to adjust treatment if indicated. Building on this, patient-focused research uses ROM data from past clients to model average client change trajectories over the course of treatment, often stratified by initial distress and other client characteristics at intake. A client’s actual change during treatment is compared to their predicted change trajectory, and this information is then provided to clinicians as feedback to inform treatment (Boswell, Kraus, Miller, & Lambert, 2013). The feedback can alert a clinician when a client is not on track for a positive outcome (NOT) or inform the clinician that progress is on track (OT) with past similar clients. Many such ROM feedback systems have been developed for use in psychotherapy, including the OQ-45 (Lambert, Kahler, et al., 2013), CORE-OM (citation), PCOMS ﻿(Duncan & Miller, 2008: Prescott et al., 2017), TOP (citation), and COMPASS (citation). See Drapeau (2012) for a review of ten ROM systems. Across systems, feedback has largely been shown to improve outcomes. ROM has quickly become a recommended standard of care, with APA including ROM as a component of effective evidence based care ﻿(American Psychological Association Presidential Task Force on Evidence-Based Practice, 2006).

The current study evaluates the effectiveness of a new ROM feedback system, which has been developed for use in college counseling centers. It also tests for differential effects of feedback across different domains of distress, and explores client moderators of feedback’s effectiveness. Before presenting the specific aims of this investigation, the literature on the impact of feedback on outcomes is reviewed, with special attention to when and for whom feedback is most effective. First, however, the methods behind ROM will be illustrated by focusing on two of the most commonly used system: the Outcome Questionnaire 45 (OQ-45, citation) and the xxxxxx (PCOMS, citation).

The OQ-45 assesses client functioning across three domains: psychological symptoms, interpersonal problems, and social role functioning. It provides scores in each domain, as well as a total score, which is most commonly used. In clinical practice, clinicians are presented with a graphical representation of their client’s scores over time, as well as a predicted change trajectory to which their client’s actual change can be compared. This predicted change trajectory is based on longitudinal treatment data from thousands of previous clients and is stratified by initial OQ-45 score. Change is modeled according to the dose-effect model (citation), which characterizes change as a rapid initial decrease in symptoms, followed by increasingly more sessions needed to achieve the same amount of change. This is modeled as a decelerating logarithmic curve. The OQ-45 also provides several status alerts, indicating that clients are deviating significantly from the expected recovery curve in either the positive or negative direction. A positive alert can be indicative that a client is making progress more quickly than expected and may be ready to terminate therapy earlier, while a negative alert indicates that therapy is not progressing as quickly as expected and client might be at risk for treatment failure. Alerts are based on 80% tolerance intervals around the predicted scores at each session, with scores falling outside the upper limit of the tolerance interval indicating that they are at risk of being included in the 10% of clients likely to have a negative therapy outcome. The OQ-45 also provides clinical support tools and assessment for signal cases, a system for helping clinicians problem solve off track cases by identifying factors that have been shown to relate to client outcome.

The PCOMS assesses mental health functioning with the 4-item Outcome Rating Scale (ORS) and therapeutic alliance with the 4-item Session Rating Scale (SRS). It also uses expected trajectories of change for the ORS, based on Bayesian inference. ORS trajectories incorporate a client’s initial score, as well as their change at the current session relative to the initial score (Miller, Duncan, Sorrell, & Brown, 2005). Clients whose scores fall below the 50th percentile of these expected trajectories are identified as at risk (Anker, Duncan, & Sparks, 2009, p. 697), indicating that they are making less change than the average client. While other ROM instruments employ other methods to provide feedback on client progress, the OQ-45 and PCOMS represent two common examples.

Feedback has been shown to improve outcomes and help prevent treatment failure across systems and methods. A recently published meta-analysis of 24 studies using either the OQ-45 or PCOMS system examined the effect of feedback across many populations and treatment modalities (Lambert, Whipple, & Kleinstäuber, 2018) and found that in a majority of studies (70%), feedback improved outcomes. Consistent with a previous meta-analyses of the OQ-45 (Lambert et al., 2011), there was a small (SMD = .14) effect of feedback for all clients, and a larger effect for off track clients (SMD = .33), with significant reductions in deterioration specifically for off track clients. For the PCOMS, there was a small to moderate effect of feedback for all clients (SMD = .40), with significantly more clients achieving a reliable positive change, but no significant effect in reducing deterioration. A 2016 systematic review found more moderate results, with just over half of studies showing a positive effect of feedback (Gondek, 2016). When considering only off track clients, however, 73% of studies found a positive effect.

While a majority of studies supports the effectiveness of feedback, it is important to understand why feedback is effective, under what conditions, and for whom. Answering these questions may shed light on the minority of studies in which feedback was not found to improve outcomes. Contextualized Feedback Intervention Theory (Sapyta, Riemer, & Bickman, 2005) suggests that in order for feedback to be effective, it has to provide additional information beyond what a therapist could glean from the client on their own. Studies showing that clinicians fail to identify worsening in their own clients, even when provided with the base rate of it happening, suggest that feedback does just that (Hannan, et al). Additionally, the feedback must be actionable and timely. Feedback should be delivered regularly, optimally on a session by session basis, when treatment can still be altered, not at the end once deterioration has already occurred. Similarly, Feedback Intervention Theory (Kluger & De Nisi, 1996) and self-regulation theory (Scheier & Carver, 2003) suggest that feedback elicits a comparison between actual and desired progress, for example between actual and expected progress, or current level of symptoms and recovery. A discrepancy between the two may prompt therapists to change their treatment plan or approach, or relax adherence to a specific model of treatment.

In addition to theories on mechanisms by which feedback improves outcomes, research comparing the effects of feedback for all clients versus only off track clients has begun to answer the question of when feedback is effective. As found in the meta-analyses and systematic reviews outlined above, the effect of feedback on symptom improvement does seem to be strongest when only considering off track clients, but this does not rule out an attenuated or different effect for on track clients. Generally, for clients already on track, receiving feedback that they are on track, or the absence of an off track alert, has not been shown to improve outcomes (﻿Crits-Christoph et al., 2012; Harmon et al., 2007; de Jong et al., 2012; Lambert, Whipple, Smart, Vermeersch, & Nielsen, 2001; Lambert et al., 2002; Probst et al., 2013; Simon, Lambert, Harris, Busath), although some studies do find a positive effect of feedback for on track clients as well (Amble, Gude, Stubdal, Andersen, & Wampold, 2015). Some research, including a meta-analysis, found that feedback may not improve outcomes for on track clients, but may shorten treatment, perhaps by indicating to therapists that the client has achieved the amount of change expected and may not need continued treatment (Lambert et al, 2003); although, a systematic review found no effect of feedback on number of sessions in 60% of studies, and a negative effect in 20% of studies (Gondek, 2016). This finding is not entirely unexpected, and in some cases, offering more sessions may in fact be an indication of clinician responsiveness to feedback indicating that a client needs more treatment to achieve the desired outcome. Lending credence to this, off track clients in feedback conditions received more sessions than off track clients in no feedback conditions (Gondek, 2016; Lambert et al, 2003).

Most ROM measures capture a single domain of distress (see the TOP for an exception), and the literature is largely silent on how domain specific feedback and alerts compare to general feedback alerts. One study found that providing feedback separately for wellbeing and affective distress improved outcomes compared to providing feedback on wellbeing alone (Dyer, 2014). Building on these results, it may be that providing feedback on specific domains of distress and impairment (e.g. alerts when clients’ depression scores are off track) may further improve outcomes. This, however, remains to be tested. Further, it is unknown whether certain domains or areas of distress benefit from feedback more than others.

Despite heterogeneity in results regarding the effects of feedback, there is little research examining whether certain types of clients benefit more from treatment that utilizes a feedback system, especially evaluating client characteristics than can be measured from the outset of treatment. One study found that feedback produced more pronounced effects for clients that started therapy with higher distress, the clients who were most likely to otherwise have a poor outcome in therapy (Lambert et al., 2001). Another study, however, found that client initial distress did not moderate the effect of feedback (Amble, Gude, Ulvenes, et al., 2015). Yet another study found that feedback’s effectiveness diminished with increased client severity (Davidson, Perry & Bell, 2015). In their meta-analysis, Lambert et al. (2019) found that the effect of feedback did not differ by diagnosis, although the ROM measures included did not offer diagnosis specific feedback, and the authors indicate that more work should be done in this area. The authors also acknowledge that some clients (or therapists) do not respond to feedback, but recognize that “we have no knowledge of the extent to which this is a function of patient variables, therapist factors, or something connected to the nature of the feedback” (pp 533-534). To our knowledge, only one study has been published that assessed client moderators beyond diagnosis or initial distress (Errázuriz & Zilcha-Mano, 2018). Unexpectedly, this study found that for clients with prior psychiatric hospitalizations, receiving feedback actually produced worse outcomes than a no feedback condition. Also unexpected, for clients who started with greater distress who went off track during treatment, receiving no feedback was better than receiving feedback that they were off track. The authors hypothesize that for these highly distressed and potentially more vulnerable clients, receiving feedback that they are not progressing as expected may be a negative experience and may further impede treatment progress. The paucity of studies, let alone the unexpected results observed, indicate that more attention to client moderators of feedback’s effectiveness is needed.

Taken as a whole, the literature suggests that while feedback is generally effective, more can be done to expend its positive impact and to understand under what conditions and for whom it is effective. The present study aims to address these gaps by evaluating the impact of one specific multidimensional feedback system developed and refined to meet the needs of specific types of clients (i.e., treated in college counseling centers), as well as to examine both clients moderators and the impact of feedback on multiple domains of specific distress and impairment.

**The Center for Collegiate Mental Health and The Counseling Center Assessment of Psychological Symptoms**

The Center for Collegiate Mental Health (CCMH) is a nationally representative practice research network (PRN) (Hayes, Locke, Castonguay, & Locke, 2011), built on a collaborative infrastructure involving multiple stakeholders, including university administrators, psychological researchers, industry partners, and over 600 university and college counseling centers. As a PRN, CCMH facilitates the collection of information that will both inform clinical practice and advance research on the mental health services provided to UCC clients, while not adding substantial burden to everyday clinical practice.

The Counseling Center Assessment of Psychological Symptoms (CCAPS) is a routine outcome monitoring instrument developed by CCMH specifically for use in a college population. The CCAPS short form used here has 34 items capturing distress across seven domains: Depression (6 items), Generalized Anxiety (6 items), Social Anxiety (5 items), Academic Distress (4 items), Eating Concerns (3 items), Alcohol Use (4 items), and Hostility (6 items), as well as a general distress index (DI) aggregating distress across multiple domains (X items). In completing the CCAPS, clients are asked to rate themselves over the past two weeks on a Likert scale, from 0 (*not at all like me)* to 4 (*extremely like me*). Each subscale is scored by taking the average of the questions that load onto that subscale. As such, higher subscale scores indicate more distress, with scores ranging from 0 to 4.

When the CCMH was launched (see Locke et al., ), clinicians using the CCAPS received a report that provided data, for each individual client, in a tabular format, with each column presenting a CCAPS subscale and rows for each CCAPS administration. See Appendix A for an example of the original CCAPS report. After several years of operation and in order to meet the needs of its practitioner stakeholders, CCMH decided to revise the CCAPS report by building a feedback system. Based on CCAPS data collected through clinical practice and designed to improve clinical outcomes, the feedback system is largely modeled after the OQ-45 feedback system. The feedback system introduced a new clinical report with several additional features. The first change to the original report was the addition of a graphical display of a client’s actual CCAPS scores over time on each subscale, overlayed on colored shading indicating whether the scores correspond to low, moderate or high distress derived from the scale’s clinical cut points. This visual allows for ease of interpreting trends across administrations. Additionally, expected recovery trajectories based on past clients starting at a similar level of distress on that subscale were added alongside clients’ actual scores allowing for a comparison between the two. Finally, an alert system was added to indicate if a client was meaningfully off track from their expected recovery trajectory. This off track alert is displayed as a blue dot, and no alert is displayed if a client’s scores are on track. See Appendix B for an example report with off track alerts.

Returning back to theories underlying feedback (cite contextual feedback theory), the visual discrepancy between a client’s current scores and the boundary of the low distress range informs therapists about how much additional change a client needs to make to be considered “recovered.” Additionally, the visual discrepancy between actual and expected recovery trajectories prompts a therapist when a client is not changing as rapidly as would be expected. This is reinforced by the off track alert generated when a client deviates significantly, indicating a change to treatment may need to be made, or at minimum a conversation with the client about treatment progress and goals. There are many clinical situations that could result in an alert. For example, a client’s progress may be relatively flat or steadily getting worse and reach a point where the lack of change or worsening triggers an alert. Alternatively, a client may experience positive change initially, but then have a sudden increase in distress due to a stressful life event, resulting in an alert in the midst of treatment otherwise progressing as expected. These two alerts may result in entirely different conversations with the client. These conversations can be informed by the graphical depiction of the scores mentioned above by providing an individualized and temporal context for the alert. By allowing the graphical display of client scores and data derived alerts to work in tandem, the new CCAPS report is able to provide new, actionable information for the therapist and client.

The development of the new feedback system exemplifies an important step of in the evolution of the CCHM PRN by fostering a positive loop between research and practice (Castonguay, Pincus, & McAleavey, 2014). CCAPS data collected as part of routine clinical practice has indeed been used in research to better understand how clients change while in treatment, as well as used to develop the feedback tool that was implemented back into UCCs with the goal of informing everyday clinical practice and ultimately improving clinical outcomes. The present study will evaluate whether the data derived feedback system did positively impact client outcomes, and if so, on what dimensions of distress and for whom.

**Research questions**

The primary research question assesses the impact of the CCAPS feedback system. Did counseling center outcomes improve after the implementation of the new feedback system? Because the CCAPS as a ROM measure was in place prior to the feedback system being implemented, any effects of the feedback system will be above and beyond the effect of ROM alone. It should be mentioned that the current study makes no attempt to isolate only the effects of a single component of the new CCAPS report (e.g. the effect off track alerts independent of the graphical depiction) or to isolate the effects of the new report from any impacts it may have had on how therapists actually conducted treatment. Instead, this constellation of report changes and any behavioral changes are evaluated together as pathways by which feedback can have effects on therapy. The second research question builds on prior research, which has largely been done in unidimensional measures of distress, to assess whether the effect of the new feedback system differed by subscale. Although not directly addressing differential effectiveness by diagnosis, as suggested by Lambert et al. (2019), this question can help to fill this gap in the literature by indicating whether certain domains benefit more from feedback. If the results show that some domains benefit less from feedback than others, this would indicate the need for further research and development of feedback methods specifically attuned to those specific domains.

Third, several client moderators will be evaluated to answer the question, for whom does feedback most improve outcomes. Some are based on prior research findings, while others are new variables being explored. Similar to prior research, this study will compare on track to not on track clients to determine whether the effect of feedback extends only to not on track clients. Also building on prior research, baseline scores on each CCAPS subscale will be tested to determine whether clients who present with more distress benefit more from treatment. Additionally, whether or not a client had previously psychiatric hospitalizations will be included to compare to the surprising result found by Errázuriz and Zilcha-Mano (2018).

Several previously untested moderators will also be examined. The frequency with which the CCAPS is administered throughout treatment the will be tested. Centers have latitude to administer the CCAPS during treatment as frequently or infrequently as they chose. CCMH recommends that it is most effective when administered at every session, which many centers follow, while other centers administer at prespecified sessions (e.g. 1st, 3rd, and 7th). It is possible that feedback will be more effective when the CCAPS is administered more frequently, as it provides more opportunities for the therapist to receive feedback and allows deterioration to be identified more immediately. Additionally, a client’s total number of sessions, the variability in a their CCAPS scores, and whether they were receiving other treatment modalities besides individual (e.g group or psychiatric) will be included.

Finally, this study will assess whether there a center effect for feedback, as the CCAPS feedback system was implemented in hundreds of UCCs across the country. This question makes a valuable contribution to the literature, which to our knowledge has not previously assessed for differential effects by center, and the presence of a center effect would indicate the presence of center characteristics that moderate feedback’s effectiveness. Although such center characteristics are not measured in the present study, testing for a center effect will inform future research directions on identifying characteristics of centers for which feedback was especially helpful. Such characteristics may be able to be implemented elsewhere to improve positive effects of feedback.

**Methods**

**Procedure**

Data for the present study were collected CCMH which, as mentioned above, is a practice research network of over 600 university and college counseling centers. Participating counseling centers collect data locally as part of clinical routine using standardized measures and can elect to contribute their center’s deidentified data to the centralized CCMH repository. Each year of CCMH data captures a single academic year, spanning from July 1 to June 30 of the following year. Four years of CCMH data from two discrete time periods are included in the present study, and centers are included if they contributed data to the repository during all four years. The first time period (2013-2015) captures data from before the updated CCAPS report was released, and the second time period (2016-2018) begins one year after the report was released on July 27, 2015. This intentional one-year gap accounts for the gradual adoption of the new report over the year following its release. While many centers began using the new CCAPS report as soon as it was made available, others began using it at a later date after having a chance to train staff in the new report. Dates on which centers upgraded to the new report within their electronic medical record system were consulted and any centers who had not updated by July 1, 2016 were excluded. This one-year gap also allows for centers to have time to become accustomed to the new report, ensuring that any clinical benefits coinciding with the release of the new report are not simply attributable to the report being something new. A dichotomous variable will be created indicating whether a client received treatment before or after the new CCAPS report and feedback system was implemented. These will be referred to as no feedback and feedback conditions. It is important to note that these two conditions occurred one after the other temporally, not simultaneously, and clients were not randomized to conditions. Although using an archival control has the drawback of not controlling for any effects of time (e.g. the two conditions happened years apart), in comparison to randomizing entire centers to different conditions simultaneously, it has the benefit of each center’s archival data serving as its own control in respect to center policies, types of treatment provided, and characteristics of clients generally seen at the center.

**Measures**

* **CCAPS**
  + Although mean scores are used for research purposes, in clinical practice, CCAPS scores are displayed as percentiles, normed based on the nationally representative CCMH database of treatment seeking college students.
  + The methods behind the expected treatment trajectories and off-track alerts were based largely on those used in the OQ-45 (citation). Expected treatment response trajectories and off track alerts were based on N clients seen in counseling center across the United States in 2012-2014. Each subscale was modeled independently using liner mixed effects modeling with fixed and random effects for intercept and session number. Session number was log transformed consistent with research showing decelerating recovery trajectories. Initials starting values were binned into X groups, and a separate model was run for each group. This provides expected recovery curves and tolerance intervals that take into account starting severity.
  + Feedback alerts for each session are based on one tailed 90% tolerance intervals around the expected trajectory for each bin, with scores falling above the tolerance boundary generating an off track alert. Diverging from the OQ-45 methodology, no positive rapid response alerts are displayed, so only an upper limit to the tolerance interval was needed. One limitation of the CCAPS feedback system relates to ceiling effects. On each subscale for a small range of scores at the ceiling, off track alerts cannot be produced because the upper limit of the tolerance interval falls above the ceiling of the scale, making it impossible for clients to score above the tolerance interval. This inability to produce an alert is indicated on the report by a line through the area where an alert would normally appear.
* **Standardized Data Set (SDS).** The SDS collects information on demographics, academics, and mental health history and is most often administered at the beginning of treatment (Hayes et al., 2011). The present study includes
  + SDS items included

**Analyses**

For each of the 8 CCAPS subscales, several client outcomes (described below) will be evaluated to determine whether outcomes improved in the feedback condition, answering research question one. For each outcome, results on each of the CCAPS subscales will be compared to determine whether the effect of feedback differed by subscale, answering research question two. To address research question four, a random effect for center will be included in each model, indicating whether the effect of the feedback system differed by center. In analyses for each outcome, only clients starting above the low cut point will be included, testing the impact of feedback on clients with some distress on each subscale.

The following outcomes will be evaluated for each subscale: deterioration, pre to post change, and rate of change. First, the rate of deterioration, or reliable worsening, in each condition will be compared. Deterioration will be determined based on the Reliable Change Index (RCI) for each subscale, a method developed by Jacobson and Truax (1991). How RCI is calculated. Clients will be dichotomized into either a deteriorated group or non-deteriorated group based on whether their scores from pre to post subscale worsened by more than the RCI for that scale. Due to ceiling effects on each subscale, some clients start with a score high enough that they are not able to deteriorate. These clients will be removed from this analysis and the rate at which this occurred will be reported. This analysis will be modeled using two-level mixed effects logistic regressions for each CCAPS subscale, with clients nested within counseling centers. The model will include a dichotomous variable indicating whether the client received treatment in the feedback or no feedback condition. Additionally, random effects for the intercept and feedback condition variable will be included to test whether centers differ in their rate of deterioration and if the effect of feedback differed by center. As feedback is specifically targeted at reducing deterioration in clients at risk for negative outcomes, it is hypothesized that clients in the feedback condition will be less likely to deteriorate.

Second, pre to post change will be compared. A change score will be created by subtracting each client’s last CCAPS score from their first CCAPS score. Only clients with a first and last CCAPS administration within 14 days respectively of their first and last individual appointments will be included in order to ensure that the change score captures the full treatment effect. This will be modeled using two-level linear mixed effects models, again with clients nested within centers. Similar to the previous model, this will include fixed and random effects for the intercept and feedback condition. While the analysis of deterioration captures only feedback’s effect on negative treatment outcomes, this analyses tests whether feedback resulted in more average change. It is hypothesized that clients seen in the feedback condition will experience more change.

As the third type outcome, clients’ rate of change will be compared across feedback conditions to test whether clients’ symptoms across the CCAPS domains improved more quickly in the feedback condition. This will be modeled with a three-level mixed effects linear model, with sessions nested within clients nested within centers. The model will include effects for the intercept, representing each client’s baseline scores, session number, representing the rate of change during treatment, and an interaction between session number and feedback condition. Additionally, random effects for all three will be included for both clients and therapists. In line with prior research on the dose effect model of therapy, the effect of session will be log transformed (citation). Clients with at least two sessions will be included in these analyses, and only individual therapy sessions will be considered. It is hypothesized that clients seen in the feedback condition will have steeper slopes, experiencing more rapid change during treatment.

It should be mentioned here that although client outcomes are the focus of the present study, these are not the only type of impact that should matter in evaluating such a system. Other outcomes that are left to future research include outcomes at the therapist and center levels, such as therapist satisfaction and burnout. Future directions for such research will be explored in the discussion in connection with the findings from the present study.

Several moderators will be examined to determine for whom feedback is most effective, addressing research question three. Interactions between each moderator and the dichotomous feedback condition variable will be added to each of the models outlined above. Interactions significant at the *p* < .001 level will be interpreted. The moderators have been chosen based on the literature reviewed in the introduction. They are listed below.

* Whether the client went off track during treatment
  + It is anticipated that clients in the feedback condition who received an off-track alert will have better outcomes than clients in the no feedback condition who went off track but did not receive the alert. This addresses the question of whether feedback improves outcomes more for clients who receive alerts; the empirical findings on which question are mixed.
* Initial CCAPS distress
  + Each client’s initial CCAPS score will be included to control for effects of baseline distress, and to test whether feedback is more beneficial for more highly distressed clients. The empirical findings on this issue are also mixed.
* Prior psychiatric hospitalizations
* Frequency of CCAPS administration
* Total number of sessions
  + It is anticipated that clients with more sessions will have better outcomes, and that this effect will be stronger in the feedback condition.
* Variability in client’s scores
  + Is feedback more effective for stable or unstable clients?
* Whether the client was in other treatment modalities besides individual therapy
  + Although the CCAPS is typically only administered at individual therapy appointments, and not at other types of appointments like group or psychiatric…

**Results**

* Descriptives
  + % of clients who alerted on each subscale (or would have alerted) and % that alerted (or would have alerted) on at least one subscale
  + When in therapy alerts occur
  + Compare clients who alerted and didn’t
    - Average starting CCAPS
    - Average # of sessions

**Discussion**

* After the implementation of the new CCAPS report, therapists who used both the old and new reports noted trickle down effects into how they conducted therapy, beyond the actual changes to the CCAPS report. In a focus group, many indicated that they brought the new CCAPS report into therapy to review with a client more because the report was more interpretable, and the visual depiction of distress scores over time sparked conversations about how therapy was progressing and guided the focus of the session. Although this study makes a contribution to the overall literature on feedback’s effectiveness and begins to answer questions around client contributions to feedback’s effectiveness, as Lambert et al. note, there is still significant work to be done to further identify therapist and contextual factors related to feedback’s effect. In that vein, there are a number of important questions that this study raises but was unable to answer.
* Important questions we weren’t able to answer
  + How often were therapists attending to the CCAPS and specifically to the feedback it provided? Does this mediate its effectiveness? We’d hope so!
  + Does the effect differ based on whether therapists discussed feedback, or CCAPS scores generally, with clients?
    - It’s not clear whether providing FB to both clients and therapists is more effective than providing to therapists alone
      * No difference (Shimokawa et al., 2010)
      * More effective when given to both (Knaup et al., 2009)
  + At a therapist level and structural center level, is the effectiveness of the new feedback system moderated by attitudes toward outcome monitoring or towards a change in routine? For example, a feeling that the change was imposed top down by center administrators could attenuate its effectiveness, potentially through therapists not attending to the feedback.
  + Is the effectiveness moderated by the way in which the new CCAPS system was introduced and if there was any training surrounding it?
  + Making sense of the mixed literature on whether FB is effective only for NOT clients using these therapist variables
    - It may be that the NOT signal itself is impactful if therapists only attend to feedback when a client alerts. This may be the case in systems where therapists carry higher caseloads. If therapists attend to feedback all throughout treatment, even if a client has not alerted (e.g. comparing a client’s visual trajectory to the expected trajectory, noting if a client is getting worse, even if not enough to alert), they may be more likely to see benefits from a feedback system all along, even in the absence of an alert. This fits with prior research showing that the effectiveness of feedback is moderated by therapists’ belief that FB is useful (de Jong et al., 2012). Further supporting the role of therapist attention to FB, the PCOMS, which explicitly instructs therapists to discuss progress and feedback with patients, has demonstrated positive effects across all patients, not just those who alert ﻿(e.g., Anker, Duncan, & Sparks, 2009; Reese, Norsworthy, & Rowlands, 2009; Reese, Toland, Slone, & Norsworthy, 2010), although this is not conclusive, as the PCOMS varies from other FB systems in other ways as well.
* Limitations
  + Not an RCT, and no true comparison group available to control for temporality
  + Can’t rule out the effect of time, which was confounded with the introduction of the profile report

**Stuff from the intro that doesn’t currently have a home**

* Giving feedback to both clients and therapists produces better outcomes (Knaup al, 2009)
* OQ predicts deterioration in 85-100% of cases, with some false positives (Lambert et al., 2018)
* Is it the alert that improves outcomes?
  + Trajectories of NOT patients were similar in FB and NFB conditions until the therapist in the FB condition was signaled that the patient was off track, but from that point forward the outcomes of patients in the FB condition improved significantly more than those in the NFB condition (Probst et al., 2013)
  + Same percentage of clients in feedback and no feedback conditions go off track (Amble, Gude, Stubdal, et al., 2015).
  + Clients in feedback and no feedback conditions who went off track had similar trajectories up to the point that the feedback condition clients received feedback, at which point their trajectory departed, indicating that the off track feedback was the effective component (Amble, Gude, Stubdal, et al., 2015)
  + Some research shows that slopes do change after a client receives an alert (Probst et al., 2013; Simon, Lambert, Harris, Busath, & Vazquez, 2012), but other research did not find an effect of feedback alert on slope (Amble, Gude, Ulvenes, Stubdal, & Wampold, 2015)
  + Although clients’ slopes improved after they received feedback, clients in a no feedback condition also had improved slopes after they went off track (when they would have received feedback), and the post-feedback slopes in the two conditions weren’t significantly different, failing to conclusively conclude that feedback results in improved rate of change. Instead, authors posit that signals tend to occur at high scores which are more likely to regress to the mean, potentially accounting for the decreasing slopes in both conditions (Amble, Gude, Ulvenes, et al., 2015)
* Other research on feedback effects
  + (Shimokawa, Lambert, & Smart, 2010).
  + Ellsworth, Lambert, & Johnson, 2006; Lambert, Whipple, Bishop, et al., ﻿2002; Lutz et al., 2006; Spielmans, Masters, & Lambert, 2006
  + OQ (Harmon et al., 2007; Lambert & Shimokawa, 2011)
  + PCOMS (Duncan, 2012) (Anker, 2009)
  + Meta-analyses
    - Meta- analysis showing effect of *d* = .28 for all clients and *d*  = .53 for NOT clients (Shimokawa et al., 2010)
    - Fortney 2017 meta analysis
    - Lambert 2003 meta analysis
    - Lambert 2011 meta analysis
    - Lambert 2018 meta analysis
    - Østergård 2018 PCOMS meta analysis
  + Although there is a preponderance of research showing feedback to improve outcomes, there are some studies showing less promising results.
    - Meta-analysis showing small effect of *d* =.10 (Knaup, Koesters, Schoefer, Becker, & Puschner, 2009)
    - No overall effect, but effect for NOT clients using OQ (de Jong, van Sluis, Nugter, Heiser, & Spinhoven, 2012)
    - Kendrick 2016 meta analysis- used very strict inclusion criteria that eliminated studies with a stronger effect