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Client Feedback in China: A Randomized Clinical Trial in a College Counseling Center

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Although client feedback has been demonstrated to improve psychotherapy outcomes in over a dozen randomized clinical trials, no studies to date have investigated the feedback effect outside of the United States or Europe. This study examined the impact of a client feedback intervention, the Partners for Change Outcome Management System, in a college counseling center in Wuhan, China ($N = 186$). Using a randomized design within routine care, treatment as usual (TAU; $n = 85$) was compared with a feedback condition ($n = 101$) in which therapists had access to client-generated outcome and alliance information at each session. Clients in the feedback condition demonstrated significantly greater improvement than those in the TAU condition at posttreatment. Not-on-track ($n = 60$) clients also demonstrated significantly more improvement at 6 times the rate of reliable change compared with the TAU condition. Survival analysis revealed that 66.7% of the clients in the feedback condition achieved reliable and clinically significant change after a median of 4 sessions whereas 57.0% of the clients in the TAU condition achieved reliable and clinically significant change after a median of 6 sessions. Alliance scores improved significantly more across treatment and were higher at posttreatment in the feedback condition. Although preliminary, this study suggests that the positive effects of improved outcomes and increased efficiency associated with systematic client feedback can also occur in a college counseling setting in China.

Public Significance Statement

Previous studies about the effects of client feedback, an intervention designed to identify clients not responding to psychotherapy to enable psychotherapists to restore treatment to a positive trajectory, have

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Promotion Strategies (16ZDA232), Young Scientists Funds of Ministry of Education (13YJC190021), and Open Research Program of Key Laboratory of Human Development and Mental Health of Hubei Province, People's Republic of China. Barry L. Duncan is a coholder of the copyright of the Partners for Change Outcome Management System (PCOMS) instruments. The measures are free for individual use but Duncan receives royalties from licenses issued to groups and organizations. In addition, the web-based application of PCOMS, BetterOutcomesNow.com, is a commercial product and he receives profits based on sales.

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only been conducted in the United States or Europe. This study is the first to demonstrate the effects of improved outcomes and efficiency associated with a client feedback intervention in a Chinese setting.

Keywords: client feedback, routine outcome monitoring, ROM, Partners for Change Outcome Management System, PCOMS

Client feedback (CF) is increasingly used in varied psychotherapy settings to provide real time and pre/post client outcome information to therapists, administrators, and funders. CF involves the routine collection of consumer feedback to track improvement, identify at-risk clients, and facilitate adjustment of therapy to prevent treatment failure. It refers to the continuous monitoring of client perceptions of progress throughout therapy and a real-time comparison with an expected treatment response (ETR) to gauge client progress and signal when change is not occurring as predicted. With this alert, clinicians and clients have an opportunity to shift focus, revisit goals, or alter interventions before deterioration or dropout.

The need for CF is based on findings that many clients quit therapy prematurely (Swift & Greenberg, 2012) or have negative outcomes (Reese, Duncan, Bohanske, Owen, & Minami, 2014). Moreover, clinicians tend to be overly optimistic about their effectiveness (Walfish, McAlister, O'Donnell, & Lambert, 2012) and are unable to predict which clients are likely to do poorly (Chapman et al., 2012). Client feedback systems aim to identify treatment failures before they occur, allowing time for clinicians to restore therapy to a positive trajectory.

Several feedback systems have emerged (Castonguay, Barkham, Lutz, & McAleavey, 2013), but only two have randomized clinical trial (RCT) support and are included in the Substance Abuse and Mental Health Administration's National Registry of Evidence-Based Programs and Practices (NREPP). First is the Outcome Questionnaire 45.2 (OQ; Lambert, 2015) System. Michael Lambert is the pioneer of CF, evolving pre/post outcome measurement to a "real-time" feedback process with a proven track record of improving outcomes. A meta-analytic review of six OQ studies ($N = 6,151$) revealed that clients in the feedback condition had less than half the odds of experiencing deterioration and approximately 2.6 times higher odds of attaining reliable improvement than did those in treatment as usual (TAU; Lambert & Shimokawa, 2011). Evidence that CF can improve outcome is now well established. The American Psychological Association (APA) Taskforce on Evidence-Based Treatments (2006) has recommended that clinicians routinely collect and utilize client-report data to inform treatment.

The other systematic feedback intervention included in NREPP is the Partners for Change Outcome Management System (PCOMS; Duncan, 2012). Emerging from clinical practice and designed with the front-line clinician in mind, PCOMS employs two, four-item scales, one focusing on outcome given at the beginning of the session (the Outcome Rating Scale [ORS]; Miller, Duncan, Brown, Sparks, & Claud, 2003) and the other assessing the therapeutic alliance administered toward the end of the encounter (the Session Rating Scale [SRS]; Duncan et al., 2003). PCOMS directly involves clinicians and clients in an ongoing

process of measuring and discussing both progress and the alliance.

There are five RCTs (see Duncan & Reese, 2015 for a review) that support the efficacy of PCOMS over TAU in individual (Reese, Norsworthy, & Rowlands, 2009), couple (Anker, Duncan, & Sparks, 2009; Reese, Toland, Slone, & Norsworthy, 2010), and group (Schuman, Slone, Reese, & Duncan, 2015; Slone, Reese, Mathews-Duvall, & Kodet, 2015) therapy with adults, with overall effect sizes ranging from $d = 0.28$ (group therapy) to 0.54 (individual therapy). In addition, three benchmarking studies have found outcomes comparable with RCTs in settings that have implemented PCOMS with adults and children in a public behavioral health setting (Kodet, Reese, Duncan, & Bohankse, 2017; Reese et al., 2014), as well as with patients in an acute psychiatric inpatient unit (Reese et al., 2017).

Four studies, however, have found mixed or nonsignificant feedback effects. Omitting the alliance feedback component of PCOMS, Murphy, Rashleigh, and Timulak (2012) found a nonsignificant advantage for the use of the ORS in total change (6.41 vs. 4.69 points) as well as the number of clients reaching reliable change (36 or 61% of the sample of 59 versus 24 or 47% of a sample of 51). In a large ($N = 1,006$) nonequivalent group design study addressing whether PCOMS improved outcomes and efficiency of cognitive-behavioral therapy, Janse, de Jong, Van Dijk, Hutschemaekers, and Verbraak (2016) found no advantage of PCOMS on the Symptom Checklist Revised-90 (SCL; Derogatis, 1992). An advantage was found as measured by the ORS and clients in the feedback condition achieved change in significantly fewer sessions. A post study audit revealed that 23.2% of the charts had no evidence of PCOMS use. An investigation addressing PCOMS in emergency psychiatry (van Oenen et al., 2016), found no differences on the ORS, the OQ, and the Brief Symptom Inventory (Boulet & Boss, 1991). A post study survey revealed that only 67% of the therapists applied PCOMS in more than 70% of the sessions. Finally, with a sample of single, female clients diagnosed with eating disorders in group psychotherapy ($N = 159$), Davidsen et al. (2017) found no significant differences between PCOMS and TAU on attendance, eating disorder symptoms, the SCL, or the ORS, although a trend toward significance occurred on the ORS. A survey of participant therapists revealed that therapists did not discuss PCOMS feedback with clients and did not, on average, find it useful. Addressing the mixed results of these European investigations, the current study attempts to mitigate the effects of both nonadherence and therapist negative perceptions of usefulness.

The studies to date using the OQ and PCOMS have been conducted in the United States or Europe. The current study examined the impact of CF in a college counseling center in China. Significant cultural differences regarding therapy could impact the effects of feedback. East Asian clients tend to view therapists in a

more expert or authority role while fulfilling a more passive or acquiescent role themselves (Kim, Atkinson, & Umemoto, 2001; Li & Kim, 2004). PCOMS, by design, is intended to be transparent and collaborative, promoting a more egalitarian therapeutic relationship, raising the question of whether it would realize the same benefits in China. For example, could the PCOMS-created demand for collaboration confuse the traditional hierarchy and result in no feedback effect or even less change?

Using a randomized design within routine care, TAU (no feedback) was compared with a feedback condition in which therapists had access to client-generated outcome and alliance information at each session. Three hypotheses guided our analyses. First, we hypothesized that clients in the feedback condition would exhibit greater pre/post treatment gains on ORS scores compared to clients in the TAU condition in both the total and the not-on-track samples. Second, we hypothesized that more clients in the feedback condition would experience reliable and clinically significant change. Third, we posited that clients in the feedback condition would demonstrate reliable and clinically significant change more quickly than those in the TAU condition. Although not a central focus of this study or previous feedback studies, we also had two secondary hypotheses regarding alliance scores and premature termination. We predicted that clients in the feedback condition would have higher alliance scores at posttreatment and more improvement in alliance scores over the course of treatment than TAU clients. Finally, we hypothesized that premature termination rates would be lower for the feedback condition than the TAU condition.

Method

Participants

This study was approved by the Research Ethics Committee of the psychology center at Central China Normal University. Participants were recruited from a large university counseling center in central China. Figure 1 reveals that of the 332 who were invited to participate, 310 clients consented to be in this study. One-hundred and 24 were excluded from analysis for one of the following three reasons. First, 31 clients did not provide a pre/post score on the ORS because they either forgot to take it or didn't complete the measure in its entirety. Eighty-six clients did not attend three sessions. Given the design of this study, that change or the lack-there-of could not be discussed until the third session (see below), three sessions were required to realize a feedback effect. Finally, seven clients were removed because their pre-ORS score was 32.1 or above. Such high scores at intake (the clinical cutoff on the ORS is 25) were removed because they are likely invalid; less than 2.5% of clinical samples score above 32.1, excluding youth and mandated clients, and the expected treatment response only calls for an insignificant 2.3 points of change (Duncan & Sparks, in press). While such high scores could be an accurate indication of an individual's distress, scores this high at intake mostly represent client misunderstanding, the therapist neglecting to match the score with the client's actual distress, and/or client reticence about openly sharing distress.

The final sample included 186 clients (40 men, 146 women). The average age was 21.44 years (range 16 to 32). There were 101 clients in the feedback condition and 85 in the treatment as usual

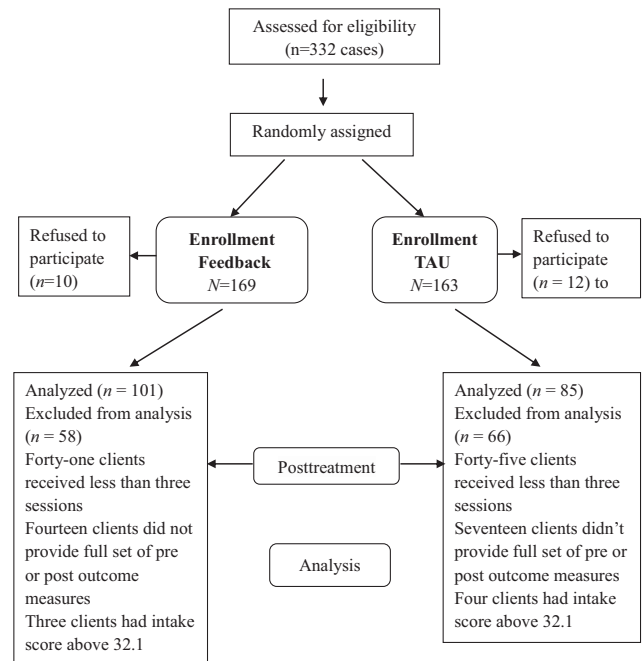


Figure 1. Participant flow into treatment conditions and data analysis.

condition. The feedback group had a mean of 4.78 sessions and the TAU group had a mean of 5.51 sessions. Students in this setting entered psychotherapy with a variety of presenting problems that mainly included interpersonal and family problems, emotional problems like depression and anxiety, self-injury, trauma-related symptoms, and decreases in academic performance. Presenting problems are not systematically tracked in this setting.

Therapists

There were 43 therapists (33 females, 10 males) who participated in this study, including six staff therapists and 18 part-time therapists (19 masters level and five doctoral level), and 19 practicum students from the MS (13) and PhD (six) programs in counseling psychology. Therapist age ranged from 24 to 52 years ($M = 32.0$; $SD = 6.7$) and clinical experience from 0.5 to 13 years ($M = 4.9$; $SD = 3.4$). Therapists had between one and 11 clients in the study ($M = 4.3$; $SD = 2.4$). Using a 5-point scale ranging from *low* (1) to *high* (5), therapists rated the extent to which they adhered to humanistic/client-centered therapy as 3.72 ($SD = 1.43$), cognitive/cognitive-behavioral as 2.25 ($SD = 1.40$), and psychoanalytic/psychodynamic as 2.63 ($SD = .86$).

Measure

The Outcome Rating Scale (ORS; Miller et al., 2003). The first part of the PCOMS feedback intervention is the administration of the ORS at the beginning of each session and the discussion of client progress. The ORS is a visual analog scale consisting of four 10-cm lines, corresponding to four domains (individual, interpersonal, social, and overall), allowing for the client's idiosyncratic rendering of his or her life circumstance. Clients place a mark on each line to represent their perception of their functioning

in each domain if using a paper and pencil version or touch or click on an iPad or other device if using a web-based application. A centimeter ruler is used to measure the distance to the nearest millimeter from the left end of the scale to the client's mark on each of the four lines, or it is automatically scored by a web system. The scores range from 0 to 40, with lower scores signaling higher distress. The paper version of the ORS was used in this study.

Multiple psychometric studies and RCTs have validated the reliability and validity of the English ORS (Duncan & Reese, 2015), and hundreds of thousands of administrations have determined cutoff and reliable change norms (Duncan, 2010; Duncan & Sparks, in press). The Chinese version of the ORS used in the current study demonstrated good internal consistency ($\alpha = .84$) and moderate concurrent validity ($r = .60$) with the OQ in a study with a population similar to the current sample (She, Sun, & Jiang, 2017), and consistent with other psychometric studies of the English-based ORS and OQ (cf., Duncan & Reese, 2015). The internal consistency of the ORS in the current sample was $\alpha = .83$.

The Session Rating Scale (SRS; Duncan et al., 2003). The second component of the PCOMS feedback intervention is the administration of the SRS toward the end of each session and the discussion of client perceptions about the alliance. The SRS is also a four-item visual analog scale based on Bordin's (1979) classic delineation of the components of the alliance: the relational bond and the degree of agreement between the client and therapist about the goals and tasks of therapy. Clients place a mark on a 10-cm line nearest the pole that best describes their felt experience with their therapist. Specifically, the instructions of the SRS direct clients to rate their therapist on the following items: relationship with the therapist ("I felt heard, understood, and respected"), goals and topics ("We worked on or talked about what I wanted to work on or talk about"), the approach used in therapy ("The therapist's approach is a good fit for me"), and the overall rating of the session ("Overall, today's session was right for me"). The client's marks on the four items are measured with a centimeter ruler and totaled for a score ranging from 0 to 40.

The English SRS also has evidence of generating reliable and valid scores in both psychometric and RCT investigations (Duncan & Reese, 2015). Regarding the cutoff score for the SRS, a conservative estimate derived for clinical purposes with descriptive statistics (score at which the majority of clients are above) is 36 (Anker et al., 2009). The Chinese SRS has not been validated but the internal consistency in the current study ($\alpha = .93$) is similar to other studies.

Procedure

The data were collected between October 2015 and June 2016. Clients received information about the study before the first session and were asked to sign a consent waiver confirming their willingness to participate. Consenting clients were assigned to the feedback group and TAU group via a randomized block design. Specifically, we randomly assigned a client (by coin flip) to a therapist with the next client for that therapist assigned to the alternate treatment condition. This helped ensure similar numbers of clients in each treatment condition and allowed therapists to serve as their own control. Both groups were asked to complete the

paper version of the ORS at the beginning of each session and the SRS at the end of each session.

A departure from the typical PCOMS protocol of the therapist administering and discussing the ORS and SRS in session, all measures were given by administrative staff separate from the therapy encounter. This change was made to honor potential cultural differences in this setting as well as therapists' views of those differences. A survey of therapists was conducted prior to the study and a majority were in favor of collecting feedback outside of the therapy. This cultural adaptation also resulted in the requirement of at least three sessions to be included in the study given that a feedback effect could only occur when the therapist saw the ORS and SRS scores after the second session and incorporated this feedback in the third.

The completed measures were put in an envelope. For the TAU condition, the completed ORS and SRS scores were not seen by the therapists. For the therapists in the feedback condition, researchers provided the original questionnaires after each session along with a progress graph. Therapists scored and plotted the ORS and SRS total scores on the graph to display the clients' progress, which occurred at the time the researchers shared the ORS and SRS, except for 20 instances when some other issue was more pressing for the therapist. In these instances, the therapist saw the ORS and SRS scores but did not graph them until the following session. The graphing at each session served as an adherence check and allowed the researchers to address any questions. At study end, all participating clients had fully completed graphs.

After three sessions, and thereafter, therapists were alerted by the researchers if their clients had changed by six points, the reliable change index of the ORS (Duncan & Reese, 2015), or not. The clients who improved fewer than 6 points constituted the not-on-track clients. No attempts were made to manage the therapists' actions in relation to the feedback that they received although they were encouraged to discuss the results and the progress graph. Therefore, the current PCOMS intervention, after each session, consisted of showing the therapists the ORS/SRS scores, completing a progress graph, a signal of RCI change or no RCI change after the third session and every session thereafter, and encouragement from the researchers to discuss the progress and alliance feedback with the clients.

Therapists were given a 1-hr overview of PCOMS that provided a general introduction and instruction about how to interpret the ORS and SRS scores regarding the cutoffs and levels of distress. Guidelines were provided regarding reliable change (an increase of 6 or more points), not-on-track clients (less than a 6-point increase), and deterioration (a decrease of 6 points or more). In addition, they were taught how to complete and explain the progress graph. The training emphasized the importance of early change and that if clients did not improve after three sessions, they would be less likely to improve in the following sessions, and were at risk for drop-out. Regarding the SRS, the importance of the alliance was discussed, especially for not-on-track clients, and guidelines for interpretation of the SRS were presented.

Analytic Strategy

We used multilevel modeling (MLM; Hox, 2002; Raudenbush & Bryk, 2002) to evaluate the efficacy of feedback. MLM was

used due to the nested data structure (i.e., sessions nested within clients nested within therapists). Given this, the assumption of independent observations is not met which can result in increase of Type I error rates; therefore, traditional analytical strategies such as analysis of variance are not appropriate. Specifically, MLM permits us to control for the variance effects from therapists to evaluate the effects of client feedback at the client level.

We constructed a two-level model (client within therapist) for evaluating differences between the feedback and TAU conditions after controlling for pretreatment scores. Data were analyzed in SPSS 24 using maximum likelihood estimation and the Satterthwaite degrees of freedom method.

We first constructed a two-level model (with initial ORS scores that were grand-mean centered to serve as a covariate) to measure the therapist-level variance. This covariate-only model is:

$$Y_{ij} = \gamma_{00} + \mu_{0j} + r_{ij} \quad (1)$$

where Y_{ij} is the post-ORS score for client i treated by therapist j ; γ_{00} is the intercept, μ_{0j} is a random therapist effect or the variance between therapists, and r_{ij} is the variance at the client level.

To address the hypothesis, we constructed a two-level multilevel model (feedback model) to represent the amount of variation in post-ORS scores at the client and therapist levels. Our basic two-level growth model is shown in Equation 2:

$$Y_{ij} = \gamma_{00} + \gamma_{10}(\text{pre-ORS}_{ij}) + \gamma_{01}(\text{FEEDBACK}_i) + \gamma_{20}(\text{SESSION}_{ij}) + \gamma_{21}(\text{FEEDBACK}_j)(\text{SESSION}_{ij}) + \mu_{0j} + r_{0ij} \quad (2)$$

where Y_{ij} is the post-ORS score for client i treated by therapist j ; γ_{00} is the intercept for the overall mean post-ORS score for groups in the TAU condition after controlling for pretreatment scores; γ_{10} is a covariate reflecting the slope between prepost ORS scores after controlling for FEEDBACK; γ_{01} is a fixed effect reflecting the mean difference between clients in the feedback and TAU conditions after controlling for pre-ORS scores; γ_{20} is a fixed effect for the number of sessions clients attended (grand-mean centered); γ_{21} is also a fixed effect evaluating the cross-level interaction between treatment condition and the number of sessions attended; μ_{0j} is a Level-2 random therapist effect; and r_{ij} is a Level-1 random client effect. We also replicated this model to evaluate the effects of feedback on clients who were identified as not-on-track.

We then constructed a third model (feedback-therapist model) to evaluate the effects of feedback across therapists. To do this we added a random slope parameter to the feedback model, a random slope and intercept model, that allowed us to model the variability of the effects of feedback across therapists. Specifically, this model evaluated if there was a relationship between treatment condition and differences in treatment outcomes across therapists. This model is:

$$Y_{ij} = \gamma_{00} + \gamma_{10}(\text{pre-ORS}_{ij}) + \gamma_{01}(\text{FEEDBACK}_j) + \gamma_{20}(\text{SESSION}_j) + \gamma_{21}(\text{FEEDBACK}_j)(\text{SESSION}_j) + \mu_{1j}(\text{FEEDBACK}_j) + \mu_{0j} + r_{0ij} \quad (3)$$

where the error term, $\mu_{1j}(\text{FEEDBACK}_j)$, was also added to reflect therapist variance accounted for the effects of treatment condition (FEEDBACK). This model was also replicated with clients identified as not-on-track.

To evaluate the differences in therapeutic alliance scores between treatment conditions, we constructed two sets of models. First, we evaluated differences in post-SRS scores between treatment conditions. We used Equations 1 and 2 but used the SRS instead of the ORS. We also did not include the number of sessions attended as a predictor. For the second set of models, we constructed a three-level multilevel model that would permit comparison of the changes (growth) in SRS scores across treatment. This model is:

$$Y_{ij} = \gamma_{000} + \gamma_{100}(\text{SESSION}_{ij}) + \gamma_{200}(\text{SESSION}_{ij}^2) + \gamma_{001}(\text{FEEDBACK}_i) + \gamma_{101}(\text{FEEDBACK}_i)(\text{SESSION}_{ij}) + \gamma_{201}(\text{FEEDBACK}_i)(\text{SESSION}_{ij}^2) + \mu_{00j} + r_{0ij} + e_{ij} \quad (4)$$

where Y_{ij} is the SRS score at session t for client i treated by therapist j ; γ_{000} is the intercept; γ_{100} is the average linear growth rate for SRS scores per session; γ_{200} is the average quadratic growth rate for SRS scores per session; γ_{001} is a fixed effect reflecting the mean difference between clients in the feedback and TAU conditions; γ_{101} is the mean linear slope difference between treatment conditions; γ_{201} is the difference in curvature growth rates between treatment conditions; μ_{00j} μ_{0j} is a Level-3 random therapist effect; r_{0ij} is a Level-2 random client effect; and e_{ij} is Level-1 error at session t . We initially ran a covariate-only model that did not include the fixed effects of feedback or the interactions between feedback and sessions that modeled linear and quadratic growth rates to evaluate therapist effects. These two models were not run for the NOT clients given concerns of power to run a 3-level model with only 60 participants.

Results

Effects of Client Feedback on Outcome—All Clients

Pre- and posttest ORS mean total scores and standard deviations for each of the treatment conditions in both samples can be observed in Table 1. We included the intent-to-treat (ITT) sample ($N = 279$; participants included those with ORS scores above 32.1 and who attended at least one session) means and standard deviations for comparison purposes. For the final sample ($N = 186$), we assessed if pretreatment ORS mean scores were different for the feedback and TAU conditions. Independent samples t tests found that the pretreatment mean differences were not statistically significant. This indicates that the initial random assignment appears to have been effective in creating equivalent groups, $t(1,184) = 1.38, p > .05$. To assess if pretreatment ORS mean scores were different for the included ($N = 186$) versus excluded ($n = 93$) clients, an independent samples t test found that the included clients had significantly lower scores than the excluded clients indicating a higher distress level, $t(1,277) = 2.58, p < .05$. In the final sample ($N = 186$), the mean number of sessions received by clients in the feedback and nonfeedback group was 4.78 ($SD = 1.95$) and 5.51 ($SD = 2.75$), respectively. This difference was significant, $t(1,184) = 2.09, p < .05$. In addition, the difference of pre-ORS scores between males and females was not significant, $t(1,184) = 0.30, p > .05$ (9 clients did not report their gender).

The results from the covariate-only model (Equation 1) are shown in Table 2. This baseline model estimated covariance parameters to compute an intraclass coefficient (ICC) and determine

Table 1
Means and Standard Deviations for the ORS for Intent to Treat ($N = 279$), Final ($N = 186$), and NOT ($n = 60$) Samples per Treatment Condition

ORS ITT and Final	Feedback		TAU	
	ITT M ($n = 145$)	Final M ($n = 101$)	ITT M ($n = 134$)	Final M ($n = 85$)
Pre	21.89 (6.72)	20.45 (5.69)	21.61 (7.27)	21.67 (6.33)
Postsessions	28.84 (6.55)	30.14 (5.79)	26.48 (7.71)	28.16 (6.39)
	3.79 (2.29)	4.78 (1.95)	4.11 (2.98)	5.51 (2.75)
ORS NOT	Feedback		TAU	
	M ($n = 26$)		M ($n = 34$)	
Pre	23.01 (5.87)		24.70 (5.23)	
Post	27.40 (6.54)		25.47 (6.76)	

Note. ORS = Outcome Rating Scale; ITT = intent-to-treat; NOT = not-on-track; TAU = treatment-as-usual condition. Standard deviations are presented within parentheses.

the amount of variability at the therapist level. The ICC showed that less than 1% of the variance (.0002) was accounted for by therapist outcome differences, which is smaller than other PCOMS studies that evaluated therapist effects (Anker et al., 2009; Reese et al., 2010). The covariate-only model indicates a significant positive slope ($\gamma_{10} = .26, p < .001$) between initial ORS scores and post-ORS scores across clients. This indicated that for every one unit of change on initial ORS scores the change in post-ORS scores was .26 points. ORS scores improved from pre- to post-treatment. Clients with an average pre-ORS score had an average post-ORS score equal to 29.34 (γ_{00}). The standardized mean effect size, Cohens' d (see Note in Table 2 for formula used), from pre- to post-ORS was $d = 1.70$.

The feedback model added the treatment condition (FEEDBACK) as a fixed effect to the first model as shown in Equation 2. The model evaluated the differences in slopes for each treatment condition while controlling for initial ORS scores. Clients in the feedback condition demonstrated significantly more improvement than TAU clients, on average 1.87 (γ_{01}) ORS points higher after controlling for pre-ORS

scores. The effect size between treatment conditions after controlling for pre-ORS scores using Hedges' g (see Note in Table 2 for formula used) was 0.31. The number of sessions attended was also a significant fixed effect ($\gamma_{20} = -0.65, p < .01$), showing an inverse relationship between post-ORS scores and the number of sessions attended. The interaction between sessions attended and treatment condition, however, was not a significant predictor of post-ORS scores. For the feedback-therapist model, the use of feedback did not result in the slopes of therapists significantly varying, Wald $Z = 0.56, p > .05$. Specifically, therapists did not benefit differentially due to using client feedback.

Effects of Client Feedback on Outcome—Not-on-Track Clients

We also evaluated treatment outcomes for clients identified as not-on-track (NOT) by replicating the models described above. The results from the covariate-only (Equation 1) and Feedback (Equation 2) models are shown in Table 3. The covariate-only

Table 2
Final Clients: Fixed and Random Effect Estimates for Predicting Post-ORS Scores

Variables	Covariate-only model	Feedback model	Feedback-therapist model
	Coefficient (SE)	Coefficient (SE)	Coefficient (SE)
Fixed effects			
Intercept—Mean post-ORS (γ_{00})	29.34*** (.44)	28.35*** (.62)	28.35*** (.62)
Client pre-ORS (γ_{10})	.26*** (.07)	.30*** (.07)	.29*** (.07)
Feedback (γ_{01})		1.87* (.85)	1.92* (.87)
Session (γ_{20})		-.65** (.23)	-.65** (.22)
Feedback \times Session (γ_{21})		.01 (.37)	-.01 (.37)
Random effects			
Client intercept variance (σ_{Client}^2)	35.41*** (3.69)	32.31*** (3.40)	31.45*** (3.56)
Therapist intercept variance ($\sigma_{\text{Therapist}}^2$)	<.001	<.001	<.001
Standardized effect size	1.70 ^a	.31 ^b	.32 ^b

Note. SE = standard error; client pre-ORS = client's initial ORS score grand mean centered; Feedback = type of feedback condition (0 = treatment as usual; 1 = feedback).

$$^a \text{Cohen's } d = (M_{\text{post}} - M_{\text{pre}}) / SD_{\text{pre}} \quad ^b \text{Hedges' } g = \frac{\gamma_{01}}{\sqrt{\frac{(n_{\text{TAU}} - 1)s_{\text{TAU(post-ORS)}}^2 + (n_{\text{Feedback}} - 1)s_{\text{Feedback(post-ORS)}}^2}{N - 2}}}$$

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 3
Not-on-Track Clients: Fixed and Random Effect Estimates for Predicting Post-ORS Scores

Variables	Covariate-only model	Feedback model	Feedback-therapist model
	Coefficient (SE)	Coefficient (SE)	Coefficient (SE)
Fixed effects			
Intercept—Mean post-ORS (γ_{00})	26.32*** (.73)	24.98*** (.90)	24.98*** (.90)
Client pre-ORS (γ_{10})	.66*** (.13)	.70*** (.13)	.70*** (.13)
Feedback (γ_{01})		2.99* (1.37)	2.99* (1.37)
Session (γ_{20})		-.32 (.30)	-.32 (.30)
Feedback \times Session (γ_{21})		.87 (.54)	.87 (.37)
Random effects			
Client intercept variance (σ_{Client}^2)	31.69*** (5.88)	27.20*** (4.97)	27.20*** (4.97)
Therapist intercept variance ($\sigma_{Therapist}^2$)	<.001	<.001	<.001
Standardized effect size	1.23 ^a	.46 ^b	

Note. SE = standard error; client pre-ORS = client's initial ORS score grand mean centered; Feedback = type of feedback condition (0 = treatment as usual; 1 = feedback).

$$^a \text{Cohen's } d = (M_{\text{post}} - M_{\text{pre}}) / SD_{\text{pre}} \quad ^b \text{Hedges' } g = \frac{\gamma_{01}}{\sqrt{\frac{(n_{TAU}-1)s_{TAU(post-ORS)}^2 + (n_{Feedback}-1)s_{Feedback(post-ORS)}^2}{N-2}}}$$

* $p < .05$. *** $p < .001$.

model showed a significant positive slope ($\gamma_{10} = .66, p < .001$) between initial ORS scores and post-ORS scores across clients. This indicated that for every one unit of change on initial ORS scores the change in post-ORS scores was .66 points. Clients with an average pre-ORS score had an average post-ORS score equal to 26.32 (γ_{00}). The standardized mean effect size from pre- to post-ORS was $d = 1.23$.

The feedback model for the NOT sample also included the treatment condition (FEEDBACK) as a predictor to the first model as shown in Equation 2. Clients in the feedback condition demonstrated significantly more treatment gains, 3.04 (γ_{01}) post-ORS points on average, after controlling for initial ORS scores. The effect size between treatment conditions after controlling for pre-ORS scores using Hedges' g was = 0.46. Again, the feedback-therapist model did not find that the use of client feedback with NOT clients significantly accounted for variability across therapists, Wald $Z = 0.00, p > .05$.

Clinical Significance and Rate of Change

Outcome was also evaluated regarding rates of reliable and clinically significant change, no change, and deterioration. Reliable change is denoted by a 6-point increase and clinically significant change includes reliable change, beginning treatment below the clinical cutoff score of 25, and concluding treatment above the clinical cutoff. A 6-point decrease is considered to indicate "deterioration" (Duncan, 2012). Table 4 shows the functioning of clients at the end of treatment in the total sample and the not-on-track sample. A chi-square analysis for reliable change showed statistically significant differences for the total sample between feedback and TAU, $\chi^2(1, N = 186) = 6.75, p < .01$, and the NOT clients (that included the six who achieved clinically significant change), $\chi^2(1, N = 60) = 9.79, p < .01$. For clinically significant change, a chi-square analysis also revealed statistically significant differences for the total sample between feedback and TAU, $\chi^2(1, N = 186) = 10.49, p < .01$. We could not conduct a chi-square analysis for the NOT sample given only 6 participants achieved this level of change.

A Cox regression survival analysis was used for the entire sample to assess when clients achieved reliable and clinically significant change. We collapsed the reliable and clinically significant change categories given that only 27 clients fell into the reliable change category. For these analyses, reliable and clinically significant change were only noted when there was no subsequent regression before treatment ended. A log-likelihood ratio test was conducted, controlling for initial severity, to assess if there were differences in the reliable change rates for the feedback and no-feedback conditions. The results showed the overall model was significant, $\chi^2(2, N = 186) = 26.23, p < .001$ and that treatment condition was a significant predictor ($\beta = -.57, p < .01$), indicating those in the feedback condition incurred reliable change at a faster rate. The survival analysis found that 66.7% of the clients

Table 4
Clinically Significant and Reliable Change Percentages in Final Sample and NOT Sample per Treatment Condition

	Feedback ($n = 101$)		TAU ($n = 85$)	
	n	%	n	%
Total				
Clinically significant change	59	58.42**	34	40.5
Reliable change	18	17.80**	9	10.60
No change	22	21.78	38	44.71
Deteriorated	2	1.98	4	4.71
NOT				
Clinically significant change	4	15.38	2	5.88
Reliable change	10	38.5**	2	5.9
No change	14	53.8	29	85.3
Deteriorated	2	7.7	3	8.8

Note. NOT = not-on-track; TAU = treatment-as-usual condition.
 ** $p < .01$ (reflects statistically significant differences between the feedback and TAU conditions for the given change category).

in the feedback condition achieved reliable change after a median of four sessions whereas only 57.0% of the clients in the no-feedback condition achieved reliable change after a median of six sessions.

Effects of Feedback on Therapeutic Alliance

To determine if treatment condition influenced the therapeutic alliance, we constructed a two-level model using the last SRS score as the dependent variable. The covariate-only model as seen in Table 5 indicates that the average last SRS score observed for all clients was 33.71. The covariate-only model also indicated a significant positive slope ($\gamma_{100} = .41, p < .001$) between initial SRS scores and post-SRS scores across clients. This indicated that for every one unit of change on initial SRS scores the change in post-SRS scores was .41 points. Therapist variability was not significant (Wald $Z = 0.71, p > .05$) with an ICC = .036, or 3.6% of variability being due to therapist effects. When treatment condition is added to the treatment model as a predictor (feedback model), clients in the feedback condition showed significantly higher scores post-SRS scores on average than TAU clients, an average of 1.94 (γ_{001}) SRS points higher after controlling for pre-SRS scores.

We also evaluated differences in alliance growth rates between treatment conditions using a three-level multilevel model. As can be observed in Table 6, the covariate-only model indicates that all clients' first SRS score was 31.11 and had a statistically significant linear growth rate ($\gamma_{100} = 0.60, p < .05$). The quadratic growth covariate was not significant, therefore only the linear model was used to evaluate if growth rates varied by treatment condition. To do this, we added treatment condition (feedback) as a fixed effect to the growth model (feedback model). This model indicated that clients in the feedback condition had a statistically significant different linear growth rate compared to clients in the TAU condition ($\gamma_{101} = 0.39, p > .05$). Specifically, clients in the feedback condition reported SRS scores that increased more rapidly across treatment.

Premature Termination

We evaluated the rates of premature termination (post-ORS score < 25) for the treatment conditions for both the ITT and final sample. For the ITT sample, the rate of premature termination was

significantly lower for the feedback (24.8%) condition compared with the TAU (36.6%) condition, $\chi^2(1, N = 279) = 4.53, p = .03$. For the final sample, the percentage of premature termination for the feedback condition (17.8%) was not significantly lower than the TAU condition (27.1%), $\chi^2(1, N = 186) = 2.92, p = .13$.

Discussion

The present study tested the effects of feedback for clients in a university counseling center in China compared with clients receiving TAU. Contrary to the PCOMS protocol, therapists did not administer the measures in session. Consistent with our first hypothesis, the feedback condition demonstrated significantly larger treatment gains compared with TAU in both samples. The effect size for feedback in the final sample was 0.31, and 0.46 for participants categorized as not-on-track—both considered small-to-medium effect sizes. The predicted score adjusted for severity of the final sample and not-on-track average client in the feedback group was 1.87 and 3.04 points higher, respectively, than an average client in the TAU group. Our second hypothesis was also supported. A comparison of the percentage of clients reaching reliable and clinically significant change in the final sample was 17.8% and 58.4%, respectively, in the feedback condition versus 10.6% and 40.5%, respectively, in the TAU group; in the not-on-track group, 38.5% of the feedback condition achieved reliable change compared with 5.9% of no feedback clients, over a six-fold difference. Finally, consistent with our third hypothesis, survival analysis revealed that 66.7% of the clients in the feedback condition achieved reliable change after a median of four sessions whereas 56.5% of the clients in the TAU condition achieved reliable change after a median of six sessions. Although the window for the feedback was quite small (therapists couldn't integrate feedback about the lack of change until the third session and clients attended 4.78 sessions on average), procedural adaptations in response to cultural differences did not seem to diminish the feedback effect. Research using the PCOMS intervention with therapists administering the measures in session might further address cultural differences.

These findings corroborate the effects reported in other PCOMS trials (see Duncan & Reese, 2015), particularly the Reese, Nor-sworthy, and Rowlands (2009) findings with a similar college counseling population, that reported significant effects of feedback over TAU with both the not-on-track and overall samples. The ES

Table 5
Final Clients: Fixed and Random Effect Estimates for Predicting Post-SRS Scores

Variables	Covariate-only model	Feedback model
	Coefficient (SE)	Coefficient (SE)
Fixed effects		
Intercept—Mean post-SRS (γ_{00})	33.71*** (.39)	32.66*** (.56)
Client initial SRS (γ_{10})	.41*** (.06)	.42*** (.06)
Feedback (γ_{01})		1.94* (.71)
Random effects		
Client intercept variance (σ_{Client}^2)	22.67*** (2.61)	21.57*** (2.51)
Therapist intercept variance ($\sigma_{Therapist}^2$)	.85 (1.20)	1.21 (1.29)

Note. SE = standard error; SRS = Session Rating Scale; Client initial SRS = client's initial SRS score grand mean centered; Feedback = type of feedback condition (0 = treatment as usual; 1 = feedback).

* $p < .05$. *** $p < .001$.

Table 6
Final Clients: Fixed and Random Effect Estimates for Multilevel Growth Model for SRS Scores

Variables	Covariate-only model	Feedback model
	Coefficient (SE)	Coefficient (SE)
Fixed effects		
Intercept—Mean SRS (γ_{000})	31.11*** (.55)	31.74*** (.70)
Session (γ_{100})	.60* (.07)	.14 (.15)
Session ² (γ_{200})	-.03 (.03)	
Feedback (γ_{001})		-.55 (.95)
Feedback \times Session (γ_{101})		.39* (.19)
Random effects		
Error variance (σ_{Error}^2)	31.75*** (2.41)	31.57 (2.41)
Client intercept variance (σ_{Client}^2)	<.001	<.001
Therapist intercept variance ($\sigma_{\text{Therapist}}^2$)	<.001	<.001

Note. SE = standard error; SRS = Session Rating Scale; Client initial SRS = client's initial SRS score grand mean centered; Feedback = type of feedback condition (0 = treatment as usual; 1 = feedback).

* $p < .05$. *** $p < .001$.

findings are also consistent with the Lambert and Shimokawa (2011) meta-analysis of PCOMS studies. The findings are not consistent with four PCOMS trials but “adherence” may suggest an explanation. Adherence and therapist perceptions of usefulness have emerged as important to the feedback effect. For example, de Jong, van Sluis, Nugter, Heiser, and Spinhoven (2012) did not find a significant effect for feedback via the OQ over TAU on the total sample but feedback was effective for those therapists who used the feedback. Three of the four studies not finding an effect for PCOMS (the Murphy, Rashleigh, & Timulak, 2012 study did not incorporate the alliance component of PCOMS) had adherence issues and/or therapists who perceived the feedback as not useful. PCOMS trials that include adherence checks and reinforcements of PCOMS use via supervision, graph checking, and data review have found a significant feedback effect. The current study incorporated ongoing graph review and identification of not-on-track clients. At the end of the study, 100% of the clients had fully completed graphs. Moreover, although not a focus of the current investigation, a poststudy survey revealed that 83.3% of the therapists perceived the ORS/SRS information as useful, in sharp contrast to the Davidsen et al. (2017) trial which reported that therapists rated the usefulness of the measures relatively low. Allegiance effects offer another explanation (Davidsen et al., 2017) of the different findings of PCOMS studies.

Adherence may be particularly important to the PCOMS feedback effect. PCOMS is intended to be used to discuss outcome and alliance with clients in session. It is therefore not only a monitoring system to inform the therapist but also requires discussion and collaboration with clients. Such a process creates a higher demand on the therapist to incorporate the feedback. Fidelity and therapist perceptions of usefulness of feedback speak to the importance of sustainability in real clinical settings. Initial training combined with a lack of organizational commitment, as demonstrated in Davidsen et al. (2017), will not sustain implementation or result in therapist perceptions of usefulness. Success requires an organizational commitment to data collection, timely identification of not-on-track clients, and dissemination of the data to clinicians and supervisors, as well ongoing attention to adherence and data integrity (Duncan, 2014; Duncan & Reese, 2015). Therapists need reinforcement and first-hand experience of the benefits of client feedback to continue its use.

More research is needed to investigate the impact of client involvement as well as the other mechanisms involved in the feedback effect. PCOMS is a “client directed” (Duncan, 2014) clinical process, and it is unknown how much therapist–client collaborative outcome and alliance monitoring impacts the feedback effect. It is also unknown how much the continuous alliance monitoring contributes versus alliance assessment as a support tool for deteriorating clients (Whipple et al., 2003). Any increase in client engagement may have influenced the feedback effect. In partial support of this explanation is the timing of the feedback (third session) related to the average length of treatment (4.78 sessions). Given this small timeframe to shift focus, revisit goals, or alter interventions, other factors may have contributed to the reported benefits.

A recent component study sought to address some of these issues. Mikeal, Gillaspay, Scoles, and Murphy (2016) randomly assigned 94 clients to three conditions: Both ORS and SRS, ORS only, and SRS only. They found no difference on the Behavior Symptom Checklist-18 (BSI; Derogatis, 2001) among the three feedback conditions (there was no TAU condition), but did find a difference on the ORS. The authors suggested that the feedback effect may be more related to the therapist request for feedback than the type of feedback attained given their finding of equivalent outcomes on the primary measure. This possibility is somewhat weakened given the small sample in each condition, nearly twice the change on the ORS in the both ORS and SRS condition versus the ORS only, and that 48.4% of the clients were in the nonclinical range of the BSI, leaving not much room for symptom change. More component research is needed to understand the feedback effect.

Our secondary hypotheses addressed the alliance and premature termination. Supporting both parts of our alliance hypothesis, the current study found a significantly higher post treatment alliance score as well as faster growth of SRS scores across treatment in the PCOMS condition perhaps suggesting that attending to the alliance may influence the feedback effect. Given the limited available time for feedback (not introduced until the third session and clients attended 4.78 session), the steeper growth of SRS scores in the feedback condition should be interpreted cautiously. Our findings contradict a small ($N = 75$) study (Rise, Eriksen, Grimstad, &

Steinsbekk, 2012) that examined the effects of PCOMS on the alliance and found no differences with TAU. More research is needed to evaluate the effects of feedback on the alliance.

It is noteworthy that the average first session SRS score was lower than U.S. or European samples, somewhat contrary to what cultural differences might predict. More research is needed to investigate this difference as well as the mechanisms in the feedback effect. Finally, our hypothesis regarding premature termination was partially supported. Significantly fewer clients dropped out of treatment in the feedback condition for the ITT sample but not the final sample.

There are several limitations to this study. First, the use of only one outcome measure in the pre/posttreatment analysis limits the conclusions that may be drawn. In addition, the instrument used was quite brief, potentially limiting the understanding of the impact of feedback. We do not know if more extensive progress assessments would have given different results or whether other measures from clinician or observer perspectives would alter our findings. As noted, findings from other studies (Davidsen et al., 2017; Janse et al., 2016; van Oenen et al., 2016) have not found a feedback effect on other outcome measures, although Anker, Duncan, and Sparks (2009) and Schuman et al. (2015) found effects on “real world” measures (divorce rate and blinded commander ratings of satisfactory reintegration, respectively). An RCT in progress seeks to answer this question by including a symptom-based outcome measure.

The relatively small sample represents another limitation, especially in the not-on-track comparisons. Larger sample sizes are needed to draw more definitive conclusions about the feedback effect with a Chinese population. Additionally, the uncertainty of what the therapists in the study did with the feedback is a limitation given that no formal adherence checks were completed to ensure fidelity to PCOMS. The after-each-session procedure by the researchers somewhat mitigated this uncertainty. In addition, the finding that most therapists (83.3%) found the information gleaned from the ORS/SRS useful suggests that therapists incorporated the feedback. Research with more control over in-session adherence is needed. The RCT in progress also seeks to address this issue with ongoing adherence measurement covering the client interaction processes of PCOMS more specifically.

Finally, the requirement of three sessions for inclusion in the study resulted in the elimination of 27.7% (15.5% attended one session while 12.3% attended two sessions) of our sample, much higher than studies requiring two sessions. For example, the Anker et al. (2009) trial lost only 14.6%. This percentage is also higher than OQ studies with a similar three session requirement. For example, de Jong et al. (2014) eliminated 21.4% of their sample. It is unknown the effect that two session clients would have had on the results had their therapy included feedback.

The empirical support for CF, although not found in all feedback trials, continues to grow. Until this study, it was unknown whether the feedback effect could be replicated in non-Western cultures. It was also unknown to what degree cultural differences might influence the effect. While preliminary and not without flaws, this study offers some evidence that the documented improved outcomes and increased efficiency associated with CF may also occur in Chinese psychotherapy settings.

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