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Investigating the effects of therapist accuracy in cognitive behavioural therapy for depression

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ABSTRACT
This study presents a means to address therapist accuracy in CBT as it relates to discussion of cognitive errors and coping strategies. Therapist interventions from CBT therapy sessions of 43 patients with depression were identified using the Comprehensive Psychotherapeutic Interventions Rating Scale, and focus of interventions on negative or positive cognitive errors, or affective, behavioural, or cognitive coping strategies was identified using the Cognitive Errors Rating Scale and Coping Patterns Rating Scale, respectively. Patients' depression symptoms were assessed using the Beck Depression Inventory. Prior to alpha adjustment, therapist accuracy of cognitive and behavioural coping strategies was found to significantly predict better coping. Tentative conclusions are provided on the value of attuning to patients' coping strategies.

Although cognitive behavioural therapy (CBT) is among the most extensively studied psychotherapeutic modalities for the treatment of depression, the specific factors that contribute to its success are not yet completely understood. Research that has formally tested the mechanisms responsible for improvement in CBT has focused on therapist variables (e.g. adherence to CBT techniques), patient variables (e.g. homework compliance), and interacting variables between the two (e.g. alliance; Langhoff, Baer, Zubraegel, & Linden, 2008). Results from such studies are mixed (Webb, Auerbach, & DeRubeis, 2012), and have sparked contention among researchers about where future research efforts should be directed: specific factors or non-specific.

For example, some researchers (e.g. Beutler, 2002; Drapeau, 2014) have warned against dismissing technique too quickly, since we have not yet accurately or adequately examined the construct. Historically, most studies have investigated technique as isolated variables, not considering how therapists adapt their interventions to what patients bring forward in session (Drapeau, 2014). In this way, therapist responsiveness has often not been captured, and may also account for the failure of some process studies to find significant associations between elements of therapy, including therapist technique, and outcome. Recently, there has been an increase in studies that have investigated these patient-therapist interactions (e.g. Aviram, Westra, Constantino, & Antony, 2016; Mcaleavey, Castonguay, & Xiao, 2014). However, there is still a need for creative and appropriately designed studies to objectively capture the dynamic process that is therapy, and the practice of the fundamental concepts to the therapeutic approach of interest.

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Creative applications to measuring technique can be found in psychodynamic research, where therapists' choice of interventions under certain circumstances has been shown to predict patient outcome (e.g. Crits-Christoph, Barber, & Kurcias, 1993; Junod, de Roten, Martinez, Drapeau, & Despland, 2005). Researchers have explored this concept of therapist accuracy, and have operationally defined it in various ways, for example, as the level of congruence between certain therapist interpretations and patients' unconscious conflicts in a given session. The Core Conflictual Relationship Theme (CCRT; Luborsky & Crits-Christoph, 1990) is a method that can be used to assess accuracy based on match in content between the therapists' interpretations and the patients' core relational patterns, two variables that are central to psychodynamic theory. Several studies have relied upon this method to tap into accuracy of therapists' interpretations, and results generally indicate a positive relationship between greater accuracy and either outcome or alliance scores (e.g. Crits-Christoph et al., 1993; Junod et al., 2005; but not Høglend, Johansson, Marble, BogwaldKjell-Petter, & Amlo, 2007).

Another approach to evaluating accuracy has been through how therapistsidentify and address patients' defence mechanisms, another central construct in psychodynamic therapy. Research has shown that addressing patient defences with defensive interpretations is related to improved alliance, greater emotional elaboration, insightful connections (Bond, Banon, & Grenier, 1998), and good outcome (Winston, Winston, Wallner Samstag, & Muran, 1994). Exploring accuracy in interpreting patients' defensive functioning has been operationalised by calculating the match between the focus of therapist interventions on defences and specific patient defences within sessions.

This literature suggests that there are certain technical actions that may be more successful depending on how they relate to specific patient variables brought forth in session. Similar methods to tap therapist accuracy in CBT have yet to be developed. Inspired by methods used in the psychodynamic literature, developing such a method based on two of CBT's key constructs, cognitive errors (CEs) and coping strategies (CSs), could be a promising starting point to assessing accuracy.

Cognitive errors are the distorted ways of processing information that are believed to cause and maintain depression (Ciarrochi & West, 2004). Negative CEs indicate a bias toward distorting information negatively (e.g. overgeneralisation: "I am never good enough"), while positive CEs signify a bias toward distorting information positively (e.g. "I am always right"). Both forms affect motivation, affect, and behaviour and have been linked to maladaptive coping (Antunes-Alves, Thompson, Kramer, & Drapeau, 2014). Coping strategies refer to the affective, behavioural, and cognitive efforts made to respond to events that are viewed as stressful (Perry, Drapeau, & Dunkley, 2005). Both reformulating patients' cognitive errors and addressing maladaptive coping are key objectives in CBT to decrease depressive symptomatology (Hamdan-Mansour, Puskar, & Bandak, 2009; Puskar, Sereika, & Tusaie-Mumford, 2003), and both have been shown to change over the course of CBT (Kozier, 2008).

This study (1) presents a method of assessing accuracy or "match" between therapist and patient as it relates to discussion of specific cognitive errors and coping strategies, and (2) investigates the effect of better therapist-patient match on these variables on patients' symptoms of depression, cognitive errors, and coping. It was hypothesised that a better match between therapist and patient on cognitive errors and coping strategies would predict a more successful outcome on the three dependent variables.

Method

Participants

Participants were drawn from the Cognitive Therapy arm of a landmark component study conducted by Jacobson and colleagues (see Jacobson et al., 1996, 2000 for full inclusion criteria). Individuals recruited for the study were diagnosed with major depressive disorder (MDD)using the Structured

Clinical Interview for DSM-III-R (Spitzer, Williams, & Gibbon, 1987), and scored a minimum of 20 points or higher on the Beck Depression Inventory (BDI; Beck, Rush, Shaw, & Emery, 1979). Participants were required to complete at least 12 therapy sessions, with a maximum of 20. Participants received the full Cognitive Therapy treatment as described by Beck and colleagues (1979). Forty three (*n* = 43) of the original 50 participants were selected based on the availability of therapy transcripts. Most were Caucasian (79.07%), as well as Native American (6.98%), African American (4.65%), and Asian (2.33%). Seven percent did not report their ethnicity. They ranged in age from 21 to 60 years (*M* = 38.81, *SD* = 8.65); most were female (*n* = 76.74%). Prior to beginning treatment, participants' mean score on the BDI was 29.63 (*SD* = 6.48). Most participants attended between 18 and 20 sessions of therapy; four attended between 11 and 17 sessions.

Three therapy transcripts from each patient were selected and therapist-patient match scores from an early, mid, and late session were averaged to improve the stability of the ratings (Krupnick et al., 1996). Previous process research has utilised similar time points (e.g. Flückiger, Del Re, Wampold, Symonds, & Horvath, 2012). Depending on availability, third sessions were selected as an early time point, as it was expected that treatment would be underway with contractual arrangements completed. For most participants (90.7%), session six was used as a mid-point of therapy. Penultimate sessions for each participant were selected as a late time point. Available audiotapes of therapy sessions for each of the 43 patients were transcribed and then coded.

Therapists

Four experienced therapists (2 male, 2 female) with previous CBT research experience provided a manualized form of CBT to patients. Therapists received a year of training based on the original Beck manual (Beck et al., 1979) prior to the commencement of the study (see Jacobson et al., 1996 for full training details). Therapists ranged in age from 37 to 49 years and had considerable post-grad clinical experience (*M* = 14.8; range: 7–20 years), with an average of 9.5 years of experience specific to cognitive therapy (range: 8–12 years).

Measures

Beck depression inventory (BDI; Beck et al., 1979)
The BDI is a widely used self-report measure of the presence and severity of symptoms and attitudes associated with depression. It has excellent psychometric properties (Beck, Steer, & Carbin, 1988; Yin & Fan, 2000). The BDI consists of 21 items and produces a score ranging from 0 to 63, with higher total scores denoting more severe depressive symptoms. It was administered to participants prior to the commencement of therapy and after its completion (Jacobson et al., 1996, 2000).

Cognitive errors rating scale (CERS – 3rd edition; Drapeau, Perry, & Dunkley, 2008)
The CERS is an observer-rated method developed to identify cognitive errors as they occur or are reported by a patient in session. The CERS can be applied to any type of transcript to identify any of the 15 cognitive errors defined in the rating scale. These have been empirically derived from the work of Beck (1976) and others. Each of the cognitive errors is further defined by valence, either positive or negative (CE-N or CE-P). Previous studies have demonstrated the construct and theoretical validity of the method (e.g. Kramer & Drapeau, 2011). Trained graduate students coded all transcripts for type, amount, and valence of cognitive errors. Twenty percent of therapy sessions were rated in consensus to establish reliability, and the average intra-class coefficient was found to be good, ICC(2, 1) = .84 (range = .60–.99).

Coping patterns rating scale (CPRS; Perry et al., 2005)
The CPRS is an observer-rated measure developed to identify coping strategies (CS) as they occur or are reported by the patient in session. The CPRS may be applied to any type of transcript to

objectively measure the incidence and type of coping strategies. The measure includes 12 CSs derived from the landmark study conducted by Skinner and colleagues (Skinner, Edge, Altman, & Sherwood, 2003). Coping strategies are further categorised as affective (CS-A, focusing on emotional experience), behavioural (CS-B, encompassing personal or interpersonal behaviours), or cognitive (CS-C, indicating thoughts, beliefs, or ideas). An Overall Coping Functioning (OCF) score can be computed as a reflection of the general level of adaptive coping used (see Kramer & Drapeau, 2009). Higher proportions indicate more adaptive coping. Previous studies have demonstrated the validity and reliability of the CPRS method (Drapeau, Perry, Blake, & D'Iuso, 2007; Kramer & Drapeau, 2011). Trained raters coded all transcripts and 20% of therapy sessions were rated in consensus to establish reliability. The inter-rater reliability was found to be good, with an ICC(2, 1) = .87 (range = .49–.96).

Comprehensive psychotherapeutic interventions rating scale (CPIRS; Trijsburg et al., 2002)

All transcripts were first coded with the CPIRS to identify the presence of therapist interventions. The CPIRS is an observer-rated measure designed to determine the presence and distribution of individual psychotherapy interventions. It consists of 76 interventions from the most commonly utilised orientations: experiential, psychodynamic, directive behavioural, cognitive, group dynamic, and systemic. It has been found to adequately discriminate among different psychotherapy orientations, as well as identify Common Factor interventions (Trijsburg et al., 2002). In this study, transcripts were coded for all 22 CBT interventions and 9 Common Factor interventions. Two trained researchers coded all transcripts and met for consensus to ensure reliability for 20% of transcripts. The inter-rater reliability was found to be good, with an average ICC(2, 1) of 0.86 (range = .57–.98).

"Match" system

After identifying therapist interventions, each intervention was coded at a content-level to determine whether they addressed a positive or negative CE as per the CERS, or an affective, behavioural, or cognitive CS as per the CPRS. If none of these applied, the intervention was coded as "None." Thus, a match score for each of the five domains was calculated for each session. In order to calculate therapist-patient match on a given variable (e.g. negative cognitive errors), the total number of therapist interventions that focused on negative cognitive errors and the total number of negative cognitive errors reported by the patient in a session were first calculated. The difference between these two values was then divided by the total number of these two values. If a patient reported 4 negative cognitive errors, and the therapist focused 6 of his/her interventions on negative cognitive errors, the calculation would be: 2/10 = .2. While counterintuitive, values closer to 0 indicate a better match. Similar procedures have been used in psychodynamic research (e.g. Junod et al., 2005). Two trained researchers coded 20% of the transcripts in consensus. The inter-rater reliability was excellent, with an average ICC(2, 1) = .91 (range = .82–1).

Data analyses

In order to test the hypotheses that a better therapist-patient match (on CE-negative, CE-positive, CS-affective, CS-behavioural, or CS-cognitive) predicts depression outcome, cognitive errors, and coping, three multiple hierarchical regression analyses were conducted. For depression outcome, pre-treatment depression score was entered in the first step as a control variable. This is in line with recommendations on calculating change across different time points (Dalecki & Willits, 1992). For late CE or OCF, patients' early therapy CE or OCF served as control variables for their respective regressions. Early scores served as a baseline measure, whereas late represented measures nearing completion of therapy.

For all regressions, results are presented with consideration of familywise error (FWER) and multiple comparisons. Given the nascent research area of therapist technique and the small sample size, the issue of correcting for FWER was taken with reservation from the perspective of generating research from a study with already modest power. Results are presented with and without alpha-

adjustments using Hochberg's (1988) step-up method for multiple testing, and the bootstrapping technique was applied to all analyses to avoid overfitting.

Results

Preliminary analyses

Focus of interventions

Therapists' mean total interventions identified with the CPIRS across three sessions was $M = 32.27$, $SD = 8.43$. The vast majority of therapist interventions focused on cognitive coping strategies ($M = 17.60$, $SD = 6.19$); no interventions focused on positive cognitive errors. The focus of therapist interventions on negative cognitive errors was rather low ($M = 1.51$, $SD = 1.21$). The number of therapist interventions focused on affective coping strategies ($M = 4.11$, $SD = 1.66$) was virtually the same as on behavioural coping strategies ($MD = 4.50$, $SD = 2.18$). The amount of interventions not focused on any of these variables was comparable ($M = 4.78$, $SD = 1.67$).

Therapist-patient match

Among patients, the average number of times negative cognitive errors ($M = 10.81$, $SD = 6.20$) were present across the three sessions outweighed the positive cognitive errors ($M = 1.39$, $SD = 1.10$). Among the coping strategies, patients discussed cognitive coping strategies most often ($M = 9.61$, $SD = 3.15$), then behavioural coping ($M = 7.64$, $SD = 3.30$), and finally affective coping ($M = 4.14$, $SD = 2.19$). Values of therapist-patient match fell between 0 and 1, with 0 indicating a perfect match and 1 indicating a perfect mismatch. The level of "match" between therapist and patient on positive cognitive errors was better ($M = .62$, $SD = .32$) than on negative cognitive errors ($M = .74$, $SD = .19$). This finding is likely due to the lower incidence of positive cognitive errors and the lack of therapist interventions addressing them, increasing the chances of having a seemingly better match. Therapist-patient match on all coping strategies was better, with the best match on cognitive coping strategies ($M = .33$, $SD = .13$), then affective coping strategies ($M = .37$, $SD = .15$), and finally behavioural coping strategies, ($M = .37$, $SD = .18$).

Dependent variables

Participants' severity of depression was assessed using the BDI before and after therapy. A paired-samples t-test showed a significant improvement in depression scores from before ($M = 29.63$, $SD = 6.48$), to after therapy ($M = 9.23$, $SD = 9.16$; $t(42) = 14.89$, $p < .01$). Patient's mean total cognitive errors in an early session was $M = 10.44$, $SD = 6.47$, of which negative cognitive errors ($M = 9.74$, $SD = 6.50$) far outweighed positive ones ($M = .70$, $SD = .96$). In late therapy, patients' mean total cognitive errors was $M = 10.60$, $SD = 6.50$, of which negative cognitive errors ($MD = 8.80$, $SD = 6.08$) outweighed positive ones ($M = 1.81$, $SD = 2.34$). The difference between total cognitive errors from early to late session was not significant, $t(42) = -.145$, $p = .89$, nor was the difference for negative cognitive errors, $t(42) = -.900$, $p = .37$. The difference between total number of positive cognitive errors between early and late session was found to be significant, $t(42) = -3.047$, $p < .01$. Patients' mean early session OCF score was $M = .69$, $SD = .16$, while late session: $M = .77$, $SD = .20$. A paired samples t-test revealed this to be a significant change, $t(42) = -.2019$, $p = .05$.

Results of evaluation of assumptions demonstrated non-normality of the data, and led to the use of bootstrapping for all analyses (Mooney, Duval, & Duval, 1993). The number of bootstrapping resampling for all analyses was 2000. For all regressions, collinearity diagnostics were performed and did not reveal violations, indicating that the estimated relationships are valid representations of the data (Tabachnick & Fidell, 2007). Due to non-normality of the data, the use of bias-corrected bootstrapped confidence intervals and standard errors was important for the reliability of any significant coefficients that emerged.[1]

Therapist-patient match and depression outcome

A hierarchical multiple regression was conducted between the five predictors: therapist-patient match on positive cognitive errors, therapist-patient match on negative cognitive errors, therapist-patient match on affective coping strategies, therapist-patient match on behavioural coping strategies, and therapist-patient match on cognitive coping strategies, and depression outcome. After controlling for pre-treatment depression score in step 1, these variables together did not significantly predict depression outcome, with change statistics of $\Delta R^2 = .118$, $F(5, 36) = 1.157$, $p = .35$. No individual type of match predicted depression outcome, as can be seen from the coefficients in Table 1.

Therapist-patient match and cognitive errors

A hierarchical regression was conducted with the two predictors: therapist-patient match on negative cognitive errors and therapist-patient match on positive cognitive errors, and patients' late therapy cognitive errors. After controlling for early therapy cognitive errors, therapist-patient match on these two variables together did not significantly predict late therapy cognitive errors, with change statistics of $\Delta R^2 = .079$, $F(2, 39) = 1.946$, $p = .16$. Neither type of match predicted late therapy cognitive errors, as can be seen from coefficients results in Table 1.

Therapist-patient match and OCF score

A final hierarchical regression was conducted between therapist-patient match on affective, behavioural, and cognitive coping and patients' late therapy coping. After controlling for early therapy coping, these variables together were found to significantly predict late therapy coping, with change statistics of $\Delta R^2 = .322$, $F(3, 38) = 6.321$, $p < .01$, $f^2 = .55$. Therapist-patient match on these three forms of coping were found to account for 35.4% ($R^2_{adj} = .286$) of the variance in coping. Given that higher OCF scores indicate more adaptive coping, while higher match scores indicate

Table 1. Hierarchical multiple regression predicting depression[1], Late cognitive errors[2], and Late OCF[3] with therapist-patient match.

Regression	Predictor	B	β	95% CI	Uncorrected p	Hochberg p
1	Post-treatment					
	Step 1					
	Pre-treatment depression	.538	.380		.034*	
	Step 2					
	Pre-treatment depression	.489	.346	[.047, 1.035]	.064	.384
	Match CE-N	8.603	.181	[−3.262, 22.801]	.252	.946
	Match CE-P	−3.442	−.121	[−10.471, 5.324]	.417	.946
	Match CS-A	−.591	−.010	[−22.270, 18.740]	.946	.946
	Match CS-B	12.419	.241	[−5.125, 27,157]	.119	.595
	Match CS-C	−2.855	−.042	[−23.359, 16.018]	.776	.946
2	Late therapy CEs					
	Step 1					
	Early therapy CEs	.354	.353		.027*	
	Step 2					
	Early therapy CEs	.340	.338	[.024, .641]	.032*	.096
	Match CE-N	6.855	.204	[−.390, 17.297]	.070	.140
	Match CE-P	4.225	.209	[−1.909, 11.003]	.215	.215
3	Late therapy OCF					
	Step 1					
	Early therapy OCF	.221	.179		.207	
	Step 2					
	Early therapy OCF	.227	.183	[−.127, .568]	.211	.211
	Match CS-A	.255	.196	[−.043, .587]	.123	.211
	Match CS-B	−.360	−.318	[−.643, −.085]	.018*	.072
	Match CS-C	−.581	−.387	[−1.053, −.064]	.036*	.108

Note: β significance based on bias-corrected (BCa) bootstrapping with 2000 samples.
*$p < .05$.

poorer therapist-patient match, an inverse relationship between the two favours the study's hypothesis. Among the coefficients, prior to alpha adjustment, therapist-patient match on behavioural coping strategies was a significant predictor, $p = .018$, 95% CI [−64, −.09], as well as therapist-patient match on cognitive coping strategies, $p = .036$, 95% CI [−.05, −.06]. However, these coefficients were no longer significant after alpha adjustment (see Table 1).

Discussion

The present study proposed a method to assess the accuracy of CBT interventions framed as a match between therapist and patient in discussion of patient cognitive errors (positive or negative) and coping strategies (affective, behavioural, or cognitive) within a session. Accuracy was conceptualised in this study as the therapist adjusting and responding to the patient's current functioning vis-à-vis cognitive errors and coping strategies within session, or more simply as the correspondence or match between the therapist and patient.

Clinicians are advised to be attentive to what patients bring forward in session, rather than blindly administering cognitive or behavioural-based interventions based on their theoretical importance. Research on other therapeutic modalities, including psychodynamic therapy, has shown that therapists adjust their interventions to focus on different areas of the patient's functioning, and that interventions that more accurately address the functioning of the patient may lead to better outcomes (e.g. Junod et al., 2005; Orlinsky, Rønnestad, & Willutzki, 2004). While it may be argued that therapists in CBT generally focus on more explicit content, as opposed to more unconscious processes, they nonetheless have to choose what processes to address given the amount of information that a patient can bring to session. Indeed, research has also shown that good therapists often deviate from treatment manuals and tend to adjust their interventions to each patient's idiosyncrasies, including CBT (Zickgraf et al., 2016). Furthermore, unlike some theoretical models, CBT does not have a long tradition of process research, as most of the research that was done in that area focused on demonstrating treatment efficacy (Drapeau, 2014). As a result, until recently, few efforts had been made to establish definitions of specific CEs and CSs that were sophisticated and precise enough to guide therapists in vivo (see Perry et al., 2005; Skinner et al., 2003). Because of this, it is often unclear what processes therapists are really seeing and choosing to address in therapy.

While results did not support the hypotheses that better therapist-patient match predicts outcome or cognitive errors, there was indication that a better therapist-patient match on cognitive and behavioural coping strategies predicted patients' use of adaptive coping. This finding remains tentative, as results were no longer significant after corrections for multiple comparisons; they may nonetheless suggest a trend that could remain with a larger sample size.

Common examples of therapist interventions that focused on cognitive coping strategies included requests to report and explore cognitions, identify underlying assumptions, and practice rational responses. Examples of therapist interventions that focused on behavioural coping strategies involved discussing new ways of behaving with others, reviewing completed homework assignments, and assigning homework assignments. This seems to suggest that the more similar patient and therapist are in their focus on behavioural and cognitive coping strategies, the higher the adaptive coping scores among patients. It may be inferred that therapists took into account context when evaluating patients' coping responses, and focused their interventions appropriately on a case by case basis (Beutler, Harwood, Kimpara, Verdirame, & Blau, 2011).

As for the relationship between accuracy and cognitive errors, the lack of significant findings may not be so surprising given the absence of interventions focused on positive cognitive errors, and the few that addressed negative CEs. This finding should be considered in view of the lack of change observed in patients' CEs from early to late therapy. While depressive symptoms and coping strategies improved significantly through CBT, patients' reporting of negative distortions was virtually the same as in early therapy. This finding in and of itself is surprising given the presumed synchronous relationship between depression and cognitive errors (Ciarrochi & West, 2004). However, while

cognitive errors are a key construct in CBT, how patients *feel* following therapy is paramount. The small but significant increase in positive cognitive errors was most reflected in the use of the cognitive error fortune telling, which reflects an overly positive expectation about the future. This finding is also noteworthy and may suggest to clinicians the value of positively valenced cognitive errors as a form of positive self-talk, in this case even hope for the future. Focusing on positive information and interpreting events in an overly positive manner could serve as a buffer against upsetting emotions, as was hypothesised by Henriques and Leitenberg (2002).

While CBT aims to address both cognitive errors and coping strategies, in this study, therapist interventions focused comparatively less on cognitive errors per se. It is possible that the relative lack of interventions focused explicitly on cognitive errors could explain the lack of change in reported negative cognitive errors. Oftentimes, therapists discussed cognitive errors in the context of reviewing patient thought records, responding with praise or acknowledgement of homework completion. Therapists tended to focus interventions more on cognitive coping, which included positive reframing, examining available evidence, and exploring the meaning behind thoughts in order to reinforce awareness of distortions and more adaptive ways of thinking in a general sense, rather than on specific cognitive errors directly (e.g. discussing what type of cognitive error was being reported). Such interventions were thus coded as focused on "coping" rather than "cognitive errors," a seeming mis-match between therapist and patient. On one hand, it may be argued that had therapists more accurately focused their interventions on CEs directly, patients' CEs may have also decreased, as would be expected. On the other hand, this finding raises questions about *how* to address cognitive distortions in session. It seems that patients' CEs may remain stable despite improvement in mood, and perhaps focusing interventions instead on the cognitive and behavioural aspects of coping are comparatively more important.

The indication of a relationship between match and coping lends some support to the concept of accuracy of therapist interventions and suggests that accurately addressing cognitive and behavioural coping strategies may predict better coping among depressed individuals. While therapist-patient match did not contribute to outcome, the importance of coping skills to moderate response to stress is well established in the literature (Hamdan-Mansour et al., 2009), and a major goal of CBT is to bolster approach- and problem-oriented coping (Puskar et al., 2003). How a person copes mediates the relationship between a stressful situation and an outcome like depression (Lazarus & Folkman, 1984). While we know that patients significantly improved through CBT based on their pre- and post-treatment depression scores, a myriad of interacting factors likely contributed to this improvement, most of which were not captured in this study. It is possible that further investigating the effects of therapist accuracy on a more peripheral or finite set of variables related to improvement could yield more interesting results. For example, previous studies have investigated relationships between accuracy and other process variables, such as emotional elaboration or insight (e.g. Milbrath et al., 1999). It would be interesting to explore the relationship between accuracy and the therapeutic alliance, as previous studies have demonstrated a significant link (e.g. Banon, Evan-Grenier, & Bond, 2001; Crits-Christoph et al., 1993; Junod et al., 2005). As the use of less adaptive coping strategies, such as avoidant-oriented, have been found to be linked to variables such as relationship dissatisfaction (Metts & Cupach, 1990; Muran et al., 1995), and to patient-reported feelings of depression (Ozment & Lester, 2001), it is possible that therapist-patient match indirectly positively influenced other outcome variables not included in this study.

While the study's sample size is respectable within psychotherapy process research (see Blake, Dobson, Sheptycki, & Drapeau, 2016; Trepka, Rees, Shapiro, Hardy, & Barkham, 2004 as examples), ifurther investigation using this method of accuracy with a larger sample size could reasonably produce more interesting and significant findings. Likewise, it is possible that a larger sample of sessions could better represent the course of therapy. It is also possible that patient or therapist variables unaccounted for in this study (e.g. patient engagement or certain therapist personality variables) may have obscured or even explained the relationship between the variables studied. Future larger studies could consider including such covariates.

Conclusion

This is the first known study to date to introduce a CBT accuracy method with relatively high inter-rater reliability within psychotherapy process research (Luborksy et al., 1980). These preliminary results suggest that therapists who focus their interventions on the coping strategies brought forth by patients in therapy predicts better coping This underscores therapists' ability to accurately adapt their behaviour to the emerging content from patients; in this case, to mirror patients in their discussion of behavioural and cognitive coping strategies.

Note

1. Removal of any potential outliers was seen as unfavourable given the already small sample size. However, for each analysis, Cook's distance ($D > 4/n$) was applied to determine the presence of influential outliers. Results revealed 2 to 4 outliers per analysis. Regressions were conducted with and without these cases, and generally revealed no difference to coefficient significance values. Results are presented with the complete sample.

Disclosure statement

No potential conflict of interest was reported by the authors.

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