An analysis of matching cognitive-behavior therapy techniques to learning styles

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ABSTRACT

Background and objectives: To optimize the effectiveness of cognitive-behavior therapy (CBT) for each individual patient, it is important to discern whether different intervention techniques may be differentially effective. One factor influencing the differential effectiveness of CBT intervention techniques may be the patient's preferred learning style, and whether this is 'matched' to the intervention.
Method: The current study uses a retrospective analysis to examine whether the impact of two common CBT interventions (thought records and behavioral experiments) is greater when the intervention is either matched or mismatched to the individual's learning style.
Results: Results from this study give some indication that greater belief change is achieved when the intervention technique is matched to participants' learning style, than when intervention techniques are mismatched to learning style.
Limitations: Conclusions are limited by the retrospective nature of the analysis and the limited dose of the intervention in non-clinical participants.
Conclusions: Results suggest that further investigation of the impact of matching the patient's learning style to CBT intervention techniques is warranted, using clinical samples with higher dose interventions.

1. Introduction

While cognitive-behavior therapy (CBT) has demonstrated efficacy for a variety of disorders (Butler, Chapman, Forman, & Beck, 2006), there remains room for improvement − a significant proportion of patients do not benefit from CBT and the mean improvement among responders may only be 20–50% (Westbrook & Kirk, 2005). Furthermore, the limited resources in routine clinical practice (White, 2008) and high drop out rates early in therapy (e.g., Bados, Balaguer, & Saldana, 2007) mean that there is a need to optimize the effectiveness of CBT for each individual patient, at the earliest opportunity. Recent research suggests that a variety of different single-sessions interventions (e.g., solution focused, exposure, motivational interviewing, CBT) can lead to clinically and statistically significant improvements (e.g., Perkins, 2006) to the

extent that more than one-third of patients do not require any further intervention, and are satisfied with the intervention (see Bloom, 2001; Zlomke & Davis III, 2008 for reviews).

As a route to increased therapy effectiveness, research has endeavored to match patients to particular kinds of therapy (Allen, Babor, Mattson, & Kadden, 2003; Giovazolias & Davis, 2005). Patient-treatment matching can be defined as a method of choosing between alternative treatment options based on particular patient characteristics that interact differentially with interventions to produce a more favorable outcome (Mattson et al., 1994). Patient-treatment matching has shown some promising results in matching patients' characteristics, such as personality traits, and coping style to different substance abuse treatments (e.g., Conrod et al., 2000; Karno & Longabaugh, 2007) and stress management interventions (e.g., Martelli, Auerbach, Alexander, & Mercuri, 1987). However, no research has looked at the impact of matching therapy technique to patients' learning style, a characteristic more commonly identified in educational environments.

In the last three decades, the proposition that students learn in different ways has emerged as a prominent pedagogical issue within the field of education (Hawk & Shah, 2007). The individual's 'learning style' is their preferred mode of receiving and processing information, such as a preference for theoretical or practical

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methods of learning. Matching teaching methods to students' (Ford & Chen, 2001; Nor-Azan, 2009), supervisors' (Wolfsfeld & Haj-Yahia, 2010) and medical patients' (Arndt & Underwood, 1990) learning styles has been shown to maximize learning.

While there are a number of conceptualizations of learning styles one of the most influential has been Kolb's (1984) theory of experiential learning and conceptualization of four modes of the learning process. Rainey and Kolb (1995) describe the four different learning styles, two of which are directly relevant to the data we report here. 'Abstract Conceptualization' indicates an analytical approach to learning that relies heavily on logical thinking and rational evaluation, with less benefit from 'discovery' learning approaches such as exercises and role-plays. In contrast 'Active Experimentation' indicates an active, 'doing' orientation to learning that relies heavily on experimentation, with more learning occurring when the recipient engages in relevant tasks.

There are clear parallels with the broader fields of learning and education because CBT can be conceptualized as a process in which the patient learns (i.e., discovers new information in relation to existing beliefs or learns techniques to change beliefs or manage emotions) and the clinician teaches (Lightburn & Black, 2001) and educational principles are consistent with the overall didactic goal of CBT (Riess, 2002). Hence, we set out to investigate the effects of matching patients' learning styles with interventions in CBT. The matching hypothesis in psychotherapy research suggests that patients benefit more from therapeutic approaches and techniques that are similar to their specific cognitive or attitudinal styles (Babor, 2008). This implies that outcomes will be better when the intervention utilizes methods consistent with a patient's preferred learning style, because that is their natural, and therefore most efficient, way of processing information. If corrective information is encountered using the preferred mode, then processing load is reduced, with corresponding facilitation of acquisition and consolidation of the relevant information (Nor-Azan, 2009).

Thus we hypothesized that patients may achieve more change in targeted beliefs and associated behaviors and symptoms when CBT interventions were matched to their preferred learning style, than when they were not matched. The current study set out to test this hypothesis using retrospective analysis of the data reported by McManus, Van Doorn, and Yiend (2011). We examined whether the impact of two common CBT interventions, behavioral experiments or thought records, was greater when participant's learning style was matched (i.e., favored active experimentation or abstract conceptualization, respectively) than when it was mismatched.

2. Method

The current paper reports on data collected in a previously reported study comparing the relative efficacy of single-session behavioral experiment (BE) and thought record (TR) interventions in effecting belief and symptom change in a non-clinical sample.

2.1. Thought record (TR) intervention

The TR intervention involved the experimenter guiding the participant through the completion of a thought record (in the manner described by Greenberger & Padesky, 1995). Participants were asked to rate how much they believed the target belief ("not washing your hands after going to the toilet will make you ill") and to specify the details and timescale of any illness they might get from not washing their hands. Then the experimenter asked them to identify any evidence that supported their belief (e.g., parents' beliefs, information in the media, personal experiences) and any that did not support their belief (e.g., observations of the frequency of omissions or ineffectiveness of hand washing, personal

experience of instances where people have not washed their hands but have not become ill). Participants were prompted to identify further evidence and reflect on their own experiences of not washing their hands after going to the toilet. After reviewing the evidence for and against the belief in detail participants formulated a 'balanced alternative belief' summarizing both the evidence for and against the target belief e.g., "Although I would feel dirty if I did not wash my hands after going to the toilet, I most likely would not get ill from it."

2.2. Behavioral experiment (BE) intervention

The BE intervention involved the experimenter guiding the participant through the completion of a BE record (in the manner described in Bennett-Levy et al., 2004). The BE intervention was identical to the TR intervention until the discussion of evidence for and against the target belief. At this point BE participants were asked to devise an experiment to test the validity of the target belief (e.g., to pass urine without washing their hands afterward to find out if they did become ill). As part of completing the behavioral experiment record sheet participants specified exactly what they would do during the experiment and how they would judge the outcome in relation to the target belief (e.g., how they would know if they became ill or not). Participants were then asked to carry out the experiment during the session. They then reviewed the implications of the experiment for their target belief. In line with the principles of BE's (Bennett-Levy et al., 2004) the experimenter encouraged participants to test their belief as fully as possible (e.g., if they believed that they were more likely to become ill from not washing their hands after going to the toilet if they then touched their face, they were encouraged to test this out).

For a more detailed description of recruitment, methodology of the interventions and treatment fidelity checks see McManus et al. (2011).

2.3. Participants

A non-clinical sample of student volunteers ($n = 59$) participated in the study, which tested the relative efficacy of single-session TR and BE interventions in effecting change in the belief 'not washing your hands after going to the toilet will make you ill'. Participants were excluded from the study if they were not fluent in English or if they had a current or past history of psychiatric disorder. Of the 91 participants in the McManus et al. (2011) study, 61 received an intervention (the remaining 30 were allocated to a control condition), and 59 of those had completed the measure of learning style so their data could be analyzed for this study.

2.4. Design

The study involved a mixed within/between participants' design where participants were divided retrospectively into two groups: (i) those who received a CBT technique that matched their learning style, and (ii) those who received a CBT technique mismatched to their learning style. Self-report outcome measures were administered at pre-intervention, post-intervention and at 1-week follow-up to assess the impact of the interventions.

2.5. Measures

2.5.1. Learning style

The Learning Style Inventory (LSI; Kolb & Kolb, 2005) is a commonly used measure to assess learning styles (Garner, 2000). The LSI consists of 12 sentences with a choice of four endings ranked 1–4 on how the ending fits with the preferred way of