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**Discontinuous Patterns of Change in Cognitive Therapies for
Depression: A Review**

LITERATURE REVIEW

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Abstract

Depression is a significant source of suffering for many people and a major public health concern. Cognitive therapies are widely applied to treat depression and are efficacious. However, a significant proportion of people do not respond to treatment. Despite intensive research the processes underlying therapeutic change are not well understood. Literature has highlighted non-linear and rapid periods of symptom change in therapy that may help to identify causal processes of change. This review examines the literature on discontinuous patterns of change in cognitive therapies for depression. There is growing evidence to suggest that the course of therapeutic change is non-linear and supplies opportunities to test theories of change. In particular, sudden gains in depression during one therapy session interval have emerged as a robust phenomenon with prognostic significance. The evidence suggests that they reflect meaningful shifts in therapy that precipitate further therapeutic change. However, methodological limitations restrict the field and uncertainty remains about their mechanisms, antecedents and consequences. Ways forward are suggested, including for more concerted research to consider the therapeutic process from the perspectives of client, therapist and the interaction between them. Studying change in treatment-resistant populations may also offer opportunity to shed light on inhibitors and facilitators of change.

Keywords: Depression; cognitive therapies; patterns of change; sudden gains

Discontinuous Patterns of Change in Cognitive Therapies for Depression: A Review

Depression is a significant public health problem (Mathers & Loncar, 2005). It is a highly prevalent, disabling condition that typically runs a chronic and recurring course (Kupfer, 1991). It is characterised by intense sadness and loss of interest and enjoyment in activities usually valued by the individual (American Psychiatric Association, 2013). It is frequently co-morbid with physical health problems (e.g. Barefoot et al., 1996) and is associated with an increased risk of mortality (Cuijpers & Smit, 2002). Thus, depression has a huge impact on individuals and families, health services and society. Enabling access to effective therapies is an imperative for health services.

Antidepressants are often the first-line treatment for depression, however, only one-third of people respond fully to pharmacotherapy (Trivedi et al., 2006), adherence is low (Hunot, Horne, Leese & Churchill, 2007) and people often express a preference for psychological therapies (Riedel-Heller, Matschinger & Angermeyer, 2005). Clinical guidelines recommend a number of psychosocial interventions including cognitive behaviour therapy (CBT), which was considered to have the best evidence-base of psychological approaches in a recent review (NICE, 2009). CBT for depression has demonstrated good efficacy and effectiveness across a number of research studies and real-world settings (e.g. DeRubeis et al. 2005; Richards & Suckling, 2009; Wiles et al., 2012), and is widely applied to treat depression. However, a significant proportion of people do not respond to treatment (Hollon, Thase & Markowitz, 2002; Wiles et al., 2012). This highlights the need for research examining the relationship between CBT processes and outcomes in order to advance understanding of the mechanisms of change in CBT.

Kazdin (2007) asserts that after decades of research we still do not know how or why psychological therapies produce change, or equally, fail to. He notes that historically, this field of research questioning the how and why of change has been neglected in favour of pure outcome research examining whether or not change takes place. Thus, while much has already been achieved on the development, implementation and evaluation of CBT for depression, understanding of change processes is less well advanced (Kazdin, 2007). Understanding the processes and mechanisms underlying change in CBT for depression is a fundamental step in efforts to develop treatments to improve therapy outcomes (Kazdin, 2007; Llewellyn & Hardy, 2001; Medical Research Council, 2008) for the large numbers of people who seek help, and ultimately may contribute to alleviating the burden of depression.

This review first outlines the cognitive theory of depression to provide context, then aims to appraise current understanding of patterns and processes of change in cognitive therapies for depression. This encompasses a broad field and vast literature, therefore, this review focuses on illustrating a promising and developing body of contemporary research that demonstrates an association between depression outcomes and non-linear patterns of symptom change over the course of CBT. Thus, research examining discontinuities in symptom change and their concomitant change processes is reviewed and future directions for research are considered.

Cognitive-Behaviour Therapy for Depression: Theory and Evidence

Cognitive therapy for depression (Beck, Rush, Shaw & Emery, 1979) is based on Beck's (1967) cognitive model of depression. It has been subject to intensive empirical investigation and consequent evolutions over the years (e.g. Segal, Williams & Teasdale, 2002; Watkins et al., 2007). Contemporary

terminology typically refers to cognitive behavioural therapies (CBT) reflecting the integration of cognitive and behavioural techniques, therefore this term will be used throughout.

The cognitive theory of depression (Beck, 1967, Beck et al., 1979) proposes that through formative developmental experiences people acquire stable cognitive schemas reflecting dysfunctional beliefs about the self, the world and the future. These beliefs may lie dormant, but are activated by relevant stressful life events. When activated, these schemas predispose the individual to engage in maladaptive information-processing styles (e.g. rumination) that precipitate depressed mood and lead to depressive behaviours that serve to maintain negative mood in a self-perpetuating feedback loop (see Figure 1). Correspondingly CBT seeks to identify and address these cognitive and behavioural processes to help a person learn more adaptive coping strategies. CBT is proposed to facilitate therapeutic change by enabling modification of core cognitive schemas, thus cognitive interventions are considered the active ingredients of change (Beck et al., 1979); this is referred to as the cognitive mediation hypothesis.

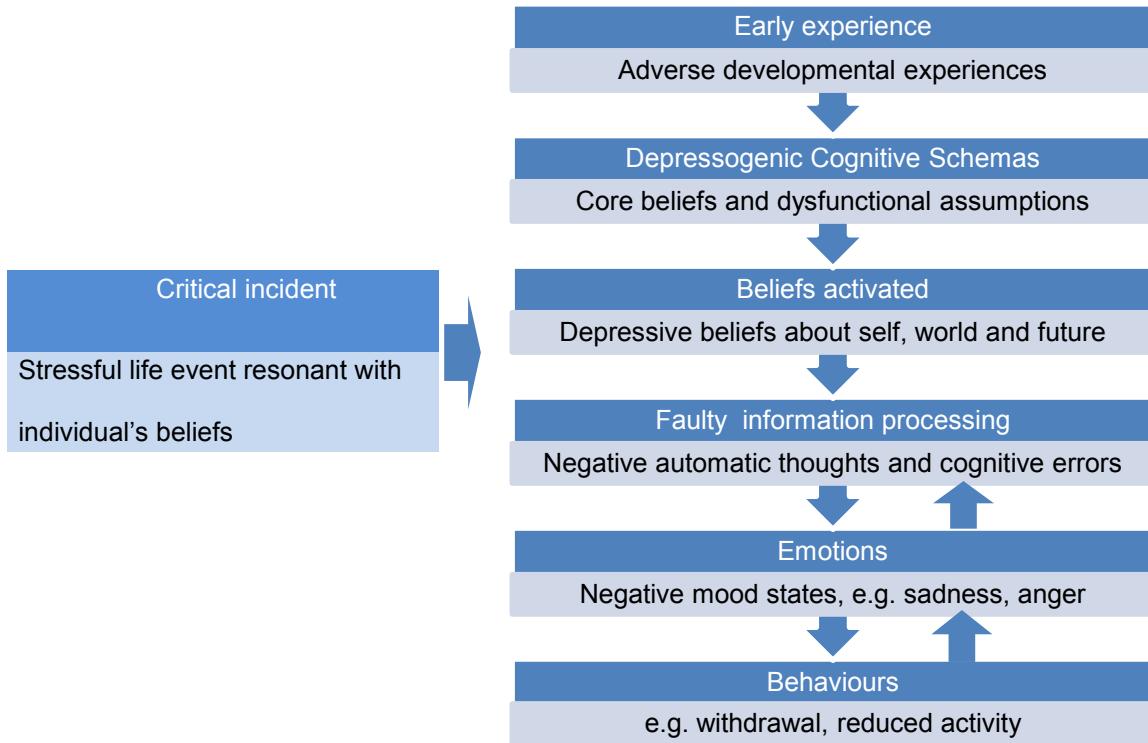


Figure 1: Illustration of the cognitive model of depression (Beck, 1967; Beck et al 1979).

CBT has demonstrated good efficacy in the treatment of depression achieving effect sizes of .85 and above (DeRubeis, Gelfand, Tang & Simons 1999; DeRubeis et al., 2005; Dimidjian et al., 2006). There is also evidence to suggest that CBT gives rise to lower rates of relapse compared to antidepressant medication (Hollon et al., 2005; Dobson et al., 2008). However, despite its efficacy, a consistent finding is that CBT is not universally effective; typically 30-50% of people do not respond to treatment with CBT (Hollon et al., 2002; NICE, 2009; Wiles et al., 2012). Furthermore, for those who do respond, relapse and recurrence are commonplace (Judd, 1997). Therefore, significant value may be gained from advancing understanding of the processes that facilitate and hinder therapeutic change.

Shape and Process of Therapeutic Change in CBT

One means to make sense of variability in outcome and to increase the effectiveness of therapy is to look more closely at the process of therapeutic change (Lewellyn & Hardy, 2001). Understanding the process of change enables putative theories of change to be tested, may advance understanding of depression and guide treatment development in order to optimize therapeutic change (Kazdin 2007; Laurenceau, Hayes & Feldman, 2007). One strand of process research has focused on temporal patterns of symptom change across the course of therapy. Longitudinal patterns of change have often been neglected in psychotherapy research where an assumption that change is gradual and linear is reflected in the use of cross-sectional aggregate data from assessment of clinical outcomes at pre- and post-treatment, but not throughout the course of treatment (Laurenceau et al., 2007).

Contemporary research investigating the shape of change in CBT has drawn attention to discontinuous patterns of non-linear change for the proposition that they mark important transition points in therapy and thus enhance capacity to isolate and study therapy processes and variables that may be causally related to change (Hayes, Laurenceau, Feldman, Strauss & Cardaciotto, 2007a). Research has identified at least three different patterns of non-linear change in CBT for depression: “sudden gains” “depression spikes”, and “rapid early responses”.

Sudden gains. Sudden gains describe large and enduring symptom improvements observed in a single between-session interval (Tang & DeRubeis, 1999, see Figure 2). Research has repeatedly shown that people who experience sudden gains in treatment report fewer symptoms of depression at the end of therapy than those who do not (Aderka, Nickerson, Bøe, & Hofmann, 2012). Furthermore, this finding has been replicated in a

range of therapy approaches and for a range of presenting issues (e.g. Adler, Harmeling & Walder-Biesanz, 2013; Bohn, Aderka, Scrieber, Stangier & Hofmann, 2013; Drymalski & Washburn, 2011; Keller, Feeny & Zoellner, 2013).

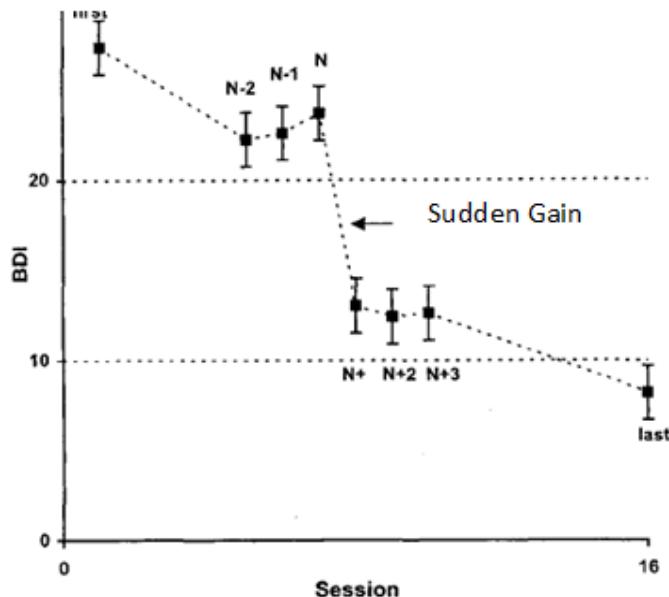


Figure 2: Illustration of time-course symptom change depicting sudden gains observed in CBT for depression. Figure taken from Tang and DeRubeis (1999).

Depression spikes. Another, emerging, pattern of discontinuous change is the “depression spike” (see Figure 3), which is described as the conceptual opposite of the sudden gain in that it refers to a large and transient worsening in symptoms (Hayes, Feldman, Beevers, Laurenceau, Cardaciotto & Lewis-Smith, 2007b).

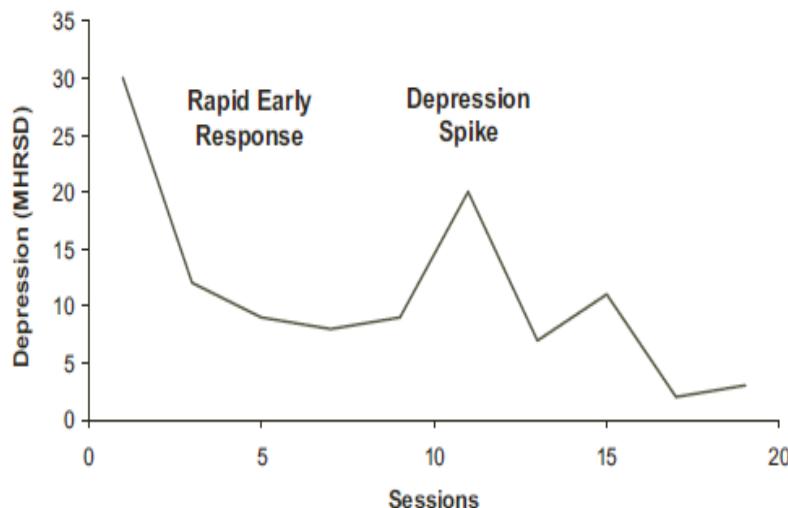


Figure 3: Time-course of symptom change over therapy, displaying the depression spike (and rapid early response). Figure taken from Hayes et al. (2007a).

Depression spikes were first identified by Hayes, Beevers, Feldman, Laurenceau and Perlman (2005) in a trial of exposure-based cognitive therapy for depression. Individual time-course data revealed the rapid early response and depression spike patterns, which both predicted improvement in depression (Hayes et al., 2007b).

Rapid early response. The rapid early response was the first non-linear pattern of change to be observed in CBT (see Figure 4). It refers to the finding that the majority of therapeutic change takes place early in therapy (e.g. Fennell & Teasdale, 1987; Ilardi & Craighead, 1994; Rush, Beck, Kovacs & Hollon, 1977) and is clinically important because people who display a rapid early response to CBT for depression go on to achieve better post-treatment outcomes (Ilardi & Craighead, 1994).

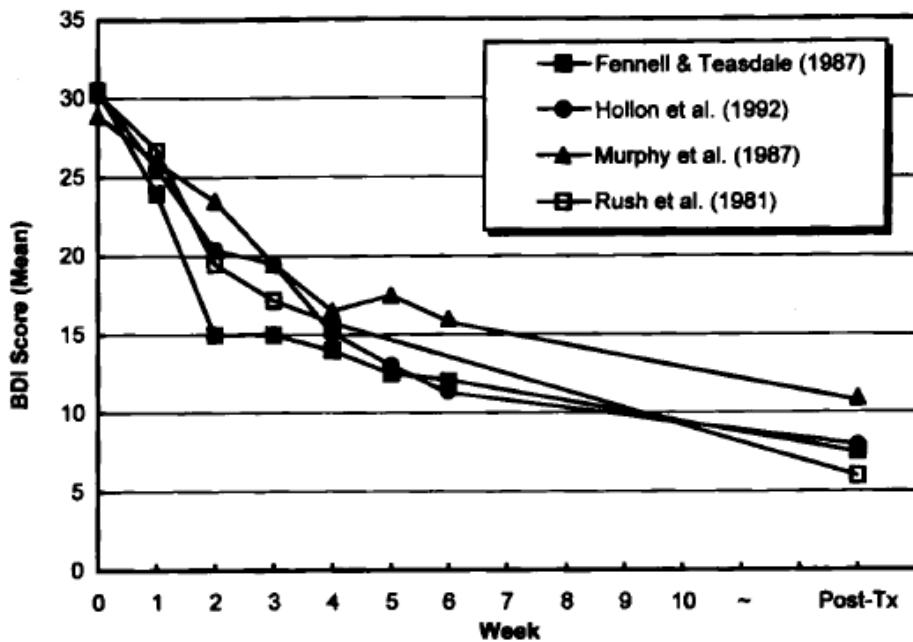


Figure 4: Temporal change in depression severity, as measured by the Beck Depression Inventory (BDI, Beck, Steer & Brown, 1996), across CBT for depression depicting the rapid early response. Figure taken from Ilardi and Craighead, (1994).

What can be learned from these patterns of change?

These patterns of change are of interest to clinical researchers for their prognostic significance across a range of disorders and therapies (Aderka, et al., 2012; Adler, Harmeling & Walder-Biesanz, 2013; Hayes et al., 2007b; Ilardi & Craighead, 1994; Keller, Feeny & Zoellner, 2013), and for their capacity to identify and focus analysis on periods of therapy that may help to identify important processes underlying therapeutic change (Laurenceau et al., 2007). Literature relating to these patterns of change and putative change processes is reviewed here.

Tang and DeRubeis (1999) hypothesised that sudden gains resulted from cognitive shifts observed in pre-gain sessions and thus proposed that they

support Beck's hypothesis of cognitive mediation as the mechanism of change in CBT (Tang & DeRubeis, 1999). Tang and DeRubeis also observed improved alliance in post-gain sessions, theorising that the cognitive shift and sudden gain triggered an "upward spiral" (p. 902) that precipitated further therapeutic gains. However, there are limitations to the interpretations that can be drawn from this study: only correlational data is provided; the reliability of the rating method was unconvincing and sudden gains did not predict reduced symptoms at 12 months and failed to predict relapse. Moreover, Vittengl, Clark and Jarrett, (2005) found that among clients who responded to treatment, CBT sudden gains did not confer added clinical benefits. Similarly, sudden gains identified by Kelly, Roberts and Ciesla (2005) in group CBT for depression were not associated with treatment outcome. However, Tang and DeRubeis (2007) countered by highlighting evidence that sudden gains generated in CBT are more stable than those obtained in non-cognitive interventions (Tang et al., 2002; Kelly et al., 2005) and revisited sudden gains using more rigorous relapse assessment procedures to indicate that sudden gains significantly reduced the risk of relapse following CBT for depression. Therefore, Tang and DeRubeis (2007) maintained that sudden gains are implicated in the preventative benefits of CBT and reflect cognitive changes.

Literature has accumulated to support the clinical and prognostic significance of sudden gains in depression (Aderka et al., 2012). Consequently, the need to identify factors that may predispose a person towards experiencing sudden gains, as well as the underlying causal processes is emphasised (Drymalski & Washburn, 2011). Such research has provided ambivalent findings in relation to Tang and DeRubeis' (1999, 2007) view that sudden gains are associated with developing cognitive insight in CBT. Studies directly

examining cognitive shifts as a precursor to sudden gains in depression have provided inconsistent results (Andrusyna, Luborsky, Pham & Tang, 2006; Kelly, Roberts & Bottonari, 2007; Tang & DeRubeis, 1999; Tang, DeRubeis, Beberman & Pham, 2005). Furthermore, sudden gains have been found to occur with similar frequency and magnitude in pharmacotherapy (Keller et al., 2013; Vittengl et al., 2005) and other non-cognitive psychotherapies (Tang, Luborsky & Andrusyna, 2002); patient-directed treatments (Lorenz, Pulverman, & Meston, 2013) and non-treatment contexts (Kelly, Roberts & Bottonari, 2007) calling into question the universality of cognitive change as a precursor to sudden gains. Others have suggested that the differential pattern of sudden gains in different therapies may indicate differential mechanisms (Jun, Zoellner & Feeny, 2013). Taken together, these findings support calls for a more trans-theoretical approach to understanding sudden gains (Hardy, Cahill, Stiles, Ispan, Macaskill & Barkham, 2005). Mechanisms other than cognitive shifts have been proposed to explain sudden gains in depression. Although, suggested mechanisms have tended to remain close to the concept of insight in one way or another. For instance, therapist interpretive accuracy (Andrusyna et al., 2006); assimilation (Goodridge & Hardy, 2009), self-evaluative processes (Kelly et al., 2007), emotional processing (Adler et al., 2013; Keller et al. 2013) and narrative coherence (Adler et al., 2013).

Limited progress has been made towards identifying factors that may predispose individuals towards sudden gains. A number of studies have failed to identify significant baseline differences between participants who go on to experience sudden gains in therapy and those who do not (Adler et al., 2013; Hardy et al., 2005; Keller et al., 2013; Kelly, Cyranowski & Frank, 2007). This

has led to suggestions that sudden gains may be better predicted by dynamic therapy process factors (Hunniscutt-Ferguson, Hoxha & Gollan, 2012).

In summary, the literature on sudden gains has accumulated to suggest that they are a relatively robust phenomenon with prognostic significance, but their mechanisms, antecedents and consequences are uncertain. Further research is needed to clarify the processes underlying sudden gains.

Hayes et al. (2005) drew on emotion theory and literature proposing emotional processing as a key mechanism in psychological interventions for anxiety (Foa & Kozak, 1986; Rachman, 1980) and endorsed suggestions that emotional processing is clinically significant in depression as well as anxiety disorders (Teasdale, 1999) to develop an exposure-based cognitive therapy for depression. The therapy was designed to target hopelessness, avoidance and rumination, and to promote activation and disturbance of the depressive network to facilitate emotional processing. Clients wrote weekly narratives of their depression to stimulate emotional processing. Emotional processing was conceptualised as “exploring and questioning issues and material related to depression with some insight or perspective shift” (p.413). Hayes et al. (2007b) evaluated the extent to which clients’ narratives demonstrated evidence of emotional processing and found that depression spikes were correlated with peak levels of emotional processing. Furthermore, when the spike occurred during the exposure activation phase of therapy it was associated with reduced symptoms post-treatment and improved rates of recovery. Thus, Hayes et al. (2007b) suggested that emotional processing mediated the association between depression spikes and improved outcomes. They construed emotional processing and associated depression spikes as evidence of *critical fluctuations*, reflecting destabilisation of the depressive system before transition,

consistent with a general principle of change seen across a range of psychological phenomena, and analogous to that seen in exposure therapy for anxiety (Heimberg & Becker, 2002).

Depression spikes have recently been studied in the context of prolonged exposure treatment for post-traumatic stress disorder (Keller et al., 2013). However, Keller et al. (2013) failed to replicate Hayes et al.'s (2007b) finding; depression spikes were not associated with improved depression outcomes. More work is needed to understand the clinical significance of transient symptom spikes in relation to emotional processing and depression outcomes.

The rapid early response has been variably defined (see Lambert, 2005 for review). However, early symptom change in CBT is thought to be associated with "remoralization" that occurs early in therapy (Howard, Moras, Brill, Martinovich, & Lutz, 1996) and reflects an increase in hope resulting from a strengthening of belief that change is possible and that therapy might be helpful in alleviating change (Kuyken, 2004). The rapid response has been cited as evidence to challenge Beck et al.'s (1979) cognitive mediation hypothesis, since cognitive modification strategies are not commonly applied during the early stages of therapy (Ilardi & Craighead, 1994, 1999).

Ilardi and Craighead argue that the rapid early response is consistent with improvement by non-specific processes common to all psychotherapies, such as talking about ones problems with a warm, attentive professional. The rapid response was replicated in Hayes et al. (2007b) study, and clients who experienced a rapid early response expressed greater hope in early narratives compared to those who did not and showed better outcomes at post-treatment. This provides some support for the notion of rapid early response as evidence of remoralisation, consistent with the phase model of psychotherapy. More

recently, early response to treatment has been studied using more advanced statistical methods (e.g. Forand & DeRubeis, 2013; Haas, Hill, Lambert, & Morrell, 2002). Forand and DeRubeis (2013) reported that pre-treatment anxiety predicted early rapid change in depression symptoms in CBT and antidepressant treatments for depression, but that early response did not predict positive outcomes. They suggest that anxiety may influence responsiveness to common therapy factors. However, the mechanisms linking rapid response to longer-term outcome is unclear (Lambert, 2005) and the debate over the precedence of specific versus common factors in therapy continues. Lambert (2005) speaks to the dilemma and points to the importance of examining trajectories of treatment response and their causes to help to clarify active ingredients of therapy.

Thus, preliminary evidence suggests that hope and emotional processing may be associated with discontinuities in symptom change and predict improved client outcomes (Hayes et al., 2007b). However, Hayes et al. studied an exposure-based cognitive therapy intervention expressly developed to target these constructs. It is not clear whether these findings would generalise to the original protocols (Beck et al., 1979) more commonly used in CBT practice and to in-session hope and processing. Adler et al. (2013) recently studied emotional processing in the context of routine clinic psychotherapy and found that higher levels preceded sudden gains in mental health, as did narrative coherence. They concluded that developing new insight and making meaning in therapy is associated with subsequent sudden gains.

The literature presented on the shape of change in CBT for depression demonstrates evolving understanding about the process of change and has highlighted important client processes that may mediate therapeutic change,

specifically hope (Ilardi & Craighead, 1994; Kuyken 2004), emotional processing (Hayes et al., 2007b) and cognitive shifts (Tang & DeRubeis, 1999). However, understanding facets of therapy that predict these changes is still lacking.

Future Directions for Research

Therapy variables. Literature examining discontinuous trajectories of therapeutic change has for the most part, concentrated on client processes during these periods of rapid change. Yet, therapist variables consistently account for a significant proportion of the variance in outcome in CBT (e.g. Okiishi et al., 2006) and there is a body of literature to suggest that therapist competence is associated with improved client outcomes (Trepka, Rees, Shapiro, Hardy, & Barkham, 2004). This suggests that the way in which therapy is provided can influence client outcomes. Furthermore, therapy is inherently a dynamic interaction between therapist and client, hence, research needs to attend to client, therapist and their interaction in order to understand the complexities of the process of therapeutic change (Llewellyn & Hardy, 2001). This appears to be a field deserving of increased attention. A better understanding of the role of therapy factors in periods of transition may help to improve treatments and yield pragmatic implications for clinical decision-making (DeRubeis, Brotman & Gibbons, 2005).

Treatment-resistant depression. There is no consensus definition for treatment-resistance, but typically treatment-resistant depression refers to the persistence of depression despite treatment that might be expected to be effective (Fava, 2003). It is a relatively common occurrence affecting up to 50-60% of people treated with an adequate course of antidepressant medications (Fava, 2003; Trivedi et al., 2006).

Persistence of depression despite treatment has significant adverse consequences for psychological wellbeing and social functioning (Moore & Garland, 2003). Higher levels of demoralisation and hopelessness are observed compared to acute depression (Thase, 1994), and as more treatment steps are required, the likelihood of remission diminishes and relapse rates rise (Rush et al., 2006). In conceptualising persistent depression, Moore and Garland (2003) describe a long-term vicious cycle where successive treatment failures reinforce hopeless beliefs and the persistence of depression (despite intervention) negatively impacts self-esteem. Chronic patterns of cognitive, emotional and behavioural avoidance and social withdrawal are activated and serve to maintain depression; these patterns become more entrenched and disruptive as depression persists. Moore and Garland note that offering cognitive interventions to help clients to address chronic patterns of avoidance in therapy frequently results in transient symptom disturbance prior to therapeutic benefit (p.36), and so non-linear trajectories may be expected in this population.

The process of therapeutic change is under-researched in this population; yet understanding change processes in people who struggle to attain therapeutic change, may help to elucidate factors underlying non-response to treatment and enhance the potency of intervention. As discussed here, hope and emotional processing represent candidates identified in the literature that may help to explain rapid symptom change. The paucity of research in treatment-resistant populations means that hypotheses as to the shape and process of change must be speculative, but given theoretical accounts emphasising the prominence of avoidance and hopeless beliefs in persistent depression, one may expect the clinical significance of emotional processing and remoralisation to be magnified. This is supported by evidence suggesting

that emotional processing is associated with improved outcomes in dialectical behaviour therapy for people with treatment-resistant depression (Feldman, Harley, Kerrigan, Jacobo & Fava, 2009). Therefore, treatment resistant depression presents a promising avenue for research examining discontinuities of change and their concomitant processes in order to understand inhibitors and facilitators of therapeutic change.

Methodological Issues and Challenges

Identification of discontinuities is a growing field and enables focused research of change processes. However, there are limitations to the literature reviewed here. Much of it relies on correlational data, meaning that causality cannot be inferred, small samples and a lack of appropriate controls are also impediments to interpretation. These are often casualties associated with process research that is less well funded than outcome research. Another issue with the study of discontinuities is the inconsistent operationalisation of change patterns and measurement of process, which limits the capacity to compare findings (Llewellyn & Hardy, 2001). Progress to build upon the extant literature can be achieved by concerted programmes of theory-driven research drawing upon sophisticated and diverse range of methodologies.

Laurenceau et al. (2007) identified core aims for process research to study the course of symptom change over time and to identify moderators and mediators of change. Psychotherapeutic change has often been studied using cross-sectional aggregated data at pre- and post-treatment (e.g. Elkin, 1989). However, this rests on the assumption that change is linear and universal and, as discussed, there is mounting evidence that this is not so. Client heterogeneity in response to treatment is masked by such approaches (Cuijpers, van Lier, van Straten & Donker, 2005). This highlights the importance

of longitudinal assessments of outcome, as well as of putative mediating and moderating variables in order to sufficiently measure change over time (Laurenceau et al., 2007). More sophisticated analytic procedures now offer the capacity to distinguish different patterns of symptom change, and test variables that may predict the shape and rate of change (Singer & Willet, 2003).

Kraemer, Wilson, Fairburn and Agras (2002) present a conceptual and analytical framework to facilitate the study of mediators and moderators in psychotherapy research. Mediators are variables that account for the relation between an independent and dependent variable and can point to possible mechanisms through which an intervention might achieve its effects. They should precede symptom change, occur during the course of treatment and be associated with future change. Thus, longitudinal assessment of putative mediators would further analysis of causal mechanisms.

Psychotherapy process-outcome research is concerned with the mechanisms through which client change is achieved and involves the study of factors that may influence therapeutic change, including therapist, client and their interaction (Lambert & Hill, 1994). A considerable challenge facing process researchers is how to appropriately examine this dynamic therapeutic interaction between therapist and client systems (Llewellyn & Hardy, 2001).

Concluding Summary

CBT for depression is an efficacious treatment but there is substantial room for improvement. Empirical understanding of how and why change occurs in CBT for depression is still needed (Kraemer et al., 2002; Kazdin, 2007), yet is integral to efforts to optimise therapeutic change. Exploring individual trajectories of symptom change enables research to move beyond the question

of whether or not CBT is effective to examine *how* change occurs (Barkham, Stiles and Shapiro, 1993).

Discontinuous patterns of change have been identified across the course of CBT for depression and are associated with improved therapy outcomes. Putative client mediating processes have been proposed, but understanding of the therapy correlates is outstanding. Treatment resistant depression represents a costly and debilitating problem. Patterns of therapeutic change are previously unexplored in this population and may offer opportunity to elucidate processes that inhibit and mobilise therapeutic change.

Examining trajectories of change and their mediators and moderators offers a fruitful line of process research. The task is for researchers to respond to methodological challenges to develop understanding of how therapy leads to effective change. Understanding how change occurs has implications for the practice of CBT, for example, supplying the potential to identify clients who may be at risk of treatment failure early on to enable therapists to respond appropriately to enhance response (Lambert, Whipple, Hawkins, Vermeersch, Nielsen, & Smart, 2003).

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Appendix A.

Search Strategy

The following electronic databases were searched: PsycARTICLES, PsycINFO, ISI Web of Knowledge. The search terms “depression” and “cognitive therapy” were used in combination with the following terms one by one “change patterns”, “sudden gains”, “depression spikes” and “rapid early responses” to identify papers for review. The searches were limited to articles published in peer-reviewed journals. Articles were included if they reported an original empirical study of a discontinuous pattern of symptom change observed over the course of cognitive therapies for depression. Relevant papers identified by cross-referencing were included additionally, including those in non-cognitive therapies, where comparison was considered to be informative. Figure A1 illustrates the search process using a flow chart to show the identification of literature for the sudden gains part of the review.

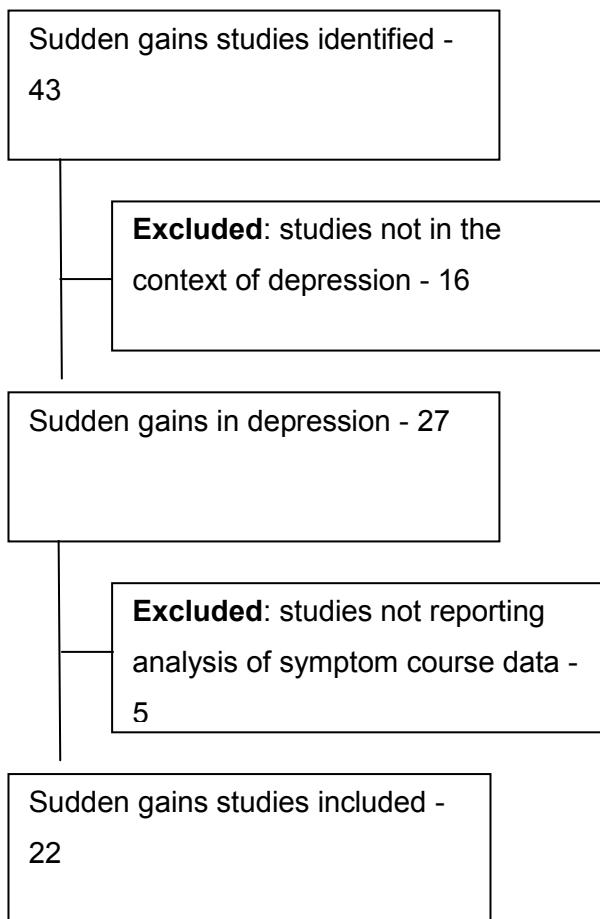


Figure A1. Flow chart depicting the search strategy to identify literature included in review relevant to sudden gains.