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Mechanisms of change: Exploratory outcomes from a randomised controlled trial of acceptance and commitment therapy for anxious adolescents

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1. Introduction

Evaluation of the efficacy of interventions has been the mainstay of clinical research for decades, generating an increasingly complex knowledge foundation of the utility of various psychotherapeutic approaches for disorder and population-specific intervention (Arch, Wolitzky-Taylor, Eifert, & Craske, 2012; Kazdin, 2007). Despite this, we are some way from establishing an empirical account for the basis of therapeutic effects – why and how even our most well-researched psychotherapies work, the processes through which interventions foster positive outcomes – typically termed "the mechanisms of change" (Ciarrochi, Bilich, & Godsell, 2010; Kazdin, 2007; Kraemar, Wilson, Fairburn, & Agras, 2002). Identification of treatment-specific mechanisms of change has been sought to support parsimonious clinical practice, optimising clinician–patient encounters to facilitate shorter term interventions delivered with improved sensitivity and specificity (Kazdin, 2007; Kraemar et al., 2002). While mediators of change, or variables that may statistically explain the relationship between therapy and outcome, are less specific than mechanisms of change – in that they may not account for the exact process through which change occurs – understanding the factors that mediate outcomes is an important precursor to identifying mechanisms (Kazdin, 2007; Kraemar et al., 2002).

Acceptance and Commitment Therapy (ACT) is a behavioural and cognitive psychotherapy that aims to foster psychological flexibility; or the ability to respond to present moment experience of psychological phenomena, with increasing awareness, whilst engaging in value-directed behaviour (S. C. Hayes, Levin, Plumb-Vilardaga, Villatte, & Pistorello, 2013). Described as a "third wave" behavioural and cognitive therapy, ACT reflects a synthesis and reformulation of concepts underpinned by prior waves including traditional cognitive behaviour therapy (CBT). Both ACT and CBT focus on the relationship of unhelpful thoughts and beliefs to psychological distress, utilise experiential learning as well as behavioural techniques and are underpinned by behavioural theory which explains, in part, the presence of psychopathology (Forman & Herbert, 2009; S. C. Hayes, Luoma, Bond, Masuda, & Lillis, 2006). However, these therapies have been distinguished on theoretical foundations, change processes, treatment methods, and primary outcome goals (Gaudiano, 2011). CBT views psychopathology as a consequence of distorted thought patterns that are addressed in treatment through cognitive change processes of cognitive disputation and restructuring, the primary aim being symptom remission or reduction (Beck, 2005; Forman & Herbert, 2009).

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In ACT, psychopathology is construed as a consequence of psychological inflexibility that occurs due to entanglement or fusion with thoughts and subsequent maladaptive efforts to control internal experience ("experiential avoidance") that leads to a decreased capacity to modify or continue exhibiting behaviours that are in the service of personal values (S. C. Hayes et al., 2006; Luoma, Hayes, & Walser, 2007). Founded upon functional contextualism, ACT focuses on the historically and situationally-defined contexts in which psychological phenomena – thoughts, feelings and sensations – occur as the target of change interventions, in contrast to the first-order change of their form or frequency, exemplified by CBT (Blackledge, Ciarrochi, & Deane, 2009; Flaxman, Blackledge, & Bond, 2011; S. C. Hayes, 2004; S. C. Hayes, Villatte, Levin, & Hildebrandt, 2011; Ruiz, 2012). Rather than emphasising symptom remission, ACT aims to foster psychological flexibility via six interrelational core processes – mediators of change – that form a "hexaflex" model; acceptance, defusion, mindfulness, self-as-context, committed action and valued living (Luoma et al., 2007). These therapeutic techniques are adopted to support more flexible responding in relation to distressing thoughts, feelings or sensations, whilst simultaneously living one's values, thereby enhancing quality of life (QOL; Arch & Craske, 2008; Baer, 2003; Ciarrochi & Bailey, 2008; S. C. Hayes et al., 2006; O'Brien, Larson, & Murrell, 2008).

Anxiety disorders are among the most ubiquitous post-modern psychiatric afflictions. ACT has been found to be effective in the treatment of the range of anxiety disorders in a systematic review of 38 studies (Swain, Hancock, Hainsworth, & Bowman, 2013). A recent metaanalysis of nine ACT randomised controlled trials (RCTs) for the anxiety disorders also observed significant large effect sizes (ES) in favour of ACT relative to waitlist control and no significant ES difference relative to alternative manualised treatments (including traditional CBT) across outcome measures (Bluett, Homan, Morrison, Levin, & Twohig, 2014).

Despite the common misperception that ACT is too complex for children, it has been argued that the experiential and metaphorical delivery of ACT processes may be more suitable for children than traditional therapeutic methods such as cognitive disputation (Coyne, McHugh, & Martinez, 2011). Developmental adaptation of ACT processes has been undertaken. A systematic review of ACT in the treatment of problems among children found ACT to produce improvements in symptoms, QOL outcomes and/or psychological flexibility, with many studies demonstrating further gains at follow-up assessment (Swain, Hancock, Dixon, & Bowman, Submitted for publication). This was true for both adolescents and children as young as 6 years. This supports the conclusions of Coyne et al. (2011) – from an earlier review of the ACT literature for children – that ACT processes operate in a similar way among children and adults. Since the conduct of the most recent review, further evidence for the effectiveness of ACT in the treatment of anxiety among children has emerged. In a recent RCT of ACT versus CBT for mixed anxiety disorders, Hancock et al. (Submitted for publication) found ACT produced significant change of equivalent magnitude on clinician, parent and self-report anxiety outcome measures compared to CBT, as well as superior outcomes to waitlist control. However, relative to CBT there are comparatively fewer studies examining proposed mechanisms of change underpinning therapeutic effectiveness among anxious populations for ACT and, to date, none of the existing studies involve child populations. Despite this, one study found a significant relationship between acceptance and defusion and anxiety disorders among 111 inpatient adolescents (Venta, Sharp, & Hart, 2012). This is also in line with Coyne and colleagues' conclusion that child-focused studies generally support ACT's conceptual model in children, adolescents and parents, and that targeting processes such as acceptance and defusion are the indicated next step in research. In addition, given that children and adolescents are typically subsumed within a family system, the influence of specific factors such as family environment, parenting and emotion regulation that may impact these processes are also in need of investigation.

Laboratory-based component studies provide a controlled method of evaluating therapeutic processes of change. A recent metaanalysis of 66 studies was conducted of single-session ACT component conditions versus inactive and/or distinct alternative comparisons on a range of ACT theoretically specified outcomes (e.g. persistence/willingness to engage in a difficult task, belief in distressing cognitions and behavioural outcomes such as academic results) and other outcomes not theoretically postulated to change (Levin, Hildebrandt, Lillis, & Hayes, 2012). Results indicated some support for each of the core processes that make up the ACT hexaflex. The model as a whole was found to have a significantly greater impact on theoretically specified outcomes than inactive conditions, a finding of medium effect size. Whilst support was also identified for the hexaflex model in terms of impact on outcomes related to the intensity and frequency of negative thoughts/feelings, larger effect sizes were observed for theoretically postulated outcomes such as QOL (Levin et al., 2012).

Preliminary research in community settings offers mixed support for the ACT hexaflex model of psychological flexibility and its core component processes as mechanisms for change for the anxiety disorders (Ciarrochi et al., 2010; Forman, Herbert, Moitra, Yeomans, & Geller, 2007; S. C. Hayes et al., 2006). Bluett et al.'s (2014) meta-analysis of 63 studies examined the relationship between anxiety and measures of psychological flexibility. Results showed a significant medium correlation between psychological flexibility and anxiety disorder symptoms among both non-clinical and clinical samples (Bluett et al., 2014). The analysis found modest support for psychological flexibility as a mediator of change. However, mediation effects were treatment-common with no significant differences between ACT and other manualised programs (CBT) identified. For example, in one study defusion was found to be a treatment-common mediator of change in clinical worry, avoidance and QOL for ACT and CBT, but not post-treatment anxiety severity (as measured by the Anxiety Disorders Interview Schedule-IV-Revised) across treatment (Arch et al., 2012). Some evidence for treatment-specific mediation was obtained in the largest formal evaluation of mediation effects treated with ACT or cognitive therapy (CT), among 174 outpatients with anxiety/depression (Forman et al., 2012). Repeated measures of several putative mediator and outcome variables were taken with the Before Session Questionnaire (Forman et al., 2012) – a brief self-report measure that collects ratings on a Likert scale continuum with one pole reflective of CT and the other of ACT putative processes/outcomes – ahead of each therapy session. Results showed an emphasis on acceptance approaches in response to distressing psychological phenomena mediated change in symptom intensity ratings for ACT, but not CT participants (Forman et al., 2012). A movement from an emphasis on cognitive change approaches to that of acceptance across sessions was associated with reduced symptom intensity (Forman et al., 2012). Defusion and committed action were observed to be treatment-common change mediators in this study (Forman et al., 2012). Processes proposed to mediate change in CBT alone have also been found to be treatment-common to ACT such as anxiety sensitivity, dysfunctional thinking, as well as defusion in some studies (Arch et al., 2012; Forman et al., 2012). These findings highlight the need for further research examining an overarching mechanism of change across cognitive behavioural approaches for anxiety disorders.

The existing ACT mediation literature for anxiety is subject to several methodological limitations. Substantial heterogeneity has been observed in study design, sample, data collection schedule, outcomes and measurement tools, treatment protocol and statistical techniques; factors that impact the capacity to draw meaningful conclusions. Few studies have compared ACT to another active psychotherapy to determine whether proposed processes