

The Impact of a Focused Acceptance and Commitment Training Workplace Intervention: Is Less, Less?

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Acceptance and Commitment Training in the Workplace: A Systematic Review

Abstract

Nearly two decades of research has supported the effectiveness of Acceptance and Commitment Therapy when applied to the workplace. Known as Acceptance and Commitment Training (ACT) in workplace settings, research has shown promising results for both health and performance. The purpose of this study is to provide a systematic review of ACT training interventions in the workplace. Our review identified 14 studies that met the criteria specified. Findings indicate that approaches to the implementation of ACT vary. To date, only public sector and voluntary populations have been targeted in earnest.

There are encouraging signs in terms of ACT's ability to ameliorate distress in working populations, particularly with high-stress populations. There is also evidence that ACT can be effective in improving a wide range of performance-related outcomes. This fits the theory behind ACT – that it targets the fundamental processes of both human suffering and effectiveness. The evidence is broadly supportive that ACT training is effective because it improves psychological flexibility – a key process or mechanism of change in human flourishing. Due to the variety of implementation in terms of the content and design of interventions, it is not possible to draw firm conclusions about the most effective format of ACT training. In future it may be necessary to experiment with shorter interventions to see if they can still yield positive outcomes, whilst maintaining clarity over the mechanisms of change. Further research may also be required with different cohorts, in particular looking at its efficacy when implemented across whole organisations.

Keywords: Acceptance and Commitment Therapy, Workplace, Resilience training, Stress management, Systematic Review.

Practitioner Points

- Acceptance and Commitment Training (ACT) has consistently been shown to produce beneficial outcomes in the workplace, particularly for mental health and performance.
- Health outcomes appear strongest for those already at high risk of burnout / mental health problems. However, positive outcomes are not restricted to these groups, and there is evidence to suggest that ACT can improve work-related performance as well as health, lending support for ACT's wider relevance across organisations.
- Being clear about the mechanisms of change in training allows practitioners to target specific processes, and in turn for training to become more accurate and concise.
- At this stage, there is no definitive evidence for the most effective training content or format. Further experimentation and innovation in terms of content, length of session and number of sessions is needed.

Background

The early 21st century is the 'getting more from less' era (Chartered Institute of Personnel & Development, 2009), with great demands placed upon workers in every sector. These demands often translate into stress; in the UK alone, work-related stress accounts for 37% of ill health and 45% of days lost (Health and Safety Executive, 2016). 1 in 6 people in paid employment will suffer a common mental health issue this year (Mental Health Foundation, 2016), and there is evidence that these trends are worsening (Greenwood, 2017). Most recently, the Thrive report estimated the overall cost of poor mental health to the UK economy at £74 - £99 billion p.a. (Stevenson & Farmer, 2017).

Moreover, there may be broader, more systemic issues at play. If stress is an issue in organisations, so too is disengagement. 20% of people are actively disengaged from their work and 60% are not actively engaged. This has implications for productivity – those who are not engaged are 18% less productive (Macleod & Clarke, 2011). In addition disengaged workers are nearly twice as likely to develop depression (Gallup, 2010).

Potentially related to these issues, the information age has added to the amount of content that people must process, leaving many employees feeling thinly spread and distracted. Whilst the ability to process information and learn new skills is at a premium (Bond & Flaxman, 2006), many people feel this is difficult when they have to juggle several streams of information simultaneously. These feelings of distraction again have implications for performance - those who juggle perform worse than those with higher task focus (Nass, Ophir & Wagner, 2009) – but they are also associated with lower rates of mental wellbeing (Gilbert & Killingsworth, 2010).

Given these challenges, treating 'mental health' as a discrete problem affecting a minority seems outdated. One of the Thrive report's (2017) explicit assumptions was that mental health affects us all:

"We start from the position that the correct way to view mental health is that we all have it and we fluctuate between thriving, struggling and being ill and possibly off work."

(Stevenson & Farmer, 2017, p. 5).

Whilst organisations have an incentive to address these issues, they may also have a unique role in doing so. 75% of people suffering from a mental health issue will never receive any form of psychological support (Seymour & Grove, 2005), placing extra emphasis on other forms of support such as training to help people deal with the demands of the modern workplace. Identifying effective forms of training which provide practical skills to help people in distress whilst also addressing the broader, more systemic issues of disengagement and distraction are clearly needed.

With an established link between psychological well-being and improved work-related outcomes (Robertson Cooper et al., 2013), positioning training in such a way seems fully justified. Mental health is a potential source of competitive advantage. Along with a moral case there is also a strong business case for such training. Given the demands of the 21st century, it is in the interests of both organisations and individuals to help employees not only survive demanding environments, but to thrive in them.

Acceptance and Commitment Training as a Stress Management Intervention

Of the individually-focused stress management interventions, a recent meta-analysis revealed that cognitive behavioural therapy (CBT)-based approaches are the most established interventions for work-related stress (Richardson & Rothstein, 2008). Within this field, there is mounting evidence that so-called 'third-wave' or contextually-based interventions, specifically in the form of Acceptance and Commitment Training (ACT), can prove effective not only for health and wellbeing outcomes but also for performance (e.g. Moran, 2011). Moreover, the components of ACT seem ideally placed to help deal not only with distress, but the wider systemic issues of distraction and disengagement. A strong mindfulness component may help reduce distraction and improve task focus. Combining this with an explicit focus on values and committed action may simultaneously help people to find ways of creating meaning, purpose and engagement, even where opportunities to do so seem superficially limited.

Over the past 2 decades ACT-based interventions have been shown to be effective for a wide range of workplace health outcomes including depression (Bond & Bunce, 2000), burnout (Lloyd, Bond & Flaxman, 2013) and general mental health (Brinkborg, Michanek, Hesser & Berglund, 2011). Yet ACT has also shown it can provide skills which are useful

beyond clinical populations. It has been associated with a wide variety of performance-related outcomes (e.g. Bond & Bunce, 2000; Varra, Hayes, Roget & Fisher, 2008) and has been shown to be effective with diverse working populations including military personnel (Harvey, Henricksen, Bimler & Dickson, 2017), media (Bond & Bunce, 2000), local government officers (Flaxman & Bond, 2010b) and administrators (Burton, Pakenham & Brown, 2010).

A final critical aspect of ACT research is its relative clarity on the mechanisms by which positive outcomes are generated. This allows practitioners and clients to understand not just *that* ACT training is effective, but *why* it is effective (e.g. Flaxman & Bond, 2010b; Lloyd, Bond & Flaxman, 2017). In theory this enables training and coaching to become more accurate and concise.

Collectively, these data may be suggestive of the need to train more employees in ACT. There have been calls to get ACT into the 'water supply' of organisations so that employees can learn it as a general workplace skill (Archer & Collis, 2011). From both an employee and organisational perspective, the ability to generate positive outcomes in both health and performance from one intervention is clearly appealing especially in ever more demanding times.

What is Acceptance and Commitment Training?

Acceptance and Commitment Training (ACT) is based on Acceptance and Commitment Therapy, which is a form of contextual behavioural science (CBS). It is rooted in a philosophy of science called functional contextualism, which emphasizes a pragmatic approach to human behaviour through the concept of workability. That is, thoughts and beliefs are not judged as being correct or incorrect per se, but whether they are useful (or workable) to achieve a more values-led life.

In clinical terms, ACT is a 'transdiagnostic' intervention (e.g. Muto & Mitamura, 2011). Namely, it applies the same underlying treatment principles across mental disorders. ACT focuses on the fundamental processes of change, rather than an emphasis on any particular disorder or situation. "In ACT, our focus is not on the myriad displays of human suffering (symptoms and syndromes) but rather on the processes that control the whole show" (Hayes, Wilson & Strosahl, 2012, p.60).

This focus on process means that ACT can be conceptualised as a fundamental approach to *all* human behaviour, the model's core features being broadly responsible for human adaptability and its opposite, human suffering.

The model that underlies ACT is focused on a set of processes that contribute both to the alleviation of human suffering but also to its promotion of effective behaviours that help promote valued living (Hayes, Strosahl & Wilson, 2012). To give one example, ACT is used extensively with chronic pain, not necessarily to control or alleviate the pain experienced, but rather to increase the vitality and meaning in life for those in pain (e.g. Dahl & Lundgren, 2006).

The central objective of all ACT interventions is to enhance psychological flexibility, which is defined as:

“Contacting the present moment fully as a conscious human being and persisting with or changing a behaviour in the service of chosen values, and based on what the situation affords, changing or persisting in behavior in the service of chosen values” (Hayes, Wilson & Strosahl, 2012, p. 96-7).

In practice, those higher in psychological flexibility are more able to move towards important values and goals, even in the presence of difficult thoughts and emotions. It is this central skill which has been shown to be the mediator (or “generative mechanism”, Baron & Kenny, 1986, p. 1173), by which positive individual and organizational outcomes have been made. In total 45 clinical studies have shown that psychological flexibility mediates positive outcomes (ACBS, 2016). Several workplace studies have also shown that psychological flexibility predicts improved performance (e.g. Flaxman & Bond, 2010b) and mental health (Bond & Bunce, 2000).

Psychological flexibility addresses a wide range of skills and abilities which are not limited to improving mental health. It is a broad, multi-dimensional concept which helps people to ‘unhook’ from difficult thoughts and emotions, shift behaviours when the situation changes, to experiment with different strategies to determine the most effective and workable solution and to maintain balance between different domains of life (Kashdan & Rottenberg, 2010).

Given this broadly applicable and contextually sensitive definition, it is no surprise that ACT has shown to be effective across a wide range of outcomes relevant to organisations. By harnessing mindfulness skills to values and committed action, ACT helps people not only deal with stressful situations more effectively, but to move towards their most important values and goals. By adopting a mindful approach, people spend less effort struggling with their internal experiences, and more on finding opportunities to move towards their most important goals and values. This, in turn, facilitates both better mental health (Baer, 2003; Hayes, Luoma, Bond, Masuda & Lillis, 2006) and improved goal-focused behavior (Bond & Flaxman, 2006).

At a theoretical level, the implementation of ACT is often based on 6 core processes: acceptance, defusion, self-as-context, contacting the present moment, values clarity, and committed action (Hayes, Strosahl, Bunting, Twohig & Wilson, 2004). When ACT is used as therapy, each of these areas is a potential area for intervention and collectively the interconnected processes attempt to develop psychological flexibility. Nevertheless there is no set formula for ACT. It is not necessary to cover all six processes, so long as psychological flexibility is being promoted. Therefore, the exercises, metaphors and paradoxes used tend to be eclectic. With no single way to train or implement ACT some have called for ACT interventions to be made briefer (Strosahl, 2016). This may suit organisations too, as so many employees find themselves unable to take significant of time away from the workplace for training (see Bethay et al., 2013).

Given this, ACT seems ripe not only for a wider audience but for innovations in terms of delivery, particularly with shorter interventions, to enable it to become part of the “water supply” of healthy and productive organisations.

The present study

There is evidence to support ACT’s effectiveness in the workplace, both in terms of health and wellbeing outcomes as well as performance-related variables. Psychological flexibility is seen as an individual determinant of both mental health and behavioural effectiveness (Hayes, Strosahl & Wilson, 1999).

However, to date there have been no attempts to review or synthesise the evidence in terms of ACT’s effectiveness as a training intervention in the workplace. To this author’s

knowledge no systematic review has yet taken place, though one meta-analysis is in preparation (F. Bond, personal communication, May 30th, 2017).

In order to understand better the evidence for using ACT in the workplace, this review therefore aims to understand some of the contextual features of ACT research to date. Namely, the types of intervention used, the cohorts it has been aimed at and the mechanisms of change involved in any beneficial outcomes.

In summary, the purpose of this review is to establish a better understanding of the:

1. **State of ACT research** in organisations; Specifically, the number of published articles relating to ACT training in the workplace, and whether this number is increasing, and insight into what is needed in terms of new research.
2. **Types of ACT training** being used in the workplace, particularly the duration, length and structure of training content. Essentially, to understand: the kind of innovations that are being used (for example in-house delivery or shorter interventions), whether some types of ACT training are more effective than others, the use of ACT in conjunction with other ideas or organizational initiatives and details on who is conducting the training.
3. **Populations** being used in research; In terms of the type of sectors and populations which ACT training being aimed at, whether ACT training is being implemented across organisations - or mainly in smaller groups and / or volunteers -and whether it is being positioned as useful for only the individuals concerned with mental health?
4. **Kind of outcomes are being achieved;** 1) What kind of outcomes are being targeted? 2) How effective is ACT in terms of outcomes? 3) Do mental health outcomes improve only for those already stressed or is it helpful to all? 4) Is ACT training mainly aimed at mental health and wellbeing outcomes, or performance too? 5) in keeping with ACT theory, are any beneficial outcomes being achieved through an increase in psychological flexibility?

Method

In May 2017 a computerised literature search was conducted of three databases: PsycINFO, Business Source Premier (EBSCO), and ABI/INFORM Collection. The search parameters were as follows: Acceptance and Commitment* (therapy, training, coaching), Psychological Flexibility, Work* (workplace, worksite, workers), Empl* (employees), Organi* (organisation/ organization), Intervention, Training, Program*.

Only references published in English since 2000 were sought. This cut-off date was chosen because the authors were aware of the first ACT workplace intervention taking place in 2000 (see Bond & Bunce, 2000).

To identify any additional published or unpublished studies, known experts in the field were contacted and asked to provide any unpublished research and suggest relevant research studies that might not be included in academic databases. A manual search was also conducted based on reference lists of selected papers. A digital Dropbox was used to store and manage the studies identified. Duplicate records were removed before the selection process was conducted.

Selection of papers for inclusion

Papers were selected for inclusion if they were published in peer-reviewed journals, empirical studies, and published in the English language. A list of 1,108 studies was compiled from the four electronic databases cited above. After duplicates were removed, this became 239.

Initially, bibliographic records retrieved from the literature searches were subjected to a broad screening process on the basis of their titles. Those titles that suggested the reference was about ACT in the workplace with employee populations were retained. Two researchers (RA and RL) independently carried out the broad screening process with any discrepancies included in the next stage. 40 articles were identified at this stage and full abstracts obtained.

The abstracts were then subjected to a narrow screening process using specific inclusion and exclusion criteria, based on the SPIO framework: Study design, Participants, Interventions and Outcomes (Robertson et al., 2015). See Table 1 for the specific inclusion

and exclusion criteria used. For the 27 abstracts that appeared to meet these selection criteria, full papers were sought.

[INSERT TABLE 1 HERE]

Full papers obtained were subjected to a further narrow screening using the SPIO inclusion and exclusion criteria. Two researchers (RA and RL) independently carried out the broad and narrow screening process, with a third researcher (JY) providing adjudication whenever discrepancies arose. The flow diagram in Figure 1 sets out the literature retrieval and selection process.

[INSERT FIGURE 1 HERE]

For those abstracts that appeared to meet these selection criteria, full papers were sought. Full papers for 27 articles were obtained and a further 3 references were found from a hand search and after contact with key researchers in the field. One of these papers, (Waters et al., 2017) had been published after the date of the initial search.

These papers were subjected to a further narrow screening using the SPIO inclusion and exclusion criteria. This left a total of 14 studies which met all inclusion criteria.

Data extraction

We developed a data extraction tool adapted from other systematic review papers (e.g. Robertson et al., 2015). The data extracted included information on the study design and purpose, the population sample and selection methods, the intervention used, and the outcomes measured and achieved in each paper. Each paper was reviewed fully at this point and the relevant data extracted into the tool for synthesis and analysis.

Results

The search of databases retrieved 1108 records, which were reduced to 239 once duplicates were removed. Following broad and narrow screening, 14 papers were considered suitable for inclusion in the review: Bethay, Wilson, Schnetzer, Nassar and Bordieri (2013); Bond and Bunce (2000); Brinkborg, Michanek, Hesser and Berglund (2011); Burton, Pakenham and Brown (2010); Flaxman and Bond (2010a); Flaxman and Bond (2010b); Harvey, Henricksen, Bimler, and Dickson (2017); Hayes et al. (2004); Lloyd, Bond and Flaxman (2013); McConachie, McKenzie, Morris and Walley (2014); Noone and Hastings (2010); Stewart et al. (2016); Varra, Hayes, Roget and Fisher (2008); Waters, Frude, Flaxman and Boyd (2017).

Table 2 provides a summary of the study, participant population and intervention characteristics of these 14 papers, and each of these areas is considered in turn below.

There is some increase in the pace of published papers of this kind. The first paper (Bond & Bunce, 2000) was published in 2000. This was followed by two further papers that decade. Since 2010, 11 papers of this kind have been published.

[INSERT TABLE 2 HERE]

Study characteristics

Country of origin

Of the 14 studies, seven were conducted in the United Kingdom (Bond & Bunce, 2000; Flaxman & Bond, 2010a; Flaxman & Bond, 2010b; Lloyd et al., 2013; McConachie et al., 2014; Noone & Hastings, 2010; Waters et al., 2017), three were in the United States of America (Bethay et al., 2013; Hayes et al., 2004; Varra et al., 2008), one was conducted in Australia (Burton et al., 2010); one in Sweden (Brinkborg et al., 2011); one in New Zealand (Harvey et al., 2017), and one in Sierra Leone (Stewart et al., 2016).

Study design

Of the 14 studies, 10 conducted randomised control trials (Bethay et al., 2013; Bond & Bunce, 2000; Brinkborg et al., 2011; Flaxman & Bond 2010a; Flaxman & Bond, 2010b; Hayes et al., 2004; Lloyd et al., 2013; McConachie et al., 2014; Varra et al., 2008; Waters et al.,

2017). The remaining four studies used a quasi-experimental pre-post design (Burton et al., 2010; Harvey et al., 2017; Noone & Hastings, 2010; Stewart et al., 2016).

Eight studies used a waitlist control group (Bond & Bunce; 2000; Brinkborg et al., 2011; Flaxman & Bond, 2010a; Flaxman & Bond, 2010b; Harvey et al., 2017; Lloyd et al., 2013; McConachie et al., 2014; Waters et al., 2017). Five studies used an active control group that received other treatment or training: Applied Behavioural Analysis training (Bethay et al., 2013), an Innovation Promotion Program (Bond & Bunce, 2000), Stress Inoculation Training (Flaxman & Bond, 2010a), Multicultural Training or MDMA training (education training about biological factors in addiction and treatment) (Hayes et al., 2004) and educational training in prevention strategies in addiction (Varra et al., 2008). Two of these studies used both a waitlist control group and an active control group (Bond & Bunce, 2000; Flaxman & Bond, 2010a). Three studies reported using no control group (Burton et al., 2010; Noone & Hastings, 2010; Stewart et al., 2016).

Data collection

Six studies collected data at two time points: pre-intervention and post-intervention (Burton et al., 2010; Noone & Hastings, 2010); pre-intervention and at 2-week follow-up (Brinkborg et al., 2011); pre-intervention and at 1-month follow-up (Harvey et al., 2017); and pre-intervention and at 3-month follow-up (Flaxman & Bond, 2010a; Waters et al., 2017).

Six studies collected data at three time points: pre-intervention, post-intervention and at 3-month follow-up (Bethay et al., 2013; Hayes et al., 2004; Stewart et al., 2016; Varra et al., 2008), pre-intervention, mid-intervention 6 weeks later and at 6-week follow-up (McConachie et al., 2014), pre-intervention, mid-intervention 3 months later and at 3-month follow-up (Flaxman & Bond, 2010b).

Two studies collected data at four time points: at each of the three intervention sessions and again at week-27 follow-up (Bond & Bunce, 2000), and at each of the three intervention sessions and again at 6-month follow-up (Lloyd et al., 2013).

Participant characteristics

Demographics

Across the 14 studies, there was a total of 1,423 participants. All of the studies included information on the age of their participants. The lowest age mean age was 34 (in Stewart et al., 2016) and the oldest age mentioned was 53.7 (in Varra et al., 2008). One of the studies published ages in a range (Harvey et al. 2017). McConachie et al. (2014) provided median age, which was 43.

For the 13 studies that provided information about gender split (excluding Flaxman & Bond, 2010b), there appeared to be a bias to predominantly female participants (Bethay et al., 2013; Brinkborg et al., 2011; Burton et al., 2010; Flaxman & Bond 2010a; Hayes et al., 2004; Lloyd et al., 2013; McConachie et al., 2014; Noone & Hastings 2010 and Waters et al., 2017). In one instance this bias was reversed with predominantly (84%) male participants (Harvey et al. 2017).

In one study (Burton et al., 2010), it was reported in the discussion that there was a majority female population, but their descriptive statistics reported 15 male and 3 female. The current author assumed this was a typing error and corrected this by swapping the values to be 15 female and 3 males. Numbers reported here reflect this correction. One study by Bond and Bunce (2000) had an even 50/50 split between the genders. The Stewart et al. (2016) and Varra et al. (2008) studies also had an approximately balanced split between both genders (54% female and 58% female respectively).

Of the 1112 participants for whom gender information was provided, 635 (57.10%) were women. However, without the Harvey et al. (2017) study, this figure increases to 601 women out of 850 participants – or 71% of the total.

Finally, 6 studies provided information about participant ethnicity (Bethay et al., 2013; Harvey et al., 2017; Hayes et al., 2004; Lloyd et al. 2013; Stewart et al., 2016; Varra et al., 2008). Of these 6, there appears to a bias to predominately Caucasian-European populations (see, e.g. Hayes et al., 2004; Lloyd et al., 2013). There were only two populations that was not predominately Caucasian, one in which 52% were of Mende background in Sierra Leone (Stewart et al., 2016) and another where 39.69% were New

Zealand European, and the rest of participants were of Maori, Pacific Island, European, African, Asian and other ethnicities (Harvey et al., 2017). One study reported a balanced split in ethnicity (Bethay et al., 2013) where 50% were Caucasian and 50% African-American.

Occupational setting

Seven papers specified a particular organization; a large, state-funded residential facility (Bethay et al., 2013), a large media organisation (Bond & Bunce, 2000), the City of Stockholm (Brinkborg et al., 2011), the University of Queensland (Burton et al., 2010), the New Zealand Defence force (Harvey et al., 2017), a large UK government organization (Lloyd et al., 2013) and a large health care organization (Waters et al., 2017).

Three papers specified more than one specific organisation: large local government organisations (Flaxman & Bond, 2010a; 2010b), independent care organisations (McConachie et al., 2014) and independent care organizations and the National Health Service (Noone & Hastings, 2010).

In total, six of the 14 studies were conducted outside of education or healthcare settings: the military (Harvey et al., 2017), media (Bond & Bunce, 2000), local government (Flaxman and Bond 2010a; 2010b), large government department (Lloyd et al., 2013), and Non-governmental organisations (Stewart et al., 2016). All of the studies took place in the public sector.

Occupations

In nine studies participants fulfilled varying occupations within one organisation or similar organisations. This included psychologists, special education teachers and assistant teachers, direct care staff nurses and social workers from a state-funded residential facility for individuals with intellectual disability (Bethay et al., 2013); personnel from council tax, environmental health, housing, social services, education, finance, and libraries from a UK local government organization (Flaxman & Bond 2010b); personnel from across the New Zealand Defence Force (Harvey et al., 2017); nurses, allied health professional and non-clinical roles in a large health care organization in Wales, UK (Waters et al., 2017); support staff involved in the direct care of individuals with intellectual disability in independent care organisations in Scotland (McConachie et al., 2014); support staff working in a variety of

community residential service settings for adults with intellectual disabilities (Noone & Hastings, 2010); managerial, creative, and technical roles in a large media organisation (Bond & Bunce, 2000); roles from across a large UK government department (Lloyd et al., 2013) and roles from across two large local UK government organisations (Flaxman & Bond 2010a);

In three studies participants fulfilled specific occupations within a region or City sector; licensed or certified alcohol and drug abuse counselors in Nevada (Hayes et al., 2004); Social workers from across the city of Stockholm (Brinkborg et al., 2011); drug and alcohol counselors' preregistered attendees at a conference on substance abuse treatment in Reno, Nevada (Varra et al., 2008).

One study drew together various occupations drawn from a region or City; a mix of non-specialist workers and professionals from over 20 different NGOs and religious orders in Bo and Freetown, Sierra Leone (Stewart et al., 2016).

Use of volunteers

In all studies bar one, the participants were volunteers. The one exception, Harvey et al. (2017) had participants who had been selected and referred according to military protocol.

Intervention characteristics

Intervention length

The first ACT in the workplace paper, Bond and Bunce 2000, used a so-called '2+1 model' which became the original ACT protocol for the workplace. This 2+1 model was based on Barkham and Shapiro's 1990 original protocol for psychotherapy delivery, in which groups of participants receive three half-day workshops: two delivered one week apart, with a third 3 months later. Three studies used the 2+1 model of delivery based on Bond and Bunce's original model (Bond & Bunce, 2000; Flaxman & Bond, 2010b; Lloyd et al., 2013).

Seven of the other studies were shorter in length than the 2+1 protocol. Four studies comprised a single 1-day ACT workshop (Bethay et al., 2013; Hayes et al., 2004; Varra et al., 2008), Waters et al., 2017). Two further studies comprised a full day workshop, followed by a half day refresher session. McConachie et al. (2014) had the refresher session after 6

weeks, Noone & Hastings (2010) held the third session 'after several weeks'. Flaxman & Bond (2010a) was delivered over two half-day workshops.

Four studies were longer in length than the 2+1 protocol. Harvey et al. (2017) was run across 5 full days; Brinkborg et al. (2011) consisted of four sessions of 3 hours each, provided every other week; Burton et al. (2010) consisted of 11 two-hour group sessions run weekly over 13 weeks and Stewart et al. (2016) was a 3 day long workshop with an additional day of supervision. On average the 14 studies had 3 contact points (i.e. training interventions on different days).

Intervention duration

Comparing the number of hours of input provided by the interventions in these studies, five studies involved interventions that provided six hours of input: (Bethay et al., 2013; Flaxman & Bond, 2010a Hayes et al., 2004; Varra et al., 2008; Waters et al., 2017). Three studies involved interventions that provided between 6 and 10 hours of input: 9.75 in the case of Bond and Bunce (2000) and 9 hours in both Flaxman & Bond (2010b) and Lloyd et al. (2013). Two studies had over 10 hours of ACT input: 12 hours in the case of Brinkborg et al. (2011) and 22 hours in the case of Burton et al. (2010).

Four studies stated their timings in terms of days; 1.5 days in the case of McConachie et al. (2014) and Noone and Hastings (2010); 3 days (+ 1 day supervision for some of the participants) in the case of Stewart et al. (2016) and 5 days in the case of Harvey et al. (2017).

If 6 hours per day is assumed to be typical for a full-day training session, a range of intervention durations ran from six hours of input (Bethay et al., 2013; Flaxman & Bond 2010b; Hayes et al., 2004; Waters et al., 2017; Varra et al., 2008) to a total of 30 hours of input (Harvey et al., 2017). The mean average intervention duration was 10.6 hours of input.

In addition to intervention duration itself, half of the studies explicitly mentioned that time was allowed for self-study and / or home practice outside of the interventions. These studies include Bethay et al. (2013), Bond and Bunce (2000), Brinkborg et al. (2011), Burton

et al. (2010), Harvey et al. (2017), Lloyd et al. (2013) and McConachie et al. (2014). In one further study homework was implied but not made explicit (Noone & Hastings, 2010).

Intervention delivery

Four studies reported on the range of group size: 7-30 (Brinkborg et al., 2011), 8-12 (Lloyd et al., 2013; Waters et al., 2017) and 3-10 (McConachie et al., 2014).

Other studies did not explicitly state group size but did discuss numbers allocated to condition, with no mention of additional workshops – thereby meaning the likelihood of group sizes being the same as condition numbers. This includes group sizes of 17 and 18 respectively (Waters et al., 2017), 30 (Bond & Bunce, 2000; Hayes et al., 2004; Varra et al., 2008) and 26 and 31 respectively (Stewart et al., 2016).

All interventions were delivered by external facilitators with previous ACT experience with one exception. The Waters et al. (2017) study adopted a practice-based approach, by evaluating a full-day ACT workshop being offered as a routine and integral part of an organization's clinical support provision for psychologically distressed staff.

Intervention content

Of the 14 studies, two studies explicitly covered all aspects of the ACT hexaflex/ all 6 of the ACT mid-level processes (Harvey et al., 2017; Stewart et al., 2016). The remaining studies focused on various combinations of mindfulness skills and values clarification with behavioural commitments (Lloyd et al., 2013). One study mentioned the ACT matrix (Stewart et al., 2016), which is a relatively new approach to developing psychological flexibility (see Polk & Schoendorff, 2014) but which also covers elements of mindfulness and perspective-taking, along with values and committed action. The possible exception was Bond and Bunce (2000) who covered mindfulness and acceptance skills extensively but did not mention values. However, on checking, this intervention did include a brief values component (F. Bond, personal communication, October 6th, 2017).

Two of the study interventions included content which was extraneous to ACT theory, yet which worked to situate the intervention in context. The READY model (Burton et al., 2010) used an ACT based approach but targeted five key resilience protective factors that were

identified from empirical literature. Harvey et al. (2017) included sections on Army values, anger and alcohol, all of which were relevant to the population being addressed.

Only six studies explicitly stated they included content which helped situate ACT in the context of the particular stressors involved in their roles. Bethay et al. (2013) included sections on work stressors and coping strategies to address the particular difficulties encountered by intellectual disabilities staff, such as perceived lack of support from coworkers. Lloyd et al. (2013) took a broader approach – work life effectiveness (i.e. deliberately targeting ‘life’ as well as ‘work’). Similarly in Waters et al. (2017), participants were invited to reflect and share within the group how they might transfer the learning into their daily lives. The explicit objective of the McConachie et al. (2014) study was to change the way support staff reacted to stressful situations, such as supporting clients who displayed challenging behaviour. Similarly, the Varra et al. (2008) study sought to situate the ACT training around specific challenges of the role, for example discussing what barriers to learning new and evidence-based treatments they encounter in their current place of employment. Finally, the Stewart et al. intervention (2016) was aimed at helping participants to implement ACT with their clients and explored differences in context in terms of delivering ACT training in Sierra Leone.

Outcomes

In terms of outcomes, the purpose of this review is to establish:

1. Whether there is evidence that ACT training is effective, by providing an overview of results achieved in the studies examined;
2. Whether there is evidence to suggest that ACT is more effective in particular areas, for example mental health, or whether its impact is broader?
3. Whether there is evidence to suggest some formats of ACT training are more effective than others, particularly looking at the structure and duration of training.
4. The mechanisms of change involved in achieving beneficial outcomes. Is there evidence to suggest psychological flexibility mediates positive outcomes?

1. Overview of Results achieved

This section provides an overview of outcomes achieved in the 14 studies. In terms of outcome measures, all of the 14 studies relied on self-reported measures. Only one study (Burton et al., 2010) provided objective data where pedometer step counts, height, weight, blood pressure and hematological data were collected.

In terms of outcomes achieved, this review will look at the effect of ACT training in three broad categories of dependent variables relating to 1) mental health and subjective well-being outcomes (see Table 3), 2) performance outcomes (see Table 4) and 3) Psychosocial outcomes (see Table 5), Other outcomes (e.g. biological / lifestyle, see table 6) and outcomes by intervention/ intervention length (see Table 7 & 8). Process measures are examined in Table 9.

1.1 Mental ill-health outcomes

Of the 14 studies, 12 measured outcomes of mental ill- health. This includes terms of psychological distress, stress, anxiety, depression, sick leave or medical utilization and burnout (excluding Stewart et al., 2016; Varra et al., 2008).

Nine of these studies measured distress using the General Health Questionnaire-12 (GHQ-12) (Bethay et al., 2013; Bond & Bunce, 2000; Brinkborg et al., 2011; Flaxman & Bond, 2010b; Flaxman & Bond 2010a; Lloyd et al., 2013; McConachie et al., 2014; Noone & Hastings, 2010; Waters et al., 2017). One used the 21-item Depression Anxiety Scale (DASS-21) (Burton et al., 2010). One used the Beck Depression Inventory (Bond & Bunce, 2000), one used Ryff's Scale of Psychological Wellbeing and the Center for Epidemiological Studies Depression Scale (CES-D) (Burton et al., 2010). Another used the Warwick-Edinburgh Mental Well-Being Scale (WEMWBS) (McConachie et al., 2014). Two studies used the Perceived Stress Scale (Brinkborg et al., 2011; Harvey et al., 2017) and another two studies used the Staff Stressor Questionnaire (McConachie et al., 2014; Noone & Hastings, 2010). One used the brief Generalised Anxiety Disorder Screen-7 (Harvey et al., 2017). Another used the Buss-Perry Aggression Questionnaire (Harvey et al., 2017). Two used the Maslach Burnout Inventory (Brinkborg et al., 2011; Hayes et al., 2004), and another two used the Maslach Burnout Inventory-Human Services Survey (Bethay et al., 2013; Lloyd et al., 2013).

[INSERT TABLE 3 HERE]

1.2 Performance outcomes

4 of the 14 studies measured performance in varying ways. Bond and Bunce (2000) measured propensity to innovate (conceptualised as attitudes toward innovation and change at work) using a scale from Burningham and West (1995). Hayes et al. (2004) measured the occurrence of stigmatising attitudes toward the mentally ill by substance abuse counsellors using the Community Attitudes Toward Substance Abusers (CASA) scale, which was developed by modifying the Community Attitudes Toward the Mentally Ill Scale (CAMI; Taylor & Dear, 1981). Another study (Varra et al., 2008) measured clinician's self-reported current use and willingness to use empirically supported pharmacotherapy treatments (EST-Pharmacotherapy) and current use of empirically supported psychotherapy (EST-Psychotherapy).

One study measured environmental mastery using a subscale from Ryff's Scale of Psychological Wellbeing (Burton et al., 2010), which measures effective and competent use of opportunities and external activities.

[INSERT TABLE 4 HERE]

1.3 Psychosocial & wellbeing outcomes

Psychosocial or wellbeing-related constructs were measured in 5 of the 14 studies.

Perceived support and/or demands and stressors were measured using The Demand-Control-Support Questionnaire (DCSQ; Brinkborg et al., 2011) and the MOS Social Support Survey (Burton et al., 2010). Stewart et al. (2016) measured life satisfaction or perceived quality of life using the Satisfaction with Life Scale. Bond and Bunce (2000) measured Intrinsic Job Motivation / Satisfaction using a scale from Warr, Cook and Wall (1979). Brinkborg et al. (2011) used the Performance-Based Self Esteem Scale. Harvey et al. (2017) used the Brief Locus of Control Scale to measure locus of control beliefs, as well as the Trait Meta-Mood Scale to measure emotional management. Another scale used was the Positive and Negative Affect Schedule (Brinkborg et al., 2011). Additionally, items measuring action consistency from the Valued Living Questionnaire was used by Burton et al. (2010) to measure actions consistent with life priorities and desires. The Valuing Questionnaire was

used by Stewart et al. (2016) to measure progress (doing things to move toward values) and obstruction (factors that get in the way of moving toward values).

[INSERT TABLE 5 HERE]

1.4 Other (biological & lifestyle) outcomes

Two of the 14 studies measured 'other' variables, related to biological or lifestyle outcomes.

Burton et al. (2010) used an objective measure of physical activity by having participants wear pedometers to measure daily step counts. They also measured self-reported physical activity in the previous week (the sum of minutes spent walking, minutes in moderate activity and minutes in vigorous activity which was doubly weighted) using items from the Active Australia Surveys. Biological measures included participant height and weight, blood pressure and haematological data, including levels of blood glucose, cholesterol, C-reactive protein and cortisol.

Harvey et al. (2017) measured alcohol use (frequency on a normal day and frequency of binge drinking) with the Alcohol Use Disorders Identification Test-Consumption (AUDIT-C), and drug use and the desire to use drugs using items derived from the World Health Organisation's Alcohol, Smoking and Substance Involvement Screening Test Version 3.0 (ASSIST V3.0).

[INSERT TABLE 6 HERE]

2. Does the evidence suggest ACT is more effective at generating outcomes in particular areas?

Of the 14 studies, 12 included dependent variables in the category of mental health.

The next most common area was psychosocial outcomes (e.g. job satisfaction) with 5 studies and then performance-related variables, with 4 studies focusing on this category. With the exception of Varra et al. (2008), these studies measured both a performance related outcome and a mental health outcome. 2 studies measured other outcomes, for example biological and lifestyle outcomes. Finally, 4 studies targeted psychological flexibility as a dependent variable. A full summary of outcomes targeted by the 14 studies is below in Table 7.

[INSERT TABLE 7]

Whilst mental health outcomes are the most commonly targeted, performance outcomes are the most successful in terms of hypotheses met. Three studies (Bond & Bunce 2000; Harvey et al., 2017; Hayes et al., 2004) were able to show that both performance and mental health outcomes improve from the same intervention.

3. Whether there is evidence to suggest some formats of ACT training are more effective than others, particularly looking at the structure and duration of training.

The original ACT training intervention is the '2+1' protocol first established by Bond and Bunce (2000). That protocol has served as the basis for the classic text in this space, *The Mindful and Effective Employee* and is no doubt the basis for many unpublished ACT training interventions since. However, whilst 3 of the studies in this review followed the 2+1 protocol, the most common format for intervention was a single day. 4 studies (Bethay et al., 2013, Varra et al., 2008, Waters et al., 2017 and Hayes et al., 2004) followed this format, with an estimated 6 hours total contact time with participants.

In terms of structure and duration of training, there does not appear to be a strong correlation between length of intervention and beneficial outcomes (as expressed by number of hypotheses achieved). With the exception of Bethay et al. (2013), there appears to be little correlation between length of intervention, duration and contact points with number of hypotheses achieved. Indeed, of the most successful studies in terms of hypotheses achieved, 4 out of 5 were also the shortest. Some of the longest interventions were also some of the patchiest in terms of successful outcomes (though overall they were still generally successful).

Finally, just over half (8) of the studies referred to homework, or practice outside of the session. It was again difficult to discern a pattern in terms of whether this led to better outcomes. A full summary of type of intervention in terms of structure, length, contact points and inclusion of homework is below in Table 8.

[INSERT TABLE 8 HERE]

4. Is there evidence to suggest psychological flexibility mediates positive outcomes?

ACT theory suggests that positive benefits to either health, wellbeing or performance will be achieved by an increase in psychological flexibility, or ACT-related processes of change and not reduction of difficult thoughts and emotions. Rather than seeking to change the content of cognitions, it aims to change the context in which those experiences are achieved.

Measures of ACT-related skills or processes

11 of the 14 studies measured skills or processes related to ACT in terms of acceptance, believability of thoughts (defusion), thought suppression, and mindfulness (excluding Flaxman & Bunce, 2010b; Harvey et al., 2017; Noone & Hastings, 2010). Four used the initial version of the Acceptance and Action Questionnaire (Bond & Bunce, 2000; Brinkborg et al., 2011; Flaxman & Bond, 2010a; Varra et al., 2008). Five studies used the AAQ-II (Burton et al., 2010; Lloyd et al., 2013; McConachie et al., 2014; Stewart et al., 2016; Waters et al., 2017).

Five studies measured believability of thoughts (defusion), using the Burnout Believability Scale (Bethay et al., 2013), Stigmatising Attitudes-Believability (SAB) (Hayes et al., 2004), and Acknowledgment and Barriers to using Empirically Supported Treatments and Believability of Barriers (Varra et al., 2008). One study used the Automatic Thoughts Questionnaire (Waters et al., 2017). One other used the White Bear Suppression Inventory (WBSI) (McConachie et al., 2014).

One further study used the Dysfunctional Attitude Survey (Bond & Bunce, 2000). Flaxman and Bond (2010a) also used the Dysfunctional Attitude Survey, but as related to a comparison intervention, so is not relevant for this review and was not included.

Two studies measured mindfulness using the Mindful Attention Awareness Scale (Burton et al., 2010), and the Five Facet Mindfulness Questionnaire (Waters et al., 2017).

Bond and Bunce (2000) also measured work change to assess the extent to which people handle job strain by innovatively modifying their work methods, process and environment using five items that were developed for that study.

[INSERT TABLE 9 HERE]

Of the studies that looked at psychological flexibility as measured by the AAQ or AAQ-2, four of the studies (Burton et al., 2010; McConachie et al., 2014; Stewart et al., 2016; Waters et al., 2017) measured psychological flexibility/inflexibility as an outcome and 3 found that ACT training increased psychological flexibility (Burton et al., 2010, Stewart et al., 2016; Waters et al., 2017).

7 of the studies (Bond & Bunce, 2000; Brinkborg et al., 2011; Flaxman & Bond, 2010a; Lloyd et al., 2013; Stewart et al., 2016; Varra et al., 2008; Waters et al., 2017) assessed psychological flexibility as the mechanism of change, or mediator, of other dependent variables. In 5 of these studies (Bond & Bunce, 2000; Brinkborg et al., 2011; Flaxman & Bond, 2010a; Lloyd et al., 2013; Varra et al., 2008) this was found to be the case.

Discussion

The purpose of this review is to establish a better understanding of the:

1. **State of ACT research** in organisations.
2. **Types of ACT training** being used in the workplace, particularly the duration, length and structure of training content and who conducts the training.
3. **Populations** being used in research.
4. **What kind of outcomes are being achieved** and whether **psychological flexibility is mediating** these outcomes.

1. State of ACT research in organisations

There is some evidence that ACT is gaining traction as a training intervention in organisations. Since 2000, there have been 14 studies which met our criteria, with some evidence that the pace is increasing – 11 of the 14 were published 2010 or later. In addition, this review also discounted 4 studies in the past 3 years because they had not yet been published and there are at least 2 further studies to the main author's knowledge currently in press. However, this still equates to less than 1 published study per year since 2000.

Whilst innovation is apparent, with changes to structure, length and delivery methods, further innovation may be needed. In particular, shorter interventions which blend ACT

skills into mainstream organizational training such as leadership development training may be necessary. It is significant that one of the key researchers, Frank Bond, often integrates ACT training into other initiatives being conducted in the organization. His work often positions ACT as a way of enhancing these initiatives and helping them gain traction. More research like this is needed.

2. Types of ACT training being used in the workplace, particularly the duration, length and structure of training and who conducts the training

The 2+1 ACT protocol, first implemented by Bond and Bunce in 2000 and subsequently refined in the *Mindful and Effective Employee*, may be the most widely used form of ACT intervention overall. However only 3 of the 14 published studies in this review followed this format. 10 of the studies had their own format. In many ways this is encouraging, as it suggests that ACT training is being used flexibly, and it lends support to the idea that ACT training can become shorter and more precise (5 studies were shorter than the 2+1 protocol in terms of hours and 7 studies shorter in terms of contact points). Shorter sessions may also help reduce the issue of attrition mentioned in some of the studies (e.g. Flaxman & Bond, 2010b, Harvey et al., 2017). It may help in the task of blending ACT skills into other organisational initiatives.

In addition, interventions which involved homework had no discernible impact on outcomes. These findings may be surprising as Reitz, Chaskalson, Olivier and Waller (2016) suggest that the effectiveness of mindfulness-based interventions (such as ACT) depends on the amount of time participants spend on home practice. Intuitively it would make sense that homework allows for more time to practice skills, however it might be that other factors (attitude of participants at the end of training, specificity of behavioural commitments or leadership follow up) are just as, if not more, important.

In terms of delivery, the majority of studies were run by experienced ACT clinicians. This may be necessary to help establish an evidence base for what is still a new intervention. However, if ACT training is to be used more widely, it would be helpful to understand whether experience is an essential pre-requisite for effective training. Two studies in this review suggest otherwise. The Waters et al. (2017) intervention was delivered in-house by psychologists with relatively little training in ACT. Brinkborg et al. (2011) found no

significant main effect of therapist, leading to the conclusion that ACT interventions can be delivered by relatively inexperienced psychologists with positive results. This suggests that ACT might benefit from a greater emphasis on train the trainer approaches, for example training organisational coaches in ACT skills. In turn this may help widen the reach of ACT, as in-house training tends to be more cost-effective.

From a research perspective, this may also be beneficial. As Waters et al. (2017) acknowledge, it is also likely to improve our understanding of the reality of workplace training: “This (practice-based approach) may help to address calls for research that exhibits greatest relevance to how therapeutic interventions are likely to be delivered in routine practice settings.” (Waters et al, 2017, p. 3).

Finally, a key aim of this study was to explore whether certain forms of ACT training had stronger evidence for their effectiveness than others. It was hard to discern any effect of session structure, length and contact point on effectiveness. The shortest intervention in this review, Bethay et al. (2013) was also the least successful in terms of outcomes. Whilst this might superficially lend support to the idea that longer courses mean better outcomes, there was little else to support this theory. A meta-analysis would provide further evidence in this field.

3. Populations being used in research

All of the studies were conducted in the public sector, and most of these (10) were in the health and education sectors.

Only one study of the 14 used participants who had not volunteered. Harvey et al. (2017) used participants who had been referred via military protocol. Perhaps unsurprisingly the authors discuss the issues of attrition, particularly as this was over a 5-day course.

However, the outcomes of this study were positive, and the authors stated that despite initial scepticism for those who had been referred, the feedback was overwhelmingly positive. This indicates that ACT content can be rolled out much more widely and still be popular and effective.

4. What kind of outcomes are being achieved? Does psychological flexibility mediate outcomes?

In 13 of the 14 reviewed studies, there was a statistically significant change in at least one of the dependent variables. On the other hand, there is no single dependent variable that shows a statistically significant effect across all of the studies in which it was investigated.

Of the 43 hypotheses across the 14 studies, 33 were deemed to be significant. However, in a number of studies clear hypotheses were not apparent, so assumptions had to be made to derive these data. A meta-analysis would help to better understand the overall impact of ACT training in terms of outcome and particularly the effect sizes being achieved.

The most frequently studied category of dependent variables was mental health, with 12 studies targeting this category. Five of the studies measured psychosocial outcomes, 4 measured performance and 2 measured 'other' outcomes such as biological or lifestyle measures.

Of these, 11 of the mental health hypotheses were at least partially supported. All 4 of the performance hypotheses were supported. Psychosocial outcome appeared to be the least responsive to ACT interventions, with only 3 studies meeting partial success. Both studies measuring 'Other' outcomes (biological and lifestyle) met with partial success.

A key finding within the mental health outcomes was that ACT is more effective for those already high in distress. 7 of the 14 studies analysed those high in distress (Bethay et al., 2013; Brinkborg et al., 2011; Flaxman & Bond, 2010b; Flaxman & Bond, 2010a; McConachie et al., 2014; Noone & Hastings, 2010; Waters et al., 2017). These data suggest a greater benefit of the ACT workshop on the most psychologically distressed support staff, i.e. those who are at greater risk of burn-out.

Whilst this alone is promising, ACT's focus on fundamental processes may also benefit research in the wider field of mental health. For example, Lloyd et al. (2013) was able to show how psychological flexibility mediates the processes of burnout. It may be that a greater focus on process rather than simply symptom reduction can play a role in reconceptualising the treatment of mental ill-health. Further research in this area is surely merited.

Does psychological flexibility mediate these outcomes?

4 of the studies measured psychological flexibility as an outcome and 3 of these studies found that ACT training did indeed increase psychological flexibility (Burton et al., 2010, Stewart et al., 2016; Waters et al., 2017). 7 of the studies assessed whether psychological flexibility acted as the mechanism of change, or mediator of other dependent variables, for example health wellbeing and performance. In 5 of these studies (Bond & Bunce, 2000; Brinkborg et al., 2011; Flaxman & Bond, 2010a; Lloyd et al., 2013; Varra et al., 2008) this was found to be the case.

These data provide further encouragement to those who argue that ACT training is a potentially exciting development for more reasons than just 'it works'. By understanding *why* it works, training can become more accurate and concise, as trainers understand at all times what it is they are training people to do. Every word, image, metaphor and exercise can be aimed at enhancing psychological flexibility. Practitioners can blend ACT ideas into other interventions (for example leadership training or coaching conversations) so that psychological flexibility can become part of the culture. This also represents an exciting opportunity to improve the quality and reach of workplace training, as skills become easier to integrate into day to day life.

Future Directions

1. Use with high risk populations

ACT has promise as a workplace intervention, particularly for stress and mental health, and particularly where it can be targeted at those already in distress. Indeed, a number of authors (e.g. Waters et al., 2017) have recommended ways to target those populations in future, so as not to 'water down' results. Future research could build on that paper's innovative design. In addition, ACT's focus on fundamental processes may benefit wider research in the area of mental health. It may even enable a change in how mental health is perceived, as it is not solely focused on symptom reduction, but rather on increasing vitality and life meaning. From this perspective, the ACT stance regarding mental health difficulties has the capacity to change the context in which 'mental health' is viewed within organisations. Rather than seeing it as an issue that affects 1 in 4 employees, an ACT

approach would be that mental health affects all of us, all the time, and that it is a performance as well as a health issue.

2. Organisation-wide rollouts

Despite ACT's effectiveness with high-stress populations, it may be a mistake to position ACT as solely an intervention for these populations and instead to experiment with organisation-wide rollouts. There are five reasons for this:

i. Objectives

ACT is focused on fundamental processes of human distress *and* flourishing. Therefore, to focus on one and not the other does not capture the true objectives of ACT. One example of this would be Brinkborg et al. (2011) who found that those with lower stress levels at baseline experienced marginally significant reduction in burnout risk. However, the researchers found that the reduction in overall burnout risk for this group was driven mostly by Personal Accomplishment. This lends weight to the idea that ACT is useful in different contexts. If one is already stressed, then the primary focus may be on mental health. However, if one has lower levels of stress, ACT may be useful for more performance-related aspects, leading to increased feelings of accomplishment.

ii. Measurement

ACT's emphasis on the function of thoughts and emotions rather than their form or frequency can make measurement of outcomes more complex. If ACT is judged purely on its ability to reduce syndromes and pathology, this is missing its primary goal which is not to change difficult thoughts and emotions, but rather their influence on behaviour (Hayes, Villatte, Levin & Hildebrandt, 2011; Hayes et al., 2006). ACT's core purpose is to help people engage in valued living, not to relieve syndromes, therefore measuring behavioural outcomes (which admittedly may be health-related) and / or values or performance-related goals fits the objectives of ACT training more readily.

iii. Prevention

Much like physical health, mental health is not something that can be 'ticked off' and taken for granted. If ACT can help prevent mental health issues from developing then it surely merits a much wider audience. As ACT's primary goal is to develop flexibility rather than

decrease pathology, some have argued it is uniquely placed for efforts to prevent future health issues (Biglan, Hayes & Pistorello, 2008).

iv. Stigma

Focusing on high-stress participants may add to the stigma of stress in the workplace (see Flaxman & Bond, 2010b). ACT's focus on process rather than syndromes presents an opportunity to normalise the idea of mental health.

v. Performance

ACT's potential to relieve distress should not mask its greater potential to help people engage in their lives and to focus on the goals and values that matter most. This review has found evidence that ACT training can have an impact on a wide range of work-related performance outcomes. Four studies measured a combination of mental health and performance outcomes, and all of these had at least partially significant results in both areas. Positioning ACT as purely a way of relieving mental health outcomes therefore risks missing outcome measures related to performance – and missing out on valuable training budgets dedicated to skills development and performance improvement.

3. More innovative delivery

Given it is difficult to identify a single most effective protocol for ACT training, there is an opportunity for further innovation. Shorter interventions, the use of new and different metaphors, blending ACT into other training (e.g. leadership training or work design initiatives) and experimenting with new methods of delivery (e.g. online or using in-house trainers) could all help to integrate ACT into the organisational mainstream. Bond and Flaxman (2010b) call for more research of this nature. Their research suggests that employees with better coping skills (e.g., psychological flexibility) are more aware of the opportunities created by more effective work designs, so one complements the other. Given ACT's focus on values and committed action, blending ACT into other initiatives may have other benefits in that participants are less passive and / or cynical about the training they receive. In practical terms, Bond and Bunce (2000) found that ACT programs for stress can encourage workers to be more assertive with supervisors over the need to make changes, not just accept work stressors, even without direct suggestions in the ACT program to make such changes. This may help prevent the 'sticking plaster' accusation sometimes

aimed at organisational attempts to boost resilience. Finally, innovations with shorter, ACT-consistent training interventions make financial sense for organisations, and is consistent with ACT's ability to target outcomes with precision through its focus on process.

4. Wider use in the private sector

The authors are aware of ACT training studies in the private sector that have been attempted or are in press, but are not aware of any that have been published. None met the inclusion study for this sector. Further research in this area might provide greater traction for ACT training, because of the possibilities of greater publicity, innovation and investment that might stem from the private sector. Outcomes in this study also suggest that this effort would be worthwhile; a business case focused not only on reducing the cost of mental health but increasing organizational productivity (along with performance, learning and engagement) would surely be formidable.

Conclusion

ACT appears to be a potentially important part of any evidence-based strategy for dealing with stress at the individual level, particularly for those already high in stress.

However, positioning ACT as purely a mental health intervention misses an opportunity. Not only may this marginalize mental health issues, risking further stigma, but it also ignores the true potential of ACT. The essence of ACT training is not to reduce mental health symptoms, but to increase the vitality, engagement and values-based living of those who receive it. ACT therefore seems promisingly placed to answer many of the challenges being posed by modern organisational life in the early 21st century.

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Tables

Table 1. SPIO narrow screen inclusion and exclusion criteria

Screening category	Inclusion criteria	Exclusion criteria
Study design	<ul style="list-style-type: none"> - Empirical research - Explores an intervention or interventions 	<ul style="list-style-type: none"> - Purely theoretical or descriptive - Not published in peer-reviewed article
Participant population	<ul style="list-style-type: none"> - Paid employees 	<ul style="list-style-type: none"> - Students, interns or clinical populations
Intervention	<ul style="list-style-type: none"> - Acceptance and Commitment Training - Group training courses 	<ul style="list-style-type: none"> - Does not include a mindfulness and values component - Does not aim to improve psychological flexibility - Not focused on workplace context - Not coaching, bibliotherapy, supervision, consultation groups
Outcomes	<ul style="list-style-type: none"> - Includes outcome measures/target variables in which the intervention aims to achieve change - Outcomes relate to health, wellbeing and / or performance variables. 	<ul style="list-style-type: none"> - Purely evaluative / qualitative

Table 2. Study, sample and intervention characteristics

Author and year	Study design	Sample	Intervention	Data collection
Bethay et al. (2013)	<p>RCT</p> <p>Randomised design comparing a combined Acceptance and Commitment Training (ACT) with instruction in applied behavior analysis. This combined intervention was compared to a control condition consisting of applied behavior analysis training only.</p>	<p>N=34.</p> <p>Participants were recruited from a large, state-funded residential facility for individuals with intellectual disability.</p> <p>Psychologists and psychological technicians (n=14), special education teachers and assistant teachers (n=11), direct care staff (n=10), nurses (n= 2), and social workers (n=1).</p> <p>26 women and 8 men (23.5 %).</p> <p>Mean age 38 years (range, 22–60), and the mean length of time employed at the facility was 7.6 years</p>	<p>The ACT+ABA condition involved 6 h of Acceptance and Commitment Training combined with 3 h of training in the principles of applied behavior analysis.</p> <p>The ABA condition, which served as the control condition, consisted of 9 h of didactic training in principles of applied behavior analysis. Each of these interventions consisted of three 3-h group sessions that were administered at 1-week intervals for 3 weeks.</p> <p>This intervention was constructed based upon examination of ACT treatment protocols relevant to worksite stress (Bond and Hayes 2002), burnout among substance abuse counselors (Hayes et al. 2004), and stress management for parents of autistic children (Blackledge and Hayes 2006). Treatment components were adapted to address the particular difficulties encountered by intellectual disabilities staff, such as dealing with emotional reactions to challenging behaviors, as well as perceived lack of support from and cooperation among coworkers.</p>	<p>3 data points (pre, post and + 3 months)</p> <p>Participants completed all outcome and process measures immediately before the first workshop, following the final workshop, and 3 months after the final workshop. The social validity survey was completed at 3-month follow-up.</p>

Author and year	Study design	Sample	Intervention	Data collection
Bond, F. W., & Bunce, D. (2000).	RCT Randomised comparison group (Innovation Promotion Program) + waitlist control group.	N=90 Ninety volunteers in a UK media organization. 15 men and 15 women participated in each condition at Time 1 (T1). Participants were age between 19 and 58 years (M age = 36.43), and held a wide variety of the jobs (e.g., managerial, creative, and technical).	Both interventions lasted 9 hours, spread over 3 months. "2 + 1" method of psychotherapy delivery (Barkham & Shapiro, 1990), in which groups of participants receive three half-day sessions: two on consecutive weeks and a third 3 months later. At each of the three sessions, participants in both SMIs were exposed to group discussions, didactic teaching, and various experience oriented exercises. Homework assignments were given at all three meetings, and the importance of them was heavily emphasized.	4 data points. Mediator and outcome variables were recorded before sessions 1, 2, and 3 (T1 to T3, respectively) and again at Week 27 (T4).
Brinkborg, H., Michanek, J., Hesser, H., & Berglund, G. (2011).	RCT ACT was compared in an additive treatment design with medical treatment as usual (MTAU).	N=106 Social workers in Stockholm. The average age of participants was 44 years (SD = 11.1, range ¼ 24e64) and 89% (n= 94) were women. The majority had permanent employment (95%, n = 101).	Four sessions x 3 h each, provided every other week. Based on a Swedish version of the ACT-SMI (Bond, 2004; Bond & Hayes, 2002). The overall aim of the intervention was to increase psychological flexibility. Each session has a specific theme and follows the same structure. Between sessions, the participants complete homework assignments, including physical exercise and mindfulness practice. Focus in the first session is stress, acceptance and language. The second session target values. The third session considers obstacles	2 points (pre and 2 weeks post). All instruments were administered two weeks prior to the start of the intervention and two weeks after the intervention.

Author and year	Study design	Sample	Intervention	Data collection
Burton, N., Pakenham, K., & Brown, W. (2010).	Single group pre–post trial No control group.	N=16 Volunteers Administrators in a University. The age of participants ranged from 24 to 50 years, with a mean of 36.5 (SD 8.6).	and flexibility. The fourth and final session focuses on compassion and communication, as well as maintenance of change. 11 x two h group sessions run weekly over 13 weeks (5-7pm) READY program targets five protective factors identified from empirical evidence: Positive emotions, cognitive flexibility, social support, life meaning, and active coping. Resilience enhancement strategies reflect core acceptance and commitment therapy (ACT) processes and cognitive behavior therapy strategies. Sessions involve psychoeducation, discussions, experiential exercises, and home assignments.	2 times points, (1 week before and 1 week after intervention)
Flaxman, P. E., & Bond, F. W. (2010b).	RCT Data were collected from three identical SMT projects, conducted across two local government organizations in London. Each project involved a randomized controlled trial that compared SMT	N=311 Volunteers Participants were drawn from various departments within the two local government organisations, including council tax, environmental health, housing and social services (welfare), education, finance, and libraries.	3 X 3 sessions of 2.5-3 hours 2+1 format, with each participant received three sessions of training, two of which occurred on consecutive weeks, with the final session occurring three months later. Each session lasted for approximately 2.5 to 3 hours The SMT program adopted the principles and techniques of acceptance and commitment therapy (ACT; Hayes, Strosahl, & Wilson, 1999) adapted for use in work settings (e.g., Bond &	3 times points - baseline, +3 months post 2 training sessions and another 3 months after final.

Author and year	Study design	Sample	Intervention	Data collection
	against a waiting list control group	Ages ranged from 18 to 63, with a mean of 41. Average tenure with current organization was 10 years.	Bunce, 2000; Bond & Hayes, 2002; Dahl, Wilson, & Nilsson, 2004; Flaxman & Bond, 2006; Hayes et al., 2004).	
Flaxman, P. E., & Bond, F. W. (2010a).	RCT Participants randomly assigned to the ACT group, SIT group, and to the waitlist control group.	N=107 Volunteers Participants were employees of two large local government organisations in the United Kingdom who had volunteered for SMT.	2 x half day training sessions. ACT and SIT were delivered via two half-day training sessions, which occurred one week apart. The training was delivered to small groups of employees during working hours. Each training session lasted for approximately three hours. The ACT intervention was based on two manuals developed for group worksite interventions (Bond, 2004; Bond & Hayes, 2002).	2 time points pre and post (3 months after 2nd training)
Harvey, S. T., Henricksen, A., Bimler, D., & Dickson, D. (2017).	RCT Intervention study with pre and post quantitative and qualitative measures and control group	N=262 Referred for intervention. Soldiers from the New Zealand Defense Force were referred onto the course by unit commanders, military health professionals, direct court orders, or the participants themselves	5 day course. The ACT-based course was developed by the primary author in accordance with the ACT hexaflex model of psychological flexibility comprising the six core processes of acceptance, defusion, self-as-context, contact with the present moment, values, and committed action.	2 time points for ACT group: first day of intervention and 1 month post. For waitlist 3 time points - intake T1, T2 on day of

Author and year	Study design	Sample	Intervention	Data collection
Hayes. S. C., Bissett, R., Roget, N., Padilla, M., Kohlenberg, B. S., Fisher, G..., & Nicholls, R. (2004).	RCT Participants randomly selected from master list of licensed or certified alcohol and drug abuse counsellors in Nevada. Participants were then randomly assigned to each of the 3 conditions.	N=90 Of the total participants, 63% were female, 84% were Caucasian, and 76% reported that their primary discipline was addictions counselling.	1 day ACT workshop (6 hours) Participants were taught methods of reducing the impact and believability of negative thoughts, through acceptance, mindfulness, and cognitive defusion. Exercises such as repeating a word until it lost all meaning (Titchener, 1916, p. 245) were used to create more psychological distance between the participants and their thoughts. Several exercises were used that deliberately brought up difficult emotions and thoughts about clients. Finally, participants went through public values declaration exercises.	intervention and 1 month post. 3 data points. Measures of stigma and burnout were taken pre-training, post-training, and after a three month follow-up.
Lloyd, J., Bond, F. W., & Flaxman, P. E. (2013).	RCT Employees of a UK government department were randomly assigned to either a worksite,	N=100 Volunteers Large government department.	3 x 3 hour sessions “two-plus-one” format whereby each participant attended three, three-hour training sessions, two of which occurred on consecutive weeks with a third that occurred two months later.	4 data points. Data were collected at baseline (T1), at the beginning of the second (T2) and

Author and year	Study design	Sample	Intervention	Data collection
	group-based, CBT intervention called Acceptance and Commitment Therapy or a waitlist control group.	The mean age of the participants was 47 (range 31-59) and 93% classified their ethnicity as "White British". On average they had worked in their current job for 59 months (4.9 years)	The training was delivered in groups of between eight and 12 employees during their normal working hours.	third (T3) workshops, and at six months follow-up (T4).
McConachie, D. A. J., McKenzie, K., Morris, P. G., & Walley, R. M. (2014).	RCT The study employed a longitudinal mixed between-within subjects design. Support staff were randomly assigned to a workshop intervention condition or to a waiting list control condition.	N=120 Volunteers Support staff working with individuals with intellectual disability (ID) Demographic data were collected on gender, age, education, hours of working, and years of experience working in ID services.	1 full day + 1 x half day session The intervention consisted of a full day workshop, followed by a half day refresher session after six weeks. Group sizes varied between 3 and 10 participants. Participants assigned to the waiting list control group received no intervention, but were invited to attend a workshop after data collection was completed.	3 data points. Participants completed measures prior to start of workshop (T 1), six weeks later at the refresher session (T 2). Follow-up measures were completed after a further six weeks (T 3).

Author and year	Study design	Sample	Intervention	Data collection
Noone, S. J., & Hastings, R. P. (2010).	Single group pre-post design combining data from the original Noone and Hastings (2009) study and the top-up sample.	N=34 Volunteers 24 were female, ages ranged from 23 to 58 years (mean=41.7). 28 staff had basic level qualifications in health and social care focused on workplace skills, and six staff had a professional qualification (nursing or social work), were currently in professional training, or had an equivalent level qualification.	One day PACT workshop and a half day follow-up session. The first was to promote a willingness in participants to review the impact of negative thoughts and emotional responses on their life. The second major goal was to undermine the literal control that language can have and to encourage participants to discriminate themselves from their thoughts. The second half of the first day was given over entirely to discriminating core values. The third session acted as a booster session, covering participants' progress with the mindfulness exercises as well as making a personal declaration to the rest of the group about a commitment towards one of their values.	2 data points. Questionnaires were completed at the beginning of the first day's workshop and then again at the end of the follow-up session.
Stewart, C., White, R. G., Ebert, B., Mays, I., Nardozi, J., & Bockarie, H. (2016).	Single group pre post design	N=57 Volunteers 26 males and 31 females; mean age=34 years; attended an introductory ACT workshop in either Freetown (n=26) or Bo (n=31). Participants were a mix of non-specialist	1 x 3 day workshop + 1 day supervision meeting of 1 day. As there are no existing guidelines about how to apply ACT in African contexts (or in non-Western cultures in general), the workshop format comprised of didactic instruction led by facilitators with role plays in front of the group and then dividing into small groups to practice.	3 data points. Participants completed measures pre-workshop, post-workshop and 3-months post-baseline.

Author and year	Study design	Sample	Intervention	Data collection
		workers and professionals from over 20 NGOs, local services and religious orders	Supervision meetings were organised following the ACT training workshops in Freetown and Bo respectively.	
Varra, A. A., Hayes, S. C., Roget, N., & Fisher, G. (2008).	Randomised comparison group (RCT) Participants were randomly assigned to either a 1-day ACT workshop or a 1-day educational control workshop. Both groups then attended a 2-day workshop on empirically supported treatments for substance abuse.	N=59 Drug and alcohol counsellors recruited randomly from preregistered attendees of a 4-day continuing education conference on substance abuse treatment 58% were women; 34% were minorities (25% African American, 7% Hispanic, 2% Native American); and mean age was 53.68 years	1 day ACT workshop (6 hours) All participants attended the same 2-day training on pharmacotherapy and evidence-based treatment. The day prior, one half of the participants were randomly assigned to attend a daylong presentation (total contact time of 6 hr) of either ACT (n = 30) or an educational control training (n = 30). Defusion techniques drawn from Hayes et al. (1999). Acceptance skills were taught as methods of dealing with the difficult thoughts and feelings that come from learning and using new treatments. Finally, the ACT trainers asked participants to identify their values as a therapist.	3 data points. Participants were assessed at the beginning (pre) and at the end (post) of 3 days of training and at 3-month follow-up.
Waters, C., Frude N., Flaxman, P., & Boyd, J. (2017)	A quasi-controlled design, with participants block allocated to an ACT intervention or waiting list	N=35 Volunteers. Participants were employees of a large health care organization in Wales, UK.	1 day ACT workshop Participants were introduced to techniques designed to: (1) raise awareness of psychological barriers to engagement in values-based action; (2) undermine the use of internal control efforts as a way of managing unwanted thoughts / emotions; (3) raise	2 data points Measures were completed by ACT and

Author and year	Study design	Sample	Intervention	Data collection
	control group based on self-referral date.	Age 39.7, 84% female, Nursing 61%, Allied health professional 16%, non-clinical role 23%.	awareness of the distinction between strategies that work inside the skin/ outside the skin; (4) cultivate defusion through mindfulness practice and (5) help participants clarify personal values.. Participants shared how they might transfer the learning into their daily lives.	control group participants at pre-intervention and 3 months post-intervention

Table 3: Measures used to assess mental ill-health variables and results

Author and year	Mental ill-health outcomes	ACT-related Results
Bethay et al. (2013)	GHQ-12 Maslach Burnout- Human Services Survey	<p>No significant group × time interactions were observed for the GHQ-12, $F(2, 64)02.48$, $p0.092$. Likewise, no significant group × time interactions were observed for the subscales of the MBI: emotional exhaustion, $F(2, 64)0.137$, $p0.873$; depersonalization, $F(2, 64)02.31$, $p0.107$; and personal accomplishment, $F(2, 64)01.32$, $p0.274$.</p> <p>Homework group. ACT+ABA group exhibited significantly greater reduction in GHQ-12 scores $t(18.86)02.295$, $p0.033$, $d00.87$. However, this difference was not maintained at follow-up, $t(22.20)0.885$, $p0.386$.</p> <p>High distress group. The ACT+ABA group (Mdn04) exhibited a significantly greater decrease in distress from pretest to posttest than did the ABA group (Mdn00) $U=4.00$, $p=.012$, $r=.67$. These results were maintained at follow-up, $U=3.00$, $p=.009$, $r=.70$.</p>
Bond & Bunce (2000).	GHQ-12 BDI	<p>ACT intervention significantly improved mental health outcomes (GHQ and BDI).</p> <p>In the ACT condition only, GHQ scores decreased significantly between T2 and T3, $F(1, 68) = 43.78$, $p < .000$ and between T 1 and T4, $F(1, 62) = 20.44$, $p < .000$. At T3 and T4, GHQ scores were significantly lower in the ACT condition than they were in the IPP condition, T3: $F(1, 67) = 32.72$, $p < .000$; T4: $F(1, 61) = 12.36$, $p = .001$; and the control condition, T3: $F(1, 67) = 35.47$, $p < .000$; T4: $F(1, 61) = 17.38$, $p < .000$. Analyses also indicated that, in the ACT condition, BDI scores decreased significantly from T2 to T3, $F(1, 68) = 17.61$, $p < .000$, $\eta^2=.21$.</p>

Author and year	Mental ill-health outcomes	ACT-related Results
Brinkborg et al. (2011).	Perceived Stress Scale-14 GHQ-12 Maslach Burnout Inventory	<p>ACT intervention significantly improved mental health outcomes, especially for participants with higher levels of perceived stress at baseline.</p> <p>Participants in the ACT intervention group demonstrated a significantly lower level of perceived stress than those in the control group at post-treatment: $F(1,103)=12.88$, $p=.001$, Cohen's $d=.72$.</p> <p>For participants with high baseline stress levels, the ACT group demonstrated a significantly lower perceived stress score than those in the control group at post-treatment: $F(1,65)=8.34$, $p=.01$, Cohen's $d=.75$. For those with low baseline stress levels, there was a marginally significant difference in perceived stress between those in the ACT group compared to those in the control group: $F(1,35)=4.01$, $p=.053$, Cohen's $d=1.09$.</p> <p>The ACT intervention demonstrated significantly lower GHQ scores than the control group at post-treatment: $F(1,103)=5.48$, $p=.021$, Cohen's $d=.38$. For participants with high stress levels at baseline, ACT demonstrated a marginally significant lower level in GHQ-12 scores than the control group at post-treatment: $F(1,65)=3.67$, $p=.06$, Cohen's $d=.36$. For participants with low stress levels, there was no significant difference in GHQ-12 scores between groups.</p> <p>Participants in the ACT group demonstrated a significantly lower level of MBI-total score than those in the control group at post-treatment: $F(1,103)=15.3$, $p<.001$, Cohen's $d=.50$. For EE subscale: $d=.32$, $p<.05$. For Dep subscale: $d=.33$, $p<.01$. For PA subscale: $d=.48$, $p<.001$.</p> <p>For participants with high baseline stress, ACT demonstrated a significantly lower MBI-total score than the control group at post-</p>

Author and year	Mental ill-health outcomes	ACT-related Results
		<p>treatment: $F(1,65)=12.24$, $p<.001$, Cohen's $d=.46$. For EE subscale: $d=.36$, $p<.01$. For Dep subscale: Cohen's $d=.19$, $p<.01$. For PA subscale: Cohen's $d=.42$, $p<.01$. For participants with low baseline stress levels, ACT demonstrated a marginally significant lower MBI-total score than the control group: $F(1,35)=4.14$, $p=.05$, Cohen's $d=.78$. Only on the PA subscale did the difference reach statistical significance: Cohen's $d=.59$ ($p<.05$).</p>
Burton et al. (2010)	Ryff's Scale of Psychological Wellbeing CES-D DASS-21	<p>From baseline to post-intervention, the ACT intervention had large favourable effects on personal growth ($t[15]=3.357$, $p=.004$). There were moderate effects on stress ($t[15]=-2.807$, $p=.013$), self-acceptance ($t[15]=2.720$, $p=.016$), autonomy ($t[15]=2.369$, $p=.032$) and depression as measured by the CES-D ($t[15]=-2.063$, $p=.057$).</p> <p>No significant differences were observed for positive relations, life purpose, anxiety or depression as measured by the DASS-21.</p>
Flaxman & Bond (2010b).	GHQ-12	<p>The ACT intervention significantly improved mental health outcomes (GHQ-12) in participants with high levels of baseline distress. For this subgroup, the effects were sustained.</p> <p>At Time 2, the ACT intervention group had significantly lower GHQ-12 scores than the control group: $t(18)=2.55$, $p < .05$, Cohen's $d=.34$. At Time 3, this difference was marginally outside of statistical significance: $t(5)=2.27$, $p < .07$, Cohen's $d=.32$.</p> <p>At Time 2, only for participants who initially presented as cases for distress (on the GHQ-12), did the ACT intervention exhibit a significantly lower level of GHQ-12 scores than the corresponding control group: $t(118)=4.31$, $p < .001$, $d=.66$. At Time 3, only for those who initially presented as cases did the ACT intervention</p>

Author and year	Mental ill-health outcomes	ACT-related Results
		exhibit a significantly lower level of GHQ-12 scores than the corresponding control group: $t(8)=2.88$, $p < .05$, $d=.57$.
Flaxman & Bond (2010a).	GHQ-12	There was a significant group x time interaction effect ($F(1,63)=5.31$, $p < .01$). At post-intervention, GHQ scores were significantly lower in the ACT group ($F(1,40)=14.78$, $p < .001$, $d=1.31$) when compared to the control group (after adjusting for pre-intervention GHQ). At baseline, all participants were classified as probably cases of minor psychiatric disorder (based on GHQ score). At post-intervention, the proportion of GHQ cases had decreased the most in the ACT group at 21%, compared to 26% in the SIT group and 63% in the control condition.
Harvey et al. (2017).	Perceived Stress Scale-10 Brief Generalised Anxiety Stress Scale-7 The Buss-Perry Aggression Questionnaire Short Form (BPAQ-SF)	<p>From pre to post-intervention, the intervention group demonstrated significant improvements in perceived stress ($M=-3.94$, $p < .001$) and anxiety ($M=-2.16$, $p < .01$). No significant differences were demonstrated in the waitlist control group in this time period.</p> <p>The intervention group demonstrated significant improvements from pre to post intervention in total BPAQ-SF scores, $M=-3.40$, $p < .01$, physical aggression, $M=-.30$, $p < .01$, verbal aggression, $M=-.26$, $p < .01$, anger, $M=-.32$, $p < .05$, and in hostility, $M=-.34$, $p < .001$. No significant differences were demonstrated in the waitlist control group in this time period for the total BPAQ-SF score or any of its subscales.</p> <p>No significant mean differences across the two groups were observed at the 1-month post intervention.</p>

Author and year	Mental ill-health outcomes	ACT-related Results
Hayes et al. (2004).	Maslach Burnout Inventory	<p>Overall burnout showed a significant Time x Treatment interaction, $F(4,18)=4.05$, $p=.004$. The ACT condition demonstrated significant improvements in burnout at post-treatment, $t(29)=3.01$, $p=.005$, and at follow-up $t(29)=2.70$, $p=.012$.</p> <p>At post-treatment the ACT demonstrated significantly better improvements in burnout than the educational control condition, $t(36)=2.44$, $p=.02$. At follow-up, ACT demonstrated significantly better improvements in burnout than the multicultural training, $t(60)=2.72$, $p=.008$.</p>
Lloyd et al. (2013).	GHQ-12 Maslach Burnout Inventory-Human Services Survey	<p>The ACT group demonstrated statistically significant reductions in strain and emotional burnout relative to the control group.</p> <p>Analyses revealed a significant overall group by time interaction for strain ($F(3,294)=8.37$, $p < .001$). Between T2 and T3, there was a significant decrease in strain in the ACT group ($F(1,42)=9.78$, $p < .01$). In the control group, there was a significant increase in strain between T2 and T3, $F(1,56)= 14.29$, $p < .01$). With T1 strain scores entered as a covariate, compared to the control group, strain was significantly lower in the ACT group at T3 ($F(1,97)=12.99$, $p < .001$), but not at T2 or T4.</p> <p>Emotional exhaustion (EE): There was a significant group by time interaction for EE ($F(3,294)=2.67$, $p < .05$). In the ACT group, there was a significant decrease in EE between T1 and T4 ($F(1,42)=5.66$, $p < .05$), between T2 and T3 ($F(1,42)=5.83$, $p < .05$) and between T2 and T4 ($F(1,42)=7.17$, $p < .01$). No significant changes in EE in the control group.</p> <p>Depersonalisation (D): There was a significant group by time interaction for D ($F(3,294)= 4.42$, $p < .01$). In the ACT group, there</p>

Author and year	Mental ill-health outcomes	ACT-related Results
		<p>was a significant decrease in D between T2 and T4 ($F(1,42)= 4.51$, $p < .05$). In the control group there was a significant increase in D between T2 and T4 ($F(1,56)=6.82$, $p < .01$), between T1 and T4 ($F(1,56)=8.60$, $p < .01$, and between T3 and T4 ($F(1,56)=4.80$, $p < .05$). With T1 D scores entered as a covariate, D was significantly lower in the ACT group than the control group at T4 ($F(1,97)=4.44$, $p < .05$, $n^2=.04$), but not at T2 or T3.</p>
McConachie et al (2014).	GHQ-12 Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS) The Staff Stressor Questionnaire	<p>The ACT workshop demonstrated significant reductions in psychological distress from pre-intervention to follow-up. The benefits relative to the control group were more apparent amongst those who had clinically high baseline distress.</p> <p>There was a significant interaction effect for time x condition ($p=.001$), with medium to large effect size). In the workshop intervention condition, there was a significant reduction in GHQ scores between pre and post-intervention ($p=.001$), a significant increase between post and follow-up ($p=.0001$), and a significant reduction between pre and follow-up scores ($p=.048$). The control group had less pronounced reductions in distress scores between pre and post ($p=.048$) and between pre and follow-up ($p=.017$).</p> <p>For participants who exhibited clinically significant levels of baseline psychological distress there was a significant interaction effect for GHQ distress scores ($p=.001$). The workshop intervention condition demonstrated a similar pattern as in total participants, with significant reductions in distress between T1 and T2 ($p < .001$) and T1 and T3 ($p < .001$), and a significant increase in distress between T2 and T3 ($p=.040$). The control group experienced significant reductions between T1 and T2</p>

Author and year	Mental ill-health outcomes	ACT-related Results
		<p>($p=.002$), and T1 and T3 ($p < .001$), but no significant change between T2 and T3.</p> <p>No significant interaction effect was found for the WEMWBS wellbeing scores for time x condition. For participants who exhibited clinically significant levels of baseline psychological distress, there was no significant interaction effect found for the WEMWBS wellbeing scores for time x condition.</p> <p>Even though perceived level of work stressors increased, psychological distress in all support staff reduced significantly from pre-intervention to follow-up. Changes in perceived levels of work stressors did not contribute to the variance explained in GHQ scores.</p>
Noone & Hastings (2010).	GHQ12 The Staff Stressor Questionnaire	<p>There was a significant decrease in GHQ scores over time with a medium effect size ($t(33)=2.45$, $p=.020$; $d=.48$).</p> <p>Support staff who had no professional level qualifications, who reported more psychological distress on the GHQ and more work-related stress on the SSQ pre-intervention had greater changes in the GHQ from pre to post-intervention.</p>
Waters et al. (2017)	GHQ-12	<p>The ACT group reported a significantly lower level of psychological distress at 3 months post-intervention compared to the control group: $p < .001$, $d=1.41$.</p> <p>At 3-months post-intervention, 50% of the initially distressed participants who had attended the ACT intervention were classified as recovered, as they met the criteria for clinically meaningful change in distress on the GHQ. None of the initially distressed control group demonstrated clinically significant improvement at the same 3-month assessment point. When the waitlist control group had attended the ACT workshop, 69%</p>

Author and year	Mental ill-health outcomes	ACT-related Results
		demonstrated clinically significant change at 3-months post-intervention and were classified as recovered.

Table 4. Measures used to assess performance-related outcomes

Author / year	Performance outcomes	Results
Bond & Bunce (2000).	Propensity to Innovate	<p>The ACT intervention significantly improved propensity to innovate, but no more so than a problem-focused IPP intervention.</p> <p>The ACT intervention demonstrated no significant improvements in propensity to innovate between Time 1 and Time 2, but did between T2 and T3, $p < .000$. In comparison to the control group, at Time 3 the ACT intervention demonstrated significantly more propensity to innovate, $p = .02$. At Time 4, scores were significantly higher than they were at Time 1 in the ACT group: $p < .000$.</p> <p>At T3 and T4, propensity to innovate did not differ significantly between the ACT and IPP groups.</p>
Burton et al. (2010)	Ryff's Scale of Psychological Wellbeing	From baseline to post-intervention, the ACT intervention had large favourable effects on environmental mastery ($p = .001$).
Hayes et al. (2004).	CASA (Community Attitudes Toward Substance Abusers)	<p>The ACT condition significantly improved community attitudes toward substance abusers, as measured at intervention follow-up.</p> <p>Analyses revealed a significant Time x Condition interaction $p = .015$. Participants in the ACT condition did not improve in stigmatising attitudes significantly at post-treatment, but did improve by follow-up, $p = .015$.</p>

Author / year	Performance outcomes	Results
		<p>Compared to the educational control group, the ACT group improved significantly in stigmatising attitudes from pre-treatment to follow-up, $p=.011$, but not from pre-treatment post-treatment.</p>
<p>Varra et al. (2008)</p>	<p>EST- Pharmacotherapy EST-Psychotherapy</p>	<p>The ACT condition demonstrated a significant increase in willingness to use pharmacotherapy (whereas the control group did not) between pre and post training ($d=.84$, $p < .05$) and between pre-training and follow-up ($d=1.03$, $p < .05$). There was a statistically significant and large effect for condition on the willingness to use pharmacotherapy , $F(1,56)=11.46$, $p=.001$,, but not for phase or group by phase interaction.</p> <p>The ACT condition demonstrated a significant increase in reported use of pharmacotherapy (whereas the control group did not) between pre and post-training ($d=.76$, $p < .05$). At follow-up, 54% of those in the acceptance pre-training condition were likely referrers, as compared with 13% in the control condition. This was a significant and large effect, $p=.001$, $d=1.03$. Using pre-scores as a covariate, there was a significant impact of treatment, $p=.002$, and group by phase interaction, $p=.002$, with acceptance pre-trained participants reporting more referrals for medications in their practice than those in the control group.</p> <p>The ACT condition demonstrated a significant increase in willingness to use psychotherapy (whereas the control group did not) between pre and post-training ($d=.76$, $p < .05$). There was no effect for phase, the group by phase interaction or condition. This suggests that effects on willingness to use empirically supported psychotherapy required both acceptance pre-training and specific and extensive education in the actual methods, not just attitudinal appeals.</p>

Table 5: Measures used to assess Psychosocial & Wellbeing outcomes

Author / year	Psychosocial outcomes	Results
Bond & Bunce (2000).	Intrinsic Job Motivation, Intrinsic Job Satisfaction	No change found in job satisfaction and motivation. Analyses revealed no significant main or interaction (Group x Time) effects for intrinsic job motivation or intrinsic job satisfaction. Neither intervention nor the control group demonstrated significant improvements in intrinsic job motivation or satisfaction.
Brinkborg et al. (2011).	Demand-Control-Support Questionnaire (DCSQ) Performance-based self-esteem (Pbse)	No significant effect of the ACT-SMI intervention was found for the DCSQ subscales in the entire sample, in participants with high baseline stress levels or in participants with low baseline stress levels. No significant effect of the ACT-SMI intervention was found for the Pbse in the entire sample, in participants with high baseline stress levels or in participants with low baseline stress levels.
Burton et al. (2010)	MOS Social Support Survey Positive and Negative Affect Schedule (PANAS-X) - Valued Living Questionnaire	The intervention demonstrated no significant improvements from baseline to post-intervention on MOS Social Support Survey scores. The intervention demonstrated a large significant improvement on positive emotions from baseline to post-intervention, $p=.002$. The intervention demonstrated significant improvements from baseline to post-intervention on valued living, $p=.022$.
Harvey et al. (2017).	Brief Locus of Control Scale (BLOCS) - 9 item Trait Meta-Mood Scale (TMMS) - 30 Item	The alpha coefficient for the internal locus of control subscale was too low to be included for analysis. The intervention group demonstrated significant reductions from pre to post-intervention in powerful others as locus of control, $p < .05$, but not in chance. No significant differences were demonstrated in the waitlist control group. The intervention group demonstrated significantly greater reductions than the waitlist control group from pre to post intervention in powerful others as locus of control, $p < .05$, $d=-.37$, but not in chance. At Time 2,

Author / year	Psychosocial outcomes	Results
		<p>the intervention group demonstrated significantly lower mean scores in powerful others and chance as loci of control than the waitlist control group, $p < .01$, $d = -.5$ and $p < .05$, $d = -.41$ respectively. No significant mean differences across the two groups were observed at 1-month post intervention.</p> <p>The intervention group demonstrated significant improvements from pre to post intervention in emotion management, $p < .001$, and in the attention subscale, $p < .001$. No significant differences were demonstrated in the waitlist control group.</p> <p>The intervention group demonstrated significantly greater improvements than the waitlist control group from pre to post intervention in emotion management, $p < .01$, $d = .69$, and in the attention subscale, $p < .001$, $d = .75$. At Time 2, the intervention group demonstrated significantly higher mean scores than the waitlist control group in emotion management, $p < .001$, $d = .74$, and in the attention subscale, $p < .001$, $d = .71$. No significant differences across the two groups were observed at 1-month post intervention.</p>
Stewart et al. (2016).	Satisfaction with Life Scale (5-Item) (SWLS) The Valuing Questionnaire (VQ) (8-item)	<p>The intervention demonstrated a significant effect for time on the SWLS, $F(2,35) = 6.433$, $p = .006$, $\eta^2 = .152$, with significant increases in SWLS scores from baseline to 3-months post-baseline ($p = .017$) and from post-workshop to 3-months post-baseline ($p = .037$).</p> <p>The intervention demonstrated no significant effects for time on VQ score.</p>

Table 6: Measures used to assess Other (Biological & Lifestyle) Outcomes

Author / year	Other outcomes	Results
Burton et al. (2010)	<p>Physical Activity (self-report min/week)</p> <p>Physical Activity (step counts/day)</p> <p>Height & Weight (BMI)</p> <p>Blood Pressure (Systolic & Diastolic)</p> <p>Haematological (blood glucose, total cholesterol, C-reactive protein, cortisol)</p>	<p>There were no significant changes in physical activity from baseline to post-intervention, in terms of self-reported minutes spent in activity in the previous week.</p> <p>There were no significant changes in physical activity from baseline to post-intervention, in terms of average daily step counts measured by a pedometer</p> <p>The intervention demonstrated no significant improvements from baseline to post-intervention on BMI.</p> <p>The intervention demonstrated no significant improvements from baseline to post-intervention on blood pressure (systolic or diastolic).</p> <p>The intervention demonstrated a small significant improvement from baseline to post-intervention on total cholesterol ($p=.025$). There were no significant differences on blood glucose, C-reactive protein or cortisol.</p>
Harvey et al. (2017).	<p>AUDIT-C</p> <p>WHO-ASSIST V3.0 (drug use & desire to use drugs)</p>	<p>The intervention group showed significant pre to post-intervention reductions in alcohol consumption ($p < .001$), while no significant changes were found in the waitlist control group. Changes in alcohol consumption were not significantly greater in the intervention group compared to the waitlist control group from Time 1 to Time 2.</p> <p>At Time 2, the intervention group demonstrated significantly lower scores in alcohol consumption compared to the waitlist control group, ($p < .05$, $d=-.43$). There was no significant mean differences on alcohol consumption between the intervention group and the waitlist control group at 1-month post-intervention.</p>

Table 7: Types of outcomes achieved by intervention¹

Author and year	Mental health	Performance	Psychosocial	Other (biological, lifestyle)	Psychological flexibility (as DV)
Bethay et al. 2013	x	-	-	-	-
Bond & Bunce 2000.	✓	✓	x	-	-
Brinkborg et al. 2011	✓	-	x	-	-
Burton et al. 2010	✓x(?)	✓	✓x	x ✓	✓
Flaxman & Bond 2010b	✓	-	-	-	-
Flaxman & Bond 2010a	✓	-	-	-	-
Harvey et al. 2017	✓	-	x✓	✓x	-
Hayes et al. 2004	✓	✓	-	-	-
Lloyd et al. 2013	✓	-	-	-	-
McConachie et al. 2014	✓(X)	-	-	-	X

¹ ✓ indicates outcome targeted and met, X indicates outcome targeted and not met, - means outcome not targeted (?) indicates unsure of whether outcomes were met. ✓x indicates mixed results with only some hypotheses met.

Author and year	Mental health	Performance	Psychosocial	Other (biological, lifestyle)	Psychological flexibility (as DV)
Noone & Hastings 2010.	✓(X)	-	-	-	-
Stewart et al. 2016	-	-	x✓	-	✓
Varra et al. 2008	-	✓		-	-
Waters et al. 2017	✓	-	-	-	✓

Table 8: Types of outcomes achieved based on length of intervention

Author and year	Format of intervention	Length of intervention (hours)	Contact Points	Homework	Number of Hypotheses achieved ²
Bethay et al. 2013	Single day	6	1	Yes	0/2
Varra et al. 2008	Single day	6	1	No	4/4
Waters et al. 2017	Single day	6	1	No	3/3
Hayes et al. 2004	Single day	6	1	No	3/3
Flaxman & Bond 2010b	2 x half days	6	2	No	2/2
McConachie et al. 2014	Day + ½ day	9	2	Yes	1.5/3

² In some cases hypotheses were not explicitly stated. In these instances the authors have estimated what these were from the research / design measures.

Author and year	Format of intervention	Length of intervention (hours)	Contact Points	Homework	Number of Hypotheses achieved²
Noone & Hastings 2010.	Day + ½ day	9	2	Yes	1/2
Lloyd et al. 2013	2+1	9	3	Yes	4/4
Flaxman & Bond 2010b	2+1	9	3	No	3/3
Bond & Bunce 2000.	2+1	9.75 hours	3	Yes	3 / 4
Brinkborg et al. 2011	4 x 3 hours sessions	12 hours	4	Yes	3 / 4
Burton et al. 2010	11 x 2 hour workshops	22	11	Yes	1/5
Stewart et al. 2016	3 day workshop	18 hours	3	No	1.5/2
Harvey et al. 2017	5 days	30 hours	5	Yes	7/8

Table 9: Process data

Author / year	Process measure used	Mediated (yes / no)	Outcomes Mediated
Bethay et al. (2013)	Burnout Believability Scale (cognitive defusion)	Yes for distress (GHQ) scores, in only for high baseline distress participants	No analysis of the BBS was carried out on all participants due to lack of significant treatment effect on outcome variables. For those who scored > 11 on GHQ there was a concurrent decrease in BBS scores from pre-test to follow-up in the ACT+ABA group relative to ABA group, $p=.009$, accompanying a significantly greater decrease in distress in the ACT+ABA group relative to the ABA group (as shown in the wellbeing outcomes table).

Author / year	Process measure used	Mediated (yes / no)	Outcomes Mediated
Bond & Bunce (2000).	AAQ Dysfunctional Attitude Survey Mediating: Work Change	AAQ - Yes (for GHQ, BDI and propensity to innovate) DAS & Work Change (no mediating effect in ACT group for any studied outcomes)	<p>In the ACT condition change in outcome was mediated by the acceptance of undesirable thoughts and feelings, but not by change in the presence of those thoughts or by innovatively modifying work stressors. In contrast, but as predicted, change in propensity to innovate in the IPP condition was mediated by work change but not by the AAQ or DAS. AAQ scores decreased significantly from T1 to T4, indicating greater psychological acceptance, only in the ACT condition, $p < .000$.</p> <p>In ACT Group for GHQ: Before AAQ entered as covariate: Effect size was .397 ($p < .001$). After AAQ entered as covariate: Effect size was .278 ($p < .001$). This was a 30% reduction in effect size when AAQ taken into account. There was no attenuating effect of work change or DAS on effect sizes.</p> <p>In ACT Group for BDI: Before AAQ entered as covariate: Effect size was .161 ($p < .01$). After AAQ entered as covariate: Effect size .036 and the F statistic for BDI was no longer significant. This was a 78% reduction in effect size when AAQ taken into account. There was no attenuating effect of work change or DAS on effect sizes.</p> <p>In ACT Group for Propensity to Innovate: Before AAQ entered as covariate: Effect size was .399 ($p < .001$). After AAQ entered as covariate: Effect size was .353 ($p < .001$). This was 12% reduction in effect size. There was no attenuating effect of work change or DAS on effect size.</p>

Author / year	Process measure used	Mediated (yes / no)	Outcomes Mediated
Brinkborg et al. (2011).	AAQ	Yes (for all outcomes except DCSQ)	Statistically significant positive correlations between AAQ and outcome measures demonstrated that higher change values in AAQ from pre to post-treatment reflected greater improvements in PSS ($r=.52$), GHQ ($r=.56$), MBI-total scale ($r=.45$), Pbse ($r=.24$), all p 's $<.05$. No significant correlations were found between AAQ and DCSQ- control or DCSQ-demand.
Burton et al. (2010).	Mindful Attention Awareness Scale AAQ-II	NA	No mediation analysis was conducted on these outcomes, they were treated as dependent variables with the following results: There were significant improvements from baseline to post-intervention on mindfulness $t(15)=3.362$, $p=.004$. There were significant improvements from baseline to post-intervention on acceptance $t(15)=2.847$, $p=.012$.
Flaxman & Bond (2010a).	AAQ	Yes (for GHQ)	In the ACT condition, an increase in AAQ scores fully mediated the beneficial impact of ACT on GHQ scores, even after controlling for change on the DAS (dysfunctional cognition). There was a statistically significant total indirect effect (estimate=-4.09; bias corrected [BC] 95% CI -7.87, -.42, and a significant specific indirect effect of ACT through the AAQ (estimate= -4.98; 95% BC CI -9.80, -1.63). The specific indirect effect of ACT through the AAQ was significantly larger than the effect through the DAS (estimate=5.88, BC 95% CI .42, 12.83).
Hayes et al. (2004).	Stigmatizing Attitudes-	Yes (for stigma and	A marginally significant Time x Treatment interaction was obtained, $p =.073$. Participants in the ACT condition

Author / year	Process measure used	Mediated (yes / no)	Outcomes Mediated
	Believability (SAB)	overall burnout)	<p>showed significantly lower levels of believability of stigmatising thoughts at posttreatment, $t(29)=2.31$, $p=.028$, and continued to do so at follow-up, $t(29)=2.48$, $p=.019$. The educational control condition did not show changes at either point, the multicultural training group only showed improvement at post-treatment. ACT showed significantly lower SAB difference scores than did the educational control condition from pre to posttreatment, $t(53)=-2.12$, $p=.038$, and pretreatment to follow-up $t(56)=-2.73$, $p=.008$.</p> <p>Four mediational analyses conducted examining the mediating role of the SAB in stigma and overall burnout results produced by the ACT and multicultural conditions. In the ACT group versus the control group as related to follow-up burnout scores, the first condition (Spearman=.28, $p=.03$), second condition (Spearman=.28, $p=.03$) and third condition (Spearman=.22, $p=.035$) were met, and the fourth condition was marginally met ($B=.22$, $SE=.11$, $t=1.95$, $p=.056$). For the multicultural training versus control, no conditions were met. In the ACT group versus the control group as related to follow-up CASA scores, all conditions were met: first (Spearman=.28,$p=.03$), second (as above), third (Spearman=.43, $p=.001$) and fourth ($B=.59$, $SE=.20$, $t=2.97$, $p=.004$). For the multicultural training versus control, condition 1 and 2 were not met. This pattern suggests that the believability of stigmatising attitudes may function as a mediator of ACT's impact (but not multicultural training's impact) on stigma and burnout.</p>

Author / year	Process measure used	Mediated (yes / no)	Outcomes Mediated
Lloyd et al. (2013).	AAQ-II (17 item)	Yes (for Emotional Exhaustion and in turn for Depersonalis ation, but not for Strain)	<p>There was a significant group by time interaction for psychological flexibility, $F(3,294) p < .01, n^2=.04$. In the ACT group, there was a significant increase in psychological flexibility between Time 2 and Time 3, $F(1,42)=12.57, p < .001, n^2=.23$, and a significant decrease between T3 and T4, $F(1,42)=6.95, p < .01, n^2=.14$, while no significant changes were observed in the control group. When Time 1 psychological flexibility scores were entered as a covariate, psychological flexibility was significantly lower in the ACT group than the control group at T2, $F(1,97)=4.62, p < .05, n^2=.05$, but there were no other significant differences between the two groups at other time points.</p> <p>Emotional Exhaustion (EE): Findings indicated that in the ACT group, the significant Time 2 to Time 3 increase in psychological flexibility mediated the significant Time 2 to Time 4 decrease in EE (Bootstrap Estimate=.8938, SE=.5727). Consistent with the ACT mediation model, further analysis demonstrated that EE had its basis in low levels of psychological flexibility, rather than strain (i.e. it was increases in psychological flexibility, not decreases in strain that accounted for decreases in EE).</p> <p>Strain: The potential mediating effect of increases in psychological flexibility on decreases in strain was not examined, as they showed changes over the same intervals (i.e. concomitant effects).</p> <p>Depersonalisation (D): Significant decreases in emotional exhaustion in the ACT group from Time 2 to Time 4 (that was found to relate to an earlier increase in psychological</p>

Author / year	Process measure used	Mediated (yes / no)	Outcomes Mediated
			<p>flexibility) buffered against a Time 3 to Time 4 increase in D in the ACT group, (Bootstrap estimate=.3721, SE=.2617), (ie. mediated the maintenance of D levels between Time 3 and Time 4). Additionally, decreases in strain at Time 2 to Time 3 mediated the decreases in D at Time 2 to Time 4 in the ACT group (Bootstrap Estimate=.5602, SE=.3534). Consistent with the hypotheses and mediation model, D had its basis in EE and strain, which in turn have their basis in psychological flexibility (i.e. ACT was having its effects through multiple mechanisms, rather than just psychological flexibility).</p>
<p>McConachie et al. (2014).</p>	<p>AAQ-II (7 item) The White Bear Suppression Inventory (WBSI)</p>	<p>NA</p>	<p>No mediation analysis was conducted on these outcomes, they were treated as dependent variables.</p> <p>A significant interaction effect for time * condition was found for thought suppression. Post Hoc analysis found a significant reduction in WBSI scores between post and follow-up in the intervention group (p = .005). Regarding the clinically distressed group of participants, a significant interaction effect for time by condition was found for thought suppression. Post hoc analysis found a significant drop in WBSI scores in the intervention group between time 2 and 3 (p = .002), and between time 1 and 3 (p = .028).</p> <p>No significant interaction effect for time * condition was found for the AAQ-II measure of experiential avoidance/ psychological flexibility. Regarding the clinically distressed group of participants, no significant interaction effect was found for condition by time for the AAQ-II.</p>

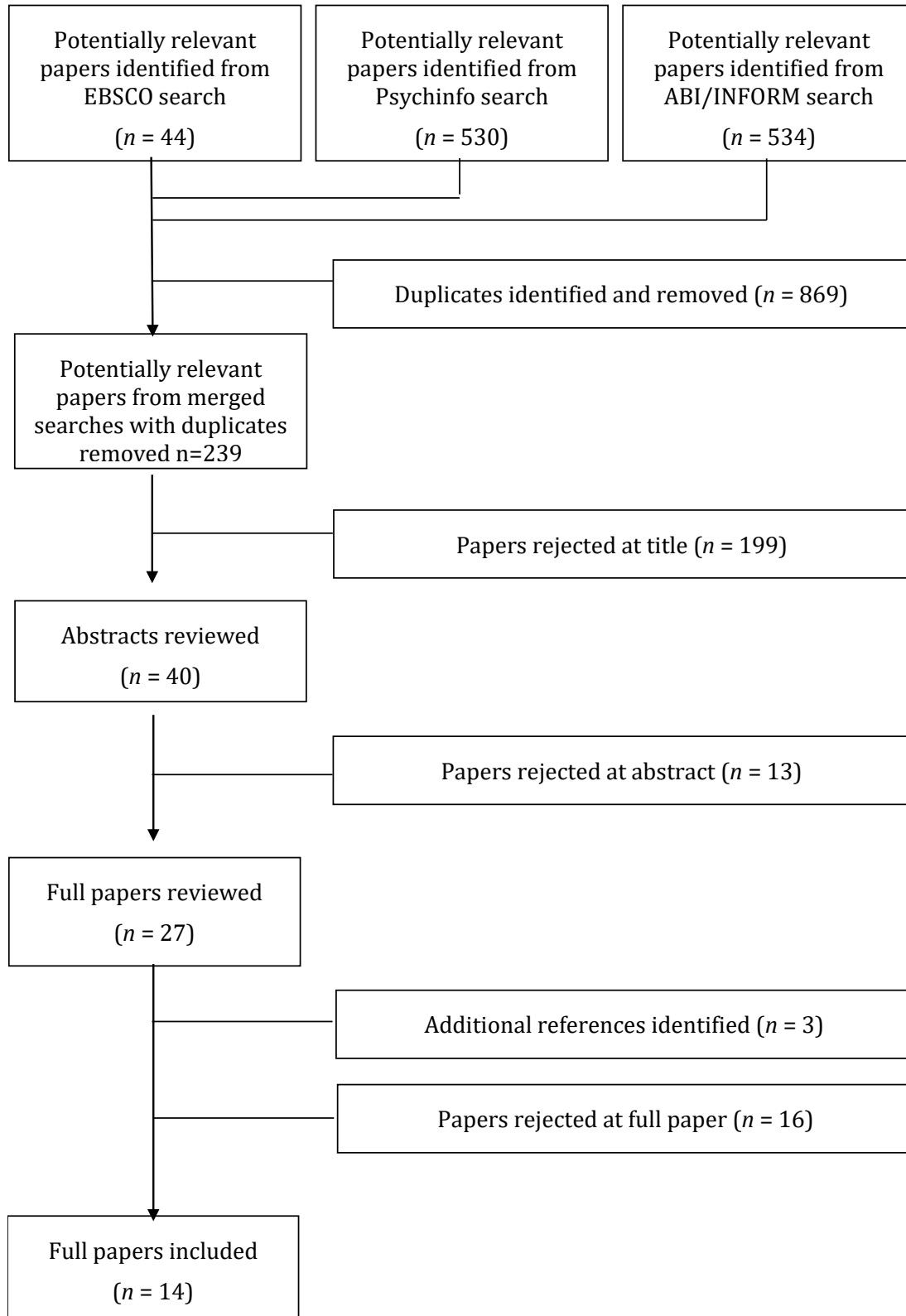
Author / year	Process measure used	Mediated (yes / no)	Outcomes Mediated
Stewart et al.(2016).	AAQ-II (7 item)	No (for SWLQ)	<p>From their correlational analysis, changes in AAQ-II scores did not appear to mediate changes on SWLS - because changes in AAQ-II scores were not correlated with changes in SWLS scores.</p> <p>The intervention demonstrated a significant effect for time on the AAQ-II, $F(2,33)=9.991$, $p=.000$, $\eta^2=.227$, with significant decreases in AAQ-II (inflexibility) scores from baseline to 3-months post-baseline ($p=.001$) and from post-workshop to 3-months post baseline ($p=.013$).</p> <p>There was no significant correlation between changes in AAQ-II scores and the SWLS from baseline to 3-month post-baseline.</p>
Varra et al. (2008)	Acknowledgment and believability of barriers to using empirically supported treatments AAQ (16 item)	<p>Yes - changes in willingness to refer was mediated by changes in believability and psychological flexibility (independently and together).</p> <p>Yes - Changes in referrals were mediated by</p>	<p>Changes in willingness to refer to pharmacotherapy at follow-up were mediated by changes in flexibility (Point estimate=.24, SE=.133, $z=1.83$, $p < .05$) and changes in believability (Point estimate=.43, SE=.178, $z=2.42$, $p < .05$ at post, both in total (Point Estimate=.67, SE=.221, $z=3.05$, $p < .005$), and for each mediator controlling for the other. Changes in actual referrals at follow-up were mediated by both working together (Point estimate=.48, SE=.205, $z=2.36$, $p < .05$), but when examined individually only change in believability of barriers functioned as an independent mediator (Point estimate=.35, SE=.172, $z=2.03$, $p < .05$). However, changes in psychological flexibility increased the indirect effect beyond change in believability alone (Point estimate=.14, SE=.117, $z=1.16$, $p < .25$).</p>

Author / year	Process measure used	Mediated (yes / no)	Outcomes Mediated
		both mediators together.	
Waters et al. (2017)	AAQ-II (7 item) Five Facet Mindfulness Questionnaire Automatic Thoughts Questionnaire (frequency & believability)	AAQ-No Mindfulness -Yes (especially observing and non- reactivity subscales)	<p>At 3-months post-intervention, the ACT condition demonstrated significantly higher levels of psychological flexibility ($B=-6.40$, $p=.03$). At 3-months post-intervention, the ACT condition demonstrated significantly higher levels of mindfulness skills ($B=-14.62$, $P=.001$). At 3-months post-intervention, the ACT condition demonstrated significantly less fusion with negative cognitions ($B=16.54$, $p=.04$). The ACT workshop did not result in statistically significant reductions in the frequency of negative automatic thoughts.</p> <p>There was no statistically significant mediation effect of increased psychological flexibility on the ACT intervention's effect on mental health.</p> <p>There was a specific indirect effect of the ACT intervention on GHQ-12 scores via an increase in mindfulness skills from pre to post-intervention: estimate=2.42, Bca 95% [CI .42, 7.21]. There was also a significant contrast comparing the relative influence of change in mindfulness skills and change in frequency of negative cognitions; estimate=2.54, BCa 95% [CI .17, 9.89]. This suggests that ACT's effects on mental health via increased mindfulness was significantly larger than the effect occurring through decreased frequency in negative thoughts. Furthermore, there were significant group by time interaction effects only for the FFMQ's observing and non-reactivity subscales. The observing</p>

Author / year	Process measure used	Mediated (yes / no)	Outcomes Mediated
			<p>and non-reactivity facets total indirect effect was statistically significant, and there were also significant indirect effects of ACT on employees' mental health via the increase in observing (estimate=1.72, BCa 95%, C .07, 5.09) and via the increase in non-reactivity (estimate=2.52, BCa 95% CI .12, 6.45).</p> <p>There was no statistically significant mediation effect of cognitive defusion on the ACT intervention's effect on mental health. Additionally, the specific indirect effect of ACT on the GHQ-12 via change in the frequency of negative thinking was not significant.</p>

Figures

Figure 1. Search results flow diagram



The Impact of a Focused Acceptance and Commitment Training Workplace Intervention: Is Less, Less?

Abstract

For the past two decades Acceptance and Commitment Training (ACT) interventions have shown promising results for a wide variety of outcomes relevant to employees and organisations. However, evidence is limited for their effectiveness in short, 'focused' training interventions or when used as part of organisation-wide training initiatives.

Employing a randomised waitlist control study design, we sought to assess whether a half-day ACT intervention could ameliorate negative outcomes, specifically burnout, whilst enhancing positive outcomes, specifically performance and resilience. In addition, we assessed whether a key process variable - psychological flexibility - explained these improvements, and whether the intervention benefitted only some or all of the participants.

Participants who completed the ACT intervention ($n = 110$) reported significantly lower levels of burnout risk and significantly higher levels of performance and resilience at Time 2 when compared with waitlist control participants ($n = 90$). In line with theory, increases in psychological flexibility significantly predicted each outcome variable at Time 3 over and above the initial Time 1 levels of each variable. As predicted, those with initially high levels of emotional exhaustion and low resilience benefitted the most. However, moderation analysis revealed that all participants benefitted from the intervention, irrespective of their initial Time 1 scores.

This study provides support for promoting short versions of Focused ACT for all employees, and for further research into process-driven interventions. Further implications for theory and practice are discussed.

Keywords: acceptance and commitment therapy (ACT), workplace stress, workplace performance, burnout, workplace training, intervention study, psychological flexibility.

Introduction

The demands of the modern work environment, and the concomitant challenges to the mental wellbeing of employees, are well known. In the UK alone, work-related stress accounts for 37% of ill health and 45% of days lost (Health and Safety Executive, 2016). The Thriving at Work report (Farmer & Stevenson, 2017) estimated the overall cost of poor mental health to the UK economy at £74 - £99 billion p.a.

Yet for organisations, the challenge extends beyond simply reducing the impact of stressful environments. In a competitive modern work environment, performance is a constant priority, and the links between psychological wellbeing and performance at work are also well established (e.g. Robertson, Cooper, Sarkar & Curran, 2015). There is evidence that wellbeing factors directly affect workplace performance; for example, fatigue in nurses has been linked to increased medication errors, work-related injuries and decreased productivity (Kunert, King & Kolkhorst, 2007).

From an organisational perspective, this is the 'getting more from less' era (Chartered Institute of Personnel and Development, 2009) and many practitioners are working with organisations who are looking for short training interventions which bring wide-ranging and fast results. Reducing the impact of poor psychological wellbeing whilst improving performance is therefore appealing for employees and employers alike, and there have been calls to establish an evidence base for interventions that achieve these aims (e.g. Dahl, Wilson & Nielson, 2004).

Evidence is mounting that one such intervention, Acceptance and Commitment Training (ACT), could help meet these calls (Moran, 2011). ACT has demonstrated that it can improve outcomes related to psychological wellbeing and performance simultaneously (e.g. Bond & Bunce, 2000). However, to date much of the evidence for ACT training in organisations has been based on three separate face-to-face sessions (see Flaxman, Bond & Livheim 2013 for a popular existing protocol) with groups of volunteers. In a recent systematic review, the average ACT workplace intervention was shown to be 10.6 hours in duration, over 3 separate contact points (Archer, Lewis & Yarker, under review).

Whilst this format has demonstrated the relevance of ACT to the workplace, gaining buy-in from organisations for three separate sessions can be difficult as it is expensive, logistically

complicated and can lead to high levels of attrition (see Lloyd, Bond & Flaxman, 2017). Whilst several ACT studies point to the efficacy of shorter, day-long interventions (e.g. McConachie, McKenzie, Morris & Walley, 2014; Waters, Frude, Flaxman & Boyd, 2017), these still require a whole day out of the office for busy workers. This increases costs and in turn the risk that training is limited to a select group of employees, for example leaders (Querstret, Cropley & Fife-Shaw, 2017) or those already identified as suffering from high stress (e.g. Dahl et al., 2004, Flaxman & Bond, 2010a). This may increase the stigma of such training (Flaxman & Bond, 2010b), but it may also represent a missed opportunity to make the benefits of potentially valuable training available to all employees. It is this opportunity that is leading to calls for ACT to be scaled across broader populations (e.g. Hayes, 2014; Patel, 2015) and new working contexts (Brinkborg, Michanek, Hesser & Berglund, 2011). Finding ways for all employees to learn ACT in shorter timeframes may increase accessibility for all employees, benefitting individuals and organisations alike. In this study we demonstrate that such interventions can maintain effectiveness when delivered across an entire workforce in a half-day format. In keeping with theory, beneficial results are found whilst maintaining their integrity in terms of explaining why changes occur. We show that different people benefit in different ways from ACT interventions, but crucially, that all benefit. From a practical perspective this has implications for the way in which workplace ACT interventions are marketed, delivered and researched. Further implications for researchers and practitioners are discussed.

Acceptance and Commitment Training (ACT)

ACT is a so-called ‘third-wave’ or contextually-based Cognitive Behavioural Therapy intervention which focuses on the fundamental processes of change, rather than the alleviation of any particular disorder:

“In ACT, our focus is not on the myriad displays of human suffering (symptoms and syndromes) but rather on the processes that control the whole show” (Hayes, Strosahl & Wilson, 2012, p.60).

The ‘processes that control the show’ are thought to contribute both to the alleviation of human suffering and to the promotion of valued living. Because in theory ACT focuses on the processes fundamental to all human behaviour, its effects are contextually sensitive,

helping people to behave in ways that are more workable (i.e. effective) for the situation they are in (Hayes et al., 2012). Partly for this reason, process-focused interventions have been called the “future of intervention science” (Hofmann & Hayes, 2018, p1).

The central process within ACT is psychological flexibility, which is defined as the ability to contact the present moment fully as a conscious human being, and to persist or change behaviour in the service of chosen values (Hayes, Strosahl, Bunting, Twohig, & Wilson, 2004). Psychological flexibility is promoted by combining skills which enhance mindful awareness with those which increase clarity and commitment to important values and goals. Mindful awareness has been shown to mediate reductions in psychological distress (Waters et al., 2017). In addition, by ‘contacting the present moment fully’ those higher in psychological flexibility are more aware of opportunities in the environment to move towards what matters to them (Bond, Lloyd, Flaxman & Archer, 2016,).

Kashdan (2010) suggests that improving psychological flexibility promotes a wide range of practical benefits, many of which are relevant to the workplace. These include adapting to different situational demands; maintaining balance between different life domains; and staying committed to behaviours that match important values and goals. In theory therefore, psychological flexibility helps different people in different ways. For one person it may alter the psychological factors that contribute to burnout (e.g. Lloyd, Bond & Flaxman, 2013), for another it may lead to greater innovation (Bond & Bunce, 2000) or a reduction in work errors (Bond & Bunce, 2003).

Collectively these studies suggest that ACT interventions may benefit all employees, according to their context. In addition, process-focused approaches suggest greater brevity and scalability are possible, as interventions can target specific processes of change more precisely (Hofmann & Hayes, 2018, Querstret et al., 2017). Given its theoretical basis and empirical backing, researchers have called for more widespread implementations of ACT in the workplace, including those with less homogenous samples (Bond & Bunce, 2003) and which are broader in scope (Dahl et al., 2004). There have been calls to get ACT ‘into the water supply’ of organisations so that employees can learn psychological flexibility as a general workplace skill (Archer & Collis, 2011; Bond & Flaxman, 2006) and so that more effective cultures may develop (Biglan, Layton, Jones, Hankins & Rusby, 2013).

In terms of assessing the effectiveness of broader interventions, ACT's focus on fundamental processes implies that it should not be judged solely on its ability to alleviate psychological distress. The primary goal of any ACT intervention is to help people engage in behaviour that moves them towards their values and goals. It is this which alters the function of difficult thoughts and emotions (rather than reducing their frequency) which in turn, promotes mental health (Hayes et al., 2012). Several studies have tested this twin focus by studying the impact of ACT interventions on health and performance simultaneously (e.g. Biglan et al., 2013; Bond & Bunce, 2000; Burton, Pakenham & Brown, 2010). Two prominent researchers in the field of intervention science have recently called for further research into interventions which "resolve the problems and promote the prosperity of individuals" (Hofmann & Hayes, 2018, p7).

We therefore took a two-pronged approach to our analysis. Firstly, we measured aspects of the workplace which could be considered 'negative' and assessed whether these could be reduced through a short ACT intervention. Second, we measured aspects of the workplace that could be considered 'positive' and assessed whether these could be enhanced. We now explain each domain in turn.

ACT's Role In Reducing Negative Human Functioning

Psychological flexibility has shown to have played an important role in the reduction of a wide range of psychological issues (Biglan, Hayes, & Pistorello, 2008; Noone & Hastings, 2010; Varra, Hayes, Roget, & Fisher, 2008). Theoretically, by adopting a mindful approach, psychologically flexible people learn to detach from difficult thoughts and emotions, thereby spending less time and energy trying to avoid or suppress them, facilitating better mental health (Hayes, Luoma, Bond, Masuda & Lillis, 2006).

In keeping with this theory, ACT interventions have been shown to have a broad impact on the alleviation of negative human functioning in the workplace, including reducing depression (Bond & Bunce, 2000), burnout (Hayes et al., 2004; Lloyd et al., 2013), and psychological distress (McConachie et al., 2014). The evidence for ACT's effectiveness is particularly strong for those already high in distress (Bethay, Wilson, Schnetzer, Nassar and Bordieri, 2013; Brinkborg et al., 2011; McConachie et al., 2014). Viladarga et al., (2011) also showed that ACT has a role to play in burnout prevention even after traditional work-site

factors, including job control, salary, social support, workload, and tenure had been accounted for.

ACT's Role In Enhancing Positive Human Functioning

In theory, those with greater psychological flexibility perform more effectively at work because they can redistribute attention and energy away from containing their difficult thoughts and emotions, towards noticing opportunities to move towards their goals and values (Bond & Bunce, 2003; Bond & Flaxman, 2006).

The “goal-related context sensitivity” hypothesis (Bond & Hayes, 2002) states that psychologically flexible people are more willing to move towards their goals and take effective action, even in the presence of anxiety and doubt. For example, Bond, Flaxman and Bunce (2008) found that psychologically flexible employees benefitted more from an intervention to improve organisational design and job control, because they were more aware of opportunities to put their extra control to use and more willing to act on that awareness. Over time, the awareness of psychologically flexible people allows them to seize goal-related opportunities, gain a sense of environmental mastery (Burton, Pakenham & Brown, 2010), and receive greater reinforcement from work, leading to further improvements in mental health and performance (Bond & Hayes, 2002).

Empirically, psychological flexibility has been associated with a diverse range of positive workplace outcomes, such as faster learning of a computer software program amongst financial services employees (Bond & Flaxman, 2006), greater innovation in a media organisation (Bond & Bunce, 2000), and the implementation of more effective working practices (Varra et al., 2008).

Psychological flexibility as fundamental process of change

An important feature of ACT research is its clarity in terms of explaining how interventions have their effect. Several studies have shown that it is psychological flexibility that mediates improvements, both in terms of reducing psychological distress (e.g. Hayes et al., 2004; Lloyd et al., 2013) and enhancing performance (e.g. Bond & Bunce, 2000; Varra et al., 2008).

Several researchers have emphasised the importance of identifying how interventions work, as well as the circumstances in which an intervention works and for whom, so that they can

become more effective (Kazdin, 2007; Querstret et al., 2017). Given ACT's process focus, it is particularly important to assess the role that psychological flexibility plays as a mediator of change (Ciarrochi, Bilich, & Godsell, 2010) and to explore who benefits from psychological flexibility and in what circumstances (Flaxman and Bond, 2010b). For example, several ACT studies have found larger effect sizes for studies that target distressed workers (e.g. Brinkborg et al., 2011; McConachie et al., 2014; Noone & Hastings, 2010; Waters et al., 2017). However, some intervention studies have shown greater effectiveness for those starting with lower levels of distress (de Vente, Kamphuis, Emmelkamp & Blonk, 2008). Onwezen, van Veldhoven & Biron (2014) also found that employees no longer benefit from psychological flexibility when they are already experiencing high levels of emotional exhaustion from excessive job demands.

In analytical terms, probing data for mediators and moderators allows researchers to better understand how interventions work, who they work for and in what context. Interventions can therefore become more effective by targeting particular issues in a working population, or by tailoring content to specific needs (Levin, Haeger & Cruz, 2018).

In this context, comparatively little is known about the effectiveness of short (i.e. half-day) ACT interventions, or their ability to help employees who are not stressed or reporting low performance initially. Several researchers have called for more research looking at whom interventions benefit and in what context (Bunce, 1997; Lloyd et al., 2017). From a practitioner's perspective it is also useful to know whether all participants will benefit from an intervention or only those in a particular group. For example, do healthy, high performers still benefit from ACT? A logical extension of the literature is to test whether short interventions can benefit all employees, whilst maintaining their theoretical integrity by demonstrating that it is psychological flexibility that explains these improvements.

ACT as a Focused Intervention

Theoretically, there are reasons to believe that short ACT interventions can be effective, as its focus on fundamental human processes enables researchers to target specific mechanisms of change (i.e. psychological flexibility), enabling training to become more efficient (Flaxman & Bond 2010a) and quicker to learn (Richards et al., 2011).

Empirically, significant improvements have been elicited from brief clinical interventions (ranging from 15 -90 minutes) for improving physical health (Vijay, Wilson, Suhrcke, Hardeman & Sutton, 2016), reducing substance misuse (Garner et al., 2017) and smoking cessation (Schimmel-Bristow, Bricker & Comstock, 2012).

Kirk Strosahl, one of the creators of ACT, is currently researching brief (or 'Focused') ACT interventions, with effect sizes comparable to those of longer-term protocols for the same conditions (personal communication, 9th May 2018). Researchers have found that Focused ACT interventions can be effective in ameliorating psychological ill-health, as well as enhancing valued living, with participants who were experiencing mild to moderate emotional symptoms (Ruiz, Hernández, Falcón and Luciano, 2016). A later study showed that clinically significant change was also achievable with participants already suffering from moderate to severe emotional disorders (with large effect sizes), after just two Focused ACT sessions of 60 minutes (Ruiz et al., 2018).

In the workplace, short (one-day) sessions have also demonstrated positive outcomes (Dahl et al., 2004, McConachie et al., 2014). Waters et al., (2017) demonstrated that a single day's training could be effective, with 50% - 69% of initially distressed employees exhibiting clinically significant improvement 3 months after a 6-hour intervention.

However, research is in its infancy in terms of showing whether half-day training interventions can have similar effects. Pierson et al., (2005) showed that a half-day ACT workshop could enhance learning taken from a day-long Motivational Interviewing intervention in terms of adherence to best practice (cited in Bond, Hayes & Barnes-Holmes, 2006). Two half-day ACT sessions have been shown to be effective in terms of improving mental health in the workplace (Flaxman & Bond, 2010a) and reducing stress (Biglan et al., 2013). Researchers have also demonstrated that ACT can be delivered flexibly, with workplace interventions being delivered via a series of face-to-face training sessions (e.g. Burton et al., 2010), one-off workshops (Bethay et al., 2013; Varra et al., 2008), and using internal resources to deliver rather than external trainers (Waters et al., 2017).

To our knowledge no study has explored the impact of a single half-day workplace ACT intervention (which we will now call a Focused ACT intervention) when rolled out across an organisation. In this study we seek to explore the effectiveness of such an intervention, in terms of both ameliorating negative aspects of human functioning and enhancing positive

aspects. We also seek to explore whether increases in psychological flexibility explain the effects of the intervention over a 3-month period, and to explore who benefits from the intervention by examining the moderating effects of those with different levels of each of the outcome variables at Time 1 (for example, does it benefit only those who are initially exhausted at the outset).

Research Objective 1: Assessing Beneficial Outcomes from a Focused ACT Intervention

The first research objective of this study was to evaluate the effectiveness of a half-day Focused ACT workshop which was being rolled out across an entire organisation.

Given the organisational backdrop of a demanding and relentless working environment, burnout risk was chosen as the key measure to assess the intervention's capacity to reduce negative functioning. ACT interventions have already shown they can reduce burnout risk (e.g. Brinkborg et al., 2011; Hayes et al., 2004). Lloyd et al. (2013) argued that psychological flexibility may act as an "initiating mechanism" in burnout reduction, reducing levels of emotional exhaustion and preventing the development of depersonalisation and subsequent burnout risk (p182).

As psychological burnout comprises three facets: emotional exhaustion, personal accomplishment and depersonalisation, we examine each of these facets individually.

Hypothesis 1 (H1)

Participants who complete the ACT training at Time 2 (T2) will report reduced burnout risk compared to those who had not completed the training at T2 (H1), specifically:

- lower levels of emotional exhaustion (H1a);
- higher levels of personal accomplishment (H1b); and
- lower levels of depersonalisation (H1c);

We next sought to explore the impact of the intervention on enhancing positive aspects of functioning. As practitioners we are interested in broadening the appeal of ACT training to organisational leaders and employers, so two performance-related measures were chosen. The first performance measure was task performance, i.e. tasks specific to one's core job; the second was a broader measure of contextual performance.

Hypothesis 2 (H2)

Participants who complete the ACT training at T2 will report improved performance over those who have not completed the training at T2 (H2), specifically:

- higher levels of task performance (H2a); and
- higher levels of contextual performance (H2b);

Because the training was promoted as ‘Resilience training’, we also wished to measure resilience to ensure good face validity. Resilience is commonly conceptualized as a feature of positive human functioning as it is defined as the ability to bounce-back, adjust or thrive following change or adversity (Garcia-Dia, DiNapoli, Garcia-Ona, Jakubowski & O’Flaherty, 2013). As such, resilient people are more likely to not only survive but thrive because they find ways to adapt and grow in the face of stress (Iacono, 2017). Occupational research suggests that resilient employees not only bounce back, they in fact bounce *forward* by finding opportunities in adversity. As such, they are more likely to perform better, demonstrate commitment, achieve a healthy work-life balance and effectively manage change (Mulqueen, 2014).

Hypothesis 3 (H3)

- Participants who complete the ACT training at T2 will report higher levels of resilience compared to those who have not completed the training at T2.

Finally, ACT training is purported to improve psychological flexibility as its central mechanism of change. Therefore, to examine our process variable further we hypothesise that:

Hypothesis 4 (H4)

- Participants who complete the ACT training at T2 will report higher levels of psychological flexibility over those who had not completed the training at T2.

Research Objective 2: Assessing processes of change and who benefits from training

The second research objective of this study was to explore ACT’s putative processes of change. Evidence that an intervention’s beneficial effects are being transmitted through changes in psychological flexibility would be consistent with ACT theory (Hayes et al., 2006).

We therefore sought to understand the role that our process variable, psychological flexibility, played with the other outcome variables at Time 3 (T3).

Hypothesis 5 (H5)

We predict that increases in psychological flexibility will account for improvements in the outcome variables at T3, (H5), specifically emotional exhaustion (H5a); personal accomplishment (H5b); depersonalisation (H5c); task performance (H5d); work performance (H5e); and resilience (H5f).

Previous research has indicated that ACT interventions may be particularly effective for those already stressed (e.g. Brinkborg et al., 2011). A number of studies have therefore focused their analysis on these populations (e.g. Flaxman & Bond, 2010b). However, as our study was part of an organisation-wide rollout, we sought to explore whether ACT can benefit everyone or only those in specific groups (for example those who are high in exhaustion or low in resilience at Time [T]1).

Hypothesis 6 (H6)

We therefore predict that increases in psychological flexibility will be more strongly associated with improvements in the outcome variables at T3 for those who have the greatest need at T1 (H6); specifically, those high in emotional exhaustion (H6a); low in personal accomplishment (H6b); high in depersonalisation (H6c); low in task performance (H6d); low in work performance (H6e); and low in resilience (H6f).

Finally, although we know that positive effects from ACT interventions can be maintained over time (e.g. Flaxman & Bond, 2010b), we do not know if short interventions can similarly maintain their effect. Querstret et al. (2017) state that many clinical studies assessing mindfulness-based interventions include substantial follow-up periods, but in contrast many workplace studies do not assess change beyond the end of the intervention. Therefore, as part of our analyses, we explore whether there is any evidence that positive changes from the shorter ACT intervention could be maintained over time (in this case, 3 months).

Method

Ethical approval

Ethical approval was granted by the University of Kingston Ethics Committee. Participants were provided with information relating to the survey process and what would happen to the data gathered. Each gave their informed consent and were made aware of their opportunity to withdraw at any stage of the research. Data were stored confidentially on a password protected site in an anonymous format.

Design

Data were collected from across an entire region of a large innovation and manufacturing company. This cross-nation study comprised 4 different countries, 7 worksites and 31 workshops spread across the Nordic region.

Between Time 1 (T1) and Time 2 (T2) we utilised a randomised waitlist control (RCT) design which compared those receiving the Focused ACT intervention (the active group) to the group awaiting training (control group). Due to client requirements and schedules for training delivery, both groups had received the training by Time 3 (T3).

Participants

The total sample comprised 504 working adults (47.4% females, n=239) all of whom received training. Nearly all employees attended the training (the organisation's own estimates were that under 5% of the total working population failed to attend a training session). The majority of participants were based in Sweden with an even split for Denmark, Finland and Norway respectively (see Table 1).

As the intervention in this study was a one-off training session, 'attrition' relates to the non-completion of one or more surveys. 410 participants completed the survey at T1 (80%), 340 at T2 (68%) and 337 at T3 (67%). The overall dropout rate in the current study was comparable with the only other randomised control trial ACT study which did not use volunteers (Harvey, Henriksen, Bimler, & Dickson, 2017), and to another ACT study which surveyed participants at 3 time points (Flaxman & Bond 2010b).

Overall, 200 (40%) out of the 504 participants completed all 3 time points. Of these, exactly 50% were female; n=100. 110 participants were in the active group and 90 in the control

group see (Table 2). As the organisation was concerned about the length of each survey, we were not able to collect any further biographical data.

Table 1

Location of Participants

Country	Participants trained	Participants Completing T1-3 surveys
Denmark	76 (15.1%)	44 (22%)
Sweden	282 (56%)	101 (50.5%)
Norway	72 (14.3%)	32 (16%)
Finland	74 (14.7%)	23 (11.5%)

Table 2

Demographic Variables for Active and Control Groups

	Active group	Control group	Total
Total number of participants	110	90	200
Total number of females	63 (57.3%)	37 (41.1%)	100 (50%)

Measures

The Maslach Burnout Inventory (MBI; Maslach, Jackson, & Leiter, 1996) is a measure of burnout containing 22 items that can be scored from 0 (never) to 6 (every day). The questionnaire comprises three subscales that can be interpreted independently: emotional exhaustion, which measures depletion of emotional energy (e.g., Item 20 is “I feel like I’m at the end of my rope”); depersonalization, which measures sensitivity to service recipients (e.g., Item 10 is “I’ve become more callous toward people since I took this job”); and personal accomplishment, which measures effectiveness in having a positive impact on recipients of service (e.g., Item 19 is “I have accomplished many worthwhile things in this job”). Cronbach’s alphas for the current study were as follows: Emotional Exhaustion T1 = .87, T2 = .91, T3 = .88, Personal accomplishment T1 = .78, T2 = .84, T3 = .81 and Depersonalisation T1 = .61, T2 = .78, T3 = .71.

Performance and Resilience Measures

We used the Task Performance subscale from the *Individual Work Performance Questionnaire* (Koopmans, Bernaards, Hildebrandt, van Buuren, van der Beek, & de Vet, 2012). Task performance can be defined as the proficiency with which individuals perform the core substantive tasks central to their job (Campbell, 1990). The Task Performance scale consists of 5 items that can be scored from 1 (seldom) to 5 (always). Items include 'In the past three months I was able to distinguish main issues from side issues' and "In the past three months I planned my work optimally'. Cronbach's alphas for the current study were as follows: T1 = .76, T2 = .79, T3 = .77,

Work Performance Questionnaire (Bond & Bunce, 2001). This one item-scale reads: "How well do you think that you have performed in your job, recently?" Answers are on a seven-point scale ranging from "very poorly" (1) to "extremely well" (7). Using a single-item global measure of performance allows the person to infer what they think is important rather than prescribe an aspect of a job that is important, allowing researchers to measure a person's overall feelings of competence. This is therefore a broader measure of contextual performance, i.e. whatever the respondent thinks of as their job.

Brief Resilience Scale (BRS) (Smith, Dalen, Wiggins, Tooley, Christopher, & Bernard, 2008); The BRS focuses on the 'bounce back' feature of resilience, supporting Carver's (1998) concept of resilience as returning to a previous level of functioning and/or "thriving". The BRS has been used in many different settings (Coelho, Hanel, Cavalcanti, Rezende & Gouveia, 2016) and was created to assess a person's ability to bounce back, adapt to stress, or thrive in the face of adversity. The scale consists of six items, with items 1, 3, and 5 positively worded (e.g. Item 1 "I tend to bounce back quickly after hard times"), and items 2, 4, and 6 negatively worded (e.g. Item 4 "It is hard for me to snap back when something bad happens"). Answers are on a 5-point scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Cronbach's alphas for the current study were as follows: T1 = .82, T2 = .82, T3 = .79.

Process Measures

Work-Related Acceptance & Action Questionnaire (Bond, Lloyd & Guenole, 2013).

The Work-Related Acceptance & Action Questionnaire (WAAQ) is a 7-item scale which is designed to measure psychological flexibility in the context of the workplace (Bond et al., 2013). In recent studies the WAAQ has shown higher correlations with work-specific

measures than the more widely used but general measure of psychological flexibility, the Acceptance and Action Questionnaire-II (Bond et al., 2013; Ruiz & Odriozola-González, 2014). Items include 'I am able to work effectively in spite of any personal worries that I have' and 'My thoughts and feelings do not get in the way of my work'. Answers are on a 7-point scale ranging from 1 (every day) to 7 (never). Cronbach's alphas for the current study were as follows: T1 = .89, T2 = .92, T3 = .90.

ACT Intervention

The training incorporated ideas and concepts from existing ACT manuals adapted for use in work settings (e.g. Bond & Hayes, 2002; Bond et al., 2013). An additional influence on the session was the developing field of Focused ACT (Strosahl, Robinson and Gustavson, 2012), which focuses on creating immediate change in clinical work. Key design principles include creating new relationships to stress symptoms (e.g. connecting emotional pain and values), thereby creating long-lasting meta-cognitive shifts. In accordance with the theory and practice of ACT, we focused on known mechanisms of change (see Waters et al., 2017) and the training emphasized the link between mindful awareness and values-based action skills (see Flaxman & Bond, 2006). Participants were given several opportunities to practise these skills during the session.

Metaphors and exercises were devised carefully to ground the content in an organisation-specific context. A working group comprised of volunteers from each site helped with this process in an effort to ensure relevance from the organisation's perspective, as well as to provide employees with a chance to influence the content of the intervention; an aspect which has been shown to be important in developing commitment to training interventions (Nielsen, Randall & Albertsen, 2007).

A final focus of the session was a strong emphasis on behavioural activation, with participants committing to a 'marginal gain' at the end of training as part of a 'behavioural challenge'. A key part of our strategy was that managers in particular were encouraged to identify marginal gains both for themselves and for their teams. They were then encouraged (and reminded) to refer openly to some of the key metaphors and ideas in the training in meetings and conversations with their team members.

Procedure

The training was open to all employees within the region (N=504), with no exclusion criteria applied. Details of the training were announced by the CEO and senior management team, in conjunction with a working committee made up of the HR and Learning or People officers at each work site. Participants were provided with a list of training dates at each venue and could sign up at a time of their choosing.

1 week prior to training, participants were e-mailed a link to the online questionnaire (T1) and made aware that the training was being conducted as part of a research project. Participation in the training was compulsory as this research was conducted as part of an organisation-wide training initiative, however participation in the research aspect (i.e. completion of the surveys) was voluntary and confidential (i.e. managers were not made aware of who had chosen to participate and who had not). All 7 measures were assessed at each of the 3 time points.

The training was delivered to employees during working hours in either a morning or afternoon session (i.e. half-day duration, 3.5 - 4 hours). Average attendance was 16 participants per session. After training, further materials were distributed in the form of reminders, additional resources and highlights from the slide deck. All sessions were facilitated by the first author who has over 10 years' experience of implementing ACT-consistent resilience training.

Immediately prior to training, the first author allocated each group of participants either to an 'active' training group or the 'control' group. This was done by drawing a random number from <https://www.random.org/> - even numbers were control groups and odd numbers were active groups.

For the control group, the survey was administered and completed immediately before training (T2). For the active group, the T2 survey was administered immediately after the training. Participants were then asked to complete the survey within 4 weeks and return it to the first author, or to the on-site resilience project representative from the working group.

Finally, all participants received a link to the survey 3 months after they had taken the training (T3). Further reminders were sent to those participants who had not responded to both T1 and T3 questionnaires at 1 and 2 weeks.

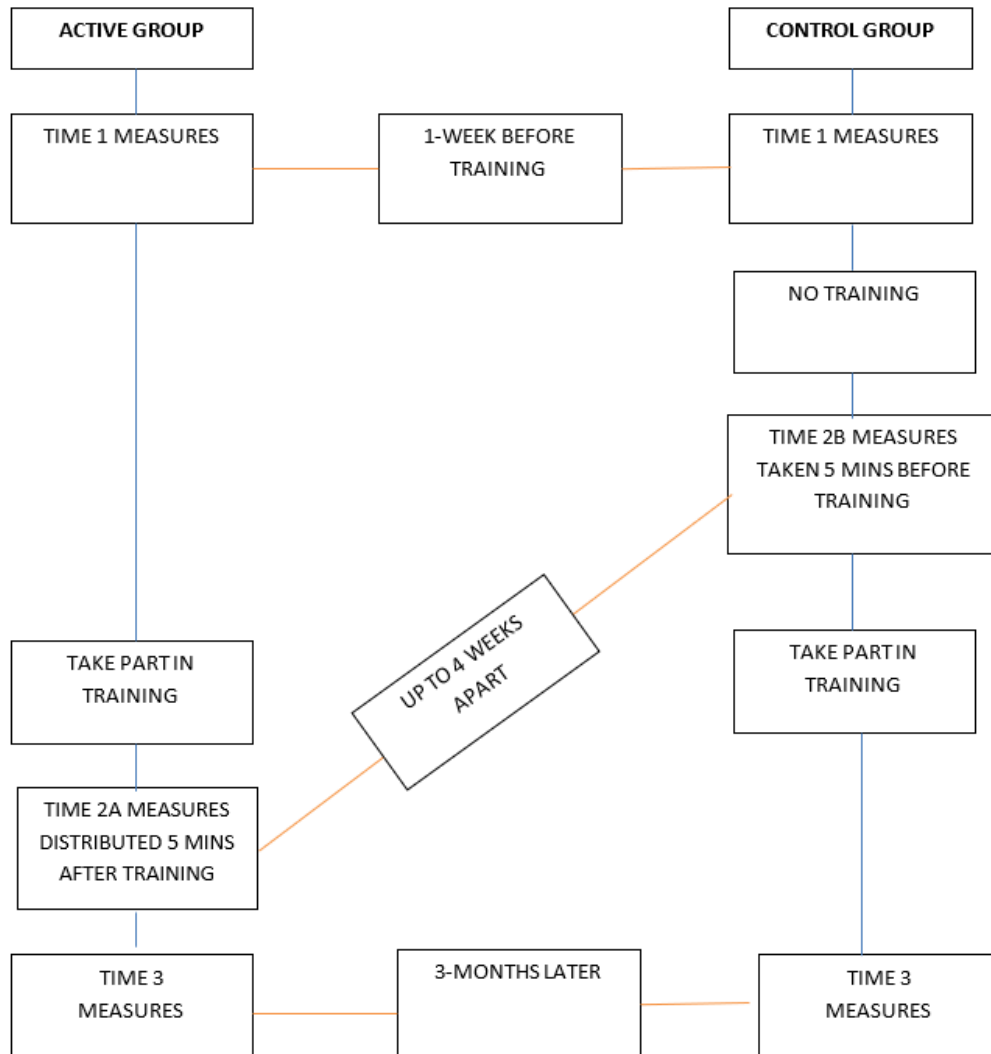


Figure 1. Study design flow diagram

Results

There were no significant differences on any of the variables at T1 between those who completed all 3 surveys and those who did not (Wilks' λ (lambda) = .986, $F(7, 402) = .811$, $p = .579$, $\eta p^2 = .014$). There were also no significant differences between men and women on any of the outcomes measured, Wilks' $\lambda = .948$, $F(7, 192) = 1.496$, $p = .171$, $\eta p^2 = .05$.

Subsequent analyses were based on the participants who completed all 3 surveys ($n=200$) and on the following group sizes: active group $n = 110$ and control group $n = 90$. No significant group differences on any variable at T1 were observed between the active and control groups (Wilks' $\lambda = .989$, $F(3, 196) = .725$, $p = .538$, $\eta p^2 = .011$).

Means and standard deviations (SDs) are presented in Tables 3 and 4 for Times 1 and 2 only, and in Table 5 for all 3 time points.

Change over time

Patterns of change in the means of each variable for active and control groups at each of the 3 time points can be observed at Figure 2. Note that the control group received training after T2, so by T3 they are technically active, however groups are portrayed separately to show the patterns of change in each group at each time point, and to help illustrate when changes occurred in each group.

As expected, the active group improved between T1 and T2 across all variables except depersonalisation. Further improvements were then observed between T2 and T3 across all variables, suggesting that changes were at least maintained.

In contrast the control group, which would be expected to stay the same at T2 as they had not received the training, deteriorated on all variables between T1 and 2, except emotional exhaustion which was almost identical (mean score of 2.00 at T1 and 1.98 at T2). However, this group subsequently improved across all variables between T2 and 3 after they had received training (although the improvements in emotional exhaustion were not significant). Additional analysis showing the significance of effects over time can be seen at Appendix A, Table 8. Although by T3 causality cannot be inferred (as both groups had received the training), these results are broadly consistent with previous research which shows a positive impact of ACT interventions over time.

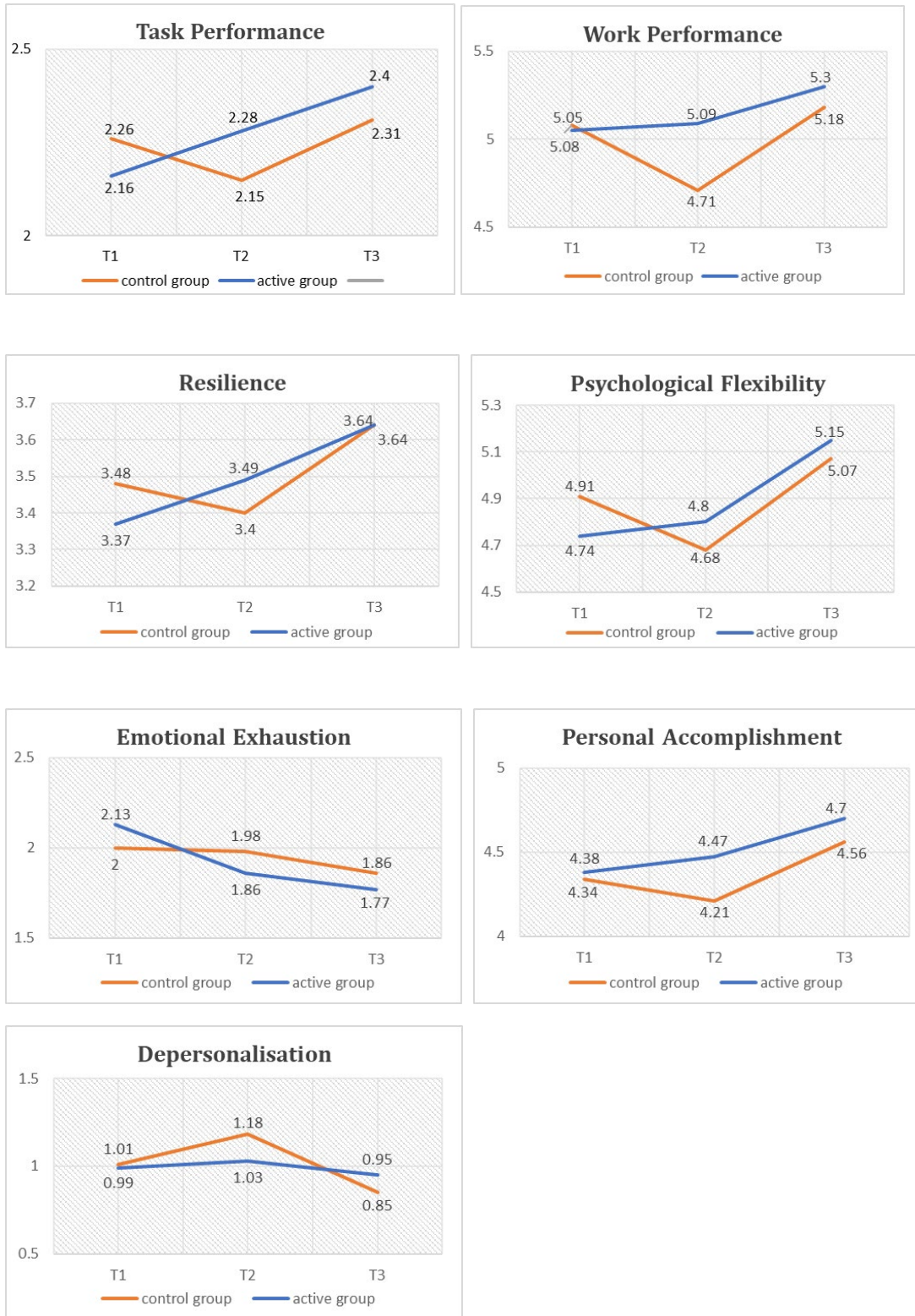


Figure 2. Change over time: mean scores for active and control groups at times 1, 2 and 3.

1. Comparisons between Groups at Time 2 – MANCOVA / ANCOVA

In the first step we sought to address hypotheses 1 - 4 by comparing differences between the active and control groups at T2. Separate multivariate analyses of covariance (MANCOVA) models were run for each group of outcome variables (i.e. burnout and performance and resilience). The MANCOVA assessed the effect of the intervention by comparing the active and control groups against each other at T2; therefore, the outcome variables in this analysis were assessed before the control group had completed the training and after the active group had completed the training. We then conducted individual analysis of covariance (ANCOVA) to assess the effect of the intervention on each of the outcome variables individually.

We first present the MANCOVA and ANCOVA results for the burnout variables (Hypotheses 1a-c), then we present the MANCOVA and ANCOVA results for the performance and resilience variables (Hypotheses 2 and 3). Finally, we present the ANCOVA results for the process variable, psychological flexibility (Hypothesis 4).

Analysis of Burnout Variables

Group level differences - Burnout variables (H1)

A MANCOVA was run with T2 scores for emotional exhaustion, personal accomplishment and depersonalisation entered as dependent variables and group (active vs. control) as the factor. We included T1 scores as covariates in the analysis because we wanted to assess differences between groups whilst controlling for initial levels of the dependent variable.

In support of hypothesis 1, a significant multivariate main effect for group was found, Wilks' $\lambda = .954$, $F(3, 189) = 3.061$, $p = .029$, $\eta_p^2 = .05$. According to Cohen's (1988) guidelines, partial eta squared (η_p^2) values of .01, .06, and .14 constitute small, medium, and large effect sizes respectively; therefore, the effect size was small.

Individual ANCOVAs – Burnout Variables (H1a-c)

Next, individual ANCOVAs were conducted to assess the effect of the intervention on each of the variables. For each ANCOVA analysis, T1 scores were entered as covariates in the model.

Consistent with hypotheses 1a and 1b, participants who completed the training reported significantly lower levels of emotional exhaustion, $F(1, 197) = 5.30, p = .022, \eta_p^2 = .026$ and higher levels of personal accomplishment, $F(1, 197) = 4.97, p = .027, \eta_p^2 = .03$, at T2 than participants who had not completed the training (see Table 3). The effect size for both emotional exhaustion and personal accomplishment was small (Cohen, 1988). It was noteworthy that after applying the Bonferroni adjustment to control for Type 1 errors, both these results narrowly miss the revised alpha of 0.017 (although emotional exhaustion remained significant when viewing the individual outcome results within the MANCOVA, $F(1, 196) = 6.78, p = .010, \eta_p^2 = .034$). These results are therefore to be treated with a degree of caution, and further research on this specific aspect may be needed (Clark-Carter, 2004).

Whilst results for **depersonalisation**, $F(1, 193) = 2.86, p = .093, \eta_p^2 = .02$, were in the direction of the hypothesis, this result was not statistically significant, so hypothesis 1c was not supported.

Table 3

Means, SDs and ANCOVA Summaries for Burnout Variables

	Active		Control		ANCOVA			
	<i>n</i>	<i>Mean (SD)</i>	<i>n</i>	<i>Mean (SD)</i>	Effect	<i>F</i> ratio	<i>df</i>	η_p^2
Emotional Exhaustion T1	110	2.13 (1.12)	90	2.00 (1.12)				
Emotional Exhaustion T2	110	1.86 (.96)	90	1.98 (1.19)	Group	5.30*	1,197	.026
Personal accomplishment T1	110	4.38 (.87)	90	4.34 (.98)				
Personal accomplishment T2	110	4.47 (.86)	90	4.21 (1.17)	Group	4.97*	1,197	.03
Depersonalisation T1	110	.99 (.89)	90	1.01 (.76)				
Depersonalisation T2	110	1.03 (.83)	90	1.18 (.82)	Group	2.86	1,193	.02

* $p < .05$

Analysis of Performance and Resilience Variables

Group level differences - Performance and Resilience variables (H2 & 3)

A MANCOVA was run with T2 scores for task and work performance and resilience entered as dependent variables and group (active vs. control) as the factor. We included T1 scores as covariates in the analysis in order to assess differences between groups whilst controlling for initial levels of the dependent variables.

In keeping with hypothesis 2, a significant multivariate main effect for group was found with medium effect size, (Cohen, 1988), Wilks' $\lambda = .897$, $F(3, 186) = 7.10$, $p < .001$, $\eta_p^2 = .10$.

ANCOVAs – Performance and Resilience Variables (H2a&b, H3)

Participants who completed the training reported significantly higher levels of task performance, $F(1, 196) = 9.29$, $p = .003$, $\eta_p^2 = .05$, work performance, $F(1, 190) = 14.7$, $p < .001$, $\eta_p^2 = .07$ and resilience $F(1, 197) = 6.73$, $p = .010$, $\eta_p^2 = .03$, at T2 than participants who had not yet completed the training (see Table 4). These results remained significant after applying the Bonferroni correction. The effect size for task performance and resilience was small, and for work performance the effect size was medium (Cohen, 1988).

Change in Process Variables (H4)

Consistent with hypothesis 4, participants who completed the training reported significantly higher levels of psychological flexibility at T2 than participants who had not yet completed the training, $F(1,196)=5.88$, $p=.016$, $\eta_p^2 = .03$, with a small effect size (Cohen, 1988).

To summarise, this stage of analysis revealed that the intervention influenced both burnout and performance / resilience outcomes positively between Time 1 and 2, in line with hypotheses 1-3. In addition, and in line with hypothesis 4, the intervention significantly improved the process variable psychological flexibility. It is noteworthy that T2 increases in the active group (4.74 – 4.80) were accompanied by decreases in the control group at T2 (4.91 ->4.68), which may partially have accounted for the differences between the groups. The reduction in control group scores between T1 and 2 was also observed across all of the other variables, except emotional exhaustion.

Table 4

Means, SDs and ANCOVA summaries for Performance and Resilience Variables

	Active		Control		ANCOVA			
	<i>n</i>	<i>Mean (SD)</i>	<i>n</i>	<i>Mean (SD)</i>	Effect	<i>F</i> ratio	<i>df</i>	η_p^2
Task Performance T1	110	2.16 (.65)	90	2.26 (.69)				
Task Performance T2	110	2.28 (.63)	89	2.15 (.66)	Group	9.29**	1,196	.05
Work Performance T1	110	5.05 (.95)	90	5.08 (1.00)				
Work Performance T2	107	5.09 (.95)	86	4.71 (.93)	Group	14.7***	1,190	.07
Resilience T1	110	3.37 (.67)	90	3.48 (.60)				
Resilience T2	110	3.49 (.65)	90	3.40 (.58)	Group	6.73*	1,197	.03

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

2. Analysis of Process - Regression

We next extended our analysis to include T3 data; in particular to explore whether increases in psychological flexibility helped explain the outcomes at T3 (hypothesis 5) and whether the intervention benefitted only some or all of the participants (hypothesis 6).

For this we employed a two-step strategy. In the first step we explored whether increases in psychological flexibility accounted for burnout, resilience and performance levels at T3 after controlling for each of those variables at T1 (H5); specifically, emotional exhaustion (H5a); personal accomplishment (H5b); depersonalisation (H5c); task performance (H5d); work performance (H5e); and resilience (H5f).

In the second step (Hypotheses 6a-f), we aimed to answer the question of who benefits from the intervention, in particular whether psychological flexibility only benefits those who

have the poorest T1 scores in each variable, or whether it benefits everyone irrespective of their initial scores.

Because by T3 both groups had received training, active and control groups were collapsed into one sample (N = 200). In step 1 (hypothesis 5) we conducted a hierarchical multiple regression analysis, using a forward-stepping procedure. In each analysis the burnout, performance or resilience measure at T3 was the outcome variable, 'change in psychological flexibility' (T3 score minus T1 score) was the predictor variable, and the T1 score for the burnout, performance or resilience measure (used as the outcome variable) was the control variable. We ran regression models for each of the 6 outcome variables (see 'Model 2' in Table 6 for the burnout variables and in Table 7 for the performance and resilience variables).

In step 2 (hypothesis 6), moderation analyses were performed using the Process macro (version 3.0 for SPSS) written by Andrew Hayes. We report the results of these analyses in 'Model 3' of Tables 6 and 7.

Step 1: Regression analyses – burnout variables (H5a-c)

The means, standard deviations and bivariate correlations for each of the study variables at each of the three time points are presented in Table 5.

Emotional Exhaustion (H5a)

Overall Model 2 predicted emotional exhaustion at T3, $F(2, 197) = 80.35, p < .001, R^2 = .45$, (see Model 2, Table 6). This result supports hypothesis 5a that an increase in psychological flexibility from pre to post-training predicts a reduction in emotional exhaustion three months after the training intervention ($b = -.37, t = -4.87, p < .001$). According to Cohen (1988), the effect size of the regression coefficients can be considered small at .10, medium at .30 and large at .50, therefore for emotional exhaustion the effects size was medium.

Personal accomplishment (H5b)

Model 2 predicted personal accomplishment at T3, $F(2, 197) = 65.17, p < .001, R^2 = .40$ (see Table 6). This supports Hypothesis (5b) that a change in psychological flexibility from pre to post-training predicts personal accomplishment three months after the training intervention, $b = .32, t = 4.95, p < .001$, with a medium effect size.

Depersonalisation (H5c)

Model 2 predicted depersonalisation at T3, $F(2, 197) = 50.88$, $p < .001$, $R^2 = .34$, (see Table 6). This supports Hypothesis (5c) that a change in psychological flexibility from pre to post-training predicts reduced depersonalisation three months after the training intervention, $b = -.17$, $t = -2.67$, $p = .008$, with a small effect size.

Step 2: Moderation analyses – burnout variables (H6a-c)

Given our interest in understanding whether psychological flexibility helps different people in different ways, we explored the moderating effect of each outcome variable at T1 using the PROCESS macro (Hayes, 2017). This analysis creates 3 separate models for the predictor and outcome variables at average, low and high levels of the moderator (in this case, each of the T1 outcomes). The macro centres the data to create the ‘average’ level of the moderator, then uses 1 standard deviation above and below this mean to create the ‘high’ and ‘low’ models (or slopes) respectively. The slopes can then be compared, allowing for an examination of whether (for example) only those initially high in emotional exhaustion benefit from the training or whether everyone benefits (i.e. are the slopes significant for everyone or only those in the high exhaustion group at T1).

Table 5

Means, SDs and Bivariate Correlations for Study Variables

	Active		Control		1 - TP	2 - WP	3 - Res	4 - PF	5 - EE	6 - PA	7 - D
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>							
1. Task performance (T1)	2.16	.64	2.26	.69							
Task performance (T2)	2.28	.63	2.15	.66							
Task performance (T3)	2.40	.67	2.31	.69							
2. Work performance (T1)	5.05	.95	5.08	1.00	.506**						
Work performance (T2)	5.09	.95	4.71	.93	.625**						
Work performance (T3)	5.30	.94	5.18	.91	.442**						
3. Resilience (T1)	3.37	.67	3.48	.60	.342**	.347**					
Resilience (T2)	3.49	.65	3.40	.58	.447**	.448**					
Resilience (T3)	3.65	.59	3.64	.55	.428**	.312**					
4. Psychological flexibility (T1)	4.74	.86	4.91	.85	.390**	.451**	.621**				
Psychological flexibility (T2)	4.80	.78	4.68	.94	.527**	.498**	.596**				
Psychological flexibility (T3)	5.15	.80	5.07	.82	.502**	.402**	.608**				
5. Emotional exhaustion (T1)	2.13	1.12	2.00	1.12	-.532**	-.395**	-.495**	-.364**			
Emotional exhaustion (T2)	1.86	.96	1.98	1.19	-.520**	-.382**	-.428**	-.385**			

Emotional exhaustion (T3)	1.77	1.03	1.86	1.18	-.460**	-.289**	-.367**	-.324**		
6. Personal accomplishment (T1)	4.38	.87	4.34	.98	.209**	.226**	.258**	.311**	-.100	
Personal accomplishment (T2)	4.47	.86	4.21	1.17	.318**	.338**	.304**	.337**	-.139*	
Personal accomplishment (T3)	4.70	.88	4.56	.90	.319**	.257**	.419**	.440**	-.173*	
7. Depersonalisation (T1)	.99	.89	1.01	.76	-.351**	-.184**	-.128	-.211**	.565**	-.090
Depersonalisation (T2)	1.03	.83	1.18	.82	-.324**	-.213**	-.153*	-.179*	.527**	-.114
Depersonalisation (T3)	.95	.87	.85	.79	-.253**	-.252**	-.196**	-.241**	.583**	-.073

Note: Time 2 surveys completed prior to training for active group and post training for control group

* Correlations are significant at the 0.05 level (2-tailed)

** Correlations are significant at the 0.01 level (2-tailed)

Step 2: Moderation analyses – burnout variables (H6a-c)

Given our interest in understanding whether psychological flexibility helps different people in different ways, we explored the moderating effect of each outcome variable at T1 using the PROCESS macro (Hayes, 2017). This analysis creates 3 separate models for the predictor and outcome variables at average, low and high levels of the moderator (in this case, T1 outcomes). The macro centres the data to create the 'average' level of the moderator, then uses 1 standard deviation above and below this mean to create the 'high' and 'low' models (or slopes) respectively. Each slope can then be compared allowing, for example, an examination of whether only those initially high in emotional exhaustion benefit from the training or whether everyone benefits (i.e. are the slopes significant for everyone or only those in the high exhaustion group at T1).

Emotional Exhaustion (H6a)

We first examined the interaction of psychological flexibility and emotional exhaustion at T1 and its impact on emotional exhaustion at T3 (see Model 3, Table 6).

The interaction was significant, $b = -.14$, $t = -2.29$, $p = .023$, indicating a moderating effect of psychological flexibility and T1 emotional exhaustion. Simple slopes analysis revealed that as predicted in hypothesis 6a, those reporting high levels of emotional exhaustion (i.e. + 1 SD at T1) benefitted the most from increases in psychological flexibility, $b = -.54$, $t = -5.11$, $p < .001$ at T3 (see Figure 3).

Of relevance to our research question of who benefits from ACT, it is notable that even those reporting low levels of emotional exhaustion at T1 (i.e. – 1 SD at T1), also experienced a significant benefit from increases in psychological flexibility, $b = -.22$, $t = -2.32$, $p = .021$, as did those with average levels ($b = -.38$, $t = -5.10$, $p < .001$). Results therefore indicate that, as predicted, increased psychological flexibility benefitted those who initially reported high levels of emotional exhaustion at T1 the most, but that all benefit, irrespective of their starting point at T1.

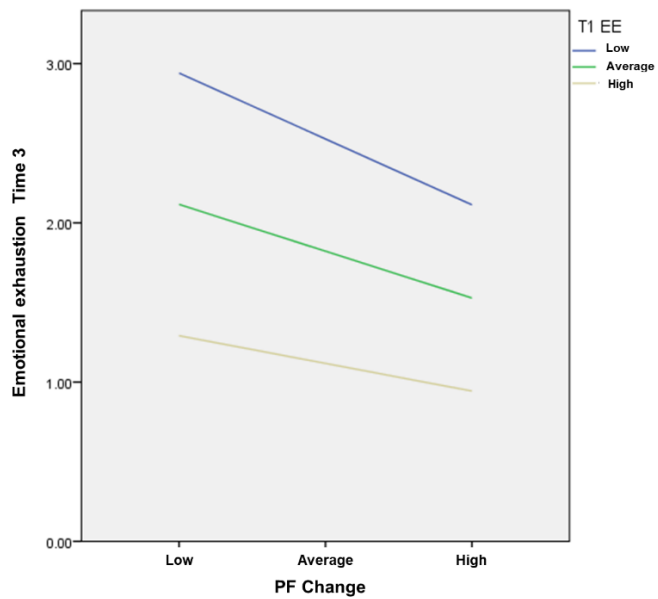


Figure 3. Change in psychological flexibility interacting with emotional exhaustion at T1 to predict emotional exhaustion at Time 3.

Personal accomplishment (H6b)

The interaction of psychological flexibility and T1 personal accomplishment was not significant, $b = .01$, $t = .21$, $p = .831$, so there was no moderating effect and hypothesis 6b was not supported. However, these results indicate that all participants benefitted from the intervention at approximately the same rate, irrespective of their initial scores in personal accomplishment at T1.

Depersonalisation (H6c)

The interaction of psychological flexibility and T1 depersonalisation was not significant, $b = .00$, $t = .06$, $p = .953$, so there was no moderating effect and hypothesis 6c was not supported. These results indicate that all participants benefitted from the intervention at approximately the same rate, irrespective of their initial scores in depersonalisation at T1.

Table 6

Moderated Regression Analyses for Determining Whether Psychological Flexibility Explains Burnout Outcome Variables

Outcome variable	Entered variables	Model 1				Model 2				Model 3			
		B	SE	T	R ²	B	SE	T	R ²	B	SE	T	R ²
Emotional Exhaustion (EE) T3	CONTROL: EE T1	.61	.06	11.08***		.62	.05	11.99***		.63	.05	12.23***	
	PREDICTOR: PF change (T1-3)					-.37	.08	-4.87***		-.38	.07	-5.10***	
	INTERACTION: PF change*EE T1									-.14	.06	-2.29*	
	Model summary				.38***				.45***				.46***
Personal Accomplishment (PA) T3	CONTROL: PA T1	.55	.06	9.73***		.57	.05	10.63***		.57	.05	10.57***	
	PREDICTOR: PF change (T1-3)					.32	.06	4.95***		.32	.06	4.90***	
	INTERACTION: PF*PA T1									.01	.07	.21	
	Model summary				.32***				.40***				.40***
Depersonalisation (D) T3	CONTROL: D T1	.56	.06	9.58***		.57	.06	9.82***		.57	.06	9.77***	
	PREDICTOR: PF change (T1-3)					-.17	.06	-2.67**		-.17	.06	-2.64**	

INTERACTION: PF*PA T1

.00 .08 .06

Model summary

.32***

.34***

.34***

*p<.05, **p<.01, ***p<.001

Note: B reported above refers to the unstandardised coefficient

Step 1: Regression analyses – performance variables (H5d-f)

Task Performance (H5d)

Overall model 2 predicted task performance at T3 better than chance $F(2,197) = 54.42$, $p < .001$, $R^2 = .36$ (see Model 2, Table 7). This supports Hypothesis 5d that an increase in psychological flexibility from pre to post-training predicts improved task performance three months after the training intervention, $b = .31$, $t = 6.05$, $p < .001$, with a medium effect size (Cohen, 1988).

Work Performance (H5e)

Model 2 predicted work performance at T3 better than chance, $F(2, 197) = 35.84$, $p < .001$, $R^2 = .27$. This supports Hypothesis (5e) that a change in psychological flexibility from pre to post-training predicts work performance three months after the training intervention, $b = .21$, $t = 2.84$, $p = .005$, with a small effect size (Cohen, 1988).

Resilience (H5f)

Model 2 predicted resilience at T3 better than chance, $F(3, 196) = 97.66$, $p < .001$, $R^2 = .50$. This supports the Hypothesis (5f) that a change in psychological flexibility from pre to post-training predicts resilience three months after the training intervention, $b = .22$, $t = 5.66$, $p < .001$, with a small effect size (Cohen, 1988).

Step 2: Moderation analyses – performance variables (H6d-f)

Task Performance (H6d)

We next examined the interaction of psychological flexibility and task performance at T1 and its impact on task performance at T3 using the Process macro (see Model 3, Table 7).

The interaction was not significant, ($b = -.14$, $t = -1.90$, $p = .059$), however simple slopes analysis revealed that, as predicted, in hypothesis 6d, those reporting low levels of task performance at T1 (i.e. – 1 SD) benefitted the most from increases in psychological flexibility, $b = .41$, $t = 5.48$, $p < .001$ at T3 (see Figure 4).

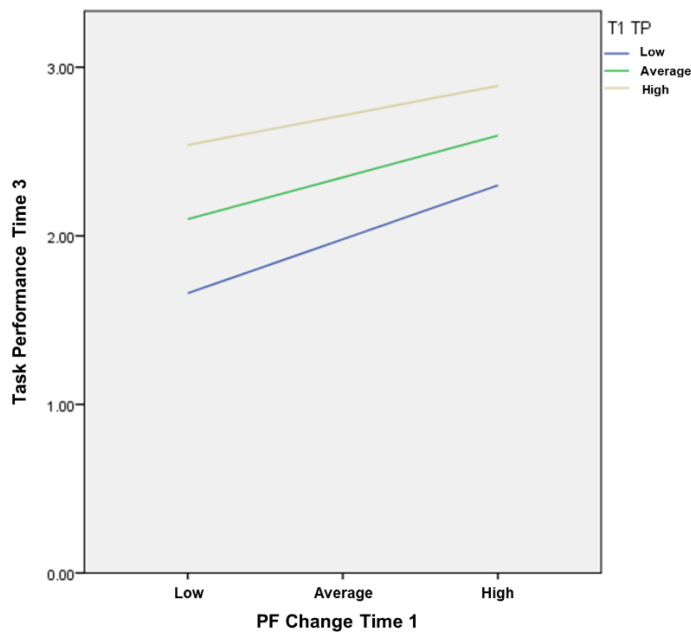


Figure 4. Change in psychological flexibility interacting with task performance at Time 1 to predict task performance at Time 3.

As with emotional exhaustion, even those who reported high scores in task performance initially (i.e. + 1 SD at T1) experienced significant benefits from psychological flexibility with respect to task performance at T3, $b = .23$, $t = 3.46$, $p < .001$. Average scorers also benefitted ($b = .32$, $t = 6.29$, $p < .001$). These results suggest that, as expected, psychological flexibility benefitted those who initially reported low levels of task performance at T1 the most, however, all employees benefitted.

Work Performance (H6e)

The interaction of psychological flexibility and T1 work performance was not significant, $b = -.04$, $t = -.49$, $p = .625$, so there was no moderating effect and hypothesis 6e was not supported. These results indicate that all participants benefitted from the intervention at approximately the same rate, irrespective of their initial scores in work performance at T1.

Resilience (H6f)

Finally, we examined the interaction of psychological flexibility and resilience at T1 and its impact on levels of resilience at T3. The interaction was significant, $b = -.14$, $t = -2.17$, $p = .031$, indicating a moderating effect. Simple slopes analysis revealed that as predicted in hypothesis 6f, those reporting low levels of resilience at T1 benefitted the most from increases in psychological flexibility, $b = .33$, $t = 5.17$, $p < .001$ at T3 (see Figure 5).

However, as with emotional exhaustion and task performance, the interaction was significant at all levels, indicating that even those who started T1 with high scores in resilience, still benefitted significantly from increased psychological flexibility, $b = .15$, $t = 3.17$, $p = .002$, as did average scorers ($b = .24$, $t = 6.10$, $p < .001$). These results indicate that psychological flexibility benefitted all participants in relation to resilience, but those who were initially low in resilience at T1 benefitted the most.

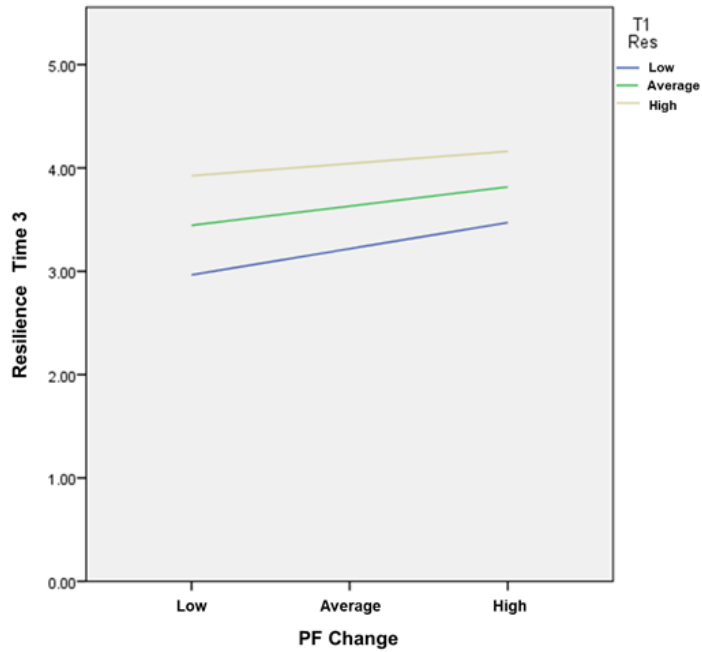


Figure 5. Change in psychological flexibility interacting with resilience at Time 1 to predict resilience at Time 3.

Table 7

Moderated Regression Analyses for Determining Whether Psychological Flexibility Explains Performance and Resilience Outcomes

Outcome variable	Predictor	Model 1				Model 2				Model 3			
		B	SE	T	R ²	B	SE	T	R ²	B	SE	T	R ²
Task Performance (TP) T3	CONTROL: TP T1	.50	.06	7.83***		.55	.06	9.34***		.55	.06	9.42***	
	PREDICTOR: PF change (T1-3)					.31	.05	6.05***		.32	.05	6.29***	
	INTERACTION: PF*TP T1									-.14	.07	-1.90	
	Model summary				.24***				.36***				.37***
Work Performance (WP) T3	CONTROL: WP T1	.47	.06	7.84***		.50	.06	8.40***		.50	.06	8.34***	
	PREDICTOR: PF change (T1-3)					.21	.08	2.84**		.22	.08	2.87**	
	INTERACTION: PF*WP T1									-.04	.08	-.49	
	Model summary				.24***				.27***				.27***
Resilience (Res) T3	CONTROL: Res T1	.58	.05	11.88***		.64	.05	13.73***		.64	.05	13.99***	
	PREDICTOR: PF change (T1-3)					.22	.04	5.66***		.24	.04	6.10***	

INTERACTION: PF*Res T1			-0.14	0.06	-2.17*
Model summary	.42***		.50***		.51***

*p<.05, **p<.01, ***p<.001

Discussion

This aim of this study was to explore the effectiveness of a half-day, Focused ACT training intervention when delivered broadly across a workplace population. We first sought to establish whether the intervention was effective in promoting two distinct aspects of human functioning; reducing negative aspects (measured by burnout risk) and promoting positive aspects (measured by self-rated performance and resilience).

A second aim was to explore the processes by which ACT had its effect, and specifically whether psychological flexibility explained these improved outcomes. We were interested to explore who benefits from such an intervention and in particular whether ACT can benefit everyone or only those in specific groups. As part of these analyses, we were also interested in any evidence that beneficial outcomes were being made or maintained over a three-month period.

Our findings provide some support for the existing literature which demonstrates the efficacy of workplace ACT interventions (e.g. Bond & Bunce, 2000; Dahl et al., 2004). We make two additional contributions to research in this area. First, the intervention being tested was a half-day in length, which to our knowledge was roughly half the length of the shortest existing workplace ACT intervention. Results indicate that Focused ACT interventions can ameliorate negative human functioning as well as promote positive human functioning across a wide sample, with beneficial changes also being explained by increases in psychological flexibility.

Second, ours was a cross-nation study, with a sample from an entire region of a large multinational organisation. We were therefore testing a sample of employees who would not have necessarily volunteered for training, thereby extending existing research to see who benefits from training interventions when delivered in contexts experienced by many practitioners. Our sample also included equal numbers of men and women, addressing previous calls for more even gender distributions (Brinkborg et al., 2011). Of particular note in relation to this sample was the finding that psychological flexibility benefitted all participants rather than only those, for example, who were initially exhausted or low in resilience at T1.

Focused ACT training; Is Less, less?

Our findings are broadly in keeping with a small number of ACT interventions which have shown they can alleviate distress whilst simultaneously enhancing performance (Bond & Bunce, 2000; Burton et al., 2010; Harvey et al., 2017).

Previous ACT interventions have demonstrated they can reduce burnout risk even when the intervention is provided in a brief format (e.g. Hayes et al., 2004). However, our study shows that this can be done in shorter timeframes than previously used and across a broader sample of employees. Results showed that a Focused ACT intervention led to reduced levels of burnout risk, supporting Hypothesis 1. Significant improvements in emotional exhaustion and personal accomplishment were found, supporting Hypotheses 1a and 1b. Depersonalisation increased in both groups between T1 and T2 (before improving at T3), so Hypothesis 1c was not supported. This may have been because the training did not work to prevent depersonalisation. Alternatively, it could be that the ACT intervention helped prevent depersonalisation from developing. This would be in keeping with the theory that psychological flexibility acts to prevent burnout by reducing levels of emotional exhaustion and preventing the development of depersonalisation (Lloyd et al., 2013). By reducing emotional exhaustion for all participants, this study lends support for the view that ACT may be curative for some participants, but preventative for others (Flaxman & Bond 2010b).

Of equal significance was the intervention's impact in improving task and work performance and resilience, supporting Hypotheses 2a, 2b and 3. Indeed, the largest effect size from this sample was found for work performance. This may indicate that for wider populations (i.e. those who do not volunteer to attend training or not initially identified as highly stressed), employees start off with lower levels of burnout risk on average, and so as psychological flexibility improves this tends to act primarily on performance rather than burnout.

In line with Hypothesis 4, the active group showed significantly higher psychological flexibility at T2 than the control group, and improvements were maintained at T3. It is worth noting that even though we did not formally analyse change over time, the control group also significantly improved in psychological flexibility between T2 and 3 after training

had occurred. Although at T3 we could no longer isolate the effects of training, these results are in line with theory and previous research.

Whilst these results are in the direction of our hypotheses, there are grounds for caution. Results indicated small effect sizes for emotional exhaustion and personal accomplishment, and there was no effect on depersonalisation. In addition, the results for emotional exhaustion and personal accomplishment became non-significant once the Bonferroni correction had been applied. In contrast, previous studies of ACT in workplace settings have reported moderate to large improvements in mental health following brief ACT-based training programmes (e.g., Brinkborg et al., 2011; Waters et al., 2017). That could be because shorter training yields less of an effect, i.e. less is less. However, it could also be that, as previous researchers have suggested, broader samples dilute the effect size (Bunce & Stephenson, 2000; Flaxman & Bond, 2010b). In this study however, the moderation analyses demonstrated that all participants benefitted from the intervention, including in terms of burnout risk, so the risk of dilution may not be as great as feared.

Alternative explanations for these results may be that ACT interventions are useful in different ways for different people, and that broader samples tend towards stronger effects in performance than in burnout or other mental health-related variables: context is key. Nevertheless, further exploration of whether reduced contact time reduces effect size would be valuable. If this is the case, would longer interventions restore the effect size? Or would more tailored follow up (e.g. in terms of online resources, or short follow-up interventions) be a more efficient way to restore the intervention's impact?

It is also worth noting that the control group deteriorated across all variables (barring emotional exhaustion, which remained the same) between T1 and T2. Although similar results have been found in other studies (e.g. Lloyd et al., 2013), in this case it was unlikely to have been because of a demoralisation effect, as participants were completing the survey immediately before training. It is conceivable that having been told to go to training, and often travelling long distances to do so, they felt resentful at the need to complete another identical survey before the session had started. As these were not volunteers, it may be that the cynics among the population became even more sceptical about the value of such training. Alternatively, it may be that there were other changes going on in the organisation which were having a negative impact on people, which the training subsequently helped to

mask. At the time of this training the organisation was going through a large change programme and many participants were experiencing changes to their roles. Skews (2018) and Nielsen, Fredslund, Christensen & Albertsen (2006) found similar effects in their coaching and training interventions respectively. Skews (2018) suggested that external factors (in that case, a General Election) may have been responsible for deterioration in the control group, and that coaching buffered this effect. Nielsen et al. (2006) concluded that further exploration of these kind of issues is needed through process analysis.

Our second research aim was to investigate whether increases in psychological flexibility could explain the improvements in the other outcome measures, as well as to explore who benefitted from the intervention. In support of Hypothesis 5a-f, and consistent with ACT theory, psychological flexibility explained improvements in all the other outcome variables, after controlling for the initial levels of each variable at T1.

In keeping with previous research (e.g. Waters et al., 2017), those who were highest in emotional exhaustion at T1 benefitted the most from improved psychological flexibility. However, our findings also suggest that even those with low levels of emotional exhaustion at T1 still benefitted significantly from improvements in psychological flexibility. This moderated but still significant pattern of results was replicated in the resilience and task performance variables. In work performance, personal accomplishment and depersonalisation no interaction effects were found, indicating that everyone benefitted from improvements in psychological flexibility at roughly the same rate, irrespective of their initial starting point at T1.

Implications for Practice

If a Focused ACT intervention can benefit all participants in terms of ameliorating burnout risk and enhancing performance and resilience, then this may provide support for further organisation-wide rollouts of ACT interventions. Practitioners should find them easier to sell, as not only are half-day interventions cheaper to implement, but the business case could highlight a potentially significant return on investment with benefits derived from costs saved by reducing stress-related problems (stress is one of the most common causes of absence from work – see Health & Safety Executive, 2016), as well as improved performance.

Employees should also benefit, primarily from better access to evidence-based training. Whilst individual-level interventions such as ACT should never be treated as the sole response to increasingly demanding workplaces, they nevertheless seem an important factor, particularly as enhanced psychological flexibility has been shown to complement organisation-level improvements (Bond et al., 2008). Bond and Bunce (2000) also found that ACT programs for stress can encourage workers to be more assertive with supervisors over the need to make changes, rather than just accepting work stressors. This may help practitioners counter the ‘sticking plaster’ accusation sometimes aimed at resilience or stress management interventions.

From an organisational perspective, if Focused ACT training is effective, it may help to address calls from learning and development professionals seeking training in bite-size formats (e.g. Chartered Institute of Personnel & Development, 2015). It is also worth noting the recent success of brief ACT coaching sessions (Skews, 2018) and ACT-consistent ‘micro-interventions’ in smartphones (Levin et al., 2018), as these could complement the rollout of organisation-wide training, potentially boosting the power and effectiveness of short training interventions still further.

There are additional advantages of organisation-wide training, not least the opportunity to create a common language amongst all employees. By having shared metaphors for helpful ideas, skills training can become more integrated into everyday office life. In particular, if managers can be encouraged to refer openly to some of the key metaphors and ideas in the training (as they were in this intervention), employees can gain a greater sense of how and when the training can be applied, particularly if greater psychological flexibility helps them notice opportunities in their environment to do so (Bond & Hayes, 2002). This may help to address requests from learning professionals (including from those within the organisation in this study) that most learning should happen on the job or through interactions with others, rather than through formal one-off events such as training (Lombardo & Eichinger, 1996).

This study may also hold implications for how ACT is marketed and delivered within organisations. Previous researchers have argued that ACT could be described as ‘curative’ for more distressed employees and ‘preventive’ for others (Flaxman & Bond, 2010b). Our findings suggest that as ACT benefits all participants, training could be developed which is

aimed at improving different outcomes, but which uses the same underlying processes of change to achieve those outcomes. For example, resilience training may focus on the outcomes of reducing stress-related ill health and enhancing performance under pressure, whilst using psychological flexibility as its core process of change. However, psychological flexibility could equally be a key ingredient in training aimed at time management, presentation skills and diversity and inclusion. Training programs could, over time, reinforce psychological flexibility skills by deepening participants' understanding and opportunity for practice across different contexts. Leadership development programmes could also focus on equipping leaders with the awareness and skills to enhance important processes of change (such as psychological flexibility) in themselves and others.

Finally, focusing on processes of change potentially allows learning to become more user-centric by emphasising different processes for different outcomes (Querstret et al., 2017). This may help to address calls from learning professionals for more personalised and tailored approaches in organisational learning (e.g. Lewis, 2017). For example, Levin et al., 2018 showed that tailoring a smartphone app using in-the-moment assessment of participants was more effective than offering generic content. In theory, different processes (including those within psychological flexibility, such as mindful awareness) could be emphasised depending on an interactive assessment of an employee's context. In future short, broad-based training (such as in this study), followed by tailored follow-up interventions, could be an effective way of creating what Biglan and colleagues describe as "psychologically flexible cultures" (2013, p200).

Theoretical Implications

We believe that our findings contribute to a developing understanding of how psychological flexibility benefits broader samples of the working population. By examining moderators of change we found support for the view that psychological flexibility is a fundamental process which improves human functioning in different ways (Hayes et al., 2006). It might be that those who need to improve their mental health or psychological wellbeing make commitments in this area, whereas those who have higher wellbeing initially focus more on improving performance. Equally, it might be that one area naturally benefits or temporally precedes the other.

Our findings are consistent with research which has shown a buffering effect of personal resources (such as psychological flexibility) in terms of ameliorating the negative impact of high job demands on employees (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001). However, whilst Onwezen et al. (2014) found that the attenuating role of psychological flexibility diminished if employees were already exhausted, our study showed that those high in emotional exhaustion benefitted most from increased psychological flexibility, which offers support for those studies which have suggested that psychological flexibility may act as a buffer to burnout (Lloyd et al., 2013).

Our moderation findings offer support for previous studies which have shown a greater effect for employees with higher levels of distress initially (e.g. Flaxman & Bond, 2010b; van der Klink, Blonk, Schene, & van Dijk, 2001). However, the finding that all participants benefit (albeit sometimes at a lower rate) may help to explain contrary findings from previous researchers that those lower in emotional exhaustion and depression sometimes benefit more from an intervention (e.g. Onwezen et al., 2014; de Vente et al., 2008).

By understanding how ACT interventions have their effect, for whom and in what context, it is theoretically easier to improve interventions, so they become more effective (e.g., Flaxman & Bond, 2010b; Hofmann & Hayes, 2018). We believe that our findings are part of this wider movement towards focusing on processes of change, and in particular that psychological flexibility is an important construct that deserves further scrutiny across wider populations in the workplace.

Limitations

The main limitation of our study was that the experimental design did not allow for a fully randomised control experiment which included Time 3. The client organisation was unwilling to measure participants three times before they received training, and no more than three times overall. Although this was unavoidable, it meant that it was not possible to compare the active and control groups across all 3 time points. In turn this means that the study does not allow for conclusions with respect to the causal effects of the intervention between Times 1 and 3.

This design also meant that the process and outcome variables were measured at the same points in time. Ideally, the study would show the process variable changing prior to the

outcome variables (Flaxman & Bond 2010a). Nevertheless, our findings are largely consistent with previous research. For example, in an earlier worksite ACT study, it was established that psychological flexibility mediated improved mental health when the mediator was measured prior to the outcome (Bond & Bunce, 2000; Hayes et al., 2006). In terms of burnout variables, Lloyd et al. (2013) show that emotional exhaustion precedes depersonalisation, which is again consistent with our findings.

There are three further limitations related to the design of this study. The first is that the follow-up period (i.e. T3) was only 3 months after training. Whilst this was preferable to having two measurement periods (as the client originally proposed) and is in line with other studies (e.g. Bethay et al., 2013; Flaxman & Bond, 2010a), it is still a short period of time to demonstrate that change is maintained. In particular, for claims of a 'preventative' effect of ACT interventions to be substantiated, longer follow up periods (i.e. one year or more) would be needed (Flaxman & Bond, 2010b).

Second, because of our client's wariness over the length of the questionnaires, we could not include many biographical questions. In other research (e.g. Viladarga et al., 2001), demographic variables such as age have been related to dimensions of burnout. Without demographic data of this kind, it was not possible to explore relationships between the data more fully, particularly in terms of who may benefit from training and in what circumstance. Whilst this was not the main purpose of this study (which was more concerned with whether ACT benefitted everyone), future studies may benefit from looking in more detail at contextual features. A final limitation of the design is that the control group did not receive an alternative intervention, leaving open the possibility that the effects of the ACT intervention were due to a "Hawthorne effect". As Waters et al. (2017) suggest, in future it would be useful to directly compare the effects of brief ACT workplace interventions with other active, and potentially longer, interventions.

There were also limitations in terms of the implementation of the intervention. For example, the first author delivered all the workshops, potentially limiting the generalisability of the findings. Although the use of one trainer reduced bias that would have been introduced by differences in training style, previous ACT studies have suggested that using different deliverers of ACT can be effective (Brinkborg et al., 2011). Waters et al. (2017) also demonstrated that using inexperienced, in-house deliverers could yield positive outcomes

with large effect sizes, and this model of delivery may be more relevant to organisation-wide rollouts.

Another potential limitation was the use of self-report questionnaires to assess change. Self-reporting may only have limited validity in terms of understanding real world outcomes (Kashdan, 2010), and this study lacked objective measures of health and performance to test this in more depth. This was difficult in this study because the breadth of our sample made it harder to identify a single measure of performance which would apply to such a broad array of roles and responsibilities. In addition, the client was reluctant to release broad organisational measures of performance (such as sales or appraisal data) to a third party or to compile these in a standardised way across lines of service and worksites. Nevertheless, where objective measures are possible to gather, this would add to the overall robustness of research.

A final limitation was the level of participant attrition. In this study, 'attrition' relates only to the non-completion of surveys. Out of the 504 participants who completed at least one survey, 200 (40%) provided data at all three time points. The dropout rate was comparable with another ACT study which did not use volunteers (e.g. Harvey et al., 2017) and to another study which surveyed participants at 3 time points (Flaxman & Bond 2010b). Nevertheless, it is conceivable that employees who felt they were not benefiting from ACT training were less inclined to complete questionnaires. Whilst there was no evidence of this in the present study, the non-completion of surveys amongst participants deserves consideration when interpreting our findings.

Directions for Future Research

It would be useful to replicate this study with further organisation-wide samples, and in particular to explore whether the patterns of results in this study (i.e. smaller effect sizes for mental health-related variables but significant results for all participants) are replicated elsewhere.

Workplace research may also consider how ACT can be scaled more broadly, particularly in terms of using samples from outside the Western world. Some studies have already demonstrated the wider applicability of workplace ACT interventions in low and middle-income countries (e.g. Stewart et al., 2016) and more research of this kind seems justified.

Along with more heterogenous samples, future research should address calls from researchers who have criticized ACT research for lacking methodological rigour (e.g. Öst, 2008). Future studies of ACT in the workplace could benefit from having repeated measurement occasions following the workshop, using control groups with active control interventions and longer follow-up timeframes, as well as the use of more objective measures of performance and / or health. Supplementing these approaches with process analysis may also be beneficial. Stronger research designs could reveal the relationships between positive and negative outcomes and the temporal effects of psychological flexibility. For example, does psychological flexibility prevent exhaustion (Lloyd et al., 2017), or does exhaustion prevent psychological flexibility (Onwezen et al., 2014)?

A continued focus on mediators and moderators would help to further refine theory and practice and in particular, identify which specific methods work best for different populations. It might be that in future the ACT model can specify which skills or processes to target based on context. Future researchers may wish to explore whether the processes within psychological flexibility can themselves be parsed further and delivered according to need.

Finally, future research may explore how short workplace interventions can be supplemented by relevant follow-up in the form of, for example, short coaching, online training or smartphone interventions. Significant results have already been shown in ACT research using self-help books, (Jeffcoat & Hayes, 2012), apps (Bricker et al., 2014, Levin et al., 2018), and coaching phone calls (Schimmel-Bristow et al., 2012). It may be that combining some of these innovations with Focused ACT training sessions could boost the effectiveness of workplace interventions still further.

Conclusion

This study provides support for the effectiveness of a half-day Focused ACT training intervention. Results showed that ACT training can deliver improvements across an entire organisation. Along with suitable structural workplace changes, ACT could therefore form the basis for short, cost-effective training which helps people to work more sustainably and effectively. Results also suggest psychological flexibility to be an important construct in

relation to effective human functioning. It may be that psychological flexibility helps different people differently, according to their context.

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Appendix A

Table 8

Repeated Measures ANOVA Results Within Group Effect Sizes for Outcome Variables

Outcome variable	Active			Control		
	Mean diff	F	η^2	Mean diff	F	η^2
Task performance						
T1 vs T2	.13*			-.13		
T2 vs T3	.12			.18*		
T1 vs T3	.24*	7.14**	.12	.05	4.37*	.09
Work performance						
T1 vs T2	.06			-.40*		
T2 vs T3	.20			.50*		
T1 vs T3	.25*	4.11*	.07	.11	17.06**	.29
Resilience						
T1 vs T2	.11			-.08		
T2 vs T3	.16*			.24*		
T1 vs T3	.27*	14.21**	.21	.17*	9.16**	.17
Psychological flexibility						
T1 vs T2	.05			-.24*		
T2 vs T3	.36*			.40*		
T1 vs T3	.41*	23.63**	.30	.16	10.71**	.20
Emotional exhaustion						
T1 vs T2	-.27*			-.02		
T2 vs T3	-.08			-.12		
T1 vs T3	-.36*	8.99**	.14	-.14	1.07	.02
Personal accomplishment						
T1 vs T2	.08			-.13		

T2 vs T3	.23*			.35*		
T1 vs T3	.32*	9.73**	.15	.22	5.19*	.11
Depersonalisation						
T1 vs T2	.04			.19*		
T2 vs T3	-.08			-.31*		
T1 vs T3	-.05	.60	.01	-.13	5.93*	.12

* $p < 0.05$, ** $p < 0.01$

Professional Doctorate in Occupational and Business Psychology: Reflective Review

1. Scoping out your research idea

Stage	Questions	Reflections
1.1	What challenges did you face and how did you overcome them?	<p>The idea for the research came relatively easily, as in some ways it is something I have been thinking about for several years.</p> <p>I have had a 10-year interest in Acceptance and Commitment Therapy (ACT) applied to the workplace. This originally had its roots in my MSc course in Occupational Psychology where Frank Bond was my supervisor. He is the leading researcher in terms of applying ACT to the workplace. Since then I have attended and presented at 5 World Conferences and undertaken extensive personal training in ACT skills.</p> <p>When Rachel and Jo told me about the Professional Doctorate I knew that I had the perfect opportunity to conduct some research. One of my main clients (a major research, innovation and manufacturing company) had asked me to do an organisation-wide intervention in building resilience.</p> <p>With high levels of buy-in amongst the organisation's leaders, I recognised that this could be a great opportunity to run a large, randomised control trial of ACT-consistent resilience training, across a whole working population. Therefore, the Professional Doctorate and the research</p>

		<p>opportunity both come along at the same time, which was serendipitous. (That said, there is no way I could have considered the Prof Doc otherwise).</p> <p>Although I was fortunate in some ways, deciding to go ahead with the research then presented me with my biggest challenge. Having decided to do the Prof Doc I then had to design the study and gain agreement with the organisation extremely quickly. I was effectively starting the Prof Doc in the wrong order (i.e. intervention and data collection first), but it was too good an opportunity to turn down.</p> <p>I had a number of immediate deadlines and I had to set most of this up during my 2-week summer holiday in August. At that stage I was away in Portugal with my wife and our 9-month-old daughter. This was pretty challenging, but I got good support from both the organisation, Jo and Rachel (and my family), so I got there in the end.</p>
1.2	Did your initial idea change during this stage? If so, how and why?	<p>My initial research idea did not change very much. This is because I was fairly clear about the initial assumptions, research questions and where the gaps in the literature might be.</p> <p>Frank Bond and others have shown that ACT training works in the workplace, but in quite specific contexts. In general sample sizes are fairly low, populations tend to be voluntary and very often they are public sector. It was also often quite long training – i.e. 3 full or half day sessions plus a follow up session later (the 2+1 protocol).</p>

		<p>My research interest was in extending ACT training across a whole working population, not all of whom would want to be there (i.e. using non-volunteers), shortening the training significantly (one half day plus follow up emails) and seeing if there was still an effect.</p> <p>The only change in my initial idea was around the design of the study. I wanted to have two completely separate groups – an Active group and a waitlist Control group. However, the organisation was reluctant to have people wait for too long to receive the training (let alone do the online survey 3 times before they received the training). Therefore, I had to compromise on the design, and bring the Active and Control groups together sooner than I would have liked (i.e. at Time 2).</p>
1.3	How did this process differ from your expectations?	<p>It didn't really. I knew that the devil would be in the detail, and it was.</p> <p>On the research design side, I was clear about the overall rationale for the intervention, but I did have decisions to make around which measures to use, how to design the research (see above) and how to best operationalise my ideas.</p> <p>There was a tension between the scales I wanted to use, and the items involved. The organisation – and by extension me – wanted to minimise the number of items and the time the scale would take. This was critical also to ensuring that the attrition across the 3 timescales did not affect the statistical power I would need to measure several different concepts.</p> <p>Compromises were necessary. For example, I severely limited the amount of biographical details that I collected. Even when I was clear about what concepts to test (for example burnout</p>

		<p>risk and psychological flexibility), I still had decisions to make about the best scales to use - i.e. the full Maslach Burnout Inventory or the brief version, and the AAQ2 or WAAQ to measure psychological flexibility.</p> <p>On the client side although there were high levels of buy-in there was still much to do and the travel and logistics of organising workshops in 4 countries and 7 venues was still extremely time consuming.</p>
1.4	<p>What were your key learnings from this stage?</p>	<p>Many things! Some of the key ones were:</p> <ul style="list-style-type: none"> • The complexity of negotiating a research study across a whole organisation, and the need to outsource tasks wherever possible, especially travel and workshop logistics. (The task is simply overwhelming otherwise, and you need to stay fresh to think about the important aspects of design etc). • The difficulty of identifying the right measures to use and striking a balance between measuring what I wanted to measure and keeping the number of items as low as possible. • The importance of investing in relationships in the client organisation – you need lots of favours at the beginning and organisational stakeholders usually have no little interest in research. • The importance of explaining the value of control trials and research to the client organisation and linking this to their own values – that was a key insight.

1.5	What would you do differently if you were to go through this process again?	<p>I would have had more time ideally! However, the reality of this opportunity was that it was a unique opportunity which landed in my lap at just about the right time. Therefore, I had to mobilise everything very quickly. It worked, but it was rushed.</p> <p>I think the other key lesson is I would have pushed even harder to establish a stronger working group with representatives from each of the 4 countries and 7 sites at the outset. But as I'm writing this I fear this may be pure hindsight – the practicalities of organising this would have been even more time consuming, at a time when I really had no time.</p>
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2. The systematic review: Developing a protocol

2.1	What challenges did you face and how did you overcome them?	<p>This was relatively straightforward, as my initial ideas were fairly specific. I knew the field – ACT in the workplace. I also knew I was interested in training interventions, not coaching or other interventions, or non-intervention studies (e.g. correlational studies). To a large extent this made life easier when it came to developing the search protocol for the systematic review.</p> <p>It also helped to have a relevant SLR to learn from, and Rachel and Jo pointed me in the direction of the Robertson Cooper review of resilience interventions in the workplace (2015). This was enormously helpful, especially in the early days of developing my own protocol.</p> <p>That said, it still takes a little bit of trial and error to find search terms that provide the results you want. For example, the AAQ is the name of the key ACT measures (the Acceptance and</p>
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		<p>Action Questionnaire) but it also turns out to be an engineering term. My own conclusion was that being prepared to try out terms and then getting a feel for the results is probably an unavoidable part of the process.</p>
2.2	<p>How did this process differ from your expectations/plan?</p>	<p>The main difference was that I was expecting the worst from this part of the process, but it was not quite as bad as I had expected, apart from the technology.</p> <p>At the outset of the Doctorate I was not familiar with systematic reviews and was mentally prepared to write a standard introduction to my research. However, once I had got my head round a Systematic Literature Review (SLR) I could see that this approach is clearly broader, less biased and far more comprehensive than the old ways of writing Introductions. Although I was dreading doing it, I could see the value in doing it and I knew it was a great way of bringing me back up to speed with the literature.</p> <p>I was therefore quite surprised that although the SLR was more effort, I felt quite energised by the process. This genuinely feels like a positive development within psychology. Without being made to do a SLR I may not have read several of the papers that made it onto my final list.</p>
2.3	<p>What were your key learnings from this stage?</p>	<p>As explained above, the SLR was more complicated than the old system of writing an Introduction. However, I felt from the initial explanation from Rachel and Jo that the changes involved in this were all positive. I could see how the old system lent itself to bias and how the</p>

	<p>new would help to redress that. Therefore, it was good to learn how my profession had developed in the 10 or so years since my MSc.</p> <p>Within the process itself, my main learning was that it is important to consider search terms carefully, as in many ways the search terms end up defining the concept. For example, I am interested in ACT training. But how is ACT training operationalised in terms of search terms? I could have had several, just on that element of the search alone:</p> <p>ACT = ("psychological flexibility" OR "experiential avoidance" OR "defusion" OR "mindfulness" OR "attentional flexibility" OR "cognitive flexibility" or OR "emotional avoidance" OR "self as context" OR "observer self" OR "Cognitive Fusion")</p> <p>So, I learned that being as precise as possible pays off. At the same time, I am not sure it would be possible to conduct a search without a huge element of trial and error and seeing what kind of results different search terms elicit.</p> <p>A final learning was of the benefit of finding similar examples of excellent SLRs and using their approaches as best practice. Jo and Rachel's support here was invaluable. Not only are their proformas useful, but their identification of similar SLRs and relevant papers helped me understand the process and also helped with some of the specifics of the search itself, for example developing effective search terms.</p>
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2.4	What would you do differently if you were to go about developing a protocol again?	<p>Think harder about my original search terms and keep a clear focus on the end goal. What am I trying to achieve?</p> <p>I also think it would have been useful to reach out to some experienced researchers (e.g. Steve Hayes in the area of ACT for example) to get his view on effective search terms etc. This may have saved some time but also given me some confidence that I was going about things in the right way. I think I underestimated the impact that SLRs had had within the field of psychology since I was last a student.</p>
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3. The systematic review: Conducting searches

3.1	How did you come to a decision on the keywords, databases and inclusion/exclusion criteria to use?	<p>Partly through trial and error. I found that it was only by running a particular search you could really understand how certain terms are used. The early searches were therefore probably a waste of time, but did they at least helped me understand the searching process.</p> <p>To give an example, I was interested in Acceptance and Commitment Therapy delivered as a training intervention in the workplace. But what is ACT? Is it just what someone calls it? Is it something specific about the content? If so, what? Is it defined by outcomes, for example ACT is always designed to develop psychological flexibility, is it about that? All of this has implications for search terms.</p>
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		<p>In the end I decided to keep my search terms as broad as possible, but to include 'psychological flexibility' as part of my definition of what ACT is. (See section 3.2 for further explanation).</p>
3.2	<p>What challenges did you face and how did you overcome them?</p>	<p>The technology was probably the biggest challenge, but defining terms was surprisingly complex. Potentially the technology was difficult because I had been away from academia so long, so it took me a while to get to grips with 1) accessing the Universities systems and navigating my way around and then 2) familiarising myself with the workings of each database.</p> <p>Although the university staff were very helpful, I often waited a few days to hear back from them, which slowed the process down and made it more disjointed.</p> <p>I also found several exceptions in terms of relevant papers to the searches themselves. For example, I knew about a particular paper which I thought would meet the criteria, but it did not appear in my searches. I would then need to understand why my search had failed to capture it. In most cases there was a good reason, in some cases it remained a source of confusion.</p> <p>However, the nadir as far as this part of the process (and the technology) was concerned was definitely Refworks. The process of de-duplication within RefWorks was laborious and frustrating. Although I followed online tutorials and advice from Library staff to the letter, I kept on losing the merged folders. Only later did I find out that this was a common glitch. By</p>

	<p>then I had already taught myself a time consuming, laborious but reliable manual work around.</p> <p>In terms of narrowing down (i.e. down to abstract sifts and then onto full papers), there was a reassuring convergence on both mine and Rachel's searches. In terms of abstracts quite a few of the papers turned out to be PhD dissertations, which were hard to obtain. I had absolutely no help from the interlibrary loan system at the university library and several e-mails were ignored. However, I had a much better record of getting papers sent to me by the authors themselves.</p> <p>In the end I did manage to get all of the papers. In the final analysis however, I decided that the quality of some of the PhD papers was too varied – it would have made the SLR far less focused and I would have been distracted by the need to standardise papers that were often ambiguous. So, in the end I decided to add published papers to my list of inclusion terms. This still left me with 14 studies which felt about right.</p> <p>The second challenge was probably defining the search terms, and I was surprised how a seemingly straightforward tasks can lead to philosophical debate. 'What is Acceptance and Commitment Therapy' is not an easy question to answer, though I was reassured that this debate is mirrored within the Association for Contextual Behavioural Science (ACBS), which is the main research association for ACT. In fact, some of the founders and key researchers within the ACBS regularly debate what makes an ACT intervention. There is broad agreement</p>
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		<p>that ACT is not a set formula. The closest I could get to a definitive answer is that ACT is defined by functional contextualism, a philosophy of science that emphasises successful working as its guiding principle. This means that any intervention that helps someone unhook from the content of their internal experience and focus on the most workable action is ‘doing’ ACT. This is the basic definition of psychological flexibility, therefore I reasoned that it is this that distinguishes an ACT intervention and that that should be a key search term. The rest of the search terms were deliberately left broad, as I felt that this was more art than science, so I would need to use my own judgment using inclusion criteria.</p>
3.3	<p>How did this process differ from your expectations/plan?</p>	<p>In all honesty I am not sure it did. With the technology I was expecting the worst and it was indeed hard to understand at first. Robert Elves was very helpful and some of the online advice you can get is also good. However, with the databases especially it was a question of trial and error.</p> <p>The interlibrary loan system was a mystery – I received no reply to several requests for articles and yet I know colleagues had success with the system.</p> <p>The Refworks de-duplication process simply didn’t work.</p> <p>The search terms were perhaps harder to define than I thought, though to be honest I didn’t have too many expectations for this part of the process. I was in new territory.</p>

3.4	What were your key learnings from this stage?	<p>As above, although some aspects of the process feel laborious, the main feeling during this part of the search process was that the objectives still felt valid. It felt like this is a fairer way of conducting research than before, so the difficulties at least feel worthwhile. However, whilst the technology is undoubtedly improving, it continues to be a little clunky for users and to lag behind.</p>
3.5	What would you do differently if you were to go about conducting systematic searches again?	<p>I would use my own manual system as a backup to Refworks and do the search more deliberately as a result, documenting each step.</p> <p>Invest time upfront in the basics. For example, follow the proformas provided more closely and use them as a thinking tool. Also I think I would have gone into Kingston a bit more often, especially to discuss the interloan library system. Too much of what I did was by email.</p> <p>Although I found including the PhD dissertations lowered the quality of the searches and added too much variety in terms of content, I think I would still repeat the process of looking at PhD dissertations initially, as I felt I learned a lot about the wider literature from doing this.</p> <p>Related to this point, I feel like another lesson is that the peer-review publication process is probably quite effective, in that it sifts out many of the more variable papers and you are left with more standardised, higher quality papers. It therefore felt like adding 'peer review' as an inclusion criterion was valid. It helped tighten and standardise the SLR, certainly in my case.</p>

		<p>I do feel most of these issues would have been less of a problem if I had been doing the Doctorate full time. My main issue was in understanding the technology and keeping the thread of my research in very short, focused bursts. At the time I had a (new) 4-month old baby (along with a now 2-year old) as well as a full-time job. The worst times were when I had to leave my tired wife alone to cope with the baby, so I could focus on my SLR, but I then had failed to make any progress (for whatever reason). Dark times!</p>
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4. The systematic review: Assimilation and write up

4.1	<p>How did you come to a decision on the way to cluster the data and tell the story? How did you make the choice of target journal?</p>	<p>The write up felt comparatively straightforward after the searches, as the articles chosen told a similar story to the ones I was expecting (after all, I had kept up broadly with the research literature in this area, so my review deepened my understanding).</p> <p>However, an important element that was of real value was reading some of my colleagues' early drafts (Emma Donaldson-Feilder was ahead of me at this stage, and reading her early drafts helped me organise my data. She used the Robertson et al (2015) paper as a model and in turn I found this to be very helpful – I used a similar format, headings, style and approach to the one they had used.</p> <p>I was not particularly worried about choice of journal or whether these would be high or low quality. As a practitioner, I have very little understanding of what makes a 'good' journal. I like publications that are honest, readable and clear. Many of the higher quality journals</p>
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		<p>publish articles that to my mind are not that clear or readable, and vice versa. Therefore, they key considerations were 1) which journals had published articles relevant to ACT in the workplace before, 2) which were open to receiving SLRs, and 3) what did Rachel and Jo make of the shortlist. Rachel and Jo from my shortlist, decided a target strategy of 3, starting with the highest ranking first. In the end, we decided to try the Journal of Occupational Health Psychology.</p>
4.2	<p>What challenges did you face and how did you overcome them?</p>	<p>One of the biggest challenges was in interpreting some of the conclusions and language in the papers I included. For example, the SLR was interested in whether ACT promoted positive outcomes in both health, wellbeing and performance. It was not an easy task to separate some of these concepts out. For example, is job satisfaction part of health and wellbeing? When psychological flexibility is treated as a dependent variable (DV), does it sit under Psychosocial, wellbeing, mental health or performance categories? So there were elements here that felt ambiguous, whilst it was my job to come off the fence. Equally there seemed to be no standard or agreed methodology existing in the literature, so I tried to apply common sense.</p> <p>In some cases, the results of each study were hard to understand and the way the papers wrote about them felt ambiguous. However, this is also one of the benefits of Systematic Reviews. Hopefully this kind of practice can be identified, and better practice can be revealed</p>

		<p>over time. I certainly felt like I learned the value of clarity when it came to setting out a case and clear hypotheses, laying out results and writing up conclusions.</p>
4.3	<p>How did this process differ from your expectations/plan?</p>	<p>Once I understood the rationale and broad process for writing a SLR then I don't think the process differed greatly from my plan. It took perhaps a little longer than I anticipated, but then these things always do.</p> <p>I feel like my knowledge has expanded greatly, particularly in terms of the state of the literature. This was one of the aims and expectations of doing the Prof Doc, and it has been met.</p>
4.4	<p>What were your key learnings from this stage?</p>	<p>One learning was that templates and best practice examples are very helpful. For example, the Robertson et al (2015) paper was of real benefit. However, there were differences between my review and theirs and with little time to spare I learned it was important not to get too attached to any one example. Key to this stage is the ability to think hard about the true purpose of the research and this means not doing things on autopilot.</p> <p>On a related theme, there were several times when I got drawn into meta-analysis mode. I had to row back from analysing the data and sometimes found it a hard line to tread. The SLR was something I got the hang of over time, perhaps unsurprisingly as I had not heard of one or read one before this course.</p>

4.5	What would you do differently if you were to go about writing up again?	Inevitably, I would take more time over it, and in particular I would read more high quality SLRs to get a feel for them and understand their purpose. I think I would also pay someone to check my work as it is easy to make mistakes when you are in the weeds.
4.6	From your SLR, what information regarding methods have you considered in the design of your study? What methods predominated? Were they the most appropriate? What was missing?	<p>From my SLR I was pretty clear what I wanted to research, and by extension what kind of design I wanted for my study. There were several gaps in the literature, but the following ones really caught my eye:</p> <ul style="list-style-type: none"> • Most of the studies were done on volunteers • All were in the public sector • Relatively small numbers for nearly all • The average length of the ACT interventions was around a day. • Most of the training was explicitly about training ACT, in other words it was a very research focused lead <p>None of this resonated with my experience as a practitioner. In my experience conducting ACT training in the workplace is possible but there are major differences. From a personal perspective these include:</p> <ol style="list-style-type: none"> 1. You cannot train only volunteers for long if you want your children to have shoes 2. All of my work was in the private sector

		<ol style="list-style-type: none">3. My work tends to be with large groups or on large projects – and this gap in the literature certainly needs to be filled with bigger group sizes4. Most of my training is half a day – the sales process favours training that allows people to not only take a half day away from their desks5. None of my training is about selling ACT, but about selling the <i>outcomes</i> that come from training ACT – i.e. reduced burnout, increased resilience, higher performance etc. Therefore, the content of the training has to include other material (stress management, time management, communications skills). In turn, this material has to be delivered ACT <i>consistently</i> if it is to improve psychological flexibility. Material needs to be delivered in such a way that it helps people either 1) unhook from difficult thoughts and emotions and 2) move pragmatically towards more effective behavioural based on important values and goals.6. Finally, the validity of materials and exercises must be high – employees must understand the value and relevance of each part of the training. Strange metaphors such as <i>Passengers on the Bus</i> – however valuable – cannot be used en masse. <p>I outline more general differences in section 5.1.</p> <p>Given all of this, I wanted to test whether ACT-consistent training is still effective given the more typical conditions for a practitioner. I felt like this would be a very worthwhile contribution to the literature for several reasons. Not least, it fills a gap and stands apart. But</p>
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	<p>also, from a practitioner perspective it is the next evolution of evidence-based practice as we seek to broaden and scale the reach of the best interventions.</p> <p>This meant that in order to fill a gap in the literature I was accepting a very big challenge. Each of the points above (apart from possibly point 2) makes delivery of training harder. In practice, the training I delivered was being given to people who sometimes did not really want to be there and had travelled from across the country to get there in time. Some felt like the resilience training was just a sticking plaster from HR...I had to take them from that initial attitude into something approaching buy-in and finally see if I can could get some behavioural activation going.</p> <p>That said, this is the right test of ACT technology. Unless ACT can prove effective in these kinds of scenarios it is not as exciting or precise as some claim it to be and that needs to be explored.</p> <p>In terms of study design, it was clear that I would be doing a control trial of some kind, and the easiest would be to run an independent measures waitlist control study; whereby participants in the active group are compared to participants who have yet to complete the training.</p> <p>I did not really consider other types of design in depth. Qualitative designs were not appropriate, as I was testing an existing area of research and seeking to extend it.</p>
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		<p>Correlational designs were also not appropriate, as I wanted to infer causality, if possible, from my research.</p> <p>In terms of what was missing, I don't feel I would do anything differently. However, a couple of qualitative studies which assessed the validity of training ACT in new workplace contexts stood out as interesting background reading. One study which did meet my criteria tested ACT in Sierra Leone. It was a fascinating study design to see if ACT terms translated to a different culture, incorporating both quantitative and qualitative elements. Not only did the intervention work quantitatively, but the comments from participants about the nature of the training were also positive. These studies are valuable in showing the flexibility of ACT training, and the wider applicability of its ideas as practitioners seek to scale its technology.</p>
4.7	<p>What has and hasn't been explored before empirically? Why might that be? Why are you in a position to explore these gaps?</p>	<p>As above.</p> <p>The reason why ACT has not been rolled out more widely or with shorter interventions is likely to be because most research is conducted by academics in specific contexts. Practitioners find it hard to do research for many reasons, and this is one of the main benefits of a Professional Doctorate – it brings many experienced practitioners back to research. This is an advantage as, although practitioners do not have the research skills (certainly initially) they often have access to interesting populations and bring more innovation in terms of delivery.</p> <p>As my SLR demonstrated, there are few workplace studies which experiment with shorter ACT protocols. In addition, despite the theoretical flexibility of the model, few studies have sought</p>

		<p>to blend ACT principles into other workplace content to see whether ACT training can be made shorter and yet still effective at developing psychological flexibility. Without this kind of innovation, the chances of wider prominence may decrease. Perhaps the reason for this is that the current benchmark ACT intervention is based on a '2+1' protocol, of 3 half day sessions. This forms the basis of the classic text in this space, <i>The Mindful and Effective Employee</i> (Bond, Flaxman and Livheim, 2014). Therefore, even day-long interventions feel short in comparison to this.</p> <p>My research is therefore relevant at the increasing number of practitioners who are drawn to ACT and looking to deliver interventions to clients more widely. The research will also be relevant to the ACT research community, particularly those interested in shorter intervention – so-called Focused ACT.</p> <p>If shorter ACT-consistent interventions work, then it may become more feasible and cost effective to promote ACT more widely across entire organisations. Given scaling ACT is one of the central objectives in the ACBS community (Hayes, UK & Ireland ACT Conference 2014), this study is bound to be of interest.</p> <p>I am in a good position to explore this gap as I am one of those practitioners who have been drawn to ACT, having been a member of the Association for Contextual Behavioural Science (ACBS) for 10 years, and presented at 4 ACBS world conferences and two UK and Ireland ACBS conferences. I have had a paper published with one of the founders of ACT (see Hulbert-</p>
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		<p>Williams et al, 2016) and been cited in several ACT-related books (e.g. <i>The Mindful and Effective Employee</i> and <i>The Big Book of ACT Metaphors</i>). I also write a blog called Working with ACT, which is listed as one of the most influential Positive Psychology blogs in the world.</p> <p>The second paper will add to the evidence by examining whether a shorter, ACT-consistent intervention (which is already being sold to many organisations throughout the world) can provide beneficial outcomes in terms of health, wellbeing and self-rated performance.</p> <p>ACT training has not, to my knowledge, been trialled across an entire organisation as part of compulsory training. The second study will report outcomes from an intervention which is being delivered across a whole organisation from the Executive team to mid-level leaders and front-line workers. It is virtually compulsory, so it is delivered to people who want to do the training and some who don't. Therefore, the research will explore whether ACT training can still have impact for groups who have not volunteered, a key test of whether training can be scaled.</p>
4.8	<p>What alternative conclusions could you have drawn from your SLR in terms of opportunities for further research?</p>	<p>I think one alternative would have been to have run some qualitative research on using a more traditional ACT training intervention (e.g. either a day long intervention or even the 2+1 protocol) on a group of non-volunteers in the private sector.</p>

		<p>I would have been curious to see if this was possible firstly – even just selling a day-long training course may have been difficult and certainly difficult en masse. But I would be especially curious to see what the attendees would have made of the traditional ACT material.</p> <p>For example, one very common metaphor used in nearly all ACT training is called <i>Passengers on the Bus</i>. Most ACT trainers and researchers use this in training, and it is an effective tool to promote cognitive defusion, one of the key aims of ACT training. However, it is a metaphor that assumes a willingness to be playful, and to potentially look a bit silly. For anyone who had not volunteered for the training my worry has always been that this would turn them off permanently. It would have been interesting to try out some of this material on the groups I work with, to see if my suspicions were correct.</p>
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5. Submitting for publication

5.1	How did you choose which publication to submit to?	<p>We were interested in publishing our findings in a journal which had consistently shown an interest in the main subject, i.e. ACT applied to the workplace. After an initial trawl of the main articles in the field we identified 3 potential journals which made our shortlist:</p> <ul style="list-style-type: none"> • Journal of Occupational Health Psychology • Work & Stress • Journal of Contextual Behavioural Science
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		<p>Of these, we decided to choose the Journal of Occupational Health Psychology. This was ambitious as it is the highest-ranking journal of the 3. However, we felt that this would be worth a try given the paper's interest in the subject and given both the SLR and research study could potentially be of interest to the journal.</p> <p>Knowing very little about the submission process I was happy to try something ambitious and thought it would be an interesting experience to get peer-reviewed comments from a prestigious journal.</p>
5.2	<p>What challenges did you face and how did you overcome them?</p>	<p>The actual submission process was in two parts – submission and then responding to comments. Firstly, the paper needed to be amended and formatted specifically for the journal. For this, Rachel and Jo organised some support – Rebecca Peters – in terms of helping to format the SLR, prepare a separate title page, and a cover letter to go along with the submission. Rebecca's contribution was superb – very clear and logical and it was a huge relief to get some help at this stage.</p> <p>One of the main challenges of the Prof Doc as a practitioner is that these minor tasks (e.g. formatting, submitting etc) which may seem easy and straightforward to someone working in academia can feel to a practitioner as almost insurmountable. Getting the SLR (and study) completed becomes such a huge and all-encompassing commitment that to then face working out how to format for a particular publication simply feels like breaking point. I don't think I would have attempted publication without this support and certainly never would do in future.</p>

		<p>Finally, the submission was anonymised before being uploaded to the Journal's website and this part of the process was surprisingly straightforward.</p> <p>Around 3 months later I received the comments from the peer-review process. Due to comments made by others on the Prof Doc who had already gone through this part of the process, I was expecting the worst. The main comment from the Editor was as follows:</p> <p><i>"Although both reviewers saw considerable merit in your focus on ACT, they also both raised significant issues with the current version of the manuscript. It is not clear to me that you will be able to address these concerns and, indeed, the reviewers were split in their recommendation as to whether the manuscript should be revised or rejected. I have opted to give the manuscript a major revision but note that I consider this a very high risk revision with no guarantee of success. It seems to me that the reviewers present two different (and possibly complementary strategies) to enhance the contribution of the paper - one suggests a meta-analysis with the other proposing a critical evaluation of methodology. Ideally I think a revision would incorporate both although my experience is that after applying a critical evaluation of methods there is often little left to meta-analyze!"</i></p> <p>Although I was expecting the worst, there is always a tiny hope that when <i>your</i> paper is reviewed they come back to reveal that they feel this is a work of great and original genius, with no need for further revision. So from that perspective it was slightly disappointing. However, when I</p>
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	<p>read the actual comments I felt they were entirely reasonable and valid (if extremely detailed and challenging).</p> <p>Both reviewers signed off with a positive sentence, which made a surprising difference:</p> <p><i>“In conclusion: an interesting an important review that needs to be thoroughly rewritten, especially regarding methodology, discussion and conclusions. I really hope that you did not find my comments too harsh but constructive and helpful. Best wishes.”</i></p> <p>Reading the comments is another example of the huge and at times quite overwhelming challenge of the Prof Doc also seeming to be worthwhile.</p> <p>In terms of resubmission, this is something that is beyond me alone. The feeling of reading the comments as a practitioner is that they have raised huge and detailed attacks on a wide range of subjects about which I know a limited amount. It’s like facing an army of tanks with a tiny popgun, and a total of about 25 minutes spare this year to win the battle.</p> <p>From my perspective publishing in a 4-star journal is not the main prize – publicising my work in a practitioner journal would be more beneficial. So I was sanguine about whether to re-submit at all, but clear that if I were to do so I could not do it alone.</p> <p>At this stage Rachel suggested bringing in another author – potentially someone who was an expert in methods - to help. This seemed a great suggestion for me; exactly what was required to respond to some of the more fundamental and challenging questions. I believe enough in the</p>
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		<p>whole idea of the Prof Doc (in particular bringing academia and practice closer together) to try this route. I was also unaware that most submissions are rejected well before this stage so even getting to where we've got to is an achievement.</p> <p>As things stand we are searching for an expert in methods to help provide some input. My hope is that with some support and then revisions we can resubmit the SLR to JOHP and if that happens I would also submit my study – which is highly complementary – to the same journal.</p>
5.3	<p>What were your key learnings from the submission stage?</p>	<p>Submitting work for publication is surprisingly easy, but admin support from people who've submitted before is essential.</p> <p>Brace for very robust challenges and some fairly fundamental challenges – but this can feel surprisingly invigorating. There is a feeling that, at the very least, you are not being patronised!</p> <p>Further specialist support (for example on methodologies) is probably required – there is a limit to how much practitioners can do alone.</p> <p>The future of our profession probably lies in studies with longer lists of authors, each bringing something different and complementary to the party.</p>

6. Research study: Design

6.1	How did you come to a decision on the study/studies you were going to undertake?	<p>Again, I felt that for me this was relatively easy, as it was an issue that had been brewing in my mind for several years. Then as described above luck intervened as the Doctorate combined with a unique opportunity offered by one of my clients to train an entire section of their workforce – from senior managers down – across 4 countries and 7 sites. This presented an almost perfect opportunity to empirically test out the kind of ACT-consistent training that I knew was already selling and therefore appealing to practitioners.</p> <p>From a practitioner’s perspective, there are numerous texts which demonstrate how ACT training can be applied outside of therapy (e.g. David, 2016). In the workplace the key text is the <i>Mindful and Effective Employee</i> (Bond, Flaxman and Livheim, 2013), which lays out a ‘2+1’ protocol for implementing ACT in the workplace.</p> <p>The 2+1 protocol has been the main intervention used within the literature to generate positive outcomes within the workplace (see Bond & Bunce, 2000). This has helped produce a compelling evidence base for the applicability of ACT to the workplace, however, there are limitations when it comes to practitioners using and building on this research:</p> <ul style="list-style-type: none">• 3 half-day sessions are difficult to sell, particularly on a larger scale, due to the cost of the training as well as the time needed out of the office for busy workers.
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		<ul style="list-style-type: none"> • With 3 sessions there is always the problem of attrition (see Lloyd, Flaxman and Bond, 2013). The issue of engagement in training is also likely to be compounded for programmes with a wider rollout (i.e. that are not voluntary). Many practitioners do not have the luxury of only training those who have volunteered to be there. Having interventions that are short and engaging is therefore critical. • The 2+1 sessions are focused specifically on training ACT skills. In research terms this is understandable, however in practice organisations often want other material covered. For example, in a stress management or resilience learning and development professionals often want trainers to cover issues such as signs and symptoms of stress, communicating under pressure, dealing with overload, the neuroscience of stress and the impact of diet, sleep and exercise. In other words, clients want a broader range of topics covered than simply ACT training. Blending ACT skills into other content (particularly with high validity and relevance for employees) is therefore critical.
6.2	How did your SLR provide the basis for your study?	It clearly identified that although ACT was showing promise in terms of a workplace intervention, there was a need for studies which further tested the limits of its effectiveness when scaled. The study is therefore designed to test the broader applicability of ACT.

6.3	How is your research unique and what will it add to the literature base?	<p>As mentioned above, the SLR had shown that most existing research was done on volunteers, in the public sector, with relatively small numbers, with interventions of around a day ad often multiple days and often explicitly about training ACT, instead of it being organisation-driven. My study clearly filled a gap in the literature as it was the opposite of all of that.</p> <p>My study is therefore different primarily because of the participants and intervention used. It is the first study of its kind (to my knowledge) to be rolled out across an entire organisation. It is the first study of its kind in the private sector. It is only the second study of its kind to use non-volunteers, in other words people who had not asked to be included. Finally, it is the first study to use very short, 'Focused' ACT principles in the workplace. The previous shortest study had been 1 day – mine was half a day (plus follow up by email).</p>
6.4	Why did you decide to use the particular methodology/analytical process?	<p>Because the research questions and hypotheses are relatively narrow and defined, quantitative analysis will be employed for the study.</p> <p>I originally planned to measure these hypotheses using ANOVA – comparing the Active and Control groups across the 3 Time points. I also planned to compare both groups on the performance outcomes, and both groups on the burnout scales using MANOVA.</p> <p>In the end I was not able to compare the groups at Time 3. (For more details see section 5.5).</p>

		<p>I used MANCOVA to examine differences between the active and control groups at Time 2, while controlling for the original measures at Time 1. [This allowed me to control for varying levels of each variable at Time 1, thereby further isolating the effects of training.]</p> <p>I also planned to explore whether psychological flexibility helped explain some of the differences in outcomes, for example as a mediator or moderator of the performance and health outcomes. The plan was to conduct a series of hierarchical multiple regression analyses, to see if the R-squared change in psychological flexibility explains a significant proportion of the variance after accounting for Time 1 levels.</p> <p>Finally, I was keen to explore whether short interventions last – my time 3 survey was taken 3 months post-training, so I wanted to explore whether any positive changes are maintained over time (or for the control group whether changes occurred between Time 2 and 3).</p> <p>The design of the study was always based on the idea of 3 time points. I (we) wanted to see if any changes were made and then endured. However, with that as a starting point the client did not want to do 3 online surveys (too much hassle, too many emails, would create too much admin) – so doing it at the training session was actually the only option, this was the best fit design which enabled us to capture 3 time points whilst also satisfying both practical, logistical and client needs.</p>
6.5	What other design could you have chosen to answer your question	The ideal design would have been a truly randomised waitlist control design. This would have meant that the active and control groups were kept separate until Time 3 (T3). Only after the T3

	<p>and why was yours more appropriate? Please consider at least two alternatives and describe why you haven't progressed with these.</p>	<p>scales had been completed would the control group have received training. However, the organisation would not allow this to happen – the control group would need to receive training virtually simultaneously to the active group.</p> <p>My eventual design was therefore a compromise, with the control groups receiving training immediately after the T2 survey and the active group receiving training before receiving the T2 survey. They then had around 3 weeks to return the survey.</p> <p>I would also like to have included more objective outcome measures, particularly around performance, absenteeism or appraisal data. As my project continued I did feel the limitations of self-report data, and this is something I included in my write up as a limitation.</p> <p>I do think in future that even if organisations are reluctant to release data of this kind, exploring participants experience in new ways (such as a daily diary study, or using technology) could be a more valid way of assessing the success of an intervention than relying on purely self-report measures.</p>
6.6	<p>If you have chosen measures, why did you choose them? List alternatives you considered and why they were rejected.</p>	<p>I know I wanted to measure psychological flexibility – the core mechanism of change in ACT training. The only choice here was between using the Acceptance and Action Questionnaire (AAQ, second version) or the Work Acceptance and Action Questionnaire (WAAQ) which was specifically designed for work contexts. I felt that the items in the WAAQ, although used less in</p>

	<p>research (including in organisations) had higher validity for organisational contexts. I therefore felt it would create fewer questions and less confusion overall.</p> <p>A related to concern for this and all other scales was the items needed to be relatively straightforward and use Plain English. Although all of the participants were fluent in English and using English as part of their daily work routines (as an American company), none of them were using English as a first language.</p> <p>In terms of outcomes, a core hypothesis to test was that ACT improves both health, wellbeing and performance. Therefore I wanted measures to tap into these as effectively and efficiently as possible.</p> <p>The measures I chose for health and wellbeing was the <i>The Maslach Burnout Inventory (MBI; Maslach, Jackson, & Leiter, 1996)</i>. Burnout is a widely used and understood term in organisational contexts, and much of my resilience content points specifically at burnout. It has also been the subject of both empirical and theoretical research in the ACT research community, therefore I felt this would provide me with the interesting test of shorted ACT intervention.</p> <p>The first performance-related scales chosen was the Brief Resilience Scale (BRS). This was again largely for pragmatic reasons, as the items relate to bouncing back from adversity and I felt this tapped into ACT's central focus on effective human functioning, rather than simply reducing ill-health. I felt that most employees would interpret the items as performance-related questions in the context of a busy and changing workplace.</p>
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		<p>The second and third performance related scales were chosen 1) because they were short and 2) they tap into slightly different elements of performance. The <i>Individual Work Performance Questionnaire (IWPQ)</i> (Koopmans, L., Bernaards, C., Hildebrandt, V., van Buuren, S., van der Beek, A. J., & de Vet, H. C. (2012). Is a multi-item task performance measure looking at performance on prioritising, completing tasks, managing time and planning.</p> <p><i>Work Performance Questionnaire</i> (Bond, F. W., & Bunce, D. (2001). The single-item Work Performance measures <u>global</u> job performance. By using a single item global measure of performance we allow the person to infer from it what they think (rather than prescribe an aspect of a job that maybe isn't even important), allowing us to measure a person's overall feelings of competence. The single measure assesses competence job as a whole, including task and contextual performance, i.e. whatever the respondent thinks of as their job. This second performance-related measure has the bonus of being a 1-item scale, so it was easier to include from the perspective of survey length.</p> <p>Alternatives in this space could have been some of the better known attitudinal scales, such as job satisfaction. However, I deliberately did not want to test participants only on attitude and motivation – I wanted more behavioural assessments as this is in keeping with ACT theory (it is based on contextual <i>behavioural science</i>).</p>
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		<p>But more importantly, ACT training has had mixed success in changing attitudinal scales such as job satisfaction. In one example, Bond & Bunce, 2000 were able to show improvements to job performance and health, but no differences in job satisfaction recorded.</p> <p>As I reflect on the choice of scales, I would have loved to have had longer to consider using more objective data. Many of the participants were salespeople. Could I have gained access to objective performance data (for example annual sales) if I had pressed harder for such data? In my mind, it would have made the study much stronger to have had objective measures of performance.</p>
6.7	<p>What challenges did you face in the design process and how did you overcome them?</p>	<p>Some of the main challenges were in the design of the study and how long we could have a waitlist control group (see section 5.3). A second challenge was combining the design of the study with the design of the actual training. There was a huge logistical challenge in organising so many workshops across different countries and locations. As mention in section 5.6, it would have been great to have longer to address some of the weaknesses in the design of my study and perhaps to have pressed harder on getting access to objective measures.</p> <p>One further challenge I faced was on the length of the overall survey. Senior managers were extremely reluctant to send a long survey round to all participants, still less to do this three times. Therefore, I had to choose scales that were abstemious in terms of how many items they had. I also had to minimise items which tapped into demographics. This limited my ability to</p>

		use control variables (for example age of participants, how long in the job, levels of seniority etc). However, I do not feel it harmed the study overall given the original aim.
6.8	How did this process differ from your expectations/plan?	<p>No plan of action survives contact with the enemy....!</p> <p>some of the challenges are explained above. Whilst these were not exactly 'part of the initial plan' I am not sure I was thinking in terms of expectations. Once of the main learning points from doing this Professional Doctorate whilst running a business and raising a family is; no matter how short of time you are or how big the problems seem, just focus in this moment on the next step.</p> <p>Ironically (or perhaps not) this is an almost perfect description of psychological flexibility. It is fair to say that I have benefitted from my own training. Perhaps you really do teach what you most need to learn?</p>
6.9	What were your key learnings from this stage?	<p>The limitations of self-report scales is something that became more and more apparent in this stage, and in fairness this is something that I include in the Limitations section of my final study. In future I would prefer to negotiate even 1 or 2 objective measures of health and / or performance.</p> <p>In terms of learnings for my own future practice, I think the key word is collaboration. Conducting high quality research is simply not possible without an effective partnership between</p>

		practitioner and research specialist. Therefore, to me this reinforces the essential value of a Professional Doctorate in the first place: to encourage these kinds of links.
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7. Research study: Gathering data

7.1	How did you go about gathering data and accessing participants? Why did you choose this route?	I was in the middle of a UK and Europe-wide rollout of some ACT-consistent Resilience training, when the opportunity to train the whole of one region (Nordic region) was presented to me. With high levels of buy-in at senior level, the training was going to be rolled out to every member of staff with 'strong recommendations' from the CEO to attend. Therefore, accessing participants was not the issue – I would be training 500 employees anyway. The only thing I needed to do was persuade senior managers (and then a working team) to conduct research. Luckily, with good levels of buy-in from my work elsewhere, this was relatively easy to achieve.
7.2	How did you choose the number and type of participants and why is that appropriate?	As above, this question does not quite cover the reality. I didn't choose the participants, and they did not volunteer. In one way, this is precisely why the study was needed. What separates my study from previous research is the sample. It looks at an unusual population in the context of what has gone before, i.e. private sector, non-volunteers, form across all levels of the organisation.
7.3	How did you choose your recruitment strategy and why?	I didn't really need to choose a recruitment strategy, as this was all part of the opportunity presented to me.

	<p>What are the limitations of this approach?</p>	<p>The limitations of the approach I took was that the challenge of building psychological flexibility in a short amount of time is greater. You have to break down initial scepticism to create value and this can be difficult. However, it is an essential part of scaling ACT. The second potential limitation is that it makes attrition higher. In theory using volunteers (who want to be there) would lead to lower attrition rates than non-volunteers. This theory is born out empirically with the one ACT study not using volunteers saw attrition rates of 60%. However, attrition in my study was not as a big an issue as was non-completion of surveys. Although we did well to have survey completion rates of 80%, 68% and 67% at Time 1, 2 and 3 respectively, this still left an overall completion rate for all 3 surveys of 40%. Because of the size of the study this did not really affect the results.</p>
7.4	<p>What challenges did you face when gathering data/accessing participants and how did you overcome them?</p>	<p>The main challenge of gathering data was the logistical challenge of collecting survey data. Time 1 and 3 were both collected online. For these we needed to ensure the survey was easy and straightforward to complete, that people understood it was confidential and that it was as short as possible. It took a while to perfect the design.</p> <p>Second, we had to perfect the formula for reminders – too few and the completion rates went down (we got a handful of extra completions with each reminder). Too many though and we risked annoying the population and senior managers.</p> <p>For Time 2 data collection, this was in person using paper and pen. For control groups I would distribute prior to training and participants would complete it prior to the training. For active</p>

		<p>groups I would distribute post training and participants would then either complete immediately or return it to me via internal post.</p> <p>There were several logistical challenges here. Firstly, a number of people did the survey but did not sign their name. I then had to try and identify who had done which survey. Second, I used a system of labelling batches of T2 returns with post it notes. However, I learned that post it notes fall off rather too easily when travelling...</p>
7.5	How did this process differ from your expectations/plan?	<p>I underestimated the demands of doing training, collecting data whilst organising the logistics of over 30 flights (including around 15 weekend flights) in 5 months. In some cases, I would arrive and then drive for >4 hours in the Nordic winter before arriving at the hotel. Also, listening to my phone try to pronounce Swedish place names / streets was impossible. It was a demanding time and I felt like everything was rushed.</p>
7.6	What were your key learnings from this stage?	<p>Pay attention to the systems you have in place for data collection. Make online surveys slick, clear, motivational and short. Perfect the wording for encouraging people to complete.</p> <p>For paper and pen surveys ensure that your labelling and identification systems are strong. And don't trust post-its to stay on when travelling!</p> <p>For travel and logistics – outsource this to an efficient travel agent and in general take the train rather than drive (takes longer but you can relax and work).</p>

7.7	What would you do differently if you were going to begin this stage again, and why?	I would have outsourced some of the admin work earlier, and used that time to double down on systems, processes, notes etc. I slightly underestimated the level of work involved – plus the travel and strain of delivering all the training. It is easy to forget things in haste, so noting down everything is hugely important.
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8. Research study: Analysing data

8.1	How did you go about analysing your data? Why did you choose this route?	<p>After leaving my data for a while it took some organising to start making sense of it. However, one of the first actions I took was one of the best; I started to make sense of the data using Excel. All this involved was looking at means for each scale and comparing these between active and control groups, but it certainly started to give me a feel for the ‘story’ of the data. It looked promising too, as means generally improved in the direction of the main hypotheses. However, 1) within that there were some surprises and 2) I was some way off being able to show that ACT training caused these improvements.</p> <p>Form there I started to transfer the raw data into SPSS and conducting some of data cleaning and preparation tasks. In general I followed advice form textbooks and YouTube to achieve this. The book I leaned on most heavily was <i>SPSS Survival Manual</i> (6th Edition) by Julie Pallant. I found this a very straightforward, step by step book which even I could generally follow.</p>
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8.2	<p>What challenges did you face when analysing your data and how did you overcome them?</p>	<p>I find it hard to remember how to do stats, but once I get my heads round it, I am reasonably confident. Therefore, to begin with I find it hard to remember very basic things like the difference between data and variable view, how to prepare the data for analysis and how to run simple tests like means and SDs.</p> <p>I overcame this partly through persistence and reading and partly through paying for stats coaching. I was not able to spend too long bringing myself up to speed, so I paid for some stats coaching from Lucie Zernerova. This largely involved me doing the stats with her there, and she would step in to help me when I needed it.</p> <p>One further challenge is to work out how to start to present the data. Although the process of analysing data is relatively straightforward – you are driving off your hypotheses – it can still seem that there are different ways of presenting your findings. One example for me was how much detail to include. For example, should I focus my paper quite narrowly on analysing differences between Time 1 and 2, or should I try to include more of the Time 3 data?</p> <p>This came to a head when I first sent my analytical plan off to Rachel and Jo, and then to Emma Russell. Emma’s role was to look at my work before the analysis stage proper, to see if I was on the right lines, and make any suitable challenges/suggestions to the strategy. I completed another template and sent it off to Emma</p>
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		<p>I originally planned to analyse the data across two groups over time. Hence, my early hypotheses read like this:</p> <ol style="list-style-type: none">1. The ACT intervention (Active) group will improve across all 7 scales between T1 and T2.2. The Active group will maintain that improvement maintain (or further improve) across all 7 scales between T2 and T3.3. The Control group will not change across all 7 scales between T1 and T2.4. The Control group will improve across all 7 scales between T2 and T3.5. The Control group will differ significantly from the active group when it comes to T2 scores across all 7 scales <p>Naively I thought it would be justifiable to treat the control group as separate, even at Time 3 as they had originally belonged to that group. This was not Emma's view. She argued that because the control group had received training at T3 they could not be analysed separately at that point. Looking back I do see the logic, however at the time this was quite a blow to my plans. My hypotheses would have to change as would my analytic strategy.</p> <p>Emma's view was that I could not call my paper a randomised control trial and that I could not test for mediation, as at Time 3 the groups were no longer active and control. This was a blow to me as, in my head, mediation depends on regression (not ANOVA) and could be done on the whole dataset. However, Emma's view was that this could not be called mediation from a statistical perspective. This left me with a problem as I was not sure</p>
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	<p>whether the changes between the groups at T2 would be that great. Emma's suggestion was twofold:</p> <p>Firstly, to conduct a MANCOVA with T2 scores for emotional exhaustion, personal accomplishment and depersonalisation entered as dependent variables and group (Active vs. Control) as the factor. We included T1 scores as covariates in the analysis because we wanted to assess differences between groups whilst controlling for initial levels of the dependent variable.</p> <p>Then, to use a multiple regression when I include both groups in one dataset and look at differences between T1 (predictors) to T3 (outcomes) by examining potentially explanatory moderators or mediators (in my case psychological flexibility).</p> <p>I felt this achieved most of my aims, however it exposed one of the weaknesses of my dataset, which is the lack of separation between the groups at time 3. It also meant I was not using the Time 3 data to show that change could be maintained over time. This is something that a change over time analysis would have addressed. However, there was a lack of a strong precedent for such an analysis – the Querstret paper only included this as an additional analysis. Therefore, Emma's solution made sense. As it turns out the data were strong enough at Time 2 to show a result, so the issue became less prominent.</p> <p>That said, one of my original research questions was about seeing if change could be sustained over time. Although I could not isolate the longer-term effects of the training</p>
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		<p>(because of my design) I was still keen to include change over time analysis in my paper. This would show that change was sustained from a short intervention, even if the causes of the sustained change could not be identified. In the end, because of the way the data presented, the moderation analyses were deemed to be some of the most important and interesting, so they were included as part of the regression analyses and enquiry into processes of change. In the end we reached a compromise on the change over time analyses whereby I included some of the main highlights from the change over time whilst excluding the rest. It may be that the version I reach for publication is different – there may be one or even two papers feasible from the data I collected.</p> <p>We agreed this analysis could potentially form part of a second study which looks in more detail at the relationships between the data. For example, we could look to build on the Lloyd, Flaxman and Bond paper of 2013, which looked at the role psychological flexibility plays in attenuating burnout. That paper was interesting because it showed that emotional exhaustion plays a key role in burnout development – by alleviating exhaustion you can prevent depersonalisation. It is interesting to see in my data that exhaustion did significantly reduce, but that depersonalisation did not. Could it be that the intervention decreased overall levels of exhaustion which in turn prevented depersonalisation from occurring?</p>
8.3	How did this process differ from your expectations/plan?	I think I knew the stats would be difficult, so again the challenges did not exactly surprise me. One thing that was different from my MSc (in 2008) was the rise of YouTube and its impact

		<p>on learning. For example, when I wanted to learn how to use and interpret the Hayes macro (for moderation analysis) I was able to use an excellent 12-minute video with Dr Erin Buchanan at Missouri State University explaining it all step by step. I ended up knowing and understanding far more about moderation than I anticipated – to the extent that I did not actually end up using it in my study, but I might do a second study exploring the relationships between data using the same dataset.</p> <p>The debate with Emma Russell over my analytic strategy was different to my original plan and undoubtedly this took some adjusting to. However, it brought home the importance of a truly rigorous research design and the importance of isolating the effect of training as far as possible. It also highlighted that I was, in effect, an inexperienced researcher at the outset of the process and a slightly more experienced one by the end!</p>
8.4	What were your key learnings from this stage?	<p>A reminder of the differences between some of the main tests. For example, I had never run a MANCOVA before, and it was good to be reminded of the difference between this and MANOVA, ANCOVA, ANOVA etc. understanding the differences between this and regression analyses – I had to start from quite a basic level.</p> <p>Once big learning was learning (to my disappointment) that the design I chose could not really be considered a randomised control trial. By joining the active and control groups together at Time 3 I had foregone the chance to infer causality in a meaningful sense over time. This limited the conclusions I could draw from the data. However, I felt that this</p>

		<p>provided an excellent ‘limitation’ to discuss. In some ways the strength of this study was the population, and the weakness was the research design. This created clear opportunities for the next study in this area.</p> <p>A final learning point was to find a paper on which to model your analysis. The Quersrtet et al (2017) paper has basically provided the model for my own analysis and write up, as it contains so many similarities to my own.</p>
8.5	<p>What would you do differently if you were going to begin this stage again, and why?</p>	<p>In an ideal world I’d do it more thoroughly and on a less reactive basis.</p> <p>If I am honest my understanding of stats is functional. That is, I understand the minimum I need to understand to complete each stage of the Prof Doc. However, my understanding of wider stats and some of the terminology involved is not so good.</p> <p>That said, maybe the most realistic outcome for me as a practitioner is a decent basic understanding of stats and an understanding of how to tackle analysis when I need to. I feel I’ve achieved that.</p> <p>A final point; at the outset of the analysis stage it is worth identifying a paper with a similar research design and analytical plan as your own, even if this is not in the exact field as your own. This can help guide one’s work in terms of structure, statistical analysis and write up.</p>

9. Research study: Writing up

9.1	What challenges did you face when writing up your study and how did you overcome them?	<p>The same issues of time, and quality time to think and make good decisions.</p> <p>Within this, I think the ability to write clearly and concisely is the biggest challenge. As Mark Twain said, I would have written a shorter letter, but I didn't have time. It is harder to write concisely because you have to be crystal clear on the story and the purpose of each section, paragraph, and sentence. You also have to be willing to kill off your favourite sentences and paragraphs – the ones you are attached to but which don't fit the narrative.</p>
9.2	How did this process differ from your expectations/plan?	<p>I am not sure it did particularly but being reminded to be concise and focused in one's writing was helpful.</p> <p>One differing expectation was how sometimes even papers in top quality journals do not make decisions (for example, in relation to data used) explicit. This can make it harder to know what current thinking is in relation to the field and in particular statistical analysis.</p> <p>One specific example concerns the use of per protocol (PP) vs intention to treat (ITT). In the Lloyd, Bond and Flaxman paper (2017) they used per protocol and excluded participants who had not completed all aspects of the programme. Yet in the earlier Flaxman and Bond (2010) paper they used multiple imputation and intention to treat and stated it as preferable.</p> <p>Neither paper (especially the later one) gave a detailed articulation of the issues involved, therefore it was difficult to work out which route to take. Resolving these kinds of issues</p>

		<p>often involves researching the specific issue itself, which then lacks the kind of contextual information that you need to make a decision. As with so many issues, it feels like a grey area, so you make a decision and list why you made it. In my case I opted for per protocol. There were 4 reasons: firstly, there was a precedent for using per protocol elsewhere (Lloyd et al) and this was the later paper by 7 years. Second, I had the sample size to justify use of per protocol. Third, ITT ideally requires complete outcome data available for all randomized participants (i.e. a complete data set at T3) – I only had about 68% at T3. Finally, as there were no differences between the smaller and larger groups, I narrowly felt per protocol was preferable.</p> <p>These kinds of issues extend to the format and layout of papers even in the same journal. For example, the Querstret et al (2017) paper includes a section called Analytic Strategy. However both the Lloyd et al (2017) and Flaxman & Bond (2010) papers include this information within each analysis. Because of the relative scope of my research (6 hypotheses) I felt that the latter format would be clearer.</p>
9.3	What were your key learnings from this stage?	<p>The importance of limitations in the Discussion section. This section can help other researchers identify and target weaknesses in existing research allowing gaps in the literature to be filled.</p> <p>I also learned the importance of writing up non-significant results. I feel that I learned as much from studies that did not have significant results as I did from studies that did. For</p>

		<p>example, learning that ACT does not generally lead to increased job satisfaction but that this does not stop improved performance or health outcomes (Bond and Bunce, 2000). That is useful 1) to understand which measures to target in an ACT intervention but 2) to understand <i>how</i> ACT interventions have their effect.</p> <p>Finally, I think to write well it's important to get into the habit of reading journals. I probably didn't read as many journals as I would have liked. As with my unread book pile, it is just difficult to find time to read as much I as want to!</p>
9.4	<p>What would you do differently if you were going to begin this stage again, and why?</p>	<p>Probably spending longer on the Results section, and consulting more widely about what others felt was the main story. This would have enabled a clearer Introduction and Discussion to emerge from a narrower focus. It would have involved less rework. That said, is it ever possible to achieve this 'ideal' approach in reality?</p>

10. Overall doctoral process

10.1	Reflecting on your doctorate, how do you feel you have developed (e.g. technical expertise, theoretical knowledge)?	<p>My own awareness and understanding of my own profession has increased immeasurably. Many of the changes I have observed in the last 10 or so years have been for the better. For example, the rise of Systematic Reviews and the idea of Professional Doctorates are both undoubtedly positive developments.</p> <p>Obviously, my technical expertise has also developed hugely. My understanding of stats has been refreshed and, in some instances, expanded. I am confident to conduct literature reviews in a more methodical and fair way than before. I also have a better appreciation of where ACT training is going and feel emboldened to move further in this direction.</p>
10.2	Can you see any changes in your practices and/or professional plan as a result of undertaking this doctorate and associated learnings?	<p>Absolutely.</p> <p>Firstly, I am going to further refine the training I do to try to make it even more effective. I am going to explore ways of improving effectiveness through short add-ons – emails, coaching and follow up training.</p> <p>Second, I may well do more research and I have already spotted several really good opportunities to do that. However, I shall be collaborating with an academic!</p>

10.3	What has been the most useful element of the process for you?	<p>Reconnecting with the research side of my profession and gaining a new respect for those who do high quality research, or those who innovate when bringing evidence-based practice to ordinary people. It is so needed.</p> <p>I also think more broadly the Prof Doc is useful in that it brings together experienced practitioners and academic researchers. So many people in our profession are drawn to psychology because of the evidence base, yet when they become psychologist practitioners they drift away from research. This is for many reasons – lack of access to journals, lack of time to do research, organisations not caring about evidence, losing contact with academics (who often are not always reinforced to maintain links with practitioners), losing SPSS etc. This means a strange disconnect within psychology which does no one any favours – practitioners lose contact with the latest research and techniques and academics work with narrow, homogenous groups.</p> <p>The Prof Doc is a way of pushing back against this tendency and bring the scientist practitioner role back to life.</p>
10.4	What has been the most rewarding element of the process for you?	<p>That the Prof Doc feels worthwhile in terms of 1) developing meaningful skills and 2) contributing to the future of my profession. Quite unlike the chartership process which felt mechanical and bureaucratic, this process has – although frustrating and challenging –</p>

		always felt meaningful. I genuinely think it is the future of our profession. I'll be arguing this for the rest of my career and encouraging people to do one.
10.5	What has been the most challenging element of the process for you?	Without doubt it has been finding time and energy in amongst the work I have to do (i.e. paid) and family time. It feels like I did the whole doctorate in stolen snatches of time. Living and working in the presence of guilt has been the most challenging thing. It's certainly been good for my psychological flexibility.
10.6	What has been the most frustrating element of the process for you?	The technology and the blind alleys. Several times I have spent a day (or nearly a day) doing something and then I realised it was wrong, or a comment from Jo, Rachel or Emma makes me realise it was not needed or not quite wrong.
10.7	What would you tell someone beginning this process? What are the key things they should know/avoid/prepare for?	In 1996 Steve Redgrave won his 4 th Gold medal at the Atlanta Olympics. At the end of the race he said, "if you see me go near a boat again, shoot me". I feel the same way about this Prof Doc. 'If you see me opening up SPSS again...' But equally, I would not advise someone else <i>not</i> to do it either. The process is worthwhile. So perhaps my advice would be more nuanced, like 'Don't have a family at the same time as doing it.' I would advise someone to be realistic about how much work it takes. Rachel and Jo do a lot to make the process as streamlined as possible. However, it is still a Doctorate and therefore

		<p>an immense amount of work. It can be lonely and exhausting. I did the whole thing feeling constantly guilty.</p> <p>So be prepared to chisel away chunks of time (whole weeks) to do it properly, and then be prepared to scrap for odd half hours here and there.</p> <p>In summary, I am glad I did it, but there's no way I'd do it again. Though 4 years after the 1996 Olympics, Redgrave won a record 5th gold medal in Athens.</p> <p>So perhaps never say never....</p>
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