

JYU DISSERTATIONS 10

Aino Kohtala

ACTing for Depressive Symptoms

**A Longitudinal Study of a Brief 4-session
Acceptance- and Value-based Intervention for
Symptoms of Depression**



UNIVERSITY OF JYVÄSKYLÄ
FACULTY OF EDUCATION AND
PSYCHOLOGY

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ABSTRACT

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The main objective of this study was to investigate a brief 4-session intervention based on a theoretical framework of acceptance and commitment therapy (ACT), and to explore its short- and long-term effectiveness among individuals reporting depressive symptoms. Additionally, the research aimed at further exploring the elements of psychological flexibility and mindfulness associated with improvements in depressive symptoms. The dissertation comprises three studies. Study I investigated the effectiveness of the brief intervention compared to a waiting-list control group. In total, 57 participants were randomized into either the ACT intervention ($n = 28$) or the waiting-list control (WLC; $n = 29$) group, the WLC participants receiving the same intervention later. Additionally, both groups were combined at the 6-month follow-up assessment to gather evidence on the short-term outcomes of the intervention. Study II further explored the effects of the brief intervention by extending the follow-up period to five years. Of the original sample, 60% ($n = 35$) attended the 5-year follow-up measurement. Study III examined the associations of depressive symptoms with psychological flexibility and mindfulness skills with a sub-group of 33 participants. In Studies I and II, reductions in depressive symptoms were detected after the intervention and the outcomes were maintained across the 5-year follow-up period. Significant improvements were also found in other measures and in psychological flexibility during the treatment period with similarly maintained long-term outcomes. The cross-sectional results from Study III showed that higher levels of depressive symptoms at baseline were associated with higher levels of observing and lower levels of psychological flexibility, accepting without judgment and acting with awareness. The findings on treatment-related and long-term changes in depressive symptoms suggest that non-judgmental acceptance was an important factor in the brief intervention. In sum, this study supports the use of the brief 4-hour ACT-based intervention for low mood and emphasizes the importance of developing non-judgmental when treating symptoms of depression.

Keywords: acceptance and commitment therapy, depressive symptoms, brief intervention, novice therapists, psychological flexibility, mindfulness skills

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TIIVISTELMÄ (FINNISH ABSTRACT)

Kohtala, Aino

Mielialaoireiden hoito neljän kerran hyväksyntä- ja arvopohjaisen intervention avulla

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Tutkimuksen tavoitteena oli tarkastella neljän kerran hyväksymis- ja omistautumisterapiaan pohjautuvan intervention lyhyen ja pitkän ajan vaikuttavuutta mielialaoireita kokevien joukossa. Lisäksi tarkoituksena oli tutkia tarkemmin, mitkä psykologisen joustavuuden ja tietoisuustaitojen osatekijät ovat yhteydessä mielialaoireiden muutoksiin. Väitöskirja koostuu kolmesta osatutkimuksesta, joissa tarkasteltiin samaa opiskelijaterapeuttien toteuttamaan lyhytinterventiota. Tutkimus I tarkasteli lyhytintervention (n = 28) vaikuttavuutta odotuskontrolliryhmään (n = 29) verrattuna. Odotuskontrolliryhmä sai saman intervention viiden viikon kuluttua ja ryhmät yhdistettiin 6 kk seurantaan varten. Tutkimus II tutki lyhytintervention pitkän aikavälin vaikuttavuutta ja viiden vuoden seurantaan osallistui 60 % (n = 35) tutkimuksen aloittaneista. Tutkimus III tarkasteli mielialaoireiden yhteyttä psykologiseen joustavuuteen ja tietoisuustaitoihin osa-aineiston (n = 33) kautta. Tutkimusten I ja II tulokset osoittivat mielialaoireiden vähentymistä välittömästi neljän kerran intervention jälkeen verrattuna kontrolliryhmään ja tulokset säilyivät sekä 6 kk että 5 vuoden seurantamittauksissa. Samanlaista merkitsevää parantumista ja tulosten säilymistä havaittiin myös muissa psyykkisen hyvinvoinnin sekä psykologisen joustavuuden mittareissa. Poikkileikkaustulokset tutkimuksessa III osoittivat lähtötilanteessa mitatun korkean mielialaoireiden tason olevan yhteydessä sekä korkeampiin havainnoinnin tasoihin että matalampiin psykologisen joustavuuden, tuomitsemattoman hyväksynnän ja tietoisuuden tasoihin samassa mittauspisteessä. Tulokset liittyen sekä intervention aikaisiin että pitkäaikaisiin myönteisiin muutoksiin mielialaoireissa viittaavat tuomitsemattoman hyväksynnän olevan merkityksellinen tekijä lyhytinterventiolla. Kokonaisuudessaan tutkimuksen tulokset tukevat neljän kerran hyväksyntä- ja arvopohjaisen intervention käyttöä mielialaoireiden hoidossa. Lisäksi tulokset nostavat esille tuomitsemattoman hyväksynnän taidon ja sen kehittämisen merkityksen mielialaoireiden hoidossa.

Avainsanat: hyväksymis- ja omistautumisterapia, masennusoireet, mielialaoireet, lyhytinterventio, aloittelijaterapeutit, psykologinen joustavuus, tietoisuustaidot

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You cannot really accomplish anything without the possibility of failure. - Lazarus Lake

This dissertation has been a journey with heaps and bounds of possibilities for failure, yet here it is, accomplished. The road to this moment has included series of doubtful moments, despair, thoughts about quitting as well as quitting for a while to take a break and rearrange my thoughts, motivation and values leading me to this point. On the scale has been my fear of failure and my fear of letting people down, as well as my joy for discoveries, the feeling I get from pursuing something important. This journey has been a journey of values, important in itself. I'm more than happy to share this accomplishment with all the people near and who that have helped me get here.

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Siilinjärvi, June 2018

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LIST OF ORIGINAL PUBLICATIONS

- I Kohtala, A., Lappalainen, R., Savonen, L., Timo, E., & Tolvanen, A. (2015). A four-session acceptance and commitment therapy based intervention for depressive symptoms delivered by master's degree level psychology students: A preliminary study. *Behavioural and Cognitive Psychotherapy*, 43, 360–373.
- II Kohtala, A., Muotka, J., & Lappalainen, R. (2017). What happens after five years?: The long-term effects of a four-session acceptance and commitment therapy delivered by student therapists for depressive symptoms. *Journal of Contextual Behavioral Science*, 6, 230–238.
- III Kohtala, A., Muotka, J., & Lappalainen, R. (2018). Changes in mindfulness facets and psychological flexibility associated with changes in depressive symptoms in a brief acceptance- and value-based intervention: An exploratory study. *International Journal of Psychology and Psychological Therapy*, 18, 83–98.

Taking into account the instructions given and comments made by the co-authors, the author of the thesis participated in the execution of the interventions, in collecting data and planned the follow-up design. The author also applied previously collected data, contributed to the analyses, and was the main author of all three publications.

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1 INTRODUCTION

Depressive symptoms, either clinical or sub-clinical, have been recognized as a widespread health challenge impacting both individuals and society at a larger level (Global Burden of Disease Study Collaborators, 2015). The World Health Organization (WHO) ranks depression as the largest individual contributing factor to global disability and suicide (WHO, 2017). Among US citizens, the lifetime prevalence of depression is almost 30% (Kessler, Petukhova, Sampson, Zaslavsky, & Wittchen, 2012), and, based on various national surveys (Patten et al., 2016), seems to be increasing. Approximately one-fifth of individuals living in high-income countries are affected by depression during their lifetime (Kessler et al., 2005a; Kessler et al., 2012).

Low mood and depressive symptoms are among the most common reasons for gravitating toward psychological help (Smit et al., 2006), and a wide variety of psychological treatments have been developed and studied to treat depressive symptoms, and many have shown good outcomes (APA Presidential Task Force on Evidence-Based Practice, 2006). Standard-length psychotherapy often comprises ten or more sessions while experienced psychotherapists are needed to deliver treatments in clinical settings, considerations which may limit the availability of treatment, especially in the case of individuals with milder forms of depression (Bijl & Ravelli, 2000). As sub-clinical depressive symptoms can cause impaired functioning in work or personal life and may lead to more severe forms of depression and disability, treatment options should also be readily available to those with milder levels of depressive symptoms (Goldney, Fisher, Dal Grande, & Taylor, 2004). Findings on treatment effectiveness (Cuijpers et al., 2014; Cuijpers, Smit, & van Straten, 2007) and the risk for incidence of major depression if not treated (Cuijpers, de Graaf, & Van Dorsselaer, 2004; Goldney et al., 2004) indicate the importance of influencing sub-clinical depressive symptoms with psychological interventions. As milder depressive symptoms are often encountered at lower levels of the health care system, brief forms of treatment may offer a possibility to help individuals with sub-clinical or mild depressive symptoms (Nieuwsma et al., 2012). Brief forms of psychological interventions are also supported by research findings on rapid and sudden changes indicating that clinically relevant changes may happen rather quickly, even during the first five sessions (Crits-

Christoph et al., 2001; Doane, Feeney, & Zoellner, 2010; Fennell & Teasdale, 1987). Research also suggests that in cognitive therapy over half of the total amount of all symptom-based recovery takes place during the first four weeks (Ilardi & Craighead, 1994).

As less extensive psychological interventions need to be developed and their efficacy studied on various levels (from randomized trials to natural settings), it is important to gain knowledge on the long-term effects of such shorter psychological encounters. The factors contributing to positive well-being outcomes and decreases in depressive symptoms need to be identified and promoted in treatments. As the time-frame is extremely short in brief treatments, the elements chosen to be integrated into the protocol should be selected with care. While traditional cognitive-behavioral approaches to treat psychological distress have received ample support (Churchill et al., 2001; Cuijpers et al., 2013; Hollon & Ponniah, 2010), they rely heavily on symptoms reduction and efforts to change and modify distorted thoughts. Another approach to suffering and distress derives from the area of research on psychological flexibility. The concept refers to a variety of dynamic, overlapping processes of shifting perspectives, relocating mental resources to meet current and future demands, and balancing between competing life domains and their needs (Kashdan & Rottenberg, 2010). Lack of psychological flexibility has been associated with various forms of distress, whether social, behavioral or psychological such as depressive symptoms (e.g., Barnhofer, Brennan, Crane, Duggan, & Williams, 2014; Berking, Neacsu, Comtois, & Linehan, 2009; Levin et al., 2014), and evidence from mediational research supports the role of change in psychological flexibility in mediating positive outcomes (Forman et al., 2012; Ruiz, 2012; Zettle, Rains, & Hayes, 2011). The concept of psychological flexibility and depression relate to each other on various levels of emotional, cognitive and social functioning, and physiological response systems (Kashdan & Rottenberg, 2010).

Acceptance and Commitment Therapy (ACT; Hayes et al., 2011a) is a clinical application of a theoretical, contextual model of human language, cognition and suffering called the Relational Frame Theory (RFT; Hayes, Barnes-Holmes, & Roche, 2001). Psychological flexibility is a core functioning element in ACT in which context it refers to 1) an ability to be present openly and without attachment or judgment at even the aversive and intensive private events, and 2) changing or persisting in behavior according to chosen values (Hayes, Luoma, Bond, Masuda, & Lillis, 2006; Hayes, Masuda, Bissett, Luoma, & Guerrero, 2004b). Overall, correlational-, component analysis-, and experimental and outcome studies show consistent evidence to support the effectiveness of the ACT model and its underlying principles and theory. ACT outperforms waiting-list, treatment-as-usual and psychological placebos (effect sizes ranging from 0.42 to 0.82), but no significant differences to established treatments has been found (see reviews and meta-analyses by A-Tjak et al., 2015; Hayes et al., 2006; Powers, Zum Vörde Sive Vörding, & Emmelkamp, 2009; Ruiz, 2010, 2012; Öst, 2008, 2014). There is also a growing body of

literature on the application of ACT in the context of depressive symptoms (e.g., Forman, Herbert, Moitra, Yeomans, & Geller, 2007; Gumley et al., 2017; Lappalainen et al., 2007; Richardson, Bell, Bolderston, & Clarke, 2017; Zettle & Rains, 1989). Sub-class analyses of depression in reviews and meta-analyses indicated a within-group effect of $d = 0.92$ (Hacker, Stone, & MacBeth, 2016) and comparison effects ranging from 0.37 to 0.76 (A-Tjak et al., 2015; Powers et al., 2009; Hacker et al., 2016), favoring ACT over control conditions.

Supporting the individual's growth toward meaningful living by strengthening the ability to flexibly and openly experience internal and external events, and to persist in chosen valued actions requires an emphasis on different elements between individuals. While promising results have been shown on the effects of time-limited interventions on increasing psychological flexibility, evidence on the effects of interventions of five sessions or less remains scarce. As brief interventions are often designed as structured, room for individualization should be allowed for. Due to the time-limited nature of these interventions, some aspects may need to be emphasized over others. Less extensive treatment should also be easy to implement and be applicable across a range of settings.

1.1 Depressive symptoms as both a societal and private issue

Directly, depression impacts approximately every fourth individual during their lifetime (US citizen nearly 30%; Kessler et al., 2012). It is considered one of the largest health issues, and in 2015 led globally to over 50 million Years Lived with Disability (YLD) (Whiteford et al., 2013b; WHO, 2017). Depression is ranked as the number one cause of non-fatal health loss (WHO, 2017), and the economic burden of affective disorders is enormous (e.g., Andlin-Sobocki & Wittchen, 2005). Several studies have examined the lifetime and 12-month prevalence of major depression (Hawthorne, Goldney, & Taylor, 2008; Kessler et al., 2012; Kessler, Chiu, Demler, & Walters, 2005b) using diagnoses based on structured interviews (based on DSM-IV, ICD-10 or some other diagnostic system). The 12-month prevalence of major depressive episodes has been estimated at between 6.6% and 9.5% among Australian and US citizens (Hawthorne et al., 2008; Kessler et al., 2012; Kessler et al., 2003; Kessler et al., 2005b), around 5.0% in Western European countries (Paykel, Brugha, & Fryers, 2005a) and 7.4% in Finland (Markkula et al., 2015). The prevalence also seems to be increasing rather than decreasing (Patten et al., 2016). Kessler et al. (2005b) estimated that of those persons classified as suffering from a depressive episode 22.3% were categorized as experiencing severe and 40.4% as experiencing mild depression. Lifetime prevalence estimates range from 16.2% to 28.8% among US residents (Kessler et al., 2003; Kessler et al., 2005a; Kessler et al., 2012). Depression seems to be more prevalent in women than men in various Western countries (Hawthorne et al., 2008; Kessler et al., 2005a; Leach, Christensen, Mackinnon, Windsor, & Butterworth, 2008; Markkula et al., 2015), and women

also tend to use mental health services more often than men (Smith et al., 2013). Similar findings have been reported in Finland (Häkkinen & Alha, 2006).

Impaired functioning and decreased well-being are linked to both clinically diagnosed depressive episodes (Kessler et al., 2005b) and sub-clinical depressive symptoms (Goldney et al., 2004; Horwath, Johnson, Klerman, & Weissman, 1992; Judd, Paulus, Wells, & Rapaport, 1996). Sub-clinical depression is often defined as the display of clinically relevant symptoms not meeting the standard diagnostic criteria for a depressive episode (for example some core symptoms are missing, or the overall number of symptoms is below the cut-off level), even if the scores on a self-report inventory for depression are above the predetermined cut-offs (Cuijpers et al., 2014).

Thornicroft et al., (2017) examined access to treatment for depression in 21 low- and high-income countries and concluded that in the developed, high-income countries 56.7% of those meeting the DSM-IV diagnostic criteria for a major depressive episode reported the need for treatment, with the situation being worse in the low-income countries. Wang et al. (2005) reported that approximately half of individuals with mood disorders received at least minimally adequate treatment in mental health services, while Thornicroft et al. (2017) reported an even smaller percentage of 41.0%. However, in both studies, the threshold for minimally adequate treatment in terms of psychological help was eight or more sessions. This definition is inadequate as it excludes various forms of intentionally brief psychological interventions that have received support and shown positive outcomes in the context of depression (e.g., Cape, Whittington, Buszewicz, Wallace, & Underwood, 2010; Cuijpers, van Straten, van Schaik, & Andersson, 2009; Nieuwsma et al., 2012). Also, with respect to the need for treatment, it can be asked why almost 60% of the individuals meeting the diagnostic criteria for major depression felt it unnecessary to seek psychological (or pharmacological) help. Research on the barriers related to seeking and receiving help for psychological problems proposes reliance on self, social stigmatization, lack of trust in treatment effectiveness, and poor recognition of symptoms as possible factors of not seeking treatment (e.g., Clement et al., 2015; Gulliver, Griffiths, & Christensen, 2010). Similar findings were reported for a Finnish sample where only 59% of the individuals classified as having a major depressive episode used mental health services (Hämäläinen et al., 2004). Although a large portion of depressed individuals neither seek nor receive treatment, depression severity seems to correlate with the probability of getting treatment (Hämäläinen et al., 2004), and the need for psychological services is growing.

Studies have reported various remission rates (Spijker et al., 2002; Whiteford et al., 2013a). Those reporting symptoms accordant with a major depressive episode, but were without professional care, had recovered after a median of three months (mean recovery time = 8.1 months). However, one-fifth of those affected remained at risk for developing a chronic depressive state at 24 months thereafter (Spijker et al., 2002). A meta-analysis by Whiteford et al. (2013a) predicted that 23% of adults with untreated depression recruited from

primary-care settings would remit within 3 months, a third (32%) within 6 months and approximately half (53%) within a year. A longitudinal study comparing those receiving treatment to those with untreated depression reported that after a 6-year follow-up, 50% of those who had received treatment for their depression developed another major depressive episode whereas only 30% of those untreated reported a subsequent major episode (Wang, 2004). Relapse is common with depression in its various forms (Hardeveld, Spijker, de Graaf, Nolen, & Beekman, 2010; Klein, Shankman, & Rose, 2006), and the risk for depressive symptoms becoming a chronic state is high in both treated and untreated people with major depression (Spijker et al., 2002).

1.2 Psychological treatments for depressive symptoms

Various non-psychological treatment options have been developed to treat depressive symptoms with antidepressant medication being the most widely used (American Psychiatric Association, 2000; (Olfson, Marcus, Druss, & Pincus, 2002). Other, newer developments include treatments such as electroconvulsive therapy (UK ECT Review Group, 2003) and neurofeedback (Hammond, 2005). However, people are often reluctant to use medication or other biological treatments, and wish for psychological therapy instead (Backenstrass et al., 2006; van Schaik et al., 2004). Meta-analyses and reviews show consistent evidence on the effectiveness of psychological treatments and psychotherapy for clinical depression both in mental health services and in primary care (Barth et al., 2013; Bortolotti, Menchetti, Bellini, Montaguti, & Berardi, 2008; Churchill et al., 2001; Cuijpers et al., 2009; Linde et al., 2015). A meta-analysis investigating the long-term results of acute-phase psychological interventions for depression in 44 studies found that psychological interventions were superior to control conditions at 6 months or longer after randomization (Karyotaki et al., 2016). However, the effects faded over longer follow-up periods. Regarding psychological interventions directed at sub-clinical depressive symptoms, meta-analyses indicate only a small effect at post-measurement ($d = 0.42$, in Cuijpers et al., 2007a; $g = 0.35$, in Cuijpers et al., 2014) compared to control conditions. The earlier meta-analysis lacked studies with long follow-ups and the effects were not significant (Cuijpers et al., 2007a); however, a reduced incidence of major depression six months post-treatment and possibly also a year after treatment was found in the more recent analysis (Cuijpers et al., 2014).

Modest to strong research support has been shown for various treatment models for depressive symptoms (Cuijpers, van Straten, Andersson, & van Oppen, 2008; APA Presidential Task Force on Evidence-Based Practice, 2006) such as interpersonal therapy (e.g., Shea et al., 1992; van Hees, Rotter, Ellermann, & Evers, 2013), problem-solving therapy (e.g., Bell, & D'Zurilla, 2009; Cuijpers, van Straten, & Warmerdam, 2007), and (short-term) psychodynamic therapy (e.g., Leichsenring, & Leibing, 2007). The National

Institute for Health and Clinical Excellence (NICE) guidelines recommend cognitive-behavioral therapy, interpersonal therapy, behavioral activation, behavioral couple therapy, and mindfulness-based cognitive therapy (MBCT) for depression depending on the symptom severity and state of the disorder (see NICE Clinical guideline [CG90], 2009; Kendrick & Peveler, 2010). Cognitive (CT) and cognitive-behavioral (CBT) therapies are among the most researched and have been reviewed as empirically supported treatments for depressive symptoms (Churchill et al., 2001; Hollon, 2016; Hollon & Ponniah, 2010). Hollon (2016) suggests cognitive and cognitive-behavioral therapies as the first-line treatment option for depressive symptoms as they seem to have significant enduring effects beyond the actual treatment phase and to offer relapse prevention compared to medication (Blackburn, Eunson, & Bishop, 1986; Cuijpers et al., 2013; Hofmann, Asnaani, Vonk, Sawyer, & Fang, 2012; Hollon et al., 2005; Hollon, Thase, & Markowitz, 2002). Patients receiving treatment based on the cognitive-behavioral model seemed to improve significantly more towards meeting non-depressed status compared to those treated using interpersonal, psychodynamic or solution-focused models (Churchill et al., 2001). However, other studies suggest comparable effects between different psychotherapeutic frameworks (Barth et al., 2013; Linde et al., 2015). Hofmann et al. (2012) stated in their meta-analysis that regarding depressive symptoms CBT was superior to waiting-list or no treatment yet compared to other active psychological treatments CBT was found either equally effective or superior. Critical discussion has taken place and a recent article questions the superiority of CBT over other psychotherapeutic models due, e.g., to the quality of the randomized controlled trials and uncontrolled researcher allegiance (Leichsenring & Steinert, 2017). They reported that efficacy of CBT was smaller in high- compared to low-quality studies, and that often large effects were obtained in comparison to waiting-list controls rather than active conditions. David, Cristea and Hofmann (2018) argued that, at the moment, CBT is the most researched therapeutic framework with no other psychotherapy showing systematic superiority to it.

Overall, studies show fading treatment effects regarding psychological interventions with longer follow-ups (Karyotaki et al., 2016). Regarding CBT, research on the long-term (over 3 years) outcomes suggests that it might be effective (Fava, Grandi, Zielezny, Rafanelli, & Canestrari, 1996; Fava, Rafanelli, Grandi, Canestrari, & Morphy, 1998; Fava et al., 2004; Paykel et al., 2005b; Wiles et al., 2016). A CBT intervention for residual depressive symptoms compared to standard clinical management was studied in individuals after their major depressive disorder had been successfully treated with antidepressants (Fava et al., 1996). At the 4-year follow-up measurement, CBT showed a protective effect against relapses compared to the clinical management control group (Fava et al., 1996). However, although the effect had faded at the 6-year follow-up, the CBT group showed a lower number of new depressive episodes during the follow-up period (Fava et al., 1998). Fava et al. (2004) examined treatment outcomes six years after an intervention phase (either CBT or clinical

management), and the follow-up results showed significantly lower rates of new episodes in the CBT compared to clinical management group. Paykel et al. (2005b) examined 6-year follow-up (after randomization) results of CBT and found that the effects of the intervention in preventing relapses had weakened during the follow up and were nearly lost between three and four years after the intervention. The CoBaIT study ($n = 430$ at follow-up) conducted across 73 general practices in three UK centers reported significant long-term (3-5 years) effects for CBT for treatment-resistant depression compared to usual care (Wiles et al., 2016). CBT was able to produce decreases in depression over time compared to the control condition, although mean depression scores remained within the mild depression range (mean = 19.2; $SD = 13.8$) for this population suffering from long-term, often chronic, depression. Stagl et al. (2015) conducted an 8- to 15-year follow-up (median 11 years) with breast cancer participants, who participated in a 10-week cognitive-behavioral stress management (CBSM) group or a one-day psychoeducational group. The CBSM group showed significantly greater reductions in depressive symptoms and better quality of life up to 15 years after the intervention.

Although effective treatments for depressive symptoms are available, access to treatment possibilities and willingness to seek and receive help present challenges (Thornicroft et al., 2017; Wang et al., 2005), even though research on adequate treatment often ignores planned and intentionally brief interventions that have proven to be effective (Cape et al., 2010; Churchill et al., 2001; Nieuwsma et al., 2012). Moreover, as rates of spontaneous remission/recovery are rather high, even in the cases of major depression (Spijker et al., 2002; Whiteford et al., 2013a), untreated cases of milder depressive symptoms may also experience recovery without treatment.

Whether or not this is the case, both clinical and sub-clinical depressive symptoms have been reported as a cause of various health and disability issues (Goldney et al., 2004; Kessler et al., 2005a) and higher risk for developing a major depressive episode (Cuijpers et al., 2004; Goldney et al., 2004), and are often the reasons for seeking help from psychological services (Smit et al., 2006). Moreover, the prevalence of depression seems to be increasing (Patten et al., 2016). Therefore effective, evidence-based and easily implemented brief treatments, especially for lower levels of the health care system need to be available to prevent these depressive feelings becoming chronic (Horwath et al., 1992; Smit et al., 2006). The challenges at the lower levels of health care systems are presented by the lack of access to standard-length psychotherapy delivered by experienced psychotherapists (Bijl & Ravelli, 2000; Nieuwsma et al., 2012). Brief psychological interventions could increase possibilities to access evidence-based psychological services quickly and at a time when the symptoms may not yet be severe (Cape et al., 2010; Churchill et al., 2001; Nieuwsma et al., 2012). Although in lower level or primary health care systems, staff are often not experienced in psychotherapy, research on brief interventions suggests that with adequate supervision less-experienced and novice therapists, students and even trained non-mental health care providers can deliver interventions with

positive outcomes (Ekers, Richards, McMillan, Bland, & Gilbody, 2011; Forand, Evans, Haglin, & Fishman, 2011; Lappalainen et al., 2007; Nieuwsma et al., 2012; Öst, Karlstedt, & Widén, 2012), even comparable to those of experienced therapists (Goldstein, 2015).

1.2.1 Defining brief therapies

Defining brief therapies presents a conceptual challenge, as brief or short-term interventions are defined very differently depending on the therapeutic framework. One possibility for formulating a definition of “brief” derives from research on clinically relevant changes in psychotherapy, more specifically, on rapid responses or sudden gains. These constructs refer to rapid changes either during the earlier phases of treatment (rapid early response; e.g., Fennell & Teasdale, 1987; Ilardi & Craighead, 1994) or during consecutive sessions throughout the treatment (sudden gains; e.g., Tang & DeRubeis, 1999). Research on change patterns during psychological treatments suggests that clinically relevant changes in symptom levels, even sudden gains, can occur very early in the treatment process, often between sessions one and five (Crits-Christoph et al., 2001; Doane et al., 2010; Dour, Chorpita, Lee, & Weisz, 2013; Fennell & Teasdale, 1987; Hunnicutt-Ferguson, Hoxha, & Gollan, 2012; Masterson et al., 2014). Rapid early responses and sudden gains have been attested across various treatment modalities and theoretical models (e.g., Kelly, Roberts, & Ciesla, 2005; Kelly, Cyranowski, & Frank, 2007; Stiles et al., 2003; Tang, Luborsky, & Andrusyna, 2002) and disorders (e.g., Aderka, Nickerson, Bøe, & Hofmann, 2012; Clerkin, Teachman, & Smith-Janik, 2008; Doane et al., 2010; Hofmann, Schulz, Meuret, Moscovitch, & Suvak, 2006; Present et al., 2008). For depressive symptoms, findings on sudden gains and rapid responding, indicating that rapid changes occur often during the earlier parts of the treatment, are consistent with the above-mentioned studies (e.g., Hunnicutt-Ferguson et al., 2012; Tang, DeRubeis, Beberman, & Pham, 2005; Tang, DeRubeis, Hollon, Amsterdam, & Shelton, 2007). The results suggest that sudden gains are also associated with better post-treatment outcomes and long-term improvements (e.g., Aderka et al., 2012), effects that have also been found for rapid early responding in CT and CBT for depression (Ilardi & Craighead, 1994; Lemmens, DeRubeis, Arntz, Peeters, & Huibers, 2016; Vittengl, Clark, & Jarrett, 2005). A recent study examining rapid changes in a brief 6-session ACT-based intervention found that 23% of the participants recovered or improved during the first two sessions and that the pre-treatment level of depression was not a significant between-group factor compared to non-improvers (Keinonen, Kyllönen, Astikainen, & Lappalainen, submitted). Different types of symptoms and causes of distress also may require differing lengths of treatment, and rates of change also vary (Barkham, Rees, Stiles, Hardy, & Shapiro, 2002; Kopta, Howard, Lowry, & Beutler, 1994). A study on naturalistic psychotherapy that took overall length of treatment into account found that this was related to the rate of change (Baldwin, Berkeljon, Atkins, Olsen, & Nielsen, 2009). Clients attending fewer therapy sessions showed relatively faster rates of change

compared to those who underwent long-lasting therapy (which did not exceed 40 weeks). The authors concluded based on the variability in the rates of change, that no one model and length of treatment is suited to all (Baldwin et al., 2009). In a 6-session ACT intervention, fast improvement was associated with a diagnosis of mild depression, and the outcomes of the intervention were superior in both depressive symptoms and psychological flexibility among the fast improvers compared to slower improvers (Keinonen et al., submitted). However, in a study on behavioral health management interventions in primary care more severe levels of pre-treatment symptoms were associated with faster improvements, indicating that severity is not always a predictor or determiner of treatment length (Bryan et al., 2012).

On limitless or unrestricted therapies, the treatment effect seems to show a negative acceleration, with most improvements occurring at the beginning of treatment regardless treatment length (Stulz, Lutz, Kopta, Minami, & Saunders, 2013). On the issue of symptom improvements, Howard, Kopta, Krause, and Orlinsky (1986) reviewed a sample of over 2 400 participants and reported that 48-58% of them improved between four to seven sessions regardless of the final duration of treatment, and that treatment beyond eight sessions lacked the cost-effectiveness of the earlier sessions. When sub-group analyses were conducted for diagnostic categories, 50% of depressive patients on average improved in 8-13 sessions, and, based solely on patient ratings, 44% improved in four sessions (Howard et al., 1986). Lutz, Lowry, Kopta, Einstein and Howard (2001) determined dose-response relations in outpatient psychotherapy for a variety of factors (well-being, symptoms and functioning) and reported large early changes in symptoms during the first two to four sessions. Furthermore, investigation of the average number of sessions completed during one treatment period in the United States and the United Kingdom showed that the average number of sessions ranged between four and seven depending upon the data source (Health and Social Care Information Centre, 2015; Connolly Gibbons et al., 2011; Talmon, 1990; Olfson et al., 2002; Stiles, Barkham, Connell, & Mellor-Clark, 2008). These findings suggest that at least some individuals experience symptom relief and lasting results early on during treatment, whether the intervention was initially intended as brief or not. Based on the evidence reported above, the number of sessions chosen for the acceptance- and values-based intervention used in the present dissertation was four. Whereas an earlier study on a brief acceptance- and values-based intervention using a similar model was conducted with six sessions (Lappalainen et al., 2007), one of the objectives of this dissertation was to examine an even more compressed form of the model and its long-term benefits. A recent study on brief ACT interventions and fast improvements also supports the use of brief treatment delivered by novice therapists (Keinonen et al., submitted).

1.2.2 Brief interventions for depressive symptoms

While meta-analyses on brief (≤ 9 sessions) psychological interventions have indicated their effectiveness for depressive symptoms (Cape et al., 2010;

Nieuwsma et al., 2012), the results on long-term effectiveness are mixed. Psychodynamic counseling for chronic depression was compared to general practice care, with sessions ranging from one to 16 (mean five sessions) in the counseling group (Simpson, Corney, Fitzgerald, & Beecham, 2003). An overall significant improvement over time was detected for both groups, yet no significant between-group differences were found at the 6- and 12-month follow-up measurements. Two different psychological interventions for depression were delivered in a community setting and both the 6-session problem-solving intervention and the 8-session group psychoeducation intervention resulted in significant decreases in depressive symptoms compared to a control group both after the treatment and at the 6-month follow-up measurement (Dowrick et al., 2000). At the 12-month follow-up, however, significant differences were no longer detected, and depressive symptoms had also improved among the controls. Primary care patients with depression and anxiety were offered a brief problem-solving intervention where four sessions were offered with the first session always face-to-face and the last three by telephone, if preferred by the patient (Lang, Norman, & Casmar, 2006). The brief intervention was compared to treatment-as-usual, and significant reductions in depression and anxiety symptoms were detected post-treatment compared to the control condition. The significant decreases in symptomatology were sustained at the 3-month follow-up, but at the month follow-up some symptom return had occurred (Lang et al., 2006). Single-session treatments using a variety of theoretical perspectives have also been advocated and research has found them to be somewhat effective for a variety of intrapsychic and interpersonal issues (although not specifically for depressive symptoms); however, more controlled research is needed (Bloom, 2001; Campbell, 2012; Talmon, 2012).

CBT-based brief interventions have demonstrated somewhat better effects for depression compared to general practitioner care, but no significant superiority over other active therapy conditions (Cape et al., 2010). Barkham, Shapiro, Hardy, and Rees (1999) developed a 2 + 1 model for subsyndromal depression with two weekly sessions and a third session three months later. They compared two active treatments, CBT and psychodynamic-interpersonal, both using the 2 + 1 model. Overall, after two sessions, the percentage of clients achieving clinically relevant improvements ranged from 43% to 65% (depending on groupings made according to baseline level of symptom severity), from 65% to 72% after the third session, with evidence of the maintenance of positive results at the one-year follow-up (Barkham et al., 1999). When the two active treatments were compared, no significant differences were found during the intervention, but at the one-year follow-up, the clients in the CBT group reported better outcomes than those in the psychodynamic-interpersonal group regarding depressive symptoms. A study by Laidlaw et al. (2008) compared a brief CBT intervention (average number of sessions = 8) for mild to moderate depressive symptoms to treatment-as-usual with good overall results, and found CBT to be beneficial in lowering hopelessness at the 6-month

follow-up. Ward et al. (2000) compared two psychological interventions (non-directive counseling and CBT) with six sessions initially (and up to a maximum of 12 sessions) to general practice care. At the post-, 4-month and 12-month follow-up measurements both the psychological intervention groups showed equal effectiveness and at the 4-month follow-up also significantly more improvement than the general practice care group (treatment-as-usual). However, at the 12-month follow-up measurement the general practice comparison group had reached the same level of symptom reduction. It was concluded that the brief interventions seemed to speed up recovery (Ward et al., 2000). A brief 5-session group-based CBT intervention for caregivers ($n = 170$) with elevated depressive symptoms was compared to treatment-as-usual (Vázquez et al., 2014). At the post-measurement, the intervention group had a lower incidence of depression and decreases in depressive symptoms compared to the usual care group, and at the 12-month follow-up these outcomes remained unchanged with significant between-group differences (Vázquez et al., 2014; Vázquez et al., 2016).

To summarize, although brief interventions seem to fasten recovery among individuals with depression and sub-clinical depressive symptoms, the significant differences between the treatment group and the control condition often either tend to disappear during the follow-up period (e.g., Dowrick et al., 2000; Simpson et al., 2003; Ward et al., 2000) or the positive outcomes return toward baseline values (e.g., Lang et al., 2006).

1.3 Psychological flexibility and depressive symptoms

Traditional mainstream CBT focuses on behavior change through strategies directed at attempting to change or modify the form and frequency of aversive and distressing private experiences or overt behavior (Beck, 1993; Clark, 1995). However, the usefulness and utility of those methods have been questioned (Longmore & Worrell, 2007), and experimental research has proposed that suppressing and avoiding thoughts increases their frequency after suppression efforts terminate (Abramowitz, Tolin, & Street, 2001; Wenzlaff & Wegner, 2000). Additionally, transdiagnostic cognitive and behavioral approaches have emerged, and meta-analysis indicate large and promising within-group effects for depressive ($g = .91$) and anxiety ($g = .86$) symptoms (Newby, McKinnon, Kuyken, Gilbody, & Dalgleish, 2015). Approaches that are the opposite of control and suppression, such as acceptance-based strategies, have been studied. Acceptance-based instructions compared to control and suppression strategies have been showing, e.g., greater pain tolerance in a cold pressor task (Hayes, et al., 1999), decreased levels of distress when experiencing intrusive thoughts (Marcks & Woods, 2005), lower fear responses when exposed to CO₂-enriched air (Eifert & Heffner, 2003; Levitt, Brown, Orsillo, & Barlow, 2004) and lower levels of negative affect and physiological responses to emotion-provoking images (Campbell-Sills, Barlow, Brown, & Hofmann, 2006). Overall,

acceptance-based strategies seem to be at least as effective as other emotion regulation strategies (e.g. reappraisal, suppression, distraction) in ameliorating the well-being of individuals with chronic pain and depression (Kohl, Rief, & Glombiewski, 2012). These findings are part of a research strand focusing on psychological flexibility, a distinct contrast to control.

Psychological flexibility (or its mirror image experiential avoidance/psychological inflexibility) is a difficult concept to define as it entails various dynamic processes over time. Studies indicate that the ability to be more psychologically flexible comes with a diversity of benefits such as managing stressors and establishing a wider and more flexible behavioral repertoire in line with the individual's values (Gloster, Meyer, & Lieb, 2017; Hayes et al., 2011a; Kashdan & Rottenberg, 2010; Spinhoven, Drost, de Rooij, van Hemert, & Penninx, 2016). Kashdan and Rottenberg (2010) proposed that both interpersonal aspects and actions along with the context in which they unfold are important to psychological flexibility. Furthermore, flexibility can be seen in the ability to shift perspectives, in the redistribution of mental resources to fit current and possible future needs, in the self-regulation of responses to meet varying demands, and balancing between rival goals, needs and life domains (Kashdan & Rottenberg, 2010). Flexibility is seen in both expressing and experiencing a variety of emotions (regardless of whether they are labeled negative or positive) relevant to the current situation, and being able to adjust behaviors to meet the demands of that situation rather than relying strictly on any given regulatory strategy (Kashdan & Rottenberg, 2010). The benefits of flexibility are also attributable to the ability to adaptively shift focus in the temporal perspective either toward the past, the present or the future according to the situational demands, as well as efficiently adjusting and allocating time to meaningful life domains (Kashdan & Rottenberg, 2010).

Several studies indicate that the construct of psychological flexibility (or lack of it, i.e. experiential avoidance) is distinct from other psychological concepts. For example, the *Acceptance and Action Questionnaire-II* is a global instrument used to measure psychological flexibility/experiential avoidance (Bond et al., 2011) and examination of its psychometric properties has shown it to be distinct from several other measures of psychological well-being and disorders. Similar findings on the relationship between the earlier version of the AAQ and various psychological measures of psychopathology and well-being have been reviewed by Hayes et al. (2006). Lack of psychological flexibility has been associated with general risk for psychopathology (e.g., Chawla & Ostafin, 2007; Fledderus, Bohlmeijer, & Pieterse, 2010; Hayes et al., 2006; Ruiz, 2010), as well as to more specific distresses such as depressive symptoms (e.g., Barnhofer et al., 2014; Berking et al., 2009; Bjornsson et al., 2010; Spinhoven, Drost, de Rooij, van Hemert, & Penninx, 2014; Tull, Gratz, Salters, & Roemer, 2004), and comorbid depressive, anxiety and substance use issues (Levin et al., 2014). It has also been theorized to influence the development and maintenance of a variety of psychological problems as well as the deterioration of psychological well-being (Kashdan, Barrios, Forsyth, & Steger, 2006; Levin et al., 2014). Experiential

avoidance is often learned as a coping mechanism when encountering stressors (“outer world” such as physical pain vs. “inner world” such as anxiety) and can alleviate distress in the short term (Biglan, Hayes, & Pistorello, 2008). However, the long-term effects are often negative, as the use of experiential avoidance, especially in relation to “inner world” experiences, narrows the behavioral repertoire and the ways in which it manifests itself (such as substance use, avoiding certain triggering situations, restricting eating/purging, self-harm) can often generate negative effects and increase distress (Biglan et al., 2008). Avoidance also strengthens the conception that negative emotions and thoughts are something to run away from, rather than to be open and accepting toward (Hayes et al., 2011a).

Lack of flexibility relates to depression on various cognitive, emotional, social functioning and physiological levels. With respect to the cognitive level, Kashdan and Rottenberg (2010) introduced two features linked to depression: rumination and attributional style. Rumination has been identified as a contributing factor in depression (Michl, McLaughlin, Shepherd, & Noelen-Hoeksema, 2013; Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008), as it involves inflexible and repetitive thinking as well as passivity regarding engagement with the environment that prohibit the acquisition of distress-competing experiences and thus maintain depressive symptoms. Rumination has also been associated with experiential avoidance and depressive symptoms (Cribb, Moulds, & Carter, 2006). With respect to attributional styles, individuals who use an inflexible style, explaining negative experiences and life events as stable, unchangeable and internal, tend to experience more depressive symptoms than those using a response style explaining aversive experiences as changeable, external and situation-specific (Abramson, Metalsky, & Alloy, 1989; Sweeney, Anderson, & Bailey, 1986). In depression the importance of attributional style and rumination is not in their existence per se, but in their repeated use across various contexts (Kashdan & Rottenberg, 2010). Furthermore, individuals suffering from major depressive disorder seem to implement impaired rather than flexible decision making when compared to healthy controls (Cella, Dymond, & Cooper, 2010).

Of the social and emotional perspectives on depression, inflexibility is seen in a variety of problems, such as those related to social skills (Segrin, 2000; Tse & Bond, 2004), the expression and understanding of non-verbal behaviors (Bourke, Douglas, & Porter, 2010; Fiquer, Boggio, & Gorenstein, 2013), and impaired context-appropriate emotional expression (Rottenberg & Vaughan, 2008), all of which tend to affect and weaken social interactions and relationships. Depressive inflexibility is also shown in various physiological and biological ways such as abnormalities in the functioning of various neurotransmitter systems (Nutt, 2008; Ressler & Nemeroff, 2000) and as the hyperactivity of the HPA axis (Pariante & Lightman, 2008).

In a clinical trial for borderline personality disorder, experiential avoidance was measured at baseline and at 4-month intervals during 12 months of therapy (Berking et al., 2009). Throughout the treatment, experiential

avoidance was associated with higher levels of depression and a positive association was found between changes in experiential avoidance and changes in depression. Tull et al., (2004) examined the relationships between experiential avoidance (with particular focus on emotion suppression) and posttraumatic stress symptom severity, anxiety and depression symptoms, and somatization among individuals exposed to traumatic events. Experiential avoidance was associated with depressive symptomatology in those with anxiety symptoms and somatization, when controlled for posttraumatic stress symptom severity. However, for one aspect of avoidance (thought suppression), a significant relationship with posttraumatic stress symptom severity emerged (Tull et al., 2004).

Longitudinal research offers mixed results on the effects of experiential avoidance. Bjornsson et al. (2010) examined college students and found cross-sectional results demonstrating a relationship between experiential avoidance and rumination, and experiential avoidance and depression, but only when rumination was regarded as high. The study failed to find any longitudinal interactions, and baseline experiential avoidance did not predict depressive symptoms 8 to 12 weeks later when baseline depressive symptoms were controlled for. However, a study examining healthy controls and individuals with prior or current emotional disorder found that experiential avoidance was stable across a 2-year period and that baseline scores for experiential avoidance predicted change in emotional distress after a 2-year period (Spinoven et al., 2014). The researchers proposed that experiential avoidance could be an integral factor affecting the course and comorbidity development of emotional disorders. Research has shown that a more persistent course of depression is linked to higher levels of experiential avoidance (Barnhofer et al., 2014). Psychological inflexibility was also higher with college students reporting current or lifetime history of depressive and anxiety symptomatology, and it was also associated with depression/anxiety comorbidity (Levin et al., 2014). Long and Hayes (2014) found that whereas ACT and CT process measures were both predictive of depressive symptoms at both 2- and 4-month follow-ups after controlling for pre-measurement depression, psychological flexibility and present-centered awareness made independent contributions to depressive symptoms, while thought believability did not. Psychological flexibility also moderated awareness, suggesting that an open and accepting attitude toward experiences influences whether awareness is an asset or a drawback (Long & Hayes, 2014). Also, higher baseline levels of acceptance (measured with the AAQ) predicted better mental health and work performance one year later, and also increased the relationship between higher levels of job control at baseline and better mental health and work performance one year later (Bond & Bunce, 2003).

Psychological flexibility and mindfulness are distinct yet interrelated and overlapping constructs that share similarities (Kashdan & Rottenberg, 2010). Baer, Smith, Hopkins, Krietemeyer and Toney (2006) conceptualize mindfulness as including present-centered observing and naming of internal and external

events, acting with an open and mindful focus, encountering internal experiences in a non-judgmental and accepting way, and allowing various thoughts, emotions and experiences to be without immediately or automatically reacting to them. Similar elements are found in definitions of psychological flexibility (Kashdan & Rottenberg, 2010). Both concepts endorse the intentional, flexible and non-judgmental observing and accepting of internal and external experiences as well as self-regulating one's behavior (Brown & Ryan, 2003; Ciarrochi, Bilich, & Godsel, 2010; Coffey, Hartman, & Fredrickson, 2010; Hayes et al., 2011a; Hayes & Wilson, 2003; Kabat-Zinn, 1990; Shapiro, Carlson, Astin, & Freedman, 2006). Studies have suggested an inverse relationship between both processes and depressive symptoms (Hayes et al., 2006; Hofmann, Sawyer, Witt, & Oh, 2010; Masuda & Tully, 2012; Soysa & Wilcomb, 2015).

On the subcomponents or processes of psychological flexibility and mindfulness, research suggests that they are differently associated with various psychopathological concepts. In non-meditative samples, mere present-centered observing without an emphasis on how to observe seemed to be associated with psychological distress such as depressive symptoms (Baer et al., 2006; Barnes & Lynn, 2010; Christopher, Neuser, Michael, & Baitmangalkar, 2012), even though the ability to observe the here-and-now is regarded as a precursor to mindful presence (Lilja, Lundh, Josefsson, & Falkenström, 2013). However, the ability to observe and be present has a different relationship with psychological measures among meditators, and Baer et al. (2008) proposed that practicing meditation might enhance other skills such as the non-evaluativeness and nonreactivity needed to counteract the possible negative effects of mere observing. Similar findings were reported with education employees: present-centeredness may present itself either as a strength or a weakness depending of the level of acceptance and openness (Long & Hayes, 2014). Non-judgmental acceptance and mindful actions have been associated with lower levels of depression in various studies (Alleva, Roelofs, Voncken, Meevissen, & Alberts, 2014; Barnhofer, Duggan, & Griffith, 2011; Christopher et al., 2012; Desrosiers, Klemanski, & Nolen-Hoeksema, 2013). Acceptance- and mindfulness-based cognitive behavioral therapies (e.g., mindfulness-based stress reduction, acceptance and commitment therapy, dialectical behavior therapy) emphasize the adoption of an accepting and open attitude toward internal, especially distressing and intensive, experiences without automatically reacting to them, as this is likely to reduce experiential avoidance and increase psychological flexibility.

1.4 Acceptance and Commitment Therapy

Although the importance of psychological inflexibility and avoidance behaviors have been identified across therapeutic systems, psychological flexibility and experiential avoidance continue to take a leading role in the contextual behavioral sciences (Blackledge & Hayes, 2001). Psychological flexibility is a

core concept in the functional contextual approach to human suffering known as Acceptance and Commitment Therapy (ACT; Hayes et al., 2011a). ACT draws on a theory of human language and cognition termed the Relational Frame Theory (RFT; Hayes et al., 2006; Hayes et al., 2001). The RFT is based on the idea that the basis of human language and cognition is the ability to learn to relate, i.e. create links between things (Blackledge, 2003; Hayes et al., 2001). These learned links or relations which RFT researchers call “relational frames” comprise mutual entailment (if A is B then B is A), combinatorial entailment (A is bigger than B and B is bigger than C then A is bigger than C without the need to examine A and C together) and transformation of stimulus functions (the function of one stimulus transforms or changes based on its relation to other stimuli). These relational frames are contextually bound and applied, and are based either on formal cues or arbitrarily (Hayes et al., 2001). Applied to the broad context of depression, mutual entailment may occur in the form of relating the self and negative evaluations, such as “I’m bad” which fuses the two, “I” and “bad”, together (Zettle, 2007). Combinatorial entailment frequently happens during comparisons that often lead the depressed person to feel inferior (Zettle, 2007). Transformation of stimulus functions may take various forms; for example, a sad, distressing event occurred while a song was playing on the radio that, prior to the event, had elicited happy emotions. Later, that same song may elicit similar sad and distressing emotional responses regardless of the initial emotional state or the context in which the song is heard. The depressed person may feel the need to avoid such triggering elements to avoid pain, a behavior which often proves difficult and life narrowing, as reminders of this kind can be more than just a song; they can also be thoughts, places, emotions and memories (Zettle, 2007).

ACT is one of the third-wave cognitive-behavioral therapies (CBT); however, it is distinct from the traditional mainstream CBT, which focuses on manual-based and disorder-specific treatments and attempts to reduce symptoms by modifying thoughts seen as distorted and biased (Hayes, Levin, Plumb-Villardaga, Villatte, & Pistorello, 2013; Zettle et al., 2011). While the emphasis in both the CBT and ACT approaches is behavior change, the processes and strategies of obtaining such change differ from each other. Based on the philosophical assumptions underlying ACT, the context and the function of individuals’ ways of behaving towards aversive thoughts, emotions and the paradox of accepting distressing subjective experiences rather than trying to change or avoid them, are seen as means to achieve more pervasive and sustainable improvements in well-being (Hayes et al., 2013). Contextuality refers to actions that have meaning only with reference to the contexts they are happening in, and is an important aspect of psychological flexibility, as people’s needs and values change across different life domains (Hayes et al., 2013; Kashdan & Rottenberg, 2010).

ACT is a transdiagnostic, general and overarching framework with its own model of psychopathology and psychological distress conceptualized through psychological inflexibility (Hayes et al., 2006; Twohig & Hayes, 2008).

ACT relies on principles that evolve as the research develops, and interventions are based on theoretical models linked to those ever-evolving principles (Hayes et al., 2013). Psychological inflexibility refers to behavioral and psychological ineffectiveness and emphasizes the role of experiential avoidance and cognitive defusion (Twohig & Hayes, 2008). In the ACT model, psychological flexibility is conceived as a two-fold construct comprising 1) the psychological ability of being aware, present-centered and accepting toward all experiences, and 2) the behavioral, dynamic aspect of persistence and change in the service of meaningful life in accordance with individual values (Hayes et al., 2004b). Experiential avoidance can be considered the opposite of flexible being and is also a two-part dynamic process. It encompasses both the unwillingness to be openly and non-judgmentally connected to aversive private experiences, such as painful memories, thoughts and emotions, and maladaptive efforts to avoid either the private events experienced as aversive or their triggers (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996; Hayes et al., 2006). This is done even when avoidance behaviors lead to outcomes inconsistent with chosen values and what the individual believes is a meaningful life. Experiential avoidance is often accompanied by cognitive fusion, which is a process of believing the literal content of the mind and acting in accordance with the content of the private events (thoughts, memories, feelings etc.). The contents of the literal mind have a defining impact on behavior; for example, thoughts are seen as their content ("I am a bad person") rather than as thoughts ("I'm having the thought that I am a bad person"). The skill needed to defuse or distance oneself from these aversive private events is lacking in individuals who resort to experiential avoidance to gain psychological relief. Cognitive fusion and experiential avoidance as the core of psychological inflexibility have been associated with various health conditions, maladaptive behavioral patterns and psychological disorders (e.g., Fledderus et al., 2010; Gaudiano, Schofield, Davis, & Rifkin, 2017; Hayes et al., 2006; Powers et al., 2009; Ruiz, 2010, 2012).

Commonly the goal in diminishing suffering and distress related to both mental and somatic disorders is to reduce their incidence (Gloster et al., 2017). This is linked to the supposition that doing so will increase well-being. Other approaches in turn suggest that well-being is more than the absence of disorders and symptoms (Fava, 2012; Huppert, 2009). Through psychological flexibility, ACT offers a way of relating to private events differently while pursuing a meaningful life with or without decreases in symptoms or negative affects (e.g., Hayes et al., 2011a). The core elements of the ACT model are often conceptualized through six, interrelated and overlapping core processes (Figure 1): acceptance, self-as-context, defusion, contact with the present moment, values, and committed action. The processes align under two larger entities: 1) acceptance- and mindfulness processes, and 2) commitment and behavioral change processes (Hayes et al., 2006; Hayes et al., 2004b). Laboratory studies examining the core ACT processes have yielded positive effects compared to inactive control conditions, thereby supporting the psychological flexibility model (Levin, Hildebrandt, Lillis, & Hayes, 2012).

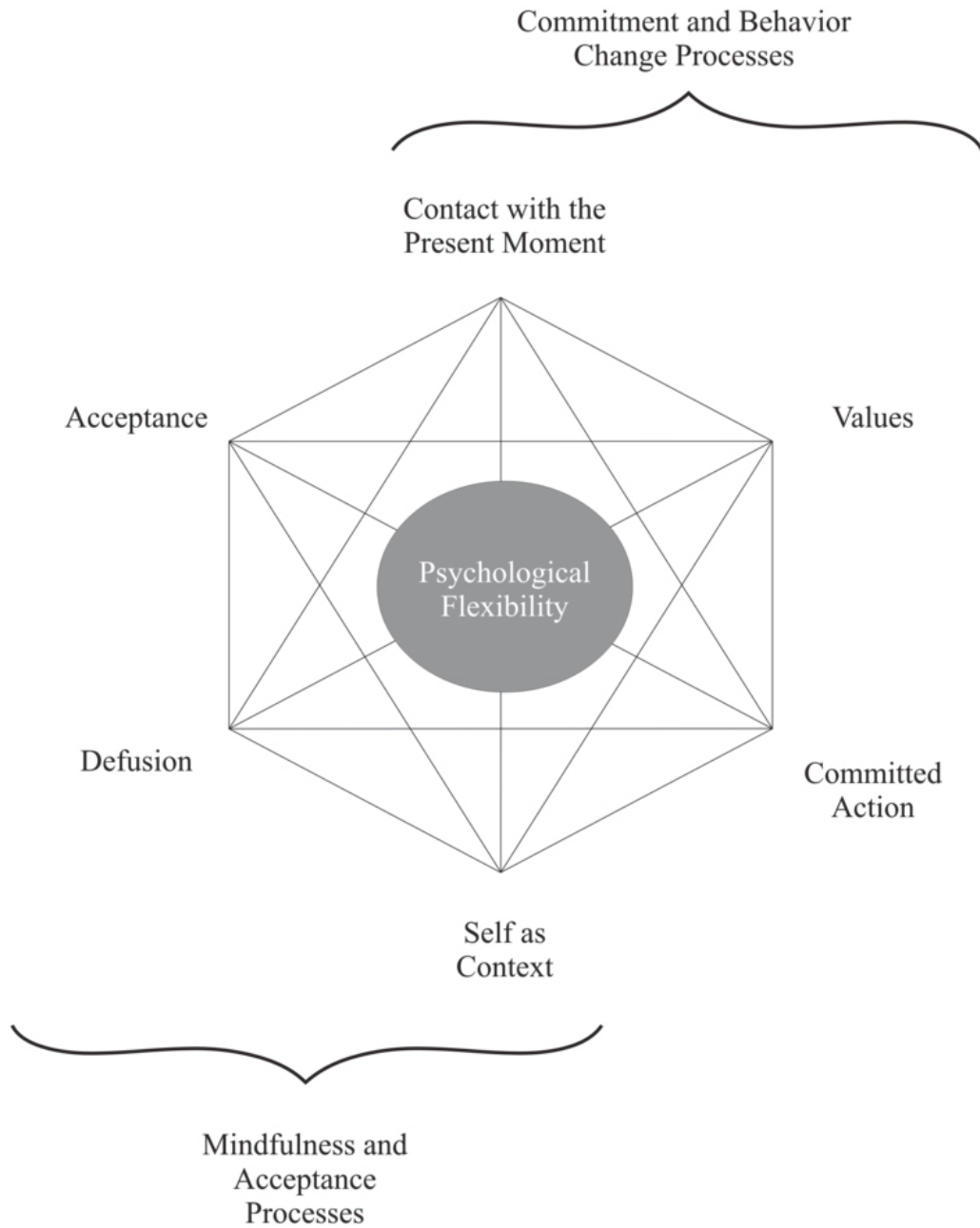


FIGURE 1 The core processes of Acceptance and Commitment Therapy (ACT) that contribute to building psychological flexibility (Ciarrochi et al., 2010)

1.4.1 Effectiveness of acceptance- and value-based interventions

Acceptance- and value-based interventions have received considerable amount of research support, and several literature reviews (A-Tjak et al., 2015; Hacker et al., 2016; Hayes et al., 2006; Powers et al., 2009; Ruiz, 2010, 2012) have reported on controlled trials showing the benefits of ACT-based interventions for

physical health issues (Dahl, Wilson, & Nilsson, 2004; Gregg, Callaghan, Hayes, & Glenn-Lawson, 2007; Lillis & Kendra, 2014; Lundgren, Dahl, Melin, & Kies, 2006), chronic pain (Hann & McCracken, 2014; Veehof, Oskam, Schreurs, & Bohlmeijer, 2011), workplace stress (Bond, & Bunce, 2000) and various psychiatric issues such as anxiety, depression or mixed anxiety/depression (Arch et al., 2012a; Arch, Wolitzky-Taylor, Eifert, & Craske, 2012b; Hayes et al., 2004b; Folke, Parling, & Melin, 2012; Forman et al., 2007; Lappalainen et al., 2007; Petersen & Zettle, 2009; Zettle & Hayes, 1986; Zettle & Rains, 1989), psychotic episodes (Bach & Hayes, 2002; Bach, Hayes, & Gallop, 2012; Gaudiano, & Herbert, 2006), and obsessive-compulsive disorder (Twohig et al., 2010).

Ruiz (2012) examined 16 studies ($n = 954$) comparing ACT to CBT in differential outcome measures and a variety of presenting issues, and found a mean effect size on the primary outcome measure of $g = 0.40$, in favor of ACT. A similar between-group effect size of $g = 0.42$ was found by Powers et al. (2009), who examined 18 randomized controlled trials ($n = 917$). Powers et al. (2009) conducted separate between-group analyses for waiting-list and psychological placebos ($g = 0.68$) and treatment-as-usual ($g = 0.42$) where ACT was superior, but detected no significant differences compared to other established treatments. Similar effects were reported by A-Tjak et al. (2015) in a review of 39 randomized controlled trials ($n = 1821$) with participants with mental disorders or physical health problems. ACT was found superior to control conditions at both the post- and follow-up measurements ($g = 0.54$ and $g = 0.36$, respectively). Specifically, ACT outperformed waiting-list controls ($g = 0.82$), psychological placebos ($g = 0.51$) and treatment-as-usual ($g = 0.64$). Comparison to established treatments (mainly CBT) yielded non-significant differences (A-Tjak et al., 2015). Öst (2008) investigated 13 randomized controlled trials and reported an overall between-group mean effect size of $g = 0.68$, resembling that found by Hayes et al. (2006) of $d = 0.66$. An updated review of 60 randomized controlled trials ($n = 4\,234$) on a variety of disorders and concerns yielded a smaller effect size of $g = 0.42$ across all comparisons (Öst, 2014). Hacker et al. (2016) examined ACT studies using anxiety (28 studies) and/or depression (39 studies) measures and for depression found within-group effect sizes of $d = 0.92$, and a comparison effect size of $d = 0.54$.

The published mediation research promotes and supports the ACT model and the processes through which it is theorized to enhance psychological change (Ruiz, 2012). In a study comparing ACT and CT, further analysis revealed that different mechanisms seemed to mediate improvements for ACT vs. CT; acceptance-based strategies mediated the outcomes for ACT, but not for CT (Forman et al., 2007). A study examining changes in anxiety sensitivity and cognitive defusion reported mediation effects for cognitive defusion in worry, quality of life, behavioral avoidance and depression. However, cognitive defusion seemed to mediate outcomes for both the ACT and CT conditions (Arch, Wolitzky-Taylor, Eifert, & Craske, 2012a). In two studies examining patients suffering from chronic pain, beneficial outcomes for pain-related

disability and life satisfaction were mediated by psychological flexibility (Wicksell, Olsson, & Hayes 2010; Wicksell, Olsson, & Hayes, 2011). In a study of a self-compassion intervention, psychological flexibility had a significant mediating effect on changes in self-compassion, general psychological distress, depression, anxiety and stress (Yadavaia, Hayes, & Vilardaga, 2014). For tinnitus, acceptance of the condition mediated the results of an ACT intervention (Westin et al., 2011).

Discordant views have been presented on the effectiveness research conducted on ACT, and the meta-analyses by Öst (2008, 2014) conclude that ACT has yet to be well-established as a treatment for any disorder (although probably/possibly efficacious for some disorders and experimental for others) and that more quality research is required. The control conditions used in many studies are often waiting-list controls or treatment-as-usual instead of other psychological interventions (Hacker et al., 2016; Öst, 2008, 2014), and long-term effects of ACT-based interventions also remain scarce. A few studies have extended follow-up periods up to 12 months or more, and the results have been encouraging (Gifford et al., 2004; Hernandez-Lopez, Luciano, Bricker, Roales-Nieto, & Montesinos, 2009; Lundgren et al., 2006; Lundgren, Dahl, Yardi, & Melin, 2008b; Vowles, McCracken, & Zhao O'Brien, 2011).

1.4.2 Face-to-face acceptance- and value-based interventions for depression or depressive symptoms

For depression and depressive symptoms in adults, several treatment studies based on acceptance and commitment therapy have yielded beneficial outcomes and the amount of studies is growing. Reviews and meta-analyses to date on the overall effectiveness of ACT have also examined in greater depth the efficacy of ACT interventions targeting depression compared to other psychological treatments, treatment-as-usual or waiting-list control conditions (A-Tjak et al., 2015; Hacker et al., 2016; Hayes et al., 2006; Powers et al., 2009; Ruiz, 2010, 2012; Öst, 2008, 2014). Powers et al. (2009) conducted a sub-group analysis of two depression randomized controlled trials comparing ACT to cognitive therapy and found a mean between-group pre- to post-treatment effect size of $g = 0.76$ favoring ACT interventions. Hacker et al. (2016) found a similar, medium effect size of $d = 0.54$, when 39 studies were investigated using a depression measure either as the primary or other outcome measure regardless of the modality or target of the intervention. A-Tjak et al. (2015), because of the small number of studies, combined primary depression and anxiety measures together and reported an effect size of $g = 0.37$, favoring ACT over control conditions. The effect size in the sub-analysis on depressive symptoms conducted by Ruiz (2012) was not significant. It should be noted that the number of randomized controlled studies in the depression context remains small, despite the recent rapid growth in the numbers of preliminary and quasi-experimental studies of ACT and depression. Furthermore, the control condition has often been waiting-list rather than active/established treatment, which has limited the interpretation and generalization of the results (e.g.,

Powers et al., 2009; Öst, 2008, 2014). Table 1 shows the central characteristics of each ACT study on adult depressive symptoms, whether a randomized controlled trial, preliminary pilot study or quasi-experimental study.

Among the first efforts to examine ACT-based interventions (previously named “cognitive distancing”) for depression was that of Zettle and Hayes (1986), in which 18 depressed women received a 12-week group program based on either an early version of ACT or on cognitive therapy. Both groups improved significantly throughout the treatment period up to the 2-month follow-up (Zettle & Hayes, 1986). Zettle and Rains (1989) investigated the efficacy of a similar ACT group intervention compared to two different variations of group-based cognitive therapy. A total of 31 women were randomized into three treatment groups and reductions in depressive symptoms were observed throughout the 12-week treatment period and at the two-month follow-up in all three intervention groups. In a re-analysis of the data, ACT outcomes on self-reported depression at follow-up were shown to be mediated by post-treatment cognitive defusion (Zettle et al., 2011). A more recent study by Forman et al. (2007) compared ACT to cognitive therapy for anxiety and depression, finding significant and equivalent improvements in depression, anxiety, quality of life, functioning and life satisfaction in both groups. A subsequent study investigating the long-term results of both interventions showed slightly better maintenance of treatment outcomes for traditional cognitive therapy over an 18-month follow-up period (Forman et al., 2012). Similar findings of no between-group post-treatment differences were reported in a study comparing ACT and cognitive therapy for major depressive disorder using a group-format with 12 sessions (Tamannaefar, Gharraee, Birashk, & Habibi, 2014). Both groups experienced reductions in depressive symptoms; however, due to lack of a follow-up period, how well these results were maintained remains unknown.

Lappalainen et al. (2007) randomized 28 participants into either an ACT or CBT group, in both of which treatment was administered by psychology students. Both groups showed improvements, with the participants in the ACT group experiencing greater symptom reduction than those in the CBT condition. The results and between-group differences in depressive symptomatology were maintained over the 6-month follow-up period (Lappalainen et al., 2007). Losada et al. (2015) randomized dementia caregivers with high depressive symptomatology to either an ACT, CBT or minimal support control group. While similar post-measurement outcomes were found between the active interventions, the maintenance of depression outcomes compared to controls was shown only in the CBT group.

The results of an early 8-session ACT-based intervention for depressive symptoms showed statistically significant decreases in depressive symptoms, anxiety and fatigue compared to a waiting-list control group, with maintenance of outcomes at the three-month follow-up (Bohlmeijer, Fledderus, Rokx, & Pieterse, 2011a). Unemployed individuals on long-term sick leave due to depressive disorder were randomized into a brief ACT intervention ($n = 16$) or

control condition ($n = 18$) with significant improvements in depression over the control condition at both the post- and 18-month follow-up measurements (Folke et al., 2012). Two modalities of delivering a brief 6-week ACT intervention (face-to-face and internet-delivered) were investigated with positive results on depressive symptoms and overall well-being at both the post- and 18-month follow-up assessments (Lappalainen et al., 2014). A preliminary, uncontrolled study investigating a group-format ACT intervention for treatment-resistant depression found significant pre- to post-measurement increases in psychological flexibility and self-compassion (Markanday et al., 2012).

Several ACT-based interventions for depressive symptoms have been investigated in the context of somatic concerns. A semi-experimental study with a small sample ($n = 16$) examined an ACT-based 8-session group intervention for depression accompanying breast cancer (Dehghani Najvani, Neshatdoost, Abedi, & Mokarian, 2015). Compared to controls, depression scores decreased and psychological flexibility increased significantly, with outcomes maintained at the one-month follow-up. Similar groups were examined in two quasi-experimental studies (Hajsadeghi, Bassak Nejad, & Razmjoo, 2017; Mohabbat-Bahar, Maleki-Rizi, Akbari, & Moradi-Joo, 2015). In both studies, 30 women with breast cancer were randomized into either an ACT group intervention (8-weeks for Mohabbat-Bahar et al., 2015; information not given in the English abstract of Hajsadeghi et al., 2017) or a control group. The results indicated significant pre- to post-measurement decreases in depression and anxiety scores in the intervention group compared to controls. Hajsadeghi et al. (2017) also reported maintenance of outcomes up to two months. Dehghani (2016) investigated the effectiveness of an 8-session group ACT intervention on depression and quality of life in dialysis patients compared to a control condition receiving no psychological interventions. The patients who underwent the ACT intervention showed superior results for both depressive symptoms and quality of life from pre- to follow-up measurements compared to the control condition. Depressive symptoms and other psychological factors were investigated among hypertensive patients ($n = 39$) randomized into an intervention based either on ACT or on motivational interviewing, or to a control group (Baradaran, Zare, Ali Pour, & Farzad, 2017). Both experimental groups showed reductions in depressive symptoms and other measures compared to the control group across the whole study period, but the study lacked a follow-up. Depression among patients with type II diabetes was treated using eight sessions of ACT (Ahmadsaraei, Doost, Manshaee, & Nadi, 2017). Compared to waiting-list controls, depressive symptoms decreased significantly in the ACT group at both the post- and 3-month follow-up measurements.

TABLE 1

Face-to-face acceptance- and value-based (ACT) interventions for depression or depressive symptoms in adults (including both randomized controlled trials and preliminary and uncontrolled studies)

Study	Subjects	Control	Format	Outcome measures relevant to depression	Process measures relevant to ACT	Relevant outcomes	Follow-up and outcomes
Zettle & Rains (1986)	18; women 100%	CT	Group, 12 weekly sessions	HRSD	ATQ	ACT > CT	2 months, ACT > CT
Zettle & Hayes (1989)	31; women 100%	Two CT- variations (CCT and PCT)	Group, 12 weekly sessions	BDI, HRSD	ATQ, DAS	ACT = CCT and PCT	2 months; ACT = CCT and PCT
Forman et al., 2007 + follow-up in Forman et al., 2012	101; women 80.2%	CT	Individual, length not specified (average 15 sessions in both groups)	BDI	KIMS, AAQ	ACT = CT	18 months; CT > ACT
Lappalainen et al., 2007	28; women 89.3%	CBT	Individual, 10 weekly sessions	SCL-90, BDI	AAQ	ACT > CBT	6 months, ACT > CBT
Petersen & Zettle, 2009	24; women 50%	TAU	Individual, 6 bi-weekly sessions	HRSD, BDI	AAQ	ACT > TAU	-
Bohlmeijer et al., 2011	93; women 81.7%	WLC	Group, 8 sessions	CES-D	AAQ	ACT > WLC	3 months, ACT > WLC
Folke et al., 2012	34; women 88.2%	Normal services available	Mixed, 1 individual session + 5 group sessions	BDI	-	ACT > control	18 months, ACT > control
Markanday et al., 2012	19; women (no info)	No control	Group, 4 weekly sessions	-	AAQ, SCS	Significant pre-post improvements	-

(continues)

TABLE 1 (continues)

Gaudiano et al., 2013	14; women 86%	No control	Individual, weekly sessions up to 6 months	QIDS-C, BPRS	AAQ, BADS, CAMS-R	Significant post improvements	3 months, maintenance of outcomes
Walser et al., 2013	745; women 21%	No control	Individual, up to 12 sessions	BDI	AAQ, FFMQ	Significant post improvements	-
Dakrymple et al., 2014)	38; women 45.9%	No control	Individual, 16 sessions	QIDS-SR/C	AAQ	Significant post improvements	-
Lappalainen et al., 2014	38; women 68.4%	-	Individual face-to-face (6 weekly sessions) and internet-delivered (6 weeks) ACT	BDI, SCL-90	AAQ, KIMS, ATQ, WBSI	Similar positive outcomes	18 months, similar positive outcomes
Tamannaefar et al., 2014	19; women 100%	CT	Group, 12 sessions	BDI	RRS	ACT = CT	-
Dehghani Najvani et al., 2015	16; women 100%	TAU	Group, 8 weekly sessions	BDI	AAQ	ACT > TAU	1 month, ACT > TAU
Gaudiano et al., 2015	13; women 55%	TAU (plus enhanced assessment and monitoring)	Individual, 16 sessions over 4 months	QIDS-C, BPRS	AAQ, BADS	ACT > TAU	3 months, reduced sample to small to draw definitive conclusions, suggestive maintenance of gains
Losada et al., 2015	135; women 84.6%	CBT and minimal support control	Individual, 8 weekly sessions	CES-D	EACQ, DTCQ	ACT = CBT	6 months, ACT < CBT for depression; ACT = CBT for secondary outcomes

(continues)

TABLE 1 (continues)

Mohabbat-Bahar et al., 2015	30; women 100%	No control	Group, 8 weekly sessions	BDI	-	Significant improvements	-
Walser et al., 2015	981; women 24%	No control	Individual, up to 12 sessions	BDI	AAQ, FFMQ	Significant pre-post improvements	-
White et al., 2011 + sub-group analysis in White et al., 2015	27; women 22%	TAU	Individual, up to 10 sessions	HADS	AAQ, KIMS	ACT > TAU for depressive symptoms	-
Dehghani, 2016 (information only from the English abstract)	30; women 100%	Control	Group, 8 sessions	BDI	-	ACT > control	Follow-up (length not specified), ACT > control
Shekari et al., 2016 (information only from the English abstract)	40; women (information not available)	WLC	Mixed (1 individual and 5 group sessions)	BDI	-	ACT > WLC	2 months (specific information not available)
Baradaran et al. 2017 (information only from the English abstract)	39; women (information not available)	MI (5 sessions) and control group	Group, 8 sessions	Depression measure not specified	-	ACT = MI; both > control	Follow-up (length not specified), ACT = MI; both > control
Davison et al., 2017	41; women 87.8%	WLC	Individual, 12 sessions (two per week)	GDS, CSDD	-	ACT > WLC	3 months, maintenance of outcomes (no control)
Gumley et al., 2017	29; women 34.5%	TAU	Individual, up to 5 months (on average, 15 sessions)	CDS, BDI	AAQ	ACT > TAU, for depressive symptoms and psychological flexibility	5 months, ACT = TAU

(continues)

TABLE 1 (continues)

Hajsadeghi et al., 2017 (information only from the English abstract)	30; women 100%	TAU	Group (length not specific in the abstract)	Depression measure not specified	-	ACT > TAU	2 months, maintenance of outcomes
Richardson et al., 2017	29; women 72.4%	-	Individual, psychologist vs. non-psychologist delivered, 12-16 sessions	CORE-OM, PHQ	CFQ, VLQ	Similar positive outcomes	3 months, similar positive outcomes
Ahmadsaraei et al., 2017	40; women 67.5%	WLC	Format not specified, 8 sessions	BDI	-	ACT > WLC	3 months, ACT > WLC

Note. ACT = acceptance and commitment therapy; CBT = cognitive behavior therapy; CCT = complete cognitive therapy; CT = cognitive therapy; MI = motivational interviewing; PCT = partial cognitive therapy; TAU = treatment-as-usual; WLC = waiting-list control; AAQ = Acceptance and Action Questionnaire; AIQ = Automatic Thoughts Questionnaire; BADS-SF = Behavioral Activation for Depression Scale-Short Form; BADS = Behavioral Activation for Depression Scale; BDI = Beck Depression Inventory; BPRS = Brief Psychiatric Rating Scale; CAMS-R = Cognitive and Affective Mindfulness Scale-Revised; CES-D = Center for Epidemiological Studies Depression scale; CIDS-SR/C = Quick Inventory of Depressive Symptomatology (self-report/clinician) CFQ = Cognitive Fusion Questionnaire; CDSS = Calgary Depression Scale for Schizophrenia; CORE-OM = Clinical Outcomes Routine Evaluation; CSDD = Cornell Scale for Depression in Dementia; DAS= Dysfunctional Attitude Scale; DTCQ = Dysfunctional Thoughts About Caregiving Questionnaire; EACQ = Experiential Avoidance in Caregiving Questionnaire; FFMQ = Five Facet Mindfulness Questionnaire; GDS = Geriatric Depression Scale; HADS = Hospital Anxiety and Depression Scale; HRS-D = Hamilton Rating Scale for Depression; KIMS = Kentucky Inventory of Mindfulness Skills; PHQ = Patient Health Questionnaire; QIDS-C = Quick Inventory of Depressive Symptomatology - Clinician; RRS = Ruminative Response Scale; SCL-90 = Symptom Checklist-90; SCS = Self-Compassion Scale; VLQ = Valued Living Questionnaire; WBSI = White Bear Suppression Inventory

Two studies have investigated the effect of ACT interventions for depression in a Veterans Health Administration setting (Walser et al., 2015; Walser, Karlin, Trockel, Mazina, & Taylor, 2013). The first study examined the training of therapists to implement an ACT treatment model for depression. The results on patient outcomes showed significant decreases in depression scores and increases in quality of life from baseline to final assessment (Walser et al., 2013). The second study focused on depression and suicidal ideation using the same intervention model as the previous study by Walser et al. (2013). Significant pre- to post-measurement increases were found for depression among those reporting suicidal ideation at baseline and for those without suicidal thoughts, additional analyses indicating that those with suicidal ideation improved significantly more (Walser et al., 2015). Furthermore, increases in psychological flexibility and mindfulness during treatment were associated with greater decreases in depressive symptoms, and increased psychological flexibility was associated with lower probability for suicidal thoughts across time. Shekari, Dabbaghi, Dowran, and Taghva (2016) investigated the effectiveness of a mixed ACT intervention (1 individual + 5 group sessions) for soldiers ($n = 30$) experiencing depressive symptoms compared to a waiting-list comparison group. The results showed significant reductions in depressive symptoms for the ACT condition compared to the waiting-list.

Depression among elderly people has been investigated in a few studies. A 12-session ACT intervention was offered to elderly adults living in long-term care, and depression measures showed significant decreases for the ACT group compared to waiting-list controls with maintenance of outcomes at the 3-month follow-up (Davison, Eppingstall, Runci, & O'Connor, 2017). Karlin et al. (2013) compared younger and older veterans receiving an ACT for depression intervention (model and overall outcomes presented in Walser et al. (2013)). The findings were similar in both age groups and suggested that ACT is an effective treatment modality for older as well as younger veterans, even among those with high levels of depressive symptoms.

Depression treated with acceptance- and value-based interventions for psychosis has been examined using a few ACT-based models (Gaudio et al., 2015; Gaudio, Nowlan, Brown, Epstein-Lubow, & Miller, 2013; Gumley et al., 2017; White et al., 2011; White et al., 2015). A model combining elements of ACT with behavioral activation termed Acceptance-Based Depression and Psychosis Therapy (ADAPT) was investigated in two studies with patients suffering from depression and psychotic features. The results in both studies showed significant improvements in both depressive and psychotic symptoms and maintenance of outcomes at the 3-month follow-up measurement (Gaudio et al., 2015; Gaudio et al., 2013). An ACT-based intervention model was also examined in individuals ($n = 29$) suffering from major depression after psychosis compared to a treatment-as-usual group (Gumley et al., 2017). Outcomes were measured at post-intervention (five months from baseline) and at five months after the intervention (ten months from baseline), with the ACT group experiencing greater reductions in depressive symptoms and increases in

psychological flexibility at the post-measurement than the treatment-as-usual group. However, the between-group differences had leveled by the 5-month follow-up measurement (Gumley et al., 2017). Participants ($n = 27$) diagnosed with emotional dysfunction (defined as depression and anxiety) emerging after psychosis were randomized to either treatment-as-usual or an ACT-based intervention lasting for ten sessions (White et al., 2011). At post-intervention, significant between-group differences were observed in favor of the ACT group in change in depressive symptoms, negative syndrome scores linked to schizophrenia, and mindfulness skills. Further sub-group analysis of the original study was conducted in participants ($n = 14$) with clinically high depression scores at baseline, with results indicating that the participants in the ACT group were significantly more likely to achieve decreases in depression symptoms than individuals in the treatment-as-usual group (White et al., 2015).

Either a psychologist- or non-psychologist -delivered ACT intervention for depression was examined in a community mental health services program (Richardson et al., 2017). The results tentatively indicated that overall ACT may be effective in clients with complex co-morbidities including depressive symptoms. Reductions in symptomatology were found both at the post- and 3-month follow-up measurements with no differences between non-psychologists and psychologists, the latter being assigned to more complex cases (Richardson et al., 2017). Comorbid depression and alcohol abuse were examined using an acceptance- and value-based intervention compared to treatment-as-usual. A sample of 24 inpatients was randomly assigned to receive either ACT (6×30 min sessions bi-weekly) or treatment-as-usual (weekly sessions of general counseling) in addition to the ongoing 12-step program which was the overall institutional context (Petersen & Zettle, 2009). The participants in the ACT group needed fewer hours of treatment to meet the discharge criteria and reported significantly fewer depressive symptoms compared to those receiving treatment-as-usual. Depression and comorbid social anxiety disorder were treated with an ACT-based individual (16 sessions) intervention incorporating behavioral activation and exposure from an ACT point of view (Dalrymple et al., 2014). The pre-to-post results showed significant reductions in depressive symptoms and improvements in other measured variables; however, the study lacked a control group.

Internet-delivered ACT-based interventions and self-help programs for depressive symptoms have also been developed and studied with promising results (e.g., Carlbring et al., 2013; Fledderus, Bohlmeijer, Pieterse, & Schreurs, 2012; Lappalainen et al., 2014; Lappalainen, Langrial, Oinas-Kukkonen, Tolvanen, & Lappalainen, 2015; Pots et al., 2016). Carlbring et al. (2013) combined behavioral activation and elements of ACT to create an internet-delivered intervention for depression lasting 8 weeks. Compared to a waiting-list control group, the results showed significant decreases in depression, although adherence to complete the modules was rather low. An ACT-based self-help book with nine modules was used in a study comparing three groups (self-help with extensive e-mail support, self-help with minimal e-mail support,

and waiting-list control) in treating depression (Fledderus et al., 2012). Significant improvements were detected in both experiment groups compared to waiting-list controls, and outcomes were maintained at the 3-month follow-up. Similar findings of significant improvements in depressive symptomatology have been found in other studies on internet-delivered interventions, and the 12-month follow-up periods showed maintenance of positive outcomes (Lappalainen et al., 2015; Pots et al., 2016).

In sum, the American Psychological Association (2013) views ACT an empirically supported treatment for depression, despite the still modest nature of that support (“probably efficacious treatment”). Long-term results continue to be lacking, especially for interventions aimed at depressive symptoms. Follow-ups of the face-to-face intervention studies have often lasted less than six months (e.g., Bohlmeijer et al., 2011a; Gaudiano et al., 2015; Gumley et al., 2017; Zettle & Hayes, 1986; Zettle & Rains, 1989), and only a few have used follow-up periods extending over six months (Folke et al., 2012; Forman et al., 2012; Lappalainen et al., 2014; Lappalainen et al., 2007), which weakens conclusions on the overall effectiveness of ACT-based interventions for depression.

1.4.3 Brief acceptance- and value-based interventions for depression or depressive symptoms

The acceptance- and values-based protocols and treatment programs reported in the literature have often utilized 6 to 12 sessions or the treatment has ended when this seemed appropriate. For example, Lappalainen et al. (2007) compared ACT and CBT (7-10 sessions), and found better symptom improvement in the ACT group with maintenance of outcomes at the 6-month follow-up.

Petersen and Zettle (2009) used a 6-session protocol (30 min biweekly) for comorbid depression and substance-abuse with less overall therapy time needed for discharge compared to treatment-as-usual. Eight sessions using a group format were administered in two studies investigating ACT for depression induced by breast cancer (Dehghani Najvani et al., 2015; Mohabbat-Bahar et al., 2015). In a study comparing face-to-face and internet-delivered ACT interventions, each lasting for six weeks, both groups showed significant decreases in depressive symptoms and increases in well-being measures both at the post- and 18-month follow-up measurements (Lappalainen et al., 2014). Another study of a web-based 7-week ACT intervention with minimal contact compared to a waiting-list control group resulted in significant positive effects in depression symptomatology, psychological flexibility and various well-being measures in the ACT group (Lappalainen et al., 2015). These results were maintained at the 12-month follow-up measurement. Bohlmeijer et al. (2011a) conducted an 8-session ACT intervention for depressive symptoms and found significant improvements compared to waiting-list controls, and maintenance of outcomes at the 3-month follow-up. Similar reductions in depressive symptoms and maintenance of outcomes were found in a study utilizing a

mixed modality 6-session (1 individual and 5 group sessions) ACT intervention compared to a control condition (Folke et al., 2012).

Research on extremely brief (≤ 5 sessions) ACT interventions is scarce, especially on interventions intended for depressive symptoms. The few brief ACT interventions that exist, regardless of the target population or symptoms, have yielded positive results. For example, in a study with psychotic inpatients, participants ($n = 80$) were randomized into either a 4-session individual ACT intervention in addition to treatment-as-usual or treatment-as-usual only (Bach & Hayes, 2002). Participants in the ACT group reported a significantly higher number of symptoms, although significantly lower level of symptom believability than those in the treatment-as-usual group, and also had 50% less rehospitalizations than the treatment-as-usual group over a 4-month follow-up period. Similar post- and follow-up measurement results were found when the research design was replicated (Gaudio & Herbert, 2006). Individuals ($n = 19$) suffering from stress and pain symptoms received a 4-session individual ACT intervention + treatment-as-usual and the results indicated reductions of 91% in sick days and fewer medical visits over the course of six months compared to treatment-as-usual (Dahl et al., 2004). An ACT intervention ($n = 14$) for the treatment of epilepsy compared to supportive treatment ($n = 13$) was investigated using a mixed individual and group format lasting for four sessions with additional booster sessions after the 6- and 12-month follow-up measurements (Lundgren et al., 2006). Both interventions were combined with seizure management, and the results indicated that ACT was superior to supportive therapy in reducing seizure frequency at post-measurement with sustained outcomes at both the 6- and 12-month follow-up assessments. In addition, the ACT group experienced significant increases in quality of life across the follow-up period compared to the supportive therapy group (Lundgren et al., 2006). Gregg et al. (2007) examined the usefulness of an ACT group (4 hours) + diabetes education workshop (7 hours) compared to the education workshop alone. Both groups improved in diabetes self-management, but after three months, the ACT group were using significantly more acceptance strategies, reported superior diabetes self-care and their blood glucose levels were more likely to be within the target range. Further, changes in blood glucose levels from the pre- to 3-month follow-up were mediated by changes in diabetes acceptance and management. Hayes et al. (2004a) compared two one-day workshops (ACT and multicultural training) for reducing stigma, prejudice and burnout in substance abuse counselors. The post- and 3-month follow-up results indicated that the ACT intervention had significantly reduced stigma at the 3-month follow-up measurement compared to the multicultural training, which had outperformed ACT at the post-measurement. The ACT group also showed reduced burnout both at the post- and 3-month follow-up measurements (Hayes et al., 2004a).

For treatment-resistant depression, Markanday et al. (2012) conducted a preliminary study using a group-format ACT intervention consisting of four weekly sessions. They found significant pre- to post-measurement

improvements in psychological flexibility and self-compassion, but no depression measures were reported and the study also lacked a control condition and a follow-up assessment (Markanday et al., 2012). A preliminary study by Ruiz et al. (2018) examined a 2-session ACT-based intervention focusing repetitive negative thinking among individuals ($n = 10$) with emotional symptoms with large effects for emotional symptoms, pathological worry, experiential avoidance, cognitive fusion, repetitive thinking and valued living.

1.4.4 Mechanisms influencing the outcomes of acceptance- and value-based brief interventions

Contextual approaches to cognitive and behavioral therapies, such as ACT, integrate elements of acceptance, present-centered attention and awareness. Research on the processes of change highlight the role of psychological inflexibility which has also been related to a wide variety of conditions causing suffering and psychological distress (Barnhofer et al., 2014; Berking et al., 2009; Levin et al., 2014; Ruiz, 2012). In acceptance- and value-based interventions, psychological flexibility and changes in it during the treatment period have been shown to partially or fully mediate positive outcomes (Forman et al., 2012; Hayes, Villatte, Levin, & Hildebrandt, 2011; Lundgren, Dahl, & Hayes, 2008a; Wicksell et al., 2010; Zettle et al., 2011).

In addition, it has been suggested that mindfulness is a concept resembling yet distinct from psychological flexibility (Curtiss & Klemanski, 2014; Kashdan & Rottenberg, 2010), and research suggests inverse associations of both these concepts with depressive symptoms (Hayes et al., 2006; Hofmann et al., 2010; Masuda & Tully, 2012; Soysa & Wilcomb, 2015). Mindfulness and present-centered awareness are also integral parts of psychological flexibility (Hayes et al., 2011b). Based on cross-sectional research, higher levels of observing may be linked to more psychological distress, although the results are inconsistent (Alleva et al., 2014; Barnhofer et al., 2011; Bohlmeijer, ten Klooster, Fledderus, Veehof, & Baer, 2011b; Christopher et al., 2012). Acceptance and non-judgmental attitude have been associated with better well-being (e.g., Alleva et al., 2014; Baer et al., 2006; Barnes & Lynn, 2010; Cash et al., 2010; Christopher et al., 2012).

With respect to some of the key processes of psychological flexibility during an ACT intervention, Bramwell and Richardson (2017) examined changes in defusion and values-based actions and their relation to treatment outcomes. They found that increases in valued actions and reductions in fusion were related to decreases in depressive symptoms during the intervention period. However, the intervention used was not brief (mean number of sessions = 13, range 4-24), and the study lacked a follow-up to better understand the causality of the related changes. A less extensive (eight weeks) intervention study examined ACT delivered in two ways for general well-being: an OPEN module targeting acceptance and defusion, and an ENGAGED module targeting valued actions and commitment (Villatte et al., 2016). They found that

the modules differed in their outcomes: the OPEN module group improved more in symptoms severity, acceptance and defusion, whereas the ENGAGED module group showed greater increases in value-based activation and quality of life. Both improved in non-reactivity and awareness, which were integrated into both group, although the methods used differed. Outcomes were maintained at the 3-month follow-up. Various ACT intervention studies for chronic pain have been examined, with the intervention often embedded into an inpatient treatment period (e.g., McCracken & Vowles, 2008; Vowles et al., 2011; Vowles & McCracken, 2008). These studies have demonstrated the importance of developing an accepting attitude toward pain, and of the importance of values and valued actions in influencing treatment outcomes.

In a brief 5-session telephone-based ACT intervention for smoking cessation, specific ACT counseling techniques were investigated for treatment effectiveness (Vilardaga, Heffner, Mercer, & Bricker, 2014). It was noted that the awareness and openness techniques used by the counselor predicted the client's smoking cessation at the subsequent session. In another study, Hesser, Westin, Hayes and Andersson (2009) examined in-session cognitive defusion and acceptance during an ACT treatment program for tinnitus (up to 10 sessions). The findings indicated that in-session defusion and acceptance behaviors coded from videotaped sessions predicted symptom reduction six months post-treatment. Gaudiano, Herbert and Hayes (2010) further explored data gathered from a randomized controlled trial of ACT and treatment-as-usual in psychotic inpatients. The ACT intervention lasted three sessions on average (depending on the length of the hospital stay) and mediational analyses indicated that changes in the believability of the hallucinations mediated the outcomes of the ACT intervention on hallucination-related distress. In accordance with the ACT model, this finding supports the idea of changing the relationship to private events rather than changing their form or frequency (Hayes et al., 2011b). Lundgren et al. (2008a) reported that acceptance and values attainment and persistence, uniquely and in combination, mediated the effects of a brief 4-session (2 x 1.5 h individual and 2 x 3 h group) ACT intervention for epilepsy.

While the above findings imply that core ACT processes have an impact on treatment outcomes in ACT interventions, brief interventions are extremely time-limited, and hence it may be difficult to incorporate all the aspects and processes promoting psychological flexibility profoundly enough to initiate the acquisition and consolidation of skills strengthening flexibility. For example, Villatte et al. (2016) reported differing outcomes depending on what ACT processes were emphasized. Research is lacking on what aspects of psychological flexibility it would be most beneficial to emphasize to ensure positive, enduring outcomes in very time-limited interventions for emotional distress.

1.5 Summary of the research

To summarize, depression and depressive symptoms in their various forms are an individual, social, interpersonal, societal and economic burden. While a variety of effective psychological treatments for depressive symptoms are available, albeit with mixed long-term effects, many individuals lack the willingness or possibility to receive psychological help due to issues such as stigmatization (such as not wanting to be diagnosed). Many individuals suffering from depression or low mood are encountered at the lower levels of the health-care system, where standard-length psychotherapy by extensively trained and experienced psychotherapists is often unavailable. Research indicates that receiving effective help for mood problems and sub-clinical depressive symptoms as early as possible may prevent their exacerbation and reduce the incidence of major depressive disorder. Briefer interventions could offer a possibility of providing psychological services more readily and without lengthy waiting times. Both the research on rapid change and early responding in psychological interventions and the meta-analytic evidence on brief psychological help support the use of less extensive interventions, while a demand currently exists for brief interventions for low mood that are easily administered without extensive training, especially in the lower levels of the health care system.

The meta-analyses on transdiagnostic cognitive and behavioral approaches reported large and significant effects for both depression and anxiety symptoms that tentatively support the use of disorder-overlapping treatment models. These approaches are also supported by findings on comorbidities in psychiatric disorders, as individuals frequently present symptoms and issues related to more than one disorder category. On the development of transdiagnostic principle-based interventions, earlier research has shown that control-based strategies may not be helpful, and even counter-effective with respect to increasing psychological well-being. One distinct approach that has been studied is based on psychological flexibility which could offer a wide and transdiagnostic framework for understanding and alleviating psychological distress such as depressive symptoms.

Psychological flexibility and experiential avoidance have attracted a growing interest in recent years and research indicates the diverse ways in which lack of psychological flexibility impacts well-being. Psychological flexibility may also serve as a protective factor against a multiplicity of stressors and aversive private events by promoting new ways of interacting with them, and concurrently help build and extend a behavioral repertoire to meet the fluctuating demands of various meaningful life domains. Psychological flexibility and mindfulness share similar features while remaining distinct concepts. Observing one's experiences and present-centered being have been considered as either assets or weaknesses, whereas an accepting and mindful attitude and actions have been associated with better psychological well-being.

Acceptance and Commitment Therapy (ACT), with the aim of enhancing psychological flexibility through processes of acceptance and mindfulness, and commitment and behavioral change, falls within the domain of contextual behavioral science. ACT-based interventions have received substantial research evidence and support, and studies indicate that increases in psychological flexibility mediate positive outcomes. Research on the effectiveness of brief (≤ 5 sessions) acceptance- and value-based interventions for depressive symptoms remains scarce, especially their long-term (over 12 months) effectiveness. In the few studies of brief ACT-based interventions, acceptance, values, defusion and the like have been shown to partially or fully mediate the treatment outcomes. However, research on what aspects of psychological flexibility warrant emphasis during such time-limited interventions to ensure desirable outcomes for affective problems is lacking.

1.6 Research aims

The aim of this dissertation was to examine and evaluate the effectiveness and long-term outcomes of a brief intervention based on ACT for self-referred individuals suffering from self-reported depressive symptoms. The dissertation comprises three studies with the overall objective of producing an effective and beneficial brief intervention for low mood that could be easily administered in contexts where the use of highly trained psychotherapists and experienced mental health professionals is not possible.

Study I focused on a brief, 4-session acceptance- and values-based intervention for individuals reporting depressive symptoms and low mood compared to a waiting-list control group. The intervention was delivered by inexperienced psychology students as part of their Master's level clinical studies, and the participants were self-referred and recruited via newspaper advertisements. The main goal of this preliminary study was to examine whether the brief intervention implemented by novice therapists would be able to produce significant reductions in depressive symptoms and increases in psychological flexibility compared to those waiting for the start of their treatment period. The short-term effectiveness and maintenance of outcomes was investigated over a 6-month follow-up without a comparison group, as the waiting-list group would eventually receive the same brief intervention. It was hypothesized that novice therapists would be able to implement the brief intervention under supervision such that it would be beneficial to the participants compared to the waiting-list control group with maintenance of outcomes up to six months among those receiving the treatment.

The main objective of **Study II** was to examine the long-term effects and maintenance of outcomes of the brief acceptance- and values-based intervention. The follow-up period lasted for 5 years after the intervention ended and the waiting list control group was combined with the original treatment group as they had also received the same intervention after a 5-week

waiting period. It was hypothesized that outcomes would be maintained to some extent, as the intervention was aimed at teaching the skills of relating to distressing private events with an accepting attitude and overcoming obstacles and barriers to acting according to one's values.

Study III concentrated on investigating changes in mindfulness subskills and psychological flexibility during the 4-session intervention, and whether they were differently associated with both short (pre to post)- and long-term (pre to 5-year follow-up) changes in depressive symptoms. Study III aimed to produce clinically relevant information on what aspects might best be included in brief, time-limited treatments to deliver their short- and long-term benefits. It was hypothesized that differential associations would be shown in mindfulness subskills and their relation to changes in depression.

2 METHODS

2.1 Study design and data collection

The data used in all three studies were drawn from a treatment effectiveness research project conducted at the University of Jyväskylä during the years 2008 and 2009, with the follow-up data gathered in 2013 and 2014. The objective of the research project was to examine the effect of a brief psychological, acceptance- and values-based intervention conducted by student therapists.

The participants were recruited via newspaper advertisements in local papers. In total, 71 individuals contacted the research project and 11 were excluded due to not meeting the inclusion criteria or deciding to discontinue. The inclusion criteria were as follows: 1) subjective depressive symptoms or depressed mood (diagnosis not necessary); 2) no other concurrent psychological treatment; 3) no reported schizophrenia; 4) no reported alcoholism; 5) no reported severe sensory or brain injury; 6) no reported neurological disorder. Informed consent to participate was obtained during the pre-measurement data gathering and interview. Participants had also received a letter beforehand which outlined the research and the rights of the participant to withdraw at any given time. This was noted again during the pre-measurement.

An imbalanced gender distribution was expected based on earlier research reporting that depression is approximately twice as common in women as in men (Leach et al., 2008) and that women are often more likely to seek psychological help compared to men (Häkkinen & Alha, 2006; Smith et al., 2013). Therefore, the remaining 60 participants were randomized into two groups by gender: 1) the original acceptance and commitment therapy -based (ACT; Hayes, Strosahl, & Wilson, 2011) intervention group, and 2) a waiting-list control group (whose participants were informed about the wait and that they would receive the same intervention approximately 37.2 ($SD = 5.9$) days later). Of the 60, three elected to discontinue before the intervention started (two before the pre-measurement and one before the intervention). Thus 57 participants, 28 in the ACT intervention group and 29 in the waiting-list control

group, started the treatment and were included in the intention-to-treat analyses. Three participants elected to quit the treatment and one participant in the WLC group decided to discontinue during the waiting-phase before treatment start. The reasons for dropping out are not available.

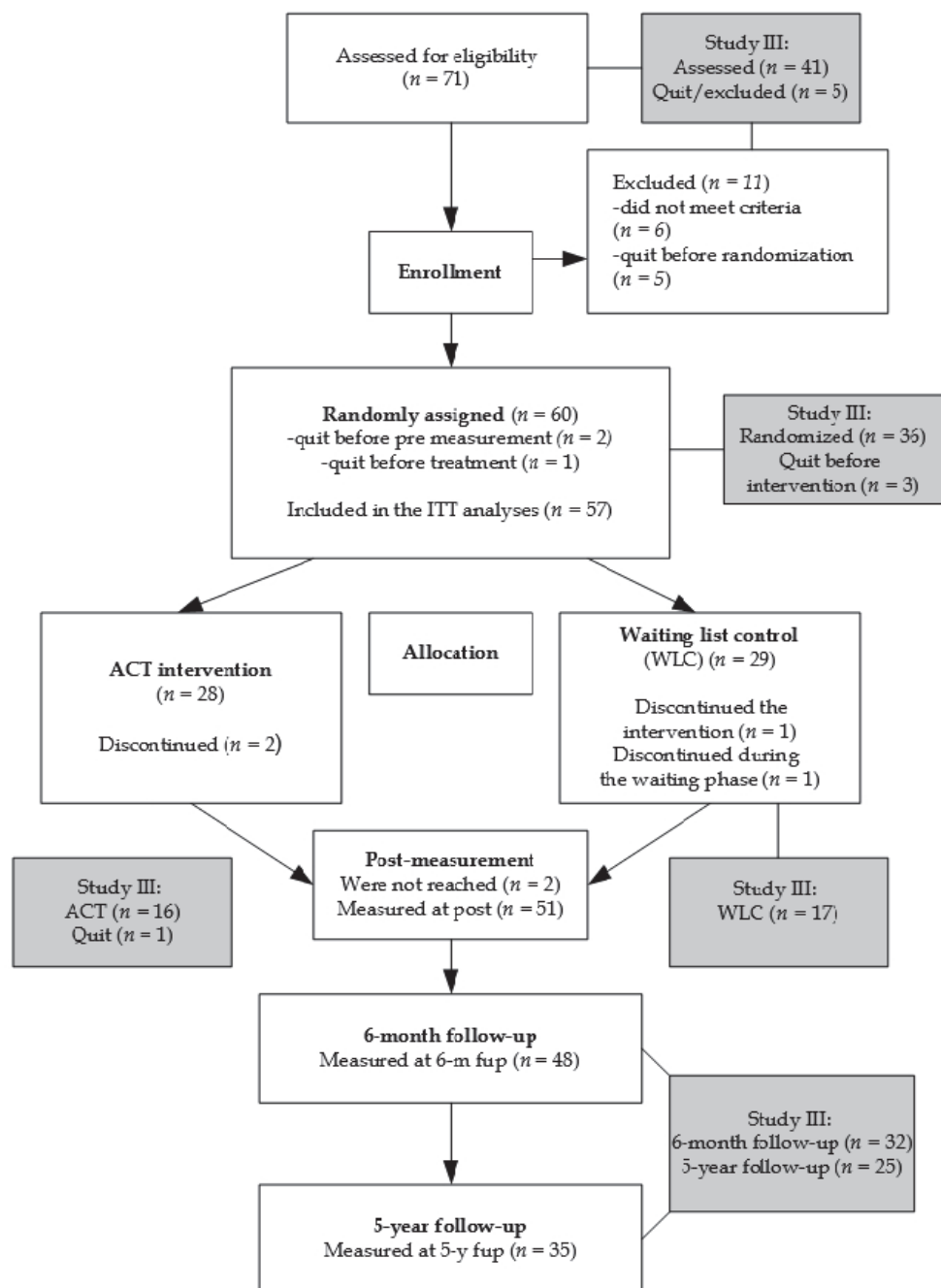


FIGURE 2 Flow of participants in Studies I, II and III

For Study III, a sub-population was derived from the original complete data used in Studies I and II. The Study III data were drawn from the data collection phase of 2009, and the participant flow is presented in Figure 2 alongside the participant flows of Studies I and II. At both the 6-month and 5-year follow-up points, all 57 participants who had originally started the intervention or the waiting-phase were sent a letter a month before the assessment informing them about the impending follow-up measurement and providing the clinic's contact information. Participants from whom no reply was received were proactively contacted a week later. At the 6-month follow-up measurement, 48 (84%) participants had been reached and had consented to participate. At the 5-year follow-up measurement, the number of participants reached was smaller, and 35 (61%) of these agreed to participate. For the 5-year follow-up measurement, self-report inventories and a background information form were sent for completion by the participants prior to their attending the follow-up. For the 6-month follow-up measurement, all the inventories and information forms were completed during the assessment meeting. To facilitate attendance, the 5-year follow-up measurement also included an interview that could be conducted either by phone or face-to-face in accordance with the participant's wishes. Fifteen participants agreed to an audio-recorded interview. Participants in the 5-year follow-up measurement were also offered a small reimbursement as compensation for their time. Across the 5-year study period, 22 participants (39%) dropped out. Of those 35 (61%) who participated in the 5-year follow-up, 26 had participated in all the previous measurements (pre-, post-, and 6-month follow-up measurements).

2.2 Participants

2.2.1 Studies I and II

The analyzed sample comprised two successive data sets (2008 and 2009) gathered to investigate the effectiveness of a 4-session ACT-based intervention for treating depressive symptoms, using an experimental (ACT) and waiting-list control (WLC) group design with 6-month and 5-year follow-up measurements in which all the treated participants were combined for the analysis. The sample used in both studies comprised 57 participants (45 female and 12 male) who started the treatment or the waiting-phase in one of the two randomized groups, i.e., the ACT intervention group ($n = 28$), or the WLC ($n = 29$), i.e., the waiting-list group, who were to receive the same treatment later.

At the pre-measurement, mean participant age was 46.2 years ($SD = 11.9$, $range = 17-71$). The gender distribution was biased in favor of women (79%). Over half of the participants (59%) were either working, studying or parenting at home. Most participants had either upper secondary education (45%) or a university degree (43%). Over half reported having previously received psychological treatment of some sort (63%) and/or had used psychotropic

medication for depression or anxiety prior to the pre-measurement (66%). At the pre-measurement, 45% reported having a diagnosis of depression and almost a third (29%) were using psychotropic medication. Based on independent samples *t*-test (for age and number of children) and χ^2 -test (for categorical variables), no differences were observed between the groups at the pre-measurement in any of the background variables. Comparison of the two data collection years (2008 and 2009) revealed significant differences in age ($t(55) = -2.602, p = .012$). The individuals in the later data collection were older (2009; mean age = 49.6) than those in the earlier data collection (2008; mean age = 41.7). Significant differences between the data collection years were also found in civil status ($\chi(3) = 7.013, p = .071$) and current use of medication ($\chi(1) = 7.090, p = .008$). The later data collection group (2009) also contained significantly more participants who were divorced or single, and more who were not using medication at the pre-measurement.

For the 5-year follow-up study, those who had dropped out before the 5-year follow-up measurement ($n = 22, 39\%$) were compared to who had participated in the 5-year follow-up ($n = 35$). At the pre-measurement, the two groups differed in age ($t(55) = 2.39, p = .020$), the participants who continued were significantly older. When depression symptoms were examined, those who had dropped out and those who were measured at the 5-year follow-up did not significantly differ from each other in either the pre- or post-measurements, or in change in depressive symptoms during the treatment phase.

2.2.2 Study III

The data on the 33 participants used in Study III derive from the larger data set ($n = 57$) used in Studies I and II. This subpopulation was investigated in the second wave (2009) of the research project, as the Finnish version of the Kentucky Inventory of Mindfulness Skills (KIMS; Baer, Smith, & Allen, 2004) used in Study III was not available at the time of the first wave. The flow of the subsample is shown in Figure 2. All 33 participants were Caucasian (27 female, 82%, and 6 male, 18%). Their mean age at the pre-measurement was 49.6 years ($SD = 12.0, range = 17-71$). Two-thirds (64%) were either working, studying or parenting at home. Half (49%) had upper secondary education, and 36% had completed a university degree. At baseline, 39% reported having a diagnosis of depression and 15% reported the current use of psychotropic medication. Over half (55%) had received psychological treatment earlier, and 63% also reported earlier use of psychotropic medication. No statistically significant differences in background information were found between the participants and dropouts at baseline.

2.3 Intervention and student therapists

The interventions were conducted in an individual format with each session lasting approximately 60 minutes. The sessions took place at the Department of Psychology. The sessions were conducted in Finnish except in one case of a native English speaker with moderate Finnish skills for whom the treatment and client measures were offered in English. In Studies I and II, all the therapists ($n = 20$) were female master's level psychology students at the University of Jyväskylä, with a mean age of 25.8 years ($SD = 5.4$; $range = 22-47$ years). One student had completed an internship period of six months, but none of the students had experience of practicing psychotherapy. In Study III, the therapists were a sub-population ($n = 12$) of the student therapists described above, as the study participants were also a sub-population of the same sample investigated in Studies I and II.

Overall, the students received approximately 10 hours of training on ACT theory and methods as part of a course on clinical methods. In addition, they received extra training (four hours) in the brief ACT protocol used in the studies. The training also included the presentation of a *functional analytic clinical case model* (FACCM; Haynes & O'Brien, 2000) and the practice of constructing one. The FACCM is a graphical approach used to analyze behavior and the relationships between different behaviors and problematic issues (Haynes & O'Brien, 2000). The therapists were obliged to attend a weekly group supervision session (2-3 hours) during the intervention period. The supervision sessions consisted of discussions on the ongoing interventions, and reviews of the methods and exercises used. Considerations in line with the ACT model for the succeeding intervention session were also outlined. The person who trained the student therapists in the ACT intervention and supervised its delivery had been trained in both CBT and ACT, and had ten years of clinical experience in using ACT in therapy. The supervision sessions had an important role in controlling for adherence to the ACT model, as individual intervention sessions were not recorded. A method checklist was also used to ensure the use of ACT methods and understanding of the therapy processes. The student therapists were required to report on the checklist what they had done during the sessions. Earlier pilot studies conducted in our research group have shown good correspondence (Cohen's kappa = .82) between independent observer ratings of the application and frequency of the methods used and the checklist (Haapala, 2008).

The treatment protocol was semi-structured with the possibility and flexibility to adapt certain elements such as exercises and metaphors, to benefit individual clients. Each session was to some extent pre-planned under supervision. The student therapists were instructed to follow a few main guidelines: 1) clarifying the client's values; 2) figuring out in cooperation with the client how to influence their lives effectively by value-based actions; and 3) working with various barriers, whether verbal, social or emotional, that may

arise when moving forward towards meaningful and valued life directions. In addition, at least one ACT-based experiential exercise or metaphor was instructed to be used during each of the sessions, including Session 1. The student therapists were instructed to use a Finnish ACT handbook (Lappalainen et al., 2004) to help choose suitable metaphors and/or exercises for the sessions. The handbook consists of information on the basics of the ACT model and processes, 32 metaphors, 18 exercises and practical forms to be used in therapy. Home assignments were constructed with the client at the end of each session and they related either to something tried or discussed during the session, or they emerged from the client's current situation, with the perspective of valued actions in mind. The sessions included different ACT processes, depending on the client. These processes were addressed using discussions on values, avoidance, fusion, present-moment awareness, control and acceptance, and experimenting with different metaphors and experiential exercises.

The goal of the first two sessions was more specific. Session 1 was mainly for gathering additional information and constructing an understanding of the issues the client presented with. ACT-based values work was given as homework. Between Sessions 1 and 2, the student therapist constructed the FACCM, presenting the client's situation in graphical form. The FACCM was presented to the supervisor before Session 2 during which it was viewed with the client and combined with the client's values homework. The combination of the FACCM and values was used to guide decisions and considerations relating to the treatment goals and targets of each client. Sessions 3 and 4 were more individual and flexible in their content, although the aim of working with valued actions and barriers remained instrumental. During the final session, a treatment summary and future directions and other considerations were discussed to support valued choices, actions, and commitment, including in situations of pain and suffering. Table 2 presents a more detailed description of the intervention.

TABLE 2 The structure and content of the 4-session ACT intervention

Session	Session objectives	Examples of exercises and activities	Homework
<p>1. Introduction and start of the analysis</p>	<p>Introduction to the brief intervention format (structure) Interview aiming at gathering information on the participant's current life situation, problems and prior attempts at solving them Construction of a problem list for the functional analytic clinical case model (constructed after the session by the therapist) Orientation to values</p>	<p>Problem list form <i>Tug-of-war</i> or <i>digging oneself out of a hole</i> (metaphors; or some other expression regarding struggling with problems) <i>Skiing</i> (metaphor), <i>the funeral exercise/tombstone</i> (exercise) Breathing or some other present-moment exercise (<i>Leaves on a stream</i>, focus also on defusion)</p>	<p>Functional analytic clinical case model (FACCM) diagram for the therapist to construct Values -worksheet</p>
<p>2. Clarification of values and treatment goals</p>	<p>Introduction of the FACCM formulation and possible corrections Review of values homework, clarification of and reflection on values Agreement on treatment aims based on the FACCM and values work Choosing important values and identifying valued actions Discussion on a meaningful life and examination of possible obstacles to taking valued actions towards a meaningful life</p>	<p><i>The Funeral/Tombstone</i> (exercise) if clarification of values seems problematic Breathing or some other present-moment exercise (<i>Leaves on a stream</i>, focus also on defusion)</p>	<p>Values based action(s) Mindfulness/breathing exercise</p>

(continues)

TABLE 2 (continues)

<p>3. Taking actions and tackling obstacles</p>	<p>Review of participant's homework and discussion on experiences Addressing participant-specific issues and chosen treatment targets Identification of verbal and emotional obstacles and addressing ACT processes linked to those barriers Introduction of the idea of self-as-context</p>	<p>The use of participant-appropriate exercises and metaphors identified and planned during supervision <i>Passenger on a bus</i> (exercise) <i>Observer</i> (exercise) Breathing or some other present-moment exercise (<i>Leaves on a stream</i>, focus also on defusion)</p>	<p>Values based action(s) Mindfulness/breathing exercise</p>
<p>4. Planning for the future</p>	<p>Review of participant's homework and discussion on experiences, barriers and problems Discussion on control and acceptance Review of the treatment and identification of important experiences, positive issues and client's resources Creation of a post-treatment plan with valued actions</p>	<p><i>Joe the Bum a.k.a. the Unwanted visitor</i> (exercise) <i>Quicksand</i> (metaphor) Breathing or some other present-moment exercise (<i>Leaves on a stream</i>, focus also on defusion) <i>What needs to be continued?</i> (discussion exercise)</p>	<p>Valued actions based on the plan created</p>

2.4 Measurements

Participants completed a set of seven self-report measures on several occasions: before and after the intervention or the waiting phase (depending on the assigned group), and both six months and five years after the treatment had ended. However, before the start of their intervention phase, the WLC group had one additional measurement which served as their pre-treatment measurement for the follow-up analyses. Their first measurement (measurement before waiting-phase) was used in the comparison (ACT vs. WLC) analyses. Two quick inventories (AAQ-2 and the visual rating scale of 0-100 for Mood; presented later) were also completed after every intervention session. They were used mostly as additional clinical feedback to guide treatment decisions. One additional process measure (mindfulness skills) was added to the 2009 data collection, and these participants completed eight measures altogether.

2.4.1 Assessment of symptoms and well-being

Two primary outcome measures were used to evaluate depressive symptoms and other psychological and related physiological symptoms. Depressive symptoms were assessed using the *Beck Depression Inventory (BDI)*, which is a widely used self-report questionnaire assessing symptoms of depression and their severity (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961). The BDI was used instead of the newer version, the BDI-II (Beck, Steer, & Brown, 1996), as the former was widely used in Finland at the time of the initial study. The convergent validity between the BDI and the BDI-II have been shown to be high, ranging from .82 to .94 (Wang & Gorenstein, 2013). The BDI comprises 21 self-rated items which cover the affective, cognitive, behavioral and physiological symptoms related to depression. The items are summed up to form a single score (from 0 to 63) indicating the severity of depression. The reliability of the instrument and its internal consistency have been found to be high (Beck et al., 1961). Various psychiatric and related physiological symptoms were measured using the *Symptom Checklist-90 (SCL-90; Derogatis, 1983)*, which is a broad self-report check list consisting of 90 items that has been validated in the Finnish population (Holi, Sammallahti, & Aalberg, 1998). The questionnaire uses a five-point scale of distress from 0 (none) to 4 (extreme) to rate all items. The SCL-90 total score range from 0 to 360, and the scores can be grouped to form nine different symptom dimensions. In the validation study, the internal consistency ranged between .77 and .90 in a patient sample, and between .79 and .97 in a community sample (Holi et al., 1998). In our studies, the SCL-90 scores were summed and divided by the number of questions (90), and presented as Global Severity Index (GSI) scores indicating overall distress (SCL-90-GSI).

Secondary outcomes measures assessed social functioning and various aspects associated with psychological well-being. Social functioning and coping

with daily life were assessed with the *Social Adaptation Self-Evaluation Scale* (SASS) (Bosc, Dubini, & Polin, 1997). The measure comprises 21 items, each of which is scored from 0 to 3 with total scores ranging between 0 and 60, higher scores indicating better social functioning. The normal range of scores has been defined as 35 to 52 (Bosc et al., 1997). The measure a Cronbach's alpha coefficient of .74 indicating good internal consistency. *Three 0-100 descriptive visual rating scales*, which assess self-confidence, mood and life satisfaction, were also used to represent quick visual feedback (Ojanen, 2000, 2001; Ojanen & Seppälä 1997). The visual scales are presented as a vertical line with 0 at the bottom and 100 at the top. Written examples pertaining to the item (e.g., self-confidence, mood and life satisfaction) being assessed are given at different points on the line to help the participant choose the correct point at which to mark it. Participants were also asked to write down a number corresponding to the mark they had drawn across the line.

2.4.2 Assessment of processes

Two primary process measures were used. Experiential avoidance and its counterpart, psychological flexibility, were assessed with the *Acceptance and Action Questionnaire-2* (AAQ-2, *earlier version*), which is a 10-item self-report instrument utilizing a 7-point Likert-type scale. As a measure of psychological flexibility, items 2 to 5 and 7 to 9 were reverse-keyed. The scores range from 7 to 70, with a higher score on the scale indicating higher psychological flexibility when reverse scored. Originally, the AAQ-2 started out as a 10-item scale but after a final psychometric analysis it has been reduced to a 7-item scale (Bond et al., 2011). The present study uses the 10-item version, as this earlier version had been translated into Finnish. The 7-item AAQ-2 has a mean alpha coefficient of .84 (Bond et al., 2011), and the 7- and 10-item versions correlate at $r = .96$, and thus the earlier version of the AAQ-2 should be valid for research purposes (Bond et al., 2011). Mindfulness skills were evaluated (in Studies II and III) with the *Kentucky Inventory of Mindfulness Skills* (KIMS), which is a multidimensional self-report scale (Baer et al., 2004). It has 39 items with a 5-point Likert-type response scale ranging from never or very rarely true (1) to always or almost always true (5). Items represent either a direct portrayal of the mindfulness skill in question or its absence (if the item is reverse-scored). The total score ranges from 39 to 195 with higher scores presenting higher level of mindfulness skills. The total score can be divided into four subscales (*observing, describing, acting with awareness, and accepting without judgment*). Items include statements for each of the subscales, for example, "I notice changes in my body, such as whether my breathing slows down or speeds up" (*observing*); "It's hard for me to find the words to describe what I'm thinking" (*describing*); "When I do things, my mind wanders off and I'm easily distracted" (*acting with awareness*); and "I criticize myself for having irrational or inappropriate emotions" (*accepting without judgment*).

2.4.3 Interview at the 5-year follow-up

In study III, the 5-year follow-up measurement included an interview which was created solely for that purpose. The interview consisted of ten questions and can be found in Appendix 1. The interview was semi-structured, as when asking the questions given on the interview form, the interviewers were instructed also to ask further questions and offer elaborations if needed. Questions were constructed to assess overall well-being and life changes during the five years that had passed since the end of the intervention (e.g., *How has your well-being changed during the past five years since the intervention ended? What kinds of changes have happened in your life during the past five years?*). The participants were also asked about the brief intervention and its perceived effects, and whether they still used principles learned during the intervention (e.g., *Has something from it stayed with you?*), and possible changes related to their thoughts and emotions (e.g., *Has your stance toward your thoughts and feelings changed in some way? If so, what do you associate with these possible changes in your stance or attitude with?*). The participants were also asked whether they had received any psychiatric or psychological help during the 5-year follow-up and, if so, insofar as they could remember it, to describe the intensity and format of that help. The full measurement session, with the interview, background information form and completion of the remaining self-report inventories, and checking those filled in at home, usually lasted 1-1.5 hours. Over the phone, the mean time was slightly different since the background information form and all the self-report inventories had already been mailed to the participant to be filled in when appropriate.

2.5 Statistical analyses

Study I

All statistical analyses were done using SPSS statistical software for Windows (version 18.0). All analyses were conducted as intent-to-treat (ITT) analyses using the last-observation-carried-forward (LOCF) method, which conservatively assumes that participants who discontinued untimely experienced no change after dropping out. Similar patterns of changes and outcomes were obtained with the ITT analyses as with the completer analyses; therefore, only the ITT analyses are reported. Baseline differences in background and dependent variables were examined using independent samples *t*-tests and χ^2 -tests. The treatment effect was compared between the groups (Group \times Time) using repeated measures analysis of variance. The between-group factor was Group (ACT vs. waiting-list control), and the within-group factor was Time (pre- and post-measurements). All dependent variables were entered into the analysis one by one. If the interaction yielded a significant effect, the Time factor was further examined separately for both groups.

Maintenance of treatment outcome was analyzed using an ANOVA for repeated measures. Pre-, post- and 6-month follow-up measurement scores were entered one at a time and compared with each other as dependent variables so that possible changes during the treatment and the follow-up could be identified. The effect sizes (ES) were calculated using Cohen's *d*. The post-measurement *between-group* ES was calculated by dividing the difference between the groups' means by the pooled standard deviation (*SD*) of the two conditions (Feske & Chambless, 1995; Morris & DeShon, 2002). A *between-group* effect size of 0.2 was considered small, 0.5 medium, and 0.8 large (Roth & Fonagy, 1996; Öst, 2006). Both the post- and 6-month follow-up measurement *within-group* ES values were calculated by dividing the mean pre-to-post change by the pre-measurement *SD*, and by dividing the pre- to follow-up measurement change by the pre-measurement *SD* (Feske & Chambless, 1995; Morris & DeShon, 2002). A *within-group* ES of 0.5 was considered small, 0.8 medium, and 1.1 large (Roth & Fonagy, 1996; Öst, 2006).

Clinical significance of depressive symptoms was examined based on the model by Jacobson and Truax (1991). Four categories describing the participants' state were used: a) recovered, b) improved, c) unchanged, and d) deteriorated. In the model both a reliable change index (RCI, minimum decrease from pre to post and pre to follow-up) and the crossing of a cutoff point (Cutoff C) are needed. The RCI and the Cutoff C level were calculated for the whole sample using the results from a validation study: the mean and the standard deviation of BDI for the non-patients were 7.21 and 6.83, respectively, and internal consistency was .86 (Elovainio et al., 2009). The mean and the standard deviation of BDI for the intervention participants were 22.44 and 9.95, respectively, and the cutoff C level was 13.41 (BDI).

Study II

Data were analyzed using both the SPSS software program (version 22.0) and theMplus program (version 7; Muthén & Muthén, 2012). First, the between-group differences were analyzed using χ^2 -test and *t*-tests. Second, all the 57 participants who had started the treatment, were included in the intent-to-treat analyses carried out using *hierarchical linear modeling* (HLM). The HLM procedure uses a *full information maximum likelihood* (FIML) estimation that allows all participants to be included in the analysis. A "missing at random" (MAR) approach was applied for missing data. The within-group data were analyzed at four stages in the study period (pre-, post-, 6-month and 5-year follow-up measurements). The overall change across the measurement points was tested by defining several new parameters of change: 1) pre- to post-measurement change, 2) post- to 6-month follow-up measurement change, 3) 6-month to 5-year follow-up measurement change, and 4) post- to 5-year follow-up measurement change. These new parameters were tested simultaneously with the Wald test. Means, standard deviations (*SD*) and confidence intervals

(CI) were calculated using the FIML estimation in order to correct the means of missing values.

Effect sizes (ES) were reported as Cohen's *d*, and the *within-group* ES for the whole study period was calculated by dividing the mean change from the pre- to 5-year follow-up measurement by the combined (pooled) *SD* of the pre- and 5-year follow-up measurement (Feske & Chambless, 1995; Morris & DeShon, 2002). Similarly, for the 5-year follow-up period, the mean change from the post- to 5-year follow-up measurement was divided by the combined *SD* of the post- and 5-year follow-up measurement. A *within-group* effect size of 0.5 was considered small, 0.8 medium, and 1.1 large (Roth & Fonagy, 1996; Öst, 2006).

The model of Jacobson and Truax (1991) was used to examine the clinical significance of depressive symptoms. The model uses four categories: a) recovered, b) improved, c) unchanged, and d) deteriorated. Both a reliable change index (RCI, a minimum decrease from pre- to 5-year follow-up measurement) and a cutoff point (Cutoff C) are calculated. The RCI identifies how much change (calculated for each participant individually) is required for a shift from clinical to nonclinical status, which is indicated by crossing an approximate cut-off point. The mean and standard deviation of BDI for the non-patients were 7.21 and 6.83, respectively (Elovainio et al., 2009). For Study II, clinical significance analyses were performed to those individuals ($n = 35$) with both pre- and 5-year follow-up measurement scores on the BDI. Their mean BDI was 23.26 ($SD = 9.46$), and the Cut-off C level was 13.94.

Study III

Both the SPSS for Windows (version 22.0) and the Mplus (version 7.0; Muthén & Muthén, 2012) software programs were used for statistical calculations. First, the background socio-demographic data were analyzed using parametric (*t*-tests) and non-parametric (χ^2 -tests) methods to evaluate possible differences between the first-treated ACT group and the later-treated original waiting-list control group. Bivariate correlations were calculated using SPSS. Change scores (pre- to post-measurement, and pre- to 5-year follow-up measurement) were always calculated by subtracting the former (pre-measurement) score from the latter (post- or 5-year follow-up measurement) score, thus negative change scores in BDI indicate decreases in depressive symptoms, which is considered a positive outcome, and negative change scores in process measures indicate a decline, which is considered a negative outcome.

To examine the significance of changes from the pre- to post-measurement and from the pre- to 5-year follow-up measurement, a hierarchical linear modeling (HLM) procedure with full information maximum likelihood (FIML) estimation was used for the intent-to-treat sample ($n = 33$). The approach uses all the observed data without deletion of any data type, producing estimates under the assumption that data are missing at random (MAR). Linear regression analyses were then calculated using the FIML estimation, with

standardized beta coefficients reported as correlations between the independent factors used. Cohen's *d* was reported to determine the *within-group* effect size. It was calculated for pre- to post-measurement change and for pre- to 5-year follow-up measurement change as follows: by dividing the mean changes by the combined (pooled) standard deviation of the baseline and the second measurement used at the time (either post- or 5-year follow-up measurement) (Feske & Chambless, 1995; Morris & DeShon, 2002). A *within-group* effect size of 0.5 was considered small, 0.8 medium, and 1.1 large (Roth & Fonagy, 1996; Öst, 2006).

TABLE 3 Summary of the variables and statistical analyses used in Studies I, II and III

Studies	Data set	Variables	Statistical methods
Study I	Randomized controlled trial (pre- to post-measurement), follow-up for all participants starting treatment; adults reporting depressive symptoms; <i>n</i> = 57	Depressive symptoms Psychological flexibility Psychological symptoms Visual ratings on mood, self-confidence and life-satisfaction Social functioning	χ^2 - and <i>t</i> -tests (SPSS) Repeated measures analysis of variance (SPSS) Cohen's <i>d</i> Clinical significance (Jacobson and Truax)
Study II	5-year follow-up for all participants starting treatment; adults reporting depressive symptoms; <i>n</i> = 57	Depressive symptoms Psychological flexibility Psychological symptoms Visual ratings on mood, self-confidence and life-satisfaction Social functioning Long-term changes and life situation (semi-structured interview)	χ^2 - and <i>t</i> -tests (SPSS) Hierarchical linear modeling (Mplus) Cohen's <i>d</i> Clinical significance (Jacobson and Truax) Both quantitative (categorical variables) and qualitative content analysis (open answers) of the interview data
Study III	Sub-population (<i>n</i> = 33), all started treatment; adults reporting depressive symptoms	Depressive symptoms Psychological flexibility Mindfulness skills in general and subscales <i>observing, describing, acting with awareness</i> and <i>accepting without judgment</i>	χ^2 - and <i>t</i> -tests (SPSS) Hierarchical linear modeling (Mplus) Correlations (SPSS) Linear regression (Mplus) Cohen's <i>d</i>

3 OVERVIEW OF THE ORIGINAL RESULTS

3.1 Study I

A Four-Session Acceptance and Commitment Therapy Based Intervention for Depressive Symptoms Delivered by Master's Degree Level Psychology Students: A Preliminary Study

Aim. The main aim of the study was to investigate the effectiveness of a brief 4-session acceptance- and values-based intervention for self-reported depressive symptoms delivered by briefly trained master's level psychology students compared to a waiting-list control group (WLC). A further aim was to study the short-term maintenance of outcomes over a 6-month follow-up period, combining all the participants who had started the treatment. As the waiting-list control participants were also offered the same intervention after the waiting period (mean 37.2 days, $SD = 5.9$), they were included in the 6-month follow-up, leaving that measurement point without a control condition.

Comparison of ACT vs. WLC. At baseline, the two groups were similar in socio-demographic background information and pre-measurement scores, except for psychological and related physiological symptoms and the mindfulness skills subscale *observing*, in both of which the levels were higher in the ACT group. In the ACT treatment group, significant changes from pre- to post-measurement were found in all the measures of depression, psychological flexibility and psychological well-being, except for mindfulness skills. In the WLC group, the only significant change during that time was in mood (visual scale for Mood; $p = .037$), indicating somewhat elevated mood during the waiting phase. The sample size for analyzing the mindfulness skills was smaller ($n = 33$, in total for ACT and WLC). Visual inspection of the mindfulness skills mean scores indicated that although no significant between-group changes occurred during the period, the ACT group's mean showed a trend toward improvements (pre = 120.25; post = 126.38), whereas the mean scores of the WLC group decreased (pre = 116.00; post = 114.76). In sum, it seems that the

waiting period had not markedly influenced the overall well-being of the WLC group. The between-group effect sizes (Cohen's d) were used to quantify the differences found between the two groups and are shown in Figure 3.

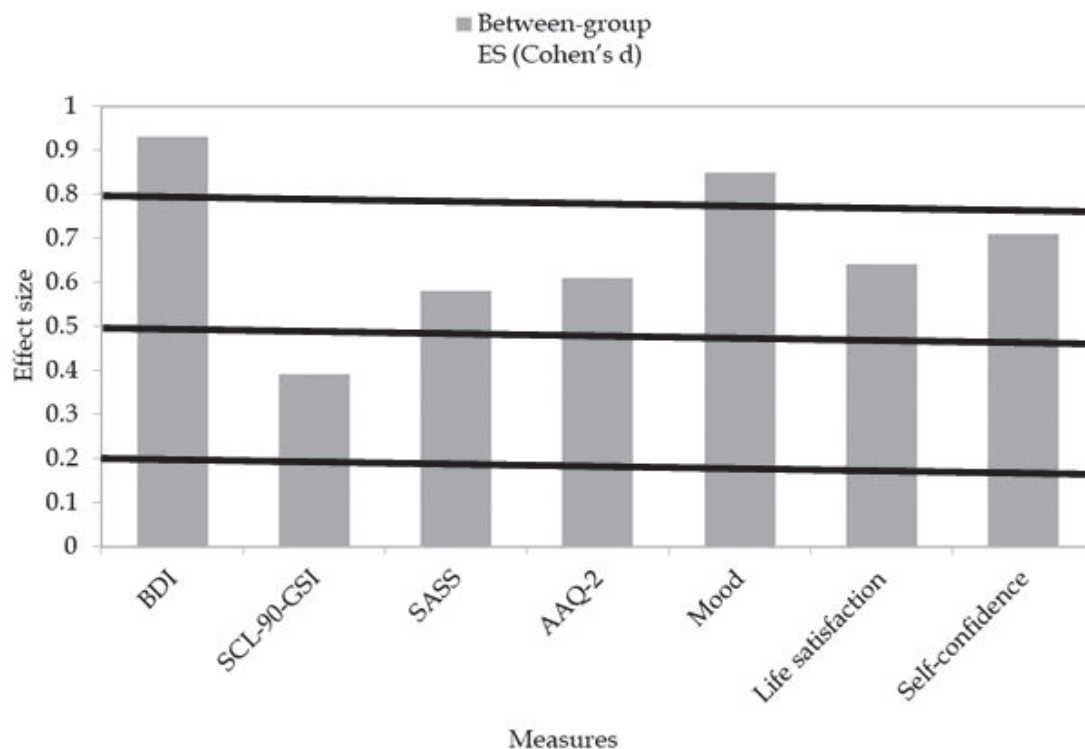


FIGURE 3 Between-group effect sizes (ES); horizontal lines in the figure represent the small (0.2), medium (0.5), and large (0.8) effect sizes

The results indicated that the brief intervention had a positive effect on various aspects of mental well-being and functioning compared to the waiting-list controls; on average, the treatment group's level of self-reported depressive symptoms (BDI) decreased by 47% (11.4 points), whereas it decreased by only 4% (0.8 points) in the WLC group. For psychological flexibility (AAQ-2), the mean increases were 31% (11.5 points) for the ACT group and 2% (1.0 point) for the WLC group. When comparing the mean scores for psychological and related physiological symptoms (SCL-90-GSI) to those found in a Finnish community sample (mean SCL-90-GSI = .60, SD = .44 in Holi et al., 1998), the post-measurement scores of the ACT group (mean = .73, SD = .50) indicate that, on average, the symptom levels were close to those of the general population.

Treatment outcomes at the 6-month follow-up. The maintenance of the achieved outcomes was assessed six months after the treatment period ended. As the WLC group received their intervention later, their 6-month follow-up assessment was also conducted later, after the appropriate time had elapsed. The measurement performed after the waiting phase, prior to starting the intervention, served as the pre-measurement for the follow-up analyses. The results for both groups combined indicated that the treatment outcomes were

maintained during the 6-month follow-up period and that significant post- to 6-month follow-up reductions occurred in depressive symptoms (BDI; $p = .018$) and psychological and related physiological symptoms (SCL-90-GSI; $p = .039$), and increases in social functioning (SASS; $p = .013$). Significant improvements in general mindfulness were also detected ($F(1.70; 54.23) = 4.7, p = .017$), with significant changes both from the pre- to post-measurement and from the pre- to 6-month follow-up measurement. Within-group effect sizes quantifying the overall effectiveness of the treatment across the whole study period until the 6-month follow-up measurement indicated a large effect for depressive symptoms (BDI; $d = 1.09$), a medium effect for psychological flexibility (AAQ-2; $d = 0.84$), and small to large effect for other variables ($d = 0.58 - 1.10$). Comparison of the psychological and related physiological symptoms measured with the SCL-90-GSI with the community sample mean scores (mean = .60, $SD = .44$; Holi et al., 1998) revealed that the mean GSI-scores at both the post- and 6-month follow-up assessments (mean scores of .79 and .69, respectively) came close to those found in the general population. Treatment effectiveness at the post- and 6-month follow-up measurements for self-reported depressive symptoms based on the BDI (Beck et al., 1961) was also examined using the clinical significance protocol (Jacobson & Truax, 1991) (see Figure 4). Twelve (21%) participants had a pre-measurement BDI below the cut-off point (13.41), and thus were not classified accordingly.

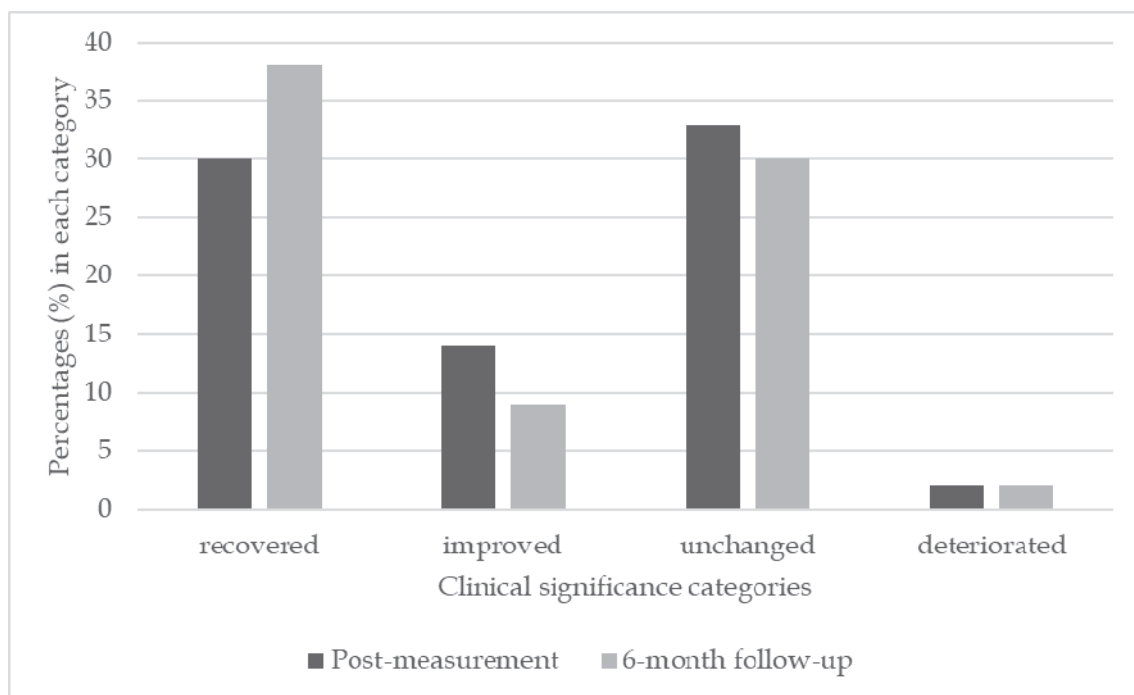


FIGURE 4 Percentages of participants at the post- and 6-month follow-up measurements categorized by clinical significance using depressive symptom (BDI) scores

The two original groups (ACT and WLC) which were combined for the 6-month follow-up analyses, were also investigated separately. The findings indicated significant differences between the groups in change from pre- to 6-month follow-up for all measures ($p < .001 - .049$), better outcomes favoring the original ACT group.

Conclusions/key findings. The results indicated that the brief 4-session ACT-based intervention for self-reported depressive symptoms, compared to waiting-list controls, was effective in reducing depressive and other psychological symptoms and increasing psychological flexibility and overall mental well-being. Since the intervention was also delivered to the waiting-list controls, the results on the maintenance of outcomes included all the treated participants. The positive outcomes persisted throughout the 6-month follow-up period and continuous improvement was detected in social functioning, depressive and other psychological and related physiological symptoms. The findings on clinical significance (Jacobson & Truax, 1991) showed that after four sessions, at post-measurement, 30% of the participants had recovered and that at the 6-month follow-up, 38% were in the recovered category. At the post-measurement, 14% had improved, and at the follow-up, 9% were in the improved category. With respect to the change trajectories of the two groups receiving treatment, the participants who received the treatment first (the original ACT group) showed slightly superior results on all measures of depression, psychological flexibility and well-being compared to those on the waiting-list both after the intervention and at the 6-month follow-up measurement.

These findings add to the previous effectiveness research on brief interventions for depressive symptoms (Cape et al., 2010; Nieuwsma et al., 2012). Specifically, our results indicate that an intervention even less extensive than generally seen in the brief intervention field can be effective up to at least six months after the intervention. The present findings also show that an ACT intervention can be effectively delivered by novice therapists without formal training in psychotherapy, providing adequate supervision is provided. This accords with the findings of other on the use of novice, inexperienced therapists or students as treatment providers (Ekers et al., 2011; Forand et al., 2011; Lappalainen et al., 2007; Nieuwsma et al., 2012; Öst et al., 2012). The results support the possibility of briefly training a group of individuals with a basic background knowledge of psychology (here master's-level students) to conduct an effective intervention. Finally, in line with the ACT model, the intervention was able to enhance and increase psychological flexibility, and thus supports the use of ACT-based therapy for affective issues (Hayes et al., 2011a).

3.2 Study II

What Happens after Five Years?: The Long-Term Effects of a Four-Session Acceptance and Commitment Therapy Delivered by Student Therapists for Depressive Symptoms

Aim. This study investigated the long-term (five years) effects of a brief, 4-session acceptance- and value-based intervention for low mood and self-reported depressive symptoms when the treatment was delivered by novice therapists. As this study was a continuation of Study I, the participants were the same 57 self-referred individuals who had originally randomized been into the active treatment (ACT) and waiting-list control (WLC) groups and started the intervention or waiting-phase. As both groups eventually received the same intervention, the groups were combined for the 6-month ($n = 48$) and the 5-year ($n = 35$) follow-up measurements to examine the stability of and possible changes in treatment outcomes. Participant experiences and their relationship to treatment outcomes across the whole study period (from the pre- to 5-year follow-up measurement) were also explored using information from the 5-year follow-up interview.

Outcomes across the whole study period. The results showed significant changes from the pre- to 5-year follow-up measurements in all measures, with large within-group effect sizes for depressive symptoms (BDI; $d = 1.45$) and psychological flexibility (AAQ-2; $d = 1.21$), and for the secondary outcome measures used for life satisfaction and mood ($d = 1.34 - 1.52$). Medium-sized effects were found in psychological and related physiological symptoms ($d = 0.99$) and self-confidence ($d = 0.90$), and small effects were detected in social functioning ($d = 0.77$) and mindfulness skills ($d = 0.78$). Comparison of the mean for psychological and related physiological symptoms with the community sample means (Holi et al., 1998) revealed close similarities (ACT = .62; community sample = .60) at the 5-year follow-up. Clinical significance (Jacobson & Truax, 1991) at the 5-year follow-up assessment was calculated using a sample of 35 participants who had participated in both the pre- and the 5-year follow-up measurements. Six participants (17%) were not categorized owing to an initial, pre-measurement BDI score below the cut-off point (13.94). Of the 29 participants categorized at the 5-year follow-up, 55% (16) were recovered, 17% (5) improved, 28% (8) unchanged, and 0% (0) deteriorated.

During the 5-year follow-up period (from the post- to 5-year follow-up measurement), significant downward trends in depressive or other psychological and related physiological symptoms and increases in psychological flexibility and mental well-being were detected. The changes in depressive symptoms across the follow-up period were examined more closely, as significant post-treatment changes in these were observed. When the changes in depressive symptoms during follow-up period were scrutinized, significant reductions were found only from the post- to 6-month follow-up, but not from

the 6-month to 5-year follow-up. Depression severity was also calculated based on the BDI categories at all measurement points (see Table 4). At the pre-measurement, nearly half (44%) of the participants reported moderate levels of depressive symptoms. After the intervention, at post-measurement, nearly 40% of the participants reported BDI scores below 10 (minimal to no depressive symptoms), depending on the mode of calculation¹. Somewhat higher percentages of minimal depressive symptoms were found at the 6-month and 5-year follow-up measurements when only those present at these assessments were examined. Furthermore, of the 25% (14) participants who reported depressive symptoms in the severe depression range at the pre-measurement only four remained in the severe depression category at the post-measurement. For one participant, the depression scores increased from moderate to severe depression during the intervention period.

TABLE 4 Proportions of participants (%) in categories by depression severity (BDI) at four measurement points. First % is the proportion of participants at that specific measurement divided by the original number of participants ($n = 57$), and the second % is based solely on the numbers present at the measurement.

Depression (BDI)	Pre ($n = 57$)	Post ($n = 51$)	6-month follow-up ($n = 48$)	5-year follow-up ($n = 35$)
minimal/no depression (0-9)	6 (10%)	20 (35-39%)	25 (44-52%)	20 (35-57%)
mild depression (10-18)	12 (21%)	17 (30-33%)	12 (21-25%)	8 (14-23%)
moderate depression (19-29)	25 (44%)	9 (16-18%)	10 (18-21%)	7 (12-20%)
severe depression (30-63)	14 (25%)	5 (9-10%)	1 (2%)	0 (0%)

Also, as a significant proportion of the participants ($n = 22$; 39%) were lost to follow-up at the 5-year assessment, those attending ($n = 35$) were compared to those lost ($n = 22$) in baseline well-being, treatment changes and background variables. No significant differences were found, although those participating in the 5-year follow-up were slightly older than those absent. Although reasons for dropping out are not available, it can be hypothesized that dropouts during the follow-up period either had higher levels of depressive symptoms or did not experience significant changes during the treatment. However, the findings on individual trajectories of depressive symptoms based on the BDI (Appendix 2) indicated that some individuals who showed considerable improvements during the intervention (e.g. BDI scores decreasing from moderate to minimal)

¹ The lower percentages at the post-, 6-month and 5-year follow-up measurements are more conservative as they have been calculated for the whole pre-measurement sample ($n = 57$), whereas the higher percentages only included those participating at the assessment in question (post, $n = 51$; 6-month, $n = 48$; 5-year, $n = 35$)

were also absent from the 5-year follow-up measurement. Conversely, some individuals with high levels of depressive symptomatology or those who experienced no treatment-related changes had continued to participate.

All things considered, the findings indicated that significant return to baseline levels had not occurred in any of the measures for those who participated at the 5-year follow-up: lower levels of depressive symptoms were maintained, and psychological flexibility remained higher than before the intervention. Overall, almost 60% of the participants interviewed at the 5-year follow-up reported improvements in their well-being during the 5-year period, and nearly two-thirds of them linked those positive changes to the ACT intervention. Further responses indicated that an accepting and defused attitude toward emotions and thoughts had been acquired or deepened. Some dissatisfaction was expressed, mainly with respect to the brevity of the intervention.

As in Study I, the sample was divided into two groups based on the original treatment order, and contrary to the findings in Study I, the between-group differences detected at the post- and 6-month follow-up measurements favoring those receiving treatment sooner, had vanished during the 5-year follow-up period. Similar long-term outcomes in well-being and psychological symptoms were observed at the final follow-up measurement. Figures 5 and 6 below illustrate the changes of depressive symptoms (Figure 5) and psychological flexibility (Figure 6) in both groups at all the measurement points.

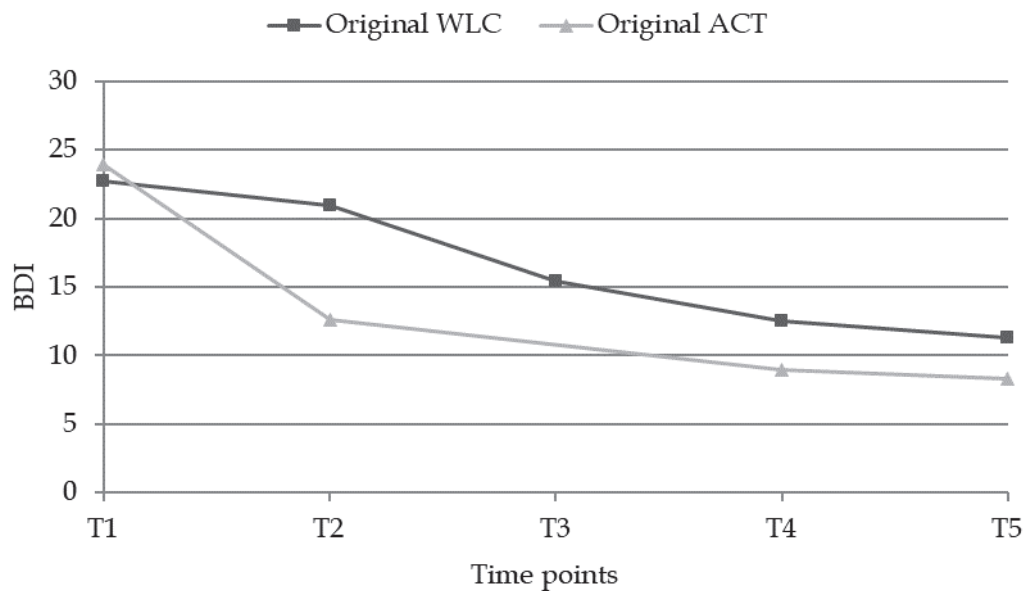


FIGURE 5 Mean depressive symptom scores for both groups at all measurements points from the pre- to 5-year follow-up measurement

Line chart indicating changes in depressive symptoms (BDI) during the five measurement points for both the original ACT group and the original WLC group; T1 = ACT group pre-treatment measurement and WLC pre-waiting period measurement; T2 = ACT group post-treatment measurement and WLC group post-waiting period measurement (serving as the pre-

measurement for their treatment period); T3 = WLC group post-treatment measurement; T4 = ACT and WLC combined 6-month follow-up measurement; T5 = ACT and WLC combined 5-year follow-up measurement

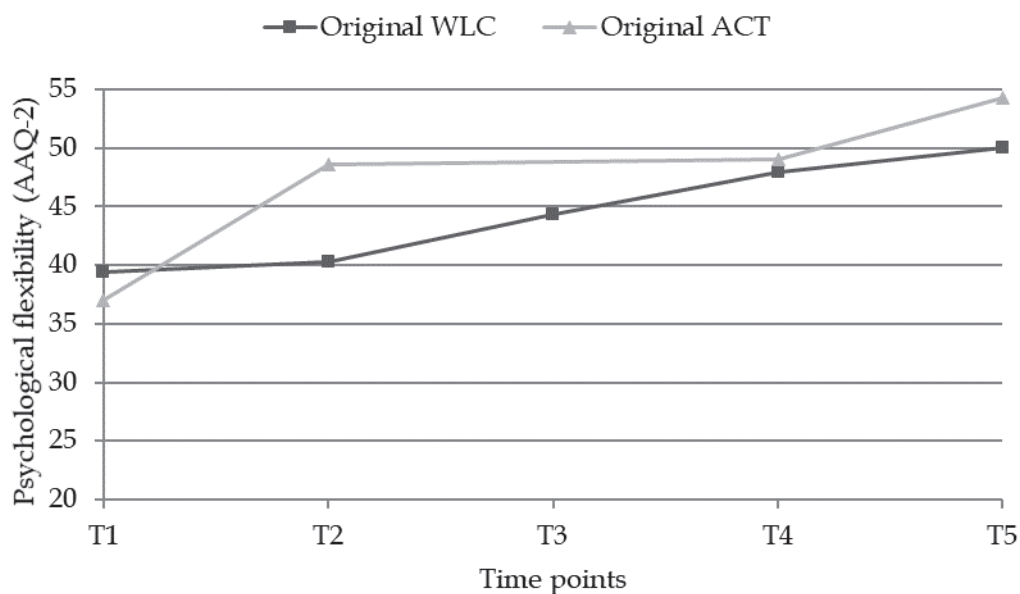


FIGURE 6 Mean psychological flexibility scores for both groups at all measurements points from the pre- to 5-year follow-up measurement

Line chart indicating changes in psychological flexibility (AAQ-2) during the five measurement points for both the original ACT group and the original WLC group; T1 = ACT group pre-treatment measurement and WLC pre-waiting period measurement; T2 = ACT group post-treatment measurement and WLC group post-waiting period measurement (serving as the pre-measurement for their treatment period); T3 = WLC group post-treatment measurement; T4 = ACT and WLC combined 6-month follow-up measurement; T5 = ACT and WLC combined 5-year follow-up measurement

The use of additional psychological treatments or help during the 5-year follow-up period was examined, and 34% (12 of 35) of the participants reported having received some type of psychological help (mainly 10 sessions or less, except for two longer treatment periods) since the ACT intervention. No statistically significant differences were observed in change patterns either during the treatment or follow-up phases in those who had received additional treatment compared to those who had not. However, those without any additional treatment experienced less depressive symptoms and more life satisfaction at the 5-year follow-up, and were more psychologically flexible at both the pre- and 5-year follow-up measurements than those who had received additional therapy.

Conclusions/key findings. Self-reported depressive symptoms ranging from sub-clinical to severe were alleviated with the brief acceptance- and value-based intervention and no deterioration was observed throughout the study period among the individuals ($n = 35$) participating in the 5-year follow-up measurement. Large within-group effects for depressive symptoms and

psychological flexibility were observed throughout the study period. A significant proportion of the participants (39%; $n = 22$) were lost to follow-up at the 5-year measurement. These individuals might automatically be regarded as failed, i.e., as having higher depressive symptomatology or small treatment changes. However, no significant differences in pre-measurement or treatment change outcomes were found between those lost to and those participating in the 5-year follow-up. The individual depression trajectories (Appendix 2) also indicated that individuals with various levels of depressive symptoms and treatment outcomes were among those either lost to or present at the 5-year follow-up measurement.

From the participants who originally started the treatment ($n = 57$), 35% reported minimal to no depressive symptoms at the 5-year follow-up assessment compared to 10% at the pre-measurement (see Table 4). At the pre-measurement, 44% reported moderate depressive symptoms and 25% reported severe symptoms whereas the corresponding percentages at the 5-year follow-up assessment were 12% and 0%. Of those participating in the 5-year follow-up assessment, almost 60% reported BDI scores below the threshold of mild depression. Of the smaller sample ($n = 35$) included in the clinical significance analyses at the 5-year follow-up, 55% (16 out of 29 individuals categorized) had recovered and 17% (5 out of 29) had improved. Almost one-third of the participants (8 out of 29) were unchanged and none had deteriorated.

In addition to depressive symptoms and psychological flexibility, the results showed significant follow-up period improvements in psychological and related physiological symptoms, mood, life satisfaction and self-confidence among those participating in the 5-year follow-up measurement. Significant reductions were shown only up to six months after the intervention, with no significant changes between the 6-month and the 5-year follow-up measurements. This could indicate that the brief intervention had a visible, lingering effect manifested as decreases in depressive symptoms after the intervention had ended. This is also supported by the ACT model and its skill-building aspect (Hayes et al., 2011a).

While some fluctuations may have occurred during the 4.5 years between the two follow-up measurements, the overall change in depressive symptoms remained insignificant from the post- to 5-year follow-up measurement. Whether the findings point to either spontaneous recovery or a lingering effect of the intervention cannot be concluded based on the data available. Additionally, preliminary data show that some individuals (25% of the participants at baseline) with high self-reported depressive symptoms (severe depression based on the BDI scores) also benefited from the extremely brief ACT intervention, as only a few of them remained in the same depression category at the post-measurement. All in all, the long-term results support earlier research on brief interventions for depressive symptoms (Cape et al., 2010; Nieuwsma et al., 2012). Moreover, the evidence from this study adds to the limited yet growing body of research on ACT and brief interventions (Dehghani Najvani et al., 2015; Mohabbat-Bahar et al., 2015; Lappalainen et al.,

2014; Lappalainen et al., 2015; Petersen & Zettle, 2009), especially those regarding depressive symptoms (Markanday et al., 2012).

3.3 Study III

Changes in psychological flexibility and mindfulness facets associated with changes in depressive symptoms in a brief acceptance- and value-based intervention: An exploratory study

Aim. The study examined whether some subcomponents of mindfulness skills and psychological flexibility, and treatment-related changes in them are of greater significance than other with respect to depressive symptoms. A subpopulation ($n = 33$) from the larger data set used in Studies I and II was used to examine the relationships between the processes measures and depressive symptoms. Of those 33, 22% (8 participants) were lost to follow-up. Of special interest were changes in the subcomponents of mindfulness during the intervention and whether such changes were related to long-term changes in depressive symptoms.

Associations between mindfulness subskills and depressive symptoms. At baseline, higher levels of psychological flexibility and the mindfulness subcomponents *acting with awareness* and *accepting without judgment* were significantly associated with lower levels of depressive symptoms. Intriguingly, higher levels of *observing* and lower levels of *accepting without judgment* showed a significant relationship with higher levels of depressive symptoms. When examining the pre-, post- and 5-year follow-up mean scores in *observing* and depressive symptoms, it was noticed that despite the baseline association of depressive symptoms with *observing* and *accepting without judgment*, no significant changes in *observing* were found across the study period (pre = 37.21; 5-year = 38.84), although a significant reduction occurred in depressive symptoms (pre = 22.61; 5-year = 10.44). Moreover, the association between the levels of *observing* and depressive symptoms at the 5-year follow-up had changed, indicating that higher levels of *observing* were associated with lower levels of depressive symptoms ($r = -.514, p = .009$). While the levels of *observing* remained similar to the baseline values, depression had improved. This result suggests that other mechanisms may have contributed to these improvements.

With respect to treatment-related changes in the mindfulness subskills and psychological flexibility, and in depressive symptoms either during treatment (pre to post) or across the whole study period (pre to 5-year follow-up), the results showed a significant relationship between the pre-post treatment-related changes in depressive symptoms and the pre-post treatment-related changes in general mindfulness ($-.51, p = .002$), psychological flexibility ($-.51, p = .003$) and *accepting without judgment* ($-.39, p = .027$). However, only the pre-post treatment changes in *accepting without judgment* showed a significant ($-.52, p = .007$) association with the long-term changes in depressive symptoms.

The changes in the mindfulness subcomponents were further analyzed in post hoc analyses: the subcomponents were paired with each other to explore their associations with changes in depressive symptoms either from the pre- to post-measurement or from the pre- to 5-year follow-up measurement. All the paired subscales showed significant relationships with treatment-related changes in depressive symptoms. Moreover, when examining changes in depression across the whole study period, only the paired combinations that included the *accepting without judgment* subscale showed significant associations. The scatter plots of the treatment-related changes in *accepting without judgment* and short- and long-term changes in depressive symptoms are presented in Figures 7 and 8.

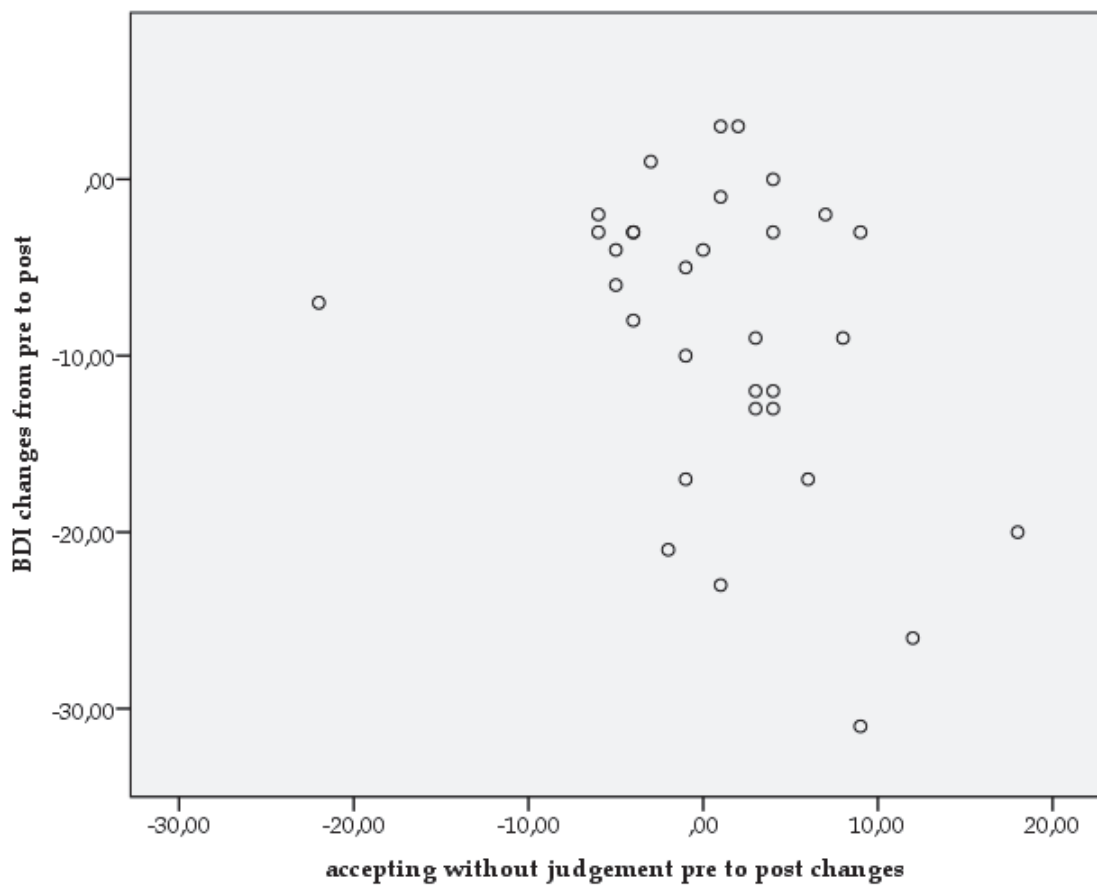


FIGURE 7 Treatment changes in accepting without judgment and short-term (pre to post) changes in depressive symptoms

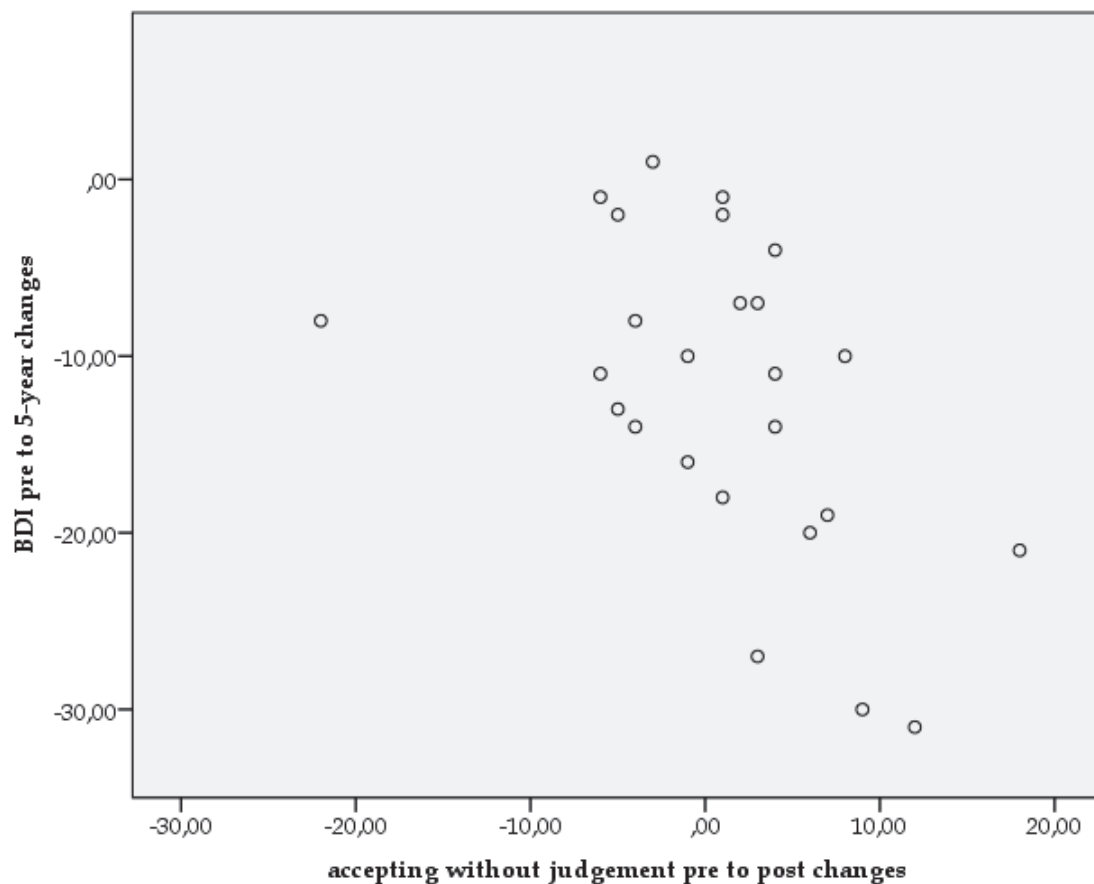


FIGURE 8 Treatment changes in accepting without judgment and long-term (pre to 5-year) changes in depressive symptoms

Conclusions/key findings. The pre-measurement findings for *observing*, *accepting without judgment* and *acting with awareness* in relation to the depressive symptom levels indicated that while individuals with higher baseline depression scores were more likely to observe their inner and outer experiences, they seemed to be more prone to lacking an accepting attitude toward the inner and outer experiences as well as the mindful and present-centered behavior patterns. These results support earlier findings from cross-sectional and longitudinal research (Alleva et al., 2014; Barnes & Lynn, 2010; Barnhofer et al., 2011; Bohlmeijer et al., 2011b; Christopher et al., 2012). The findings for *observing* suggest that other factors may influence whether mere observing and present-centered being become a liability or a strength, as proposed by Long and Hayes (2014). The importance of the *accepting without judgment* subscale and treatment-related changes in it was shown by the results, as it was significantly and positively associated with both the treatment-related and five-year changes in depressive symptoms. Even when the mindfulness subscales were paired with each other, only combinations containing *accepting without judgment* were related to long-term changes in depressive symptoms. These findings indicate that acceptance and a non-judgmental attitude toward experiences are

important factors in both the short- and long-term benefits of brief ACT interventions for depressive symptoms.

Mindfulness and present-moment practice have gained increasing attention in recent years and research on the subcomponents of mindfulness indicates that *observing* has been associated with psychopathology and depressive symptoms (Baer et al., 2004; Baer et al., 2006; Baer et al., 2008; Barnes & Lynn, 2010; Coffey et al., 2010). Similar findings emerged from the present study, where it was noticed that when *observing* was combined with other skills, especially with *accepting without judgment*, significant long-term associations with depressive symptoms were found. For brief, time-limited interventions, introducing and strengthening an accepting attitude might produce more long-lasting results. These results also add to the research on the model and processes of change in ACT, as psychological flexibility significantly changed during the intervention and was associated with treatment outcomes in the context of depressive symptoms (Hayes et al., 2011a; Hayes et al., 2011b; Ruiz, 2012). Additionally, changes in some of the underlying factors and elements that compose psychological flexibility were significantly associated with changes in depression, a result which tentatively suggests their unique importance for the brief acceptance- and value-based intervention model. The findings on smaller elements, principles and processes of change related to the present outcomes can also be considered important with respect to debate on the benefits of empirically supported change processes and principles instead of overall treatment packages (Rosen & Davison, 2003).

4 DISCUSSION

The aims of this dissertation were threefold; to examine a brief 4-sessions ACT intervention for self-reported low mood and depressive symptoms compared to waiting-list controls; the short- and long-term effectiveness of the intervention; and the associations of mindfulness subskills and psychological flexibility with both baseline and short- and long-term changes in depressive symptoms. All three studies focused on the same acceptance- and value-based intervention provided by master's level psychology students without either prior knowledge of or experience in psychotherapeutic methods. The overall goal was to gain clinically relevant and useful information on an acceptance-based brief intervention delivered by briefly trained novice therapists for mood issues that are often encountered at the lower levels of health care systems, and to develop a model for which training can be easily given and which can easily be implemented in those settings.

The results showed that the 4-session ACT intervention was successful in decreasing depressive, psychological and related physiological symptoms, and increasing psychological flexibility, life satisfaction, social functioning and self-confidence in individuals suffering from low mood and depressive symptoms. Furthermore, in the case of the individuals participating in the long-term follow-up measurement, treatment outcomes were maintained over a period of five years with no significant deterioration to pre-treatment symptoms. While these findings show promise, they remain preliminary, and hence further research is needed.

4.1 Treatment effectiveness

The main finding of Study I indicated that the brief 4-session ACT intervention significantly reduced depressive symptoms and improved the overall well-being of the participant group compared to the WLC group, where changes were non-existent except for the secondary outcome measure for mood. The 5-

week waiting period had only a slight impact on well-being of the WLC group as their mood significantly improved, although no changes were observed in depressive symptoms or the other measures. This indicates that waiting for the treatment did not influence their depression and that spontaneous recovery did not occur during the wait period. The groups were similar at baseline in all measures, except for psychological and related physiological symptoms and the mindfulness skills subscale of *observing*, where higher levels were found in the ACT treatment group. For both groups, i.e., the original intervention group and the WLC group (treated later), the brief intervention delivered by novice therapists produced significant reductions in depressive symptoms, psychological and related physiological symptoms and improvements in psychological flexibility, social functioning, mood, life satisfaction and self-confidence that were maintained up to six months. Improvements in depressive and other psychological and related physiological symptoms, and in social functioning continued during the 6-month follow-up period. Comparison of the mean post-assessment psychological and related physiological symptoms (SCL-90-GSI) scores in the ACT group with those found for a general Finnish community sample (Holi et al., 1998), revealed that the Study I scores closely resembled the general community mean scores. In addition, the mean scores at the post- and 5-year follow-up measurements in Study II were also close to the average score found in the community sample (Holi et al., 1998).

In Study I, significant reductions in depressive, psychological and related physiological symptoms and increases in psychological flexibility, mood, life satisfaction, social functioning and self-confidence were detected up to six months after the brief intervention. Study II showed that those outcomes were maintained across a period of five years after the initial treatment ended among those who participated in the 5-year follow-up measurement. Analyses of clinically significant change in Study I indicated that at the post-assessment 44% and at the 6-month follow-up 47% of participants were categorized as recovered or improved. In Study II, at the 5-year follow-up, approximately 70% of the participants (21 out of 29) categorized based on the analyses had either recovered or improved. However, the samples used in the clinical significance analyses were small. The percentages nevertheless resemble those reported by other studies on ACT interventions (Arch et al., 2012a; Glover et al., 2016; Vowles et al., 2011), although they are somewhat smaller than those found for longer interventions (Forman et al., 2007; Forman et al., 2012; Lappalainen et al., 2014).

Nearly 70% of the present participants reported either moderate or severe depressive symptoms based on BDI symptom scores and levels. As almost 40% of the participants in the original sample did not attend the 5-year follow-up, it may be assumed that the percentages of individuals showing clinically significant change and the distribution of individuals in the depression severity categories reported in this dissertation would be different had the whole sample been available or those lost to follow-up automatically classified as “unchanged” or “deteriorated” or considered failed cases. However, the

individual trajectories of depressive symptoms (Appendix 2) indicated that those lost to follow-up included individuals who showed large decreases in depressive symptoms during the treatment while those participating in the long follow-up included individuals with minor treatment-related changes and high post-measurement levels of depressive symptomatology. This implies that the lost individuals were not automatically unsuccessful cases with severe depression. Nevertheless, the number of participants in the 5-year follow-up accounted for only 60% of the original sample which limits the conclusions that can be drawn from the findings. Given these limitations, both more and less conservative estimates were used to quantify the depression categories during the post- and follow-up measurements (see Table 4). If the lost participants are regarded conservatively as failed attempts at treatment, the percentages of participants experiencing minimal to no depressive symptoms at the 6-month and 5-year follow-up measurements resemble those found at the post-measurement. At the 5-year follow-up measurement, 35% reported minimal to no depressive symptoms, 14% mild symptoms and 12% moderate symptoms. The less conservative percentages indicate that over half of the participants attending either the 6-month (52%) or 5-year (57%) follow-up measurements experienced minimal to no depressive symptoms. Moreover, almost 40% of the participants attending the post-assessment reported no to minimal depressive symptoms (BDI lower than 10 points) at that time, compared to 10% at the pre-measurement. These findings echo the percentages (48-58%) of participants showing early, rapid improvement at between four to seven sessions despite the final length of the intervention, found in the review by Howard et al. (1986). The percentages of those continuing to report depressive symptoms in the moderate (20%) or severe (0%) categories (based on the BDI) at the 5-year follow-up were similar to those found in Hollon et al. (2005). Hollon et al. (2005) showed that 31% of those withdrawn from treatment after significant improvements reported relapses during the 12-month follow-up. It should be remembered, however that in the present study depressive episodes were not assessed during the follow-up period, only the symptomatic state at each assessment point.

The effect sizes for depressive symptoms reported in Studies I (between-group effect pre to post ACT vs. WLC, $d = -0.93$) and II (within-group effect pre to 5-year follow-up $d = 1.45$) were large and at least comparable to those found in earlier research on either brief interventions in general or ACT-based interventions for depressive symptoms (A-Tjak et al., 2015; Cape et al., 2010; Hacker et al., 2016; Powers et al., 2009). A meta-analysis of brief psychological interventions reported small between-group effects (CBT over usual primary care, $d = -0.33$; problem-solving therapy over usual care, $d = -0.26$; Cape et al., 2010). Lappalainen et al. (2007) compared ACT and CBT, and found a between-group effect size of $d = -0.53$ at post and $d = -0.55$ at follow-up for depressive symptoms favoring the ACT intervention. In this study, the within-group effects for ACT for depressive symptoms were moderate (pre to post $d = 0.83$; pre to follow-up $d = 0.94$). In another study by Lappalainen et al. (2014), the

effect size for depressive symptoms in a 6-session ACT intervention including an 18-month follow-up was large ($g = 1.37$) for the whole study period.

One-third of the individuals ($n = 12$) participating in the 5-year follow-up reported having additional psychological treatment, and although their change patterns resembled those not receiving additional help, their well-being prior to the treatment somewhat differed. Those with additional treatment during the follow-up period reported significantly more problems with social functioning and lower levels of psychological flexibility at the pre-measurement compared to those without any additional treatment. At the 5-year follow-up, those with additional treatment, showed more depressive symptoms, lower mood and life satisfaction and lower levels of psychological flexibility. It is possible that those who had additional treatment did not benefit as much as the others from the brief intervention. There was a non-significant, yet marked difference in the depressive symptoms of those with and without additional help, favoring the latter, at both the pre- (mean difference = 5.1 points; with help = 26.6 vs. without help = 21.5) and post-measurement (mean difference = 5.4 points; with help = 16.9 vs. without help = 11.5). However, at the 5-year follow-up, the difference in depressive symptoms was significant, with lower depression scores among those without additional help (mean difference = 6.2 points; with help = 7.7 vs. without help = 13.9; $p = .022$).

With respect to reported depression diagnoses of those receiving additional treatment, almost 60% (7 out of 12) reported having a depression diagnosis at the pre-measurement and 50% (6 out of 12) at the 5-year follow-up measurement; the corresponding percentages for those without any additional treatment were 30% (7 out of 23) at the pre-measurement and 4% (1 out of 23) at the 5-year follow-up measurement. The between-group differences at the 5-year follow-up measurement were significant ($\chi^2(3) = 11.43$, $p = .010$). Furthermore, as psychological flexibility has been associated with well-being in various ways (Ciarrochi et al., 2010; Hayes et al., 2004b; Hayes et al., 2011a; Kashdan & Rottenberg, 2010), a possible interpretation of the lower pre- and follow-up psychological flexibility levels of those who had received additional treatment, could be need for more time and support to achieve the level of psychological flexibility required to increase and strengthen overall long-term well-being.

These findings suggest that those with a higher baseline level of depressive symptoms and lower levels of psychological flexibility might need more extensive treatment to achieve outcomes similar to those with lower baseline levels of depressive symptoms and higher flexibility. However, several participants with severe pre-treatment levels of depressive symptoms (based on BDI categories) benefited from the brief treatment. Other factors (such as major, unpredictable life events) may also lead to seeking additional help. However, the qualitative interview data are limited, and the small sample size did not allow sub-groups to be formed to achieve statistically meaningful interpretations. Nevertheless, seeking additional help should not be seen merely as an issue or a problem, as a brief intervention, like the one studied here, could have acted as a catalyst for seeking more psychological help if the

participant noticed benefits and changes after receiving those four sessions or, alternatively, the intervention could have lowered the threshold to actively seek help.

Both Studies I and II indicated that effective treatment can be provided by inexperienced, yet motivated novices with adequate supervision, which is in line with earlier research on the administration of interventions by beginners (Ekers et al., 2011; Hiltunen, Kocys, & Perrin-Wallqvist, 2013; Lappalainen et al., 2007; Öst et al., 2012). In fact, the outcomes can be as good as those achieved with experienced therapists (Goldstein, 2015). To summarize, an extremely brief 4-session acceptance- and value-based intervention fared well when matched against other brief psychological interventions for depressive symptoms, and the extended follow-up produced additional evidence of its benefits and the maintenance of its outcomes. These results support the growing body of evidence on the value of ACT interventions, and contribute to the evidence both on long-term ACT outcomes and on the effectiveness of extremely brief ACT interventions, especially for depressive symptoms, an area that remains underresearched.

4.2 Changes in mindfulness skills and psychological flexibility associated with treatment outcomes

An interesting question concerns which treatment components are the most effective when applying brief, time-limited interventions. Knowledge on such integral components responsible for positive outcomes could help further develop both brief and longer psychological interventions. Research on ACT treatments of various lengths indicated that increases in acceptance and willingness to experience aversive private events, value-based actions, and reductions in cognitive defusion have all been associated with improvements (Twohig, Hayes, & Masuda, 2006; Vowles et al., 2011; Wersebe et al., 2017; Zettle et al., 2011). The findings from Study III support the inclusion of accepting and non-evaluative elements associated with psychological flexibility in brief interventions to promote long-lasting outcomes. Study I showed significant improvements in psychological flexibility during the treatment phase compared to waiting-list, which implies that the ACT-based intervention was able to enhance the skills in just four weeks. Study II demonstrated that significant increases had taken place in psychological flexibility between the post- and 5-year follow-up measurement. For mindfulness skills, significant improvements were observed from the pre- to post-measurement and across the whole study period up to five years, while a positive trend with a small within-group effect size ($d = 0.78$) was found during the follow-up period (the post- to 5-year follow-up assessment was almost significant, $p = .050$). In Study III, although significant mean changes during the treatment period were observed only in general mindfulness, not in its subscales, large variation was

detected in the mean scores suggesting that some participants had experienced appreciable changes whereas others had not. Across the study period (from the pre-measurement to 5-year follow-up), significant increases were found in all the mindfulness subscales, except for *observing*. The non-significance of these treatment-related changes might be due to the small sample size ($n = 33$), or it might be that the 4-week period was too brief to generate significant increases in the mindfulness subcomponents during the treatment phase. Overall, significant improvements during treatment phase were detected in general mindfulness and psychological flexibility. However, the drop-out rate at the 5-year follow-up measurement of the subpopulation was smaller as with the complete sample used in Studies I and II (22% vs. 39%, respectively), yet it generates limitations to conclusions and generalizability. When assessing the baseline differences between those present and those absent from the 5-year follow-up, significant differences were noted merely with regards to Life satisfaction ($p = .021$; lower satisfaction among those who had dropped out) and baseline diagnosis (the absent group reported more proportionally more depression diagnosis than the those present at the 5-year follow-up).

As one of the objectives of this dissertation was to investigate which elements would be related to better treatment outcomes, it was expected, based on earlier cross-sectional research, that non-evaluative acceptance of thoughts and emotions, and mindful actions would be related to depressive symptoms, and that *observing* per se would be either unrelated to or directly associated with higher depressive symptomatology (Alleva et al., 2014; Barnes & Lynn, 2010; Christopher et al., 2012; Villatte et al., 2016). *Observing* has also been associated with higher psychological distress through other concepts such as rumination (e.g., Alleva et al., 2014), or it has been unrelated to depressive symptoms, yet related to higher levels of anxiety (Bohlmeijer et al., 2011b).

The results gained from Study III support the previous cross-sectional findings, as higher levels of *observing* were related to higher depressive symptoms at baseline. One possible reason for this might be related to on the instrument used, as Alleva et al. (2014) pointed out that many of the items in the KIMS *observing* subscale are self-focused which might pose an issue in the context of depressive symptoms. They also found a significant positive correlation between *observing* and rumination. However, other findings of Study III on the *observing* subcomponent showed that its level remained unchanged throughout the treatment and follow-up periods and that the relationship between *observing* and depressive symptoms had changed at the 5-year follow-up such that higher levels of *observing* were now associated with lower levels of depressive symptoms. At the post-measurement, depressive symptoms were not associated with *observing*. These findings from Study III suggest that the relationship between observing and depressive symptoms switched around during the intervention period.

The ability to observe is considered a pivotal aspect of mindful being; without being observant and present, an open attitude toward experiences is not possible (Lilja et al., 2013). Therefore, it should not be ignored but perhaps

substantiated with other skills such as *accepting without judgment*. In a cross-sectional study, the relationship between depressive symptoms and *observing* was found to be dependent on the ability to make observations without reacting to them (Desrosiers, Vine, Curtiss, & Klemanski, 2014). The authors suggested, based on earlier research and their own results, that a possible explanation for the associations described above is the distinction between *what* is observed and *how* it is observed. They also suggested the presence of a moderating factor due to inconsistencies in the relationship between *observing* and depressive symptoms (Desrosiers et al., 2014). Long and Hayes (2014) found that life quality was not associated solely with present-moment awareness, or acceptance, but the combination of both, and that acceptance influences whether present-moment awareness becomes a strength or a weakness. In the field of mindfulness research, the Monitor and Acceptance Theory (MAT; Lindsay & Creswell, 2017) attempts to incorporate both the attention side of monitoring momentary experience and the attitude side of an accepting stance toward such present-moment experiences. MAT seeks to bridge the gap between the effects of mindfulness training and the underlying processes responsible for those effects. In the ACT model, being present includes a non-judgmental way of relating to the experiences observed and not reacting to them automatically, rather than the mere noticing of inner and outer experiences (Hayes et al., 2011a). However, in the hands of a therapist, some pivotal aspects (such as the *how* of observing) might be overlooked, especially among those with less experience of the ACT model of psychological flexibility. When considering some of the present-moment exercises used in ACT (for example “Leaves on a Stream”; Luoma, Hayes, & Walser, 2007), the focus is on the particular way various internal and external events can be encountered and defused from (e.g., noticing when the mind wanders or how it reacts to various experiences, seeing thoughts, emotions and sensations as leaves floating down the stream and gently returning the focus to the here-and-now). However, other exercises (such as breathing-based exercises) focus more on observing one’s breathing and noticing what happens without any particular emphasis on specific way of noticing. These example exercises could both be used in both *what* and *how* ways through their adaptation to suit the needs of the client and the situation by the therapist. Both types of exercises were used in the brief 4-session intervention; however, no data are available on the specific amount of each type of exercise used. An accepting and non-evaluative attitude toward experiences was found beneficial for inducing long-term changes in depressive symptoms. The present findings indicate that more emphasis should be put on the *how* way of noticing and observing and on combining what is noticed with instructions on how to relate to the experiences being observed.

4.3 Limitations

There are several limitations that need to be considered when evaluating this dissertation and its contributions. One factor limiting the generalizability of the results concerns the study population which consisted mainly of females who were self-referred and motivated to participate in the brief treatment. As formal diagnoses were not conducted, the results may not be applicable to a clientele with a more severe and complex symptomatology or difficult issues in functioning. However, in their symptoms and subjective feelings of depression, the study participants represent a clinically relevant population often encountered in mental health and primary care settings. Investigating this specific group seems justifiable as research focusing on sub-clinical and self-reported depressive symptoms has found that the impairments in well-being can increase the incidence of more severe symptomatology (Goldney et al., 2004; Horwath et al., 1992; Judd et al., 1996).

With respect to the brief treatment model presented in all three studies, the student therapists administering the treatment received only a rather short period (14 h) training program in the ACT methods. As the ACT model is complex and layered, the methods based on it may have been applied in a more mechanical or technical way by the present novice therapists compared to more experienced ACT therapists able to make more flexible and nuanced use of the model. For example, experienced therapists might apply the ACT-based model differently and they might be more adept at creating exercises and responsive to tiny cues presented by the client during the sessions. These observations and limitations, however, concern all novice therapists or counselors regardless of the treatment orientation, and especially those who have only had abbreviated training. Hence, the results of the dissertation may not be generalizable to ACT given by experienced therapists. The adherence to the ACT model was monitored by using a checklist of methods and processes in each treatment session, and fidelity to the protocol and ACT was also assessed during the weekly supervisions. The therapists were not allowed to proceed to the next session without presenting the supervisor with a rough idea and plan to ensure the inclusion of ACT-consistent elements and exercises. The student therapists were instructed to use a Finnish handbook on ACT (Lappalainen et al., 2004) for selecting the exercises to be used in the sessions. The quality of treatment and adherence to the treatment model could have been improved through visual- or audio recordings and the possibility of random audit of sessions by an outside expert. Overall, the present studies indicate that good outcomes can be attained with adequately supervised staff, students or novice therapists (Ekers et al., 2011; Hiltunen et al., 2013; Lappalainen et al., 2007; Öst et al., 2012), even when they lack a mental health background (Richardson et al., 2017), and that in some cases outcomes can be comparable with those of professionals (Goldstein, 2015).

In Studies II and III, the loss of participants during the long follow-up period limits the conclusions that can be drawn from the results and threatens

internal validity. Nearly 40% of the participants were lost to the 5-year follow-up, and thus the results might have been different with the complete sample, which was already small at the outset. With the subsample used in Study III, the drop-out rate at the 5-year follow-up was somewhat smaller (22%). Drop-outs are always a problematic issue and with a long follow-up, they are more frequent and difficult to control. However, those who continued and those who dropped out or were lost to the 5-year follow-up were, until they dropped out, similar in their baseline measurement scores and treatment-related changes regarding depressive symptoms. Another possible confounding factor presented by the follow-up sample was the additional psychological treatments received by some individuals (one-third) and the medication used by the same or other individuals (one-fifth). Commonly, those subgroups would be excluded from the analyses. However, although the participants with additional treatment had significantly higher levels of depressive symptoms five years after the original brief treatment, their outcomes were similar to those without any additional treatment.

Moreover, the possibility that other variables might have affected the psychological well-being of the participants during the long follow-up period cannot be excluded. It might also be that the measures used at the 5-year follow-up were not sensitive enough to capture all the subtleties and details of the participants' lives during that lengthy post-intervention period. For example, some participants experienced difficulties in remembering precisely the possible treatments they had received (e.g., psychotherapy, appointments with a psychiatrist, supportive therapy, the number of meetings) or the life events they had experienced (e.g., changes in relationships, moving, changing jobs, starting school).

To some extent, factors like these complicate interpretation of the effectiveness of the intervention on overall well-being, as separating the influence of the intervention per se from that of other factors is impossible. Moreover, some participants might have experienced positive changes due to spontaneous remission/recovery during the follow-up irrespective of the intervention (Whiteford et al., 2013a). The quality and precision of the long-term results of the ACT intervention and the exclusion of confounding factors could have been enhanced by adding measurement points during the 5-year follow-up period and using different measurement methods, such as standardized interviews. These are, however, issues that are not unique to this study, but common to all longer follow-up assessments.

Some limitations concern the use of a waiting-list control group. An active control group could have enabled analysis of the effects specifically linked to the ACT intervention unconfounded by the general effect of being heard and being in contact with a person regarded as helpful. It is possible that other types of intervention or attention given to participants might have produced similar short- or long-term benefits. With respect to the waiting-list control group and the waiting-phase before their turn of the intervention, the assessment meeting and knowledge of treatment-to-come had minimal or no effects on their well-

being in general, as the only significant improvement was found in a secondary measure for mood, while no effect was found for depressive symptoms. The waiting-list group also had somewhat smaller intervention effect, although the between-group differences had disappeared at the 5-year follow-up measurement.

Missing data were addressed differently between Study I, and Studies II and III. Study I used the conservative approach of last-observation-carried-forward (LOCF), where the information from the latest data point is carried forward to other data points to compensate for missing data. The assumption was made that subjects who dropped out would have continued responding as they did at the point of dropping out. Another approach to missing data, using a different statistical package, was selected for Studies II and III. For those studies, a more sensitive method of dealing with missing data was applied, i.e., the assumption that data were “missing at random” (MAR). Moreover, caution should be applied when interpreting results in studies using small samples, such as in this dissertation, as they entail a tendency to result in larger effects than are found with larger samples (Kühberger, Fritz, & Scherndl, 2014). As recommended, the effect sizes reported in Studies II and III were supplemented with confidence intervals (CI) as the width of the interval provides more information concerning the fidelity of the estimation of the impact (Kühberger et al., 2014). The CI’s reported were wide, a factor which should be considered when evaluating the effects as possible overestimation of the effect sizes might occur. Some analyses were post hoc in nature which may be considered a limiting factor to the credibility of the results, yet data suggested interesting hypothesis, also stemming from earlier research, in need of further testing. However, those findings need to be replicated to exclude false findings based on random patterns.

It also needs to be noted that depressive symptoms and other psychological concepts were measured with self-report questionnaires alone. The results might have been different with the addition of clinician-rated measures. Cuijpers, Li, Hofmann, and Andersson (2010) conducted a meta-analysis comparing self-report and clinician-rated measures for depression when both were used in the same psychotherapy trial. The overall results indicated that the effect size based on clinician-rated measures was significantly higher than that measured with self-report in the same study (differential effect size of $\Delta g = 0.20$), and they concluded that self-reports could produce more conservative outcomes compared to clinician’s assessments. Cuijpers et al. (2010), while not excluding the use of self-reports as a practical tool of achieving adequate information, suggest that both measures be included in clinical trials.

4.4 Implications for clinical practice

The findings of this dissertation have several important implications for professionals and clinical practitioners. Overall, the results support the use of a

brief ACT intervention in treatment for self-reported depressive symptoms and low mood. The results showed that the brief intervention effectively alleviated mild to moderate symptoms and, furthermore, that the psychological flexibility of the participants increased during the intervention. The maintenance of beneficial treatment outcomes both at six months and five years after the intervention among those participating in the follow-up measurements are further evidence of the benefits of and maintenance of outcomes in brief intervention models based on acceptance and valued actions. The training of the student therapists in implementing the brief intervention was short: the master's level psychology students received altogether 14 hours of training, four of which were specific to the semi-structured ACT model used. In addition, weekly supervision was used to pre-plan the succeeding session, to discuss the possible difficulties encountered and to monitor adherence to the ACT model. The students had bachelor's degrees in psychology, meaning that while they had no experience in psychotherapeutic methods, and a great majority of them had either extremely limited or no experience on working with clients, they were knowledgeable about various aspects of mental health.

These findings support the conclusion that novice therapists can deliver effective time-limited treatments with on-going supervision and brief training. This is in line with earlier research on inexperienced treatment providers (Ekers et al., 2011; Goldstein, 2015; Hiltunen et al., 2013; Lappalainen et al., 2007; Richardson et al., 2017; Öst et al., 2012). This also supports the idea of teaching effective intervention methods to novices, as these methods can be beneficial in environments where time and personnel resources are limited. It should be noted that clients showing insufficient improvement and who are essentially in need of more extensive treatments should be directed to more specialized services without delay. Some individuals who underwent the 4-session ACT intervention received additional help afterwards, which can be expected, as it is unrealistic to assume that any intervention, whatever its length, will alleviate everyone's psychological distress, while a variety of unexpected adverse events, for which psychological help is needed, may happen in life.

In general, the meta-analyses suggest that psychological interventions, either brief or lengthier, are effective treatments for depression in primary care settings (Cape et al., 2010; Cuijpers et al., 2009). In relation to primary care, ACT-based interventions for health-related issues have been adapted to the resource constraints and frameworks for action typical in those settings (Biglan et al., 2008). The results of this dissertation support the notion of offering evidence-based and structured interventions in environments where the treatment on offer is often time-limited, resources are scarce and the individuals seeking help may not yet be suffering from severe symptoms. Health care settings of this kind include student health care, primary care and occupational health care. Those are often part of a larger, often hierarchical, tiered system of health care providers. Stepped-care models for depression promote the concept of offering different treatment possibilities and levels of intensiveness within a graduated system: when mild or sub-clinical symptoms are present, lighter

time-restricted interventions are offered to prevent the symptoms from worsening and to increase overall well-being (for example, the NHS guidelines for the treatment of depression in the UK, which are based on the NICE recommendations; Clark, 2011; NICE Guidelines, 2011). The first steps of a stepped-care system often comprise brief treatments, self-help programs and web-based interventions, and if symptoms increase or worsen, the system guides the patient to lengthier and more specialized treatment options provided by more experienced and highly educated mental health professionals.

Time limits on treatment may lead to change being perceived as a positive possibility, sharpen the focus of the intervention and also accelerate the process as awareness of the limits imposed on treatment may promote greater effort to change (Eckert, 1993). The use of time limits and time-limited interventions are supported by research on symptom changes and change rates. For example, Baldwin et al. (2009) examined naturalistic psychotherapy across various intervention lengths and noted that treatments with a lower number of sessions often produced faster rates of change in symptomatic states compared to longer treatments. They suggest that in naturalistic therapy, clients may terminate treatment when adequate recovery is achieved. Faster recovery from symptoms may have multiple explanations; for example, lower levels of distress were encountered in clients attending fewer sessions whereas clients with more severe symptoms attended more sessions and showed lower change rates (Baldwin et al., 2009). Change rates may also be dependent on the class of symptoms: personality-based symptoms seem to require more time to change than distress symptoms (Kopta et al., 1994; Pilkonis & Frank, 1988). Despite indications that the present 4-session acceptance- and value-based brief intervention was beneficial, even for those with high levels of depressive symptoms, such brief interventions may not be the best first-line option for such cases and standardized time limits should not be imposed on all clients (Baldwin et al., 2009; Barkman et al., 2006; Stulz et al., 2013) Additionally, brief interventions should not be used as a standard treatment “for all” step that has to be completed before entering longer therapies, while for some psychological issues low-intensity treatment is not recommended to begin with (Clark, 2011).

While, in primary health care, mental health care providers willing to use evidence-based practices, for example due to resource constraints or lack of training, may often be lacking, a growing need nevertheless exists for psychological help. Even if effective treatments are available, the challenges in treating depressive symptoms also include issues of access to treatment and the willingness to seek and accept help (Hämäläinen et al., 2004; Thornicroft et al. (2017). Regardless of whether psychological help for depressive symptoms is accepted or declined, its various effects on the intra- and interpersonal as well as societal levels are often visible (Andlin-Sobocki & Wittchen, 2005; Whiteford et al., 2013b). Research on help-seeking behaviors and stigmatization reveals that often people feel stigmatized and labeled when given diagnoses, which in turn could decrease their willingness to seek help (Clement et al., 2015; Gulliver et al., 2010). Offering acceptance- and value-based brief interventions such as

the one applied in this dissertation, could ease accessibility to psychological interventions and as a result, prevent the worsening of symptoms and disabilities in functioning. Similarly, stigmatization may be reduced by offering interventions without the need for diagnoses or referrals and, at least in mild conditions, treatment should be offered with less bureaucracy and relatively quickly, despite the less severe symptomatology. For instance, the Improving Access to Psychological Therapies (IAPT) program in the UK allowed self-referrals in addition to referrals by general practitioner, as it was noticed that some community members, such as ethnic minority members and those with more chronic mental health issues, tended not to contact a GP for a referral even though treatment was needed (Clark, 2011). Treatment accessibility should not be a burden with regards to any level of symptom severity, yet often both the primary care level of services and specialized health care comes with sometimes inordinately long waiting times, at least on the latter level with referrals. When aiming to offer treatments promptly, brief interventions such as the one in the current dissertation could be implemented with an “open-doors” policy where the intervention offered is intentionally time-limited and diagnoses or referrals are not required. However, it should be noted that if interventions are provided by novices without a mental health care background, some serious disorders or symptoms may be overlooked due to lack of experience and education. Thus, supervision with an expert is advisable and more severe cases should be referred to specialized care. In addition to the remarks made above, a problem regarding access to effective brief treatments may also be associated with their dissemination within the practices of the health care system: evidence-based interventions can only realize their full potential if they have been integrated into the system as part of a working entity.

Research suggests that continuing treatment past initial remission may decrease relapse risk (Jarrett et al., 2001; Vittengl, Clark, Dunn, & Jarrett, 2007), and that offering booster sessions seems to produce better results compared to interventions without additional sessions (Karyotaki et al., 2016). However, especially in some naturalistic settings, while the possibility to extend interventions may be impossible, other environments may be more flexible in terms of offering a few additional sessions after the initial brief intervention if needed. In clinical practice, brief acceptance and value-based interventions could be developed further by adding booster sessions when needed, especially for individuals needing more time to develop and strengthen their psychological flexibility. In ACT, total remission or the lack of symptoms are not regarded as ultimate goals, yet a life with meaning can be achieved even amidst adversity. Life often fluctuates between stressful and more balanced times, and hence additional bouts of treatment may be needed to fortify the skills learned.

Another important aspect of the 4-session intervention is its flexibility and malleability. As the nature of depression may include fluctuations in mood and carry a prominent risk of relapse (Judd et al., 1998), a psychological approach of increasing flexibility in relating to aversive and distressing thoughts, emotions

and feelings, and decreasing avoidance while behaving according to chosen values might provide long-lasting benefits (Biglan et al., 2008). The intervention was structured and “protocolled” both for research purposes and to assist novice therapists administer a new framework and methodology and to adapt it to their subsequent clinical work. However, the brief 4-session intervention should not be regarded as a basic manualized model. From a functional viewpoint, the clinical principle-based model of ACT is mostly the same across the different disorder and syndrome classes (Hayes et al., 2011b). This suggests that the 4-session intervention would at least theoretically speaking, be modifiable and implementable for a range of psychological and other health-related issues, not merely depression, albeit it was only investigated here among individuals reporting depressive symptoms. The 4-session ACT intervention does not in itself emphasize depression-specific elements and it is not designed to be delivered exclusively for depressive symptoms. The focus was on value-based actions and addressing flexibly and with acceptance the emotional, cognitive, social and behavioral issues frequently arising when pursuing values and life with meaning. Various transdiagnostic CBT approaches have yielded large and significant increases in depression and anxiety symptoms, and tentative support was found for larger within-group effects for depression than for anxiety, indicating the benefits of transdiagnostic perspectives and unified models for affective problems and distress (Newby et al., 2015). Furthermore, individuals generally do not present with one strictly definite disorder, and depression, for example, has been shown high comorbidity with anxiety, personality issues and substance use (Melartin et al., 2002). However, Luoma et al. (2007) state that the transdiagnostic nature of ACT is different from many other unified approaches, as ACT is not based on a fixed set of elements across diagnoses, but on functionally and contextually applied processes promoting psychological flexibility irrespective of the diagnoses presented. Therefore, interventions based on ACT principles and processes could be more malleable and better suited for treating individual sets of issues compared to strictly manual-based or even unified and transdiagnostic (brief) intervention approaches. Hayes and Hofmann (2017) suggest the viability of process-based treatment perspectives in which evidence-based procedures and processes are integrated to promote psychological health in a more individualized and personalized way. This process-based therapy (PBT) may even replace the traditional structures within which various therapies are currently working (Hayes & Hofmann, 2017).

Acceptance- and value-based interventions approach the individual from an angle where problems are acknowledged and recognized, yet not fixed to as the determinants of progress but addressed from the viewpoint of values, context and functionality. For example, the 4-session intervention started with gathering information on the issues perceived as problematic by the client and presenting it in a visual form to the client. Furthermore, values were introduced at the very beginning and integrated into the treatment as guiding principles,

and the client was approached using the ACT processes that seemed most suitable for that specific individual.

Brief interventions have been considered a promising effective treatment option in primary care (Cape et al., 2010). Time-limited interventions may also render individuals more committed and motivated toward treatment and making changes (Eckert, 1993). However, little is known about the influence on outcomes of more specific elements of such interventions. Research on ACT processes support the overall model of psychological flexibility as well as individual elements such as values and valued actions, an accepting attitude and defusion in the context of treatment outcomes (Bramwell & Richardson, 2017; Villatte et al., 2016; Vowles et al., 2011). The results of this dissertation (Study III) provide further evidence not only on the benefits of brief interventions but also on the elements of psychological flexibility associated with greater improvements in depressive symptoms. Adding and emphasizing acceptance and non-judgmentality of experiences seemed to be related to both short- and long-term improvements in depressive symptoms. This provides practitioners with knowledge on the importance of developing an accepting and non-evaluative stance toward even those most intensive and distressing of experiences. In practice, this can be achieved through awakening and strengthening the aspects in clients and teaching them the skills of observing and describing as ways to stay present and focused, yet also emphasizing the way experiences observed and described could be addressed using a compassionate, accepting and non-evaluative attitude. For depressive individuals, constant observing and labeling can result in rumination and self-criticism making it even more important to introduce the idea of acceptance in to the treatment process. Similar ideas have been proposed in mindfulness research, where the Monitor and Acceptance Theory (MAT; Lindsay & Creswell, 2017) has been proposed to explain the effects of mindfulness through the combination of underlying processes of monitoring moment-to-moment experiences and having an accepting attitude toward them. However, the findings of this dissertation are limited, and future research is warranted, especially on the components impacting positive changes associated with brief interventions.

4.5 Future research

The main results of this dissertation support the use of a brief 4-session acceptance- and value-based intervention for self-reported depressive symptoms among individuals motivated to participate in it. Evidence was also found that a brief intervention can be effective when provided by psychology students under supervision. A brief intervention can result in long-term benefits for a significant proportion of the individuals receiving it. However, some important questions and suggestions need to be raised for future research

as little is still known about extremely brief ACT interventions for psychological distress, especially for depressive symptoms.

The dissemination and acceptability of brief interventions in various fields of health care needs to be addressed. Biglan et al. (2008) provided evidence that ACT-based methodologies could be adapted to meet the demands of hectic primary care. Occupational and student health care are further examples of environments where brief interventions could prove to be beneficial. Based on the outcomes of this dissertation, brief ACT interventions could potentially be implemented in such settings, to the benefit of the individuals often encountered there. To meet this objective, studies should be conducted in naturalistic clinical environments to ascertain the acceptability and effectiveness of such potential interventions. Although the therapists in this dissertation were students and novices, they had a relatively profound knowledge base in psychology compared to non-mental health novices. The present findings need to be replicated using other therapist populations (such as general nurses or social workers) in order to examine therapist training and the implementation of brief interventions across a wider variety of treatment providers. Moreover, in the present study the participants were motivated, self-referred and mostly females, and diagnoses were not made. While the importance of examining clearly defined and diagnosed populations is valuable, the populations often met and treated in primary, student and occupational health care comprise individuals with milder or sub-clinical symptoms. In addition, the present preliminary data suggest that a brief ACT intervention can also be effective in persons suffering from higher levels of depressive symptoms; however, this finding needs to be subjected to rigorous scrutiny and established through further research. Future research should also examine the effects of a brief ACT intervention by comparing individuals suffering from diagnosed depression with those whose symptoms are sub-clinical to explore further the possible differences in treatment outcomes based on symptom severity.

Some individuals might benefit from additional sessions to strengthen the development of a more psychologically flexible mindset and behavioral repertoire. Previous research implies that relapse risk may be reduced if treatment is continued or boosted after initial symptomatic remission (Jarrett et al., 2001; Vittengl et al., 2007), while interventions with booster sessions offered to those who needed them produced significantly better outcomes compared to interventions without additional sessions (Karyotaki et al., 2016). The addition of booster sessions in the context of ACT interventions have been used in a study of ACT for epilepsy (Lundgren et al., 2006), and should be investigated further among brief interventions for psychological distress.

Web- and mobile-based approaches and applications could also be integrated into brief face-to-face interventions to boost the intervention and its effects and to strengthen the acquisition of new skills. Several studies have shown results supporting the use of web-based ACT interventions for depressive symptoms (e.g., Carlbring et al., 2013; Fledderus et al., 2012; Lappalainen et al., 2014; Lappalainen et al., 2015; Pots et al., 2016), and hence

future research could further examine the benefits of including additional technologies to enhance a brief ACT intervention.

In relation to the importance found for changes in depressive symptoms of certain changes psychological flexibility and mindfulness, it was noticed that the measures used might not capture all the different processes of psychological flexibility. Further research on time-limited interventions could include instruments for capturing the aspects missed in Study III, such as the meaning of values and commitment to acting in accordance to them. A variety of inventories and measures are available for assessing values and commitment to actions, such as the Valued Living Questionnaire (Wilson, Sandoz, Kitchens, & Roberts, 2010). Beyond the question of the measures to be used is that of the processes important for psychological change. Study III implied that changes towards an accepting attitude during the 4-session intervention was related to changes in depressive symptoms. Villatte et al. (2016) examined an 8-week ACT intervention delivered with two different emphases (the OPEN and the ENGAGED modules) to investigate their differential impacts on outcomes. Such modular intervention research should be replicated with briefer interventions to determine whether different emphases on ACT processes produce differential treatment outcomes. Based on the findings from Study III, a module promoting an accepting stance toward experiences could be compared to modules emphasizing mere observing. A module promoting values and valued actions could also be added, as previous studies have indicated their importance for improvements (Bramwell & Richardson, 2017; Vowles et al., 2011).

As the field of psychological intervention studies often uses follow-up periods lasting up to 12 months or less, longer follow-up periods are important in providing evidence on the usefulness of these interventions, especially shorter ones. Research with follow-up periods that include, for example, additional assessments and more extensive interviews regarding the post-treatment period could be conducted to separate the different factors influencing the current state of well-being in more detail. On the measures and questionnaires used, future studies should include both self-report measures as well as clinician-rated instruments as suggested by earlier research (Cuijpers et al., 2010).

One aspect limiting the generalizability of the results is the lack of a control condition after the post-measurement. A different research design for examining the efficacy of a brief intervention compared to that of another ongoing, established intervention model could produce important evidence on benefits and long-term effects. Overall, the brief 4-session ACT intervention should be investigated with improved and more varied methodologies and designs, different target and provider populations, and more naturalistic settings to confirm the preliminary results of this dissertation.

4.6 Conclusions

The findings of the present dissertation are in line with those of earlier research on brief psychological interventions and on ACT-based interventions for depressive symptoms. When individuals reporting mild to moderate levels of depressive symptoms were offered a 4-session acceptance- and value-based intervention provided by student therapists, the improvements found on depressive symptoms, overall well-being and psychological flexibility showed the benefits of the intervention compared to those of waiting-list controls. Although the waiting-list controls knew they would be receiving treatment, no reduction in their depressive or other symptoms were detected during the 5-week waiting period. The evidence obtained from this study supports the use of less extensive treatments, as the 5-year follow-up results showed maintenance of treatment outcomes in those attending the assessment. For example, approximately one-third of the participants in the original sample reported minimal to no depressive symptoms at the 5-year follow-up measurement compared to 10% at the pre-measurement. Similarly, at the 5-year follow-up, no attendees reported symptoms indicating severe depression, whereas in the pre-measurement one-fourth had reported symptoms high enough to be classified as severe. The results also indicate that at baseline, higher levels of depressive symptoms were related to higher levels of observing and lower levels of psychological flexibility, accepting without judgment and acting with awareness. Accepting without judgment came to the fore when treatment-related changes in psychological flexibility and mindfulness skills were examined in relation to changes in depressive symptoms either during the treatment or over the whole five-year study period. Examination of paired combinations of the mindfulness subcomponents showed that combinations including accepting without judgment were related to changes in depressive symptoms across the whole study period. The importance of non-judgmentality and acceptance as opposed to avoidance and control have been demonstrated in literature with regards to mental well-being (e.g. Alleva et al., 2014; Christopher et al., 2012; Desrosiers, Klemanski, & Nolen-Hoeksema, 2013; Kashdan & Rottenberg, 2010). These findings indicate that accepting with non-evaluative attitude may be an important factor influencing changes in depressive symptoms and should be emphasized in treatment planning and implementation.

To conclude, the findings indicate the effectiveness of the 4-session acceptance- and value-based intervention for self-reported depressive symptoms. Furthermore, among the participants attending the 5-year follow-up, treatment outcomes were found to have been maintained across the 5-year follow-up period with no significant deterioration in any of the measures, and that in some cases improvements were detected. Finally, there were indications that developing an accepting and non-judgmental attitude toward experiences was an important component of the success of the intervention in reducing depressive symptoms.

YHTEENVETO (SUMMARY)

Tämä väitöskirja koostuu kolmesta osatutkimuksesta, joiden päällimmäinen tarkoitus oli selvittää, voidaanko hyväksyntä- ja arvopohjaisen neljän kerran lyhytintervention avulla lievittää masennusoireita sekä lisätä psykologista joustavuutta. Lisäksi tarkoituksena oli tutkia intervention lyhyen ja pitkän aikavälin tuloksellisuutta masennusoireita kokevien aikuisten joukossa, sekä kartoittaa psykologisen joustavuuden ja tietoisuustaitojen eri elementtien yhteyttä masennusoireiden muutoksiin. Tutkimuksen kohteena oleva interventio pohjautui hyväksymis- ja omistautumisterapeuttiseen (HOT) viitekehykseen, joka painottaa psykologisen joustavuuden lisäämistä.

Hyväksymis- ja arvopohjainen puolistrukturoitu interventio koostui neljästä 60 minuutin yksilötapaamisesta, ja toteuttajina toimivat psykologian masterivaiheen opiskelijat, jotka olivat saaneet lyhyen (14 h) koulutuksen interventiioon ja osallistuivat viikoittaiseen työnohjausryhmään. Lyhyen intervention tärkeimpinä suuntaviivoina oli: 1) selkeyttää asiakkaan omat elämää ohjaavat arvot, 2) löytää asiakkaan kanssa yhteistyössä toimivia tapoja vaikuttaa hänen omaan hyvinvointiinsa arvojen mukaisten tekoja avulla, ja 3) työskennellä arvojen mukaisen toiminnan esille nostamien esteiden kanssa. Jokaiseen interventiokäyntiin kuului kokemuksellisia hyväksymis- ja omistautumisterapialle tyypillisiä harjoituksia ja kielikuvia sekä arvojen mukaiseen toimintaan painottuvia kotitehtäviä. Käyntien yksilöllistämistä suunniteltiin työnohjauksessa jokaisen osallistujan tavoitteiden ja haasteiden mukaisesti.

Osatutkimukseen I osallistui yhteensä 57 mielialaoireita kokevaa henkilöä, joista 79 % oli naisia ja osallistujien keski-ikä oli 46,2 vuotta. Osallistujat satunnaistettiin joko HOT-hoitoryhmään (n = 28) tai odotuskontrolliryhmään (n = 29). Odotuskontrolliryhmä sai saman lyhytintervention viiden viikon odotuksen jälkeen ja intervention lyhyen aikavälin tuloksellisuutta tarkasteltiin kuuden kuukauden kohdalla yhdistämällä molemmat lyhytintervention saaneet ryhmät. Kaikkiaan kuuden kuukauden seurantaan osallistui yhteensä 48 interventio- tai odotusjakson aloittanutta henkilöä. Tutkimusasetelman mukaisesti osallistujat kävivät mittaustapaamisissa ennen ja jälkeen intervention, ja uudelleen kuuden kuukauden sekä viiden vuoden kuluttua intervention päättymisestä. Lisäksi odotuskontrolliryhmällä oli yksi ylimääräinen mittauskerta ennen odotusjakson alkua. Kaikilla tutkimuskäynneillä osallistujat täyttivät itsearviointiin perustuvat lomakkeet liittyen masennusoireisiin, koettuihin fyysisiin ja psyykkisiin oireisiin, sosiaaliseen toimintakykyyn, mielialaan, elämäntyytyväisyyteen, itseluottamukseen, ja psykologiseen joustavuuteen. Lisäksi osa tutkittavista täytti myös tietoisuustaitoja koskevan lomakkeen jokaisella tutkimuskäynnillä. Viiden vuoden seurantaan sisältyi myös puolistrukturoitu seurantahaastattelu, jossa käyntiin läpi kulunutta ajanjaksoa mm. voinnin ja elämänmuutosten kautta sekä kartoitettiin mahdolliset muut psykologiset hoitotaksot ja lääkitys tuona aikajaksona.

Osatutkimus II arvioi lyhyen hyväksyntä- ja arvopohjaisen intervention pitkän aikavälin tuloksellisuutta viiden vuoden seurantamittauksen avulla. Yhteensä 35 osallistujaa tavoitettiin ja suostui osallistumaan seuranta-mittaukseen.

Osatutkimus III kartoitti psykologisen joustavuuden ja tietoisuustaitojen merkitystä masennusoireisiin tutkimalla pienempää alaryhmää ($n = 33$). Alkumittauksen aikaista psykologista joustavuutta sekä tietoisuustaitoja tutkittiin suhteessa masennusoireisiin, jotta saataisiin lisätietoa yhteyksistä kyseisten muuttujien välillä. Lisäksi psykologisen joustavuuden ja tietoisuustaitojen hoidon aikaisia muutoksia tutkittiin suhteessa masennusoireiden muutoksiin, joko hoidon tai koko tutkimusjakson (alku-mittauksesta viiden vuoden seurantaan) aikana.

Osatutkimuksen I tulosten mukaan neljän kerran lyhytinterventio vaikutti myönteisesti osallistujien masennusoireisiin, fyysisiin ja psykologisiin oireisiin, sosiaaliseen toimintakykyyn, psykologiseen joustavuuteen, mielialaan ja elämäntyytyväisyyteen sekä itseluottamukseen verrattuna odotusryhmään, jonka kohdalla ei ollut tapahtunut muutoksia masennusoireissa. Myöskään muissa mittareissa ei ollut tapahtunut muutoksia, paitsi mielialaa kuvaavassa visuaalisessa skaala-asteikossa, jossa näkyi lievää mielialan kohentumista. Hyväksyntä- ja arvopohjaiseen interventioon osallistujien hyvät hoitotulokset myös säilyivät kuuden kuukauden seurantamittauksen mukaan, ja lyhyen seurannan aikana masennus- ja muut oireet jatkoivat vähentymistään. Kliinisesti merkitsevän muutoksen mallin mukaisesti loppumittauksessa 44 %:lla osallistujista oli tapahtunut joko parantuminen tai kohentumista masennus-oireiden suhteen. Kuuden kuukauden seurannassa vastaava määrä oli 47 %.

Osatutkimuksen II tulokset osoittivat hyväksyntä- ja arvopohjaisen lyhytinterventioita vaikuttaneen säilyneen pitkällä aikavälillä niiden osallistujien joukossa, jotka tavoitettiin viiden vuoden seurantaan varten. Viiden vuoden seurantaan osallistuneissa ($n = 35$) ei näyttäytynyt masennus- tai muiden oireiden heikentymistä tai palautumista lähtötasolle, myös psykologinen joustavuus sekä tietoisuustaidot olivat säilyttäneet hoidon jälkeisen tasonsa. Masennustason arvioinnin mukaan (Beckin masennuskyselyn (BDI) pisteiden ja kategorioiden mukaisesti) loppumittauksessa melkein 40 % viiden vuoden seurantaan osallistujista raportoi masennuspisteidensä olevan alle 10 tarkoittaen minimaalista tai ei masennusta.

Osatutkimuksen I tulokset osoittivat, että ensiksi hoidon saaneen ryhmän kohdalla hoitotulokset olivat paremmat, sekä hoidon jälkeen, että kuuden kuukauden seurannassa, vaikka molemmissa ryhmissä havaittiin myös merkittävää masennusoireiden kohentumista ja psykologisen joustavuuden lisääntymistä. Osatutkimuksen II mukaan nämä ryhmien väliset erot olivat kuitenkin kaventuneet viiden vuoden seurantamittauksessa ja molempien ryhmien tulokset olivat samansuuntaiset. Lisäksi osatutkimuksessa II verrattiin seurannan aikana psykologista hoitoa saaneita niihin, jotka eivät olleet hakeneet muuta apua. Näiden ryhmien välillä ei ollut merkitseviä eroja muutoksessa, mutta he, jotka olivat hakeutuneet jatkokontaktiin, kokivat enemmän masennusoireita viiden vuoden seurannassa. He olivat myös sekä alku- että viiden vuoden seurantamittauksissa psykologisesti joustamattomampia kuin muuhun psykologiseen hoitoon hakeutumattomat.

Lyhytintervention aikaisia muutoksia psykologisessa joustavuudessa sekä tietoisuustaidoissa yleisesti ja alataitoihin (havainnointi, kuvailu, tietoinen toiminta ja tuomitsematon hyväksyntä) luokiteltuna, sekä niiden suhdetta masennusmuutoksiin tutkittiin osatutkimuksessa III. Tulokset viittasivat siihen, että korkeat masennusoireet hoidon alussa olivat yhteydessä sekä korkeisiin havainnoinnin tasoihin, että matalampiin tuomitsemattoman hyväksynnän ja tietoisien toiminnan tasoihin alkumittauksessa. Hoitojakson aikaiset myönteiset muutokset masennusoireissa olivat yhteydessä hoitojakson aikaisiin muutoksiin psykologisessa joustavuudessa, tietoisuustaidoissa yleisesti sekä tuomitsemattoman hyväksynnän alataidossa. Tuomitsematon hyväksyntä oli ainut, jolla oli yhteys myös koko tutkimusjakson aikaiseen muutokseen masennusoireissa. Kun tietoisuustaitojen eri alataitoja yhdistettiin pareittain toisiinsa, nousi tuomitsematon hyväksyntä merkitykselliseksi monessa yhteydessä. Tulokset tukevat sitä, että omien sisäisten kokemusten hyväksyntä niitä tuomitsematta ja arvioimattomatta on merkityksellinen osatekijä hyväksyntä- ja arvopohjaisessa lyhytinterventiössä sekä sen lyhyen ja pitkän aikavälin tuloksissa suhteessa masennusoireisiin.

Yhteenvedon voidaan todeta lyhyen hyväksyntä- ja arvopohjaisen intervention vähentäneen masennusoireita, parantaneen hyvinvointia ja lisänneen psykologista joustavuutta sekä heti hoidon päättymisen jälkeen, että kuuden kuukauden ja viiden vuoden seurantamittausten mukaan kyseisiin seurantamittauksiin osallistuneiden joukossa. Lisäksi tutkimustulokset antavat viitteitä siitä, että lyhytintervention aikaiset muutokset varsinkin hyväksyvässä ja tuomitsemattomassa suhtautumisessa omiin ajatuksiin ja tunteisiin ovat merkityksellisiä masennusoireiden muutoksien kannalta. Tulokset tukevat hyväksyntä- ja arvopohjaisten lyhytinterventioiden käyttöä subjektiivisten masennusoireiden hoidossa. Lyhytinterventio hoitomallina varsinkin lyhyitä hoitojaksoja suosivissa ympäristöissä kuten perusterveydenhuollossa sekä opiskelija- ja työterveyshuollossa, voi tulosten perusteella olla hyödyllistä ja perusteltua.

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APPENDICES

Appendix 1

The 5-year follow-up interview questions (semi-structured)

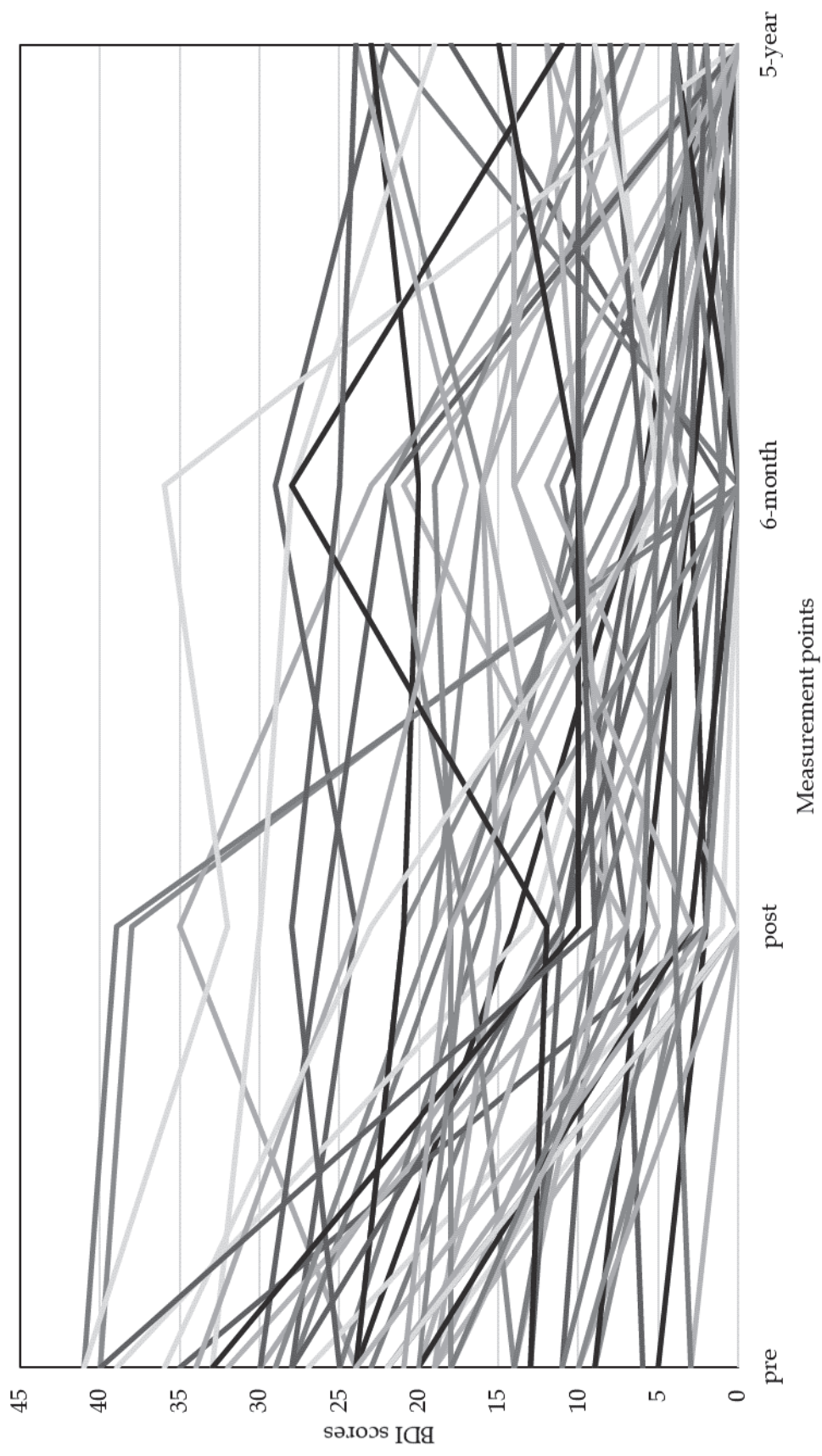
- 1) How did you experience the brief intervention five years ago? What was its significance for you and your well-being?
- 2) How has your well-being changed during the past five years since the intervention ended?
- 3) What kinds of changes have happened in your life during the past five years? Do you consider them as minor or major changes? Do you associate these possible changes somehow with the brief intervention?
- 4) Has your stance toward your thoughts and feelings changed in some way? If so, what do you associate with these possible changes in your stance or attitude with? (To the brief intervention or other aspects?)
- 5) How do you feel about the intervention now? Has something from it stayed with you?
- 6) Have you used some of the elements or methods used in the sessions in your own life since the intervention? If so, what are they and how have they been a part of your life?
- 7) Have you sought help for issues related to mental health since the brief intervention? Elaborate, if needed.
- 8) If you have, was this associated with the intervention? If so, in what way?
- 9) Would you recommend a brief intervention like this one to others?
- 10) Have you participated in any other research project or study (such as treatment, diet, medication) related to mental well-being since the brief intervention?

Any (negative or positive) feelings about or associations related to the original intervention or this follow-up study?

Free comments and thoughts:

Appendix 2

Individual depression trajectories. The figure presents the depression scores of each participant at each measurement point.



ORIGINAL PAPERS

I

A FOUR-SESSION ACCEPTANCE AND COMMITMENT THERAPY BASED INTERVENTION FOR DEPRESSIVE SYMPTOMS DELIVERED BY MASTER'S DEGREE LEVEL PSYCHOLOGY STUDENTS: A PRELIMINARY STUDY

by

Aino Kohtala, Raimo Lappalainen, Laura Savonen, Elina Timo, &Asko
Tolvanen, 2015

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A Four-Session Acceptance and Commitment Therapy Based Intervention for Depressive Symptoms Delivered by Masters Degree Level Psychology Students: A Preliminary Study

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University of Jyväskylä, Finland

Background: Depressive symptoms are one of the main reasons for seeking psychological help. Shorter interventions using briefly trained therapists could offer a solution to the ever-rising need for early and easily applicable psychological treatments. **Aims:** The current study examines the effectiveness of a four-session Acceptance and Commitment Therapy (ACT) based treatment for self-reported depressive symptoms administered by Masters level psychology students. **Method:** This paper reports the effectiveness of a brief intervention compared to a waiting list control (WLC) group. Participants were randomized into two groups: ACT ($n = 28$) and waiting list ($n = 29$). Long-term effects were examined using a 6-month follow-up. **Results:** The treatment group's level of depressive symptoms (Beck Depression Inventory) decreased by an average of 47%, compared to an average decrease of 4% in the WLC group. Changes in psychological well-being in the ACT group were better throughout, and treatment outcomes were maintained after 6 months. The posttreatment "between-group" and follow-up "with-in group" effect sizes (Cohen's d) were large to medium for depressive symptoms and psychological flexibility. **Conclusions:** The results support the brief ACT-based intervention for sub-clinical depressive symptoms when treatment was conducted by briefly trained psychology students. It also contributes to the growing body of evidence on brief ACT-based treatments and inexperienced therapists.

Keywords: Acceptance and commitment therapy (ACT), depressive symptoms, brief intervention, novice therapist

Introduction

Subclinical mood problems as well as clinical depression are at the top of the list in the most common psychological problems among clients seeking psychological services (Kessler, Chiu, Demler, Merikangas and Walters, 2005; Kessler, Olfson and Berglund, 1998), and psychological treatments, especially cognitive therapies (CT) and cognitive-behavioural therapies (CBT) have been found to be effective in the treatment of depression and depressive symptoms (e.g. Hollon and Ponniah, 2010; Westen and Morrison, 2001). However, therapeutic interventions have been examined using well-trained and clinically experienced psychotherapists, the training of which is time-consuming and expensive. In recent years, research has extended to the field of shorter treatments delivered by novice therapists, and the

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results have been promising (Forand, Evans, Haglin and Fishman, 2011; Öst, Karlstedt and Widén, 2012).

In this preliminary study, a four-session Acceptance and Commitment Therapy (ACT) based intervention for depressive symptoms was administered by Masters level psychology students to adults reporting subjective feelings of depressive mood. ACT is based on functional contextualism and a profound theory of language and cognition called relational frame theory (Hayes, Masuda, Bissett, Luoma and Guerrero, 2004; Hayes, Barnes-Holmes and Roche, 2001; Hayes, Strosahl and Wilson, 2011). A key combining concept in ACT is psychological flexibility, the ability to be fully present and accepting while constantly changing or persisting in behaviour in the service of values (Hayes, Luoma, Bond, Masuda and Lillis, 2006). There are various studies supporting the model and its effectiveness in therapy work with respect to several mental health problems compared to treatment-as-usual, waiting-list controls and treatments designed to impact the problem (see meta-analysis by Hayes et al., 2006; also review by Ruiz, 2010). The efficacy research on ACT and its processes of change concerning diagnosed depression is still limited and supportive results are seen as preliminary (Bohlmeijer, Fledderus, Rokx and Pieterse, 2011; Hayes, Boyd and Sewell, 2011; Zettle and Hayes, 1986; Zettle and Rains, 1989).

Psychological treatments by novice therapists have been supported by research, but relatively few studies have been conducted with respect to applying ACT. In a study by Forman, Herbert, Moitra, Yeomans and Geller (2007), doctoral students received training in both CT (12 hours) and ACT (18 hours) and conducted both treatments (approximately 18 sessions) with similar improvements in client well-being. Lappalainen et al. (2007) examined the impact of CBT and ACT interventions for depression when therapists were Masters level psychology students whose training was part of the clinical teaching program consisting of 20 hours of lectures and 30 hours of supervision. The clients treated with ACT showed better improvement of symptoms compared to CBT clients, although well-being in both groups improved. The present study continues the research line of student-administered treatments presented in Lappalainen et al. (2007) by replicating parts of its design. The current study differentiates from that study by using a waiting-list control and more than a 50% shorter intervention model without a CBT group. A similar target population with subjective distress, but who may not fulfill the diagnostic criteria for depression, was used as we argue that this is a population often in need of psychological treatment. Also, compared to other psychology trainee studies (Forand et al., 2011; Öst et al., 2012), the present study uses a considerably shorter intervention and therapist training, a control group and a 6-month follow-up to assess treatment outcome stability. The aim of the current study was to examine whether a brief ACT-based intervention delivered by psychology students would have positive psychological effects on self-referred clients who reported depressive mood, compared to not administering any treatment (i.e. compared to a waiting-list group). This study also permitted the evaluation of longer term outcomes.

Method

Procedure

The analysed data consists of two successive collections (2008 and 2009) investigating the efficacy of a four-session ACT-based intervention in the treatment of depressive symptoms,

using an experiment (ACT) group and a waiting-list control (WLC) group design with a 6-month follow-up combining all treated participants. For ethical reasons no control condition was left to follow-up since the WLC group also received the same treatment approximately after a 5-week waiting period. The measurement after the waiting period was used as pre-measurement for the WLC group. The treatment was administered by student therapists conducting the project as a voluntary part of their Masters degree in psychology studies at the University of Jyväskylä, Finland.

Participants were recruited via a newspaper advertisement stating that a university research project studying the efficacy of a brief psychotherapeutic treatment provided by psychology students was seeking individuals with depressed mood. Participants were asked to contact via telephone or e-mail. The criteria of participants sought for inclusion were the following: 1) subjective depressive symptoms or depressed mood (diagnosis not necessary); 2) no other concurrent psychological treatment; 3) no reported diagnosis of schizophrenia; 4) no reported alcoholism; 5) no reported severe sensory or brain injury; 6) no reported neurological disorder. Criteria 3–6 were used for the neuropsychological research component of the same project. The participants were interviewed on the phone about their subjective mood and other inclusion criteria.

A total of 71 participants contacted the project of whom 60 met baseline inclusion criteria and decided to continue (see Figure 1 for the flow of the participants). After the sample of 60 was collected, a randomization into two groups by gender was conducted. After randomization, three participants decided to quit and the groups starting treatment were as follows: 1) the experiment group ($n = 28$) and 2) the WLC ($n = 29$) (i.e. the waiting-list group, of which 5 discontinued and 24 received treatment later). Altogether, 50 participants received the ACT treatment, and 9 discontinued treatment and did not attend the follow-up. Reasons for dropping out are not available.

A set of seven self-report measures (presented later) were completed on three occasions: before and after the treatment or the waiting phase, and 6 months after the treatment had ended; however, the WLC group completed the measures for the fourth time after their treatment had been completed due to the nature of the design. The AAQ-2 (the Acceptance and Action Questionnaire–2, earlier version; Bond et al., 2011) and the visual rating scale of 0–100 for mood (Ojanen and Seppälä 1997; Ojanen 2000, 2001) were also completed after every session to be used as additional clinical feedback to guide treatment decisions. Before the follow-up, participants received a letter with information concerning the upcoming measurement, and they were asked to contact the clinic. Those who did not contact were phoned by the research team one week later.

Participants

The sample consisted of 57 Caucasian participants (45 females and 12 males; one participant did not provide background information). Their mean age was 46.2 years ($SD = 11.9$, range = 17–71). They had an average of 1.6 children, and 16 (29%) of the participants were unmarried, 18 (32%) were married, 9 (16%) were living with their partner, and 13 (23%) were divorced. Twenty-two (39%) of the participants were working, 10 (18%) were unemployed, and 10 (18%) were retired; three (5%) were on sick leave, 6 (11%) were students, 3 (5%) were homemakers and 2 (4%) were entrepreneurs. Five (9%) of the participants had only basic education (comprehensive school), 25 (45%) had a secondary level education, 24 (43%)

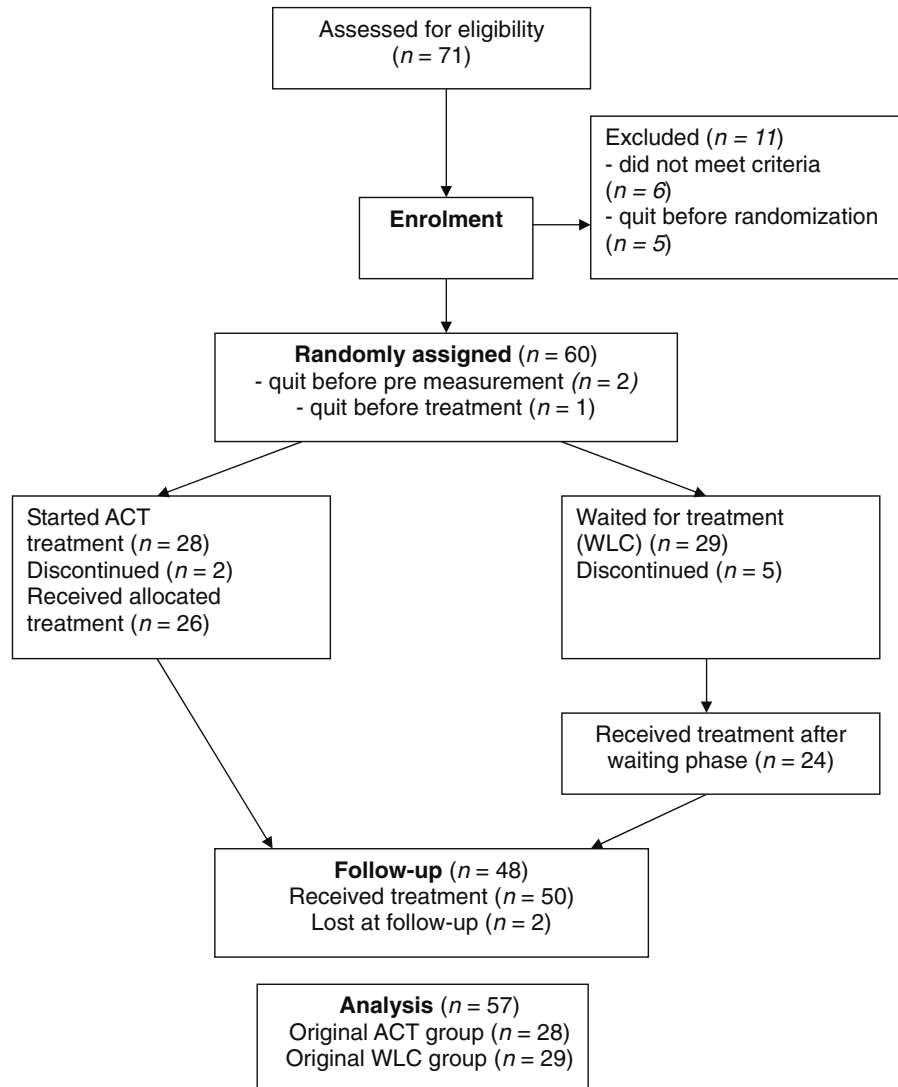


Figure 1. Participant flow through the study

had higher education (university or college), and 2 (3%) reported other. Thirty-five (63%) of the participants had previously received therapy or conversational support, 37 (66%) had previously used medication for depression or anxiety, and 16 (29%) were on medication when treatment started. Medication at pre-measurement was used by 9 (32%) of the participants in the ACT group and 7 (25%) in the WLC group. An independent samples *t*-test (for age and the number of children) and a χ^2 -test (for categorical variables) revealed no significant differences

between the ACT and WLC groups or between the two data collection groups with regard to their background information and medication use at pre-measurement.

Client measures

The Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock and Erbaugh, 1961) is a widely used self-report questionnaire with 21 items measuring the severity of depression. The reliability of the instrument and the internal consistency has been found to be high (Beck et al., 1961). *The Symptom Checklist-90* (SCL-90) is a broad self-report check list of psychopathological symptoms and has been validated with regard to the Finnish population (Holi, Samallahti and Aalberg, 1998). The internal consistency ranged between .77 and .90 in a patient sample and between .79 and .97 in a community sample. In our study, the scores from the SCL-90 are reported as General Severity Index (GSI) scores, which are calculated by dividing the original score by the number of questions (90). *The Social Adaptation Self-Evaluation Scale* (SASS; Bosc, Dupini and Polin, 1997) measures social functioning and coping with daily life, and has the Cronbach's alpha coefficient of .74, indicating good internal consistency.

Three descriptive visual rating scales of 0–100, measuring self-confidence, mood and life satisfaction were also used to present quick visual feedback (Ojanen and Seppälä 1997; Ojanen 2000, 2001). *The Acceptance and Action Questionnaire-2* (AAQ-2, earlier version), a 10-item self-report instrument utilizing a 7-point Likert-type scale, was used to evaluate psychological flexibility and experiential avoidance. The AAQ-2 started out as a 10-item scale that had been translated into Finnish and was used in this study, but it has been reduced to a 7-item scale after final psychometric analysis (Bond et al., 2011). The 7-item AAQ-2 has the mean alpha coefficient of .84 (Bond et al., 2011). The 7- and 10-item versions correlate at $r = .96$ and thus the earlier version of the AAQ-2 should be valid for research purposes (Bond et al., 2011). We have used it in the sense of evaluating the amount of psychological flexibility, with higher scores indicating more flexibility, thus items 2 to 5 and 7 to 9 were reverse-keyed.

Therapists

All therapists ($n = 20$) were female Masters level psychology students at the University of Jyväskylä, with mean age of 25.8 years ($SD = 5.4$; range = 22–47 years). One student had completed an internship period of 6 months, but none of the students had experience of practising psychotherapy.

The students had received approximately 10 hours of training on ACT as part of their clinical methods course and, in addition to this, they received extra training (4 hours) in the brief ACT protocol. The training included a lecture on the general principles of ACT core processes as well as the presentation of a “functional analytic clinical case model” (FACCM; Haynes and O'Brien, 2000) and the practice of constructing one. FACCM is a vector-graphic approach for analysing problematic behaviours, the relations between behavioural problems and the importance, strength and direction of those causal and non-causal relations (Haynes and O'Brien, 2000). Therapists used an ACT manual (Lappalainen et al., 2004) throughout the therapy and they attended weekly group supervisions (2–3 hours) during the treatment. All student therapists took part in the supervision sessions in which ongoing interventions were discussed, methods and exercises used were reviewed, and treatment considerations in

Table 1. The total number and percentage per session of methods used by all therapists, showing all clients attending all four sessions ($n = 41$); the number in each cell states for how many clients the method was used during each session

Method	Session 1	Session 2	Session 3	Session 4
Clarifying goals	31 (76%)	25 (61%)	18 (44%)	14 (34%)
Values	14 (34%)	41 (100%)	36 (88%)	32 (78%)
Attempts to change and solve problems	23 (56%)	21 (51%)	20 (49%)	23 (56%)
Discussion on control and acceptance	14 (34%)	22 (54%)	23 (56%)	33 (80%)
Conceptions of self	7 (17%)	13 (32%)	23 (56%)	15 (37%)
Metaphors	25 (61%)	29 (71%)	30 (73%)	35 (85%)
Dealing with cognitive defusion	5 (12%)	7 (17%)	16 (39%)	12 (29%)
Observer exercise	2 (5%)	23 (56%)	32 (78%)	4 (10%)
Mindfulness exercise	39 (95%)	21 (51%)	26 (63%)	26 (63%)
Home assignments	41 (100%)	40 (98%)	41 (100%)	34 (83%)

line with ACT model were outlined for the following session. The supervisor/trainer (RL) had been trained in both CBT and ACT, and had approximately 10 years of clinical experience in ACT. The supervision was an important component in controlling adherence and assuring the use of ACT-based methods. The therapists were to report what they had actually done during sessions and the use of a checklist was required (Table 1).

Treatment

Treatment was conducted in an individual format and the language used was Finnish, except in the case of one native English speaker with moderate Finnish language skills to whom the treatment was offered in English. Student therapists followed a semi-structured treatment model and they were able to adapt certain aspects such as metaphors and exercises to benefit the client in question. Each session lasted approximately 60 minutes and took place at the Department of Psychology. Two leading guidelines were given to the therapists. First, they were instructed to find out in cooperation with their clients how they could most effectively influence their lives by value-based actions; that is, to “activate” clients between the sessions. The second guideline focused on working with emotional and verbal barriers that may rise when taking actions toward a “good life”.

Session 1 consisted mostly of gathering additional background information and constructing a problem list based on the client’s issues. An ACT-based value description (writing down everything the client affiliates with a “good life”) was used as a home assignment. Based on the problem list, the therapist constructed the FACCM showing, in graphical form, how the problems were related to each other. Between sessions 1 and 2 the FACCM was presented to the supervisor, and during session 2 it was viewed with the client. After presenting the FACCM, a value analysis was constructed in session based on the client’s value description. The FACCM and values analyses were used to guide decisions concerning treatment targets and aims for each client. Sessions 3 and 4 were more individually planned during supervision, and during session 4 a summary of the treatment and future directions were covered with the client to support future work towards valued life.

ACT metaphors and exercises were used throughout the whole treatment process and therapists were instructed to use at least one during each session. Home assignments were either related to the methods and exercises used during sessions or they emerged from the client's life situation. ACT processes were worked with the client using discussions on values, control and acceptance, different metaphors and exercises.

A more elaborate treatment description is available from the corresponding author. We were not able to collect video or audio recordings of the sessions: instead, after each session, therapists marked on a checklist which methods were used (according to pre-formulated categories, see Table 1). Previous studies in our research group have shown good correspondence (Cohen's kappa = .82) between the checklist and independent observers' ratings regarding the frequency of the usage of the methods (Haapala, 2008). Our clinical experience is that the adherence to the treatment protocol among students is very high, and observations made during supervision support that.

Statistical analysis

Statistical analyses were conducted with the SPSS for Windows software (version 18.0). The effects of the treatment were compared between groups (Group x Time) using a repeated measures analysis of variance with Group (ACT treatment vs. waiting-list control) as a "between-group" factor and with Time (pre- and post-measurements) as a "within-group" factor. All dependent variables were entered one at a time. If the interaction was significant, the Time effect was further tested for both groups separately. The stability of the treatment outcome was examined using an ANOVA for repeated measures. Pre, post and follow-up scores were entered one at the time, used as dependent variables and compared with each other in order to identify possible changes during and after the treatment. Analyses were conducted for treatment completers and intent-to-treat (ITT) analyses were calculated using the last-observation-carried-forward (LOCF) method on the conservative assumption that participants who discontinued prematurely experienced no change. A similar pattern of results was obtained with both analyses; therefore, only the ITT results are reported. All participants who began treatment ($n = 57$) were included in the ITT sample. The effect sizes (ES; Cohen's d) were calculated as follows. The between-group ES was calculated posttreatment by dividing the difference between the treatment group mean and the control group mean by the pooled standard deviation (SD) of the conditions. The within-group ES was calculated for both post- and follow-up measurement by dividing the mean change from pre to post by the pre-measurement SD and by dividing the mean change from the pre to follow-up with the pre-measurement SD (Feske and Chambless, 1995; Morris and DeShon, 2002). A between-group effect size of 0.2 was considered small, 0.5 medium, and 0.8 large. A within-group ES of 0.5 was considered small, 0.8 medium, and 1.1 large (Roth and Fonagy, 1996; Öst, 2006). Clinical significance for depressive symptoms was computed based on the Jacobson and Truax (1991) model in which both a reliable change index (RCI, a minimum decrease from pre to post and pre to follow-up) and the crossing of a cut-off point approximating a shift from clinical to nonclinical status, are required. Calculating the individual RCI and the cut-off C for whole sample, the results of validation study were used: the mean and SD of BDI for non-patient were 7.21 and 6.83 respectively, and internal consistence was .86 (Elovainio et al., 2009). The mean and SD of BDI for patient from this study were 22.44 and 9.95, respectively. Cutoff C level was 13.41 (BDI).

Results

Baseline equivalence

At pre-measurement, there were no statistically significant differences in any of the measures between the data samples (2008/2009) or the two groups (ACT and WLC) except in experienced symptoms (SCL-90-GSI), the higher amount of symptoms being reported in the ACT group.

Comparison of ACT treatment group vs. waiting-list control (WLC) group

The results yielded a main effect for all the dependent variables ($F(1, 55) = 12.45 - 46.29$, $p = .000 - .001$). As can be seen from Table 2, there was a significant Group x Time interaction effect on all variables, indicating that the groups changed differently during the treatment in favour of the ACT group. Between-group effect sizes indicate large differences in depressive symptoms (BDI, $d = .93$) and mood (Mood, $d = .85$); medium-sized differences in psychological flexibility (AAQ-2, $d = .61$), social functioning (SASS, $d = .58$), self-confidence (Self-confidence, $d = .71$) and life satisfaction (Life satisfaction, $d = .64$); and a small difference in experienced symptoms (SCL-90-GSI, $d = .39$) (see Öst, 2006). Mean scores, standard deviations, interaction effects and between-group effect sizes (Cohen's d) at pre- and posttreatment for both groups are presented in Table 2.

Treatment outcome and 6-month follow-up

The treatment effects lasted for the 6-month follow-up period and there was a significant within-group treatment main effect over time on all variables (Table 3). Paired t -tests were done on all dependent variables. Psychological flexibility (AAQ-2) had significantly increased during pre to post ($t(56) = -4.91$, $p = .000$), and pre to follow-up ($t(56) = -6.56$, $p = .000$), but there was no further reductions from post to follow-up ($t(56) = -1.17$, $p = .246$). A similar pattern was found in terms of Mood, Self-confidence and Life satisfaction (pre to post $t(56) = -4.64 - -6.04$, $p = .000$; pre to follow-up $t(56) = -4.61 - -6.13$, $p = .000$; and post to follow-up $t(56) = -.64 - -1.95$, $p = .056 - .524$). There were significant changes from post to follow-up in terms of depressive symptoms, experienced symptoms and social functioning (pre to post $t(56) = -3.71 - 6.73$, $p = .000$; pre to follow-up $t(56) = -4.85 - 6.99$, $p = .000$; and post to follow-up $t(56) = -2.56 - 2.45$, $p = .013 - .039$). Within-group effect sizes indicated that the overall effectiveness of the treatment (from pre to follow-up) was large in terms of BDI ($d = 1.09$) and Mood ($d = 1.10$). Medium-sized effects were detected in terms of SCL-90-GSI ($d = .78$), AAQ-2 ($d = .84$), and Life satisfaction ($d = .99$). Means, standard deviations, main effects of time, and within-group effect sizes (Cohen's d) are presented in Table 3.

Approximately half of the participants had originally belonged to the WLC group, and they had waited an average of 37.2 days ($SD = 5.9$) for their treatment. The waiting period had not significantly influenced the WLC group except with regard to mood (Mood $t(28) = -2.19$, $p = .037$) which had elevated statistically significantly indicating some positive changes in mood among the waiting clients. The original ACT and WLC groups were also examined as separate groups at follow-up. The assumption of sphericity had been violated in terms of BDI, SCL-90-GSI, SASS and Mood, therefore degrees of freedom were corrected using

Table 2. Mean scores (standard deviations), interaction effect and between group effect sizes (Cohen's *d*) of the intent-to-treat sample

Measurement ^a	ACT therapy (n = 28)		WLC (n = 29)		Group x Time (interaction effect)	
	Pre	Post	Pre	Post	F	ES Cohen's <i>d</i> (between-group)
BDI	23.93 (9.79)	12.57 (8.88) †	22.03 (8.84)	21.21 (9.76)	19.01 **	-0.93
SCL-90-GSI	1.36 (.61)	.73 (.50) †	1.05 (.47)	.93 (.53)	15.33 **	-0.39
AAQ-2	37.00 (10.67)	48.54 (11.83) †	40.10 (12.51)	41.07 (12.63)	14.99 **	0.61
SASS	33.04 (8.02)	37.96 (6.39) †	33.52 (5.33)	34.24 (6.38)	6.89 *	0.58
Mood	36.96 (14.98)	60.32 (20.00) †	38.93 (16.86)	44.72 (16.39) †	16.81 **	0.85
Self-confidence	45.79 (19.78)	62.36 (20.74) †	45.97 (19.11)	48.17 (18.93)	14.50 **	0.71
Life satisfaction	45.36 (15.93)	60.54 (21.98) †	47.52 (15.36)	48.79 (13.68)	14.67 **	0.64

† statistically significant difference between pre- and post-measurements using within-group repeated measures * $p < .05$, ** $p < .01$

^aBDI = Beck Depression Inventory; SCL-90-GSI = Symptom Checklist-90 General Severity Index; AAQ-2 = Acceptance and Action Questionnaire - 2; SASS = Social Adaptation Self-evaluation Scale; Mood = visual rating scale of 0-100 for mood; Self-confidence = visual rating scale of 0-100 for self-confidence; Life satisfaction = visual rating scale of 0-100 for life satisfaction

Table 3. Pre-, post- and follow-up measurement mean scores and standard deviations of the intent-to-treat sample

Measurement ^a	All starting treatment (<i>n</i> = 57)				Main effect for time <i>F</i>	Effect size (Cohen's <i>d</i>) within-group	
	Pre		Post			Pre to post	Pre to follow-up
	Pre	Post	Follow-up (6 months)	<i>F</i>			
BDI	22.44 (9.95)	14.19 (9.67) †	11.60 (9.89) ††	41.57 **	0.83	1.09	
SCL-90-GSI	1.15 (.59)	0.79 (.54) †	0.69 (.53) ††	28.43 **	0.61	0.78	
AAQ-2	38.68 (11.01)	46.33 (12.36) †	47.96 (10.85) ††	24.54 **	-0.69	-0.84	
SASS	33.60 (7.01)	36.68 (6.71) †	38.79 (8.65) ††	17.15 **	-0.44	-0.74	
Mood	40.96 (15.95)	57.05 (20.36) †	58.56 (21.00) ††	32.73 **	-1.01	-1.10	
Self-confidence	47.33 (19.33)	57.53 (20.55) †	58.63 (22.66) ††	18.89 **	-0.53	-0.58	
Life satisfaction	47.30 (14.81)	58.26 (21.21) †	61.96 (20.28) ††	26.61 **	-0.74	-0.99	

† significant difference between pre- and post-measurements measured with paired samples t-test; †† significant difference between pre- and follow-up measurements measured with paired samples t-test * *p* < .05, ** *p* < .01

^aBDI = Beck Depression Inventory; SCL-90-GSI = Symptom Checklist-90 General Severity Index; AAQ-2 = Acceptance and Action Questionnaire - 2; SASS = Social Adaptation Self-evaluation Scale; Mood = visual rating scale of 0-100 for mood; Self-confidence = visual rating scale of 0-100 for self-confidence; Life satisfaction = visual rating scale of 0-100 for life satisfaction

Huynh-Feldt estimates of sphericity. A repeated measures analysis of variance yielded significant Group x Time interaction effects on all dependent variables: BDI $F(1.79, 98.65) = 5.21, p = .009$, SCL-90-GSI $F(1.81, 99.28) = 10.55, p = .000$, AAQ-2 $F(2, 110) = 3.67, p = .029$, SASS $F(1.87, 102.82) = 3.19, p = .049$, Mood $F(1.85, 101.97) = 6.45, p = .003$, Life satisfaction $F(2, 110) = 4.89, p = .009$ and Self-confidence $F(2, 110) = 6.47, p = .002$. The additional analysis indicated better treatment outcomes in the case of participants belonging to the first treated ACT group. All clients were also divided in terms of medication use at pre-measurement (yes/no) and no significant differences at pre, post or follow-up between the groups were found.

Clinical significance (Jacobson and Truax, 1991) was examined at post and follow-up in terms of self-reported depressive mood based on the BDI (Beck et al., 1961) using four categories: (1) recovered; (2) improved; (3) unchanged; (4) deteriorated. When examining all clients who began treatment ($n = 57$), at post 17 (30%) were recovered, 8 (14%) were improved, 19 (33%) remained unchanged and 1 (2%) deteriorated. At follow-up, the results were 22 (38%), 5 (9%), 17 (30%) and 1 (2%) respectively. Twelve (21%) of the clients had a pre-measurement BDI below the cut-off point (BDI = 13.41), and were not classified according to the model. There were no statistically significant differences between the first treated ACT group and the later treated WLC group at post or follow-up.

Discussion

Main findings

The results indicated that the clients with sub-clinical depressive symptoms who underwent the four-session intervention showed significantly greater decreases in depressive mood and symptoms, and improvements in psychological flexibility and overall mental well-being compared to those not receiving treatment. Stability of the treatment effect was confirmed by a 6-month follow-up. Both between- and within-group effect sizes were comparable to other studies (e.g. Forand et al., 2011; Hayes et al., 2006; Ruiz, 2010; Öst, 2006; Öst et al., 2012) with regard to self-reported depressive symptoms and psychological flexibility. This study suggests that adults reporting mild to moderate depressive symptoms can be effectively treated with a very brief intervention, even when clinically inexperienced psychology students are applying the treatment, which is consistent with earlier research (Forman et al., 2007; Lappalainen et al., 2007).

Limitations

When drawing conclusions from this study, the following limitations must be observed. Because of the brief training and complexity of the model, the methods may have been used in a more mechanical way compared to them being used by experienced ACT therapists; however, we argue that this is an issue common to all novice therapists regardless of the orientation. Also, the student therapists were highly motivated to use new approaches. Thus, the results can be generalized with regard to motivated young university students having extensive training in general psychology.

Since self-report measures of depressive symptoms and psychological distress were used instead of formal diagnosis, nonself-report or behavioural measures, the results do not

necessarily apply to clients with more severe and complex presentation of symptoms. In those cases, more extensive and intensive treatments applied by experienced clinicians may be required. Nevertheless, we argue that the client group in this study represents a clinically relevant population in mental health settings.

Also, the small sample size limits the generalizability of the results and prevents further reliable analysis concerning subgroups. It could also be argued that the assessment meetings and the waiting period of the WLC group may have affected the results. In fact, there were some indications that waiting for treatment had a positive effect on mood, yet the treatment effect of the WLC group was slightly weaker. The observation of the smaller intervention effect of the WLC group is interesting, and may need further attention. Thus, the conclusions drawn from the pre, post and follow-up data may be conservative. Additionally, another approach instead of the last-observation-carried-forward (LOCF) could have been used. However, based on our earlier experiences (Lappalainen et al., 2007), we estimated that LOCF would produce approximately the same results as using observed cases.

Clinical implications and future research

Although the results supporting the effectiveness of the brief intervention can be seen as preliminary, they illustrate that the combination of extremely brief treatments and therapists with no previous formal psychotherapeutic training or experience can generate positive therapeutic changes in the treatment of subjective distress and depressive symptoms. One must be cautious regarding the results as the current study did not involve a population with clinical depression and the results cannot be readily generalized to such a population.

Future research should investigate to whom these shorter treatments are best suited. Generalizing the results of efficacy research to real-world or other clinical settings can pose a problem (Roth and Fonagy, 1996), and we argue that if these findings can be replicated in more naturalistic settings, the cost and clinical implications would be considerable.

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II

WHAT HAPPENS AFTER FIVE YEARS?: THE LONG-TERM EFFECTS OF A FOUR-SESSION ACCEPTANCE AND COMMITMENT THERAPY DELIVERED BY STUDENT THERAPISTS FOR DEPRESSIVE SYMPTOMS

by

Aino Kohtala, Joonas Muotka, & Raimo Lappalainen, 2017

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Empirical Research

What happens after five years?: The long-term effects of a four-session Acceptance and Commitment Therapy delivered by student therapists for depressive symptoms

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ABSTRACT

Brief interventions can be viable treatment options worth consideration in addressing the growing need for treatments of subclinical and clinical depressive symptoms. However, there is uncertainty regarding the long-term benefits of these interventions. The aim was to examine the long-term (5-year) effects of a 4-session Acceptance and Commitment Therapy (ACT) intervention for low mood delivered by novice therapists in order to see whether lasting effects could be achieved cost-effectively with four intervention sessions. Originally, 57 self-referred clients were randomized into two groups: an intervention group and a waiting-list control group which received treatment later. The groups were combined both at the 6-month ($n=48$) and the 5-year ($n=35$) follow-up measurements to examine intervention effects. The results indicate a good effect size for depressive symptoms (the Beck Depression Inventory (BDI)): $d=1.45$ (CI 1.10–1.80) through the five-year study period. All in all, approximately 40% of the participants reported minimal to no depressive symptoms based on the primary outcome measure, the BDI (scores 0–9), both at post- and 5-year follow-up measurements.

1. Introduction

Depressive symptoms, either clinical or subsyndromal, are often the reason people seek psychological services (Smit et al., 2006), and mood related symptoms impair functioning and affect well-being in terms of both clinically diagnosed depression (Kessler, Chiu, Demler, & Walters, 2005) and those suffering at the subclinical level (Goldney, Fisher, Dal Grande, & Taylor, 2004; Horwath, Johnson, Klerman, & Weissman, 1992; Judd, Paulus, Wells, & Rapaport, 1996). Meta-analyses indicate that psychological interventions and psychotherapy are effective for both clinical and subclinical depression (Barth et al., 2013; Cuijpers et al., 2014; Cuijpers, van Straten, van Schaik, & Andersson, 2009; Linde et al., 2015), and treatments based on the cognitive-behavioral therapy (CBT) model are among the most studied and reviewed as empirically supported (Cuijpers et al., 2013; Hollon & Ponniah, 2010). They could be regarded as the first-line option for treatment (Hollon, 2016). As depressive symptoms are strongly associated with clinical depression or major depressive episode, effective treatments should be developed and implemented early (Horwath et al., 1992). Depressive symptoms are often encountered in low-level settings which may limit the possibility to offer standard-length psychotherapy (Bijl & Ravelli,

2000; Nieuwsma et al., 2012), and a significant part of those seeking help are new cases advocating for easy and rapid access to treatment to prevent symptoms from worsening (Smit et al., 2006).

Brief psychological interventions may be more readily implemented in low level settings and could offer a viable possibility to an easier access to psychological help in order to diminish suffering (Churchill et al., 2001; Nieuwsma et al., 2012). We argue that those interventions could be a viable alternative to meet the service needs, especially among clients with mild psychological symptoms. Psychological flexibility (Hayes, Masuda, Bissett, Luoma, & Guerrero, 2004; Kashdan & Rottenberg, 2010) could offer an insight on how to promote psychological health and decrease distress. Psychological flexibility is a core concept in Acceptance and Commitment Therapy (ACT; Hayes et al., 2004; Hayes, Strosahl, & Wilson, 2011), a recent development in the CBT tradition, focusing on acceptance and valued living. Earlier research focusing on acceptance- and value-based interventions has shown promising, positive results regarding a wide variety of psychological and health-related suffering (A-Tjak et al., 2015; Hayes, Luoma, Bond, Masuda, & Lillis, 2006; Powers, Zum Vörde Sive Vörding, & Emmelkamp, 2009; Ruiz, 2010), even in a time-limited (3–10 sessions) intervention setting (Hayes et al., 2006; Kohtala,

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Lappalainen, Savonen, Timo, & Tolvanen, 2015; Lappalainen et al., 2007, 2014; Lappalainen, Langrial, Oinas-Kukkonen, Tolvanen, & Lappalainen, 2015). Psychological flexibility is targeted in ACT interventions and mediational data suggests that it is likely to be influencing the positive outcomes, yet the results seem to be somewhat mixed and follow-ups were often at 6 months or less with some exceptions (e.g. Ciarrochi, Bilich, & Godsel, 2010).

We developed a 4-session, semi-structured, individual-oriented ACT-based intervention for self-reported depressive symptoms. An earlier report on our brief intervention (Kohtala et al., 2015) declared it to have had a positive impact on the well-being of the participants: after the intervention, decreases in depressive symptoms and increases in psychological flexibility were found to have been greater than in the parallel waiting-list control group, and these effects were maintained in the intervention group across a 6-month follow-up period.

However, more research is needed to investigate both the effectiveness of very brief psychological interventions and especially their long-term effectiveness, since the maintenance of treatment outcomes is an important factor when assessing interventions to be implemented and disseminated in health care systems. Follow-ups lasting longer than 12 months are rare in psychotherapy research, with a few exceptions. In CBT literature, several CBT-based interventions with long follow-ups have been reported to show promising yet fading results concerning relapse prevention (Fava et al., 2004; Fava, Rafanelli, Grandi, Canestrari, & Morphy, 1998; Paykel et al., 2005). Regarding depressive symptoms, research on long-term effectiveness has yielded some cases with good maintenance of treatment outcomes (Andersson et al., 2013; Stagl et al., 2015; Wiles et al., 2016), but research on individual brief interventions with long-term follow-up periods is scarce. Follow-ups beyond the 12-month mark are also rare in ACT as well as in other types of cognitive-behavioral therapies, and the results have been mixed. With respect to the ACT literature, Zettle and Rains (1989) were among the first to report positive results in the treatment of depression yet with only a two-month follow-up. More recently, two studies have examined different modalities of brief ACT interventions (face-to-face and Internet-delivered) for depressive symptoms with an 18-month follow-up (Folke, Parling, & Melin, 2012; Lappalainen et al., 2014). Those interventions included individual or group sessions, and reported significant improvements in depressive symptoms, general health and quality of life. Treatment gains were maintained across the 18-month follow-up periods. While there is evidence for the treatment effectiveness of such brief ACT interventions with follow-ups, the longer-term impact is unknown.

Given the scarcity of long-term follow-up data on brief ACT interventions for depressive symptoms, our aim was to gain preliminary long-term data on the effectiveness of a brief ACT intervention for depressive and other psychological symptoms, as well as on psychological flexibility and mindfulness skills. The current study is a follow-up investigation to our earlier study (Kohtala et al., 2015), in which a pre-post comparison with a waiting-list control group was conducted covering a 6-month follow-up period (without the waiting-list comparison group). The current study evaluates the maintenance of that intervention's effects after a period of 5 years. Our primary intention was to study the long-term effectiveness of that brief ACT intervention provided by novice therapists, which had a non-diagnosed population seeking help for low mood. Studies, for example by Forand, Evans, Haglin, and Fishman (2011), Hiltunen, Kocys, and Perrin-Wallqvist (2013), and Öst, Karlstedt, and Widén (2012), suggest that treatments provided by trainees can be effective. Furthermore, we argue that it is also important to investigate the effectiveness of low-cost interventions for the benefit of clients with milder symptoms of depression in order to decrease the possibility of major depressive episodes (Cuijpers et al., 2014; Horwath et al., 1992).

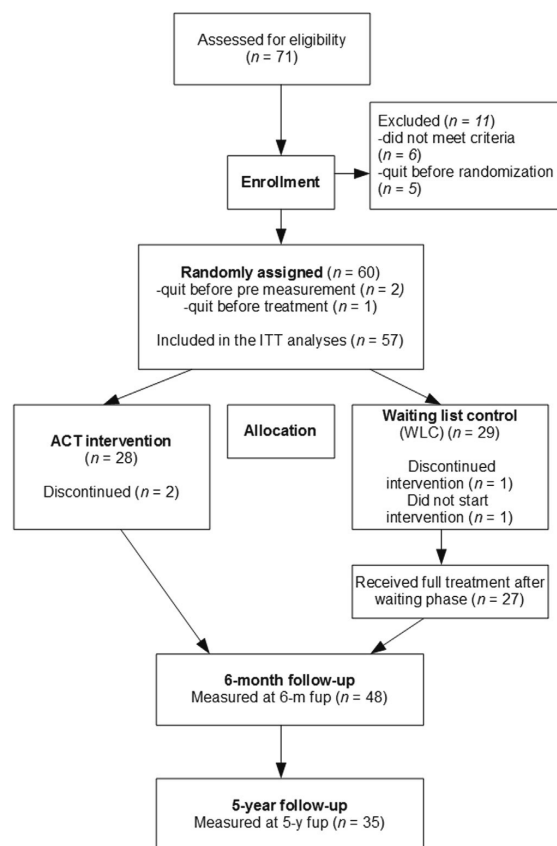


Fig. 1. Flow of the participants.

2. Method

2.1. Participants

The participants were recruited via a newspaper advertisement stating that a university research project studying the efficacy of a brief intervention conducted by psychology students was seeking participants experiencing depressed mood. Originally, 71 participants contacted the project. Eleven were excluded because inclusion criteria were not met or they wished to discontinue (see Fig. 1 showing the flow of participants). The criteria for inclusion were as follows: 1) subjective depressive symptoms or depressed mood (diagnosis not necessary); 2) no other concurrent psychological treatment; 3) no reported schizophrenia; 4) no reported alcoholism; 5) no reported severe sensory or brain injury; and 6) no reported neurological disorder. We anticipated an imbalanced gender distribution as depression is roughly twice as common in women as in men (Leach, Christensen, Mackinnon, Windsor, & Butterworth, 2008), and research suggests that women are more likely to seek psychological help than men (Smith et al., 2013). Thus, the remaining 60 participants were randomized into two groups by gender. From those 60 participants, two participants quit before the pre-intervention measurement and one dropped out just before the intervention started, leaving 57 participants organized into two overarching groups: 1) the ACT intervention group ($n=28$), and 2) the waiting-list control group ($n=29$) (i.e., WLC group, whose participants were informed that they would receive treatment approximately five weeks later). In secondary analyses later, the original ACT group is referred to as Group 1 and the waiting-list control group (WLC) as

Group 2. The waiting list controls also had one additional measurement before the start of the intervention (serving as their pre-treatment measurement). All in all, three participants decided to discontinue the intervention and one participant from the WLC group did not begin their intervention after the waiting phase. Their mean BDI score was 11 ($SD = 9.83$; $range = 2–20$). Reasons for dropping out are not available. In addition, two participants who completed the intervention were not reached to participate in the post-measurement. Altogether 51 participants were analyzed at post-measurement.

All 57 (28 + 29) participants were Caucasian (45 female, 79%, and 12 male, 21%; one participant did not provide background information). Their mean age at the beginning of the research was 46.2 years ($SD = 11.9$, $range = 17–71$). Over 68% of the participants were reporting moderate to severe symptoms of depression.¹ Table 1 presents the participants' background information and variables at both the pre-intervention and 5-year follow-up measurement points. More detailed pre-intervention socio-demographic data, by group (original ACT vs. waiting-list control), have been presented elsewhere (Kohtala et al., 2015).

2.2. Procedure

The data analyzed covered two waves (Spring 2008 and 2009) of a four-session (weekly 60-min sessions over a period of four weeks), individual-oriented ACT intervention for the treatment of self-reported depressive symptoms. More elaborate descriptions of the intervention protocol, the research design, and the intervention's effectiveness have been reported elsewhere (Kohtala et al., 2015) and can be obtained from the corresponding author.

Both groups which had received treatment were contacted six months and again five years after their intervention had ended. Self-report measures (presented later) were completed before the intervention as well as six months and again five years after it. Both at the 6-month and 5-year follow-up points, all of the 57 participants who had started the intervention/waiting-phase were contacted by letter a month before informing them about the upcoming measurement and providing the clinic's contact information. Those who did not make contact on their own were proactively contacted a week later. Altogether 48 participants were reached and agreed to participate at the 6-month follow-up measurement, and 35 at the 5-year follow-up measurement. The 5-year follow-up assessment included an interview either on the phone or face-to-face based on each participant's preference. A packet of self-report inventories and a background information form were sent to the participants prior to the follow-up interview to be completed beforehand. The inventories and questionnaires used were the same as for the measurements during the intervention phase and at the 6-month follow-up assessment. All in all, 22 participants (39%) dropped out during the 5-year follow-up period (Fig. 1). From the sample of 35 participants (61%), 26 had participated in all of the previous measurements: pre-, post-, and 6-month follow-up measurements. Fifteen participants agreed to an audio-recorded interview. A small reimbursement was offered to all participants to compensate them for their time.

In examining the background variables (documented at the beginning of the intervention, see Table 1), the following differences were found between the participants who dropped out before the 5-year follow-up measurement ($n = 22$) and those who continued ($n = 35$). The two groups differed in terms of age ($t(55) = 2.39$, $p = 0.020$), the participants who continued were significantly older. However, when examining depression symptoms (the Beck Depression Inventory), those

Table 1
Background information for three different groups.

Baseline characteristic	Pre-intervention measurement ($n = 56^a$)	Pre-intervention measurement for participants not included in the 5-year follow-up ($n = 21^b$)	5-year follow-up measurement ($n = 35$)
Female/Male	45/12 (79% / 21%)	16/6 (73% / 27%)	29/6 (83% / 17%)
Employment			
Work life	24 (43%)	7 (33%)	17 (49%)
Outside of work life	13 (23%)	5 (24%)	8 (23%)
Unemployed	10 (18%)	3 (14%)	7 (20%)
Other	9 (16%)	6 (29%)	3 (8%)
Education			
Basic education	5 (9%)	2 (6%)	3 (9%)
Secondary degree	25 (45%)	14 (40%)	13 (37%)
Higher education	24 (43%)	18 (51%)	18 (51%)
Other	2 (3%)	1 (3%)	1 (3%)
Civil status			
In a relationship	27 (48%)	8 (38%)	21 (60%)
Unmarried	16 (29%)	10 (48%)	4 (11%)
Divorced	13 (23%)	3 (14%)	8 (23%)
Other	0 (0%)	0 (0%)	2 (6%)
Mental health diagnosis^b			
No diagnosis	25 (45%)	20 (57%)	28 (80%)
Depression	25 (45%)	11 (31%)	4 (11%)
Depression and other	4 (7%)	3 (9%)	3 (9%)
Other than depression	2 (3%)	1 (3%)	0 (0%)
Psychotropic medication used	16 (29%)	9 (43%)	2 (6%)

^a One participant refused to give background information.

^b Diagnosed by a general doctor or a psychiatrist.

who dropped out and those who had participated in the 5-year follow-up did not significantly differ from each other both at pre- and post-measurement nor in terms of changes in depression during the intervention period.

2.3. Intervention

According to its protocol, the intervention consisted of four sessions that were acceptance- and value-based, semi-structured, yet individually oriented. The therapists were female Master's degree level psychology students ($n = 20$). The total time used for training and supervising the novice therapists was approximately 23 h, consisting of training on the ACT model and methods, and mandatory group supervision provided weekly during the intervention phase. During the supervision, each session was planned and prepared under the guidance of an experienced ACT therapist. A case formulation model (*the FACCM model*; Haynes & O'Brien, 2000) was used to conceptualize client issues and to guide the formulation of treatment aims in co-operation with the client and their values. The key guidelines of the intervention were the following: (1) clarification of values, (2) individual activation for changes based on client-defined values, and (3) dealing with different emotional and verbal barriers. In addition, at least one ACT metaphor or experiential exercise (such as the *Observer* exercise (Hayes et al., 2011)) was designated to be used during each session, using a Finnish handbook on ACT (Lappalainen et al., 2004). A more elaborate training and intervention description can be found elsewhere (Kohtala et al., 2015) and is also available from the corresponding author (A.K.).

¹ Depression severity was calculated based on the BDI categories at pre-measurement as follows: 1) minimal depression = 10.5% (6 participants), 2) mild depression = 21% (12 participants), 3) moderate depression = 44% (25 participants), 4) severe depression = 24.5% (14 participants).

2.4. Client measures

To measure self-perceived depressive symptoms, the *Beck Depression Inventory* (BDI) was used. It is a 21-item questionnaire measuring the severity of diagnostic depression symptoms (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961). Its reliability and internal consistency have been found to be high (Beck et al., 1961), and the convergent validity between the BDI and the BDI-II (Beck, Steer, & Brown, 1996) have been reported as high, ranging from 0.82 to 0.94 (Wang & Gorenstein, 2013). When planning the research study, the BDI-II was not available. Psychological symptoms were measured using the *Symptom Checklist-90* (SCL-90; Derogatis, Lipman, & Covi, 1973), which is a broad self-report checklist validated in regard to the Finnish population (Holi, Sammallahti, & Aalberg, 1998). For example, in a community sample the internal consistency ranged between 0.79 and 0.97, and in a patient sample between 0.77 and 0.90. In the current study, the SCL-90 scores are reported as *General Severity Index* (GSI) scores (calculated by dividing the SCL-90 score by the number of questions). Social functioning and coping with daily life was measured with the *Social Adaptation Self-Evaluation Scale* (SASS) (Bosc, Dubini, & Polin, 1997), which has the Cronbach's alpha coefficient of 0.74. Self-confidence, mood and life satisfaction were measured using three descriptive *Visual Analog Scales* (VAS scales) with a 0–100 range (Ojanen & Seppälä, 1997; Ojanen, 2001). The *Acceptance and Action Questionnaire – 2* (AAQ-2, earlier version), which is a 10-item self-report survey using a 7-point Likert-type scale, was used to measure the intertwined ACT subcomponents influencing what is defined as *psychological flexibility* (Ciarrochi et al., 2010). From now on, we use *psychological flexibility* to address the findings from the AAQ-2. The version used in this study was the 10-item scale, which had been translated into Finnish. That version has been reduced in the past to include only seven items and has the mean alpha coefficient of 0.84 (Bond et al., 2011). The correlation between the 7- and 10-item versions is $r=0.96$, and, according to Bond et al. (2011), the earlier version of the AAQ-2 is valid for research purposes. In the present study, higher scores on the AAQ-2 indicate more flexibility, meaning items 2–5 and 7–9 were reverse-scored. Mindfulness skills were evaluated using the *Kentucky Inventory of Mindfulness Skills* (KIMS), which is a 39-item self-report inventory that measures four components of mindfulness skills: observing, describing, acting with awareness, and accepting without judgment (Baer, Smith, & Allen, 2004).

The same assessment tools as in the earlier stages of the project were used in the 5-year follow-up. An interview consisting of ten open questions was conducted at the 5-year follow-up point, and some of the results are presented later to give supplementary information in addition to the quantitative data as we consider follow-ups this long to be a rarity in intervention research. There were questions concerning overall well-being and any major or minor life changes during the five years (e.g., *How has your well-being changed since the intervention ended, during the past five years?*). The participants were asked about the brief intervention and its perceived effects, whether they still used the principles learned during the intervention (e.g., *Has something from it stayed with you?*), and possible changes related to their thoughts and emotions (e.g., *Has your stance toward your thoughts and feelings changed somehow? Do you associate these possible changes to the brief intervention in any way?*). In addition, the participants were asked whether or not they had taken part in any other psychological or psychiatric treatments during the 5-year follow-up period.

2.5. Data analyses

Data analyses were carried out using the SPSS software program (version 22.0) and the latent variable Mplus program (version 7; Muthén & Muthén, 2012). Differences between the intervention groups at the start of the intervention were tested using chi-square and *t*-tests. All 57 of the randomized participants were included in the intent-to-treat analysis studying the effects of the intervention at the 5-year

follow-up mark. We used *hierarchical linear modeling* (HLM), which uses a *full information maximum likelihood* (FIML) estimation that allowed all randomized participants to be included in the analysis. The missing data is presumed to be “missing at random” (MAR). We examined *within-group* changes at crucial stages of the study period, taking pre- and post-intervention measurements followed up with measurements six months and five years after the intervention. To analyze the overall change across the measurement points, three new parameters measuring changes were defined: 1) change from pre-to-post, 2) change from post to 6-month follow-up, and 3) change from 6-month to 5-year follow-up. These parameters were tested simultaneously, using the Wald test. Mean values and standard deviations (SD) were calculated using FIML estimation to correct the means of missing values. Effect sizes (ES) were calculated using the Mplus and are reported as Cohen's *d*, and the within-group effect sizes were calculated as follows, both for the whole study period and the 5-year follow-up period: the mean change from the pre-intervention to 5-year follow-up measurement was divided by the combined (pooled) pre-intervention and 5-year follow-up measurements' SD, and the mean change from the post-intervention to 5-year follow-up measurement was divided by the combined post-intervention and 5-year follow-up measurements' SD (Feske & Chambless, 1995; Morris & DeShon, 2002). A within-group effect size of 0.5 was considered small, 0.8 medium, and 1.1 large (Öst, 2006; Roth & Fonagy, 1996).

3. Results

3.1. Outcomes at the 5-year follow-up mark

Means, standard deviations (SD), 95% confidence intervals (CI), and within-group effect sizes (ES) (Cohen's *d*) are presented in Table 2. Six participants (11%) had a pre-treatment BDI score below 10 which is considered the limit for minimal depression, yet they were all included in the analyses due to inclusion criteria of subjective feelings of depression. Severe depressive symptoms (BDI score over 30) were reported by 14 (25%) participants at the pre-measurement. The 95% confidence intervals indicated that there were various statistically significant changes from the pre-intervention to 5-year follow-up mark in all outcome measures. For example, the confidence intervals of the BDI ranged from 19.88 to 25.00 at the pre-intervention measurement point and from 7.23 to 11.80 at the 5-year follow-up mark. The period after the 4-session intervention (assessed for changes from the post-intervention to 6-month follow-up point as well as from the 6-month to 5-year follow-up point) was analyzed with the purpose of investigating the maintenance of the treatment effects. With the exception of the SASS (social adaptation), there were significant trends indicating positive changes during the follow-up period. The results show a significant within-group main effect for time (post to 5-year follow-up) on depressive symptoms (BDI: estimate = -4.05 , $p=0.005$), psychological symptoms (SCL-90-GSI: estimate = -0.16 , $p=0.006$), psychological flexibility (AAQ-2: estimate = 5.14 , $p=0.009$), mood (Visual Analog Scale (VAS) for Mood: estimate = 6.93 , $p=0.014$), life satisfaction (VAS for Life Satisfaction: estimate = 8.55 , $p=0.006$), and self-confidence (VAS for Self-confidence: estimate = 7.28 , $p=0.027$). Within-group (pre to 5-year follow-up) effect sizes (Cohen's *d*) varied from 0.77 to 1.52 (small to large): large effect sizes were found regarding depressive symptoms (BDI, $d=1.45$), mood (VAS for Mood, $d=1.52$), life satisfaction (VAS for Life Satisfaction, $d=1.34$), and psychological flexibility (AAQ-2, $d=1.21$). These results and the mean scores (Table 2) indicate that positive changes in well-being took place throughout the whole study period.

The sample was also analyzed by group based on the original intervention order: Group 1 and Group 2. The results indicate that the groups differed from each other in terms of changes during the intervention (the Wald test estimates ranging from -5.93 to 13.96 , $p=0.000-0.030$), except for mindfulness skills (KIMS: estimate 2.10,

Table 2

Mean scores, standard deviations, and 95% confidence intervals (CI) for all dependent variables at pre-, post-, 6-month follow-up, and 5-year follow-up measurement (Within-group effect sizes (ES) with 95% confidence intervals (CI) are also Presented).

Measurement ^a	Pre <i>M</i> (<i>SD</i>) (<i>n</i> = 57) <i>CI</i>	Post <i>M</i> (<i>SD</i>) (<i>n</i> = 51) <i>CI</i>	6-month follow-up <i>M</i> (<i>SD</i>) (<i>n</i> = 48) <i>CI</i>	5-year follow-up <i>M</i> (<i>SD</i>) (<i>n</i> = 35) <i>CI</i>	ES (Cohen's <i>d</i>) and <i>CI</i>	
					Pre – 5-year	Post – 5-year
BDI	22.44 (9.86) 19.88–25.00	13.55 (9.76) 11.02–16.08	10.46 (9.94) 7.94–12.99	9.51 (7.86) * 7.23–11.80	1.45 1.10–1.80	0.46 0.18–0.73
SCL-90-GSI	1.15 (0.59) 0.99–1.30	0.77 (0.54) 0.63–0.92	0.67 (0.55) 0.52–0.81	0.62 (0.47) * 0.48–0.75	0.99 0.67–1.31	0.31 0.08–0.53
SASS	33.60 (6.95) 31.79–35.40	36.84 (6.85) 35.00–38.68	39.40 (8.76) 36.98–41.83	39.10 (7.33) n.s. 36.87–41.32	0.77 0.46–1.08	0.32 0.05–0.69
Mood	40.97 (15.81) 36.86–45.07	58.90 (20.34) 53.42–64.39	60.44 (20.89) 54.74–66.15	65.85 (16.83) * 60.83–70.88	1.52 1.10–1.95	0.37 0.09–0.66
Self-confidence	47.33 (19.16) 42.36–52.31	58.72 (20.95) 53.10–64.35	59.78 (22.95) 53.62–65.94	65.77 (21.58) * 59.49–72.06	0.90 0.59–1.22	0.33 0.02–0.65
Life satisfaction	47.30 (14.68) 43.49–51.11	59.39 (21.48) 53.67–65.11	63.48 (19.67) 58.04–68.91	68.01 (16.22) * 62.70–73.33	1.34 0.90–1.78	0.45 0.13–0.78
AAQ-2	38.68 (10.91) 35.85–41.52	46.86 (12.64) 43.48–50.24	48.54 (10.89) 45.57–51.50	51.49 (10.30) * 48.41–54.58	1.21 0.88–1.53	0.40 0.09–0.71
KIMS	116.88 (13.40) 112.31–121.45	122.22 (19.39) 115.55–128.90	125.90 (23.48) 117.58–134.23	128.68 (16.64) n.s. 122.50–134.86	0.78 0.42–1.14	0.36 0.03–0.68

pre = pre-intervention measurement; post = post-intervention measurement.

Mood = visual analog scale of 0–100 for mood; Self-confidence = visual analog scale of 0–100 for self-confidence; Life satisfaction = visual analog scale of 0–100 for life satisfaction; AAQ-2 = Acceptance and Action Questionnaire – 2; KIMS = Kentucky Inventory of Mindfulness Skills (*n* = 33).

p-values for post to 5-year follow-up: * = *p* < 0.05, ** = *p* < 0.01, n.s. = not significant.

^a BDI = Beck Depression Inventory; SCL-90-GSI = Symptom Checklist-90: General Severity Index; SASS = Social Adaptation Self-Evaluation Scale.

p = 0.681). In terms of life satisfaction, there was also a between-group difference during the post to 6-month follow-up (VAS for Life Satisfaction: estimate 4.84, *p* = 0.000). Those significant differences were in favor of Group 1, indicating better intervention outcomes for those receiving the treatment without a waiting time. However, those differences thinned out during the longer follow-up period (the Wald test estimates 6-month to 5-year follow-up ranging from –9.96 to 2.90, *p* = 0.118–0.820). These results indicate that even though there were between-group differences during the intervention favoring the earlier treatment start of Group 1, the differences in well-being vanished during the years to follow.

At the 5-year follow-up point, 34% (12 of 35) of the participants had received some type of psychological treatment during the follow-up period. According to the interviews with the participants, such treatment was mainly short-term (2–10 sessions) and only two therapies were extensive (one lasted 12 months, and the other was comprised of 50 sessions). We investigated the possibility that the additional treatment received during the follow-up had an impact on the changes in outcome variables. No statistically significant interaction effects were found either from pre-to-post or from post- to 5-year follow-up measurement when we compared who had received additional treatment to those who had not. This suggests that there were no differences in the patterns of change between these two groups. However, there were significant between-group differences at the 5-year follow-up in terms of depressive symptoms (BDI: estimate 6.18, *p* = 0.016), life satisfaction (VAS for Life Satisfaction: estimate –13.70, *p* = 0.019), psychological flexibility (AAQ-2: estimate –8.04, *p* = 0.012), and mindfulness skills (KIMS: estimate –14.84, *p* = 0.005). The mean scores indicate that the group without any additional treatment during the 5-year follow-up period had better scores at the end of the follow-up period. The groups also differed at the pre-intervention point concerning psychological flexibility (AAQ-2: estimate –7.53, *p* = 0.026) and social functioning (SASS: estimate –5.83, *p* = 0.035): the scores indicate higher psychological flexibility and social functioning prior to the intervention among those not having received psychological treatment during the follow-up. Psychotropic medication use was also examined: 80% (28 of 35) had not used medication during the 5-year follow-up period, and a mere 6% (2 of 35) used medication at the time of the 5-year follow-up measurement. One of them had used medication also during the intervention phase.

Based on the BDI scores, the number of participants reporting minimal depressive symptom scores (BDI score of 0–9) was calculated during post-, 6-month and 5-year follow-up measurements. At post-measurement, 20 participants reported BDI scores lower than 10 (35–39%, the first percentage is the amount of participants divided by the number of participants at the pre-measurement (*n* = 57) and the second percentage uses the number of participants at that particular measurement point as a divisor). Similar amounts of participants and percentages were 25 (44–52%) for 6-month follow-up and 20 (35–57%) for the 5-year follow-up. The smaller percentages regard the lost participants more as failed treatment attempts and the latter higher percentages report results only from those participating at that particular measurement. Five (9–10%, calculated as mentioned above) participants indicated severe depression (BDI scores over 30) at post-measurement, one (2%) participant at 6-month follow-up and zero at 5-year follow-up measurement.

3.2. Participant experiences

The analytical results of the data from the 5-year follow-up interviews revealed that 57% of the participants (20 of 35) had experienced improvements in their well-being during the 5-year follow-up period, 26% (9 of 35) had not experienced well-being changes, and merely 11% (4 of 35) had experienced self-reported deterioration. Of the 5-year follow-up participants, 6% (2 of 35) were unable to clearly determine such changes due to fluctuations in their well-being. As much as 60% (12 of 20) of those who experienced improvements reported that they felt that those changes were connected to the ACT intervention. Responses regarding those changes conveyed an accepting and defused attitude toward private events; for example, “I’ve been able to influence my own well-being: I don’t get stuck in feelings, I see them as separate things” and, “A lot has changed in my life, but I’ve gotten better at handling those changes: no fighting with past matters”. Nearly two-thirds (60%; 21 of 35) of the participants utilized methods learned during the intervention later in life. Participant responses also conveyed negative experiences regarding the intervention, and those responses reflected dissatisfaction with the duration of the intervention. Perhaps related to the brevity of the intervention, there were comments concerning forgetting; for example, “Early on, I used the methods more, now I’ve forgotten a lot.”

4. Discussion

4.1. Main findings

The primary aim of the current study was to examine the long-term impact and outcomes of a brief, student-administered ACT intervention on a sample of self-referred participants experiencing self-reported depressive symptoms. This research has found statistically significant decreases in depressive symptoms and increases in psychological flexibility and well-being both directly and five years after the intervention relative to participants' pre-intervention levels of functioning and symptoms. Maintenance of outcomes was detected even at the 5-year mark relative to participants' immediate post-intervention as well as 6-month follow-up results. The effect sizes for the whole study period (pre- to 5-year follow-up measurement) were large, for example, with regard to depressive symptoms ($d = 1.45$) and psychological flexibility ($d = 1.21$). These effect sizes compare well to within-group effect size findings in other long-term follow-up studies in ACT literature (e.g., Cohen's $d = 0.59$ – 0.77 in Folke et al. (2012); Hedges' $g = 0.96$ – 2.08 in Lappalainen et al. (2014); Cohen's $d = 0.28$ – 0.85 in Vowles, McCracken, & Zhao O'Brien (2011)). However, when drawing conclusions regarding the findings in this study, we need to keep in mind that studies using smaller samples tend to report larger effects than studies using larger samples (Kühberger, Fritz, & Scherndl, 2014). It is recommended that effect sizes (ES) be supplemented with confidence intervals (CI), since the width of the intervals provides more information on how accurate the estimation of the impact is (Kühberger et al., 2014). In the current study, the 95% within-group confidence interval from pre-measurement to 5-year follow-up Cohen's d for BDI was 1.10–1.81, and the confidence interval from post-measurement to 5-year follow-up d for BDI was 0.19–0.76. Thus, these relatively wide confidence intervals indicate that the relatively large within-group effect sizes should be taken with caution, because the confidence intervals probably overestimate the size of the effect (see, e.g., Kühberger et al., 2014).

A 4-session ACT intervention conducted by psychology students, novices in therapeutic methods who underwent a brief training in ACT, appears to be effective for self-referred clients reporting mild to moderate feelings of depression and low mood. Earlier studies on the long-term effectiveness of brief CBT/ACT interventions have reported rather good short-term (six months to two years) results (e.g., Folke et al., 2012; Lappalainen et al., 2007, 2014; Stice, Rohde, Gau, & Wade, 2010). In our earlier studies utilizing this and similar brief ACT models, we have observed that the current model delivered either face-to-face or via a web app produced significant changes in mood and psychological well-being that were maintained for up to at least 18 months (Kohtala et al., 2015; Lappalainen et al., 2007, 2014, 2015; Räsänen, Lappalainen, Muotka, Tolvanen, & Lappalainen, 2016). For example, Lappalainen et al. (2014) observed a large within-group effect size (BDI-II, $g = 1.17$) after a six-week face-to-face intervention delivered by psychology students, and the effect of the intervention was maintained up to the measured 18-month follow-up mark ($g = 1.59$). In the current study, the within-group effect size for depressive symptoms (BDI) was $d = 1.46$ (change from post to 5-year follow-up, $d = 0.48$), which is in line with results reported by Lappalainen et al. (2014). Despite the limitations, the results of the current study add to the research literature by extending the follow-up period.

4.2. Limitations

Several limitations need to be addressed. First, 39% of the individuals in the original sample could not be contacted to be invited to participate in the 5-year follow-up, and it should be kept in mind that the results might have been different with the complete sample. The small sample size and the biased gender distribution limit the generalizability of the results. Secondly, the follow-up sample also included those individuals having had additional psychological treatment (one-

third) or medication (one-fifth) during the follow-up, a subgroup commonly removed from the analyses. Even though the group with additional psychological treatment had significantly higher levels of depressive symptoms at the 5-year follow-up mark, a similar pattern of outcomes (decreases in depressive symptoms) was detected between the groups. For some individuals, either more or less depressed, the brief intervention might have acted as a catalyst to seek out more psychological help they might have needed but had been lacking due to various reasons.

Thirdly, we are not able to exclude other possible variables that may have had an effect on the well-being and outcomes during this long follow-up. It is also possible that the same changes that were observed during the 5-year study period could have occurred without any intervention due to spontaneous recovery/remission (Whiteford et al., 2013). The percentages below the BDI threshold of 10 points at post-, 6-month and 5-year follow-up measurements were 35–39%, 44–52% and 35–57%, respectively, compared to 23% (3 months), 32% (6 months) and 53% (12 months) from the spontaneous recovery research by Whiteford et al. (2013). The course of depressive symptoms might have fluctuated during the research period as depression is often cyclic by nature and phases of higher mood might have occurred during the measurement periods. However, it is unlikely that those phases would have coincided for most of the participants during all of the follow-up measurements. To address the issue of confounding factors and the possibility of spontaneous recovery more thoroughly, the follow-up could have been conducted using multiple measurement periods rather than two. In addition, different measurement tools such as standardized interviews might have given more precise information. A disadvantage for using a waiting-list control group instead of an active control is not being able to focus the treatment effects specifically on the ACT intervention, and it may be possible that another type of intervention or general therapeutic attention could have resulted in similar outcomes. This should be tested in future studies comparing long-term effectiveness of brief interventions with different frameworks. It could also be questioned whether the novice student therapists actually applied the ACT model as such, according to the protocol. Even though the sessions in this study were not recorded, we have access to coded video material from a similar brief-treatment model for depression by novice therapists (Keinonen, Kyllönen, Astikainen, & Lappalainen, 2017; Kyllönen, Muotka, Puolakanaho, Astikainen, & Lappalainen, 2017) which used a validated *ACT Adherence Scale* (Twohig and Crosby, 2010; Twohig et al., 20). Concerning that similar ACT model, the overall adherence to the project manual and the overall competence of the ACT delivery reflected a satisfactory level of competence ($M = 3.35$ and $M = 3.29$, respectively, Keinonen et al., 2017; Kyllönen et al., 2017), yet the ACT treatment was not administered in a very proficient way, which is, however, to be expected in cases with such brief training—this applies to our study as well. Nevertheless, it should be noted that the student therapists were supervised on a weekly basis by an experienced ACT therapist. Thus, they were not allowed to run a session without first presenting a plan of execution to be applied during the next session. As a rule, the supervisor instructed the student therapists to read the selected exercises presented during the sessions using a Finnish handbook on ACT (Lappalainen et al., 2004). This should be taken into account when generalizing the effects of the intervention. Nonetheless, based on our observations in this study and in previous ones, we claim that the students did apply the ACT methods satisfactorily, including several experiential exercises and metaphors. The overall results draw our attention to the possibility that for motivated individuals seeking help with mild to moderate levels of depressive symptoms, even a brief psychological intervention provided by non-experts (combined with regular supervision by an expert) can result in long-lasting benefits for a significant number of participants. Yet, further studies using improved methodologies and design need to confirm whether our findings are empirically true.

Finally, formal diagnostic interviews were not carried out as such,

and it must be noted that these results may not directly apply to severe psychological disorders. However, studies focusing on individuals with lower levels of depressive symptoms, even those who may not fulfill diagnostic criteria, seem justifiable based on research concerning subclinical symptomatology (Goldney et al., 2004; Horwath et al., 1992; Judd et al., 1996). Although we totally agree on the importance to study clearly defined clinical populations, we call for more discussion on whether the effectiveness of psychological interventions should be studied only with regard to participants fulfilling diagnostic criteria. This is especially true considering brief interventions provided by less-trained therapists and counselors often working in primary care in comparison to highly trained specialists working with more complicated cases involving more severe diagnoses. Further limitations concerning the intervention and design have been discussed elsewhere (Kohtala et al., 2015).

4.3. Clinical conclusions

In conclusion, the data suggest that our brief, 4-session ACT intervention produced positive treatment outcomes and maintenance of those effects to a significant portion of motivated individuals with mild to even severe self-reported depressive symptoms. We are not suggesting that everyone benefits from a brief treatment, but on average 40% (our percentage range was 35–57%) can be categorized as recovered (scores below 10 in the BDI) at the 5-year follow-up, indicating that a good number of participants benefits long-term as well. These percentages are somewhat higher compared to those of spontaneous remission (Whiteford et al., 2013) and the 4-session ACT intervention seemed to produce those changes more rapidly than spontaneous recovery might have. Spontaneous recovery also did not occur during the intervention period in the waiting-list control group. However, the relatively large effect sizes associated with small samples sizes may have caused an overestimation of the effects and this should also be taken into consideration (Kühberger et al., 2014). If replicated, the follow-up measurement should be more extensive and there should be several measurement points (e.g. yearly or at 6 month intervals) in order to gain more precise data on possible relapses, other treatments, and life and well-being changes. In addition, the follow-up interview could be more structured to offer insight and useful information concerning participant experiences, as those could help develop and mold interventions further. Our research, like that of others (e.g., Forand et al., 2011; Gloster et al., 2015; Öst et al., 2012), suggests that with a little training and ample supervision novice therapists can provide effective psychological interventions. These results add to earlier research involving novice therapists, and support the use and implementation of effective and evidence-based psychological interventions with time-limited training.

Brief interventions for treating symptoms of depression can be a cost-effective yet beneficial alternative to longer psychotherapy, at least for certain individuals. We argue that brief psychological interventions for low mood and depression should be studied more and implemented at lower level care, since mood problems and depressive symptoms often may lead to clinical and severe episodes of depression (Horwath et al., 1992). As a simplified example, the improvements participants gained through the four weeks in our ACT-based intervention were quite comparable, in terms of a reduction in depressive symptoms, to a 5-year therapy based on psychoanalysis that involved four weekly sessions throughout the treatment (Knekt et al., 2011), specifically: ACT: mean BDI change of 13.4 points (*CI* for pre to 5-year difference = 10.40; 16.40, $d = 1.45$ ($CI = 1.10; 1.80$); psychoanalysis: mean BDI change of 13.8 points (*CI* for pre to 5-year difference = 10.54; 17.06, $d = 1.86$ ($CI = 1.33; 2.36$). The study populations were reasonably comparable regarding participants' levels of depression symptoms (e.g., BDI at pre: ACT, $m = 22.44$, $SD = 9.96$, compared to psychoanalysis, $m = 19.30$, $SD = 6.40$); both populations were self-selected for the particular intervention and were carried out in the same Nordic

country. We call for further studies with long follow-up periods to investigate for what types of clients brief interventions may be suitable as an alternative to longer lasting treatment.

This study lacked the possibility to take a closer examination of crucial processes, mechanisms of change and behavioral patterns associated with positive long-term outcomes, and those elements should be studied more extensively to help identify more successful ways to develop treatment protocols, especially for brief interventions. Future research should examine change processes and try to identify treatment responders and non-responders also within longer time frames. Additionally, further research should focus on naturalistic settings and transdiagnostic populations to a greater extent in order to address the needs faced in the field more closely. More studies are needed to investigate whether building more psychological flexibility and learning to see life as an active pursuit of valued living even amidst a painful life or adverse private events might offer additional benefits compared to approaches paying attention more to symptom removal that have yielded mixed long-term effectiveness results (Fava et al., 1998; Stice et al., 2010). It could also be interesting to examine whether brief interventions act as a catalyst to seek out much needed additional help for some individuals, perhaps when their situation hasn't changed for years. In addition, those having received additional treatment after a brief intervention reported lower psychological flexibility and social functioning prior to the intervention compared to those not having received psychological treatment during the follow-up. The level of psychological flexibility and social functioning might predict the need for additional treatment after a very brief intervention, a notion which could also be elaborated on in future studies.

This study provides additional evidence for the potential effectiveness of brief psychological interventions, as also supported by earlier research (Folke et al., 2012; Kohtala et al., 2015; Lappalainen et al., 2007, 2014), especially regarding individuals with mild to moderate symptoms of depression.

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III

CHANGES IN MINDFULNESS FACETS AND PSYCHOLOGICAL FLEXIBILITY ASSOCIATED WITH CHANGES IN DEPRESSIVE SYMPTOMS IN A BRIEF ACCEPTANCE- AND VALUE-BASED INTERVENTION: AN EXPLORATORY STUDY

by

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Changes in Mindfulness Facets and Psychological Flexibility Associated with Changes in Depressive Symptoms in a Brief Acceptance and Value Based Intervention: An Exploratory Study

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ABSTRACT

Increased knowledge of the type of skills training that is beneficial for producing long-term changes in depressive symptoms might help in the development of more effective brief interventions. This study aims to explore whether changes in mindfulness facets (KIMS) were differentially associated with changes in depressive symptoms (BDI) both immediately and 5 years after a brief 4-session intervention based on the psychological flexibility model. The data was a subpopulation of 33 participants who received a 4-session ACT-based treatment provided by student therapists. The measures were taken at pre-intervention, post-intervention and 5-year follow-up points in time. Acting with awareness and accepting without judgment as well as higher observing were associated with higher depressive symptoms at the pre-intervention. Changes in the levels of the accepting without judgment subscale during the treatment and paired combinations of different KIMS subscales were positively related to changes in depression. However, accepting without judgment seemed to be important as it was the only facet related to long-term changes in depression either on its own or paired with other facets. Emphasis on strengthening the ability to accept experiences in an accepting and nonjudgmental way should be taken into account when developing and administering brief ACT-based interventions.

Key words: Acceptance and Commitment Therapy, depressive symptoms, brief intervention, novice therapist, psychological flexibility, mindfulness.

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Novelty and Significance

What is already known about the topic?

- Psychological flexibility and mindfulness are interrelated concepts that both have been associated inversely with psychological distress such as depressive symptoms.
- Mere observing of experiences and present-centered being may present themselves as liabilities or strengths, and accepting nonjudgmentally has been associated with psychological well-being.

What this paper adds?

- Treatment changes in flexibility and mindfulness were associated with short-term improvements in depressive symptoms.
- Nonevaluative acceptance was associated either on its own or paired with other mindfulness subskills to long-term (5 years) improvements in depressive symptoms.
- Results suggested that emphasizing an open and accepting attitude toward aversive experiences were linked to improvements in time-limited interventions.

Brief psychological interventions for mood and anxiety problems and depressive symptoms are often implemented at the lower levels of health care systems, and such interventions have been studied with promising results (Cape, Whittington, Buszewicz, Wallace, & Underwood, 2010; Churchill *et alii*, 2001; Linde *et alii*, 2015; Nieuwsma *et alii*, 2012). However, the effects might not always be comparable to longer treatments (Cape *et alii*, 2010). Since brief interventions are time-limited, the content needs to be planned carefully and accordingly to support recovery and changes in well-being in

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a short time-frame. Constructs such as psychological flexibility and mindfulness have been receiving ample interest and both have been studied in relation to psychological health. Regarding both, research points to a positive relationship with well-being (Bond *et alii*, 2011; Hayes, Luoma, Bond, Masuda, & Lillis, 2006; Baer, Smith, & Allen, 2004; Levin *et alii*, 2014). Psychological flexibility is the key concept of Acceptance and Commitment Therapy (ACT; Hayes, Masuda, Bissett, Luoma, & Guerrero, 2004; Hayes, Strosahl, & Wilson, 2011). ACT-based interventions promote the willingness to openly and mindfully embrace and approach private experiences, thoughts and feelings while either committing to change or persisting with behaviors according to one's own values (Hayes *et alii*, 2011). Psychological flexibility is commonly addressed as a single, global construct, but it can also be defined through interrelated elements combined into a two-fold process of 1) being consciously in the present moment and accepting of experiences while 2) taking into account the dynamic nature of behavioral change or acting persistently according to one's chosen values (Hayes *et alii*, 2004, 2006).

Psychological flexibility and mindfulness seem to share similar definitions, including being able to intentionally observe and describe the internal and external experiences as they happen, to take actions purposefully and with awareness, to take a nonjudgmental stance toward one's own thoughts and emotions, and both can also be seen as aiming to disengage from the domination of literal, evaluative language processes (Bilich, & Godsel, 2010; Brown & Ryan, 2003; Coffey, Hartman, & Fredrickson, 2010; Hayes *et alii*, 2011; Hayes & Wilson, 2003; Kabat-Zinn, 1990; Shapiro, Carlson, Astin, & Freedman, 2006). The mechanisms of change seem to be quite similar as both psychological flexibility and mindfulness involve the intentional recognition of one's own behaviors, thoughts and emotions, having a flexible attitude toward these and the ability to self-regulate them (Ciarrochi *et alii*, 2010; Shapiro *et alii*, 2006). Despite similarities, mindfulness and psychological flexibility are also understood as distinct, yet overlapping processes (Kashdan & Rottenberg, 2010). Concerning measures of psychological distress, an inverse relationship between depressive symptoms and both mindfulness (Hofmann, Sawyer, Witt, & Oh, 2010; Khoury *et alii*, 2013; Soysa & Wilcomb, 2015) and psychological flexibility (Hayes *et alii*, 2006; Kashdan & Rottenberg, 2010) has been suggested. There is evidence suggesting that both psychological flexibility and mindfulness may protect against the developing or worsening of psychopathological problems such as depressive symptoms (e.g., Christopher, Neuser, Michael, & Baitmangalkar, 2012; Bond *et alii*, 2011; Bryan, Ray-Sannerud, & Heron, 2015; Gilbert & Christopher, 2010; Woodruff *et alii*, 2014). However, it has been suggested that for a protective effect to take place, at least regarding mindfulness, a substantial amount of practice and sustenance might be required (Barnhofer, Duggan, & Griffith, 2011).

Mindfulness has been incorporated into various treatment protocols, and the emphasis on specific, formal mindfulness skills training varies between therapeutic orientations. For example, in mindfulness-based stress reduction (MBSR; Kabat-Zinn, 1990), mindfulness training is the foundation, compared to third-wave therapies such as ACT (Hayes *et alii*, 2011) and dialectical behavior therapy (DBT; Linehan *et alii*, 1999) where a mindful and aware stance toward experiences is incorporated into various aspects of therapy without an emphasis on mere formal practice.

Psychological flexibility is often measured with the Acceptance and Action Questionnaire-2 (AAQ-2; Bond *et alii*, 2011), which is a single-factor instrument inspecting the whole of experiential avoidance and its counterpart, psychological flexibility. However, it does not enable a more specific inspection of the underlying processes that compose psychological flexibility. As the AAQ-2 is a holistic measure, other multidimensional measures used concurrently might provide more insight into whether some aspects of psychological flexibility should be emphasized when planning acceptance-based brief intervention protocols. One possibility for gaining more information on the significance and relationship of psychological flexibility in relation to psychological changes is to

investigate mindfulness and its subskills as a way to deconstruct some of the different elements that psychological flexibility might consist of. Baer *et alii* (2004) define mindfulness as consisting of 1) noticing both external and internal experiences, 2) naming or labeling those experiences using words, 3) taking purposeful action with a present-moment focus, and 4) embracing a non-evaluative and accepting mindset toward experiences and sensations. Similar concepts are found among ACT core processes promoting psychological flexibility, such as present-moment awareness, acceptance, mindful selection of values and commitment to act according to them (Hayes *et alii*, 2011).

Different facets of mindfulness seem to be linked differently to various psychopathological concepts. Concerning depressive symptoms and mood problems, describing or labeling feelings and thoughts has been found to be the least significant factor of all the mindfulness facets (Alleva, Roelofs, Voncken, Meevissen, & Alberts, 2014; Bohlmeijer, ten Klooster, Fledderus, Veehof, & Baer, 2011; Cash & Whittingham, 2010). In non-meditative samples, observing seems to be associated with maladaptive constructs and psychological distress, such as depressive symptoms, rather than with well-being as other mindfulness facets (Baer *et alii*, 2004; Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006; Baer *et alii*, 2008; Barnes & Lynn, 2010). However, there are some mixed results regarding the associations between observing and higher levels of psychological distress (Barnhofer *et alii*, 2011; Bohlmeijer *et alii*, 2011). It has been noted that without the ability to notice and observe, mindfulness and present-moment acceptance are not achievable (Lilja, Lundh, Josefsson, & Falkenström, 2013); and the definitions of mindfulness include present-moment awareness which implies being able to observe the here-and-now (Baer *et alii*, 2004). In addition, studies with meditative samples show different results in terms of the observing facet suggesting that the importance of observing may lie in practice or perhaps in the ability to combine other skills with it to enhance non-reactivity to experiences and thus decreasing *the* possible maladaptiveness of mere observing (Baer *et alii*, 2008). Lower levels of depressive symptoms have been associated with nonjudgmental acceptance (Alleva *et alii*, 2014; Barnhofer *et alii*, 2011; Christopher *et alii*, 2012; Desrosiers, Klemanski, & Nolen-Hoeksema, 2013), as well as with acting with awareness (Bohlmeijer *et alii*, 2011; Christopher *et alii*, 2012; Desrosiers *et alii*, 2013). Most of the existing research investigating the associations between these facets is cross-sectional while longitudinal studies are rare (e.g., Barnes & Lynn, 2010; Barnhofer *et alii*, 2011). Several treatment studies have measured psychological flexibility using the AAQ-2 as a global construct and found that it plays a mediating role concerning outcomes (e.g., Ciarrochi *et alii*, 2010). A longitudinal study by Long and Hayes (2014) found that ACT-based process measures predicted depressive symptoms after controlling for pre-intervention depression. Psychological flexibility and present-centered awareness uniquely affected depressive symptoms, and the process of awareness was moderated by psychological flexibility. They suggested that the ability to be aware and present-centered may be either a liability or an asset contingent on whether or not one is open and accepting toward experiences. Regarding intervention studies, specific components of psychological flexibility impacting outcomes have also been examined, such as for chronic pain (McCracken & Gutiérrez Martínez, 2011) and depression (Forman, Herbert, Moitra, Yeomans, & Geller, 2007). Forman *et alii* (2007) found that nonjudgmental acceptance and mindful actions mediated the outcomes in the ACT treatment group. Regarding brief interventions (i.e., lasting less than ten sessions), especially those targeting mood problems, the examination of the components of psychological flexibility contributing to treatment effects is still scarce.

Brief psychological interventions are supported in the treatment of psychological distress (Cape *et alii*, 2010; Churchill *et alii*, 2001; Linde *et alii*, 2015; Nieuwsma *et alii*, 2012) and similar findings have been reported with ACT-based brief interventions for various distresses (e.g. Bach & Hayes, 2002; Lappalainen *et alii*, 2014; Markanday *et alii*, 2012; Petersen & Zettle, 2009). Additionally, our previously published papers

describe the short- and long-term treatment outcomes of a brief 4-session acceptance- and values-based intervention (Kohtala, Lappalainen, Savonen, Timo, & Tolvanen, 2015; Kohtala, Muotka, & Lappalainen, 2017). To increase the existing knowledge of what processes might be consequential and beneficial in time-limited acceptance-based interventions, our aim with the present study was to investigate the aspects and processes comprising psychological flexibility that might be linked to better treatment outcomes both short- and long-term through such brief forms of treatment. As an ACT-based intervention, we focused on the elements linked to being able to contact both the internal and external experiences in the present moment in a mindful and nonjudgmental way while persisting or changing one's behavior purposefully. These skills or processes are present in both mindfulness and psychological flexibility. The intervention was designed to produce a comprehensively more flexible stance toward experiences, encouraging taking actions toward valued living instead of emphasizing pure formal practice. The aim of the current study was to gain additional information on how different skills or set of mindfulness skills relate to changes in depressive symptoms and what aspects of mindfulness or psychological flexibility might be important to emphasize in and integrate into brief, time-limited acceptance- and value-based interventions.

Based on the above, we were particularly interested in investigating whether changes in the subcomponents of mindfulness skills during a very brief 4-session ACT intervention were associated with changes in depression symptoms during the intervention, and whether those changes predicted long-term changes in depressive symptoms. The present study investigated the following research questions: (1) which subcomponents of mindfulness had the strongest association with symptoms of depression at the beginning of the intervention, and (2) which subcomponents of mindfulness were associated with better short-term (pre to post) and long-term (pre to 5-year follow-up) changes in depressive symptoms.

METHOD

Participants and Procedure

The study population consisted of 33 participants who underwent a 4-session acceptance- and value-based intervention for self-reported depressive symptoms. The participant group examined here was part of a larger data set (see Kohtala *et alii*, 2015; Kohtala *et alii*, 2017). The present study focused on changes in psychological flexibility and mindfulness while examining their relation to depressive symptoms. The Research Ethics Committee of the University of Jyväskylä approved the study.

The recruitment of participants was conducted via a local newspaper advertisement announcing that a university research project seeks individuals feeling depressed and willing to participate in a brief treatment study where therapists are Master's degree level psychology students. Regarding the subsample used in the present study, Figure 1 shows the attrition of the participants. Several inclusion criteria were used: 1) subjective depressive symptoms or depressed mood (diagnosis not necessary); 2) no other concurrent psychological treatment; 3) no reported schizophrenia; 4) no reported alcoholism; 5) no reported severe sensory or brain injury; 6) no reported neurological disorder. During the contacting and screening phase, five participants decided to quit or were excluded based on the inclusion criteria leaving 36 participants to be randomized. Randomization was conducted according to gender, since a biased gender distribution was expected based on previously reported gender differences in both depression prevalence and help-seeking behaviors (Leach, Christensen, Mackinnon, Windsor, & Butterworth, 2008; Smith *et alii*, 2013). All in all, 33 participants were organized into two groups: 1) the ACT intervention group ($n= 16$), and 2) the waiting-list control group ($n= 17$;

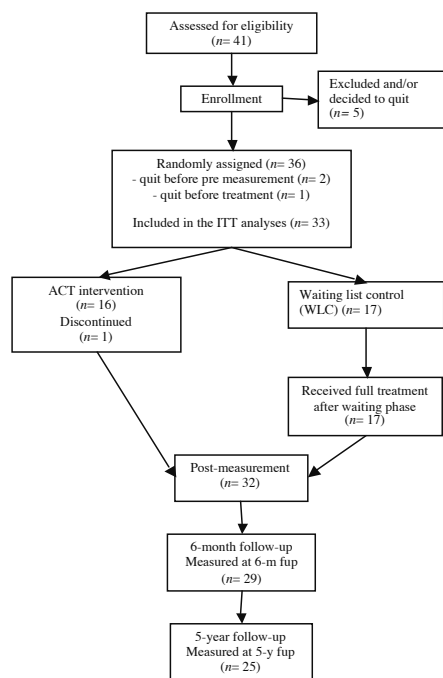


Figure 1. Attrition of the participants.

i.e., WLC group, which received treatment approximately five weeks later). The WLC group had an additional measurement after their waiting-phase before their intervention phase started, and this measurement served as their pre-intervention measurement in the analyses. In the present study, the two groups were combined as they both received the same brief intervention. One participant from the ACT group decided to quit the intervention and 32 participants attended the post-intervention measurement. Three more participants dropped out by the time of the 6-month follow-up measurement, leaving 29 participants (88%) attending that measurement. And a further four participants dropped out by the 5-year follow-up measurement: 76% of the participants who had started the intervention attended the 5-year follow-up measurement.

All 33 participants were Caucasian (27 females, 82%). Their mean age at the beginning of the research was 49.6 years ($SD= 12.0$; range= 17-71 years). The participants' background information is presented in Table 1. No statistically significant differences were found between the original ACT group and the later-treated WLC group.

Student therapists and ACT-based intervention

The therapists ($n= 12$) in this study were female Master's degree level psychology students at the University of Jyväskylä. Their mean age was 25.8 years ($SD= 6.86$; range= 22-47 years) and they had studied an average of 3.3 years ($SD= 1.0$; range= 1.5-5.5). The therapists had received approximately 10 hours of training on ACT principles and methods as part of their regular curriculum. An additional four hours were dedicated to ACT-specific intervention material and the presentation and construction of a functional analytic clinical case model (FACCM; Haynes & O'Brien, 2000) that was used to guide treatment decisions and goals alongside the analysis of participants' values.

Table 1. Background information for pre-measurement as a whole and by group.

Baseline characteristic		Pre-measurement (n= 33)	ACT group (n= 16)	WLC group (n= 17)
Female/Male		27/6 (82%/18%)	13/3 (81%/19%)	14/3 (82%/18%)
Employment	Work life	17 (52%)	9 (56%)	8 (47%)
	Outside of work life	7 (21%)	4 (25%)	3 (17.6%)
	Unemployed	5 (15%)	2 (13%)	3 (17.6%)
	Other	4 (12%)	1 (6%)	3 (17.6%)
Education	Basic education	3 (9%)	2 (12.5%)	1 (6%)
	Secondary degree	16 (49%)	7 (44%)	9 (53%)
	Higher education	12 (36%)	5 (31%)	7 (41%)
	Other	2 (6%)	2 (12.5%)	0 (0%)
Civil status	In a relationship	16 (49%)	8 (50%)	8 (47%)
	Unmarried	7 (21%)	3 (19%)	4 (24%)
	Divorced	10 (30%)	5 (31%)	5 (29%)
Mental health diagnosis*	No diagnosis	17 (52%)	9 (56%)	8 (47%)
	Depression	13 (39%)	6 (38%)	7 (41%)
	Depression and other	2 (6%)	0 (0%)	2 (12%)
	Other than depression	1 (3%)	1 (6%)	0 (0%)
History of psychotropic medication		21 (64%)	8 (50%)	13 (77%)
Psychotropic medication at the pre-measurement		5 (15%)	3 (19%)	2 (12%)

Notes: * = diagnosed by a general doctor or a psychiatrist.

The intervention was semi-structured and featured certain obligatory elements at the beginning. However, each session was planned under the supervision of an experienced ACT therapist (see below). Two leading guidelines directed the treatment protocol: 1) clarifying values and encouraging the client to commit to value-based actions, and 2) addressing and dealing with emotional, cognitive, social and behavioral barriers that might arise along with committed actions. ACT-consistent metaphors and experiential exercises were instructed to be used during every session, and homework assignments were constructed together with each client and linked to the topics covered during each session. Each session lasted 60 minutes on average, and the first two sessions were mainly dedicated to functional analysis and to the topic of values, including also a few experiential ACT exercises. The individual FACCM was outlined by the therapists, reviewed during the supervision and viewed along with the values-analysis homework together with each client. Subsequent sessions were more individualized in terms of content, exercises and metaphors in order to meet each client's goals and needs. Chosen values and commitment to actions based on those values played a central role in the intervention. The last session also included a summary of the treatment, a discussion on future directions and suggestions for useful and beneficial exercises, as well as acting as a forum for clients' insights supporting the continuous advancement toward valued and meaningful living. The intervention model is outlined in more detail in Table 2.

The therapists were instructed to use an Acceptance and Commitment Therapy manual (Lappalainen *et alii*, 2008) during the sessions. The manual includes the basic ACT principles and core processes, 32 metaphors, 18 exercises and some practical worksheets that can be used in therapy. Mandatory group supervision (approximately 2 hours) was held weekly during the treatment period and each subsequent intervention session was outlined with an experienced ACT therapist who acted as the supervisor (author RL). The total time for training and supervision was 23 hours.

Client measures

The Beck Depression Inventory (BDI) was used as the primary outcome measure. The BDI is a widely used self-report questionnaire with 21 items measuring the severity of depression (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961). The reliability of the instrument and the internal consistency have been found to be high (Beck *et alii*, 1961). The instrument has yielded an alpha coefficient of .92 for outpatient populations (Beck, Steers, & Brown, 1996). The original BDI was used instead of the more recent version (BDI-II) since the earlier version was readily available in Finnish when the research was being planned and designed.

Table 2. The structure and content of the brief ACT intervention.

Baseline characteristic	Session objectives	Examples of exercises and activities	Homework
1. Introduction and start of the analysis	Introduction to the brief intervention format (structure). Interview aiming at gathering information on the participant's current life situation, problems and prior attempts at solving them. Construction of a problem list for the functional analytic clinical case model (constructed after the session by the therapist). Orientation to values	Problem list form. <i>Tug-of-war or digging out of the hole</i> (metaphors; or some other regarding struggling with problems). <i>Skiing</i> (metaphor), <i>the funeral exercise/tombstone</i> (exercise). Breathing or some other present-moment exercise.	Functional analytic clinical case model (FACCM) diagram for the therapist to construct). Values worksheet
2. Clarification of values and treatment goals	Introduction of the FACCM formulation and possible corrections. Review of values homework, clarification of and reflection on values. Agreement on treatment aims based on the FACCM and values work. Choosing important values and identifying valued actions. Discussion on meaningful life and examination of possible obstacles to taking valued actions toward meaningful life.	<i>The funeral exercise/tombstone</i> (exercise) if clarification of values seem problematic. Breathing or some other present-moment exercise.	Value-based action(s). Mindfulness/breathing exercise.
3. Taking actions and tackling obstacles	Review of participant's homework and discussion on experiences. Addressing participant specific issues and chosen treatment targets Identification of verbal and emotional obstacles and addressing ACT processes linked to those barriers	The use of participant appropriate exercises and metaphors identified and planned during supervision. <i>Passenger on a bus</i> (exercise). <i>Observer</i> (exercise). Breathing or some other present-moment exercise.	Value-based action(s). Mindfulness/breathing exercise.
4. Planning for the future	Introduction of the idea of self-as-context Review of participant's homework and discussion on experiences, barriers and problems. Discussion on control and acceptance. Review of the treatment and identification of important experiences, positive issues and clients resources. Creation of a post-treatment plan with valued actions	<i>Joe the Bum a.k.a. the unwanted visitor</i> (exercise). <i>Quicksand</i> (metaphor). Breathing or some other present-moment exercise. <i>What needs to be continued?</i> (discussion exercise).	Valued actions based on the plan created

The two process measures used were the Acceptance and Action Questionnaire-2 (AAQ-2, earlier version) and the Kentucky Inventory of Mindfulness Skills (KIMS). The AAQ-2 is a single-factor self-report inventory designed to measure psychological flexibility and experiential avoidance (depending on the scoring). The 10-item version used in this study also exists as a 7-item questionnaire following further psychometric analyses (Bond *et alii*, 2011). We used the 10-item version as it had been translated into Finnish. The 10- and 7-item versions correlate at $r = .96$, and the mean coefficient of the 7-item version has been reported to be 0.84 (Bond *et alii*, 2011). Items 2 to 5 and 7 to 9 were reverse-scored, meaning that higher scores on the AAQ-2 indicate more flexibility. The KIMS is a multidimensional self-report scale with 39 items measuring mindfulness skills (Baer *et alii*, 2004). The KIMS includes four subscales (observing, describing, acting with awareness, and accepting without judgment), and it uses a 5-point Likert-type scale with responses ranging from “never” or “very rarely true” to “always” or “almost always true”. Items include statements as follows: “I notice the smells and aromas of things” (observing); “It’s hard for me to find the words to describe what I’m thinking” (describing); “I drive on ‘automatic pilot’ without paying attention to what I’m doing” (acting with awareness); and “I criticize myself for having irrational or inappropriate emotions” (accepting without judgment). Even though the intervention was not mindfulness-based, and the AAQ-2 and the KIMS do not measure exactly the same constructs, the KIMS was used to widen the core conceptual construct of psychological flexibility. A more precise description of the KIMS subscale items can be found in Appendix. The KIMS was used instead of a more recent mindfulness self-report measure (The Five-Facet Mindfulness Questionnaire, FFMQ; Baer *et alii*, 2006) as it had already been translated into Finnish when the present study was being planned.

Data analysis

The bivariate correlations were calculated using SPSS for Windows (version 22.0). Further analyses were performed using the Mplus program (version 7.0) (Muthén &

Muthén, 2012). All 33 participants were included in the intent-to-treat analysis examining changes over time. Hierarchical linear modeling (HLM) with full information maximum likelihood (FIML) estimation was used to examine changes in the process and outcome measures. This approach includes all available data and accounts for values missing at random (MAR). The FIML estimation was also used to analyze means, standard deviations (*SD*) and confidence intervals (CI). Linear regression analyses were performed using the FIML estimation, and the standardized beta coefficients are reported as correlations between the variables. To describe the effect of the treatment, effect sizes (Cohen's *d*) were calculated using the Mplus program for both the treatment period and the whole study period, as follows: the mean change from the pre- to post-intervention measurement (a 5-week period, on average) was divided by the pooled pre- and post-intervention measurements' *SD*, and the mean change from pre-intervention to 5-year follow-up measurement was divided by the combined pre-intervention- and 5-year follow-up measurements' *SD* (Feske & Chambless, 1995; Morris & DeShon, 2002). A within-group effect size of 0.5 is considered small, 0.8 medium, and 1.1 large (Roth & Fonagy, 1996; Öst, 2006).

Change scores (pre- to post-intervention measurement, pre-intervention to 5-year follow-up measurement) used to assess correlations were always calculated by subtracting the former (pre-intervention measurement) from the latter (post-intervention or 5-year follow-up measurement); thus, negative change scores in the BDI indicate decreases in depressive symptoms and are considered a positive outcome, whereas negative change scores in process measures indicate a decline, and are seen as a negative outcome.

RESULTS

The correlations between pre-intervention levels of process measures and depressive symptoms are shown in Table 3. The Pearson's bivariate correlations indicate that lower scores for psychological flexibility, the KIMS subscales acting with awareness and accepting without judgment, were significantly associated with higher scores for depressive symptoms at the beginning of the intervention. Interestingly, higher levels of observing were associated with higher scores for depressive symptoms. However, higher scores regarding accepting without judgment were related to lower scores for observing, suggesting an inverse relationship between these two KIMS subscales.

Changes in depressive symptoms, psychological flexibility and mindfulness skills were analyzed at pre-intervention, post-intervention, and 5-year follow-up measurement points. Table 4 presents the pre and post-intervention means, standard deviations (*SD*), 95% confidence intervals (CI), within-group effect sizes (Cohen's *d*) and the effect of the treatment (Wald test) with respect to depressive symptoms, aspects of mindfulness and psychological flexibility.

Table 3. Bivariate correlations (Pearson, $n=33$) between depression (BDI) and process measures (AAQ-2 and KIMS) pre scores.

Measurement	Pearson correlation coefficients					
	BDI	AAQ-2	KIMS	Observe	Describe	Acting with awareness
AAQ-2	-.65**	--				
KIMS	-.20	.48**	--			
Observe	.37*	-.20	.51**	--		
Describe	-.10	.25	.64**	.35*	--	
Acting with awareness	-.36*	.52**	.40**	-.29	-.08	--
Accept without judgment	-.49**	.54**	.30	-.48**	-.14	.45**

Notes: BDI= Beck Depression Inventory; AAQ-2= Acceptance and Action Questionnaire; KIMS= Kentucky Inventory of Mindfulness Skills and its subscales; *= $p < .05$; **= $p < .01$; pre= pre-measurement.

Table 4. Mean scores, standard deviations, and 95% confidence intervals (CI) for outcome and process variables at pre and post (within-group effect sizes (ES) with 95% confidence intervals (CI) are also presented).

Measures	Pre (n= 33)	Post (n= 32)	5-years FU (n= 25)	ES (Cohen's <i>d</i>) and CI	
	<i>M</i> (<i>SD</i>) CI	<i>M</i> (<i>SD</i>) CI	<i>M</i> (<i>SD</i>) CI	Pre-Post	Pre-FU
BDI	22.61 (9.92) 19.22; 25.99	13.87 (9.54)** 10.58; 17.15	10.67 (7.28) ^{AA} 8.02; 13.33	0.89 ^{AI} 0.55; 1.24	1.37 ^L 0.99; 1.75
AAQ-2	38.33 (11.07) 34.56; 42.11	44.39 (12.72)** 40.00; 48.78	50.54 (11.20) ^{AA} 46.48; 54.59	0.51 ^S 0.15; 0.87	1.10 ^L 0.78; 1.41
KIMS	116.88 (13.40) 112.31; 121.45	122.22 (19.39)* 115.55; 128.90	128.68 (16.64) ^{AA} 122.50; 134.86	0.32 0.04; 0.61	0.78 ^S 0.42; 1.14
Observe	37.21 (9.45) 33.99; 40.44	38.90 (9.56) 35.61; 42.20	38.00 (7.29) 35.41; 40.59	0.18 -0.11; 0.46	0.09 -0.30; 0.48
Describe	25.73 (6.70) 23.44; 28.01	26.91 (7.45) 24.36; 29.47	27.83 (6.15) ^{AA} 25.60; 30.06	0.17 -0.03; 0.36	0.33 0.07; 0.58
Acting with awareness	25.64 (5.69) 23.69; 27.58	27.09 (6.87) 24.73; 29.44	29.94 (6.71) ^{AA} 27.61; 32.28	0.23 -0.09; 0.56	0.69 ^S 0.45; 0.94
Accept without judgment	28.21 (7.10) 25.79; 30.64	29.34 (7.85) 26.64; 32.04	32.14 (5.88) ^{AA} 29.95; 34.34	0.15 -0.17; 0.47	0.60 ^S 0.27; 0.94

Notes: BDI= Beck Depression Inventory; AAQ-2= Acceptance and Action Questionnaire-2; FU: follow-up; KIMS= Kentucky Inventory of Mindfulness Skills and Subscales below; Pre= pre-intervention measurement; Post= post-intervention measurement; * = *p* < .05; ** = *p* < .01; ^A = *p* < .05, ^{AA} = *p* < .01; ^S = effect size small 0.5; ^M = effect size medium 0.8; ^L = effect size large 1.1.

Changes from pre-intervention to 5-year follow-up measurement were significant regarding psychological flexibility (AAQ-2: estimate= 12.11, *p*= .000), depressive symptoms (BDI: estimate= -11.79, *p*= .000), general mindfulness skills (KIMS: estimate= 11.58, *p*= .000), and several mindfulness subscales (KIMS describing: estimate= 2.23, *p*= .00; KIMS acting with awareness: estimate= 4.14, *p*= .000; KIMS accepting without judgment: estimate= 3.91, *p*= .000). The pre to post changes in the mindfulness subscales were not statistically significant, whereas changes in depressive symptoms, psychological flexibility and general mindfulness skills were significant. The effect sizes (Cohen's *d*) from the pre- to post-intervention indicate a medium effect for depressive symptoms (BDI: *d*= -0.89) and a small effect for psychological flexibility (AAQ-2: *d*= 0.51). For the whole study period (from the pre-intervention to 5-year follow-up measurement), a large effect was found regarding depressive symptoms (BDI: *d*= -1.37) and psychological flexibility (AAQ-2: *d*= 1.10) while a close-to-medium effect was detected for general mindfulness skills (KIMS: *d*= 0.78) and a small effect was found for the subscales acting with awareness (*d*= 0.69) and accepting without judgment (*d*= 0.60).

The relationships between the changes in the process measures during the treatment (pre- to post-intervention) and the changes in depressive symptoms both during the treatment (pre- to post-intervention) and across the whole study period (pre-intervention to 5-year follow-up measurement) are seen in Table 5. The pre to post change correlations indicate that the change in depressive symptoms was related to changes in psychological flexibility (AAQ-2), general mindfulness skills (KIMS), and the accepting without judgment subscale.

Changes in depressive symptoms across the whole study period (pre to 5-year follow-up) were significantly associated with changes in accepting without judgment during the intervention (pre to post). However, changes from pre to post in three other KIMS subscales were not related to changes in depression across the whole study period.

Table 5. Bivariate correlations (Pearson, *n*= 33) between depression (BDI) change scores (from pre to post, and to 5-years FU) and process measures (AAQ-2, KIMS) change scores (from pre to post).

Measurement	Pearson correlation coefficients						
	BDI Pre-Post	BDI Pre-FU	AAQ-2 Pre-FU	KIMS Pre-Post	Observe Pre-Post	Describe Pre-Post	Acting with awareness Pre-Post
	BDI pre-FU	.75**	--	--	--	--	--
AAQ-2 Pre-Post	-.51**	-.32	--	--	--	--	--
KIMS Pre-Post	-.51**	-.38	.42*	--	--	--	--
Observe Pre-Post	-.23	.05	.05	.65**	--	--	--
Describe Pre-Post	-.26	-.27	.36*	.35	-.07	--	--
Acting with awareness Pre-Post	-.30	-.15	.42*	.56**	.17	.03	--
Accept without judgment Pre-Post	-.39*	-.52**	.29	.64**	.04	.23	.17

Notes: BDI= Beck Depression Inventory; AAQ-2= Acceptance and Action Questionnaire; FU: 5-year follow-up; KIMS= Kentucky Inventory of Mindfulness Skills and its subscales; Pre= pre-intervention measurement; Post= post-intervention measurement; * = *p* < .05; ** = *p* < .01.

Since previous research suggests that different components of mindfulness seem to be linked differently to various psychopathological concepts (see Introduction), we further examined the combinations of different KIMS subscales and whether they were related to changes in depressive symptoms. A further examination was conducted using a linear regression model testing pairs of subscales to see whether some of those combinations were related to positive changes in depressive symptoms both during the treatment phase and from the beginning of the study to the 5-year follow-up measurement (see Table 6). The investigation of the subscale pairs showed significant associations with pre- to post-intervention changes in depressive symptoms, even though when examined individually only the accepting without judgment subscale had produced significant results. Thus, while pre to post changes in other subscales (observing, describing, and acting with awareness) were not significantly related to pre to post changes in depressive symptoms (Table 5), significant associations were observed when the those KIMS subscales were paired with each other or with the accepting without judgment subscale (Table 6). However, when examining the pre to post changes in these combinations with regard to long-term changes (pre-intervention to 5-year follow-up measurement) in depressive symptoms, merely the combinations involving the accepting without judgment subscale produced significant results.

Table 6. Combination correlations (MPlus, $n=33$) between depression (BDI) change scores (pre to post and pre to FU) and aspects of mindfulness skills (KIMS) change scores (pre to post).

Measures	Pearson correlation coefficients					
	Observe+ Acting with Awareness	Observe+Accept without Judgment	Observe+ Describe	Describe+ Acting with Awareness	Describe+Accept without Judgment	Acting with Awareness+Accept without Judgment
BDI pre-post	-.34**	-.42**	-.33*	-.39**	-.43**	-.45**
BDI pre-FU	-.04	-.30*	-.08	-.26	-.54**	-.45**

Notes: BDI= Beck Depression Inventory; FU= 5-year follow-up; KIMS= Kentucky Inventory of Mindfulness Skills and its subscales; Pre= pre-measurement; Post= post-intervention measurement; *= $p < .05$; **= $p < .01$.

DISCUSSION

The main objective of the present study was to investigate whether changes in the subcomponents of mindfulness skills during a very brief 4-session ACT intervention were associated with changes in depression symptoms during that intervention, and also whether those changes predicted long-term changes in depressive symptoms. Our preliminary results suggested that different facets seen as parts of psychological flexibility and mindfulness might behave differently compared to one another during a brief intervention, and the changes in them during treatment may have a different impact on long-term changes in depressive symptoms.

As previous research has suggested (Alleva *et alii*, 2014; Barnes & Lynn, 2010; Barnhofer *et alii*, 2011; Bohlmeijer *et alii*, 2011; Christopher *et alii*, 2012), in our study, accepting without judgment was associated with depressive symptoms on many levels: pre-intervention scores correlated with each other (higher levels of depressive symptoms at the beginning of the treatment were related to lower levels of accepting without judgment) and changes in accepting without judgment during the treatment were associated with changes in depressive symptoms from both pre- to post-intervention and pre-intervention to 5-year follow-up measurement. No other changes in mindfulness facets showed associations with short- or long-term treatment changes *regarding* to participants' depression symptomatology. At the time of the pre-intervention measurement, acting with awareness had a negative association to depressive symptoms (higher levels of depressive symptoms were related to lower levels of acting with awareness), and describing was unrelated to depression, also in line with earlier research (Alleva *et alii*, 2014; Barnhofer *et alii*, 2011; Bohlmeijer *et alii*, 2011; Cash & Whittingham, 2010; Carmody & Baer, 2008; Christopher *et alii*, 2012).

As expected, the observing facet was positively related to depressive symptoms at the pre-intervention measurement time: higher levels of observing at the beginning of the treatment were related to higher pre-treatment levels of depressive symptoms. Observing also seemed to change the least, and higher levels of observing have been associated either directly or indirectly with lower well-being in cross-sectional studies (Alleva *et alii*, 2014; Barnes & Lynn, 2010; Christopher *et alii*, 2012). Worth noticing is that the overall level of depressive symptoms significantly decreased in spite of the observing feature maintaining its level. It might be that other important skills or skill sets, such as acting with awareness and accepting without judgment, had been integrated into the process of becoming more aware of inner and outer experiences.

When the KIMS' subscale changes were combined in pairs, there were significant associations regarding all pairs in relation to the pre- to post-intervention changes in depression. As noted earlier, individual subscale changes were significantly associated with changes in depressive symptoms only in regard to the accepting without judgment subscale, not regarding observing, describing or acting with awareness. When the subscale combinations were examined in relation to the whole study period, merely those combinations including the accepting without judgment subscale were statistically significant. Adding another subscale did not seem to strengthen the association when investigating the long-term changes in depressive symptoms. It appears that changes in accepting without judgment carried the most importance when it comes to the longevity of the treatment effect of a brief acceptance- and value-based intervention. These results show the importance of taking a non-evaluative and accepting stance even toward painful private events, supporting the theory behind acceptance- and value-based interventions (Hayes *et alii*, 2011), as well as confirming earlier research (Alleva *et alii*, 2014; Barnhofer *et alii*, 2011; Christopher *et alii*, 2012; Desrosiers *et alii*, 2013).

Our study has several limitations. Firstly, the fairly small sample size, the not diagnosed population and the biased gender distribution may have affected the results and thus limit their generalizability regarding *only* treatment-motivated females reporting mild to moderate symptoms of depression. Secondly, during the 5-year follow-up period, six participants (24% of the 25 participants) reported having had additional psychological treatment, four (16%) had used psychotropic medication during the follow-up and two (8%) were on medication by the time of the 5-year follow-up measurement. When comparing those participants having had additional psychological treatment to those not having had any, there were significant differences in both the pre- and post-intervention measurement results regarding acting with awareness [$t(23) = 2.30, p = .031$ and $t(23) = 2.50, p = .020$], respectively, in both cases with higher levels in those participants not having had any additional treatment outside our intervention. At the 5-year follow-up measurement, significant differences were detected in terms of psychological flexibility [$t(23) = 2.74, p = .012$] and acting with awareness [$t(23) = 3.18, p = .004$], also in both cases with higher levels in those participants not having had any additional treatment. These findings, combined with other results from the present study, are indicative of the importance of developing a non-evaluative, open attitude and mindful behavior as these seem to be significant factors leading better outcomes in brief acceptance- and value-based interventions, as well as better for one's overall well-being in general as suggested by earlier research (Alleva *et alii*, 2014; Barnhofer *et alii*, 2011; Barnes & Lynn, 2010; Bohlmeijer *et alii*, 2011; Christopher *et alii*, 2012; Desrosiers *et alii*, 2013). However, more research with larger samples, improved methodologies and research designs is called for. Further related limitations, such as concerning this type of intervention and long follow-ups, are discussed in previous papers that used the same data (Kohtala *et alii*, 2015; Kohtala *et alii*, 2017).

Thirdly, no statistically significant changes were detected during the brief 4-session intervention with respect to the KIMS subscales. It might be that the 4-session ACT intervention was not able to produce measurable changes large enough to be statistically

significant for specific aspects of flexible, mindful and nonjudgmental behavior within such a short time frame for all individuals. The individual variation in KIMS subscales was large, indicating that some individuals experienced more changes than others. However, significant pre to post changes were found in the single-factor measure of psychological flexibility (AAQ-2) as well as in the total score of the multidimensional mindfulness measure (KIMS).

Lastly, since psychological flexibility has been defined as a two-fold process as presented earlier (Hayes *et alii*, 2004, 2006), the measures available in the present study (AAQ-2, KIMS) may have captured only the first part consisting of present-moment awareness and having an accepting attitude toward experiences. Hence, the second part concerning the behavioral aspects and valued choices might be missing in our measurement, even though those dynamic behavioral aspects were crucial elements of the brief treatment model used. Thus, the associations found in the present study only address the aspect of having an accepting and aware attitude, possibly missing other integral elements important to changes in depressive symptoms. Also, it should be noted that our study applied a very brief intervention model delivered by novice therapists without extensive training or experience in psychotherapy.

Regardless of the limitations of the present study, we believe our findings to have implications for both clinical and research communities. By examining the various aspects of psychological flexibility beyond cross-sectional studies and investigating whether changes in those aspects are differentially related to changes in depressive symptoms and other well-being factors during time-limited treatment, we were able to bring more insight to what elements and processes might be important to the effectiveness of brief, time-limited acceptance and value-based interventions. As our results indicate, mere noticing and labeling of experiences was not associated to changes in depressive symptoms, yet when those aspects were combined with a non-evaluative attitude toward those experiences the association became significant. Similar observations and results regarding the relationship between observing and lower levels of mental health (Baer *et alii*, 2006; Baer *et alii*, 2008), as well as the observation of differential patterns of relationships between facets of mindfulness and mental health factors (e.g., Desrosiers *et alii*, 2013), have been found using a newer self-report measure for mindfulness aspects, the Five-Facet Mindfulness Questionnaire (FFMQ; Baer *et alii*, 2006).

As the results of our study suggest, certain aspects of mindful and acceptance, such as being able to observe and describe experiences and act with intention and awareness, might not be sufficient as separate “skills”; the emphasis on one facet might not be sufficient in producing and maintaining well-being and an open, flexible stance toward experiences over time. Observing has been associated with psychological distress and depressive symptoms (Baer *et alii*, 2004; Baer *et alii*, 2006; Baer *et alii*, 2008; Barnes & Lynn, 2010). However, the ability to notice and observe is also considered to be a pivotal aspect in various definitions of what is required to develop an accepting and mindful attitude and stance toward experiences (Lilja *et alii*, 2013), and should thus not be ignored but rather combined and strengthened with other skills.

As noted with regard to limitations, the importance of and changes in behavioral components and valued actions related to treatment outcomes in brief interventions for depressive symptoms should be addressed in future studies using more sophisticated designs. Also, other measures dissecting the concept of psychological flexibility, such as the Cognitive Fusion Questionnaire (CFQ) (Gillanders *et alii*, 2014) and the Valued Living Questionnaire (VLQ) (Wilson, Sandoz, Kitchens, & Roberts, 2010) could be used.

Our results imply that clinicians using acceptance-based interventions aiming for more behavioral and psychological flexibility should emphasize the development of a nonjudgmental and accepting attitude, which seems to be an important element in both achieving and maintaining lower levels of depressive symptoms. As some interventions may emphasize a more formal approach to developing mindful and present-centered

attention, clinicians should also be aware of not putting too much emphasis on observing and describing experiences without balancing these with acceptance skills. Similar findings have been discussed regarding longitudinal and cross-sectional mindfulness research (e.g., Barnes & Lynn, 2010; Brown, Bravo, Roos, & Pearson, 2015). The aim of the treatment model examined in our study was not to teach the participants mindfulness per se as in formal mindfulness-based interventions (e.g., MBSR; Kabat-Zinn, 1990), but rather to engage them in a more mindful and present-centered orientation toward their experiences and accepting the experiences without evaluations or judgment. Simplified, the aim was to help individuals gain more psychological flexibility. The existing literature drawing from both mindfulness and psychological flexibility research also promotes the importance of such ways of relating to the present moment, thoughts and emotions, underlining the potential effectiveness of our treatment approach.

APPENDIX

Kentucky Inventory of Mindfulness Skills (KIMS) by Ruth A. Baer, Ph.D., University of Kentucky
Subscales and related statements

Observe

- I notice changes in my body, such as whether my breathing slows down or speeds up.
- I pay attention to whether my muscles are tense or relaxed.
- When I'm walking, I deliberately notice the sensations of my body moving.
- When I take a shower or bath, I stay alert to the sensations of water on my body.
- I notice how foods and drinks affect my thoughts, bodily sensations, and emotions.
- I pay attention to sensations, such as the wind in my hair or sun on my face.
- I pay attention to sounds, such as clocks ticking, birds chirping, or cars passing.
- I notice the smells and aromas of things.
- I intentionally stay aware of my feelings.
- I notice visual elements in art or nature, such as colors, shapes, textures, or patterns of light and shadow.
- I pay attention to how my emotions affect my thoughts and behavior.
- I notice when my moods begin to change.

Describe

- I'm good at finding the words to describe my feelings.
- I can easily put my beliefs, opinions, and expectations into words.
- I'm good at thinking of words to express my perceptions, such as how things taste, smell, or sound.
- It's hard for me to find the words to describe what I'm thinking.
- I have trouble thinking of the right words to express how I feel about things.
- When I have a sensation in my body, it's difficult for me to describe it because I can't find the right words.
- Even when I'm feeling terribly upset, I can find a way to put it into words.
- My natural tendency is to put my experiences into words.

Acting with awareness

- When I do things, my mind wanders off and I'm easily distracted.
- When I'm doing something, I'm only focused on what I'm doing, nothing else.
- I drive on "automatic pilot" without paying attention to what I'm doing.
- When I'm reading, I focus all my attention on what I'm reading.
- When I do things, I get totally wrapped up in them and don't think about anything else.
- I don't pay attention to what I'm doing because I'm daydreaming, worrying, or otherwise distracted.
- When I'm doing chores, such as cleaning or laundry, I tend to daydream or think of other things.
- I tend to do several things at once rather than focusing on one thing at a time.
- When I'm working on something, part of my mind is occupied with other topics, such as what I'll be doing later, or things I'd rather be doing.
- I get completely absorbed in what I'm doing, so that all my attention is focused on it.

Accepting without judgment

- I criticize myself for having irrational or inappropriate emotions.
- I tend to evaluate whether my perceptions are right or wrong.
- I tell myself that I shouldn't be feeling the way I'm feeling.
- I believe some of my thoughts are abnormal or bad and I shouldn't think that way.
- I make judgments about whether my thoughts are good or bad.
- I tend to make judgments about how worthwhile or worthless my experiences are.
- I tell myself that I shouldn't be thinking the way I'm thinking.
- I think some of my emotions are bad or inappropriate and I shouldn't feel them.
- I disapprove of myself when I have irrational ideas.

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