A 4-session student given Acceptance and Commitment Therapy for depression: Efficacy and Therapeutic Processes

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ABSTRACT

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The present study investigated the efficacy of a 4-session Acceptance and Commitment Therapy (ACT) for the treatment of depression compared to a waiting list control group when the therapy was given by psychology students. It was also studied whether a brief ACT treatment has an influence on ACT processes defined as psychological flexibility and mindfulness skills and whether better treatment outcomes were associated with changes in those processes.

ACT treatment group's (n = 25) depression level (BDI) decreased an average of 50 % (13 BDI scores). In the waiting list control group (n = 24) the depression level decreased only an average of 4 % (1 BDI score) which was not statistically significant. Changes in psychological well-being in the ACT group were throughout superior compared to the changes in the waiting list control group. Large positive changes in depression in the ACT group were associated with better treatment outcomes. Results also showed that changes in psychological flexibility and mindfulness skills during treatment were positively related to treatment outcome. These results give support to the fact that when psychological flexibility and mindfulness skills ameliorate, there are also significant improvements in psychological well-being.

Keywords: cognitive behavioral therapy, acceptance and commitment therapy, depression, psychological flexibility, mindfulness skills

ABSTRAKTI

Neljän kerran opiskelijaterapeuttien antama Hyväksymis- ja omistautumisterapia masennuksen hoidossa: Tuloksellisuus ja terapeuttiset prosessit.

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Tässä tutkimuksessa selvitettiin 4 hoitokerran Hyväksymis- ja omistautumisterapian tehokkuutta masennuksen hoidossa verrattuna hoitoa odottavaan ryhmään. Terapeutteina toimivat psykologian loppuvaiheen opiskelijat. Tutkimuksessa selvitettiin myös sitä, miten lyhythoito vaikuttaa psykologiseen joustavuuteen ja tietoisuustaitoihin, jotka ovat hyväksymis- ja omistautumisterapiaan liittyviä prosesseja. Psykologiseen joustavuuteen ja tietoisuustaitoihin liittyen tutkittiin myös sitä, ovatko muutokset kyseisissä prosesseissa yhteydessä hoidon tuloksellisuuteen.

Hoitoryhmän (n = 25) masennuksen taso (BDI) laski keskimäärin 50 % (13 BDI pistettä). Odotusryhmän (n = 24) masennuksen taso puolestaan laski keskimäärin 4 % (1 BDI piste), mikä ei ollut tilastollisesti merkitsevää. Muutokset psyykkisessä hyvinvoinnissa hoitoryhmällä olivat kautta linjan parempia verrattuna odotusryhmän tuloksiin. Suuret, positiiviset muutokset masennuksessa hoitoryhmällä olivat yhteydessä parempiin hoitotuloksiin. Tutkimuksen tulokset osoittivat myös, että psykologisen joustavuuden ja tietoisuustaitojen muutokset hoidon kuluessa ovat positiivisesti yhteydessä masennuksen hoitotuloksiin. Tulokset tukevat oletusta siitä, että psykologisen joustavuuden ja tietoisuustaitojen kasvaessa myös psyykkisessä hyvinvoinnissa tapahtuu merkittäviä muutoksia.

Avainsanat: kognitiivinen käyttäytymisterapia, hyväksymis- ja omistautumisterapia, masennus, psykologinen joustavuus, tietoisuustaidot

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1 Introduction

1.1 Depression

Depression is a syndrome affecting several aspects of life and incorporating emotional, cognitive, motivational and physical symptoms. Depression is multiform psychiatric disorder incorporating various symptoms such as a significant decline in either mood or pleasure and interest, insomnia or hypersomnia, fatigue, feelings of worthlessness or guilt, psychomotoric changes, difficulties in concentration and recurrent thoughts of death, suicidal impulses or actions (Isometsä, 2007).

In Europe 3-10 % of the general population suffers from depression (Isometsä, 2007). The numbers fluctuate depending on the criteria used to diagnose depression. In Finland, the most recent health survey, Terveys 2000, states that 5 % of the interviewees have experienced a major depressive episode, based on DSM-IV criteria, during the past 12 months (Pirkkola et al., 2004). The prognosis of depression depends mostly on the severity of the depressive state (Isometsä, 2007): those suffering from mild depression tend to recover even without any treatment, but over 10 % of depression cases become chronic (Judd et al. 1998). Depression has a tendency to recur: 80 % of patients suffering from depression experience another depressive episode (Judd, et al., 1998).

Depression is also comorbid with various other disorders including anxiety and personality disorders and problems with intoxicants (Isometsä, 2007). When diagnosing depression it is essential to separate it from somatic diseases, symptoms caused by chemical substances and other psychological disorders such as dementia or bipolar disorder. Depression is considered to be more common among females than males (Isometsä, 2007) and according to Pirkkola et al. (2004) 7 % of females in Finland suffer from depression while the figure among males is only 4 %.

There are various causes of depression. Biopsychosocial models suggest that biological, psychological and social factors all contribute in varying degrees to the onset of depression (Leventhal, 2008). Also genetic predisposition, stressful life events and vulnerability are regarded as possible causing factors of depression. There exist several contemporary theories of the psychological and cognitive aspects of depression, the most renowned being Beck's Theory of Depression which considers thought processes as factors causing depression (Davison & Neale, 2001). According to Beck's model, depressive symptoms are experienced because cognitive processes are biased and thus negative interpretations are made concerning the self, the future and

the world which is called the depressive triad (Davison & Neale, 2001).

The general psychological view of depression is based on content: individuals having depressive symptoms are diagnosed as having disorders and attempts to ease symptoms are made by treating the presumed causes, whatever they may be (Zettle & Hayes, 2002). On the contrary, the Acceptance and Commitment Therapy (ACT) conceives depression in functional and contextual ways: the main problem is not a negative thought or interpretation or a depressed mood, but the contexts in which private events (negative emotions, depressive behaviors and events) affiliate with the inefficient way of behaving and living (Zettle, 2007; Zettle & Hayes, 2002). Experiential avoidance, cognitive fusion, rumination and attachment to a damaged conceptualized self in part produce those links (Zettle, 2007; Zettle & Hayes, 2002). Hayes et al. (2004) have stated that almost half of the various symptoms of depression can be traced back to the lack of acceptance and willigness, because the opposite of acceptance is experiential avoidance which causes psychological pain (Hayes & Smith, 2008).

Several methods have been discovered to affect depression such as biological treatments and various forms of psychotherapy. The most common pharmaceutical treatments are monoamine oxidase inhibitors (MAOI's), tricyclic antidepressants (TCA's) and selective serotonin reuptake inhibitors (SSRI's). Drug therapies are the most used way to alleviate the symptoms of depression, albeit they only treat symptoms, may cause serious side effects and do not offer a desired help to a fare share of clients (Davison & Neale, 2001). Drug therapies are often incorporated with psychotherapeutic efforts to help clients. Depression has been treated successfully with interpersonal therapy (IP) which is also a brief intervention including 12-16 weekly sessions (Karlsson & Markowitz, 2002). The basis of the treatment is the view that depression usually starts after a negative change in life and thus depression is a complex pattern of interpersonal and psychological factors. Therapy focuses on close relationships and tries to identify the changes and events that have occurred in the client's life before depression (Karlsson & Markowitz, 2002).

One of the most studied therapies is cognitive behavioral therapy (CBT) and it has been shown to be an efficient way to treat depression (Öst, 2006). CBT usually includes 16-20 sessions and emphasizing the meanings of negative, unilateral information processing and unworkable beliefs as the perpetuating factors of depression. Based on Beck's views of depression, the CBT intends to change the client’s pessimistic views of the self, the world and the future. Behavior activation (BA) is a part of CBT but it has been used separately to diminish avoidant behaviors (Lejuez, Hopko &

Hopko, 2001). The target is to identify the positive actions and activities accordant with the clients aims and goals and then to increase the participation to those activities. Newer parts of the cognitive-behavioral tradition include for example Acceptance and Commitment Therapy (ACT) which offers interesting possibilities and perspectives in both understanding and treating depression.

1.2 Acceptance and Commitment Therapy

1.2.1 Relational Frame Theory

Behavior therapy can be divided into three different stages or generations the first being traditional behavior therapy (Hayes, 2004). After that comes the cognitive behavioral therapy (CBT) stage. The third and most recent generation is a combination of contextualistic approaches (Hayes, Luoma, Bond, Masuda, & Lillis, 2006). The Acceptance and Commitment Therapy (ACT) is a part of the third wave of behavior therapy.

ACT is based on functional contextualism and a profound theory of language and cognition called Relational Frame Theory (Hayes et al. 2006; Hayes, Barnes-Holmes & Roche, 2001; Hayes, Strosahl, & Wilson, 1999). The Relational Frame Theory (RFT) is a theory of learning whose main idea is the ability of human language and cognition to create connections between private events arbitrarily and in many ways, and then to apply these learned relations or equivalences to new situations or private events based simply on certain cues that trigger derived relational patterns (Hayes et al. 2006; Hayes et al., 2001; Hayes et al., 1999). In a simplified manner, the problem is situated in the dominance of literal language.

ACT proposes three main characteristics of relational frames based on RFT: bidirectionality or mutual entailment, combinatorial entailment and transformation of stimulus function (Hayes, 2004; Hayes et al., 1999). Bidirectionality (or mutual entailment) signifies symmetry meaning that if an individual learns that there is a connection between A and B in a specific context, he also creates a connection between B and A in that context (e.g. If a person learns that Carl is taller than Wendy, then Wendy has to be shorter than Carl). This bidirectionality in inherit and thus a permanent part of human life (Hayes et al., 2001). Combinatorial entailment means that if an individual learns that A relates to B and B relates to C in a specific context then there is also a connection between A and C in that context (e.g. If Carl is related to Wendy and Wendy is related to Walt, then there is also a

family connection between Carl and Walt). Transformation of stimulus functions means that the relations mentioned above enable the altering of the meanings of related events (Hayes et al., 2006). For example if there is mutual entailment between a trauma and talking about the trauma then by transformation of stimulus function, talking about the trauma can produce similar emotions and thoughts as the trauma itself (Kuivalainen & Lappalainen, 2003). The transformation of stimulus functions is not solely related to verbal events or meanings: objects, sensations, pictures and phenomena can also become the focus of transformation.

Thus it is relatively easy to create connections arbitrarily and without any kind of substance or link to reality (Hayes, 2004; Lappalainen et al., 2008). The verbal and relational connections also tend to be extraordinarily strong and never seem to disappear entirely once established (Hayes, 2004; Lappalainen et al., 2008). The integral part of the weakening of verbatim functions of words is to diminish the function of language dependant on the relational frames and connections (Lappalainen et al., 2008). Based on those dependence relationships and equivalencies it is also essential to lessen the transition of the functions of psychological events to other situations (Lappalainen et al., 2008). The weakening of the literal meanings of language does not obliterate derived relations but that is not even considered to be necessary (Lappalainen et al., 2008). Instead, noticing relational frames and how they influence behavior, is important.

ACT emphasizes the second-order change meaning altering the functions of private events causing negative outcomes (Zettle, 2007). The understanding of the function of a certain behavior is integral (What does a behavior, e.g. depressive thoughts, serve?) in ACT. In a simplified manner, a depressive person may not be able to leave his house to meet friends because the outside world scares him. Thus he stays home and that behavior gives him a feeling of safety. In ACT the idea is to preserve the function of the behavior (feeling of safety) but not the behavior. The aim is to find more adaptive ways to maintain the feeling of safety while living according to values (e.g. friendship) and removing a harmful or distressing behavior which might partly uphold depressive mood. Based on ACT's contextual roots the meaning of contexts in the development of psychopathologies is emphasized. According to Hayes et al. (2006) the contexts of reason giving, literal meanings and experiential avoidance strengthen the control that cognitions and verbal processes possess. Based on RFT, even the literality of therapies might strengthen or maintain the derived relations and connections.

Experiential learning is considered to be an extremely powerful way of learning and ACT utilizes

the strength of experiences and learning by means of exercises and metaphors (Lappalainen et al., 2007a). Using experientiality ACT tries to diminish the domination of derived relations. Actions relate to experientiality and are an integral part of ACT and can be reached through chosen values and goals in which case actions accord with valued life directions (Lappalainen et al., 2007a). Overt behavior is not changed for the purpose of reducing negative emotions or thoughts or regulating mood. Behavior changes are made because chosen values redirect behavior and actions to particular life directions (Zettle, 2007). Obstacles such as thought and emotion behaviors are practically unavoidable. For example a depressed person might think that in order to participate in valued activities all depressive symptoms and feelings must disappear. According to RFT human suffering is continuous (Lappalainen et al., 2007a) and thus ACT aims to teach individuals to enter a life with the difficult private events instead of trying to win a fight against them (Hayes & Smith, 2008).

1.2.2 Psychopathology and core processes

According to ACT, human suffering, for example depression, is inevitable since language and cognition create relational frames which link difficult private events, exterior objects and situations together (Lappalainen et al., 2007a) and guide individuals to use unsuccessful and futile control strategies directed toward their own thoughts, feelings and emotions (Hayes, 2004).

From an ACT point of view, the domination of literal language, cognitive fusion and experiential avoidance partially inflict on depression and depressive symptoms (Zettle & Hayes, 2002). Generally cognitive fusion can be described as the inordinate, inappropriate and often unconscious regulation of behavior by using language processes such as rules, derived connections and correlations (Hayes, 2004; Hayes et al., 2006). Individuals fuse themselves with their thoughts and feelings thinking they are the same as their private events. Thus the individual becomes more controlled by verbal rules and relations and less in contact with the present moment, experiences and learning from them (Hayes et al., 2006).

Cognitive fusion is closely related to and supports experiential avoidance (Hayes et al., 2006). Hayes (2004) describes experiential avoidance as an attempt to evade private events even when escaping from them causes more psychological distress. ACT and its underlying theory of relational frames, RFT, provide experiential avoidance process one account (Hayes, Masuda, Bissett, Luoma, & Guerrero, 2004a). Verbal controlling and problem solving, the use of logic and common sense and the experiential avoidance of harmful situations are practical methods in many areas of life but

are inefficient ways to manage psychological events because the use of those means may lead to more distress (Hayes & Smith, 2008). Humans are not simply able to avoid unpleasant situations in order to avoid psychological pain because that pain can be triggered by various cues in different situations (e.g. The word “water” can be in connection to a traumatic situation and merely the word can produce distress). Instead humans try to avoid the actual psychological distress making that avoidance or suppression the cue to feel more anxious, depressed or distressed (Hayes, 2004; Hayes & Smith, 2008), thus making the suffering caused by attempts to control private events unavoidable. Verbal processes and reasoning cause suffering through relational frames, but those abilities are also fundamental to human functioning hence those functions can not be eliminated.

From an ACT point of view various forms of psychopathology can be condensed into three elements acting in unison: 1) futile attempts to control private events, 2) the domination of language and cognition over experiences and 3) lack of values clarity and the inability to change behavior to meet chosen values (Hayes, 2004; Hayes et al., 2006; Hayes et sl., 2004a; Kuivalainen & Lappalainen, 2003). From all that emerges psychological inflexibility and which is the primary target of the therapy work (Fletcher & Hayes, 2005; Hayes et al., 2006; Lappalainen et al., 2008).

ACT model suggests that psychological flexibility is discovered through six core processes using mostly various metaphors and exercises to confront problematic issues (Hayes, 2004; Hayes et al., 2006; Fletcher & Hayes, 2005). The core ACT processes are acceptance, contact with the present moment, values, committed action, self as context and cognitive defusion. Depression can also be understood through these processes.

Hayes et al. (2006) have also divided the core processes into two groups, still related to each other: Acceptance, defusion and self as context are part of Mindfulness and Acceptance Processes whereas Commitment and Behavior Change Processes involve contact with the present moment, values and committed action (Hayes et al., 2006). In fact self as context, committed action and contact with the present moment are rather new components in the ACT model even though those processes have been in the background all along but only recently they have been formulated into separate components. According to Hayes et al. (2006) all ACT processes are overlapping and they interact and thus should be treated as a whole. Positive results in the client's well-being are achieved when the processes are introduced and used simultaneously because they complement each other. For the sake of comprehension, they are discussed as separately as possible.

Mindfulness is a Buddhist concept which has been fairly unfamiliar to Western society until recently and it is often referred to in ACT literature (Fletcher & Hayes, 2005). Mindfulness can be defined as a nonjudgmental way of paying attention in the present moment (Baer, 2003). Lately, mindfulness based interventions have gained ground across the treatment methods for psychological problems, the most cited method being the mindfulness-based stress reduction (MBSR) program developed by Kabat-Zinn (Baer, 2003). The efficacy of mindfulness-based interventions is supported by a growing number of empirical literature (Baer, 2003; Baer, Fischer, & Huss, 2005; Gregg, Callaghan, Hayes, & Glenn-Lawson, 2007) and thus teaching mindfulness skills as a part of a treatment can be an efficient way to affect psychological well-being. From the RFT standpoint, mindfulness embraces four ACT processes (being present, self as context, cognitive defusion and acceptance) and through those processes it also influences valuing and committed action thus being an integral part of the discovering of psychological flexibility (Fletcher & Hayes, 2005). Mindfulness in ACT can therefore be defined as defused and accepting contact with present moment as an individual separate from the content of the private events accepted and contacted (Fletcher & Hayes, 2005).

1.2.2.1 Acceptance

As stated above experiential avoidance attributes to a wide variety of problems. ACT proposes acceptance as an alternative to avoidance since the attempt to control and avoid psychological pain causes more pain. Acceptance can be a misleading concept since it is often perceived as a rather passive and negative submission and silent suffering (Hayes & Smith, 2008). According to ACT, acceptance does not signify that individuals should passively accept situations or behaviors they can have an influence on such as substance use. According to Hayes et al. (2006) the ACT model considers acceptance as an active, willing and conscious way to experience all private events without controlling or attempting to change their form or frequency, or letting them determine actions. When accepting, individuals choose to embrace inoffensively everything that is (Dahl, 2009, course; Lappalainen et al., 2008). For example a depressed patient might be taught to embrace the depression and negative feelings and emotions more fully (e.g. to notice how different thoughts evoke and how body reacts; to detect the need to act a certain way) rather than controlling or trying to suppress them because it is the suppression that causes more distress and psychological harm (Fletcher & Hayes, 2005).

When accepting, clients are being present in the moment without judgments, predictions, avoidance or evaluations thus making them freer to pursue a valued and more flexible way of living (Hayes & Smith, 2008; Fletcher & Hayes, 2005). Thereby, acceptance is always a two-part process (Bond & Bunce, 2003) where 1) withdrawal from controlling private events and experiencing them fully leads to 2) an increase in resources to be transferred to acting in a way that is congruent with values and goals.

In a way acceptance also involves some type of exposure because individuals expose themselves to stressful private events, but contrary to some behavioral therapies, the aim of exposure (experiencing private events fully and as they occur) in ACT is not to regulate emotions or feel better. The purpose of acceptance is merely to feel and to experience fully for the purpose of experiencing fully (Hayes, 2004; Hayes & Smith, 2008). Thus in one sense acceptance could be perceived as the exposure to inner events.

Acceptance is also closely connected to cognitive defusion because it is difficult for example for a depressed person to experience events as they are, not as what they say they are, if language processes are constantly creating arbitrary relations and intensifying possibly harmful relationships between events and language (Fletcher & Hayes, 2005; Hayes, 2004). This means that in order to feel feelings as feelings, think thoughts as thoughts etc. the derived meaning or function of that feeling or thought has to diminish, since language and fusing with cognitions can be seen as barriers to acceptance.

1.2.2.2 Cognitive Defusion

On the grounds of Relational Frame Theory (Hayes, 2004; Hayes et al., 2006), there are arbitrary verbal relations between private events that create meanings and functions that may not be based on reality but are controlling the persons life. Those links and relations can be dissolved through cognitive defusion techniques which are designed for diminishing the importance of language and altering the functions feelings, thoughts and sensations. According to Blackledge (2007) the purpose of cognitive defusion is not to change the way of thinking, on the contrary, the aim is to disrupt the language processes causing the meaning of the private event to transform into harmful one by using a variety of techniques like paradoxes and cognitive distancing. Even though verbal processes are thought to be the primary source of psychological harm, defusion techniques are nevertheless based on language use since the negative force and control of language can be

weakened by using language itself (Hayes, 2004; Lappalainen et al., 2008). But the use of language is considered to be fairly paradoxal and nonlinear (Hayes, 2004).

ACT defusion techniques also try to make a difference between descriptions (The chair is made of wood) and evaluations (The chair is ugly) of events because a description of an event cannot be changed but the evaluations may be altered (Lappalainen et al., 2008). Individuals tend to regard their descriptions as evaluations so that the changing of those events becomes impossible: if an individual describes himself as bad (which actually is an evaluation), it can become literal, permanent and unchangeable (Lappalainen et al., 2008). Hayes (2004) states that another way to establish cognitive defusion is through mindfulness exercises. Thoughts and feelings are contacted here and now without verbal judgings or evaluations. Thus the verbal relations and the power of the literal language have to be diminished.

It is essential to notice that thoughts are merely thoughts which can be observed without getting infused into them (Hayes et al., 1999). This is an ACT process called self as context or the observing self which is explained below. A depressed person might consider a thought ”I feel depressed and miserable, thus I am depressed and unable to do things” as a definite fact which might prevent him from living the desired life. When the person understands that his thoughts about depression are merely thoughts without actual control over his behavior he might be able to consider his values and make choices that lead him towards the valued life which may ease his depressive mood. As stated above, cognitive defusion is strongly connected to various other ACT processes such as being present and self as context.

1.2.2.3 Self as Context

RFT suggests that language processes control private events and thus may produce psychological distress (Hayes, 2004; Hayes et al., 2006). People tend to combine themselves with their thoughts, feelings and emotions so that it becomes impossible to separate what is a thought and what is self (e.g. I feel depressed thus I am depressed). During therapy, the client discovers that the self consists of various parts: the conceptualized self, the ongoing self-awareness and the observing self (Hayes et al., 1999). The conceptualized self consists of verbal descriptions and evaluations that individuals have on themselves and their private events, and becoming absorbed into the conceptualized self can cause problems (Hayes et al., 1999; Lappalainen et al., 2008). In therapy, the client is taught to separate himself from the conceptualized self by using cognitive defusion and mindfulness

exercises (“I experience but I am not my experience.”). The process during which the client separates from the literally-taking part of the self can be hard on the client because that conception of self may be the only one he knows of and the feeling of loosing a vital part of him might be difficult. The idea of the observing self or self as context is crucial at that point. The self as context is not based on content that can be directly defined or described (Hayes et al., 1999). It is a perspective or a locus that is unchangeable and permanent. Self as context is separate from the threatening thoughts and feelings which helps the client to confront painful private events because the attachment to them has been reduced and the new experience of a separate, transcendent self has become a safe place to contemplate frightening events (Hayes, 2004; Hayes et al., 2006). According to Hayes et al. (2006; 1999) self as context promotes other ACT processes such as cognitive defusion and acceptance.

1.2.2.4 Contact with the Present Moment

The problems in the background of being present are dominance of the past and fear of the future (Hayes et al., 2006). Individuals lose contact with present moment when they surrender to the chaos of judging, predictions, explanations and reasoning produced by their thinking and language processes (Fletcher & Hayes, 2005). The depressed individual has lost contact with the present moment and lives in the past events feeling fearful and distressed about the future, because it seems that the future has nothing to offer. ACT encourages individuals to indulge in overt and direct contact with surrounding events as they happen in which case their behavior becomes more in accordant with their chosen values (Hayes et al., 2006). Contact with the present moment also relates to acceptance because acceptance happens when private events are experienced fully in the moment, and it involves contacting both internal and external events dispassionately and without attachment (Fletcher & Hayes, 2005). The means to accomplish contact with the present moment is the use of language to note and to describe private events. Being present promotes continuous nonjudgmental contact with psychological and environmental events as they occur (Dahl, 2009, course; Lappalainen et al., 2007).

1.2.2.5 Values

According to Hayes (2004) values are the context in which other processes unite as a whole. In ACT values are conceived as chosen directions that are unmeasurable and unreachable but are manifested in behavior (Fletcher & Hayes, 2005; Hayes et al., 2006). Values can be seen as intrinsic

positive reinforcer towards which individuals proceed (Dahl, 2009, course). Hayes et al. (2006) state that the problem behind values is the lack of clarity: people may have chosen values based on pliance, avoidance or fusion and when doing so, values hold no intrinsic and long-term reinforcement. Discussions and exercises on values and goals in various domains (work, close relationships and family, health, spirituality etc.) are executed in order to help the clients choose which values they wish to realize in their lives and towards which values or life directions they wish to navigate in their lives (Hayes et al., 2006). A depressed person can be extremely absorbed into his depressive thoughts and is unable to uncover his values and to look at the future. After values clarification, committed action also becomes a part of the value process and therapy work when attainable goals congruent with chosen values are specified and then actions through which values can be achieved and the possible obstacles are defined (Hayes et al., 2006; Lappalainen et al., 2008). Obstacles and problems are between individuals and their values, thus pain and suffering lay between now and the place where individuals want to be (valued life) (Dahl, 2009, course). Obstacles can also be unsolvable because if they were solvable, individuals would already have unraveled them. Individuals tend to think that in order to live a valued life they first need to solve their problems and obstacles which actually takes them further away from their valued life direction (Dahl, 2009, course). Clients are also asked whether or not they think their present actions have been in congruence with the values they possess. Often behavior is affected by the learned and derived relations and equivalencies and thus actions rarely are in accordance with the chosen values.

1.2.2.6 Committed Action

Committed action is one of the main goals in the ACT model meaning moving forward to live a life accordant with chosen values. According to Dahl (2009, course), committed action includes ever larger patterns of actions linked to values and a requirement to committed action is the willingness to expose oneself to pain and discomfort. Committed action usually means that behavioral changes need to take place (Fletcher & Hayes, 2005). The willingness to change behavior also tends to lead to contact with certain barriers and obstacles that are confronted with other ACT processes (Hayes et al., 2006; Lappalainen et al., 2008). The ACT model involves both short and long-term behavioral goal-setting in order for the committed action to happen (Hayes et al., 2006). Goals are considered as concrete stages or steps on the way towards a valued life. For example if a chosen value is being useful (value area: work), then committed actions could include bigger and smaller steps such as applying for a job and doing work individual assignments.

1.3 Effectiveness of ACT

Various studies have been done considering the effectiveness of ACT for the treatment of psychosis (Bach & Hayes, 2002; Gaudiano & Herbert, 2006), diabetes self-management (Gregg et al., 2007), epilepsy (Lundgren, Dahl, Yardi, & Melin, 2008), depression (Zettle & Rains, 1989), social anxiety disorder (Dalrymple & Herbert, 2007), stress and pain symptoms (Dahl, Wilson, & Nilsson, 2004), worksite stress (Bond & Bunce, 2000) and obsessive-compulsive disorder (Twohig, Hayes, & Masuda, 2006b). In addition, ACT has received supportive evidence as a treatment for chronic skin picking (Twohig, Hayes, & Masuda, 2006a), chronic pain (McCracken & Vowles, 2008), marihuana dependence (Twohig, Shoenberger, & Hayes, 2006), smoking cessation (Gifford et al., 2004) and substance abuse (Hayes et al., 2004b). ACT has also been evaluated against traditional cognitive behavioral therapy in depression using students as therapists (Lappalainen et al., 2007a).

Hayes et al. (2006) stated in their meta-analysis that when ACT is compared to any other treatment method, based on effect sizes (ES), the effect of ACT is medium (ES > .50). When ACT is compared to a waiting list group, to a placebo design or to a treatment-as-usual, the impact of ACT is large (ES > .80) both after the treatment and the follow-up period (Hayes et al., 2006). The effect size is a measure indicating the strength and size of the relationship between two variables and it is independent of the size of the sample. Here effects sizes indicate the strength of the ACT treatment in relation to other treatments.

1.4 Process studies

The Acceptance and Action Questionnaire, the AAQ, (and its revised version AAQ-2) has been developed in order to map the core processes of ACT (Hayes et al., 2006). According to Hayes et al. (2006) it is a measure of several ACT processes relating to psychological flexibility in a larger scale.

When examining the effectiveness of a therapy it is also essential to study what are the mechanisms or processes through which the therapy works. Hayes et al. (2006) suggest various methods to study the elements integral to a therapy. Preliminary results concerning the actively working components can be done using correlational studies. The correlational studies have typically examined more than one ACT process at a time and the AAQ has been the instrument with the most evidence

(Hayes et al., 2006). Hayes et al. (2006) reviewed studies investigating the AAQ and various psychological outcomes. The AAQ has been correlated with other measures and instruments in order to determine to what degree the AAQ levels correlate with psychological functioning or psychopathology measured with various inventories, questionnaires and scales (Hayes et al., 2006). To summarize the meta-analysis made by Hayes et al. (2006), the evidence from correlational studies support the ACT model.

Therapy processes can also be studied by examining their fluctuation during the research on outcomes (Hayes et al., 2006). Usually ACT processes in treatment outcome studies have been studied using the AAQ or other similar instruments, designed to measure specific domain of experience (Hayes et al., 2006). Hayes et al. (2006) state that in order to investigate processes of change, there has to be an actual change. Hayes et al. (2006) have gathered studies on ACT outcomes, summarized effect sizes and noticed that ACT in fact does forge change based on the effect sizes.

Dismantling studies are another method to study processes. These decompose treatment protocols to measurable components which then can be examined separately or in smaller clusters (Hayes et al., 2006). However, there are problems with dismantling studies: smaller ones tend to be ignored and larger studies are expensive and take a long period of time. Thus according to Hayes et al. (2006) ACT researchers have executed micro-studies on ACT processes in order to examine whether they actually are active, psychological components working in accordance with the theory.

Hayes et al. (2006) have gathered up articles concentrating on research on ACT components and processes. According to them (Hayes et al., 2006) there is supporting evidence of acceptance and cognitive defusion processes and more and more research is being done on values-based components. Other ACT elements such as being present and self as context need more scientific research but targeted studies are ongoing (Fletcher & Hayes, 2005; Hayes et al., 2006). Processes have been studied in laboratory situations where the effect of a single technique (Masuda, Hayes, Sackett, & Twohig, 2004) or a process to a specific thing (e.g. pain tolerance) has been isolated for research purposes. Results are preliminary but supportive to separately working ACT processes.

Mediational analyses are important in testing the treatment model, not merely the outcomes, since ACT is a therapy model with functional components or processes (Lundgren, Dahl, & Hayes, 2008). Mediational studies also reveal that ACT is separate from traditional behavior or cognitive

therapy and the processes of change are not the same as with existing methods. ACT seems to be working through different mechanisms as for example cognitive therapy (Zettle, 2007) or TAU (treatment-as-usual) which supports ACT processes as active and critical components of ACT outcomes (Forman, Herbert, Moitra, Yeomans, & Geller, 2007). There is evidence that changes in cognitive fusion mediate positive outcomes in ACT for psychosis (Bach & Hayes, 2002; Gaudiano & Herbert, 2006). Similarly, research states that cognitive fusion plays a mediational role in ACT treatment for depression, but not in CT (Zettle & Rains, 1989). Bond and Bunce (2000) noticed that the acceptance of unwanted feelings and thoughts mediated positive effects of an ACT stress intervention.

1.5 Summary

Barton (2000) states that the cognitive therapy for depression has not changed since it was established based on Beck's model of depression. According to Barton (2000) even though cognitive therapy is as equally efficient as any other treatment method only approximately half of the clients actually benefit from the treatment. Thus new treatments for depression should be developed and as stated above ACT has been found to have positive effects on depressive thoughts and emotions.

Sanderson (2003) also states that the national policymakers responsible for the mental health resources (in Finland the Social Insurance Institution of Finland) constantly need to consider both the costs and the effectiveness of the treatments supported. Long therapies are also questions of money and resources. Thus it is necessary to examine the efficacy of shorter treatments and psychotherapies (Sanderson, 2003). ACT is not yet an empirically supported psychological treatment but more and more work is done in order to prove the effectiveness of brief ACT interventions.

More research needs to be done of ACT and outcomes of treatment for depression. Few, if any, studies have examined the effects of extremely brief interventions. This study focuses on the influence of the ACT processes during normal therapy work and as a part of an entity of therapy, not as a separate component. Thus problems concerning the validity of measuring and effects rise since processes are seen as interconnected components acting in unison. But on the other hand, in the present study the processes are examined in a more natural environment and the population studied is more varied and realistic.

1.6 Research questions

The main goal of this paper was to determine whether a 4-session ACT treatment conducted by student therapists affects patients suffering from depression compared to a waiting list group. Previous study (Timo, 2009) based on relatively small number of subjects suggests that student therapists with only limited (20 hours) training to ACT methods are able to treat depressed clients with exceptionally good results.

Secondly, the aim was to study the effects of a brief ACT intervention on psychological flexibility and mindfulness skills processes. Thus, another goal was to investigate whether changes or increases in psychological flexibility and mindfulness skills during the treatment are associated with treatment outcome and the efficacy of the treatment. Based on previous results (e.g. Hayes et al., 2006), it was expected that higher levels of psychological flexibility, and changes in acceptance and mindfulness contribute to positive treatment outcomes. As a part of this goal, we were interested to see whether treatment outcomes can be predicted by the changes in mindfulness skills and psychological flexibility measured after the second session.

2 Method

2.1 Procedure

The data analyzed in this paper consists of two successive studies (spring 2008 and 2009) both investigating the efficacy of a brief (4 sessions) Acceptance and Commitment Therapy in the treatment of depression using the same research design (experiment and waiting list groups). The treatment was conducted by student therapists (psychology students) doing the project as a part of their master's level psychotherapy studies in the University of Jyväskylä.

The inclusion criteria were the following: 1) depressed mood, 2) age between 18 and 60 years, 3) no other psychological treatment at the same time, 4) no schizophrenia diagnosis, 5) no alcoholism, 6) no severe sensory injuries, 7) no neurological disorders, 8) no injuries to the brain. Even though one inclusion criterion was the age between 18 and 60 years, individuals over 60 years old and under 18 years old were treated and included in the study because otherwise the number of participants would have been too low. The inclusion criteria were used mainly because of the neuropsychological (EEG) data collected before and after the treatment of the waiting period. These data are reported elsewhere.

The participants were randomly assigned to two groups: experiment and waiting list (received therapy later on). In 2008, the randomization was conducted when the individuals contacted the university. Every other participant was randomized into the treatment group and every other into the waiting list group. Groups were also matched with gender so that every other male was in the therapy group and every other in the waiting list group, the same method was used with females. In 2009 the participants were randomized using the same method as in 2008 but after the sample was collected. The experiment group consisted of 25 participants and the waiting-list control group was 24 individuals. The research design is illustrated in Figure 1.

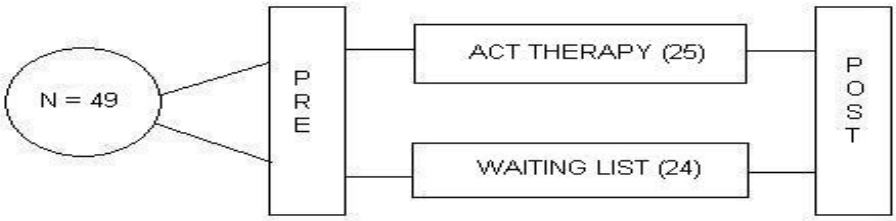

Figure 1. Research design: PRE means the measurements before the treatment or waiting period and POST signifies the measurements after the treatment or waiting period.

The full client outcome data was collected two times: before and after the therapy for the treatment group and before and after the waiting list for the control group. The clients also completed the AAQ-2 and the mood visual scale from Ojanen after every session (client measures explained in chapter 2.3). In 2009 the clients completed an additional inventory measuring mindfulness (KIMS) after the second session. At pre-measurement clients filled out eight self-report inventories listed below in chapter 2.3, and in 2009 they also completed the mindfulness inventory. At post-measurement clients completed the same inventories and were also asked to complete a questionnaire consisting of several questions related to their satisfaction with treatment and perceived effectiveness of treatment on their well-being. Possible changes in medication were also inquired. In 2009, a structured diagnostic depression interview (based on the DSM-IV) was used in pre- and post-measurements in order to have more diagnostic reliability.

Basic demographic information was collected through a questionnaire on the telephone when the clients contacted the university. More detailed background information was collected through background information form. In 2008 the clients completed the form at home and brought to the pre measurement phase, and in 2009 the form was filled in the pre measurement interview.

2.2 Participants

Participants were recruited via newspaper advertisement which stated that a university research project studying the efficacy of a brief psychotherapeutic treatment was seeking individuals feeling themselves depressed. The advertisement also stated that the therapy is provided by psychology students and that in 2008 the cost was 50 Euros. In 2009, the therapy was free. Participants were asked to contact via telephone or e-mail. All in all, 71 participants contacted the project and 60 of them filled the inclusion criteria and decided to continue. From the 60 individuals seven dropped

out before post measurement: in 2008 two participants decided to quit before the treatment and one quit before the second ACT session and never showed up, in 2009 two individuals cancelled before pre measurement, one participant did not show up to the EEG measurement and one participant decided to quit after the second therapy session. 53 participants continued to the post measurement. The analyzed data was slightly smaller because four individuals having BDI score lower than 9 were treated but excluded from the statistical analyses. Thus the number of subjects included in the analysis was 49 (40 female and 9 male).

The complete analyzed data was from 49 participants (40 female and 9 male). Their mean age was 46.8 years (SD = 11.3, range = 17-71). They had the average of 1.6 children and 31 % (15) of the participants were unmarried and 51 % (25) were either married or living with their partner, 18 % (9) participants were divorced. 45 % (22) of the participants were working, 14 % (7) were unemployed and 18 % (9) were retired. 23 % (11) of the participants were students, homemakers or on sick leave. 6 % (3) of the participants had only basic education (comprehensive school), 45 % (22) had second-degree education and 45 % (22) had higher level education (university or college). 47 % (23) of the participants had no previous depression diagnosis and 45 % (22) had the diagnosis. 6 % (3) had another mental health diagnosis in addition to a depression diagnosis. 63 % (31) of the participants had received therapy or conversational support before and 65 % (32) had used depression medication earlier and 27 % (13) were on medication as the therapy started. Based on the background information, the two groups were quite similar in terms of age, gender, marital status, work, earlier treatments, diagnosis and medication. The background information by group is summarized in Table 1.

Table 1. Background information by group

	ACT therapy group (n = 25)	Waiting list control group (n = 24)
Age (mean, SD, range)	48.12 (10.74; range 17-71)	45.33 (11.96; range 28-66)
Women/men	20/5 (80 % / 20 %)	20/4 (83 % / 17 %)
Working or studying	15 (60 %)	12 (50 %)
Married or living together	14 (56 %)	11 (46 %)
Earlier treatments	16 (64 %)	15 (63 %)
Depression diagnosis (clinical*)	14 (56 %)	11 (46 %)
Medication during the research	8 (32 %)	5 (21 %)

* diagnosed by a doctor or a psychiatrist in the health care service

In 2009, when diagnostic depression interviews were conducted, 19 (39 %) participants suffered from severe depression in the pre measurement based on the diagnostic interview. Nine (47 %) of

them belonged to the ACT therapy group and ten (53 %) to the waiting list control group.

2.2 Client Measures

Following measurements were used before and after the treatment. Beck Depression Inventory (BDI) is a widely used self-report questionnaire with 21 items measuring the severity of depression (Beck et al., 1961). One of the inclusion criteria for the EEG in the study was having a BDI score at least 9 which is regarded as the limit for mild depression. The BDI has good reliability and validity in both nonclinical and clinical populations (Beck et al., 1961). The Symptom Checklist-90 (SCL-90) is a broad self-report check list of psychopathological symptoms which has been validated for the Finnish population (Holi, Sammallahti, & Aalberg, 1998). In this study the scores from SCL-90 are reported as General Severity Index (GSI) which presents the amount of the symptoms. The GSI index (SCL-90-GSI) is calculated by dividing the client's scores by the number of questions (90). The Acceptance and Action Questionnaire – 2 (AAQ-2) is a 10-item questionnaire evaluating experiential avoidance and psychological flexibility. The AAQ-2 is a revised version of the earlier AAQ's (Hayes et al., 2006) which has been found to correlate highly with earlier versions (Sandoz, Wilson, & Merwin, in press). Sandoz et al. (in press) state that the AAQ-2 has good reliability and construct validity. The Beck Anxiety Inventory (BAI) is a self-report inventory to measure anxiety (Beck, Epstein, Brown, & Steer, 1988). It consists of 21-item measuring physiological and cognitive aspects of anxiety. The BAI has shown high internal consistency, good reliability and validity in both clinical and nonclinical populations (Beck et al., 1988). Social Adaptation Self-Evaluation Scale (SASS) measures social functioning and coping with daily life (Bosc, Dupini, & Polin, 1997). Three descriptive visual rating scales 0-100 measuring self-confidence, mood and life satisfaction were also used (Ojanen & Seppälä 1997, Ojanen 2000; 2001). In 2009, mindfulness skills were assessed by using the Kentucky Inventory of Mindfulness Skills (KIMS), a 39-item self-evaluation questionnaire measuring four mindfulness subscale skills: observe, describe, act with awareness and accept without judgment (Baer, Smith, & Allen, 2004).

In 2009, structured diagnostic interviews based on DSM-IV-TR depression diagnosis (APA, 2000) were conducted in the pre measurement phase on participants in order to have more diagnostic reliability. Participants were diagnosed with severe depression or no depression as follows: at least five symptoms must occur and one of them has to be a) depressed mood or b) loss of interest or pleasure. All symptoms have continued at least two weeks and they represent a change in comparison to earlier behavior. In addition, they must cause clinically significant pain or harm in

social, work or other areas in everyday life. Those diagnoses can only be seen as suggestive since no professional rater or clinician was used.

2.3 Therapists

All therapists (N= 20) were female master's level psychology students at the University of Jyväskylä. Their mean age was 25.8 years (SD 5.4; range 22-47) and they had studied an average of 3.3 years (SD 1.0; range 1.5-5.5). One student had completed an internship, which is a compulsory part of psychology studies. Two therapists had some experience of contact with clients as their psychologist or as a group session leader, but none had any experience with actual psychotherapy methods. Three (15 %) of the therapists had had some therapy or conversational support earlier.

Before therapy training the students had studied at least one course on interviewing skills (3 credits). The student therapists received 20 hours of training on ACT and CBT methods. A part of the training, including mainly general principles, was given in the course of cognitive behavioral therapies, and a part of it was executed in a smaller group of only therapists. The presentation of a functional analytic clinical case model (FACCM, Haynes & O'Brien, 2000) and the practice of constructing a FACCM by using imaginary cases was also included in the training of the student therapists as well as lectures on general principles of ACT and core processes. According to Lappalainen, Miettinen and Lehtonen (2007b), FACCM is a graphic approach to analysing problematic behavior, the relations between behavioral problems and the importance of those relations. It also points out the causal factors. Therapists also used an Acceptance and Commitment Therapy manual (Lappalainen et al., 2008) throughout the therapy. The manual describes the main assumptions underlying ACT, core processes and how they can be discussed in therapy, studies concerning ACT, 32 metaphors, 18 practices and some practical forms that could be used in therapy. Therapists received group supervision once a week during the treatment, each session lasting for approximately 2 hours. All students took part in the supervision sessions.

The student therapists also completed the same eight measures as their clients in relation to themselves before the first and after the last treatment session (AAQ-2, BDI, BAI, SCL-90, SASS, three visual rating scales). In 2009 the therapists completed also completed the KIMS. They also filled a structured questionnaire both before and after the treatment process. The pre-questionnaire concerned the fears, expectations and evaluation of their skills. The post-questionnaire handled the same issues, but it also included an evaluation of the whole therapeutic process and of how the

expectations concerning their own skill level and therapy equated the reality. These data are reported elsewhere.

2.4 Treatment

Student therapists followed a semi-structured treatment model listing the issues to be covered during each session. They were able to adapt certain aspects of the treatment (metaphors and exercises) in order for it to become more suitable to the client in question. The therapy sessions lasted 60 minutes and took place at the Department of Psychology. All clients were informed that therapy would consist of four weekly sessions.

The first session consisted mostly of gathering background information of the client. The client's problems were covered and after the session the therapist constructed a functional analysis clinical case model (FACCM) based on first session, presented it to the supervisor and then to the client at the second session. The FACCM was used in order to make decisions about which topics should be selected as treatment targets for each client. Therapy aims were discussed with each client, and clients had the opportunity to take the summary of the case model to home and change or correct it.

ACT metaphors and exercises were used from the first session throughout the whole treatment process and therapists were instructed to use at least one ACT-based exercise during every session. After each session the therapists marked on a check list which methods they had used during that session. Home assignments were either related to the methods used in sessions, such as mindfulness exercises, or they emerged from the client's life situation or even were suggested by the client himself. In 2008, the clients filled out the AAQ-2 and one visual rating scale by Ojanen after each treatment session. In 2009, the clients completed the same questionnaires after each session and also the KIMS after the second session. Sessions were not recorded.

Table 2 presents the methods used in each session for the experiment group. The figure in each cell states for how many clients a method has been used in each session. Total number of the clients treated was 25.

Table 2. Methods used by therapists during treatment (total number of clients = 25)

Method	Session 1	Session 2	Session 3	Session 4
Clarifying goals	19	16	13	12
Values	5	25	21	21
Study of the attempts to change and solve problems	16	9	12	15
Discussion on control and acceptance	10	10	15	19
Conceptions of self	6	5	11	9
Metaphors	14	18	19	22
Dealing with cognitive defusion	3	4	10	13
Observer exercise	3	13	13	5
Mindfulness exercise	24	13	16	19
Home assignments	25	25	24	22

2.5 Data analysis

All statistical methods used were parametric and conducted with SPSS version 15.0. Within group analyses were made using paired samples t-test and independent samples t-test. Between group analyses were made mainly by using the analysis of covariance and the analysis of variance. In addition, analyses of correlations were used and also a nonparametric analysis, Wilcoxon t-test, was used when the data was divided into smaller segments.

3 Results

3.1 Pre and post measurements

There were no significant differences in any of the measurements at the beginning of the treatment between the two years (2008/2009). Nor were there any significant differences between the two comparison groups in the pre measurement with one exception. KIMS was conducted only in 2009 and there was a significant difference in the KIMS subscale "observing" between the ACT therapy and the waiting list control groups [F (1, 28) = 7.53, p = .010]. This indicates that the basic level of observing feelings and thoughts was higher in the ACT group than in the waiting list group. Table 3 presents the pre and post measurement mean scores and standard deviations by group.

Table 3. The pre and post measurement mean scores and standard deviations by group

Measurement	ACT therapy (n = 25)		Waiting list control (n = 24)	
	Pre	Post	Pre	Post
BDI	25.56 (8.56)	12.80 (8.94) *	24.04 (7.89)	23.04 (9.33)
BAI	18.08 (10.00)	9.88 (8.03) *	17.21 (7.88)	16.67 (9.41)
SCL-90-GSI	1.41 (.62)	.71 (.51) *	1.17 (.39)	1.03 (.51)
SASS	32.44 (8.26)	37.48 (6.41) *	33.08 (4.80)	33.96 (6.22)
Mood	36.24 (15.35)	61.24 (19.99) *	35.17 (13.99)	42.17 (14.93) *
Self-confidence	44.12 (19.84)	62.28 (21.42) *	43.46 (19.22)	46.13 (19.34)
Life satisfaction	44.72 (15.77)	61.24 (22.01) *	45.79 (14.79)	47.33 (12.82)
AAQ-2	35.32 (9.82)	48.16 (12.27) *	37.33 (10.73)	38.50 (11.19)
KIMS	119.73 (14.48)	126.27 (23.77)	114.40 (11.76)	113.00 (13.27)
observe	40.60 (10.03)	44.13 (9.72)	32.60 (5.19)	34.87 (8.69)
describe	26.13 (7.18)	25.80 (8.65)	26.60 (5.53)	25.67 (7.24)
act with awareness	25.60 (5.28)	28.33 (6.16)	26.00 (6.61)	24.07 (5.55)
accept without judgment	27.40 (6.67)	28.07 (8.10)	29.20 (6.72)	28.20 (7.93)

* statistically significant difference between pre and post measurements using paired samples t-test

Between group differences were examined using the analysis of covariance. The pre measurement scores were used as covariates. The analysis of covariance indicated that there were differences between the two groups at the end of the treatment in terms of BDI [$F(1,49) = 20.87$, $p = .001$], BAI [$F(1,49) = 13.49$, $p = .001$], SCL-90-GSI [$F(1,49) = 11.03$, $p = .002$], SASS [$F(1,49) = 6.13$, $p = .017$], Self-confidence [$F(1,49) = 14.71$, $p = .001$], Mood [$F(1,49) = 17.02$, $p = .001$], Life satisfaction [$F(1,49) = 13.33$, $p = .001$], AAQ-2 [$F(1,49) = 14.15$, $p = .001$] and KIMS "act with awareness" [$F(1,15) = 6.64$, $p = .016$]. The differences were in favor of the ACT therapy group (see table 3).

Correlations between BDI changes and changes in outcome and process measures were also examined. BDI change correlated significantly with both changes in psychological flexibility and mindfulness in the ACT therapy group: AAQ-2 ($r = -.68$ ($n = 25$), $p<.001$) and KIMS ($r = -.60$ ($n = 15$), $p = .019$). Thus a large decrease in depression was related with a large increase in psychological flexibility and mindfulness skills. No significant correlations between changes in depression and changes in process measures were found in the waiting list group. BDI change correlated significantly with BAI change (ACT group: $r = .71$ ($n = 25$), $p<.001$; waiting list control: $r = .56$ ($n = 24$), $p = .005$) and SCL-90-GSI change (ACT group: $r = .86$ ($n = 25$), $p<.001$; waiting list control: $r = .67$ ($n = 24$), $p<.001$) in both groups, although correlations were bigger in the ACT therapy group.

The results between the groups were also compared with the effect size parameter (Roth & Fonagy, 2005; Öst, 2006). The effect sizes were calculated with the Effect Size calculator (http://web.uccs.edu/lbecker/Psy590/escalc3.htm). Table 5 shows the effectiveness of the treatment as effect sizes. Based on the analysis, between the groups there was a large difference (over .80) in depression (BDI), psychological flexibility (AAQ-2) and in Mood, and a medium size difference (over .50) in Self-confidence and Life satisfaction, anxiety (BAI), symptoms (SCL-90), social functioning (SASS) and mindfulness skills (KIMS) (see Öst, 2006).

Table 5 also presents the within group effect sizes that indicated the effectiveness of the treatment or the effects of the waiting period. The effect sizes indicated that there was a large effect (>1.10) in depression (BDI), symptoms (SCL-90), psychological flexibility (AAQ-2) and mood (visual scale Mood) in the ACT therapy group. Also medium effects (>.80) were detected in anxiety (BAI), life satisfaction and self-confidence (visual scales). The effect sizes showed that the therapy did not

seem to have an effect on mindfulness skills (KIMS). In the waiting list control group the within group effect sizes indicated only small changes during the waiting period. Table 5 shows that the treatment period was more effective than the waiting list period.

Table 5. The between group and within group effect sizes illustrating the effectiveness of the therapy (Cohen's d).

	Between group	Experiment group Within	Control group Within
BDI	-1.12	1.46	.12
BAI	-.78	.90	.06
SCL-90	-.63	1.23	.31
AAQ-2	.82	-1.16	-.12
KIMS	.69	-.33	.11
SASS	.56	-.68	-.16
Mood	1.08	-1.40	-.48
Life satisfaction	.77	-.86	-.11
Self-confidence	.79	-.88	-.14

Additionally, the data from ACT therapy group was divided on the grounds of the median of BDI scores into two groups: small or negative change in depression (mean change = 4.38) and large and positive change in depression (mean change = 21.83). Thus, the purpose was to study more closely those with small versus large change in depression. There were statistically significant differences between the groups in pre measurement in terms of BDI [t (23) = 2.62, p = .015], BAI [t (23) = 2.20, p = .038], SCL-90-GSI [t (23) = 2.92, p = .008] and KIMS "observe" [t (13) = 2.31, p = .038]. Based on mean scores and standard deviations (see Table 6), the pre BDI scores were higher in the group of large and positive change in depression (mean 29.75 (SD 6.66), range 18-40) compared to the group of small or negative change (mean 21.69, (SD 8.50), range 10-40). The pre BAI scores were higher in the group of large and positive change in depression (mean 22.33 (SD 9.93), range 5-36) compared to the group of small or negative change (mean 14.15, (SD 8.67), range 3-25). The pre SCL-90-GSI scores were also higher in the group of large and positive change in depression (mean 1.73 (SD .42), range .79-2.33) compared to the group of small or negative change in depressive mood (mean 1.11, (SD .64), range .24-1.98). The pre KIMS scores were higher in the group of large and positive change in depression (125.33 (SD 13.87), range 103-141) compared to the group of small or negative change in depression (116.00 (SD 14.41), range 97-149). These results indicated that in the group of large change in depression, the initial state of psychological well being was lower, and their initial mindfulness skill levels were higher as compared to those

who reported smaller change in depression.

Table 6 .The pre and post measurement mean scores and standard deviations by group

Measurement	Small or negative change in depression (n = 13)		Large positive change in depression (n = 12)	
	Pre	Post	Pre	Post
BDI	21.69 (8.50)	17.31 (9.88)	29.75 (6.66)	7.92 (4.25) *
BAI	14.15 (8.67)	11.38 (9.33)	22.33 (9.93)	8.25 (6.34) *
SCL-90-GSI	1.11 (.64)	.85 (.60)	1.73 (.42)	.56 (.37) *
SASS	34.38 (9.32)	35.38 (7.42)	30.33 (6.69)	39.75 (4.33) *
Self-confidence	45.62 (24.82)	57.85 (26.76) *	42.50 (13.48)	67.08 (13.08) *
Mood	40.54 (19.79)	55.62 (24.57) *	31.58 (6.45)	67.33 (11.64) *
Life satisfaction	44.69 (20.19)	54.69 (27.39) *	44.75 (9.87)	68.33 (11.51) *
AAQ-2	36.15 (10.30)	42.77 (13.88) *	34.42 (9.64)	54.00 (6.82) *
KIMS	116.00 (14.41)	111.44 (15.18)	125.33 (13.87)	148.50 (14.96) *
observe	36.33 (9.12)	38.22 (5.87)	47.00 (8.15)	53.00 (7.24)
describe	23.89 (6.64)	21.89 (7.01)	29.50 (7.15)	31.67 (7.89)
act with awareness	26.00 (6.42)	26.00 (5.07)	25.00 (3.35)	31.83 (6.37) *
accept without judgment	29.78 (6.76)	25.33 (8.73)	23.83 (5.12)	32.17 (5.31) *

* statistically significant difference between pre and post measurements paired samples t-test

In the group, where there had been a large, positive change in depression there were significant differences between pre and post measurements in BAI [t (11) = 6.32, p = .001], SCL-90-GSI [t (11) = 11.73, p = .001], KIMS [t (5) = -4.68, p = .005], KIMS “act with awareness” [t (5) = -4.51, p = .006], KIMS “accept without judgment” [t (5) = -3.35, p = .020], AAQ-2 [t (11) = -5.91, p = . 001], SASS [t (11) = -5.32, p = .001], Self-confidence [t (11) = -5.60, p = .001] , Mood [t (11) = -11.23, p = .001] and Life satisfaction [t (11) = -5.43, p = .001]. There were also significant differences between pre and post measurements in the small or negative change in depression in terms of AAQ-2 [t (12) = -2.24, p = .045], Self-confidence [t (12) = -3.16, p = .008], Mood [t (11) = -3.17, p = .008] and Life-satisfaction [t (12) = -2.24, p = .045]. In other words, clients experienced better self-confidence, mood and life-satisfaction, and there was a significant increase in psychological flexibility in both groups regardless of the degree of depression change. However, a large decrease in depression was associated with a large increase in psychological flexibility, significant change in anxiety, the amount of symptoms experienced, social functioning and

mindfulness skills. Thus, a large change in depression during the treatment was associated with broader changes in psychological well-being as compared to a smaller change in depression. Interestingly, based on mean scores (see Table 6), within the small depression change group, the trend in "accept without judgment" was negative. Thus, this suggested that with small or no change in depression, participants experienced less accepting without judgment.

As a curiosity, biggest and smallest changes in depression in the ACT therapy group were also investigated at a descriptive, individual level. Only those participants with a high initial BDI score were studied because large changes were impossible to occur when the starting level was low. There were two participants with large BDI changes in the ACT treatment group: BDI decrease of 33 and 31 points. Participant number 15 had a BDI change of 33 points from 35 to 2, which means that based on BDI scores, her depression was severe before the therapy started and after the therapy her status was normal. Her anxiety level and the amount of symptoms experienced had also changed (BAI: from 36 to 7 points; SCL-90-GSI: from 2.27 to .31). Her psychological flexibility levels had also increased from 30 to 66 points. There was a big change in BDI scores also in participant number 65 whose BDI score was 40 before the ACT therapy and 9 in the post measurement. Similar development also appeared with her BAI scores which decreased from 27 points to 15. Also her SCL-90-GSI scores decreased from 2.33 to 1.24. All her pre measurement outcome scores were very high which indicates that her psychological state was very problematic, and still significant changes had happened during the ACT therapy. Her psychological flexibility scores (AAQ-2) and mindfulness skills improved during therapy: AAQ-2 from 36 to 48 points and KIMS from 103 to 121 points.

The smallest change (2 points) was noticed with participant number 3: her BDI had decreased from 40 to 38 points. Her BAI scores had increased from 12 to17 points and the amount of symptoms experienced (SCL-90-GSI) had stayed in the same level (1.93) indicating that her depressive mood and functioning had not changes based on the self-reported scores. Based on the AAQ-2 scores, her psychological flexibility level had not changed (change from 24 to 23 points) during the treatment. Participant number 3 was treated in 2008 so no mindfulness skills measures are available.

3.2 Psychological flexibility and treatment outcomes

The data suggested that psychological flexibility was associated with depression and the amount of symptoms experienced. The correlation between AAQ-2 and BDI was -.57 ($p<.001$) in the pre

measurement which indicates that the more psychological flexibility the clients experienced, the less depressed they felt. The correlation between the amount of symptoms experienced, measured with SCL-90-GSI, was -.52 ($p<.001$) in the pre measurement phase meaning that more psychological flexibility was associated with less symptoms experienced. AAQ-2 scores at pre measurement also correlated significantly with SASS ($r = .44$, $n = 49$, $p = .002$), Mood ($r = .33$, $n = 49$, $p = .022$), Self-confidence ($r = .52$, $n = 49$, $p<.001$) and Life satisfaction ($r = .52$, $n = 49$, $p<.001$). KIMS and its subscales were not significantly correlated with AAQ-2 scores. In the post measurement AAQ-2 was significantly correlated with all outcome measures except KIMS subscales “observe” and “accept without judgment”.

Next, the relation between psychological flexibility and treatment outcomes was examined. Firstly, the pre measurement level of AAQ-2 scores was correlated with outcomes measures changes in order to examine the possible relationship between the initial psychological flexibility levels to possible improvements during therapy. Correlations are presented in Table 7. It was found that the initial psychological flexibility level was not significantly correlated with treatment outcomes. This indicates that the client's pre treatment level of psychological flexibility is not an essential measure of the treatment effectiveness.

Table 7. Correlations between pre measurement AAQ-2 and outcome measure changes

Measurement	ACT therapy group (n = 25)	Waiting list control (n = 24)
	AAQ-2 pre	AAQ-2 pre
BDI change	.19	-.05
BAI change	.15	.07
SCL-90-GSI change	.29	.05

Secondly, the data from ACT therapy group was divided on the grounds of the median of AAQ-2 scores into two groups: small or negative change in psychological flexibility (mean psychological flexibility change = 2.00) and large and positive change in psychological flexibility (mean psychological flexibility change = 22.85). There were no statistically significant differences between the groups in pre measurement condition measured with independent samples t-test.

Table 8. Small or large change in psychological flexibility during treatment: the pre and post measurement mean scores and standard deviations by group

Measurement	Small or negative change in psychological flexibility (n = 12)		Large positive change in psychological flexibility (n = 13)	
	Pre	Post	Pre	Post
BDI	22.92 (7.91)	17.58 (9.96) *	28.00 (8.71)	8.38 (5.01) *
BAI	18.00 (10.14)	14.25 (8.66)	18.15 (10.29)	5.85 (4.86) *
SCL-90-GSI	1.24 (.68)	.99 (.56)	1.56 (.54)	.45 (.30) *
KIMS	122.11 (16.94)	121.33 (23.01)	116.17 (10.11)	133.67 (24.99)
observe	41.00 (11.86)	43.33 (10.34)	40.00 (7.46)	45.33 (3.04)
describe	25.22 (7.97)	22.44 (8.26) *	27.50 (6.25)	30.83 (7.06) *
act with awareness	27.00 (6.06)	27.44 (7.62)	23.50 (3.21)	29.67 (3.14) *
accept without judgment	28.89 (7.20)	28.11 (7.37)	25.17 (5.64)	28.00 (9.38)
SASS	34.00 (9.46)	34.92 (7.45)	31.00 (7.06)	39.85 (4.32) *
Self-confidence	43.33 (25.29)	53.17 (23.23) *	44.85 (14.15)	70.69 (16.23) *
Mood	37.83 (19.57)	52.92 (23.66) *	34.77 (10.74)	68.92 (12.37) *
Life satisfaction	42.33 (19.10)	50.83 (26.02)	46.92 (12.31)	70.85 (11.82) *

* statistically significant difference between pre and post measurements using paired samples t-test

In the group, where there had been a large, positive change in psychological flexibility, there were significant differences between pre and post measurements in BDI [t (12) = 7.86, p<.001], BAI [t (12) = 5.00, p<.001], SCL-90-GSI [t (12) = 8.78, p<.001], KIMS "describe" [t (5) = -5.42, p = .003], KIMS "act with awareness" [t (5) = -11.36, p<.001], SASS [t (12) = 5.13, p<.001], Mood [t (12) = -9.41, p<.001], Self-confidence [t (12) = -6.49, p<.001] and Life satisfaction [t (12) = -5.82, p<.001]. There were also significant differences between pre and post measurements in the small or negative change in psychological flexibility in terms of BDI [t (11) = 3.38, p = .006], KIMS "describe" [t (8) = 3.00, p = .017], Mood [t (11) = -3.06, p = .011] and Self-confidence [t (11) = -2.69, p = .021]. In other words, clients feel less depressed and experience better mood and self-confidence in both groups regardless of the degree of psychological flexibility change. Though, in the large psychological flexibility change group, also anxiety, the amount of symptoms experienced, social functioning and life satisfaction had changed towards the desired direction. Results suggest that the treatment outcome might be better when psychological flexibility changes more during therapy.

Then the between group differences regarding treatment outcome were analyzed using the analysis of covariance. The pre measurement scores were used as covariates. Based on the analysis of covariance, there were following statistically significant between group differences at the end of the treatment: BDI [$F(1,25) = 18.65$, $p<.001$], BAI [$F(1,25) = 14.21$, $p = .001$], SCL-90-GSI [$F(1,25) = 25.38$, $p<.001$], KIMS "describe" [$F(1,15) = 21.38$, $p = .001$], AAQ-2 [$F(1,25) = 52.83$, $p<.001$], SASS [$F(1,25) = 14.00$, $p = .001$], Self-confidence [$F(1,25) = 9.99$, $p = .005$], Mood [$F(1,25) = 9.29$, $p = .006$] and Life satisfaction [$F(1,25) = 6.91$, $p = .015$]. In other words, psychological flexibility has a significant influence on the decrease in depressive mood, anxiety and experienced symptoms and the increase in self-confidence and life satisfaction. When examining the mean scores by group (see Table 8), it is clear that the group in which changes in AAQ-2 scores are positive and large, also the effect of the therapy is better and outcomes are more positive.

Next goal was to investigate whether a change in psychological flexibility was connected to treatment outcome measured with changes in BDI and SCL-90-GSI (see Table 9). In the ACT group, the correlation between changes in AAQ-2 and BDI change was -.68 ($n = 25$, $p<.001$) and between changes in AAQ-2 and SCL-90-GSI change the correlation was -.78 ($n = 25$, $p<.001$).

Table 9. Correlations between AAQ-2 change, KIMS change, outcome and process measure changes

	ACT therapy		Waiting list control	
	AAQ-2 change	KIMS change	AAQ-2 change	KIMS change
BDI change	-.68 **	-.60 *	-.22	-.37
SCL-90 change	-.78 **	-.76 **	-.50 *	-.61 *
BAI change	-.67 **	-.39	-.33	.18
AAQ-2 change	1	.53 *	1	.17
KIMS change	.53 *	1	.17	1
observe change	.21	.74 **	.05	-.52 *
describe change	-.87 **	-.54*	-.17	-.52 *
acting with awareness change	.53 *	.69 **	.00	-.16
accepting without judgment change	.24	.81 **	.05	.58 *

** correlation is significant at the .01 level

* correlation is significant at the .05 level

Changes in psychological flexibility were also correlated with Life satisfaction change (r = .56 (n = 25), p = .003), Mood change (r = .55 (n = 25), p = .004) and Self-confidence change (r = .69 (n = 25), p = .000). In other words, the more changes in psychological flexibility during therapy, the less the client experiences symptoms and depressive mood and the more satisfied the client is with life.

When examining the relationship between treatment outcomes and changes in AAQ-2 scores after the second session it was discovered that early changes in psychological flexibility was correlated with changes in SCL-90-GSI (r = -.44, n = 25, p = .028), Life-satisfaction (r = .41, n = 25, p = . 039), SASS (r = .57, n = 25, p = .003) and KIMS (r = .60, n = 15, p = .017). Correlations indicate that only some of the treatment outcomes can be predicted by a fast increase in psychological flexibility measured after the second session.

3.3 Mindfulness and treatment outcomes

Mindfulness measured with KIMS was not significantly correlated with any of the measures except SASS (r = .40, n = 30, p = .028), which measures social functioning, in the pre measurement phase. In the post measurement phase KIMS was correlated with SASS (r = .49, n = 30, p<.001), AAQ-2 (r = .48, n = 30, p<.001), BDI (r = -.45, n = 30, p = .012), SCL-90-GSI (r = -.42, n = 30, p = .021), Mood (r = .40, n = 30, p = .029) and Self-confidence (r = .41, n = 30, p = .026). Results indicate that the level of mindfulness skills after treatment is associated with various aspects of mental well-being and psychological flexibility.

The KIMS subscales were also examined throughout the Results chapter. Below are the compiled results regarding the subscales. As stated before, there was a significant difference in the subscale “observe” between the two groups in the pre measurement. As seen in Table 3 there were no significant differences in any of the subscales between pre and post measurements in either of the groups. There were almost a significant difference between the pre and the post measurements in KIMS subscales “observe” and “act with awareness” in the ACT treatment group (Table 3). When the ACT treatment group was divided in two in terms of depression change, it was noticed that in the large change in depression group there were significant pre to post differences in subscales “act with awareness” and “accept without judgment” (see Table 6). That indicates that when a large change occurs in depression during treatment, there are also positive changes in awareness and nonjudgmental accepting of feelings and thoughts. When the ACT treatment group was divided in

two in terms of psychological flexibility change, it was also noticed that in the large change in psychological flexibility group there were significant pre to post differences in subscales “describe” and “act with awareness” (see Table 8). These findings are supported by correlations (see Table 9) according to which changes in psychological flexibility (AAQ-2) are associated with changes in KIMS subscales “describe” and “act with awareness” in the ACT treatment group. These results indicate that when a large change in psychological flexibility occurs, there are positive changes in awareness and describing of feelings and thoughts.

When investigating changes in KIMS scores it was discovered that changes in mindfulness skills were connected to treatment outcome measured with changes in BDI, BAI and SCL-90-GSI (see Table 9). In the experiment group, changes in KIMS correlated with changes in SCL-90-GSI ($r = -.76$, $n = 15$, $p<.001$) and in SASS ($r = .78$, $n = 15$, $p<.001$). Changes in mindfulness skills were also correlated with BDI ($r = -.60$, $n = 15$, $p = .019$), Mood ($r = .54$, $n = 15$, $p = .038$) and AAQ-2 ($r = .53$, $n = 15$, $p = .042$). In the waiting list control group, changes in mindfulness skills were correlated significantly only with experienced symptoms measured with SCL-90-GSI ($r = -.61$, $n = 15$, $p = .015$). Correlations indicate that after the therapy an increase in mindfulness skills was connected to larger changes in psychological flexibility and social functioning and smaller changes in depression and the amount of symptoms experienced.

When studying the relationship between treatment outcome and changes in KIMS scores after the second session it was discovered that early changes in mindfulness skills were significantly correlated with changes in AAQ-2 ($r = .59$, $n = 15$, $p = .021$) and KIMS ($r = 78$, $n = 15$, $p = .001$) measured in the post measurement phase. Early changes in KIMS also had a significant relationship with SCL-90 ($r = -.57$, $n = 15$, $p = .027$) and Mood ($r = .58$, $n = 15$, $p = .023$). Correlations indicate that an early change in mindfulness skills can predict only some of the treatment outcomes.

Next, the relation between mindfulness skills and treatment outcomes were examined. First of all, the initial, pre measurement level of mindfulness skills scores were correlated with outcomes measures changes in order to examine the possible relationship between initial mindfulness skills level to possible improvements during therapy. Correlations are presented in Table 10. It was found that the initial mindfulness level was not significantly correlated with treatment outcomes.

Table 10. Correlations between pre measurement KIMS and outcome measure changes.

Measurement	ACT therapy group KIMS pre	Waiting list control KIMS pre
BDI change	-.23	-.21
BAI change	-.41	.05
SCL-90-GSI change	-.25	-.12

Second, the data from ACT therapy group was divided on the grounds of the median of KIMS scores into two groups: small or negative change in mindfulness (mean mindfulness change = 9.86) and large and positive change in mindfulness (mean mindfulness change = 20.88). Data was examined using both parametric and non-parametric analyses due to the small number of participants. However, results were nearly the same with both analyses and thus only parametric analyses are reported. There were statistically significant differences between the group in pre measurement in terms of BDI [t (13) = -2.52, p = .025] and SCL-90-GSI [t (13) = -3.41, p = .005] measured with parametric t-test. Based on mean scores and standard deviations, the BDI was higher in the group of large and positive change in mindfulness (mean 28.00 (SD 9.46), range 14-40) compared to the group of small or negative change. (mean 17.43, (SD 6.13), range 10-25). The SCL-90-GSI was higher in the group of large and positive change in mindfulness (mean 1.75 (SD . 43, range .91-2.33) compared to the group of small or negative change. (mean .863, (SD .579), range .24-1.72). In other words, the group where mindfulness change was large and positive, the client were more depressed and had more symptoms before the therapy.

In the group, where there had been a large, positive change in mindfulness skills, there were significant differences between pre and post measurements in terms of all measurements. There were significant differences between pre and post measurements in the small or negative change in mindfulness in terms of Life satisfaction [t (6) = -3.12, p = .021] and Self-confidence [t (6) = -2.633, p = .039] showed significant difference between pre and post measurements. In other words, clients are more satisfied with their lives in both groups regardless of the degree of mindfulness change. Though, in the large mindfulness skills change group, anxiety, depression and symptoms had decreased, social functioning had improved and clients experienced more life satisfaction and self-confidence. Even though the initial state was more severe in terms of depression and symptoms in the large change in mindfulness skills, results suggest that treatment outcomes might be better when mindfulness skills change more during therapy.

Table 11. Small or large change in mindfulness skills during treatment: the pre and post measurement mean scores and standard deviations by group

Measurement	Small or negative change in mindfulness skills (n = 7)		Large positive change in mindfulness skills (n = 8)	
	Pre	Post	Pre	Post
BDI	17.43 (6.13)	14.14 (9.16)	28.00 (9.46)	10.75 (7.00) *
BAI	15.00 (9.24)	11.86 (11.00)	22.25 (11.10)	10.38 (8.19) *
SCL-90-GSI	.86 (.58)	.70 (.49)	1.75 (.43)	.79 (.57) *
SASS	36.43 (11.06)	36.14 (9.62)	33.13 (4.88)	39.13 (4.77) *
Self-confidence	42.86 (30.65)	56.00 (27.23) *	49.13 (11.50)	65.38 (16.33) *
Mood	46.43 (20.28)	60.86 (22.74)	31.63 (5.07)	64.13 (17.35) *
Life satisfaction	49.29 (20.77)	65.00 (22.57) *	46.63 (8.90)	62.13 (21.28) *
AAQ-2	38.00 (11.91)	41.00 (14.02)	36.75 (9.65)	51.13 (7.57) *

* statistically significant difference between pre and post measurements using paired samples t-test

Then between-group differences regarding treatment outcomes were analyzed using the analysis of covariance. The pre measurement scores were used as covariates. Based on the analysis of covariance, there were significant differences in SCL-90-GSI [$F(1,15) = 6.87$, $p = .022$], SASS [$F(1,15) = 13.97$, $p = .003$] and AAQ-2 [$F(1,15) = 7.19$, $p = .020$]. BDI [$F(1,15) = 4.54$, $p = .055$] was nearly significant. Based on the results, changes in mindfulness skills have a significant association with symptoms, psychological flexibility and social functioning. When examining the mean scores by group (see Table 11), it is clear that the group in which changes in mindfulness skills are larger, also the effect of the therapy is better and outcomes are more positive.

4 Discussion

The main goal of this study was to determine whether a 4-session student given ACT treatment has a positive effect on depressed clients when compared to a waiting list control group. As hypothesized, ACT treatment is an effective way to treat depression compared to a waiting period. In the waiting list control group, results indicate that there was a statistically significant change only in mood. That indicates that the anticipation of the treatment to come might have had a small positive effect on the client's depressive mood. Still, changes in the ACT treatment group were significantly larger and more positive and treatment effects were widely spread into different areas of mental well-being.

The between-group effect sizes (Öst, 2006) give support to the assumption that the ACT intervention is an effective model in the treatment of depression compared to a waiting period. The largest differences between the two groups (ACT treatment group and waiting list control group) were in depression, psychological flexibility and mood. Also other measures showed moderate between group differences. The within group effect sizes strengthen the main results indicating that the treatment has had a large positive influence on depressive mood and psychological flexibility and a smaller effect on other aspects of psychological well-being measured in this study. The effect sizes also validate the results indicating that the waiting period might have affected the depressive mood of some clients: the within group effect sizes indicate that the waiting period has had a small effect on mood in the waiting list control group.

When comparing the effect sizes of this study to other effect sizes listed by Öst (2006) it seems that the short ACT treatment used here is basically at least as effective as longer cognitive therapy. ACT has nearly the same or even better effect sizes depending on the measures used (BDI: 1.12; AAQ-2: .82; KIMS: .69) compared to an average effect size (.82) of 20 cognitive therapy and cognitive behavioral therapy studies (Öst, 2006). Nevertheless, it has to be taken into account that this study is only preliminary and has a small number of participants, but the effect size comparisons are supportive and informative.

The second goal was to study the effects of the ACT treatment to ACT processes specified here as psychological flexibility and mindfulness skills which can be understood as combining several overlapping ACT processes. The processes were studied using AAQ-2 for psychological flexibility

and KIMS for mindfulness skills. In compliance with the hypothesis, the results show that changes in psychological flexibility have a relationship with treatment outcomes and those individuals with larger positive changes in psychological flexibility also benefited from the ACT treatment more and had better treatment outcomes compared to those with small or negative changes in psychological flexibility. However, the initial level of psychological flexibility before the treatment was not correlated with changes in treatment outcomes indicating that the pre treatment level of psychological flexibility was not associated with treatment outcomes. Psychological flexibility levels were also measured throughout the therapy and the changes in psychological flexibility after the second therapy session were associated with the amount of symptoms experienced, mindfulness skills, self-confidence and social functioning. Thus, some of the treatment outcomes can be predicted by a fast increase in psychological flexibility measured after the second session. These results indicate that psychological flexibility changes that happen during the therapy are substantial to the effectiveness of the treatment. Those clients who learn to be more psychologically flexible in the course of the treatment feel less depressed and anxious and have better mental well-being compared to those less psychologically flexible in the early stage of the treatment.

Pre measurement mindfulness skills scores have no relationship with changes in treatment outcome which indicates that the initial level of mindfulness is not a predictor of treatment outcome. Based on correlations, the pre treatment level of mindfulness skills was not associated with pre treatment level of psychological flexibility or that of mental well-being except social functioning. Mindfulness skills do not tell the level of depression, anxiety or symptoms. However, there seems to be a relationship between changes in mindfulness skills and changes in psychological flexibility during treatment indicating that when there are changes in mindfulness skills psychological flexibility also changes and vice versa. Also, the changes in mindfulness skills during treatment were associated with changes in the majority of outcome measures (except anxiety). This suggests that when the client acquires more mindfulness skills there are also positive changes in depressive mood and symptoms. However, mindfulness skills did not change significantly during the treatment but instead there was a significant change in psychological flexibility. This could be explained by the smaller number of participants in the mindfulness skills analyses, and by the assumption that mindfulness skills might take more time to emerge and thus the changes are not obtained just after four sessions. There were some indications that KIMS subscale “observe” and “act with awareness” scores had changed more in the ACT therapy group compared to the waiting list control. The analysis of covariance shows that there were significant between-group differences after the treatment only in “act with awareness”. This gives support to the conclusion that the four session

ACT treatment had a specific effect on observing thoughts and emotions and being aware of them. In accordance with this, the therapists reported that they had used many mindfulness-related exercises aiming to increase observing skills.

However, the changes in mindfulness skills were relatively small compared to other changes. There might be various reasons to that, some of which have been discussed earlier (the small number of participants and the slower emergence of mindfulness skills). It might also be that KIMS is not the best measurement instrument when it comes to mindfulness skills. It will be interesting to see whether there are any significant changes in mindfulness skills in the follow up phase and whether those possible changes have a relationship with treatment outcomes and psychological flexibility.

These results provide evidence supporting earlier research data (Baer et al., 2004; Hayes et al., 2006) that larger, positive changes in psychological flexibility and mindfulness skills have a relationship with better treatment outcome. The examination of individual cases gives additional support to the assumption that better results in depression have a connection with higher psychological flexibility and mindfulness levels, and that ACT therapy affects both psychological flexibility and mindfulness skills by improving them and thus increases well-being and decreases depressive mood. Both of the participants reporting the biggest depression changes showed also clear improvements in their psychological flexibility and mindfulness skills during the ACT therapy. On the contrary, the participant with the smallest change in depression reported no change in psychological flexibility during the treatment. These conclusions are supported by correlations between depression changes and process measure changes (see Table 9).

According to this study, psychological flexibility seems to be a better measure of better well-being and positive treatment outcome than mindfulness skills. The improvements or changes in psychological flexibility were larger than those in mindfulness skills, even though both psychological flexibility and mindfulness skills were associated with good treatment outcome. The ACT treatment conducted by student therapists affected the key ACT processes, that is, psychological flexibility and mindfulness skills. This is in accordance with the theory of ACT.

The diagnostic depression interviews were conducted only in 2009 and in the pre measurement phase the participants suffering from severe depression (19) had divided almost equally between the two groups (ACT group: 9; waiting list group: 10) which supports the results indicating that the two groups did not differ from each other in the pre measurement phase (table 3). The diagnostic

depression interviews were conducted also in the post measurement and based on the interviews 10 participants filled the criteria of severe depression, five in the ACT therapy group and six in the waiting list control group. These results indicated that depression had decreased equally in both groups which is contrary to the results from the outcome measure scores. This discrepancy can be considered to derive from the fact that the interviews were extremely simple, were conducted by a large group of non-experts in clinical psychology and the depression diagnosis was only based on scoring the answers given by the client. Thus, interview criteria for severe depression were probably too robust and too unspecific.

There are also limitations to this study that need to be considered. Clients did not present the average population fully because they were self-referred to treatment and can thus be seen as motivated and interested in the treatment itself. The generalisability of the results is a problematic issue also because of the number of the participants (49), and more particularly the number of male participants (9) was low. Based on that, these results show the efficacy of a brief ACT intervention when clients are motivated females and the therapists are motivated psychology students. Also, we can hypothesize how much a 4-session treatment has actually worked on its own: in this study, there were up to 6 measurements or meetings (interview meetings, EEG measurements) in addition to the actual therapy sessions. And all of those measurements contained social interaction which might have eased the depression of some clients. However, the waiting list control group also received the same amount of meetings (interview meetings, EEG measurements) and therefore the effects of the additional social interaction are controlled. The amount of additional meetings might have had an influence on the treatment outcomes but they can not explain the differences between the ACT treatment and waiting list control groups.

It is also important to notice that all clients were given homework assignments, and they were expected to actively deal with their situation between the sessions. Thus, the actual influence of the treatment is much more extensive than just four hours, but that applies to nearly all therapies. In fact, the treatment time is four weeks which included four hours of active face-to-face expert contact.

Regardless of the limitations, the declines in especially depression, anxiety and psychological symptoms in the ACT therapy group were large and considerable. These results can be seen as preliminary but they illustrate the fact that extremely brief interventions can be useful in the treatment of depression. This study suggests that shorter interventions and therapies should be

studied more and applied to clinical settings outside research institutions. The resources of mental health clinics are small and they can often offer only short interventions and a limited number of meetings. Thus, more effective ways to help clients in a shorter time period are needed and the results in this study give support that ACT might be a possibility for affecting the client's mental well-being successfully in a limited time-frame. For the future, short interventions could increase the possibility that more people seeking help can be aided. Furthermore, ACT treatment encourages clients to actively influence their lives. It can therefore be hypothesized that brief ACT treatments could be applied to situations where clients have become fairly passive and pessimistic.

As stated before, in a simplified manner, ACT suggests that psychological suffering (for example variation in mood) is permanent and inevitable (Hayes & Smith, 2008) since relational frames make arbitrary connections between private events, situations and objects (Lappalainen et al., 2007). In spite of regarding human suffering as inescapable, ACT offers a positive outlook on life: in ACT treatment, the focus is not on the problems of the clients but on values and the life directions the client appreciates and is willing to work towards.

In this study, the correlations between mindfulness skills changes and depression changes support the idea of using mindfulness skills training as part of the treatment of depression. For the future, the relationship between mindfulness skills and depression is an interesting theme for research. Also the individual descriptive analysis of the treatment measure scores indicated that ACT seems to be working also for those individuals with high levels of depression. In this study the treatment length was four sessions and the results were encouraging. Thus, additional research is needed to support the earlier results regarding the permanence of the treatment effects.

Öst (2008) has studied the methodological aspects and efficacy of the third generation behavior therapy studies and traditional cognitive behavioral therapy (CBT) studies and has concluded that ACT, nor any other third generation behavior therapy, does not have the support of sufficient amount of empirical data and that ACT studies have more methodological deficiencies than traditional CBT studies. Suggestions are made regarding future research such as comparing ACT with CBT for the common psychiatric disorders (anxiety, depression, eating disorders). Several studies indicate that ACT is a promising treatment to such disorders (see Hayes et al., 2004) and this study supports that view. But, as Öst (2008) has pointed out, more research is needed.

In conclusion, it can be stated that a 4-session ACT therapy given by student therapists is an

effective treatment model of depression increasing psychological flexibility and mindfulness skills. Through the changes in psychological flexibility and mindfulness skills, there are decreases in depressive mood, anxiety and the amount of symptoms experienced and enhances in self-confidence and life satisfaction.

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