Katariina Keinonen

Help May be a Few Sessions Away

Understanding Early Sudden Gains in an Acceptance and Values-based Intervention for Depression: Occurrence, Effect and Association with Competence

UNIVERSITY OF JYVÄSKYLÄ

FACULTY OF EDUCATION AND
PSYCHOLOGY

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ABSTRACT

The aim of this research was to investigate the occurrence and effects of early sudden gains in an acceptance and values-based intervention for depression delivered by novice therapists. The intervention was a semi-structured six-session intervention based on the principles and methods of acceptance and commitment therapy. All participants (n=56) were diagnosed with major depressive disorder by an independent physician. Study I and Study II explored the immediate effect of early sudden gains during the intervention and impact on treatment outcome after the intervention and during the six-month and 12-month follow-up phases. The results suggested that early sudden gains occur relatively frequently in interventions delivered by novice therapists; around 25% of participants were classified as early sudden gainers after two sessions based on the RCI classification (Jacobson & Truax, 1991). Those participants who experienced early sudden gains were also noted for significantly superior treatment outcomes after the six-session intervention both at the levels of depression and psychological flexibility. The large changes associated with early sudden gains were very stable and the treatment effect was maintained up to 12 months after the intervention. Study III sought to explore the possible association between competence and adherence with early sudden gains. All novice therapists (n=37) received a total of four days of training in the methods of acceptance and commitment therapy along with building a case conceptualization. The novice therapists were evaluated by external raters for competence and adherence based on randomly selected video recordings (n=74, two sessions for each therapist) using the ACT Adherence Scale rating system (Plumb & Vilardaga, 2010). Level of competence was linked with the magnitude of early changes in depression. Competence was also associated with overall treatment outcome. These results suggest that early sudden gains are an important and clinically significant phenomenon in the treatment of depression. Given the very limited training of novice therapists, early sudden gains do not appear to require extensive experience from the therapist. At the moment, research literature has yet to identify what explains early sudden gains and more research is necessary to understand possible causal factors.

Keywords: Acceptance and commitment therapy, early sudden gains, depression, novice therapists

TIIVISTELMÄ (FINNISH ABSTRACT)

Tämän tutkimuksen tavoitteena oli tarkastella varhaisen äkillisen hyötymisen esiintymistä ja vaikutusta hoitotulokselle noviisiterapeuttien toteuttamassa interventiossa depression hoidossa. Kuuden kerran interventio oli rakenteeltaan puolistrukturoitu ja se perustui hyväksymis- ja omistautumisterapian menetelmiin ja periaatteisiin. Tutkimuksen ulkopuolinen lääkäri tapasi kunkin tutkittavan (n=56) depressiodiagnoosin varmistamiseksi. Osatutkimus I ja Osatutkimus II tarkastelivat varhaisen äkillisen hyötymisen välittömiä vaikutuksia intervention aikana ja vaikutuksia hoitotulokselle intervention päättyessä, sekä seurantavaiheessa 6 ja 12 kuukautta hoidon päätyttyä. Tulokset viittasivat siihen, että varhainen äkillinen hyötyminen on verrattain yleistä myös noviisiterapeuttien toteuttamissa interventiossa; noin 25 % tutkittavista (n=13) luokiteltiin varhain äkillisesti hyötyneiksi kahden tapaamisen jälkeen RCI-luokittelun (Jacobson & Truax, 1991) mukaisesti. Äkillisesti varhain hyötyneet tutkittavat kokivat merkittävästi suurempia muutoksia depressio-oireiden tasossa ja psykologisen joustavuuden tasossa koko intervention aikana. Suuremmat muutokset äkillisen varhaisen hyötymisen yhteydessä olivat vakaita ja hoitotulokset pysyivät yllä 12 kuukautta intervention päättymisestä. Osatutkimus III pyrki selvittämään mahdollista yhteyttä terapeuttien (n=37) kompetenssin ja adherenssin sekä varhaisen äkillisen hyötymisen välillä. Terapeuttien kompetenssia ja adherenssia arvioitiin ulkopuolisten arvioitsijoiden toimesta videoitujen hoitotapaamisten perusteella. Satunnaisesti valittu otos tapaamisia (n=74, 2 tapaamista terapeuttia kohden) pisteytettiin käyttäen validoitua ACT Adherence Scale -menetelmää (Plumb & Vilardaga, 2010). Korkeampi kompetenssi oli yhteydessä suurempiin varhaisiin masennusoireiden muutoksiin ja parempaan masennuksen hoitotulokseen koko intervention aikana. Tulokset viittaavat siihen, että varhainen äkillinen hyötyminen on merkittävä ja kliinisesti tärkeä ilmiö depression hoidossa. Varhainen äkillinen hyötyminen ei näytä vaativan terapeutilta huomattavaa kokemusta. Tällä hetkellä tutkimuskirjallisuus ei ole vielä voinut osoittaa, miten äkillistä varhaista hyötymistä voidaan selittää ja lisää tutkimusta tarvitaan varhaisen äkillisen hyötymisen ymmärtämiseksi ja ennustamiseksi.

Avainsanat: Hyväksymis- ja omistautumisterapia, varhainen äkillinen hyötyminen, masennus, noviisiterapeutit

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Taking into account the instructions given and comments made by the co-authors, the author of the present thesis participated in designing the research plan, planning and execution of the intervention, and collecting the data. The author also contributed to the statistical analysis and was the main author of the three publications.

FIGURES

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1   INTRODUCTION

1.1   Sudden gains in psychological treatments

1.1.1   Identification and definition

The timing of therapeutic changes during a psychological treatment has traditionally been explored at a group mean level. In line with this approach, in 1994, Ilardi and Craighead reported that in several studies on the efficacy of cognitive-behavioral therapy (CBT), 60-70% of improvements in depressive symptomatology occur during the first four weeks. The authors interpreted this observation to suggest that non-specific factors may explain most of the overall treatment response as the first four weeks of a CBT-based treatment do not include active cognitive modification. The influential article drew attention to how variation in the timing of response to treatment should be explored.

One of the most notable responses to the observation reported by Ilardi and Craighead was that of Tang and DeRubeis (1999b), who argued that mechanisms of change cannot be inferred from a group mean time course owing to substantial variation in time courses between individuals. Instead, Tang and DeRubeis (1999a) suggested that individual time courses should be assessed to accurately track and present meaningful patterns of change in a given treatment condition and population. The discussion on methodology in the field of treatment efficacy research has since yielded a substantial amount of research literature exploring and reporting individual patterns of changes in symptomatology. In particular, a large amount of studies has focused on *sudden gains*, a term coined by Tang and DeRubeis (1999a) that refers to abrupt, large decreases in symptomatology between two consecutive sessions.

Tang and DeRubeis (1999a) defined sudden gains using three-fold criteria that seeks to ensure a sudden gain is large (1) by absolute definition, (2) in relation to the level of symptoms prior to the sudden gain and (3) with respect to fluctuation at the level of symptoms before and after the gain. The original criterion was set as follows (Tang & DeRubeis, 1999a):

A sudden gain occurred between session N and session $N + 1$ if (a) the gain was at least 7 BDI points ($BDI_N - BDI_{N+1} \geqslant 7$); (b) the gain represented at least 25% of the pregain session's BDI score ($BDI_N - BDI_{N+1} \geqslant 0.25 \times BDI_N$); and (c) the mean BDI score of the three therapy sessions before the gain (sessions $N - 2$, $N - 1$, and N) was significantly higher than the mean BDI score of the three therapy sessions after the gain (sessions $N + 1$, $N + 2$, and $N + 3$) using a two-sample t-test, with an alpha of .05.

These criteria thus require that to be considered a sudden gain, a change in the severity of symptoms must be at least seven points on the Beck Depression Inventory (BDI; Beck & Steer, 1987) and the change has to take place between two consecutive sessions (see Figure 1). Additionally, the change should represent 25% of the BDI score for the individual before a sudden gain occurs. For example, if a participant had a BDI score of 32 points, the change between two sessions would have to be at least eight points (25% of 32). Finally, the BDI score must be statistically significantly higher during the three sessions before the sudden gain than during the three sessions after. This requirement can make certain that high fluctuations in session-by-session BDI scores are not interpreted as sudden gains.
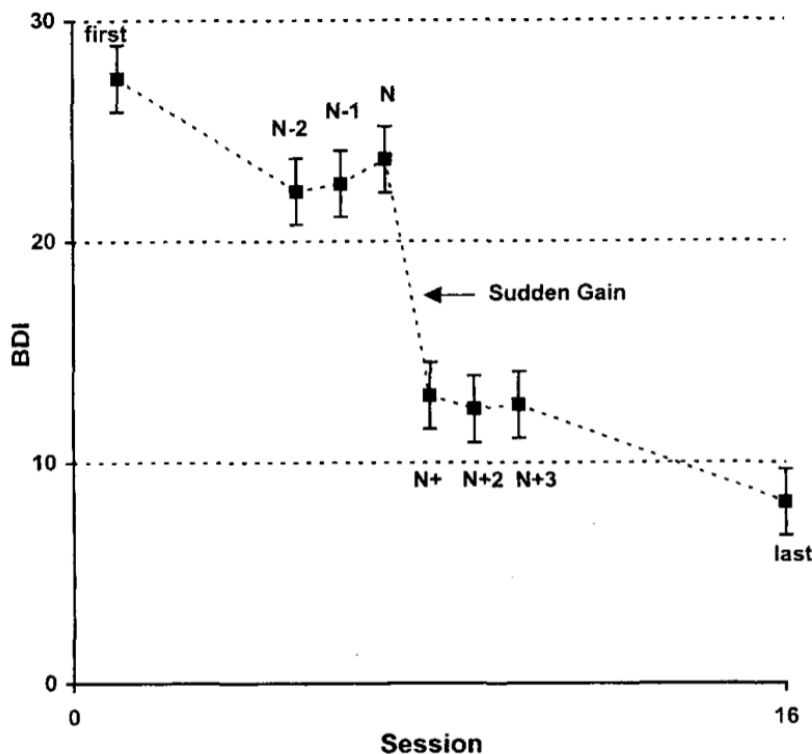
FIGURE 1   Definition of sudden gains (Tang & DeRubeis, 1999a).

Although the rationale behind the original criteria has been widely accepted, some criticisms have been made of the formulation. First, the authors themselves point out that the cutoff of 7 points using the BDI is arbitrary even if some empirical evidence for the cutoff were available in the data used by Tang and DeRubeis (1999a). As other measures have since been employed as a primary outcome variable, the first criteria has been adopted by requiring a magnitude of change that corresponds to the portion of variance within the range of the BDI, i.e., a change of seven points on the BDI represents 11% of the range of 0-63. However, different scales may be more or less sensitive to short-term changes in wellbeing or symptomatology. Second, it is not possible to identify sudden gains during very early stages of treatment (i.e., after the first or second session) with this criterion. Tang and DeRubeis (1999a) state that the first sessions of a treatment should be excluded from sudden gain analysis as they are too different from other, later sessions. However, *early* sudden gains have subsequently attracted research interest and studies suggest early changes may be clinically and theoretically interesting to explore. The second criterion (stating the change need to represent 25% of the BDI score before the sudden gain) has also been criticized owing to autocorrelation of the data. Third, the original criteria do not account for clinically significant changes among participants with less severe conditions and lower scores on measures of symptom severity. For example, a mild depression may yield a score of 14 on the BDI and a full recovery as defined as < 10 points on the BDI would only require an alteration of five points. Thus, sudden gains could arbitrarily be associated with symptom severity by excluding changes that are clinically significant, but less than seven-points decreases in symptoms from being classified as sudden gains.

The criticism of the original criteria and restrictions on applicability for identifying early sudden gains has led to some variation in the criteria among research on the phenomenon. For example, the first criterion requiring a change of 7 points on the BDI (or similar magnitude on other scales) has been modified using the Reliable Change Index (RCI; Jacobson & Truax, 1991) cutoff score instead of a predefined cutoff score based on the range of a measure (e.g., Aderka, Appelbaum-Namdar, Shafran, & Gilboa-Schechtman, 2011; Hofmann, Schulz, Meuret, Moscovitch, & Suvak, 2006). In this case, the cutoff score has been devised by dividing change scores observed in current data by the standard error scores of the measure. Other alterations include measuring depression biweekly instead of session-to-session (Vittengl, Clark, & Jarrett, 2005). Also, the third criterion that uses data from three sessions before and after the sudden gains has been changed to requiring that 50% of the symptom reduction a sudden gain represents may not reverse during the two sessions after the gain (Gaynor et al., 2003). Employing alternate criteria may have, in some cases, yielded more frequent or less regular occurrences of sudden gains versus the original criteria.

These alterations and varying frequencies of sudden gains reported when utilizing different criteria raise the need for a discussion on possible ways to define early sudden gains in a coherent and clinically meaningful way. While it is

problematic to use different methods in defining sudden gains, it is also important to be sensitive to the original rationale behind separating sudden and gradual gains. Identifying sudden gains at different phases of the treatment and among participants with varying symptom severity may be important to understand how these significant and rapid changes can be explained.

1.1.2 Occurrence and immediate effect on symptom severity

Sudden gains have been reported in various settings with different treatments based on several approaches and traditions, various populations and in individual, couple or group settings among adults and children. Sudden gains do not seem to be specific to a given method and they can arise during the treatment of many disorders.

Among cognitive-behavioral and cognitive therapy-based treatments, sudden gains have been identified in the treatment of depression (Tang, DeRubeis, Beberman, & Pham, 2005), including treatment-resistant depression (Abel, Hayes, Henley, & Kuyken, 2016) and several anxiety disorders: e.g., panic disorder, severe health anxiety, social phobia, post-traumatic stress disorder and generalized anxiety (Clerkin, Teachman, & Smith-Janik, 2008; Hedman et al., 2014; Hofmann et al., 2006; Keller, Feeny, & Zoellner, 2014; Norton, Klenck, & Barrera, 2010, respectively). Sudden gains have also been observed in the treatment of eating disorders (e.g., Cavallini & Spangler, 2013). In addition, sudden gains have recently been reported in internet-based CBT (Hamdeh et al., 2018) as well as exposure and response prevention for obsessive-compulsive disorder (Buchholz, Abramowitz, Blakey, Reuman, & Twohig, 2018).

Sudden gains are not limited to cognitive and cognitive-behavioral psychotherapies, but emerge in treatments based on other traditions, such as inter-personal psychotherapy (Kelly, Cyranowski, & Frank, 2007) along with family and supportive therapy (Gaynor et al., 2003), for example. Sudden gains were also reported in treatment-as-usual couple therapy for military veterans (Doss, Rowe, Carhart, Madsen, & Georgia, 2011).

Interestingly, previous research provides evidence that high competence or extensive clinical experience is not required for sudden gains to occur. Greenfield, Gunthert and Haaga (2011) have reported that novice therapists produce sudden gains in psychotherapy training clinic settings with comparable frequency to that of experienced therapists: 23% of novice therapists' clients experienced sudden gains. Overall, these finding suggest that sudden gains may be under-recognized and are much more common than is generally acknowledged.

There are several features of sudden gains that are both theoretically and clinically interesting while also supporting further exploration of the underlying mechanisms that give way to sudden gains. First, studies have reported that sudden gains take place more regularly during the first few sessions, i.e., sudden gains have been observed to be most frequent after session two (Dour, Chorpita, Lee, & Weisz, 2013) or even after session one (Hunnicutt-Ferguson, Hoxha, & Gollan, 2012). The vast majority of sudden gains have been reported to occur before session six (Dour et al., 2013; Hunnicutt-Ferguson et al., 2012), indicating

that they may yield a very fast and significant response to treatment for certain individuals and highlighting the clinical importance of understanding sudden gains. Moreover, sudden gains may be a factor that explain individual differences in the dosage of treatment needed for recovery.

Second, sudden gains are relatively common as many studies report 30-40% of individuals experience a sudden gain during treatment (e.g., Hunnicutt-Ferguson et al., 2012; Tang, DeRubeis, Hollon, Amsterdam, & Shelton, 2007). This provides evidence that in addition to having a role in the recovery process of a considerably large group of patients, sudden gains are also important at a theoretical level as they may have a large effect on the efficacy of a given treatment at a group level; studies have reported that among participants who respond to treatment, sudden gainers may represent up to 50% of responders (Hofmann et al., 2006; Tang & DeRubeis, 1999a).

Third, at an individual level, sudden gains produce a significant, fast improvement in an individual's wellbeing. For example, sudden gains have been reported to represent a 10-13-point reduction on the BDI (e.g., Tang et al., 2007), which suggests a very substantial clinical change in depressive symptom severity over a very brief period.

1.1.3 Effect of sudden gains on treatment outcome

Several studies have reported that in addition to a significant immediate impact on symptom severity, sudden gains also produce superior treatment outcomes posttreatment for depression and various anxiety disorders (e.g., Hedman et al., 2014; Keller et al., 2014; Norton et al., 2010). A meta-analysis of 16 studies, including 19 treatment conditions for depression and anxiety disorders, shows the effect sudden gains have on treatment outcomes to be especially large (Hedges' g = 0.75) when CBT is employed (Aderka, Nickerson, Bøe, & Hofmann, 2012). In addition to treatment of depression and anxiety disorders, sudden gains predict superior treatment results for a wide variety of other disorders. In the treatment of OCD, Hamdeh et al. (2018) have connected sudden gains with greater reductions in OCD symptoms and less severe symptoms compared to gradual gainers after an internet-based cognitive therapy program. Sudden gains have also been linked with improved treatment results among children and adolescent receiving cognitive-behavioral treatment for OCD (Storch et al., 2019). Additionally, among participants with eating disorders (excluding anorexia nervosa), sudden gains have been reported to predict better overall outcomes at the end of treatment (Cavallini & Spangler, 2013). In cognitive-behavioral treatment of alcohol-use disorders, sudden gains in the frequency of urge to drink predicted enhanced outcomes (Drapkin, Epstein, McCrady, & Eddie, 2015).

Sudden gains have also been associated with superior long-term treatment results. The meta-analysis earlier showed that sudden gains have a moderate effect at follow up compared to those not reporting sudden gains in the treatment (Hedges' g=0.56, pooled follow-up durations; M=4.44 months, Aderka et al., 2012). In the treatment of depression, sudden gains have been associated with lower rates of relapse and symptom recurrence during a two-year follow-up

phase (Tang et al., 2007). Similarly, it has been reported that sudden gains are associated with superior treatment results at up to 12-month follow-up among adults suffering from anxiety disorders (Bohn, Aderka, Schreiber, Stangier, & Hofmann, 2013; Hedman et al., 2014) and among children treated for posttraumatic stress disorder (Aderka et al., 2011). In the treatment of eating disorders, sudden gains that were defined based on the body mass index (BMI) were found to predict long-term weight results up to 24 months in the treatment of anorexia nervosa (Cartwright, Cheng, Schmidt, & Landau, 2017). Yet, some studies have reported that the advantage associated with a sudden gain may fade over time. For example, Lemmens, DeRubeis, Arntz, Peeters, and Huibers (2016) suggested that sudden gains have prognostic value up to five months after treatment, but not after one year. Overall, research on sudden gains' long-term treatment effects is not as frequently reported as research on such impacts posttreatment. More studies are needed to understand the stability of changes associated with sudden gains.

1.1.4 Early sudden gains

Several studies have determined that sudden gains were most likely to occur within the first three sessions (Dour et al., 2013; Hunnicutt-Ferguson et al., 2012; Masterson et al., 2014). The sudden gains reported during the first third of treatment are called *early* sudden gains in order to be distinguished from sudden gains emerging later during treatment or even the last few sessions. As large changes in the first sessions of a treatment can have important prognostic value, early sudden gains are a particularly interesting subclass of sudden gains both in a clinical and theoretical sense, as the dosage of the treatment has not been large in the case of early sudden gains.

To separate the phenomenon of early sudden gains from that of *rapid response*, it is important to consider the timeframe within which changes occur as well as the magnitude of changes. In the case of early sudden gains, significant improvements take place between sessions and may manifest after only one or two sessions. In the case of rapid response, a participant is defined as a rapid responder if they respond to treatment by week four (e.g., Lackner et al., 2010). Rapid response has been proposed to offer evidence on the importance of non-specific factors' in explaining the effectiveness of cognitive therapy and CBT because cognitive modification techniques are not implemented before week three (Ilardi & Craighead, 1999; Wilson, 1999). However, several studies have reported that the first month of cognitive therapy or CBT includes eight sessions (two weekly sessions; e.g., Bulik, Sullivan, Carter, McIntosh, & Joyce, 1999). The number of sessions would suggest therapeutic methods are indeed employed and it can be argued that the time duration allows the treatment to have an effect on symptoms (Tang & DeRubeis, 1999b). Among the more recent research, the term rapid response has become infrequently used overall.

The results on early sudden gains' effect on treatment outcomes are mixed. While some studies have associated early sudden gains with superior treatment findings (Hunnicutt-Ferguson et al., 2012; Kelly, Roberts, & Ciesla, 2005), there

are also studies that have not established early sudden gains having prognostic value (Dour et al., 2013). The timing of early sudden gains (i.e., 1st session gain, 2nd session gain, etc.) may be important with regards to the outcome. For example, it has been reported that early sudden gains that take place after session one are not associated with greater overall improvements, but early sudden gains occurring after session two do predict greater enhancements during treatment (Clerkin et al., 2008). Contrary to this finding, Busch, Kanter, Landes and Kohlenberg (2006) reported that 1st session gains and even pretreatment gains (i.e., sudden gains occurring after the pretreatment assessment) predicted recovery in the treatment of depression. Despite the conflicting results on whether early sudden gains are associated with better treatment results compared to gradual improvements, early sudden gains do represent a clinically important and powerful change during the very early stages of treatment at an individual level, which invites more research on the mechanisms of early sudden gains.

1.1.5   Predicting sudden gains

Despite the strong evidence underlying sudden gains' clinical importance, the discussion continues regarding why sudden gains occur and if they are related to particular sessional content or whether they could be reflecting non-specific components of treatment. Individual studies have associated sudden gains with specific factors of the treatment, but those results have not been replicated and, in some cases, even been contradicted in further analysis. For example, Tang and DeRubeis (1999a) proposed that cognitive changes precede sudden gains, creating an upward spiral leading to recovery. This finding has received support in the literature on sudden gains in the treatment of eating disorders (Cavallini & Spangler, 2013), where critical sessions (sessions occurring immediately before a sudden gain) were described to include higher levels of therapist-driven cognitive interventions. Additionally, critical sessions were reported to have more therapist empathy, client cognitive change and client motivation than other sessions (Cavallini & Spangler, 2013). The cognitive change hypothesis is also supported by findings on increases in coping skills and alliance immediately after a sudden gain was observed (Wucherpfenning, Rubel, Hofmann and Lutz, 2017).

However, it has also been reported that rather than cognitive instructions, the session before sudden gains included content highlighting relaxation and behavioral self-change (Kelly et al., 2005). The cognitive change hypothesis has also been directly contradicted by Hofmann et al. (2006), who posited that sudden gains are not more frequent in cognitive-behavioral treatment compared to exposure therapy for social phobia, nor associated with cognitive changes prior to sudden gains. These contrary results could reflect methodological differences, resulting in different interpretations of the data, or it could be that sudden gains can occur through various routes.

The hypothesis of different paths leading to sudden gains receives some support from studies that have suggested sudden gains are associated with various other factors, i.e., hope measured before the sudden gain and therapist competence in building a case conceptualization (Abel et al., 2016), higher initial self-

esteem (non-treatment-related sudden gains; Kelly, Roberts, & Bottonari, 2007) and demographic factors (i.e., age group; Kelly et al., 2005).

While encouraging, these findings have not been replicated or strongly supported as research literature has accumulated. It should also be pointed out that sudden gains have been reported in group psychotherapy for social anxiety disorder specifically designed to only incorporate non-specific factors (Thorisdottir, Tryggvadottir, Saevarsson, & Bjornsson, 2018) and in research designs where treatment was not offered and only self-evaluation was incorporated (Kelly, Roberts, & Bottonari, 2007). As such, these results warrant caution in drawing strong conclusions based on association of sudden gains with treatment content.

There may also be unidentified, confounding factors that underlie these relationships, e.g., therapist characteristics or patient behavior prompting specific techniques. For example, Cavallini and Spangler (2013) observed that decreases in client engagement in homework assignments predicted sudden gains. As mentioned earlier, the same study established support for the cognitive change hypothesis (Cavallini & Spangler, 2013). Together, these results suggest that client behavior may prompt emphasis of certain techniques and could moderate the effect of cognitive modification or other methods. Additionally, Wucherpfenning et al. (2017) have quite recently described how therapeutic alliance moderated the effect sudden gains had on treatment outcomes. This interesting finding implies that exploring possible moderators of sudden gains' effect are needed in addition to investigating possible moderators of session content's effect on the occurrence of sudden gains.

To summarize, it is safe to say that a clear consensus on the fundamental mechanisms behind sudden gains has not yet been reached. Some evidence can be found on the role of therapeutic processes, but the possibility of non-specific factors' relationship with sudden gains has also been suggested. It is possible that certain factors are more important in specific circumstances or under certain conditions, while others have stronger predictive power in different circumstances. One possible factor behind sudden gains and early sudden gains that has not been previously explored is variance in the level of therapist competence and treatment adherence.

1.2   Therapist competence and treatment adherence

At the moment, research on the relationship of competence and adherence with treatment outcomes is underexamined. This is especially concerning as the available studies indicate that adherence and competence may not play an important part in predicting treatment outcomes. In fact, a meta-analysis including 36 studies with diverse populations and treatment methods found that there is no relationship between competence and adherence and outcomes, while controlling for alliance decreased the already minor effects even further (Webb, DeRubeis, & Barber, 2010). It should be noted that just 15 studies evaluated the association between competence and outcome with most of the included studies exploring

the association between adherence and outcomes (Webb et al., 2010). Additionally, most studies employed observational (i.e., correlational) methods (Webb et al., 2010), which does not allow conclusions on causal effects surrounding the importance of competence or adherence.

Among the individual studies, there are consistent reports of the strength of the relationship of competence and/or adherence with outcomes being modest or non-significant. For example, in a sample of highly trained therapists participating in a controlled cognitive-behavioral treatment trial for panic disorder, neither adherence nor competence predicted symptom severity despite high variance in competence between therapists and between sessions during the treatment (Boswell et al., 2013). Strunk, Brotman, DeRubeis and Hollon (2010) have reported that in the treatment of depression, cognitive therapy competence did predict evaluator-rated symptom severity, but not self-reported symptom severity. Additionally, when patient difficulty was considered, the effect was reduced to non-significant (Strunk et al., 2010). Pursuant to these findings, Branson, Shafran and Myles (2015) established that competence and adherence were not associated to treatment outcomes for anxiety disorders or depression with CBT. In addition, Weck et al. (2013) determined that in preventing depression relapse, alliance is a significant predictor while competence in CBT is not.

In some cases, further analysis has revealed significant associations that are encouraging to researchers seeking to understand the role of competence. For example, Branson et al. (2015) found that there were differences in treatment outcomes for anxiety disorders when comparing the highest 10% in competence rating to the lowest 10%. Such results indicate that the current rating methods may yield high homogeneity in the competence ratings for individual therapists and obscure the impact on treatment outcomes. Other questions to be considered are when competence is important and when should it be evaluated. Haug et al. (2016) found that *early* competence and adherence levels have an effect on treatment results for anxiety disorders. Specifically, Haug et al. (2016) note that higher competence and adherence ratings based on early sessions of the intervention were associated with superior treatment results for panic disorders and with lower dropout rates for social anxiety. Competence could play an especially important role during early stages of treatment.

One specific area of competence-outcome research that is particularly understudied at the moment is novice therapists' competence's effect on treatment outcomes. Hypothetically, novice therapists may present more variation in the level of competence compared to highly experienced therapists. Among novice therapists, Brown et al. (2013) described how higher competence levels in novice therapists *does* improve treatment outcomes when treating anxiety disorders. This finding strongly encourages more research on less trained and less experienced therapists' skills' importance. In addition to the possibly greater variance among novices, novice therapists may be particularly fitting for the purposes of understanding competence's effect on outcome also because therapists without any prior training or clinical experience can be assumed not to possess previously learned methods and approaches to therapeutic work. Exploring the importance

of novice therapists' competence and adherence is also interesting for dissemination of evidence-based treatments and training new professionals - it may provide important knowledge on how much training and experience is necessary for successful delivery of a given treatment protocol or intervention.

Branson et al. (2015) suggest that the non-significant competence-outcome results that have been widely reported may support the hypothesis that competence is not important after a certain level, or that there is a level of competence that is "good enough", after which competence ceases to explain changes during the treatment. This hypothesis does, of course, raise the question of what that level is. To answer this question, which is very critical to therapist training and dissemination of treatments, it may be prudent to consider the available rating scales that are available for evaluating competence and the features of these scales.

It can be argued that the modern requirement to provide an estimate of competence and adherence as a component of reporting treatment integrity may have yielded overly positive ratings of therapist competence levels in the therapy research literature. For example, using the Drexel University CT/ACT Therapist Adherence and Competence Rating Scale (DUACRS; McGrath et al., 2005), novice therapists were rated "very good" or "excellent" for competence in 92% of cases (Forman, Herbert, Moitra, Yeomans, & Geller, 2007). This finding suggests that the scale in question may not capture variance in competence after a certain level is accomplished. It also indicates that some of the current methods for evaluating competence do not fulfill the requirements proposed by Perepletchikova and Kazdin (2005) in terms of sensitivity to experience levels and further training as a guidelines for developing scales for competence coding. If the available rating systems and scales to evaluate competence fail to reliably differentiate among competence levels – especially among the higher levels of therapists' skillfulness – more sensitive approaches may be necessary to understand the relationship between competence and treatment outcomes.

It has also been proposed that the failure to provide data to support the importance of competence may stem from confounding factors, such as alliance or severity of symptoms of the participant, potentially influencing or obscuring the relationship of competence and adherence with outcomes (Webb et al., 2010). One could argue that the influence of sudden gains on treatment outcomes could also be such a factor.

1.2.1 Rating competence and adherence in cognitive-behavioral therapy

Over the past decades, cognitive therapy has been a prevalent method examined in research literature on competence and adherence's effect on treatment outcomes. It seems that CBT competence and adherence have not been as frequently explored, which might explain – or be explained by – the lack of readily available rating methods. Among research that has employed previously developed rating scales, many studies have used the Cognitive Therapy Scale (CTS; Young & Beck, 1980) and Revised Cognitive Therapy Scale (CTS-R; Blackburn et al., 2001), though they have not been developed for assessing adherence and competence

in CBT (Branson et al., 2015; Webb et al., 2010). Additionally, while the CTS-R has been reported to have robust validity and inter-rater reliability (Blackburn et al., 2001), the scale combines the constructs of adherence and competence, causing difficulties in interpreting rating results as well as competence and adherence's relationship to outcomes when utilizing this scale.

Another common approach has been to employ ratings scales that have been developed specifically for a given trial (e.g., Boswell et al., 2013). Using tailored rating methods may also produce variability in observed levels of competence and adherence as well as noted effects on treatment outcomes. As research on competence-outcome effects is arguably lacking, emphasis on comparability of results is a key consideration.

Competence and adherence in acceptance and commitment therapy, in particular, has been vastly underexamined in the extant literature. In fact, to the best of the author's knowledge, no studies are available where the relationship of therapist competence or adherence with outcomes was assessed.

Currently, there are at least two scales available for evaluating levels of competence and adherence in ACT; the aforementioned Drexel University ACT/CT Scale (DUACRS; McGrath et al., 2005), and ACT Adherence Scale (Plumb & Vilardaga, 2010). Only studies reporting ratings at a group level (or individual level, where only one therapist was included) are available in the previous literature. For example, earlier work has used the DUACRS to establish similar levels of competence and adherence between two groups of therapists providing either CBT-based or ACT-based treatment for anxiety disorders, but within-group examinations have not been reported (Arch et al., 2012). For the ACT Adherence Scale, descriptive data on therapists' competence and adherence has been reported (e.g., Twohig et al., 2010), but variance in therapists' competence and treatment adherence have not been examined for association to variance in treatment outcomes.

Recent literature suggests that therapist skillfulness should be evaluated using methods that are sensitive to differences among novices and highly experienced therapists as well as responsive to training in a given method (Long & Hayes, 2018). The second criteria may prove difficult in practice as competence reaches increasingly high levels. Further discussion is also needed to determine how much competence is expected and at which stage of training. For example, Blackburn et al. (2001) were unable to provide evidence of high levels of or increases in competence with respect to several aspects of cognitive therapy during one year of training. These findings suggest that as new scales are developed or existing scales are further refined, an open discussion regarding the empiric sensibility of new rating results is necessary to ensure clinical and theoretical usefulness of competence evaluation – both when reporting treatment integrity and focusing solely on exploring the relationship of competence and adherence with outcomes.

1.3 Aims of the research

Overall, previous research suggests that sudden gains and early sudden gains may reflect important processes of change in psychotherapy as sudden gains possess strong predictive power regarding treatment outcomes. Continuing research efforts to investigate how sudden gains occur and if factors related to treatment or patient/therapist characteristics that can be linked with sudden gains are valuable to understanding therapeutic change. One factor that has not been previously assessed as a possible predictor of sudden gains and early sudden gains is therapist competence and treatment adherence. While the currently available methods of rating competence and adherence in acceptance and commitment therapy have not been widely utilized, they may provide novel information on the importance of competence regarding outcomes at a more general level, as well.

The goal of the present research was to investigate the occurrence and effects of early sudden gains in a six-session acceptance and values-based intervention for diagnosed depression delivered by novice therapists. The work evaluated the immediate effect of early sudden gains during the intervention, the effect at posttreatment and follow-up, and possible factors that could explain early sudden gains (including competence and adherence). This report includes three studies that seek to increase understanding of early sudden gains' effect in a brief intervention and explore the association between abrupt changes in symptomatology and therapeutic processes of change.

1.3.1 Specific goals of the studies

Study I focused on the frequency and magnitude of early sudden gains within an acceptance and values-based treatment delivered by novice therapists. The early sudden gains association with pretreatment levels of symptoms and therapeutic changes in therapeutic processes, i.e., psychological flexibility, believability of depressive thoughts and hopefulness, was also determined. In addition, Study I sought to investigate the impact of early sudden gains for treatment outcomes both at the level of depressive symptomatology and psychological flexibility.

The research questions were thus set as follows: (a) how many participants experience early sudden gains among participants diagnosed with major depressive disorder (MDD) receiving a six-session ACT intervention delivered by novice therapists; (b) are any demographic characteristics of the participants associated with early sudden gains; (c) are early sudden gains associated with treatment outcomes in a brief ACT intervention; and (d) are early sudden gains in depression symptom severity associated with early changes in psychological flexibility and believability of depressive thoughts and hopefulness?

The goal of Study II was to further evaluate the effect of early sudden gains during the follow-up period of 12 months. The association between the magnitude of early changes in depression and magnitude of overall changes during the follow-up period was examined. In addition to the primary outcome measure of

depression symptom severity, changes during the one-year follow-up in psychological flexibility, believability of depressive thoughts and hopefulness were also assessed. Stability of early sudden gains was also evaluated using the RCI-classification system.

The research questions of Study II were: (a) are early sudden gains among the participants associated with stable changes and/or superior long-term treatment results at the level of depression, psychological flexibility or believability of depressive thoughts or hopefulness at six months and 12 months after the intervention; (b) how strongly are early sudden gains and long-term outcome results associated; and (c) are early sudden gains associated with RCI classification status, use of medication for depression or seeking further psychological treatment for depression during the follow-up phases?

Study III sought to understand the role of therapist competence and treatment adherence for the large variance in depressive symptomatology during the first two sessions of the intervention and for overall treatment outcome for depression and psychological flexibility. In addition, the relationship between early changes in depression, competence and adherence as three possible factors explaining treatment outcome was explored.

Therefore, the research questions for Study III were as follows: (a) is treatment outcome in depression or psychological flexibility associated with therapist competence, treatment adherence or use of specific ACT processes; (b) can therapist competence and treatment adherence be connected with larger changes in depression or psychological flexibility during the first sessions of the intervention; and (c) can variance in therapist competence explain variance in treatment outcome if the effect of early sudden gains is controlled for?

2 METHOD

2.1 Participants

In Study I and Study II, the participants were recruited through advertisements in local newspapers. The advertisement called for 18- to 65-year-old volunteers suffering from depressive symptoms. All participants were required to obtain a diagnosis of MDD based on the criteria in the International Classification of Diseases (10th ed.; ICD-10; World Health Organization, 1992). The diagnosis was established in an interview with a medical doctor as part of recruitment for the study. Additionally, all participants were required to obtain a score of >13 points on the BDI-II suggesting self-reported depressive symptomatology. Exclusion criteria for the study were: (a) psychiatric diagnosis other than depression; (b) neurological diagnosis; (c) misuse of alcohol or drugs; and (d) on-going psychological treatment. The recruitment process was conducted in three waves from 2011-2012.

Out of the total of 160 volunteers that replied to the advertisement, 120 participants took part in the clinical interview by the medical doctor. Of those participants, 109 fulfilled the criteria for MDD and 58 participants were randomly allocated to the intervention group while 51 participants were allocated to the wait-list control group. After excluding one participant with a missing baseline measure for depression and another for early depression changes identified as an extreme outlier, a total of 56 participants were included in the sample for Study I and Study II (see also Figure 2). Informed consent was obtained for all participants as part of the recruitment process before random allocation.

Among the participants, 77% were women, 54% were married or cohabiting and 50% were employed at the time of the intervention. The racial make-up of the participants was homogenously Caucasian. Mean participant age was 49.2 years (SD=11.74, range=19-65). Most participants were diagnosed with mild depression (61%; single episode, mild n=18, recurrent, mild n=16). Dysthymic disorder was diagnosed for 7% of participants (n=4) and moderate depression was diagnosed for 32% (single episode, n=9, recurrent n=9).

Enrollment

Assessed for eligibility (n=160)

Excluded (n=51)
- Not meeting inclusion criteria (n=23)
- Not meeting diagnostic criteria (n=11)
- Declined to participate (n=17)

Randomized (n=109)

Allocation

Allocated to intervention (n=58)
- Received allocated intervention (n=58)

Allocated to waitlist (n=51)
- Waitlist data not reported in the current research

Follow-Up

Lost to follow-up (n=13)
- 6 months (n=5)
- 12 months (n=8)

Analysis

Analyzed (n=56)
- Excluded from analyses (missing baseline measure, extreme outlier) (n=2)

FIGURE 2   Flow of participants.

In Study III, the analyses included data from the participants described for Studies I and II and the 37 novice therapists delivering the intervention. The novice therapists were master's students of psychology who had no prior clinical experience. The mean age of the novice therapists was 24 years (SD=3.8, range 20–39) and 92% were female. Study III featured video recordings of the intervention sessions from all novice therapists and one client of each therapist. If a therapist had

delivered the intervention for more than one client, the client included in the analysis for Study III was randomly chosen. Hence, 37 participants from the whole sample of 56 participants in Studies I and II were part of Study III. The students acting as therapists took part in the study as a component of their master's studies and received credits for participating.

2.2   Procedure and measurements

In Studies I and II, during the pre-measurement phase, the 56 participants included in the study were asked to fill out self-report questionnaires (See Table 1.) The questionnaires were filled out again during the intervention (before session three) and afterwards. For Study II, the questionnaires were also filled out six months and 12 months after the intervention. Some participants were lost during the follow-up phase of the study and 51 participants took part in the six-month follow-up and 43 participants in the 12-month follow-up (see Figure 1).

The primary outcome measures of Study I and Study II were depressive symptoms and psychological flexibility. Depressive symptoms were assessed by the Beck Depression Inventory-II (BDI-II) while psychological flexibility was measured using the Acceptance and Action Questionnaire-2 (AAQ-2; Bond et al., 2011). In addition, changes in psychological processes were examined during the intervention and follow-up phase with the Adult State Hope Scale (ASHS; Snyder, 2000) to measure hopefulness and the believability scale of the Automatic Thoughts Questionnaire (ATQ-B; Hollon & Kendall, 1980) to assess the believability of depressive thoughts. A detailed description of the questionnaires used in Study I and Study II is found in each of the published articles.

In Study III, the questionnaire data from the participants on depression (BDI-II) and psychological flexibility (AAQ-2) during the intervention was combined with a sample of video recordings from sessions of the intervention. Permission for recording the sessions was obtained during the first session of the intervention.

All novice therapists (n=37) were included in the sample for rating therapist competence and adherence using the ACT Adherence Scale (Plumb & Vilardaga, 2010). For all novice therapists, one client was randomly selected to be included in the analysis for Study III. Then, two sessions were randomly chosen from each individual therapist-participant pair out of the five recorded sessions (sessions 2-5) for competence and adherence ratings yielding a total sample of 74 sessions. The sample represents 25% of the total number of recorded sessions (n=300). An external rater completed rating for all sessions with three additional raters evaluating a smaller sample of sessions to ensure inter-rater reliability.

TABLE 1   Assessment measures and phases of assessment for all studies.

Measures	Study I	Study II	Study III	Time of Assessment
Beck Depression Inventory (BDI-II): Severity of Depressive Symptomatology	X	X	X	Study I: pre, before session 3, post Study II: pre, before session 3, post, six-month follow-up, 12-month follow-up Study III: pre, before session 3, post
Acceptance and Action Questionnaire (AAQ-2): Level of Psychological Flexibility and Experiential Avoidance	X	X	X	Study I: pre, before session 3, post Study II: pre, before session 3, post, six-month follow-up, 12-month follow-up Study III: pre, before session 3, post
Adult State Hope Scale: Level of Hopefulness	X	X		Study I: pre, before session 3, post Study II: pre, before session 3, post, six-month follow-up, 12-month follow-up Study III: -
Automatic Thoughts Questionnaire – Believability (ATQ-B): Believability of Depressive Thoughts	X	X		Study I: pre, before session 3, post Study II: pre, before session 3, post, six-month follow-up, 12-month follow-up Study III: -
ACT Adherence Scale: Therapist Competence and Adherence (Including Frequency and Extensiveness of Specific Processes)			X	Study I: - Study II: - Study III: two randomly selected sessions per therapist

2.3 Intervention

The three studies included in this dissertation examined early sudden gains in a six-session acceptance and values-based intervention delivered by novice therapists. The therapists were master's level students of psychology. None of the novice therapists had previous clinical experience.

The novice therapists received four days of training (32 h) for constructing a case formulation model (Haynes & O'Brien, 2000) and on the principles and methods of ACT. The case formulation model served as a basis for planning and providing the intervention based on the client's individual needs. Guidance for the planning of the intervention was included as a part of group supervision provided weekly during the intervention (two hours each week). The supervisor for the novice therapists was a professor of clinical psychology and psychotherapy as well as an expert in ACT. The novice therapists also attended peer-group supervision events on a weekly basis.

The first two sessions of the six-session intervention were highly structured (see Table 2 for a brief summary of content). During the first session, the therapist conducted an interview to obtain an overview of the client's situation and construct an individual problem list based on the interview. At the end of the session, the therapist discussed values and goals while presenting a home assignment to identify and clarify personal values. The therapist also obtained permission to video record the sessions (only the therapists are visible on the recording) and discussed possible practical questions.

The second session was begun by presenting the case formulation model based on the interview and problem list constructed during the first session. The therapist then reviewed the homework assignment on values and re-evaluated the case formulation model based on the value discussion. The client was presented "the observer" exercise (Hayes, Strosahl, & Wilson, 1999), a mindfulness exercise (i.e., "Follow your breath"; Hayes et al., 1999) and an individually chosen metaphor. For a homework assignment, the client was instructed to take value-based actions and practice mindfulness for 5–10 min per day.

The last four sessions of the intervention were more individualized. However, the therapists were instructed to use exercises and metaphors in each session. There were 12 exercises that were obligatory, but the timing of them was freely opted for.

TABLE 2   Brief summary of session content.

Session	Structured content
Session 1	Interview
	Constructing individual problem list
	Assigning homework (worksheets on values)
	Permission to record sessions
Session 2	Presenting case formulation
	Discussing values and goals (homework)
	The observer exercise
	Follow your breath exercise
	Presenting a metaphor
	Assigning homework (daily mindfulness exercise)
Sessions 3 to 6	12 obligatory exercises (free order)
	Individually chosen sessional content and homework assignments

2.4 Defining early sudden gains

Early sudden gainer status was based on changes in BDI-II after two sessions and defined as attainment of improved or recovered status via the RCI classification (Reliable Change Index; Jacobson & Truax, 1991). The RCI classification calculates whether participants changed to such an extent that the change is unlikely to be because of measurement unreliability (improved) and whether they also pass the weighted midpoint (cutoff C=14.94 in the current data) between the means of the clinical sample and normal population (recovered). For the normal population, descriptive values reported in Beck, Steer and Brown (2004) were used in the current analysis (BDI-II M=7.65, SD=5.90). Participants not classified as improved or recovered after two sessions were given the status of non-early sudden gain (N-ESG).

In regard to the original sudden gain criteria introduced earlier, the RCI classification offers an alternative way to define early sudden gains that takes into account recovery without need for an arbitrary cutoff for change scores. Thus, the RCI classification method allows early sudden gains to be observed in less severe cases; those participants suffering from mild depression can also obtain the status of early sudden gainer even if the change in BDI-II scores is not seven points but is still clinically and statistically significant. Additionally, using the RCI classification method permits independence of specific questionnaires and questionnaire's sensitivity to change to be considered. Employing values from the normal population supplies empirical data for the rationale for defining early sudden gains. The RCI classification does not consider the stability of change. However, follow-up data including RCI classification six months and 12 months after the intervention are reported in the published articles to take stability into account.

2.5   Competence and adherence rating procedure

The therapists' competence and treatment adherence were rated using the ACT Adherence Scale (Plumb & Vilardaga, 2010). Ratings were based on a randomly selected sample of sessions (n=74). Two sessions for each therapist were randomly drawn. The random selection was completed by allocating session numbers to novice therapists to achieve a balanced sample with equal amounts during sessions 2 to 6.

A psychologist with clinical experience in applying ACT methods acted as a master rater and coded all material. Three other coders were used to establish inter-rater reliability. Two experienced ACT psychotherapists coded seven sessions each and a psychology student coded 22 sessions. Inter-rater reliability was evaluated using the intraclass correlation coefficient values for absolute agreement between each coder pair, which reflected robust inter-rater reliability; average measure ICC was .80-.84 across all variables.

Overall competence and adherence were coded based on a single session. For overall competence, a high rating indicated that: "The therapist consistently addressed the client's needs, consistently attended to the client's response to treatment targets and applied the processes outlined in the manual very clearly and in-depth." For overall adherence, a high rating indicates that: "The therapist spent most of the session performing a general assessment of functioning and applied more than one of the therapy processes in an extremely in-depth manner." Importantly, adherence ratings do not consider the skillfulness of applying the therapy processes. For the process-specific subscales, a high rating indicates that: "The variable occurred with great frequency and was addressed by the therapist in a very in-depth manner." Mean values for the two sessions coded for each novice therapist were used as the rating for overall competence and adherence, as well as the ACT Adherence subscales (n=37).

2.6   Statistical analyses

In Study I, early sudden gains were identified using the RCI classification described previously. Baseline differences in pre-treatment levels of symptoms and in changes in symptoms of depression between the groups were analyzed by one-way analysis of variance (ANOVA) tests. Possible associations between demographic variables and early sudden gains were explored using cross-tabulation with Fisher's Exact Test. Differences between the ESG and N-ESG groups during the first two sessions and over the whole six-session intervention at the level of process measures (hopefulness, believability of depressive thoughts and psychological flexibility) were analyzed using a repeated measures multivariate analysis of variance (MANOVA) test. As for the assumptions for the MANOVA analysis, assumption of normality was met based on visual inspection of the Normal Q-Q Plots. However, there were 11 outliers identified among the four dependent variables at three measurement points. Most outliers were identified on the distribution of scores for the ATQ. The outliers were

manually transferred to the distribution by assigning each outlier observation the highest/lowest value in the data. The analysis was then run on raw data and data with transferred outliers. The outliers did not affect interpretation of the results and raw data was presented for descriptive values. Additionally, the assumption of equality of variances was violated for individual measures (pre-measurement BDI-II and ATQ, and post-measurement BDI-II and ASHS), which indicates a need for caution when interpreting results. To compensate for the violation, Welch-corrected F-values and significance was reported for these measures in an additional one-way ANOVA table. The magnitude of the differences was evaluated by reporting the between-group effect size (Hedges' g) for each comparison. In addition, corrected d-values, where pre-measurement differences are accounted for as suggested by Klauer (2001), were reported where applicable. An effect size of $\geq$ 0.20 was considered small, $\geq$ 0.5 moderate and $\geq$ 0.8 large (Cohen, 1988).

In Study II, the RCI classification was again used to identify early sudden gains and create groups based on the status in the classification. The groups were identical to those examined in Study I. Treatment results for the two groups up to the 12 months follow-up were explored. The significance of the differences in the long-term treatment outcomes between those experiencing early sudden gains and those who did not experience early sudden gains were analyzed using a series of one-way ANOVA analyses to test for differences at pre-treatment and at the six-month and 12-month follow-up phases for all four measures (BDI-II, AAQ-2, ATQ and ASHS). In executing the analysis, 11 outliers were identified in the data. The outliers were manually transferred to the distribution of each variable by assigning the outliers the highest/lowest value observed in the data. Transferring the outliers had no effect on the interpretation of the current analysis and results were reported from the original, raw data. The normality assumption was met based on a visual inspection of the Normal Q-Q Plots except for the ATQ-B, for which normality was violated at follow-up phases. Further, the homogeneity of variances assumption was violated for individual comparisons (for BDI-II, AAQ-2 and ASHS at six-months follow-up and for ATQ-B at 12-months follow-up). For these comparisons, the Welch ANOVA was reported to account for the violation of homogeneity of variances. To assess the effect size of observed differences, corrected Cohen's d value was employed as suggested by Morris (2008), which allowed accounting for differences in group sizes and pretreatment scores between the groups. An effect size of d >.20 was considered small, d >.50 moderate and d >.80 large (Cohen, 1988). The correlation between ESG and follow-up treatment results are reported as indicators of the strength of the association between the variables. To evaluate the stability, clinical significance and prognostic value of early sudden gains RCI classification, use of medication for depression and psychological treatment after the intervention for early sudden gainers and non-early sudden gainers at follow-up phases with Pearson's Chi-Square statistics was assessed.

In Study III, owing to the Likert scale used in the ACT Adherence Scale ratings, non-parametric correlation analysis was employed to explore associations between varia-

bles. Spearman rank-order correlation analysis was also used to investigate the relationship between the magnitude of early change in depression and overall competence and adherence ratings as well as process-specific subscales on the ACT Adherence Scale. Next, Spearman correlation analysis was employed to explore the association with overall treatment outcomes. An identical analysis was also repeated for early changes in psychological flexibility (instead of early changes in depression). Finally, a stepwise regression model was used to predict the outcomes from competence, adherence and early changes in depression, where competence, adherence and early changes in depression were introduced as the independent variables and outcomes of depression and psychological flexibility the dependent variable in the respective analysis. An additional simple linear regression analysis was carried out to examine the effect of competence and adherence to treatment outcomes when early changes in depression were not considered.

All analyses were completed using IBM Statistical Package for Social Sciences (SPSS) version 24. A summary of the statistical analyses for all three studies is presented in Table 3.

TABLE 3   Summary of statistical analyses in each three studies.

	Time	Statistical analysis	Variables
Study 1	After session 2	RCI classification	BDI-II
	Pre-treatment	ANOVA analyses	BDI-II, AAQ-2, ASHS, ATQ
	Pre-treatment	Fisher's Exact Test	Demographic variables Diagnosis
	Pre-treatment After session 2 Post-treatment	MANOVA analysis	BDI-II, AAQ-2, ASHS, ATQ
	Pre-treatment After session 2 Post-treatment	Between-group effect size (Hedges' g)	BDI-II, AAQ-2, ASHS, ATQ
Study 2	After session 2	RCI classification	BDI-II
	Pre-treatment Six-month follow-up 12-month follow-up	ANOVA analyses	BDI-II, AAQ-2, ASHS, ATQ
	Pre-treatment Six-month follow-up 12-month follow-up	Between-group effect size (Cohen's d*)	BDI-II, AAQ-2, ASHS, ATQ
	Pre-treatment Six-month follow-up 12-month follow-up	Correlation with magnitude of ESG	BDI-II, AAQ-2, ASHS, ATQ
	Six-month follow-up 12-month follow-up	RCI classification	BDI-II
	Six-month follow-up 12-month follow-up	Pearson's Chi-Square test	RCI classification Medication for depression Psychological treatment
Study 3	During the six-session intervention Post-intervention	Spearman correlation	ACT Adherence Scale BDI-II, AAQ-2
	During the six-session intervention Post-intervention	Stepwise linear regression	ACT Adherence Scale BDI-II-AAQ-2
	During the six-session intervention Post-intervention	Simple linear regression	ACT Adherence Scale BDI-II AAQ-2

*Note: BDI-II = Beck Depression Inventory-II, AAQ-2 = Acceptance and Action Quetionnaire-2, ASHS = Adult State Hope Scale, ATQ = Automatic Thoughts Questionnaire, * = corrected d-values were reported as suggested by Morris (2008).*

3   SUMMARY OF THE RESULTS

3.1   Study I

Early sudden gains in an acceptance and values-based intervention: Effects on treatment outcome for depression and psychological flexibility

The aim of Study I was to examine the occurrence of early sudden gains in an acceptance and values-based intervention delivered by novice therapists. Additionally, the effect of early sudden gains on process measures during the treatment was examined and the impact on treatment outcome was reported. Participants with early sudden gains were compared to gradual gainers or the non-early sudden gain group.

Occurrence. The RCI classification identified 13 participants (23.2%) as either improved (n=2, 3.6%) or recovered (n=11, 19.6%) after two sessions. Early sudden gains were associated with the major depressive disorder diagnosis subclass of mild depression in that mild depression was more frequent among the early sudden gainers than expected in the case of random variation. Also, none of the participants who were retired experienced early sudden gains. No other demographic variables were associated with early sudden gains.

Effect on depression and process measures after two sessions. There was a large difference between those experiencing and those not experiencing early sudden gains in depression symptom severity after two sessions (Hedge's g=1.1). There were also significant differences between the groups in changes in hopefulness and believability of depressive thoughts from pre-treatment to the assessment after two sessions. The effect size for the difference in the change score was moderate for believability of depressive thoughts (between-groups d=.52) and large for hopefulness (d=.80). For psychological flexibility, the between-groups effect size was close to moderate (d=0.48) in favor of the group experiencing early sudden gains, but the group mean difference was not significant. There were no statistically significant differences in any process measures at pre-treatment.

Effect on depression and process measures at postintervention. There were significant differences between the two groups in overall changes in depression, psychological flexibility and hopefulness. Additional one-way ANOVA analysis revealed that the early sudden gainers experienced larger overall decreases in depression (Hedges' g=.90) and greater overall increases in psychological flexibility during the six-session intervention (Hedges' g=.69).

TABLE 4   Group means at pretreatment, after two sessions, at posttreatment and for total change during the intervention for the ESG group and N-ESG group with between-group effect sizes (Hedges' g).

Measure	Time	ESG (n=13) M (SD)	N-ESG (n=42) M (SD)	Hedges' g
BDI-II: Depression	Pre	23.54 (5.14)	23.30 (7.30)	.03
	After two	10.23 (3.35)	20.16 (7.82)	-1.38*
	Post	5.08 (3.88)	11.72 (8.63)	-.84*
	Change	18.46 (5.85)	11.58 (8.00)	.90*
AAQ-2: Psychological Flexibility	Pre	38.54 (12.45)	38.30 (9.68)	.02
	After two	43.69 (9.12)	39.00 (9.46)	.49
	Post	53.62 (8.73)	45.19 (12.33)	.72*
	Change	-15.08 (14.40)	-6.88 (10.89)	-.69*
ATQ-B: Believability of Depressive Thoughts	Pre	65.62 (20.68)	74.28 (26.42)	-.34
	After two	49.69 (14.16)	67.95 (22.72)	-.85*
	Post	59.69 (40.87)	56.58 (26.74)	.10
	Change	5.92 (38.48)	17.70 (22.93)	-.43
ASHS: Hopefulness	Pre	22.31 (8.35)	23.70 (7.98)	-.17
	After two	34.00 (9.34)	28.42 (8.69)	.62
	Post	37.46 (5.78)	34.05 (9.81)	.37
	Change	-15.15 (8.63)	-10.35 (8.92)	-.53

Note: BDI-II = Beck Depression Inventory – II; AAQ-2 = Acceptance and Action Questionnaire – 2; ATQ-B = Automatic Thoughts Questionnaire – Believability; ASHS = Adult State Hope Scale. Negative values represent an increase in total score. * = between-group difference is statistically significant (p < .05)

Conclusions. Early sudden gains occurred relatively frequently and had a strong effect on treatment outcome in an acceptance and values-based intervention. Roughly 25% of participants with diagnosed MDD experienced fast, clinically significant improvements after two sessions. Those participants who were diagnosed with mild depression were more likely to experience early sudden gains. After two sessions, the mean change in the symptoms of depression scores (BDI-II) among early sudden gainers was 13.31 compared to 3.14 among those not experiencing early sudden gains (ES, g > 0.80, see Figure 3). Participants with early sudden gains also reported a larger

decrease in believability of depressive thoughts, and a greater increase in hopefulness during the two first sessions than other participants. The outcome of the six-session intervention was superior for participants experiencing early sudden gains at both the level of depressive symptomatology and psychological flexibility compared to those not experiencing early sudden gains.
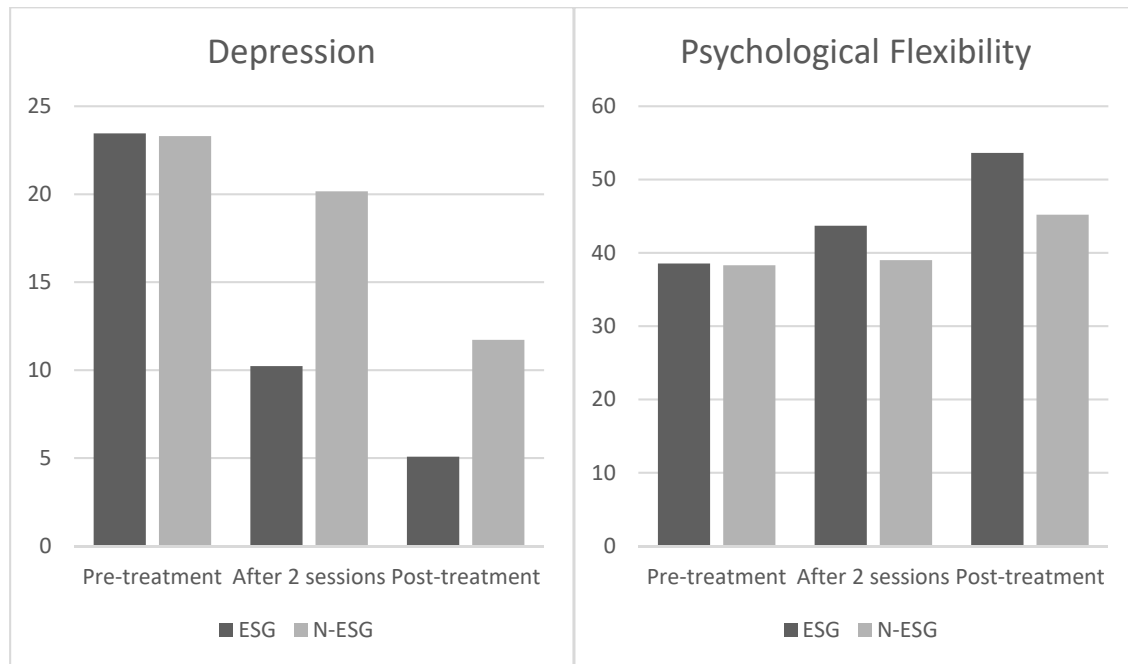
FIGURE 3   Mean level of depression and psychological flexibility at pre-treatment, after two sessions and after the intervention.

Key findings. The results provide evidence of early sudden gains in the context of brief ACT-based interventions delivered by novice therapists. This study also suggests that changes in believability of depressive thoughts and hopefulness during the first two sessions could be associated with early sudden gain. Further research on the relationship between early sudden gains and therapeutic processes could enhance the understanding of individual differences in treatment efficacy.

3.2 Study II

Long-term stability of early sudden gains in an acceptance and values-based intervention

The main objective of Study II was to examine the long-term treatment outcome and stability of decreases in the severity of depressive symptomatology associated with early sudden gains at six-month and 12-month follow-up phases. In addition, long-term effects on psychological flexibility, hopefulness and believability of depressive thoughts was explored.

Early sudden gains' stability and effect on long-term treatment outcome in depression. The overall changes in depression during the follow-up period from pre-treatment to six-month follow-up was larger in groups experiencing early sudden gains compared to other participants (between-group $d > 0.80$). When the follow-up period was extended to 12 months, group mean differences were no longer significant. However, when investigating the effect sizes at the 12-month follow-up phase, there was a small between-group effect for the level of depression ($d=0.39$) in favor of those experiencing early sudden gains. Additionally, there was a significant correlation between magnitude of the early sudden gains and the 12-month treatment outcome. The RCI classification at the six-month and 12-month follow-up phases showed that all of the participants who had experienced an early sudden gain remained improved or recovered (90% recovered at 12-month follow-up).

Early sudden gains' effect on long-term treatment outcome in psychological flexibility, hopefulness and believability of depressive thoughts. There were no statistically significant differences between the groups for the level psychological flexibility, hopefulness or believability of depressive thoughts at six-months and 12-months follow-up. However, the between-group effect sizes indicated that there was a large difference ($d > 0.80$) in hopefulness, a moderate difference ($d > 0.50$) in psychological flexibility and small difference in believability of depressive thoughts in favor of the ESG group at six-months follow-up. At the 12-month follow-up phase, small effect sizes ($d > 0.20 - < 0.50$) were still observed in psychological flexibility and hopefulness in favor of those experiencing early sudden gains. There were also significant correlations between the magnitude of changes in depression during the first two sessions and the 12-month follow-up treatment outcome for psychological flexibility and hopefulness.
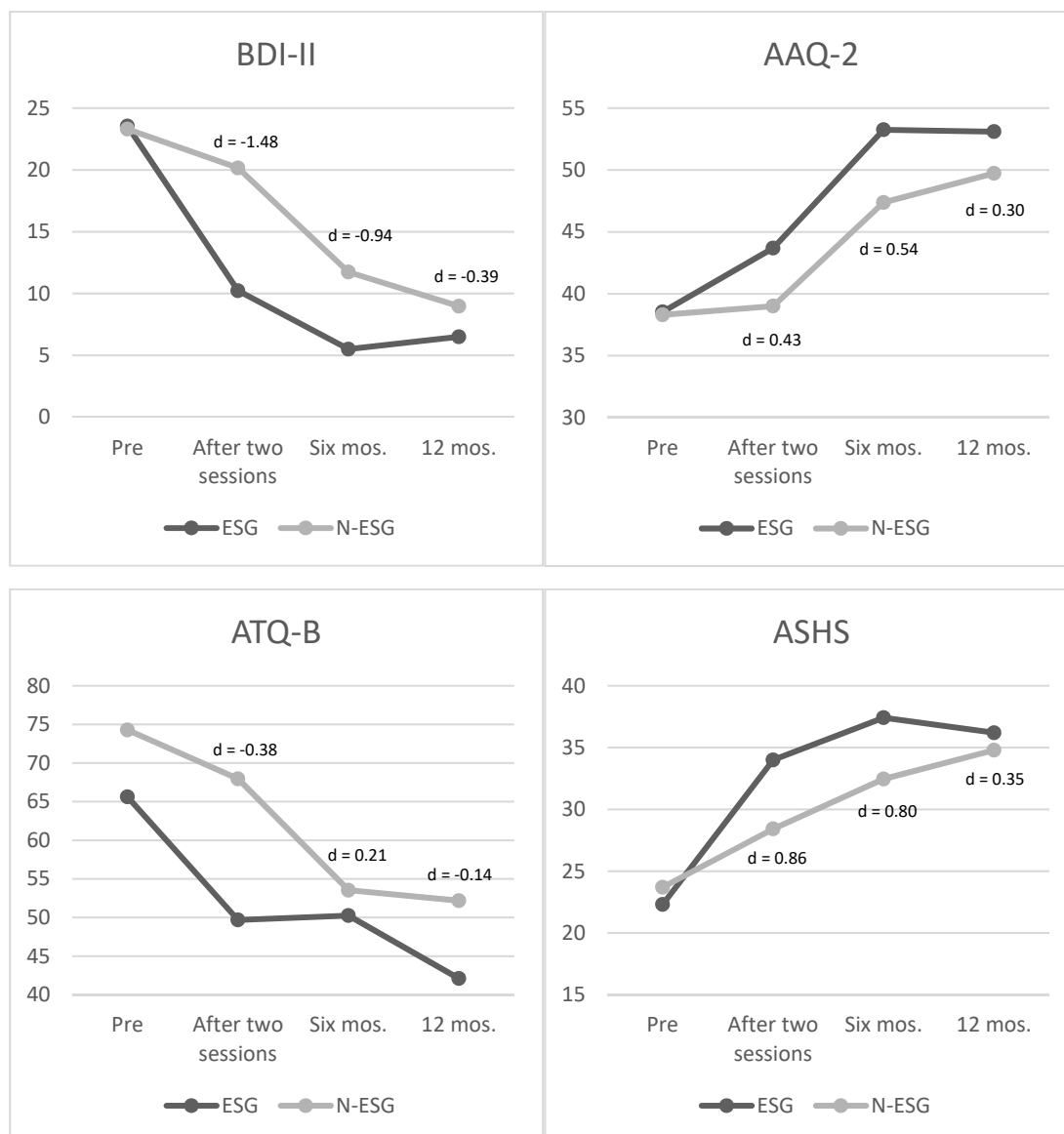
FIGURE 3   Level of depression (BDI-II), psychological flexibility (AAQ-2), believability of depressive thoughts (ATQ-B), and hopefulness (ASHS) at pretreatment, after two sessions, six-months follow-up and 12-months follow-up with between-group effect sizes.

Note: Corrected d-values are presented, where pre-differences and different sample sizes are controlled for as suggested by Morris (2008).

Conclusions. Roughly 20-25% of participants diagnosed with MDD exhibited clinically significant changes in depression symptoms within two sessions and these changes were maintained 12 months after the intervention. The results were supported by the RCI classification at six and 12 months after treatment. A very high proportion of the ESG participating in the follow-up phase were still improved (recovered or improved as per RCI classification), suggesting stable decreases in depressive

symptoms. Further, larger changes in depression symptoms during the two first sessions predicted greater changes in depression symptoms from pre-treatment to six months after the intervention.

Key findings. The findings support the view that changes in symptom severity occurring very early in the treatment seem to predict stable, significant improvements. It may be important to include regular assessment in early phases of treatments to capture and further understand early sudden gains. In addition, early sudden gains seem to indicate a very low rate of symptom recurrence even when the treatment is delivered by novice therapists. Interestingly, high therapeutic competence and long clinical experience does not seem to be required for early sudden gains to manifest given the very short training and non-existent clinical experience of the novice therapists providing the treatment in the current study. In conclusion, the current results support the hypothesis that early sudden gains in an acceptance and values-based intervention yield stable improvement in depression symptoms and psychological flexibility that can be identified up to 12 months after treatment.

3.3 Study III

Competence and Adherence in an Acceptance and Values-Based Intervention: Effects on Treatment Outcomes and Early Changes in Depression

Study III investigated the association between: (1) early changes in depression; (2) competence and adherence of the novice therapists; and (3) treatment outcome.

Competence and adherence among novice therapists. The therapists demonstrated satisfying levels of competence in ACT given the short training and lack of previous clinical experience (n=74 sessions, M=3.32, SD=0.99; scale 1-5). Adherence ratings were similarly at an adequate level (n=74 sessions, M=3.24, SD=0.87). The descriptive values for the adherence and competence ratings as well as the process-specific ratings for the ACT Adherence Scale are reported in Table 4.

TABLE 5   ACT Adherence Scale ratings for novice therapists (session n=74).

Rating for	Range	M	SD	95 % CI
Competence	2.00-5.00	3.32	0.87	3.02; 3.60
Adherence	2.00-5.00	3.24	0.99	2.98; 3.48
Defusion	1.00-5.00	2.82	1.01	2.62; 3.14
Acceptance	1.00-5.00	3.19	0.96	2.93; 3.45
Creative hopelessness	1.00-4.00	1.51	0.73	1.33; 1.73
Values and goals	1.00-5.00	2.53	0.95	2.28; 2.72
Committed action	1.00-5.00	2.47	1.08	2.18; 2.79

Treatment outcome and competence and adherence. The overall competence and adherence ratings based on two rated sessions were significantly associated with the overall treatment outcome for depression (r_s=.37, p=.013, r_s=.39 and p=.009, respectively), but not for psychological flexibility. In addition, there was a significant association for overall treatment outcome for depression and the defusion subscale (r_s=.41, p=.006) as well as the committed action subscale (r_s=.49, p=.001). This suggested that among the rated sample of sessions, the more frequently and extensively the therapist addressed defusion and committed action, the larger the overall changes in depression. The committed action subscale was also associated with the overall treatment outcome for psychological flexibility (r_s = .37, p = .014), suggesting that the more frequently and extensively the therapist addressed committed action, the greater the overall changes the client reported in psychological flexibility.

Early changes' association with competence and adherence. When investigating the total population (n = 37), we observed a significant correlation between overall competence in ACT and the magnitude of early changes in depression (r_s = .31, p = .032). Adherence to the project manual was not associated with early sudden gains. There were also significant correlations between the ACT Adherence Scale subscale ratings and early changes in depression (i.e., the frequency and extensiveness with which the therapist addressed defusion (r_s = .34, p = .018), creative hopelessness (r_s = .34, p = .019), values and goals (r_s = .28, p = .047) and commitment to valued action (r_s = .34, p = .019). Overall competence or adherence was not associated with larger early changes in psychological flexibility. None of the subscale ratings were associated with early changes in psychological flexibility.

Explaining outcome: The effect of competence and early changes in depression. For outcome in terms of depression, a model including early changes in depression and adherence had the strongest predictive power, explaining 38.7% of total variance in treatment outcome. Including competence in the model did not have a significant effect and competence was excluded. For outcome with respect to psychological flexibility, early changes in depression alone predicted outcome and explained 29.7% of total variance. Including competence and/or adherence in the model did not have a significant effect. Both competence and adherence were excluded from the regression model predicting outcome in psychological flexibility.

To explore the effects of competence and adherence further, competence and adherence were introduced as the predictive variable without early sudden gains with depression and psychological flexibility as the dependent variable in a simple linear regression. Competence and adherence ratings explained some variance in treatment outcome for depression, but not for psychological flexibility.

Conclusions. Those novice therapists, who had higher competence and adherence ratings produced superior treatment outcomes for depression. In addition to the overall competence and adherence ratings, the extensiveness and frequency with which the therapist addressed defusion and committed action was associated with treatment outcome in terms of depressive symptoms. Treatment outcome for psychological flexibility was associated with the extensiveness and frequency the therapist dealt with committed action, but not with overall competence and adherence.

Overall competence ratings were also associated with larger early changes in depression, which in turn were linked with the frequency and extensiveness with which the therapists addressed defusion, creative hopelessness, values and goals, and commitment to valued action during the six-session intervention.

When the treatment outcome was predicted based on competence and adherence, we observed that both competence and adherence to the project manual explained 13-14% of variance in outcome for depression. However, when the magnitude of early changes in depression were considered, only adherence could significantly explain outcomes. For psychological flexibility, only the early changes in depression could explain variance in outcome. These results suggested that early changes in depression have a strong effect on treatment outcome and controlling for early changes in depression eliminates the effect of competence on outcomes.

Key findings. To the best of our knowledge, the current results are the first to offer evidence for the association of competence and treatment outcome in acceptance and values-based treatments. However, they suggest that if the magnitude of early changes is considered a predictive variable for predicting outcome, only treatment adherence can add to the predictive power of the model, where as competence is not able to enhance that predictive power. This highlights the importance of understanding the relationship between early sudden gains and competence. As the current results are observational in nature, a causal relationship cannot be established.

4 DISCUSSION

The objective of the present research was to investigate the occurrence and effect of early sudden gains in an acceptance and values-based intervention consisting of six sessions. Early sudden gains association with the outcome and process variables were explored in two studies; the first including effects during the intervention and immediately after the intervention while the second including the long-term effects at six and 12 months after the intervention. The first study also aimed to identify demographic variables and pretreatment variables that may be able to predict who experiences sudden gains. The third study included investigation of early sudden gains association with the novice therapists' competence and adherence. The relationship between competence and adherence, early sudden gains and treatment outcomes were examined to understand how these variables affect individual variance in overall outcomes.

The results indicated that early sudden gains occurred among 20-25% of participants in a brief, acceptance and values-based interventions delivered by novice therapists. Early sudden gains in depression were associated with superior overall treatment outcome for depression and psychological flexibility. In addition, those who experienced early sudden gains reported very low levels of symptoms and high psychological flexibility throughout the follow-up period of 12 months, suggesting that early sudden gains were stable and persistent changes. Finally, there was an association between competence and the magnitude of early changes among all participants, suggesting that higher competence in ACT may have increased the frequency of early sudden gains.

4.1 Effects on treatment outcome

Among the participants with diagnosed MDD, roughly 25% experienced fast, clinically significant improvements after only two sessions. The mean change in score of severity of depressive symptomatology (BDI-II) among early sudden gainers was

large; the change was more than four times the change experienced by those not exhibiting early sudden gains (13.31 points compared to 3.14 points; ES, g > 0.80). The frequency of early sudden gains is similar to that reported in previous research; approximately 30% of participants have been reported to experience early sudden gain within the first two to three sessions (Dour et al., 2013; Hunnicutt-Ferguson et al., 2012). The current results add to previous knowledge by reporting that the frequency of early sudden gains does not decrease when using novice therapists without any clinical experience and limited training.

Early sudden gains at the level of depression were also associated with larger decreases in believability of depressive thoughts, and greater increases in hopefulness during early stages of treatment. While a causal relationship cannot be reliably inferred based on this observation, the effect of sudden gains on secondary measures reflects the clinical importance of early sudden gains by suggesting that the decrease in symptom severity may be associated with changes in therapeutic processes. Additionally, hope has been previously associated with sudden gains (Abel et al., 2016). Among participants suffering from treatment resistant depression, participants experiencing sudden gains reported expressing more hope during the session preceding the sudden gain (Abel et al., 2016). The larger changes in the believability of depressive thoughts offer some support to the hypothesis of cognitive changes explaining sudden gains (e.g., Tang et al., 2005) by suggesting that changes in processing thoughts occur in parallel to sudden gains. However, it is worthwhile noting that decreases in symptom severity could also cause the believability of depressive thoughts to decrease and hopefulness to increase.

While arguably important during the early stage of the brief intervention, the association of sudden gains with hopefulness and believability of depressive thoughts fades to non-significant towards the end of the intervention. The outcome of the intervention was superior for those experiencing early sudden gains at both the levels of depressive symptomatology and psychological flexibility. This finding is the first to link early sudden gains to greater improvements in psychological flexibility, the key process targeted in interventions that are based on the methods of acceptance and commitment therapy.

In addition to the immediate impacts during the intervention and the impact on treatment results, early sudden gains resulted in a stable change that persisted through the follow-up phases up to 12 months. Combined, the results indicate that 20-25% of patients with MDD exhibit clinically significant changes in depression symptoms within two sessions, and these changes are maintained up to 12 months after the intervention.

Previous research also suggests that sudden gains predict stable changes as well as lower relapse and symptom recurrence rates in the treatment of depression (Tang et al., 2007). In the current work, only one of the 13 participants who had experienced ESGs exhibited symptom recurrence (i.e., transferred from 'recovered' to 'improved' in the RCI-classification at 12-months follow-up). Even though the differences in long-term treatment outcomes between sudden gainers and non-sudden gainers eventually became non-significant, the stability of the changes presented among sudden gainers itself is a clinically important observation. Some studies have also reported sudden

gains resulting in significant differences in long-term treatment outcomes, even at 12-months follow-up, which indicates that the suddenness of improvement may have an important effect even when examined after extended time periods (e.g., Bohn et al., 2013; Hedman et al., 2014).

4.2   Explaining early sudden gains

Early sudden gains were associated with the diagnosis of a mild depression (criteria as defined in ICD-10) based on a clinical interview with an independent physician. As the self-reported severity of depressive symptomatology was not associated with early sudden gains, the diagnostic criteria may include factors that could be characteristic of those who are likely to experience an early sudden gain. This finding is the first to associate early sudden gains to clinical assessment prior to the intervention. The association to diagnosis of mild depression may be visible using the RCI classification system to identify early sudden gains. The RCI method used empirical data from the clinical sample and normal population sample to identify those participants who experienced reliable changes during the first two sessions. Contrary to previous definitions of early sudden gains, a predefined cutoff value for the magnitude of change required for the status of early sudden gainers was not used. This method may have allowed more sudden gains be identified among those suffering from milder symptoms.

In addition, early sudden gains were connected with work status. None of the retired participants experienced early sudden gains. The retiree status may reflect poorer overall health or more severe symptomatology within the current sample as intake criteria included an age requirement of being under 65 years old or within the working age range. Reasons for retirement were not recorded and thus it was not possible to explore if retirement among the current participants was based on the nature of employment, physical health problems or problems associated with mental health.

The current research also explored novice therapists' competence and adherence as a possible factor that may be associated with early sudden gains. Based on the low number of participants, this association was examined among the whole sample instead of using group comparisons. Overall competence ratings were associated with larger early changes in depression. This finding suggests that those therapists who have higher competence in delivering the treatment may promote or produce more early sudden gains compared to therapists' whose competence levels are lower. While therapist competence with a particular treatment method has not been previously associated with sudden gains, therapist competence in building a case conceptualization has been reported to increase sudden gains in the treatment of depression (Abel et al., 2016).

Considerably more research is needed to understand the role of competence in specific methods, though. In the current design, competence was evaluated based on two randomly selected sessions that were balanced for sessions across the intervention

as suggested in Plumb and Vilardaga (2010, p. 273). It can be argued that this procedure provides a more accurate assessment of competence by capturing more individual variation and variation in session content. In fact, it has even been suggested that coding competence based on single session ratings may have contributed to the null findings on the importance of competence to treatment outcome (Webb et al., 2010). However, using several sessions to evaluate competence also excludes the possibility of inferring causal relationships between competence and very early changes. There may also be confounding factors related to competence and sudden gains. For example, the quality of case conceptualizations and occurrence of sudden gains could both be related to the nature of the participant's symptoms or treatment targets. While remaining cautious in drawing too strong conclusions, the current finding does encourage further exploration of the relationship of competence with early sudden gains.

Interestingly, overall treatment adherence was not associated with early sudden gains. When using the ACT Adherence Scale, high competence ratings reflect the consistency of addressing the client's needs, the consistency of attending to the client's responses and the clarity and depth of applying the ACT processes. In comparison, a high adherence rating reflects the time spent on assessing functioning and applying the ACT processes in a very in-depth manner. Though preliminary, the results suggest that the skillfulness of applying ACT (including the ability to respond to the clients' in-session behavior) may be more important to early sudden gains than the extensiveness of applying therapy processes.

Early changes in depression were also associated with the frequency and extensiveness with which the therapists addressed defusion, creative hopelessness, values and goals, and commitment to valued action during the six-session intervention. Among the sample of rated sessions, the therapists with larger early changes also spent more time and approached these ACT processes more deeply than those with smaller early changes. These process-specific subscales of the ACT Adherence Scale are rated based on the actual emergence of discussion and/or exercises targeting a specific process as defined in the rating manual. When considering the association to early sudden gains, it needs to be noted that the ratings are based on a limited sample of sessions and are not necessarily representative of all the sessions; some differences between each session are to be expected in the processes that are being focused on. Thus, contrary to the rating for overall competence, these subscale ratings are very sensitive to session content and topics as all processes would not be addressed during each session yielding low ratings for some subscales.

4.3 Clinical implications

The current findings add to the previous research literature that supports the clinical importance of sudden changes in symptomatology. The data clearly indicates that sudden gains have a great impact on an individual's wellbeing during treatment and sudden gains can predict overall treatment outcomes. This prognostic value is especially significant regarding early sudden gains that can be taken into account during

the treatment compared to sudden gains that occur at late stages of the treatment. Early sudden gains are an indication of great variation in the need for treatment dosage among patients across various conditions. In addition, early sudden gains are associated with a very low rate of symptom recurrence, which further highlights the clinical value of this powerful phenomenon.

While further research is required to confirm if continuing treatment after an early sudden gain is observed to ensure the stability of the changes, in a clinical context, understanding and recognizing early sudden gains could still be used as a prognostic tool among other factors for clinical decision-making. In essence, early sudden gains suggest that low-cost interventions utilizing healthcare professionals with minimal training in delivering interventions may be an efficient approach to approximately 25% of patients with MDD. This subgroup of patients may benefit very rapidly and enjoy stable long-term results. This, in turn, supports the provision of stepped-care models where longer treatments can be offered on the basis of non-responsiveness to brief treatments instead of as treatment-as-usual alternatives. Stepped-care models, where low-cost, brief interventions could be offered to large groups, if extensive training is not necessary, could be both economically efficient and sensible from the point of view of those seeking help.

The clinical (and theoretical) implications of early sudden gains' association with hopefulness and believability of depressive thoughts are important in the context of therapeutic work and understanding early recovery. The current data suggests that changes in hopefulness may be important in explaining the significant immediate effect sudden gains have on wellbeing and the effect on treatment outcomes. It may be important to consider that hopefulness was measured using the Adult State Hope Scale (Snyder, 2000), which defines hopefulness as the ability to perceive different pathways to reach one's current goals and the experience of being able to actively pursue those goals. While the current data does not offer conclusive evidence for causal relationships between early sudden gains and hopefulness, the observed association indicates that supporting agency and – in the context of acceptance and values-based treatments – identifying one's values and commitment to actions in service of those values. Hope has also been previously reported to be expressed at elevated levels during sessions preceding sudden gains (Abel et al., 2016).

Along with the clinical implications of the association between early sudden gains and hopefulness, the connection of early sudden gains with believability of depressive thoughts highlight certain methods of acceptance and values-based treatments. It seems that defusion may be an important process in creating early changes in the treatment of depression. While the current data does not allow inferring causal effects, the theoretical framework of acceptance and commitment therapy suggests that changes in the relationship of an individual with their thoughts can explain changes in wellbeing.

Interestingly, early sudden gains were not reflected via fast changes in the level of psychological flexibility, but they were associated with superior treatment results in psychological flexibility after the intervention. Larger changes in psychological flexibility indicate more improvement in the skills associated with acceptance and values-based actions. When reviewing the data, changes in depression occur *before* changes

in psychological flexibility among early sudden gainers. It is possible that the measure used to evaluate psychological flexibility (AAQ-2; Bond et al., 2011) is not as sensitive to sudden changes as the process measures for hopefulness and believability of depressive thoughts. This hypothesis is supported by the changes in defusion that arguably suggests specific processes within the model of psychological flexibility may be more sensitive to session-to-session variation and improvement. However, it is clinically noteworthy to observe that among the early sudden gainer group of participants, the severity of depressive symptoms decreases drastically before large changes in the primary therapeutic process can be observed.

In addition to examining early sudden gains' effects among the participants, the present work also explored therapist competence and treatment adherence. To the best of the author's knowledge, the current research is the first to investigate the role of therapist's skillfulness in treatment outcomes with respect to acceptance and values-based treatments. While modest, the associations reported indicate that competence and adherence have some effect on treatment outcomes, especially if the effect of early sudden gains is not controlled for. When outcomes were predicted based on competence and adherence, we observed that both competence and adherence explained roughly 13-14% of variance in outcomes for depression. This finding is important in that it encourages further discussion on how the predictive power of competence and adherence should be investigated. The level of competence observed among novice therapists in the current data also highlights the importance of the need for a discussion on how competence is defined and measured. It is critical to strive towards developing measures of competence that can reliably distinguish between novice therapists and experts. Further, developing methods to evaluate competence that have clear clinical value for those providing training for therapists and those deigning dissemination of treatments is vital. At the moment, some recommendations and guidelines are available for devising rating systems or scales for the purposes of reliable evaluation of competence. Finding cost-effective and clinically meaningful ways to track the professional development of therapist trainees and professionals would benefit a wide range of training providers and clinicians by bringing the idea of evidence-based training into the field of evidence-based treatments.

4.4 Limitations

There are several limitations to the generalizability of the current results. First, the sample investigated in the current research was small. During the follow-up phase of 12 months, 23% of participants were lost. Those participants who did not experience the intervention as helpful may have declined participation in the follow-up more often than those participants who did find the intervention beneficial. In addition, women and retirees were overrepresented among the participants. As all participants were volunteers replying to an advertisement, the sample may not be representative of clinical samples, in general. Second, the definition of early sudden gains in the current research is a departure from the original sudden gain criteria, which limits the

comparability of the current findings to those presented in previous works. While the RCI classification is a widely used and robust method for evaluating clinically significant changes, it does represent an alternative approach to measuring sudden gain. Also, sudden gains were not evaluated later in the treatment, which may obscure the differences between the early sudden gainers and other participants as some may have experienced a sudden gain after session three. Third, competence and adherence ratings were carried out only for a sample of sessions. While the overall competence and adherence ratings are not particularly sensitive to individual sessions' topics or content, the process-specific subscales focusing on the frequency of each process are very difficult to interpret based on the limited sample. Fourth, the follow-up period of 12 months was relatively short and longer follow-up periods would benefit the understanding of the stability of early sudden gains. Finally, the current results are observational in nature and no causal effects can be reliably inferred.

4.5 Future research

There are several interesting and important questions future research should pursue answers to. Although literature on sudden gains has been cumulating over the last two decades, the mechanism of change behind sudden gains is still largely unknown. Additionally, there are contradictory results available on the effect of early sudden gains, as research has both supported and questioned the association of early sudden gains with superior treatment outcome. Early sudden gains seem to be an understudied subclass of sudden gains that may have particularly strong clinical value as a prognostic tool that can be recognized early on in treatment.

One specific research direction that deserves more attention is if sudden gains have indeed inflated effectiveness estimates and whether they can, in some way, explain why certain patients respond even to placebo treatments. For example, it has been reported elsewhere that around 60–70% of those participants who took part in the current study benefitted from the six-session ACT intervention (Kyllönen et al., 2018). Taking the frequency of early sudden gainers into account, around one-third of participants that benefitted are participants who experienced early sudden gains. As long as research on sudden gains is inconclusive on whether this phenomenon is related to treatment effects or non-specific factors, caution may be needed in interpreting effectiveness results.

While it can be concluded that sudden gains are not limited to certain approaches, association with specific treatment targets or certain processes has not been consistently reported. The current findings describe an association between early sudden gains and early changes in hopefulness and believability of depressive thoughts, which needs to be explored further to draw conclusions on a causal relationship between these process variables and early sudden gains. In addition to replicating and extending the current design, designs built around clear hypotheses on features of treatment or patient characteristics that could be linked with sudden gains are needed.

The current results also suggest that the diagnostic criteria for mild depression as defined in ICD-10 could provide novel information on who are more likely to experience sudden gains.

To provide evidence for sudden gains' association to therapist behavior or therapeutic change processes, future research should aim to record as precise in-session data as possible. Further, such research should also seek to control possible factors that may confound the effect of treatment processes on sudden gains, such as alliance or patient-perceived treatment credibility. Studies using single-therapist designs may have an advantage by eliminating variance among participant's treatments while evidently diminishing sample size based on time restrictions. A series of single-case designs might allow exploration of both patient and therapist characteristics and behaviors at the level of detail required in this exploratory phase of understanding sudden gains.

Finally, in exploring the association between competence and early sudden gains, the current research offers some evidence for the importance of therapist's skillfulness. There is a clear necessity for further investigation of the relationship between competence and treatment adherence and outcome, but also for a scientific discussion on where the lack of strong evidence for the importance of competence and adherence stems from. While the level of competence and adherence among therapists used in a given study is often described as part of high-quality research and treatment-integrity reporting, the association between the variance in competence and variance in treatment outcome within the design is less often discussed. Studies that have focused on how strong this association is suggest that competence and adherence are not very important for overall treatment outcomes (Webb et al., 2010). In a clinical context, this lack of research and data to support the importance of building therapeutic skills and following treatment protocols is an obvious shortcoming. In the context of research interests, promoting further analysis and publishing the competence and adherence rating data available in many cases seems important and valuable.

The current procedures for evaluating competence may have, in part, developed to serve treatment-integrity reporting in that they need to be reasonably fast to be useful in data with several therapists and robust in that they do necessitate extensive training for the raters. However, in examining the role of competence in treatment outcomes, different features are emphasized: to measure variance in competence and adherence, sensitive measures with capabilities to differentiate among those with high competence are needed. Additionally, competence measures and evaluation protocols require broad discussion to build consensus on central aspects of skillful behavior that should be prompted in therapist training in general, and in the context of research protocols.

4.6 Conclusions

The current research provides evidence of early sudden gains in the context of a brief ACT-based intervention delivered by novice therapists with limited training. Early

sudden gainers experienced superior treatment results both at the level of depressive symptoms and psychological flexibility after the six-session intervention. Additionally, early sudden gains were associated with superior long-term treatment outcomes for depression at six months after the intervention. Among the participants with early sudden gains, the effect of the intervention was very stable and persisted through the 12-month follow-up period; 90% of early gainers were recovered after one year. Early sudden gainers' early sudden gains in depressive symptoms were reflected in changes in therapeutic processes, i.e., believability of depressive thoughts and hopefulness. While causal relationships cannot be inferred based on the current analysis, the results encourage further examination of the relationship between hopefulness and early sudden gains and between believability of depressive thoughts and early sudden gains.

Competence and adherence were also associated with early sudden gains. Further research is required to understand the interaction among competence, adherence and early sudden gains and their effect on treatment outcomes. However, the present research suggests that when explaining treatment outcomes, early sudden gains' predictive power is superior to that of competence or adherence.

Altogether, these findings highlight the need to examine individual differences in treatment response not only after treatment, but during treatment. Early sudden gains are an indication of great variation among the pathways to change an individual may take. It is important to encourage discussion on how these major differences in the speed of recovery can be explained and taken into consideration when planning the provision of treatment.

It is also important to strive to respond to the lack of empirical work supporting the importance of competence. The definition and rating of competence requires broad discussion among clinicians and researchers, as currently available methods may not be sufficiently sensitive to accurately assess competence or responsive enough to track professional development. If competence truly was not very important to treatment outcomes – at least in certain conditions, e.g., when therapists receive continuous supervision – provision of low-cost, brief interventions that require minimal training and are thus easy to disseminate should be more broadly considered as an alternative to responding to the increasing need of psychological help.

Given that the current results could be generalized to the total population of depressed patients in Finland, the 25% of patients with MDD requiring very few sessions to produce major improvements would represent a great number of people in need of treatment options. Stepped-care models that include low-threshold interventions could have a substantial effect on the efficiency and efficacy of treatment by allowing individual differences in varied need of dosages of treatment to be utilized. Of course, with the large number of people seeking support, for whom help may be just a few sessions away, the benefits on their wellbeing and that of their families far overshadows the economical advantage.

YHTEENVETO (SUMMARY)

Varhainen äkillinen hyötyminen hyväksyntä- ja arvopohjaisessa masennuksen lyhytinterventiohoidossa: Ilmeneminen, vaikutukset ja yhteys kompetenssiin

Tämän tutkimuksen tavoitteena oli tarkastella varhaisen äkillisen hyötymisen (engl. early sudden gain) ilmenemistä ja vaikutuksia masennuksen lyhytinterventiohoidossa. Kuuden kerran lyhytinterventio toteutettiin hyväksyntä- ja arvopohjaisin menetelmin noviisiterapeuttien toimesta. Tutkimus tarkastelikin myös kompetenssin yhteyttä varhaiseen äkilliseen hyötymiseen.

Tutkimukseen osallistui 56 vapaaehtoista tutkimushenkilöä, joilla osana tutkimuksen sisäänottokriteereitä oli diagnosoitava masennus tutkimuksen aikana. Lisäksi tutkimukseen osallistuivat 37 psykologian opiskelijaa, jotka tarjosivat intervention tutkimushenkilöille. Tutkimushenkilöiltä kerättiin psykologisilla itsearviointilomakkeilla tietoa mielialaoireista, masennukseen liittyvien ajatusten uskottavuudesta, toiveikkuudesta ja psykologisesta joustavuudesta ennen intervention alkamista, intervention aikana kahden tapaamisen jälkeen, sekä intervention päätyttyä. Lisäksi tutkimushenkilöitä pyydettiin osallistumaan seurantatutkimukseen kuusi kuukautta ja kaksitoista kuukautta intervention jälkeen. Kaikki interventiotapaamiset videoitiin lukuun ottamatta ensimmäistä tapaamista, jonka aikana lupa videointiin pyydettiin. Videomateriaali koodattiin ulkopuolisen koodaajan toimesta ja kunkin terapeuttina toimineen opiskelijan kompetenssi ja adherenssi arvioitiin käyttäen validoitua arviointilomaketta. Näin osatutkimusten aineisto koostui tutkimushenkilöiden oireiluun ja psykologiseen joustavuuteen liittyvistä kyselylomakkeista ja videomateriaalin pohjalta tehdyistä arvioista noviisiterapeuttien toiminnasta.

Interventio toteutettiin hyväksyntä- ja arvopohjaisin menetelmin ja periaattein, jotka tähtäävät psykologisen joustavuuden lisäämiseen omien henkilökohtaisen arvojen mukaisen elämän mahdollistamiseksi ja lisäämiseksi. Opiskelijat saivat ennen intervention alkamista yhteensä neljän päivän koulutuksen tapauskuvausmallin tekemiseen ja hyväksymis- ja omistautumisterapian menetelmiin. Koulutuksen lisäksi opiskelijoita ohjeistettiin tutustumaan hyväksymis- ja omistautumisterapian manuaaliin ja itsehoitokirjallisuuteen, joka toimi myös lisämateriaalina intervention toteutuksessa. Intervention aikana opiskelijat osallistuivat viikoittain ryhmätyönohjaukseen hyväksymis- ja omistautumisterapian erityisasiantuntijan ja kliinisen psykologian ja psykoterapian professorin johdolla. Lisäksi opiskelijat osallistuivat viikoittain vertaistyönohjausryhmiin, jotka antoivat mahdollisuuden keskustella interventioiden toteuttamisesta muiden opiskelijoiden kanssa.

Interventio oli puolistrukturoitu interventio, jonka kaksi ensimmäistä tapaamista etenivät ennalta suunniteltujen sisältöjen mukaisesti ja neljä jälkimmäistä tapaamista olivat vapaammin suunniteltavissa kunkin tutkimushenkilön yksilöllisten tarpeiden mukaisesti. Ensimmäinen tapaaminen käsitti tutkimushenkilöiden haastattelun yksilöllisen oireluettelon luomiseksi. Lisäksi ensimmäisellä tapaamisella ohjeistettiin tutkimushenkilöitä tekemään tapaamisten välillä omien henkilökohtaisten arvojen kirkastamiseen liittyviä tehtäviä. Toinen tapaaminen käsitti yksilöllisen ongelma-

luettelon ja haastattelun pohjalta rakennetun tapauskuvausmallin esittämisen tutkimushenkilöille ja intervention tavoitteiden asettamisen tapauskuvausmallin ja tutkimushenkilön henkilökohtaisten arvojen varassa. Toisella tapaamisella kaikille tutkimushenkilöille esitettiin lisäksi ajatusten ja tunteiden käsittelyyn liittyvä Tarkkailijaharjoitus, sekä tietoisuusharjoitus, jota asiakkaan pyydettiin toistamaan päivittäin interventiotapaamisten välissä.

Kolmannesta tapaamisesta alkaen opiskelijat valitsivat interventiotapaamisten sisällöt vapaasti tapauskuvausmallin pohjalta ja tutkimushenkilön yksilöllisten tarpeiden mukaisesti. Suunnittelua tuettiin työnohjaustapaamisissa. Opiskelijoiden oli kuitenkin sisällytettävä interventioon kaksitoista harjoitusta tai metaforaa, jotka oli ennalta valittu pakollisiksi sisällöiksi. Nämä pakolliset harjoitteet voitiin sisällyttää vapaassa järjestyksessä mille tahansa tapaamiselle.

Opiskelijoiden toimintaa arvioitiin hyväksymis- ja omistautumisterapian menetelmiä käyttävien terapeuttien kompetenssin ja adherenssin arvioimiseen kehitetyn arviointimenetelmän avulla. Kunkin 37 terapeuttina toimineen opiskelijan tapaamisista valittiin satunnaisesti kaksi videoitua tapaamista, jotka pisteytettiin. Videoaineisto sisälsi näin 74 videoitua tapaamista ja otos edustaa 25 % kaikista videoiduista tapaamisista. Hyväksymis- ja omistautumisterapian menetelmiin perehtynyt psykologi toteutti arvioinnit ja reliabiliteetin varmistamiseksi kolme muuta henkilöä arvioi lisäksi otoksen pisteytetyistä videoista uudelleen. Koodaajien välinen reliabiliteetti oli hyvä ja arviointeja voitiin pitää luotettavina.

Intervention vaikutuksia arvioitiin tutkimushenkilöiden täyttämien psykologisten itsearviointimenetelmien avulla. Tutkimushenkilöt täyttivät masennusoireiden vaikeustasoa arvioivan BDI-II-lomakkeen, toiveikkuutta arvioivan ASHS-lomakkeen, masennukseen liittyvien ajatusten uskottavuutta arvioivan ATQ-B-lomakkeen ja psykologista joustavuutta arvioivan AAQ-2-lomakkeen ennen intervention alkamista ja intervention päätyttyä. Seurantatutkimus toteutettiin kuusi ja kaksitoista kuukautta intervention jälkeen varhaiseen äkilliseen hyötymiseen liittyvän muutoksen vakauden tarkastelemiseksi.

Tutkimuksen mielenkiinnon kohteena olleen varhaisen äkillisen hyötymisen tunnistamiseksi tutkimushenkilöt täyttivät itsearviointikyselyt myös intervention aikana kahden tapaamisen jälkeen. Varhaista äkillistä hyötymistä arvioitiin mielialaoireiden vaikeustason perusteella. Varhainen äkillinen hyötyminen määriteltiin tutkimuksessa RCI-luokittelua hyödyntäen. RCI-luokittelu tunnistaa kliinisesti ja tilastollisesti merkittävän muutoksen ja jakaa tutkimushenkilöt neljään ryhmään muutoksen suuruuden ja suunnan mukaan. Varhain äkillisesti hyötyneiksi katsottiin ne tutkimushenkilöt, jotka luokiteltiin jo kahden tapaamisen jälkeen hyötyneiden tai parantuneiden ryhmään. Loput, muuttumattomien tai heikentyneiden ryhmiin sijoittuneet tutkimushenkilöt määriteltiin ei-varhain hyötyneiksi.

Osatutkimus I keskittyi tunnistamaan varhain äkillisesti hyötyneet tutkimushenkilöt ja tarkastelemaan varhaisen äkillisen hyötymisen välittömiä vaikutuksia, sekä vaikutuksia intervention hoitotulokselle intervention päättyessä. Varhain äkillisesti hyötyneitä tutkittavia oli kaikkiaan 13, joista kaksi ryhmiteltiin kahden tapaamisen jälkeen hyötyneiksi ja 11 parantuneiksi käytetyn RCI-luokittelun menetelmin.

Osatutkimuksessa I havaittiin, että varhainen äkillinen hyötyminen näyttäytyy merkittävän suurena mielialaoireiden vähenemisenä jo kahden tapaamisen jälkeen. Varhain äkillisesti hyötyneet tutkimushenkilöt raportoivat keskimäärin 13 pisteen laskua BDI-II-lomakkeen pistemäärässä. Tämän huomattavan mielialaoireiden muutoksen lisäksi varhain äkillisesti hyötyneet raportoivat muita tutkimushenkilöitä suurempia muutoksia toiveikkuudessa ja masennukseen liittyvien ajatusten uskottavuudessa kahden tapaamisen jälkeen. Lisäksi varhain äkillisesti hyötyneet tutkimushenkilöt hyötyivät koko interventiosta muita tutkimushenkilöitä enemmän sekä mielialaoireiden tasolla, että psykologisen joustavuuden tasolla arvioituna.

Osatutkimus I tarkasteli myös mahdollisia selittäviä tekijöitä varhaiselle äkilliselle hyötymiselle. Varhain äkillisesti hyötyneiden ryhmä ei eronnut muista tutkimushenkilöistä minkään käytetyn itsearviointilomakkeen pistemäärässä ennen intervention alkamista. Varhain äkillisesti hyötyneiden joukossa oli kuitenkin odotettua enemmän lievän masennuksen diagnoosin saaneita tutkimushenkilöitä, eikä varhain äkillisesti hyötyneiden joukossa ollut lainkaan eläkkeellä olevia henkilöitä. Varhainen äkillinen hyötyminen ei ollut yhteydessä muihin demografisiin taustamuuttujiin.

Osatutkimus II tarkasteli varhaisen äkillisen hyötymisen vakautta pitkällä aikavälillä, kuusi kuukautta ja kaksitoista kuukautta intervention jälkeen. Varhain äkillisesti hyötyneet tutkimushenkilöt hyötyivät interventiosta muita tutkittavia enemmän vielä kuuden kuukauden jälkeen mielialaoireiden tasolla arvioituna. Kahdentoista kuukauden jälkeen merkitseviä eroja ryhmien kesken ei enää ollut havaittavissa. Varhain äkillisesti hyötyneiden joukossa intervention aikana tapahtuneet muutokset olivat ajallisesti vakaita ja pysyivät yllä koko vuoden seurantajakson ajan. Ne tutkimushenkilöt, jotka eivät kokeneet varhaista äkillistä hyötymistä saavuttivat äkillisesti hyötyneiden tutkittavien ryhmän 12 kuukauden seurantajakson aikana.

Osatutkimus III käsitteli terapeutteina toimineiden opiskelijoiden koko intervention ajalta arvioidun kompetenssin ja adherenssin merkitystä varhaiselle äkilliselle hyötymiselle ja hoitotulokselle. Sekä kompetenssin, että adherenssin havaittiin olevan yhteydessä hoitotulokseen mielialaoireiden vakavuuden tasolla arvioituna. Kompetenssi ja adherenssi selittivät noin 13-14 % vaihtelusta hoitotuloksessa. Selitysvoima kuitenkin hävisi, kun varhaisen äkillisen hyötymisen vaikutus hoitotulokseen huomioitiin. Adherenssi ja varhainen äkillinen hyötyminen pystyivät yhdessä selittämään 38,7 % vaihtelusta hoitotuloksessa. Kompetenssin lisääminen hoitotulosta selittävään malliin ei lisännyt selitysvoimaa. Kompetenssi oli toisaalta yhteydessä varhaisen mielialaoiremuutoksen suuruuteen, mikä viittaa siihen, että kompetenssin vaikutus saattaa heijastua hoitotulokseen välillisesti varhaisten muutosten kautta.

Kokonaisuudessaan osatutkimusten tulokset nostavat esiin varhaisen äkillisen hyötymisen merkittävän vaikutuksen myös lyhyissä, noviisiterapeuttien toteuttamissa hyväksyntä- ja arvopohjaisissa interventioissa. Varhainen äkillinen hyötyminen on yhteydessä välittömään, intervention aikana tapahtuvaan oireiden lievittymiseen ja lisäksi se heijastuu muita tutkittavia parempaan hoitotulokseen sekä mielialaoireiden, että psykologisen joustavuuden tasolla intervention päättyessä ja vielä kuusi kuukautta intervention jälkeen. Kliinisen merkittävyyden ohella ilmiöllä on tieteellisen tutkimuksen näkökulmasta kiinnostava, sillä se nostaa esiin tarpeen keskustelulle

ja tutkimukselle muutoksen mekanismeihin liittyen ja erityisesti muutoksen ajoittumista selittävien mekanismien laajemmalle tarkastelulle.

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ORIGINAL PAPERS

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EARLY SUDDEN GAINS IN AN ACCEPTANCE AND VALUES-BASED INTERVENTION: EFFECTS ON TREATMENT OUTCOME FOR DEPRESSION AND PSYCHOLOGICAL FLEXIBILITY

by

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Early sudden gains in an acceptance and values-based intervention: Effects on treatment outcome for depression and psychological flexibility

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ABSTRACT

Objective: The aim of this study was to explore early temporal patterns of change in a treatment delivered by novice therapists. We examined if early sudden gains (ESGs) in a six-session acceptance and values-based intervention would produce superior treatment outcomes when compared to slower improvements.
Method: The temporal patterns of change of 56 clients diagnosed with depression were analyzed. ESGs were defined as reaching the status of recovered or improved in the Reliable Change Index (RCI) (Jacobson & Truax (1991)) classification after two sessions. The group with ESGs was then compared to participants without ESGs for differences in treatment outcome on measures of symptomatology and measures of therapeutic processes.
Results: The results reflected significant differences between the groups in treatment outcomes. The ESG group (23.2% of participants) showed superior results both on the level of depressive symptomatology and psychological flexibility. Participants with ESGs also reported more hopefulness and less-believable depression-related thoughts after two sessions.
Conclusions: The results suggest that the early, clinically significant change is associated with superior treatment results both on the level of reduced symptom severity and therapeutic processes.

1. Introduction

Sudden gains (SGs) and abrupt reductions in symptom severity between consecutive sessions have been shown to occur in various treatment settings, resulting in superior posttreatment and follow-up outcomes that are not associated with severity of symptoms at baseline (e.g., Hunnicutt-Ferguson, Hoxha, & Gollan, 2012; Lemmens, DeRubeis, Arntz, Peeters, & Huibers, 2016). A relatively high percentage (approximately 30–40%) of participants with depression experience SGs (e.g., Hunnicutt-Ferguson et al., 2012; Tang, DeRubeis, Hollon, Amsterdam, & Shelton, 2007). SGs have also been identified in the treatment of eating disorders, panic disorder, severe health anxiety, social phobia, posttraumatic stress disorder and generalized anxiety (Cavallini & Spangler, 2013; Clerkin, Teachman, & Smith-Janik, 2008; Hedman et al., 2014; Hofmann, Schulz, Meuret, Moscovitch, & Suvak, 2006; Keller, Feeny, & Zoellner, 2014; Norton, Klenck, & Barrera, 2010), respectively.

SGs can represent a mean change of 10–13 points on the Beck Depression Inventory (BDI) (Beck & Steer, 1987; e.g., Tang et al., 2007). The effect size (ES) of SGs on outcomes has been reported to be moderate in meta-analysis in posttreatment and during follow-up when follow-up periods were pooled (for follow-up periods, M = 4.44

months; Hedges' g = 0.62 and 0.56, respectively; Aderka, Nickerson, Bøe, & Hofmann, 2012). SGs also predicted lower rates of relapse and symptom recurrence in depressed patients during a 24-month follow-up (Tang et al., 2007).

Interestingly, SGs can occur very early. Several studies have found that SGs are most likely to happen within the first three sessions (Dour, Chorpita, Lee, & Weisz, 2013; Hunnicutt-Ferguson et al., 2012; Masterson et al., 2014). Altogether, these results suggest that a relatively large proportion of clients may benefit during the first few sessions and that these sudden improvements predict outcomes during and after interventions.

To the best of our knowledge, SGs have not been reported in acceptance and value-based treatments or in treatments using novice therapists. This presents a need for further studies investigating SGs in process-based interventions such as Acceptance and Commitment Therapy (ACT), especially when treatment is delivered by non-experts. Further, there are no studies focusing on processes of change associated with SGs in acceptance and value-based treatments. Our aim was to (a) determine how many participants diagnosed with major depressive disorder would experience early sudden gains (ESGs) in a six-session ACT intervention delivered by psychology students, (b) examine if demographic variables were associated with ESGs, and (c) analyze if ESGs

were associated with treatment outcomes in a brief six-session intervention. We also explored (d) whether ESGs with depression symptoms were associated with changes in psychological flexibility, believability of depressive thoughts, and hopefulness. This could help us to understand the processes or mechanisms associated with fast improvement using psychological treatments.

2. Method

2.1. Design

The data were drawn from a randomized, controlled trial to evaluate the efficacy of ACT delivered by student therapists. The main outcome results and a full description of the study design are reported in Kyllönen, Muotka, Puolakanaho, Astikainen and Lappalainen (in press).

2.2. Participants

Volunteer participants were recruited using an advertisement placed in a local newspaper. A diagnosis of major depressive disorder as defined in the *International Classification of Diseases, 10th edition* (ICD-10; World Health Organization, 1992) was required from all participants in order to take part in the study. The diagnosis was determined by a physician during a structured interview (see Figs. 1 and 2). The same physician carried out all the screening interviews. Exclusion criteria were (a) psychiatric diagnosis other than depression, (b) neurological diagnosis, (c) misuse of alcohol or drugs, and (d) on-going psychological treatment. Participants were randomized into an experimental and a control group. Only the experimental group was included in this study. Thus, the participants in the current study (n = 56) fulfilled the diagnostic criteria of the ICD-10 either for depressive episode (F32, F32.1, n = 27), recurrent depressive episode (F33, F33.1, n = 25), or chronic depression (F34.1, n = 4).

Participant flow is shown in Fig. 1. Four participants were excluded from current analysis. The analysis included 56 participants of whom 77% were women, 54% were married or cohabiting, and 50% were employed at the time of the intervention. All participants were Caucasian. Mean participant age was 49.2 years (SD = 11.74, range = 19–65).

2.3. Therapists and the intervention

The study therapists were master's students of psychology (n = 37) with no prior clinical experience. Training consisted of four full-day lectures (32 h) on constructing a case formulation model and learning the principles and methods of ACT. The student therapists received 2 h of group supervision weekly for total of 10 h from a licensed psychologist and an expert in ACT.

The intervention comprised six hour-long weekly sessions. Since the focus of this paper was to investigate the ESGs, the impact of the intervention was studied after the first two sessions. Consequently, the protocol for these two sessions will be presented in detail below.

The first two sessions were highly structured, while the last four sessions were semistructured. The first session included an interview to establish understanding for a case formulation model (Haynes & O'Brien, 2000). During the interview, an individual problem list was constructed, and the problems were specified further if necessary. The therapist was instructed to describe the problems in behavioral terms and to discover how problems were connected to each other. At the end of the session, the therapist explained and presented a mindfulness exercise (i.e., focusing on breathing) and a home assignment on values. For the homework assignment, the client was instructed to fill in a form asking to specify her/his values (i.e., "Write down on this form things that personally matters to you"), and the client was instructed to complete the Valued Living Questionnaire (VLQ; Wilson, Sandoz, Kitchens, & Roberts, 2010). Between session 1 and 2, each therapist attended a group supervision and constructed the case formulation model in cooperation with the supervisor. The second session included presentation and discussion of the case formulation model. After reviewing the case formulation model, the client was asked to describe personal values and to specify value-based actions that she/he was willing to take. The client was presented an individually chosen metaphor, "The observer" exercise (Hayes, Strosahl, & Wilson, 1999) and a mindfulness exercise (i.e., "Follow your breath"; Hayes et al., 1999). For a homework assignment, the client was instructed to take value-based actions and practice mindfulness for 5–10 min per day. The remaining four sessions used the following structure: Each session started with a review of the homework assignment, the client was presented with a metaphor, one to three experiential exercises were conducted, and then a mindfulness exercise was implemented. At the end of the session, value-based actions were discussed and defined.

2.4. Treatment integrity

After receiving permission during the first session, all following sessions were video-recorded. Two randomly selected sessions with each therapist were coded using the coding manual provided by Plumb
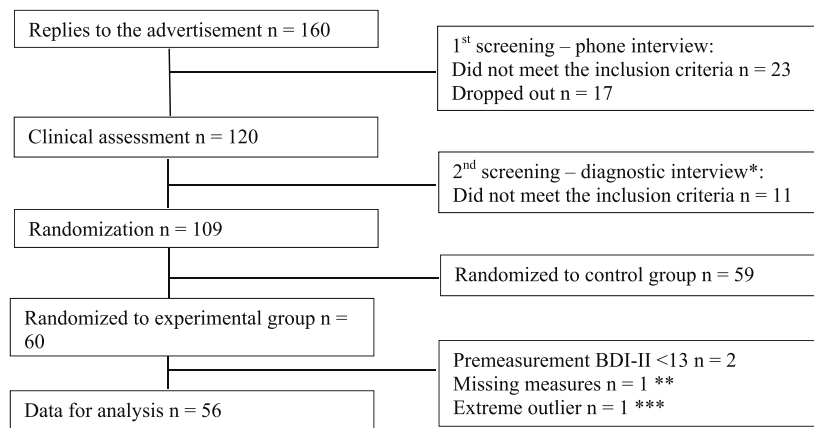

Fig. 1. Flow of participants. Note: * = Screening interview carried out by a physician. ** = Baseline BDI-II missing. *** = BDI-II change during two sessions was 38 points (from 40 to 2).

and Vilardaga (2010) to describe overall ACT competence and adherence. Twenty-one percent (n = 74) of all experimental group sessions (n = 360) were coded. The sample was balanced to include equal amounts of sessions 2 through 5 to represent overall competency and adherence throughout the intervention. All coded sessions were coded by a licensed psychologist familiar with ACT, while 3 external raters coded 33 randomly selected sessions (45%). Interrater reliability was good (0.80–0.84). Overall adherence and competence in ACT were acceptable given the short training and lack of clinical experience among the student therapists. Mean scores for all coded sessions (n = 74) on a 1–5 scale for adherence were M = 3.24 (SD = 0.87, 95% CI [3.04, 3.45]) and for competence were M = 3.31 (SD = 0.99, 95% CI [3.09, 3.55]). Scores for the coded second sessions (n = 15) for adherence were M = 3.60 (SD = 1.06, 95% CI [2.99, 3.81]) and for competence were M = 3.40 (SD = 0.74, 95% CI [3.02, 4.18]). There were no significant differences in competence and adherence ratings among sessions 2 through 6 (i.e., the overall rating levels were stable during the intervention). These values can be compared to the ratings observed for experienced ACT therapists. For example, mean value of 4.4 for adherence and 3.9 for competence on the same 1-to-5 scale has been reported (Twohig, Hayes, & Masuda, 2006). In the current study, the observations made during the second session showed the adherence level as CI = 2.99–3.81. This suggests that the therapists spent at least half of the sessions attending to at least one of the ACT processes (level 3). Competence levels were seen at CI = 3.02–4.18, indicating that the therapists were at least sometimes (level 3) or moderately (level 4) addressing needs and treatment targets and that processes were applied either superficially (level 3) or clearly (level 4).

2.5. Measures

Changes after two sessions were evaluated with four measures: depression with the Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 2004), believability of depressive thoughts with the Automatic Thoughts Questionnaire (ATQ-B; Hollon & Kendall, 1980), hopelessness with the Adult State Hope Scale (ASHS; Snyder, 2000), and psychological flexibility with the Acceptance and Action Questionnaire (AAQ-II; Bond et al., 2011). Pretreatment measures took place immediately after recruitment of the participants, during the 2 weeks prior to the first session. Measures were repeated before beginning the third session, 2–4 weeks after premeasurement (M = 23.50, SD = 7.79 days). Posttreatment measures were administered after the last session, 5–7 weeks after premeasurement (M = 46.36, SD = 8.79 days). The BDI-II is a self-report measure of severity of depressive symptoms containing 21 items (α = 0.81, indicating good internal consistency). For a review of evidence for the validity of the BDI-II, see Dozois, Dobson and Ahnberg (1998). The BDI-II is scores range from 0 to 63, with higher scores indicating more severe symptoms. Each item includes four statements with increasing severity of symptoms (e.g., 0 = "I do not feel sad," 1 = "I feel sad," 2 = "I am sad all the time and I can't snap out of it," and 3 = "I am so sad or unhappy that I can't stand it"). The ATQ-B is a self-report measure of believability of depressive thoughts containing 30 items (α = 0.97, indicating excellent internal consistency). The validity of the ATQ-B is discussed in Zettle, Rains and Hayes (2011). Scores range from 30 to 150, with higher scores indicating more believable thoughts. The items measure thoughts associated with depression (e.g., "I'm worthless"), and each item is scored for believability on a range of 1–5. The ASHS is measure of short-term hopefulness containing 6 items (α = .79, indicating good internal consistency). Evidence for the validity of the ASHS is reported in Snyder et al. (1996). Scores range from 6 to 48, with higher scores representing higher hopefulness. Each item is a statement on the perceived ability to progress toward one's personal goals and on being able to identify ways to obtain those goals (e.g., "I can think of many ways to reach my current goals"). The AAQ-II is a self-report measure of psychological flexibility containing 10 items (α = .66, indicating acceptable internal

consistency). Evidence for the validity of the AAQ-II is reported by Bond et al. (2011). Scores range from 10 to 70, with higher scores indicating higher psychological flexibility in this study, though generally AAQ-II is scored so that higher scores indicate inflexibility. The items include statements describing acceptance and experiential avoidance (e.g., "I worry about not being able to control my worries and feelings").

2.6. Defining ESGs

ESG status was based on changes in BDI-II after two sessions and defined as attainment of improved or recovered status in the RCI classification (Reliable Change Index; Jacobson & Truax, 1991). The two-session cutoff for ESGs was based on the fact that the first two sessions were highly structured. The RCI calculates whether participants changed to such an extent that the change is unlikely to be due to measurement unreliability (i.e., improved) and whether they also pass the weighted midpoint (cutoff C = 14.94) between the means of the clinical sample and normal population (i.e., recovered). For the normal population, descriptive values reported by Beck and colleagues (2004) were used in the current analysis of the BDI-II (M = 7.65, SD = 5.90). Participants not classified as improved or recovered after two sessions were given the status of non-early sudden gain (N-ESG).

2.7. Statistical analysis

Following identification of ESGs, the initial differences in pretreatment level and in changes in depressive symptomatology between the groups were analyzed by one-way ANOVAs. Possible associations with the demographic variables and ESGs were explored using cross-tabulation with Fisher's exact test. Strength of associations between ESGs and the demographic variables were evaluated with Cramer's V values. First, differences between the ESG and N-ESG groups in the changes on the process measures (i.e., hopelessness, believability of depressive thoughts, and psychological flexibility) during the first two sessions were analyzed with a repeated-measures MANOVA. Differences in the pattern of change over the whole six-session intervention were then similarly analyzed using a repeated-measures MANOVA. As for the assumptions of the MANOVA analysis, the assumption of normality was met based on visual inspection of the Normal Q-Q Plots. However, there were 11 outlier observations identified among the four dependent variables on three measurement points. Most outliers were identified on the distribution of scores on the ATQ. The outliers were manually transferred to the end of the distribution by replacing outliers with nearest values from non-outliers. The analyses were then run on the raw data and on data with transferred outliers. The outliers did not affect interpretation of the results; the raw data are presented for descriptive values in Fig. 3 and in Appendix 1. Also, the assumption of equality of variances was violated for individual measures (premeasurement BDI-II and ATQ and postmeasurement BDI-II and ASHS), which indicates a need for caution when interpreting results. To compensate for the violation, Welch corrected F-values and significance are reported for these measures in the additional one-way ANOVA table (see Appendix 1). The magnitude of the differences was evaluated by reporting the effect size (Hedges' *g*) for each comparison. In addition, corrected d-values (i.e., premeasurement differences accounted for; Klauer, 2001) were reported where applicable. For ES, d ≥ 0.20 was considered small, d ≥ 0.5 moderate, and d ≥ 0.8 large (Cohen, 1988).

3. Results

3.1. Participants showing ESGs

Based on changes in the BDI-II, the RCI-classification identified 13 participants (23.2%) as either improved (n = 2, 3.6%) or recovered (n = 11, 19.6%) after two sessions; these participants were given the status of ESG (BDI-II m = 10.23, SD = 3.35). The majority of

ESG and subclass of depression diagnosis

Note: F32.0 = Mild depression; F32.1 = Moderate depression; F34.1 = Chronic depression;
F33.0 = Recurrent depression, mild episode; F33.1 = Recurrent depression, moderate episode

■ ESG Observed   ■ ESG Expected   ■ Total

ESG and working status

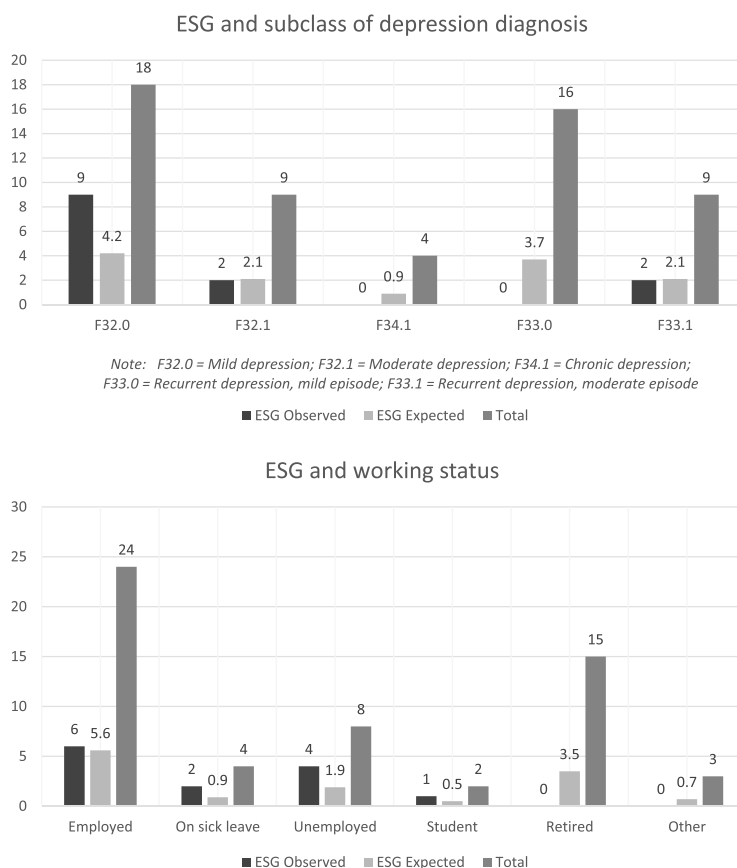■ ESG Observed   ■ ESG Expected   ■ Total

Fig. 2. Frequency of subclass of depression diagnosis (upper panel) and working status (lower panel). Observed and expected number of participants with ESG, and total number of participants in each category is reported (e.g. F32.0 n = 9 for the ESG group and n = 18 for all participants).

participants (n = 43, 76.8%) were classified as N-ESG. Of these participants, 75% (n = 42) remained unchanged and 1.8% (n = 1) had deteriorated (BDI-II m = 20.16, SD = 7.82). The difference in BDI-II between the ESG and N-ESG groups was large (F(1,47) = 43.23, p < 0.001 (d > 1.1; see Fig. 3 and Appendix 1)). No statistical differences between the groups were found in their pretreatment levels of depression.

3.2. ESGs and demographic variables

The number of ESG participants diagnosed with mild depression by the independent physician and participants who were unemployed was significantly higher than expected, and the number of participants with recurrent depression and who were retired was lower than expected (diagnosis subclass, p = .006, Cramer's V = 0.49; and work status, p = .017, Cramer's V = 0.45; see Fig. 2). No other demographic variables were associated with ESG.

3.3. ESGs and process measures after two sessions

There was a significant multivariate effect reflecting a difference between the ESG and N-ESG groups in changes on the three process measures (F(3,52) = 4.71, p = 0.006). Thus, defusion (ATQ-B), hopefulness (ASHS), and psychological flexibility (AAQ-II) changed differently in the ESG and N-ESG groups during the two first sessions (see Fig. 3). Univariate tests showed the differences were statistically

significant for changes in hopefulness (F(1,54) = 8.27, p = 0.006) and for believability of depressive thoughts (F(1,54) = 5.97, p = 0.018). ES for the difference in the change score was moderate for believability of depressive thoughts (between-group d = 0.52) and large for hopefulness (d = 0.80; see Fig. 3 and Appendix 1). The univariate effect was not significant for psychological flexibility. However, the between-group ES was close to moderate (d = 0.48) in favor of ESG. There were no statistically significant differences in any of the process measures at pretreatment.

3.4. ESGs and effect on treatment outcome

There was a significant multivariate effect suggesting differences between the ESG and N-ESG groups in the pattern change during the intervention, from pretreatment to posttreatment, when all outcome measures were included in the analysis (F(8,46) = 7.69, p < 0.001). With regard to the univariate analysis, the sphericity assumption was not met for depression, believability of depressive thoughts, or psychological flexibility. Greenhouse-Geisser correction was used to correct the degrees of freedom for these variables. From pretreatment to posttreatment, there were significant differences between the groups in changes of depressive symptoms (BDI-II: F(1.45, 76.76) = 13.63, p < 0.001), psychological flexibility (AAQ-II: F(1.64, 86.84) = 3.53, p = 0.042), and hopefulness (ASHS: F(2106) = 4.04, p = 0.022). Differences in changes in believability of depressive thoughts (ATQ-B) were not statistically significant (p = 0.052; see also Fig. 3). An
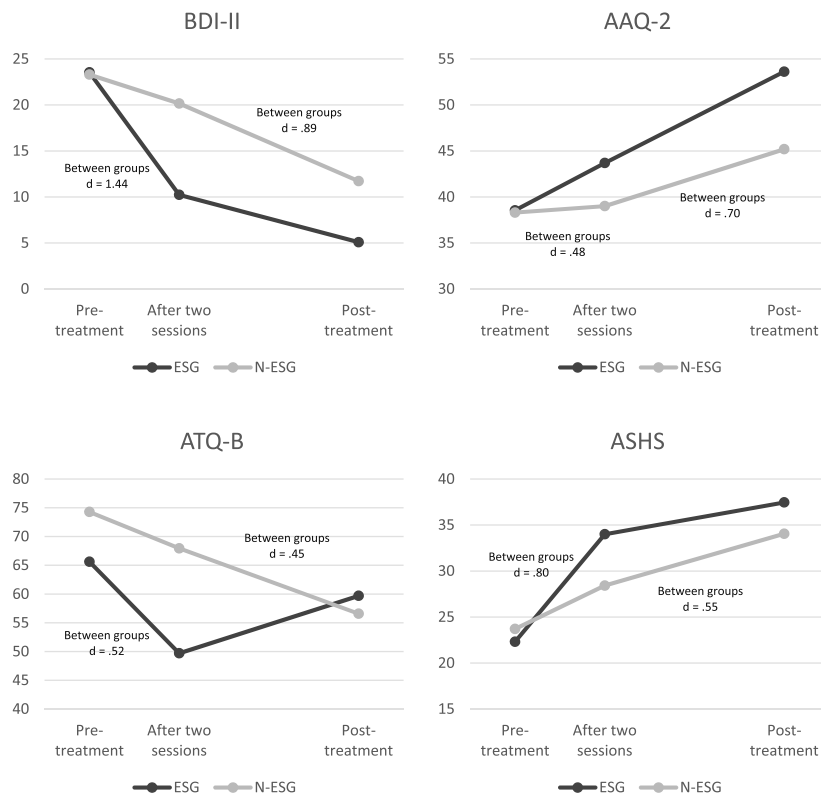
Fig. 3. Level of depression (BDI-II), psychological flexibility (AAQ-2), believability of depressive thoughts (ATQ-B) and hopefulness (ASHS) at pretreatment, after two sessions and posttreatment with between group effect size after two sessions and after six sessions.

additional one-way ANOVA analysis showed that the ESG group experienced larger decreases in depression symptoms (Hedges' $g = 0.90$) and increases in psychological flexibility during the intervention (Hedges' $g = 0.69$).

4. Discussion

The present results showed that roughly 25% of participants diagnosed with a major depressive disorder experienced fast, clinically significant improvement during the first two sessions of a brief ACT intervention delivered by psychology students. After two sessions, the mean change in the symptoms of depression scores (BDI-II) within the ESG group was 13.31 compared to 3.14 of the N-ESG group (ES, $g > 0.80$). Participants with ESGs also reported a larger decrease in believability of depressive thoughts and larger increase in hopefulness during the two first sessions when compared to N-ESG participants. The outcome of the six-session intervention was superior for the ESG group on both the levels of depressive symptomatology and psychological flexibility.

ESGs were associated with a diagnosis based on the ICD-10 screening interview. Most ESG participants were diagnosed with mild depression. This suggests that diagnostic criteria may provide information on which participants with depression are more likely to show ESGs. This is particularly interesting considering that there were no differences between the groups in self-reported symptomatology as assessed by the BDI-II. More research is needed to clarify whether different types of diagnoses predict ESGs. Also, the ESG group contained no retired participants. No other demographic variables were associated with ESGs.

The results are consistent with previous research suggesting that approximately 30% of participants may show fast improvement within the first two to three sessions (Dour et al., 2013; Hunnicutt-Ferguson et al., 2012). This study indicates that such results also occurred when the intervention was implemented by inexperienced therapists. The present results are also consistent with previous findings that rapid changes are associated with superior treatment results (e.g., meta-analysis; Aderka et al., 2012; Lemmens et al., 2016).

Interestingly, ESGs as determined by clinically significant change in depressive symptoms were associated with a larger decrease in believability of depressive thoughts and a larger increase in hopefulness during the first two sessions of the intervention. Although there was no significant difference between the groups in psychological flexibility after the two sessions, the ESG group reported moderately ($d = 0.48$) higher psychological flexibility after 2 weeks and significantly larger change at posttreatment. The direction of the changes as seen in the ATQ-B during the two first sessions was similar to that observed in the AAQ-II and ASHS. That is, believability of depressive thoughts decreased, while psychological flexibility and hopefulness increased. However, between sessions 3 through 6, ATQ-B showed a different direction of change when compared to AAQ-II and ASHS (see Fig. 3). Overall, there is a need for more research aimed at identifying the specific processes of change that may explain why a relatively large group of clients show rapid benefit from psychological interventions.

Comparability between the present and previous findings on SG is limited by differences in approach. Whereas the previous research has been focusing mostly on identifying SG *at any point during treatment* (as defined in Tang & DeRubeis, 1999), our interest was in *early, clinically significant* changes based on RCI classification.

When drawing conclusions from the current study, the following limitations must be observed. First, the results clearly need replication with a larger sample. Second, women and retirees were over-represented. Third, the treatment was implemented by novice therapists. Furthermore, the observed association of ESGs with processes of change is not evidence of causal relationships. Interpretation of the statistical analysis is further limited by the violation of the assumption of equal variances on some variables.

The present study along with earlier findings on SGs supports the provision of short interventions for clients with mild to moderate depression. Outcomes observed after two to three sessions could be used as criteria to determine further need of treatment.

To conclude, the results provide evidence for ESGs among 25% of the clients who received ACT-based interventions for depression. This study also suggests that psychological flexibility, especially believability of depressive thoughts and hopefulness during the first two sessions could be associated with ESGs. Further research on ESGs from psychological interventions could increase understanding of individual differences in treatment effects.

Acknowledgments

Appendix A

See Table A1.

Table A1
Descriptive values for raw data at pretreatment, after two sessions, posttreatment and for total change during the intervention for the ESG group and N-ESG group with post hoc one-way ANOVA F-values, significance and effect size (Hedges' g) and corrected effect size (d_{corr}).

Measure Time	ESG n = 13		N-ESG n = 42		$F_{1,53}$	p	Hedges' g / d_{corr}[b]
	M (SD)	95% CI	M (SD)	95% CI			
BDI-II							
Pre	23.54 (5.14)	[20.43, 26.65]	23.30 (7.30)	[21.06, 25.55]	0.01	.914	.03
After 2	10.23 (3.35)	[8.21, 12.25]	20.16 (7.82)	[17.76, 22.57]	43.23[c]	< .001	− 1.38/− 1.44
Post	5.08 (3.88)	[2.73, 7.42]	11.72 (8.63)	[9.07, 14.38]	15.27[c]	< .001	− .84/− .89
Change	18.46 (5.85)	[14.92, 22.00]	11.58 (8.00)	[9.12, 14.04]	8.23	.006	.90
AAQ-2							
Pre	38.54 (12.45)	[31.02, 46.06]	38.30 (9.68)	[35.32, 41.28]	0.01	.943	.02
After 2	43.69 (9.12)	[38.18, 49.21]	39.00 (9.46)	[36.09, 41.91]	2.49	.120	.49/.48
Post	53.62 (8.73)	[48.34, 58.89]	45.19 (12.33)	[41.35, 49.03]	5.22[a]	.026	.72/.70
Change	− 15.08 (14.40)	[− 23.78, − 6.37]	− 6.88 (10.89)	[− 10.27, − 3.49]	4.81[a]	.033	− .69
ATQ-B							
Pre	65.62 (20.68)	[53.12, 78.11]	74.28 (26.42)	[66.15, 82.41]	1.18	.283	− .34
After 2	49.69 (14.16)	[41.14, 58.25]	67.95 (22.72)	[60.96, 74.95]	12.16[c]	.001	− .85/− .52
Post	59.69 (40.87)	[34.99, 84.39]	56.58 (26.74)	[48.35, 64.81]	0.10	.748	.10/.45
Change	5.92 (38.48)	[− 17.33, 29.18]	17.70 (22.93)	[10.64, 24.76]	1.88	.177	− .43
ASHS							
Pre	22.31 (8.35)	[17.26, 27.35]	23.70 (7.98)	[21.24, 26.15]	0.30	.588	− .17
After 2	34.00 (9.34)	[28.36, 39.64]	28.42 (8.69)	[25.75, 31.09]	3.98	.051	.62/.80
Post	37.46 (5.78)	[33.97, 40.96]	34.05 (9.81)	[31.03, 37.06]	2.43[c]	.129	.37/.55
Change	− 15.15 (8.63)	[− 20.37, − 9.94]	− 10.35 (8.92)	[− 13.09, − 7.60]	2.94	.092	− .53

Note: BDI-II = Beck Depression Inventory – II; AAQ-2 = Acceptance and Action Questionnaire – 2; ATQ-B = Automatic Thoughts Questionnaire – Believability; ASHS = Adult State Hope Scale. Negative values represent an increase in total score. [a] = Due to a missing post-treatment AAQ-2 measurement n = 55, df = 1,53. [b] = Corrected effect size was calculated as suggested by Klauer (2001); different group sizes and pretreatment differences were controlled for. [c] = Welch correction was used for the F-values for variables that did not meet the assumption of equality of variances.

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II

LONG-TERM STABILITY OF EARLY SUDDEN GAINS IN AN ACCEPTANCE AND VALUES-BASED INTERVENTION

by

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Long-term stability of early sudden gains in an acceptance and values-based intervention

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A B S T R A C T

Though previous research has extensively reported that sudden gains are associated with superior treatment results, research on the long-term effects and stability of sudden gains is not as consistent. The current study explored the long-term stability of *early* sudden gains (ESGs) observed in a brief acceptance and values-based intervention for depression provided by novice therapists. The participants were 56 volunteers diagnosed with major depressive disorder. Among the participants, 23% experienced ESGs, i.e. they reached the status of improved or recovered in the Reliable Change Index (RCI; Jacobson & Truax, 1991) classification after only two sessions. The current study examined the level of depressive symptoms (BDI-II), psychological flexibility (AAQ-II), believability of depressive thoughts (ATQ-B), and hopefulness (ASHS) 6 and 12 months after the intervention. Of the original participants, 77% (n = 43) took part in the 12-month follow-up. The results showed that positive changes achieved during the two first sessions in the ESG group were maintained up to 12 months after the intervention. The ESG group remained improved or recovered in the RCI classification through the 12-month follow-up period. However, at the 12-month follow-up, there were only small differences between the ESG and the non-ESG groups. The results suggest that participants achieving ESGs show stable improvements lasting up to 12 months after the treatment.

1. Introduction

In the treatment of depression and various anxiety disorders, sudden gains—i.e. large, stable, and sudden changes in symptom severity—have been associated with superior treatment outcomes at posttreatment (e.g., Hedman et al., 2014; Keller, Feeny, & Zoellner, 2014; Norton, Klenck, & Barrera, 2010). A meta-analysis of 16 studies on sudden gains showed the effect size that sudden gains have on treatment outcomes is particularly large (Hedges' g = 0.75) when cognitive behavioral treatments are employed (Aderka, Nickerson, Bøe, & Hofmann, 2012). As the typical magnitude of sudden gains is relatively large—around 10–13 points on the Beck Depression Inventory (BDI; Beck & Steer, 1987; e.g., Tang, DeRubeis, Hollon, Amsterdam, & Shelton, 2007)—sudden gains appear to have high clinical relevance during the treatment.

Overall, sudden gains occurring at various stages of treatment are an interesting subtype of improvement not only due to the superior treatment results that they are associated with but also due to the high frequency at which they occur. Studies have typically reported that approximately 30–40% of participants experience at least one sudden

gain during the treatment (e.g., Hunnicutt-Ferguson, Hoxha, & Gollan, 2012; Tang et al., 2007). These results suggest that understanding sudden gains may help clinicians to identify and take advantage of this dramatic and frequent phenomenon.

One of the features of sudden gains that still needs to be clarified is how far reaching the effects of sudden gains are on treatment results. Whereas several studies have reported the effect of sudden gains immediately after treatment, reports of long-term treatment results are rarer. Some encouraging findings can be found, however. In the treatment of depression, sudden gains have been associated with lower rates of relapse and symptom recurrence during a two-year follow-up phase (Tang et al., 2007). In the treatment of anxiety disorders, it has been reported that sudden gains are associated with superior treatment results up to 12-month follow-up (Bohn, Aderka, Schreiber, Stangier, & Hofmann, 2013; Hedman et al., 2014). Similarly, Aderka, Appelbaum-Namdar, Shafran, and Gilboa-Schechtman (2011) found that children who had sudden gains while being treated for posttraumatic stress disorder had superior treatment outcomes at posttreatment, and they maintained the advantage at 12-month follow-up. In line with these results, a meta-analysis showed that sudden gains have a moderate

effect at follow-up compared to those not reporting sudden gains during the treatment (n = 8 studies, Hedges' g = 0.56, pooled follow-up durations, mean [M] = 4.44 months; Aderka et al., 2012). Also, a study by Lemmens, DeRubeis, Arntz, Peeters, and Huibers (2016) suggested that sudden gains have prognostic value up to five months after treatment but not after 12 months. More studies are needed to draw conclusions on how stable the changes associated with sudden gains are and how far reaching the advantage is when compared to those not experiencing sudden gains.

Sudden gains can occur at any point during the treatment, but some studies have reported that their frequency is higher during the first few sessions (e.g., Hunnicutt-Ferguson et al., 2012; Masterson et al., 2014). For example, Dour, Chorpita, Lee, and Weisz (2013) observed that sudden gains were more likely to occur between the second and third sessions than at any other time, and most of the observed sudden gains occurred before session six. Similarly, Hunnicutt-Ferguson et al. (2012) found that the frequency of sudden gains was highest for the first session, and, again, most sudden gains occurred before session six.

The available studies that focus on *early* sudden gains (ESG) have reported somewhat mixed results on the effect on the treatment outcome. ESG is a similar concept to that of *rapid response,* that refers to clinically significant changes after the first four weeks of the treatment. However, ESG refers to large and clinically significant changes during these first four weeks of treatment. Whereas some have found that ESGs predict overall treatment outcome (e.g., Hunnicutt-Ferguson et al., 2012; Kelly, Roberts, & Ciesla, 2005), there are also studies that have found that ESGs do not predict better outcomes (Dour et al., 2013). In addition, Clerkin, Teachman, and Smith-Janik (2008) reported that sudden gains occurring after session one do not predict greater improvements, but sudden gains occurring after session two do predict greater improvements. In accordance with this, we have previously reported that sudden gains occurring before the third session predict a better overall treatment response in the treatment of depression as measured at post treatment (Keinonen, Kyllönen, Astikainen, & Lappalainen, 2018, Kyllönen et al., 2018). Finally, it has been suggested that ESGs (i.e. sudden gains occurring during the first third of the treatment) may be more significant for treatment results than sudden gains occurring later in the treatment (Kelly et al., 2005). Based on the available studies, further exploration of the clinical and theoretical importance of ESGs is needed.

In addition to the need for more studies with longer follow-ups, we also need more studies that investigate sudden gains in treatments provided by inexperienced therapists. If sudden gains consistently occur in treatments provided by novice therapists, this may suggest sudden gains are not related to extensive training or high competence. Indeed, Greenfield, Gunthert, and Haaga (2011) have reported that novice therapists working in a psychotherapy training clinic produced sudden gains at a comparable frequency (23% of participants experienced sudden gains) to that reported for experienced therapists. To our knowledge, there are no studies reporting the long-term stability of sudden gains in the treatments administrated by novice therapists.

The current study aims to extend our understanding of sudden gains by exploring the effects of ESGs on long-term treatment results in an acceptance and values-based treatment (ACT) provided by novice therapists. We have previously reported that ESG was associated with superior treatment results at posttreatment in a six-session intervention delivered by student therapists without any prior clinical experience (Keinonen et al., 2018). All participants were diagnosed as having a major depressive disorder, and ESG was defined as being classified as improved or recovered according to the RCI classification (Jacobson & Truax, 1991) using Beck Depression Inventory-II scores after only two sessions (BDI-II; Beck, Steer, & Brown, 2004). We found that 23% of participants reached the status of early sudden gainers using the RCI method to identify ESG (Keinonen et al., 2018). Superior treatment outcomes were detected on both the level of depressive symptomatology and on the level of psychological flexibility, which was used as a secondary measure for therapeutic change (Keinonen et al., 2018).

In the current study, we investigated whether significant changes in depression symptoms occurring at early stages of treatment (i.e. during the first two weeks) predict the long-term treatment outcome when participants diagnosed with a major depressive disorder were offered a six-session ACT intervention delivered by inexperienced therapists. We wanted to explore: (1) Are ESGs that are observed in depression symptoms within the two first sessions maintained after the intervention? Do those who show ESGs in depression show superior long-term treatment outcomes (at 6 and 12 months) on the levels of depressive symptomatology, psychological flexibility, hopefulness, and believability of depressive thoughts? (2) How strong is the association between ESGs and long-term treatment results (at 6 and 12 months)? (3) Are ESGs associated with the RCI classification status (recovered, improved, unchanged, or declined), the use of medication for depression, or psychological treatment for depression at the 6- and/or 12-month follow-up phases?
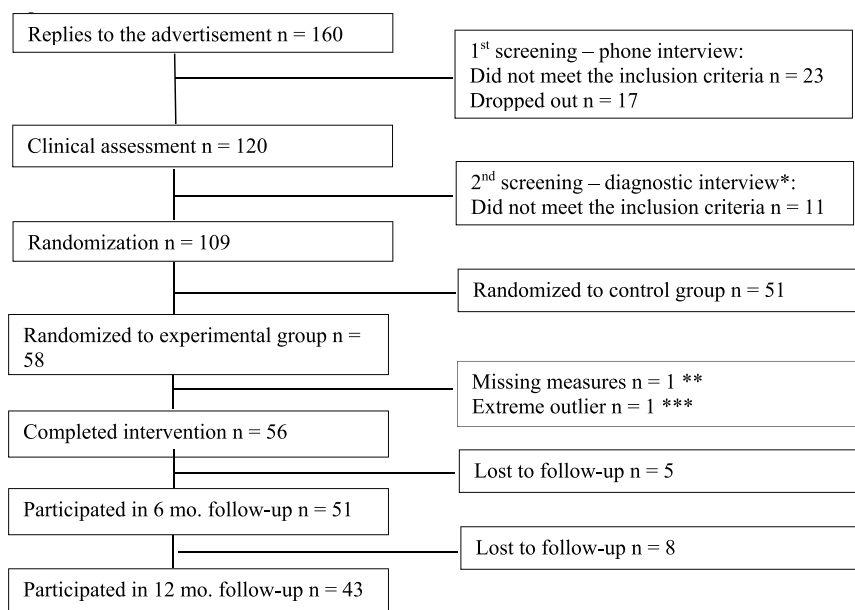
2. Method

2.1. Participants

The current study is part of a larger study examining the efficacy of a six-session ACT intervention for major depressive disorder delivered by novice therapists (Kyllönen et al., 2018). The participants were volunteers with a diagnosis of major depressive disorder that was based on the criteria in the *International Classification of Diseases* (World Health Organization, 1992) and was obtained in an interview with a medical doctor as a part of the recruitment for the study. Exclusion criteria for the study were: (1) psychiatric diagnosis other than depression, (2) neurological diagnosis, (3) misuse of alcohol or drugs, and (4) on-going psychological treatment.

A total of 56 participants were included in the current study with 43 (77%) of the participants completing all measures up to the 12-month follow-up. The flow of participants is shown in Fig. 1. Forty-three (77%) of the participants were women, half (50%) were employed, and more than half (54%) were married or cohabiting. The mean age of the participants was 49.2 years (standard deviation [SD] = 11.74, range = 19–65). The majority of participants were diagnosed with mild depression (61%; single episode, mild n = 18; recurrent, mild n = 16). Dysthymic disorder was diagnosed for 7% of the participants (n = 4), and moderate depression was diagnosed for 32% (single episode n = 9; recurrent n = 9). For more detailed information, see Table 1. Table 1 also describes the participants classification based on the BDI-II.

The follow-up phases were 6 and 12 months after the six-session ACT intervention and included an interview and the completion of questionnaires. A 15–20 min interview was conducted face-to-face at the 6-month follow-up and by the phone at the 12-month follow-up. The participants were contacted by phone to invite them to participate in the follow-up phases.

2.2. Intervention

The therapists were master's students of psychology (n = 37) with no prior clinical experience (mean age 24 years, SD = 3.8, range 20–39, 92% female). Training consisted of four full-day lectures (32 h) on constructing a case formulation model and learning the principles and methods of ACT. The six-session intervention was a semi-structured ACT-based intervention delivered by student therapists with no prior clinical experience. The first two sessions were highly structured. During the first session, the therapist interviewed the client to get an overview of the client's situation and constructed an individual problem list. At the end of the session, the therapist explained and presented a home assignment regarding values. The second session included the presentation of a case formulation model (Haynes & O'Brien, 2000) based on the interview and a discussion of the model. After discussing

| Replies to the advertisement n = 160 | → | 1st screening – phone interview:
Did not meet the inclusion criteria n = 23
Dropped out n = 17 |

| Clinical assessment n = 120 | → | 2nd screening – diagnostic interview*:
Did not meet the inclusion criteria n = 11 |

| Randomization n = 109 |

| Randomized to experimental group n = 58 | → | Randomized to control group n = 51 |

| Completed intervention n = 56 | → | Missing measures n = 1 **
Extreme outlier n = 1 *** |

| Participated in 6 mo. follow-up n = 51 | → | Lost to follow-up n = 5 |

| Participated in 12 mo. follow-up n = 43 | → | Lost to follow-up n = 8 |

*Note: * = Screening interview carried out by a physician. ** = Baseline BDI-II missing. *** = BDI-II change across two sessions from 40 to 2 points.*

Fig. 1. Flow of participants. Note: * = Screening interview carried out by a physician. ** = Baseline BDI-II missing. *** = BDI-II change across two sessions from 40 to 2 points.

Table 1
Descriptive data for background and baseline variables.

	N	%
Sex	13	23
Male	43	77
Female		
Age group	5	9
18-29	18	32
30-49	33	59
50-65		
Marital status	10	18
Single	30	54
Married/Cohabiting	15	27
Divorced/Widowed	1	2
N/A		
Education	2	4
Basic education	38	68
Upper secondary education	16	29
Higher education		
Antidepressive medication	20	36
Yes	36	64
No		
Previous psychotherapy	8	14
Yes	48	86
No		
BDI-II classification	19	34
Mild	20	36
Moderate	17	30
Severe		

the model, the therapist reviewed the homework assignment regarding values, and the case formulation model was re-evaluated based on the value discussion. The client was presented with an individually chosen metaphor, the observer exercise (Hayes, Strosahl, & Wilson, 1999), and

a mindfulness exercise (i.e., "Follow your breath"; Hayes et al., 1999). As a homework assignment, the client was instructed to take value-based actions and practice mindfulness for 5–10 min per day. The last four sessions could me more individualized, but the student therapists were instructed to use exercises and metaphors in each session with 12 exercises being obligatory, though the timing was freely chosen. The student therapists received weekly group supervision (2 h, total of 10 h) with an expert in ACT. The supervisor helped the students to plan the intervention based on the case conceptualization. In addition to the group supervision, the student therapists participated in weekly peer-supervision groups. A more detailed description of the intervention can be seen in Keinonen et al. (2018) and Kyllönen et al. (2018).

2.3. Treatment integrity

The student therapists' adherence and competence were evaluated using the ACT adherence scale (Plumb & Vilardaga, 2010). The ACT Adherence scale evaluates competence and adherence on a scale of 1–5, where a rating of 1 for competence suggests "The therapist did not competently address any of the client's needs, did not attend to the client's responses to treatment targets, and did not apply any of the processes outlined in the manual." A rating of 5 for competence suggests "The therapist consistently addressed the client's needs, consistently attended to the client's response to treatment targets, and applied the processes outlined in the manual very clearly and in-depth". For adherence, a rating of 1 suggests "The session was entirely off topic or focused entirely on general assessment without addressing any of the other processes outlined in the therapist manual." A rating of 5 for adherence suggests "The therapist spent most of the session doing a general assessment of functioning and applied more than one of the therapy processes in an extremely in-depth manner". The process-

specific subscales are also rated on a scale of 1–5 based on frequency and depth, where a rating of 1 indicates that "The variable never explicitly occurred." and a rating of 5 indicates that "The variable occurred with great frequency and was addressed by the therapist in a very in-depth manner."

To evaluate treatment integrity, two randomly selected sessions were coded from each therapist (n = 37) providing a total of 74 coded sessions. A psychologist with clinical experience of using ACT methods coded the material. Three other coders coded a sample to evaluate interrater reliability; two very experienced ACT-psychotherapists were assigned to code 7 sessions each, and a psychology student was assigned to code 22 sessions. The intraclass correlation coefficient (ICC) for absolute agreement between each coder pair reflected good interrater reliability: the average ICC was 0.80–0.84 for the three coder pairs over all variables. The student therapists delivered the intervention with satisfying levels of adherence and competence (on a scale of 1–5, M = 3.31, SD = 0.87 and M = 3.23, SD = 0.74, respectively), though not on a professional level. On the ACT Adherence Scale, a rating of 3 for competence suggests "The therapist sometimes addressed the client's needs, sometimes attended to the client's response to treatment targets, and applied the processes outlined in the manual only superficially" and a rating of 3 for adherence suggests "The therapist spent at least half of the session attending to at least one of the processes outlined at any point in the therapy manual, also attending to general assessment, in a somewhat in-depth manner." The descriptive statistics for all the ACT process variables that were included in coding are reported in Table 2.

2.4. Measures

Four measures were used in the current analysis to evaluate the level of symptoms and psychological processes at four timepoints: (1) at pretreatment, (2) after two sessions (2–4 weeks after the pre-measurement), (3) at six months after the intervention, and (4) at 12 months after the intervention.

Beck Depression Inventory II (BDI-II). Changes in depressive symptomatology were evaluated with the BDI-II (Beck et al., 2004). The BDI-II is a 21-item questionnaire. Each item asks the client to choose one of four statements that correspond to increasing severity of symptoms of depression (e.g., 0 = I do not feel sad, 1 = I feel sad, 2 = I am sad all the time and I can't snap out of it, and 3 = I am so sad or unhappy that I can't stand it). The range of the measure is 0–63 with higher scores suggesting more severe depressive symptomatology. The internal consistency was good (21 items; α = 0.81).

Acceptance and Action Questionnaire (AAQ-2). The level of psychological flexibility was evaluated using the Acceptance and Action Questionnaire (AAQ-2; Bond et al., 2011). The AAQ-2 is a self-report measure consisting of 10 statements (e.g., I worry about not being able to control my feelings.) The statements are rated for accuracy on a seven-point scale where 1 = never true and 7 = always true. The range is 10–70. High scores indicate high psychological flexibility in our data. The internal consistency was acceptable (10 items; α = 0.66).

Adult State Hope Scale (ASHS). Hopefulness was evaluated with

the Adult State Hope Scale (ASHS; Snyder, 2000), which consists of statements about goal-directed energy and planning to accomplish one's goals (e.g., I can think of many ways to accomplish my goals.) There are six statements in the measure. The statements are rated for how true they feel at the moment. The scale for rating the items is 1–8 (1 = definitely false, 8 = definitely true) with the range of the total score being 6–48. High scores represent high hopefulness. The internal consistency was good (6 items; α = 0.79).

The Automatic Thoughts Questionnaire's believability-dimension (ATQ-B). The Automatic Thoughts Questionnaire's (ATQ; Hollon & Kendall, 1980) believability-dimension (ATQ-B) was used to evaluate the believability of depressive thoughts. The ATQ questionnaire is comprised of a list of thoughts associated with depression (e.g., I'm worthless) that rated for how frequently the thought can be recognized and for how believable it feels. The ratings for both dimensions are on a five-point scale (1 = not at all, 5 = all the time and 1 = not at all, 5 = totally, respectively). The range of each dimension of the questionnaire is 30–150 with higher scores indicating more frequent or more believable thoughts. The internal consistency for believability was excellent (ATQ-B; 30 items; α = 0.97).

Statistical analysis. Early sudden gainers were identified using the RCI classification (Jacobson & Truax, 1991) and was based on changes after the first two sessions (BDI-II measured approximately three weeks after the pre-measurement, M = 23.50, SD = 7.79 days). The rationale for using the RCI classification was based on the two following reasons: 1) we wanted to take into account the measurement error, and 2) to address the question of clinical significance, i.e. changes required to reflect meaningful response to the treatment (for a more detailed description, see Keinonen et al., 2018). The first two weeks represent the first third of the six-week intervention and sudden gains during this time are thus defined early sudden gains as suggested by Kelly et al. (2005). We used ESG and non-ESG (N-ESG) groupings to explore the treatment results up to the 12-month follow-up. To assess the effect size of these differences, we used the corrected Cohen's d value, as suggested by Morris (2008), which allowed differences in group sizes and pretreatment scores between the groups to be accounted for. To analyze the stability of changes in the ESG and N-ESG groups, we used a series of ANOVA analysis to investigate differences in the level of depression, psychological flexibility, hopefulness and believability of depressive thoughts at pre-treatment, at the six-month follow-up and at the 12-month follow-up. Eleven outliers were detected in the data. The outliers were manually transferred on the distribution of each variable. The outliers were assigned to the highest/lowest value in the data for the current variable. The ANOVA analysis were then carried out using both the original data with outliers and without outliers to see if they had an effect on the interpretation of the ANOVA analysis. The outliers did not affect interpretation and statistics are reported for the raw data. The normality assumption was met based on a visual inspection of the Normal Q-Q plots except for the ATQ-B, for which normality was violated at the follow-up phases. The homogeneity of variances assumption was also violated for individual comparisons (for BDI-II, AAQ-2, and ASHS at 6-month follow-up and for ATQ-B at 12-month follow-up). The Welch ANOVA was performed for these comparisons to account for the violation of homogeneity of variances. The between-group differences were also investigated using between-group effect sizes, where an effect size of d > 0.20 was considered small, d > 0.50 was considered moderate, and d > 0.80 was considered large (Cohen, 1988). The correlation between ESG and follow-up treatment results are reported as indicators of the strength of association between the variables. Pearson's chi-squared test was used to evaluate the clinical significance and prognostic value based on RCI classification, use of medication for depression, and psychological treatment after the intervention for ESG and N-ESG at the two follow-up points (6 and 12 month). The analyses were computed using IBM SPSS Statistics 24.

Table 2
Descriptive statistics for competence, adherence, and use of ACT processes during the intervention for all 37 student therapists.

	Range	Mean	SD
Overall Competence	2.00–5.00	3.31	.87
Overall Adherence	2.00–5.00	3.23	.74
Deliteralization/Defusion	1.50–4.50	2.88	.78
Willingness/Acceptance	2.00–5.00	3.19	.78
Creative Hopelessness/Workability/Control is Problem	1.00–3.50	1.53	.60
Values and Goals	1.50–4.00	2.50	.67
Committed Action	1.00–4.50	2.49	.91
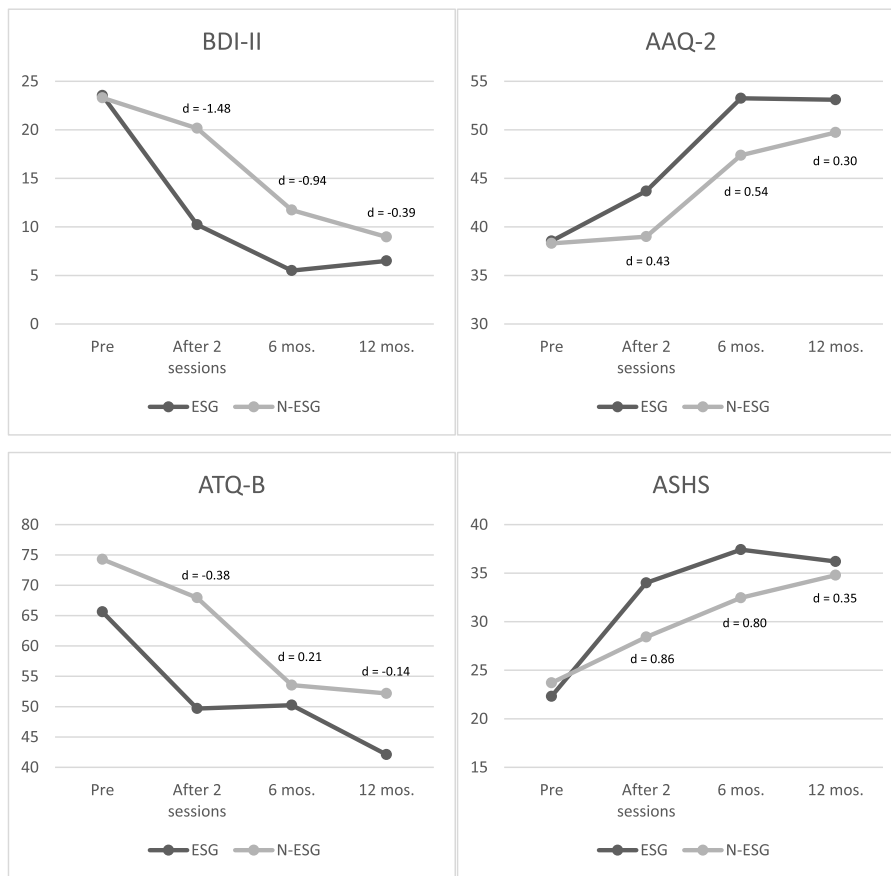
Note: Corrected d-values are presented, where pre-differences and different sample sizes are controlled for as suggested by Morris (2008).

Fig. 2. Level of depression (BDI-II), psychological flexibility (AAQ-2), believability of depressive thoughts (ATQ-B), and hopefulness (ASHS) at pretreatment, after two sessions, 6-month follow-up, and 12-month follow-up with between-group effect sizes. Note: Corrected d-values are presented, where pre-differences and different sample sizes are controlled for as suggested by Morris (2008).

3. Results

The descriptive statistics for the pretreatment and follow-up measurements are reported in Fig. 2, where the participants were grouped according to the RCI classification based on changes observed after two sessions (for descriptive values, see also Table 3.). The classification identified 13 participants (23%) as the ESG group, whereas those participants who had not improved after two sessions were referred to as the N-ESG group (n = 43, 77%). The mean change during the two first sessions (during a period of 2–4 weeks after the pre-measurement) in BDI-II within the ESG group was 13 scores, and in the N-ESG group, it was 3 scores (Keinonen et al., 2018). There were no significant pretreatment differences between the groups on any of the measures used.

First, given the large difference in the change of depression symptoms during the two first sessions between the ESG and N-ESG groups, we were interested in how these groups changed over time after the brief intervention ended. A series of ANOVA analyses with the ESG group as the between-groups variable and level of depression, psychological flexibility, hopefulness, and believability of depressive thoughts as the dependent variables (measured at pretreatment, 6-month follow-up and 12-month follow-up). The ANOVA analyses showed that there

were no pretreatment differences between the groups, but the ESG group reported significantly lower depression ($F_{1,40}$ = 10.79, p = 0.002), higher psychological flexibility ($F_{1,37}$ = 4.70, p = 0.037) and higher hopefulness ($F_{1,44}$ = 5.72, p = 0.021) at the six-month follow-up (see Table 3). In accordance with this, the between-group effect size indicated that there was a large difference (d ≥ 0.80) in depression symptoms, a large difference (d ≥ 0.80) in hopefulness (ASHS), a moderate (d ≥ 0.50) difference in psychological flexibility (AAQ-2), and a small difference in believability of depressive thoughts (ATQ-B) in favor of the ESG group at 6-month follow-up.

At the 12-month follow-up, there were no significant differences between the groups on any variable. However, when investigating the effect sizes at 12-month follow-up, there were small between-group differences (d ≥ 0.20 - < 0.50) in depression symptoms, psychological flexibility, and hopefulness (ASHS) in favor of the ESG group. The difference in believability of depressive thoughts (ATQ-B) was very small.

Overall, as we can see from Fig. 2, the changes in the ESG group were maintained during the 12-month follow-up period. The 95% confidence intervals for change scores from pretreatment to 12-month follow-up were as follows: for BDI-II, ESG (14.21, 22.40) and N-ESG

Table 3

Descriptive statistics and one-way analysis of variance for between group differences in depression, psychological flexibility, hopefulness and believability of depressive thoughts at pre-treatment, 6-month follow-up and 12-month follow-up.

Measure	Time	M (SD)		F	df	p
		ESG	N-ESG			
Depression	Pre-treatment	23.54 (5.14)	23.30 (7.30)	0.01	1,54	.914
BDI-II	After 2 sessions[a]	10.23 (3.35)	20.16 (7.82)	43.23	1,47	< .001
	6-months[a]	5.50 (4.23)	11.74 (9.03)	10.79	1,40	.002
	12-months	6.50 (5.86)	8.97 (7.71)	0.87	1,41	.357
Psychological flexibility	Pre-treatment	38.54 (12.45)	38.30 (9.68)	0.01	1,54	.943
AAQ-2	After 2 sessions	43.69 (9.12)	39.00 (9.46)	2.49	1,54	.120
	6-months[a]	53.25 (6.38)	47.38 (12.37)	4.70	1,37	.037
	12-months	53.10 (6.44)	49.73 (11.05)	0.84	1,41	.366
Hopefulness	Pre-treatment	22.31 (8.35)	23.70 (7.98)	0.30	1,54	.588
ASHS	After 2 sessions	34.00 (9.34)	28.42 (8.69)	3.98	1,54	.051
	6-months[a]	37.42 (4.46)	32.36 (10.48)	5.72	1,44	.021
	12-months	36.20 (9.92)	34.79 (10.42)	0.14	1,41	.706
Believability of depressive thoughts	Pre-treatment	65.62 (20.68)	74.28 (26.42)	1.18	1,54	.283
ATQ-B	After 2 sessions[a]	49.69 (14.16)	67.95 (22.72)	12.16	1,32	.001
	6-months	50.25 (32.26)	53.54 (24.58)	0.14	1,49	.709
	12-months[a]	42.10 (9.55)	54.18 (25.36)	3.68	1,19	.070

Note.

[a] = Welch ANOVA statistic was reported to account for violation of homogeneity of variance.

(11.20, 17.11); for AAQ-2, ESG (−7.15, −24.85) and N-ESG (−6.34, −15.17); for ASHS, ESG (−4.85, −25.95) and N-ESG (−8.01, −14.84); and for ATQ-B, ESG (14.48, 43.32) and N-ESG (11.72, 30.34).

Second, we were interested in whether the change in depression symptoms during the first two sessions was associated with the observed changes from the pre-treatment to the 12-month follow-up. When analyzing the total sample, there were significant correlations between the magnitude of ESG (i.e. early changes in depression) and the long-term treatment outcome for depression (12 months r = 0.36, $p \leq .05$, n = 43), psychological flexibility (12 months r = −0.33, $p \leq 0.05$, n = 43), and hopefulness (12 months r = −0.29, $p \leq 0.05$, n = 43). Change in believability of depressive thoughts up to 12-month follow-up was not significantly associated with early changes in depressive symptomatology.

Third, we were interested in the clinical significance of ESGs. The RCI classification for the ESG and N-ESG groups 6 and 12 months after the treatment support the results above. The number of participants classified as recovered in the ESG group was very high at both 6- and 12-months follow-up (Table 4) supporting the stability of early changes. However, no significant differences between the groups were obtained. Also, there was no difference between the groups in the use of medication for depression during the follow-up. Very few of the participants in the ESG group received treatment during the follow-up (n = 1/10 at 12-month follow-up).

Table 4. RCI classification frequencies, use of medication for depression, and psychological treatment after the intervention and Pearson's chi-squared test for the early sudden gain (ESG) group and the non-early sudden gain (N-ESG) group 6 and 12 months after treatment.

4. Discussion

The aim of the current study was to explore the stability of ESGs in a six-session ACT intervention delivered by novice therapists. We have previously reported that ESG was associated with a superior treatment outcome at posttreatment (Keinonen et al., 2018). In the current study, we examined the long-term effect of ESG observed within two sessions on changes in symptom and therapeutic process measures from pre-treatment to 6- and 12-month follow-up phases.

The results suggested that ESG in depression symptoms resulted in a stable change that persisted through the follow-up phases up to 12 months. Thus, roughly 20% of clients diagnosed as having a major depressive disorder showed clinically significant changes in depression

symptoms within two sessions, and these changes were maintained 12 months after the intervention. The results were supported by the RCI classification at 6 and 12 months after treatment: a very high number of the ESG group members who participated in the follow-up phase were still improved (recovered or improved in the RCI classification) suggesting that ESG is a very stable improvement. Further, larger changes in depression symptoms during the two first sessions predicted larger changes in depression symptoms, psychological flexibility, and hopefulness at the 12-month follow-up. However, those participants not showing ESG achieved an equal positive change at 12-month follow-up after the intervention.

The results are in line with those reported by Lemmens et al. (2016) in that sudden changes during the treatment do produce better follow-up results up to a certain point (i.e. five months), but the group differences eventually fade. Similarly, in the current study, the ESG group showed a better outcome at the 6-month follow-up, particularly in depression symptom. However, at the 12-month follow-up, the differences between the ESG and N-ESG groups were small. Tang et al. (2007) also reported that sudden gains were associated with lower relapse and symptom recurrence rates. Although the differences between the ESG and N-ESG groups were non-significant in the RCI classification at follow-up in the current study, only one of the 13 participants who had experienced ESGs showed symptom recurrence. However, some studies have reported sudden gains resulting in significant differences in the treatment outcome even at 12-month follow-up phases (e.g., Bohn et al., 2013; Hedman et al., 2014), whereas the current results failed to show a significant difference after 12 months.

Although fewer studies have been published focusing on the long-term effect of ESG than those focusing on the immediate effect, these findings support the view that changes in symptomatology very early in the treatment predict stable and significant improvements. In addition, ESGs appear to indicate a very low rate of symptom recurrence even when the treatment is delivered by novice therapists. It may be important to include regular assessment in the early phase of the treatment to capture and to take advantage of ESGs.

It has been reported elsewhere, that around 60–70% of those participants who took part in the current study benefitted of the six sessions ACT intervention (Kyllönen et al., 2018). These results suggest that almost half of those participants who benefit from a six-session ACT intervention delivered by novice therapists, benefit after only two sessions. However, further research is needed to examine whether a very short treatment could be sufficient on its own for a subgroup of

Table 4

RCI classification frequencies, use of medication for depression, and psychological treatment after the intervention and Pearson's chi-squared test for the early sudden gain (ESG) group and the non-early sudden gain (N-ESG) group after two sessions and 6 and 12 months after treatment.

		ESG n = 13	N-ESG n = 43	χ^2	*p*
	RCI-classification				
After two sessions n = 56	Recovered	12 (85%)	–	56.00	< .001
	Improved	2 (15%)	–		
	Unchanged	–	42 (98%)		
	Deteriorated	–	1 (2%)		
	Medication				
	Yes	3 (23%)	17 (40%)	1.18	.228
	No	10 (77%)	26 (60%)		
		ESG n = 12	N-ESG n = 39	χ^2	*p*
6 months n = 51	**RCI-classification**				
	Recovered	12 (100%)	23 (59%)	7.17	.067
	Improved	–	8 (21%)		
	Unchanged	–	7 (18%)		
	Deteriorated	–	1 (3%)		
	Medication				
	Yes	2 (17%)	14 (36%)	1.58	.209
	No	10 (83%)	25 (64%)		
	Psychological treatment				
	Yes	1 (8%)	6 (15%)	0.39	.535
	No	11 (92%)	33 (85%)		
		ESG n = 10	N-ESG n = 33	χ^2	*p*
12 months n = 43	**RCI-classification**				
	Recovered	9 (90%)	24 (73%)	1.84	.398
	Improved	1 (10%)	4 (12%)		
	Unchanged	–	5 (15%)		
	Medication				
	Yes	4 (40%)	13 (39%)	0.00	.973
	No	6 (60%)	20 (61%)		
	Psychological treatment				
	Yes	1 (10%)	7 (21%)	0.64	.425
	No	9 (90%)	26 (79%)		

Note:Cutoff C = 14.49. Cutoff C was calculated using the pretreatment mean and standard deviation for all data (n = 56).

participants with depression symptoms or if it is important to continue the treatment after ESG is observed to ensure the stability of the changes.

Further research is also needed to understand if it could be possible to promote sudden gains or early sudden gains. Previous research has not been able to consistently associate sudden gains with a certain method or session content. Interestingly, high therapeutic competence and long clinical experience do not appear to be necessary for ESGs to occur, either. In fact, the limited training time and the absence of clinical experience among the novice therapists who provided the treatment in the current study did not seem to significantly reduce the frequency of sudden gains compared to the frequency reported in studies that did use more experienced therapists. Given that ESGs produce long-lasting effects, it would be highly beneficial to be able to intentionally facilitate sudden gains. Furthermore, knowledge of the processes associated with ESGs could be utilized to create more effective treatment procedures if further research were able to identify factors responsible for the early sudden gains.

The occurrence of sudden gains in various settings suggests that sudden gains are not specific to certain populations, treatments, or settings and nor are they consistently related to any of the demographic or psychological measures used across sudden gain studies. In fact, there is no strong evidence to support any of the hypotheses presented to explain sudden gains. Individual studies have associated sudden gains with certain method-related factors (e.g., cognitive changes; Tang & DeRubeis, 1999) or demographic factors (e.g., participant age; Kelly et al., 2005), but none of these results have been replicated or widely supported by other studies. At this moment, sudden gains remain unexplained, and some studies have even suggested that sudden gains could be related to some of the common features of psychological treatments (Kelly et al., 2005). Therefore, future research on sudden gains and possible factors that could explain sudden gains could have

an interesting role in furthering the understanding of crucial processes in psychological interventions.

It is important to be aware of the following limitations when generalizing the results of the current study. First, the sample that was investigated was small, and 23% of participants were lost at the follow-up phases. The participants who did not find the intervention helpful may have declined participation in the follow-up more often than those who experienced the intervention as effective, creating the possibility of a biased sample. Second, the intervention was delivered by novice therapists with only four days of training. This may cause variation in the competence levels of the therapists causing more between-subject variation than might be expected in data with experienced therapists. Third, most of the participants were women, and all were volunteers who were motivated to take part in the intervention. This limits the sample's representativeness compared to clinical populations in general. Follow-up time was relatively short (12 months). Also, the intervention was continued after ESG was observed. Thus, more studies are needed investigating the maintenance of treatment effects after ESGs without any further treatment. This knowledge would help with the utilization of the prognostic value of ESGs, and it could also help with the development of effective brief intervention models. In addition, follow-up designs that control for possible treatment during the follow-up period are needed to draw further conclusions regarding the long-term effects of ESGs.

In conclusion, the current results support the hypothesis that ESGs in an ACT intervention yield stable improvements in depression symptoms and psychological flexibility, which can be identified up to 12 months after treatment. Though preliminary, the results suggest that novice therapists can produce ESGs with very little training among approximately 20–25% of the clients. The findings add to the body of research that suggests that changes early on in an intervention can be used as a prognostic tool on an individual level.

Acknowledgements

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III

COMPETENCE AND ADHERENCE IN AN ACCEPTANCE AND VALUES-BASED INTERVENTION: EFFECT ON TREATMENT OUTCOME AND EARLY CHANGES IN DEPRESSION

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