

The Impact and Evaluation of an ACT-based Aftercare Intervention in Addiction Care
– A Mixed-Method Pilot Study

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Abstract

Objective. This mixed-method pilot study aimed to evaluate the effect and acceptability of an Acceptance and Commitment Therapy (ACT) based aftercare focusing on participants with substance use disorder (SUD) after primary treatment. In addition, implementation barriers and facilitators based on therapists' aftercare experiences were identified. **Method.** 21 participants were recruited via convenience sampling as therapists examined their current caseload. Besides, therapists ($n=4$) providing the aftercare were recruited for the research. Quantitative data were gathered via an online questionnaire during pre-and post-intervention. Measures were self-reported substance use, refusal self-efficacy, wellbeing, psychological flexibility, and acceptability. Qualitative data were collected via semi-structured interviews and analysed via thematic analysis post-intervention. **Results.** Participants ($n=4$) maintained abstinence during treatment. Individual analysis of reliable change showed that refusal self-efficacy, wellbeing, and psychological flexibility maintained or improved during treatment. Acceptability of the aftercare was overall positive, with a satisfaction grade of 8.8 on a 1-10 scale. Implementation facilitators are adaptability of the intervention and the use of early-adopter therapists to create awareness of the intervention. Barriers were organisational communication and planning. **Conclusion.** The ACT-based aftercare shows promising potential to be an effective and acceptable approach in the context of SUD despite a high drop-out rate. The facilitators and barriers can be used to improve the implementation process. Based on this pilot study, a randomized-controlled trial (RCT) with a larger sample and follow-up data is recommended.

The Impact and Evaluation of an ACT-based Aftercare Intervention in Addiction Care – A Mixed-Method Pilot Study

Substance use disorders (SUDs) have seen a negative trend over the last ten years. Alarmingly, 36 million individuals worldwide suffered from SUDs in 2019 in contrast to the 27 million in 2010, stating an increase of 33% (United Nations Office on Drugs and Crime; UNODC, 2021). The Global Burden of Disease Mortality and Causes of Death Collaborators (GBD, 2016) also stated shocking statistics, namely an increase of 31.8% deaths due to substance abuse. Moreover, in 2016, 4.2% and 1.3% of all disability-adjusted life-years (DALYs) were respectively attributed to alcohol and substance abuse (GBD, 2018). Specifying to the Netherlands, roughly 65.000 individuals received treatment (Wisselink et al., 2016) and, in 2017, 1906 individuals died due to alcohol abuse and 171 due to substance abuse (Nationale Drugs Monitor, 2021).

The current treatment for SUDs consists of various psychosocial interventions. A cross-sectional analysis by Tran and colleagues (2019) showed that the current trend focuses on traditional intervention approaches based on behavioural therapy, cognitive behavioural therapy, and counselling. Jhanjee (2014), in a literature review, illustrated that overall, Cognitive Behavioural Therapy (CBT), Motivational Interviewing (MI), and Relapse Prevention (RP) are effective, evidence-based interventions substance abuse-wide. It must be noted that these interventions are often overlapping and combined (Kiluk & Carroll, 2013), indicating that many clinics use a combination of these three treatments. Besides CBT, MI, and RP, third-wave cognitive behavioural therapies, such as Acceptance and Commitment Therapy (ACT) and Mindfulness-based relapse prevention (MBRP), are emerging as treatments for SUDs (Lee et al., 2015).

Despite multiple effective treatments, relapse rates remain high in patients suffering from SUDs. In a review, Njoroge (2018) reported that up to 75% of the patients relapse after

treatment, measured between zero and six-month follow-up across substances in general. The percentages differ widely, however. To illustrate, Andersson and colleagues (2019) presented a relapse rate of 37% within a follow-up of three months amongst inpatients who received either 2-to 4 months of treatment or more than six months of treatment suffering from illicit SUD. Participants received individual, group and pharmacological treatment. However, lower relapse rates seem less frequent. In contrast, Kabisa and colleagues (2021) reported relapse rates of nearly 60% between two weeks and three months after treatment in an inpatient sample being treated at a psychotherapeutic hospital. Interestingly, none of these studies used an aftercare program, despite widespread evidence that aftercare has positive effects on the recurrence of SUDs (Blodgett et al., 2014).

Research shows the importance of aftercare, which presents limited but promising evidence. A systematic review by Lenaerts and colleagues (2014) noted that an active intervention (providing coping skills and/or increasing motivation), compared to aftercare as usual (e.g., supportive counselling), provided better results in patients suffering from alcohol use disorder. In addition, in a sample in which most participants used heroin as their primary substance, Vanderplasschen and colleagues (2010) reported that aftercare had a significant effect on short- and long-term abstinence after primary treatment (for example, inpatient treatment). Moreover, a recent review by McKay (2021) found a small effect favouring aftercare versus treatment as usual (TAU) control groups (e.g., intensive outpatient treatment or relapse prevention), concluding that aftercare with an active component is a relevant addition to make SUD treatment more effective. Ideally, aftercare should be provided after primary treatment and be combined with an active component to increase effectiveness. An area of interest for such aftercare treatments is third-wave behavioural therapies.

A novel approach for SUD aftercare is, as time progresses and new evidence of effectiveness arises, the third-wave behavioural therapy ACT (Hayes et al., 2006). The

effectiveness becomes increasingly evident (Stotts & Northrup, 2015). According to Lee and colleagues (2015), the difference between ACT and traditional behavioural therapies is the focus on mindfulness and acceptance to explore and cope with inner processes associated with drug-related behaviour. ACT involves six essential processes, namely acceptance, cognitive defusion, the self as context, and mindfulness as well as commitment to value-based behaviour (Hayes et al., 2006). These processes ultimately influence the construct ‘psychological flexibility’, which Li and colleagues (2019) described as the ability to cope with challenges to substance-related triggers without averting these challenges. As coping with these triggers remains after primary treatment, ACT, with the six processes, seems an effective aftercare intervention as it evidently increases psychological flexibility (Maia et al., 2021). However, to the researchers’ knowledge, there seems to be little research on ACT-based aftercare interventions for SUDs.

There is, however, research on aftercare interventions like ACT to indicate their effectiveness. To illustrate, Mindfulness-Based Relapse Prevention (MBRP) is such a derivative of ACT. MBRP combines mindfulness (i.e., awareness of the present moment) with techniques based on relapse prevention (Ramadas et al., 2021). MBRP showed promising effectiveness as aftercare (Bowen et al., 2014), specifically for patients who also suffer from depression or anxiety (Roos et al., 2020; Goldberg et al., 2018). A systematic review of thirteen studies noted the effectiveness of Mindfulness-Based Interventions (MBIs), such as MBRP, on reduced craving and frequency of use (Ramadas et al., 2021). Interestingly, in their systemic review, Sancho and colleagues (2018) reported that the positive effects of MBIs do not persist after primary treatment, indicating the need for aftercare. However, there seems to be mixed evidence for MBIs due to small sample sizes and a lack of controls (Schwebel et al., 2020). Evidently, more research is needed to provide more firm conclusions, despite the promising potential of MBI as aftercare in SUDs.

Besides research on effectiveness, it is essential that the intervention is accepted by its participants. Currently, there is evidence for the acceptability of MBIs, to a lesser degree on ACT, and, to the researchers' knowledge, two studies on the acceptability of ACT aftercare treatments for SUDs. Bautista and colleagues (2019) discussed the acceptability of MBIs in general, which show acceptability, but are mainly based on self-reported acceptability. The studies used in this systematic review lacked a standardized measurement, which likely resulted in inconsistent acceptability conclusions, which infers the need for more research regarding acceptability (Bautista et al., 2019). In addition, there is evidence for the acceptability of ACT-based interventions for psychiatric disorders and MBIs. O'Connor and colleagues (2018) conducted a systematic review and meta-analysis in which they researched ACT-based eHealth interventions for psychiatric disorders such as depression and anxiety. Evidence, despite preliminary and not comparable to traditional, face-to-face treatment, indicated that participants accepted these interventions and provided positive feedback (O'Connor et al., 2018). The existing evidence regarding SUDs, despite small, targeted smoking cessation interventions, showed that patients accepted ACT-based interventions (Kelly et al., 2015; Heffner et al., 2020; Karekla & Savvides, 2021). Furthermore, also limited by a small sample, an ACT-based intervention for problematic alcohol consumers with HIV was, besides accepted, also practicable (Woolf-King et al., 2018). Moreover, two small studies showed that ACT-based aftercare interventions in patients with SUDs in the Netherlands were well accepted among the small samples (Schnieder, 2017; Jongejan, 2017). It is thus assumed that in the context of this study, an ACT-based aftercare would be accepted after the primary treatment.

There being little evidence specifically for ACT as an aftercare intervention, there is however evidence which shows that ACT seems effective for SUD treatment in general, despite being preliminary (Stotts & Northrup, 2015). In a meta-analysis, Lee and colleagues

(2015) concluded that ACT was likely as effective as other active treatments (such as CBT) and had a significant small effect over other control conditions. In addition, a recent systematic review reported positive effects of ACT, such as increased psychological flexibility and reduced substance use (Maia et al., 2021). Despite promising results thus far, Zamboni and colleagues (2021) noted that the evidence is still limited, and more studies are desired.

Moreover, there is currently strong evidence that ACT works effectively for various mental disorders. In a review of 20 meta-analyses, Gloster and colleagues (2020) presented outcomes for symptom reduction, health promotion, and findings compared to control conditions. They found ACT significantly efficacious with, overall, small effect sizes for symptom reduction in depression, anxiety, SUDs, chronic pain, and transdiagnostic conditions compared to active (e.g., treatment as usual) and inactive (waitlist, placebo) control groups. Accordingly, for ACT they found that the controlled effect sizes were small to medium for quality of life, wellbeing, functioning, and psychological flexibility. Moreover, compared to control conditions, an overall medium effect size favouring ACT against placebo and waitlist was found. In comparison to active interventions, 14 out of 22 comparisons were statistically significant and with a mean overall effect size to a medium effect in favour of ACT (Gloster et al., 2020).

With evidence on ACT-interventions for treating mental disorders in general and regarding SUDs, there seems to be a literature gap specifically for ACT-based aftercare intervention studies on effectiveness and acceptability. Therefore, research is necessary on the development and effectiveness of these interventions. Based on the following rationale, it seems reasonable to implement an ACT-based aftercare intervention. First, the effectiveness of ACT on general psychiatric disorders and the effectiveness of ACT on SUDs seems evident. Besides, ACT seems to be effective in a combination of both also. Second, the

promising yet mixed effectiveness of MBIs such as MBSR might, when combined with primary treatment, form an answer to the significant relapse rates across individuals who suffer from SUDs. Lastly, and in addition, ACT-based interventions and MBIs seem accepted in a variety of settings amongst patients. However, another literature gap emerges when focussing on the implementation of ACT-based aftercare interventions.

The literature on the implementation of an ACT-based aftercare intervention aimed at patients suffering from SUDs is limited. However, there are studies on determinants for the implementation of ACT-based interventions for other psychiatric disorders. For example, Nedelcu and Grégoire (2020) mentioned the determinants of administrative and colleague support next to effective promotion and recruitment strategies as important facilitators for implementation. Barriers to implementing an ACT-based aftercare intervention could be the time cost and scheduling problems (Nedelcu & Grégoire, 2020). Similarly, Trompetter and colleagues (2014) recommended involving stakeholders as early as possible and involvement of the management as determinants for success, whereas perceived workload might be a barrier to implementation. Walser and colleagues (2013) conducted an implementation study wherein participants received a three-day workshop and, accordingly, weekly supervision sessions lasting 90 minutes in which sessions were discussed. They found that workshops only were insufficient for implementing ACT competencies and follow-up contact was necessary (Walser et al., 2013). In addition to ACT-implementation studies, Garland and Howard (2018) examined MBI implementation with SUD patients in clinical care. These authors pose implementation challenges concerning the training and subsequent supervision in addition to personal practice. Also, they note that there seems to be no consensus on the amount of training, supervision, and practice required to implement an MBI. In addition, the most efficacious training format, for example a group training or online training courses, is not known (Garland & Howard, 2018).

Hence, the current study's aims are threefold. First, it will investigate the effectiveness of an ACT-based aftercare intervention. The possible impact of the aftercare on substance use, refusal self-efficacy, wellbeing, and psychological flexibility will be measured. Secondly, the acceptability of the aftercare will be measured by participants' experiences during the aftercare. Thirdly, an investigation of the implementation process and strategy will be conducted. Implementation barriers, such as participant recruitment and intervention promotion, will be assessed, next to general experiences of the aftercare. The setting in which the intervention will be implemented is a Dutch addiction care organization. Their clients are youth and adolescents, adults, individuals with an intellectual disability, delinquents, and informal caregivers. The care system has distinct steps these clients follow, namely: intake, detox (if necessary), treatment, final evaluation, and aftercare. In addition, treatment can be either ambulant, or if not sufficient, clinical. The intensity of the treatment differs according to the individuals' needs. To illustrate, the short treatment is five, and the long treatment is twelve contact moments. These treatments are one-on-one, based on CBT, and are provided online, online and face-to-face (if needed), or entirely face-to-face.

This pilot study used a mixed-method study design. As a quantitative measure, three groups of participants were asked to fill in a questionnaire. In addition, these participants were also invited for a qualitative semi-structured interview post-aftercare. The therapists who provided the aftercare were interviewed regarding a process evaluation regarding the implementation of the aftercare. Thus, the research questions examined were:

- 1) What is the impact of an ACT-based aftercare intervention on mental health, the mechanisms of refusal self-efficacy and psychological flexibility, and the behavioural outcome substance use?
- 2) How did participants experience the ACT-based aftercare intervention for substance use disorders, and how acceptable did participants find it?

3) What are facilitators and barriers during the preparation and execution of the ACT-based aftercare seen from therapists' perspectives?

It is expected that substance use amongst participants remains stable, or participants remain abstinent, that is, maintenance of primary treatment outcomes. In addition, it is expected that participants experience higher self-efficacy to refuse substances. Moreover, mental health and psychological flexibility will maintain or improve during the intervention. Lastly, it is expected that the intervention will be accepted by participants and, where necessary, they will provide feedback to improve the intervention.

Method

Design

The present study used a mixed-method design. Data were collected from participants participating in the intervention and from therapists who provided the intervention. Quantitative data were collected from participants only during pre-and post-intervention. Qualitative data from participants were collected via a semi-structured interview post-intervention. Solely qualitative data were collected from therapists at mid-intervention, circa after three weeks, and post-intervention after nine weeks. The study setting was entirely online due to the COVID-19 pandemic. The intervention, however, took place on location, face-to-face. Quantitative data were collected via an online questionnaire. The researcher provided a QR code to the therapists, who gave it to the participants, who then scanned it with their smartphones. In case the QR code did not work, a web link was provided. Qualitative data from participants was collected via telephone. Qualitative data from therapists were collected via the online Microsoft Teams platform. The study got ethical permission from both the Ethics Committee BMS at the University of Twente (211318) and the Research Ethics Committee at Radboud University Medical Centre (2021-8338).

Participants

In total, twenty-one participants started the ACT-based aftercare intervention at three different locations, with respectively eight, seven, and six participants per group. Fifteen participants completed the pre-measurement, of which 60% were male, and with a mean age of 47.4 years. See Table 1 for the baseline characteristics.

Participants were recruited via the convenience sampling method. The six therapists leading the intervention examined their existing case-load and contacted participants to participate in the intervention. Inclusion criteria were stability in comorbid diagnosis, abstinence or control over substance use, and eighteen years or older. When all of these were applicable, the following list of inclusion criteria was checked for at least one criterion: craving, worrying, fighting negative emotions, negative self-concept, struggling to accept SUD, feelings of shame and guilt, being passive, openness for mindfulness, openness for a group setting. Furthermore, participants must be able to read and speak Dutch, and show a willingness to do homework exercises. Exclusion criteria were following another treatment and experiencing major life changes such as moving or intense informal care.

One group did not find five participants to start the aftercare. The exclusion criterium regarding following another treatment was removed. Three participants were still in treatment while following the aftercare intervention.

For the process evaluation, four therapists were invited. That is, one ACT-trained therapist from each of the three groups, as the therapists gave the intervention together. Besides, one of these four provided the training for the therapists as well as providing the intervention. The therapists were of different professions: one is a psychologist, one a coach/trainer, one a general practice mental health worker, and one a social worker.

Intervention

Living to the Full [Dutch: *Voluit Leven*] was a nine-session weekly intervention lasting two hours per session. Two therapists who were trained in Living to the Full led the sessions.

All participants received a copy of the Living to the Full workbook (Bohlmeijer & Hulsbergen, 2019).

Table 1

Demographic variables at baseline

Baseline characteristics	<i>N</i>	%
Gender		
Male	9	60
Female	6	40
Age		
18-30	3	20
31-50	7	47
51-65	5	33
Highest educational level		
VMBO	2	13.33
MAVO	1	6.67
HAVO	1	6.67
MBO	4	26.67
HBO	6	40
University	1	6.67
Previous treatment		
Ambulant	10	66.67
Clinical	2	13.33
Addiction/trauma treatment	1	6.67
Combination of ambulant/clinical	1	6.67
Currently following treatment	1	6.67
Time finished		
0 – 6 months	5	33.33
6 months – 1 year	4	26.67
1 – 2 years	1	6.67
Currently following treatment	3	20
No answer	1	6.67
Primary substance*		
Alcohol	10	66.67
Cannabis	1	6.67
Cocain	1	6.67
Desinger drugs	1	6.67
Gambling	1	6.67
Binge-eating	1	6.67

Note. *Gambling and binge-eating were considered substances.

The nine weeks were divided into three-weekly sections, with each section containing a different theme. The first section was an introduction to Living to the Full and aimed at changing participants' perception of psychic pain. The second section aimed at discovering

resources, commitment to Living to the full, that one is not one's thoughts, and affectionate attention to oneself. The last part was practical, in which participants discovered their values and how to live according to these values. Every week participants practiced also with complementary mindfulness and meditation exercises, such as a body scan, attention to the breathing, and practising day-to-day activities, such as brushing the teeth, with attention.

Living to the Full is based on the six ACT core concepts, which ultimately influence psychological flexibility (Hayes et al., 2006). Through acceptance, cognitive defusion, mindfulness, value-based behaviour, the self as context, and committed action, Hayes and colleagues (2006) argue that psychologically inflexible individuals could increase their flexibility.

Besides, Living to the Full can be adapted to, and was found effective in, a wide variety of psychopathology. To illustrate, the intervention was found effective in the treatment of depression (Pots et al., 2016; Fledderus et al., 2012), chronic pain (Trompetter et al., 2015), and anxiety (Witlox et al., 2021). In this study, the adaptation of the Living to the Full program for participants in addiction care was described by Schokker (2021).

Measures

The quantitative data were collected pre- and post-measurements via an online questionnaire. Four different constructs were measured: substance use, refusal self-efficacy, wellbeing, and psychological flexibility. Client satisfaction was measured only post-measurement. Qualitative data were collected via semi-structured interviews.

Quantitative measures

Substance use. Current substance use, and inherently possible relapse, was measured via the first module of the Measurement in the Addiction for Triage and Evaluations (MATE; Schippers et al., 2011). The MATE was a test to assess all the relevant information necessary for an individual's SUD treatment (Schippers et al., 2011). The first module measured the

participants' use of substances in the past 30 days and the amount they have used on a regular day, which participants had to score on a seven-point scale. The scale ranged from (1) *never* to (7) *every day*. The MATE did not include behavioural addictions such as sex and gaming as well as designer drugs. As these are widespread, however, they were therefore added to the questionnaire.

Refusal self-efficacy. To measure refusal self-efficacy, eight items of the Drinking Refusal Self-Efficacy Questionnaire-Revised (Oei et al., 2005; DRSEQ-R) were generalized for substances. This questionnaire measures an individual's belief to resist alcohol based on three subscales: social pressure, opportunistic, and emotional self-efficacy (Oei et al., 2005). The six-point Likert scale ranged from (1) *I am very certain that I can NOT refuse the substance* to (6) *I am very certain that I can refuse the substance*. The DRSEQ-R proved a reliable and valid measure in adolescent samples (Young et al., 2007), Arab and Asian samples (AlMarri et al., 2009), and United States college students (Scully et al., 2018).

Wellbeing. To measure wellbeing, the Dutch version of the Mental Health Continuum – Short Form (Lamers et al., 2011; MHC-SF) was used. This was a fourteen-item questionnaire on which participants scored on a six-point Likert scale and contains three items on emotional wellbeing, five items on social wellbeing, and six on psychological wellbeing (Lamers et al., 2011). The scale ranged from (1) *never* to (7) *always*. Being reliable and valid in the general population of Poland (Karas et al., 2014) and Argentina (Lupano Perugini et al., 2017), it also seems applicable in individuals with psychopathology (Franken et al., 2018). It should be noted, however, that there is no evidence of the validity and reliability in specific SUD samples.

Psychological flexibility. Psychological flexibility was assessed via the Acceptance and Action Questionnaire for Substance Abuse (Luoma et al., 2011; AAQ-SA). This was an eighteen-item scale that contained two subscales, namely values commitment and defused

acceptance (Luoma et al., 2011). The scale ranged from (1) *never true* to (7) *always true*. The AAQ-SA was internally consistent and had a good construct validity (Luoma et al., 2011). A recent study by Sánchez-Milan and colleagues (2022) confirmed validity amongst Spanish individuals with SUD.

Client satisfaction. To measure participants' experience with the intervention, seven questions were based on the Client Satisfaction Scale (CSQ-8), translated to Dutch by de Brey (1983) and concluded it was helpful as a measure.

Qualitative measure

Semi-structured interview. The interview (see Appendix A) with participants was held after the nine weeks of the aftercare intervention. The interview had two distinct parts. First, in part A, participants were asked about their general experiences with the intervention. Broad, open questions were asked first. If more information was needed, this part contained more specific items about expectations, the mindfulness and meditation exercises, the group-setting, the homework exercises, the contribution to dealing with complaints, strengths and weaknesses of the intervention, and suggestions for improvement. In part B, the questions were aimed at the impact of the ACT-based aftercare on participants. The questions asked were about the changes in complaints, changes in substance use, changes in refusing substances, changes in wellbeing, and changes in psychological flexibility.

There were two measurement moments with therapists, namely after three weeks and after nine weeks (see Appendix B). The goal of the interview was threefold. First, a process evaluation regarding the ACT-based aftercare training the therapists received prior to the intervention. Secondly, an evaluation of the participant recruitment phase. Thirdly, an evaluation of the nine weeks of the intervention. The interview after four weeks dealt with the evaluation of the training therapists received, the recruitment of participants, and an

intermediate evaluation of the intervention up to week three. The interview after nine weeks was an evaluation of the whole nine weeks of the intervention.

The semi-structured interview was based on the five-phase model created by Kallio and colleagues (2015). The first phase was aimed at determining if the semi-structured interview suited the research question. As the research question was aimed at individual experiences, both of patients and therapists, a semi-structured interview was deemed suitable to conduct (Galletta, 2013). The second phase consisted of a literature research on semi-structured interviews in ACT- and SUD research. Subsequently, a draft was created and checked by a senior researcher of the organization. After completing the draft, the first interview with a therapist and participant was the pilot. This pilot was then examined, adjusted and hence the final form of the interview scheme was produced.

Procedure

Participant procedure

Before the intervention started, the questionnaire as well as the interview scheme was created. Participants were recruited two months until one week prior to the intervention. Three groups at three locations were formed. At the start of the first session, participants were handed an informed consent, which contained the goal, execution of the research, expectation of participants, data management, and contact details. Afterwards, an online questionnaire followed, which participants could fill in on their smartphone by either scanning a QR code or, in case participants were for whatever reason not able to scan this, use a web link. Participants absent from the first meeting were asked to fill in the questionnaire at home, which therapists send by e-mail. The procedure for the post-meeting was identical. After the intervention, therapists were asked to check if participants were interested to participate in an interview. If consented, these participants were contacted via telephone. The interview was conducted via telephone and lasted between 25 and 35 minutes.

Therapist procedure

Before the intervention started, therapists received a three-day ACT-based aftercare training. Afterwards, they started recruiting participants for the intervention. In the second week, the therapists were contacted to participate in an interview via e-mail. Before the interview, the therapists filled in informed consent. The first interview took place via Microsoft Teams and lasted between 15 to 20 minutes. In the seventh week, therapists were contacted via e-mail to participate in the second interview, which took place after the intervention. This interview also lasted between 10 to 15 minutes.

Analysis

Qualitative analysis with therapists

The interviews were recorded, transcribed, and imported into online coding software. Privacy sensitive data were anonymized. The coding program used was ATLAS.ti 8. The framework used to analyse the data was thematic analysis (Braun & Clarke, 2006). Braun and Clarke (2006) described thematic analysis as ‘‘a method for identifying, analysing, and reporting themes within data’’ (p. 79). Thematic analysis is well-suited for a mixed-method methodology, as qualitative data are collected via semi-structured interviews (Percy et al., 2015) that investigates the experiences and meaning of participants (Braun & Clarke, 2006). Specifically, an inductive analysis was used. In inductive analysis, data are individually analysed, then merged, and followed by creating a synthesis to answer the research question (Percy et al., 2015). The six-phase model described by Braun and Clarke (2006) was used while conducting the thematic analysis. First, to get acquainted with the data, transcriptions were made, and then read while writing initial ideas. Subsequently, pieces of interesting data were coded with the research question in mind. The third phase consisted of identifying potential themes based on the initial codes. This was done by creating a thematic map (see, for example, Braun & Clarke, 2006). The potential themes were reviewed in phase four, and

the thematic map was adjusted to refine the themes. Additionally, in phase five, the thematic map was finished, themes were named and then described. Concluding, the analysis was written, quotes were added, and an answer was formulated for the research question. The final coding scheme can be found in Appendix C.

Qualitative analysis with intervention participants

Due to the low number of participants willing to participate in the interview ($n=3$), it was decided to do a less systematic and detailed thematic analysis. The steps were as follows. First, transcriptions were made, and ideas were written down. Secondly, initial codes were noted, and themes were defined. Then the themes were redefined and named. Lastly, the analysis was written, quotes were added, and an answer was formulated for the research question.

Quantitative analysis

The data were analysed via IBM SPSS Statistics 27. First, normality of the data was checked with the Shapiro-Wilks test, as the data set was small. This test tests if the sample was normally distributed in a population. If the p -value is smaller than the chosen alpha (α), then the null hypothesis is rejected, and it is assumed that the data are not normally distributed. If the data were not normally distributed, then the non-parametrical Wilcoxon signed-rank test was used as an alternative.

In the case of a normal distribution, the first test was a one-sample t-test to check the representativeness of the sample, as a control group was not part of this study. The sample baseline was compared with a reference population found in the literature. The reference population scores used were from the same authors as for the reliable change analysis (see below). For refusal self-efficacy (DRSEQ) and wellbeing (MHC-SF), a higher score on these questionnaires indicates higher levels of self-efficacy and wellbeing. Regarding psychological

flexibility (AAQ-SA), a higher score indicates less psychological flexibility, whereas a lower score indicates more psychological flexibility.

Secondly, a binominal test for a single proportion was used to analyse whether the abstinence rate was significantly higher than the test proportion. Here, H_0 assumes that 40% remain abstinent after treatment other than the ACT-based aftercare (Li et al., 2017). H_a assumes that more than 40% remain after the intervention.

If normally distributed, the effect of the intervention on substance use, refusal self-efficacy, wellbeing, and psychological flexibility was measured using the individual analysis of reliable change (RC), where at pre- and post-treatment comparisons were conducted to create a reliable change index (Jacobson & Truax, 1991; RCI). The equation used, was $RCI = (X_{post} - X_{pre}) / \sqrt{2(SD_{pre})^2(1-\alpha)^2} = (X_{post} - X_{pre}) / SD_{diff}$. There is a statistically significant difference between pre- and postquestionnaire when $X_{post} - X_{pre} = >1.96$ (i.e., 2σ) x SD_{diff} (rounded up) and when the $RCI = >1.96$. The standard deviations and Cronbach's Alpha necessary for the equation were taken from large samples. For refusal self-efficacy, the average SD for males and females of the alcohol-dependant sample (see table 5) by Oei and colleagues (2005). For wellbeing, see Fledderus and colleagues (2012), Table 2 in the ACT-E group. Regarding psychological flexibility, see Shorey and colleagues (2017), Table 3, the mindfulness group.

No ACT-based aftercare for substance use populations utilizing these questionnaires was found in the literature. Therefore, comparable populations were used. This study had, at baseline, ten individuals whose primary treatment was focusing on alcohol. The DRSEQ (Oei et al., 2005) measured drinking refusal self-efficacy and was thus deemed acceptable as a comparison population. The MHC-SF (Lamers et al., 2011) was, to the researchers' knowledge, not used in substance use studies. Hence, based sample was used (Fledderus et al., 2012) as depression, anxiety, and substance use are often comorbid psychopathologies (Lai et

al., 2015, as cited in Teesson et al., 2020). The psychological flexibility sample was acceptable, as the population was similar to the current sample, except that Shorey and colleagues (2017) used a residential sample.

Integration of qualitative and quantitative data

To answer the three research questions, qualitative data from the semi-structured interviews were used to support the outcomes of the questionnaire. Qualitative, as well as quantitative analyses, were done simultaneously and separately. Afterwards, the outcomes from the interviews were connected to the outcomes from the questionnaire. To illustrate, in the interview, questions were asked about the measured constructs (e.g., refusal self-efficacy) and, subsequently, the answers were used to further clarify quantitative data by adding quotes gathered from the interviews.

Results

Drop-out

In Figure 1, the participant flow during the intervention is presented. The intervention drop-out rate was 42.9%, which is higher than face-to-face treatment for substances in general (Lappan et al., 2019). The research drop-out rate was 60%. Complete data were available for six participants post-intervention. However, two participants did not use their personal number and were thus not relatable. The final sample analysed consisted of four participants (Table 1). Nine participants discontinued the intervention, of which eight were participating in the current study. The main reasons for drop-out were relapse or that the intervention was provided at an inconvenient time for the participant.

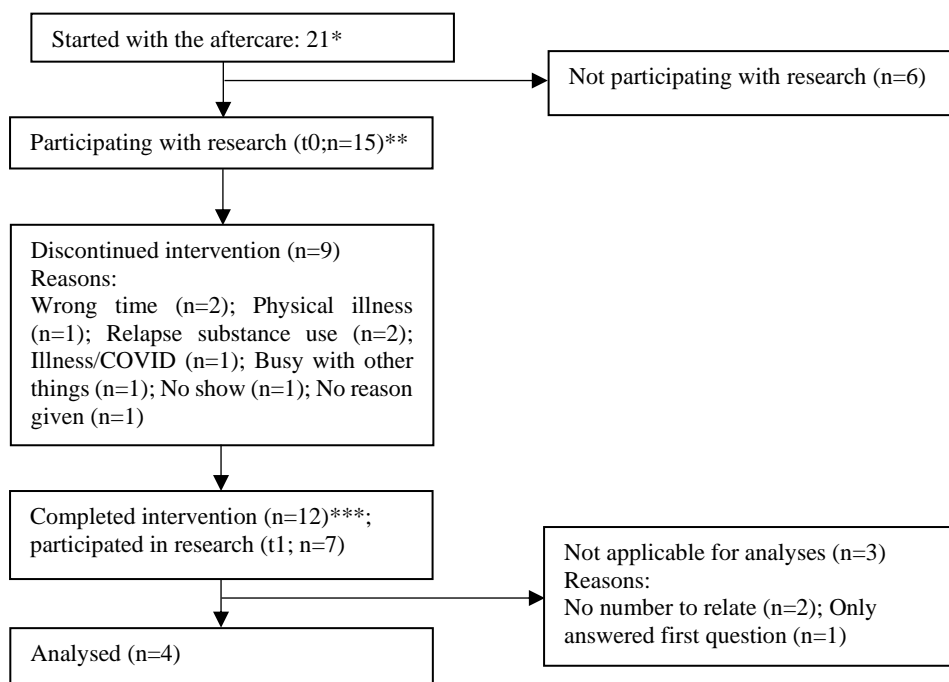
Regarding the semi-structured interview with participants, six participants were willing to be interviewed. However, two did not answer their phone, and one was deemed unstable by his therapists. The final number of participants interviewed was three (Table 1).

Table 1*Final sample*

Participants	Pre/post questionnaire?	Interviewed?	Sex	Age	Substance
1	Yes	Yes	M	27	Binge-eating
2	Yes	No	M	45	Designer drugs
3	Yes	Yes	F	64	Alcohol
4	Yes	No	M	50	Alcohol
5*	No	Yes	M	61	Alcohol
6**	No	No	-	-	-

* No post-questionnaire, thus only included in the qualitative acceptability analysis.

** Not relatable, only included in participant satisfaction (CSQ8).

Figure 1*Participant flow*

Note. For client satisfaction analysis, n=6 was analysed, as no number to relate was necessary.

*Zwolle n=8; Apeldoorn n=6; Enschede n=7.

**Zwolle n=7; Apeldoorn n=5; Enschede n=3.

*** Zwolle n=2; Apeldoorn n=4; Enschede n=6.

Pre-treatment sample analysis

Five constructs were compared with means from similar populations to determine if the pre-treatment sample significantly differed from that population mean. The one-tailed t-test showed that the mean value of refusal self-efficacy ($n=15$, $M = 33.4$, $SD = 8.07$) was significantly lower than the population mean (47.49) = $t(14) = -6.763$, $p < .001$. Next, wellbeing was analysed. The mean value of emotional wellbeing ($n=15$, $M = 3.51$, $SD = 1.42$) did not significantly differ from the population mean (3.27) = $t(14) = .658$, $p = .521$. The mean value of social wellbeing ($n=15$, $M = 3.77$, $SD = .80$) was significantly higher than the population mean (2.79) = $t(14) = 4.763$, $p < .001$. The mean value of psychological wellbeing ($n=15$, $M = 3.66$, $SD = 1.10$) did not significantly differ from the population mean (3.2) = $t(14) = 1.66$, $p = .120$. Lastly, psychological flexibility (PF) was compared. The mean value of PF ($n=15$, $M = 67.9$, $SD = 16.1$) was significantly lower than the population mean (81.74) = $t(14) = 3.315$, $p = .005$.

Effect evaluation

Substance use

All four participants were not using at the start of the intervention and 30 days before. After the intervention, all participants were still not using (Table 2). During the intervention, participant three stated that her resolve not to use only increased: “*The feeling of not using has grown much stronger.*” In addition, participant one noted the usefulness of the meditation practice concerning relapse: “*The meditation practises helped, when the stress gets too high, I will not fall back into old habits*”.

Furthermore, the binominal test showed $p = .026 < \alpha = 0.05$. Therefore, the null hypothesis was rejected, and there was significant evidence in favour of the ACT-based aftercare intervention effectiveness.

Table 2*Substance use (SU) in the last 30 days per participant*

Participants	Pre-intervention SU	Post-intervention SU
1	0	0
2	0	0
3	0	0
4	0	0

Refusal self-efficacy

The analysis of reliable change on the DRSEQ showed a pre- and post-treatment difference of 8 scale points or more (see Table 3). The mean scores for the pre- and post-test were $\mu_{pre}=38$ and $\mu_{post}=45.5$. The mean difference between these was $\mu_{post}-\mu_{pre}=7.3$ (Table 4). Three scores increased, whereas one lowered with four scale points. Individual analysis shows that in three cases there is evidence for significant reliable change. Participant three thought it helpful that there was not only focus on the substance, but on more aspects as well: “*There was no focus on substance use, on what you can or cannot do, but from more openness. That worked for me.*”

Table 3*DRSEQ*

Cronbach's α	0.90
<i>SD</i>	5.93
<i>Sdiff</i>	2.65
Significant Difference	6

Table 4*DRSEQ Reliable Change*

	Xpre	Xpost	Xpost – Xpre	RCI
Participants				
1	37	45	8	3.02 *
2	31	47	16	6.04 *
3	39	48	9	3.40 *
4	46	42	-4	-1.51
μ	38	45.5	7.3	

Note. * Is significant RC

Wellbeing

The analysis of reliable change showed that the significant difference between pre- and post-measurement was, respectively for emotional wellbeing (EWB), social wellbeing (SWB), and psychological wellbeing (PWB), two scale points (Table 5). Regarding EWB (Table 6), μ_{pre} was 4.5, and μ_{post} was 4.9, with the mean difference between the two being 0.4. Two participants show no change in EWB after treatment, whereas two participants show change however not significant. Concerning SWB (Table 7), μ_{pre} was 4.15 and μ_{post} was 4.8, with the mean difference being 0.65. Two participants had a lower score, both minus 0.2, at the post-test. The other two participants showed signs of significant reliable change. PWB (Table 8) had μ_{pre} at 4.4 and μ_{post} at 5.3, with a mean difference of 0.9. Three participants showed an increase with an RCI greater than 1.96, indicating significant reliable change. Participant three learned to be milder to herself: ‘*Looking at myself searchingly and mildly without any judgement.*’ Besides, she noted her feelings of shame, denial, and not wanting to talk changed into an honesty: ‘*Honesty, and having courage to share. That is where everything begins*’. Moreover, participant one felt that he could focus on much more than short term problems. In addition, he added that he gained perspective and a sense of peace

after the intervention: ‘‘*The intervention has brought me more perspective and peace, above all more self-respect.*’’

Table 5

MHC-SF

	EWB	SWB	PWB
Chronbach's α	0.83	0.74	0.83
<i>SD</i>	0.92	0.84	0.88
<i>Sdiff</i>	0.54	0.61	0.51
Significant Difference	1.1	1.20	1.0

Table 6

EWB Reliable Change

	Xpre	Xpost	Xpost – Xpre	RCI
Participants				
1	6	6	0	0
2	3.6	4.3	0.7	1.30
3	5	5	0	0
4	3.3	4.3	1	1.85
μ	4.5	4.9	0.4	

Note. * Is significant RC

Table 7

SWB Reliable Change

	Xpre	Xpost	Xpost – Xpre	RCI
Participants				
1	4.4	5.8	1.4	2.30 *
2	3.6	5.2	1.6	2.62*
3	4.6	4.4	-0.2	-0.33
4	4	3.8	-0.2	-0.33
μ	4.15	4.8	0.65	

Note. * Is significant RC

Table 8

PWB Reliable Change

	Xpre	Xpost	Xpost – Xpre	RCI
Participants				
1	5.8	6	0.2	0.39
2	3.7	4.8	1.1	2.16 *
3	4.2	5.5	1.3	2.55 *
4	3.7	4.7	1	1.96 *
μ	4.4	5.3	0.9	

Note. * Is significant RC

Psychological flexibility

The significant score difference based on the analysis of reliable change showed a score difference of 12 (Table 9). Mean scores (Table 10) were 63 at pre-treatment and 39.5 at post-treatment. The mean difference between μ_{post} and μ_{pre} was -23.5. All four participants scored higher than the significant difference of 12 points, indicating significant reliable change. Participant one mentioned that he felt capable of creating more space for himself and choosing behaviour based on his values: *“The effects of the intervention showed me what I myself wanted to accomplish. I could pull it towards myself. Own motivation, own values, chase what I want.”* In addition, he gained the tools to be less judgemental to himself: *“Now I can say to myself: well, okay, now I am doing well, I can take a day or moment off, take it easy, and from that point move on.”* Participant three learned to move away from her thoughts and feel what is in the body: *“Anxiety is a part of my life and that it okay to be there. That I can recognize it. Go and discover what I feel in my body.”*

Table 9*AAQ-SA*

Cronbach's α	0.95
<i>SD</i>	18.95
<i>Sdiff</i>	5.99
Significant	12
Difference	

Table 10*Psychological Flexibility Reliable Change*

	Xpre	Xpost	Xpost – Xpre	RCI
Participants				
1	45	23	-22	-3.67 *
2	78	43	-35	-5.84 *
3	62	49	-13	-2.17*
4	67	43	-24	-4.01 *
μ	63	39.5	-23.5	

Note. * Is significant RC

Acceptability

Six participants completed the adjusted CSQ-8 questionnaire and were used to determine participant satisfaction. Only three participants participated in the interview, however. These three interviews were used in the thematic analysis, which resulted in the themes of overall impression, meditation exercises, group setting, and homework.

Participant satisfaction. On the adjusted version of the CSQ-8, the comments regarding participants' satisfaction with the aftercare were, overall, positive, with negative exceptions in the information provided before the aftercare. Four out of six participants answered that they got 'a little' information prior to the aftercare. The other two thought information provision was 'to a large extent' and 'complete'. Concerning the therapists' way

of explaining, all six were positive. In addition, all six participants thought their help needs were sufficiently addressed, with participant 1 noting: *‘My compliments for the therapists. All attention and time for my questions.’* Apart from one, all participants thought the aftercare was the right aftercare for their complaints. The chance of recommending the organisation to others was graded with a mean score of 9.5. In addition, the aftercare was graded with a mean score of 8.83. Both scores were graded on a 1-10 scale.

Overall impression. All three participants were mainly positive about the aftercare in general. Participant one commented that the intervention was: *‘Comfortable, broadening my horizon, and a practical tool. It pulled me out of a pit after my treatment at the organisation.’* Participant five was surprised about the treatment, yet, similarly to participant one, thought the intervention to be useful: *‘I am surprised about the treatment. About substance use, or misuse, is almost no talk. I expected to look at the whole substance abuse, but we looked at a deeper level. Positively surprised. It was not new, but insightful.’* In accordance with participants one and five, participant three was also positive: *‘My half-full toolbox is a bit fuller. Exceptionally positive experience. I went every time with joy.’*

Meditation exercises. All three participants underlined the importance of the meditation exercises during the intervention, especially reflecting on oneself and looking without judgement. For example, participant three told: *‘Looking at myself without judgement. For me that was something like wow.’* Participant one did not have high expectations about meditation. However, it taught him: *‘Sometimes one can do things by doing less. That has offered me a whole new perspective.’* Participants one and three thought that the meditation exercises were easy to follow. Participant five noted, however, that due to his own restlessness, he did the exercises quickly to get on with other work.

Group setting. Two out of the three participants were positive about the group's size. Both, however, had smaller groups than at the start of the intervention. Both noted they were

satisfied with smaller groups. Participant three noted, for example: *“Eight would be a good setting. Personally, I prefer smaller. That is safer.”* Participant one explained similar thoughts: *“We started with six, ended with four. However, it is comfortable because it is compact. It provides more space to see similarities between the participants.”* In contrast, participant five thought a larger group would be of more value, despite feeling safe.

Homework. All three participants thought the homework exercises from the book helpful. The participants thought them easy to do, accessible, yet challenging. For example, participant one summarized: *“The exercises you need to think about, they challenge you, however in a very approachable manner.”* In addition, participant three described it as: *“Timewise it was easy, the book was also very easy to read.”*

Implementation

From now on, the results based on therapist interviews will be presented. Three themes were identified during the thematic analysis. These are: communication, the content of the aftercare, and positive feedback.

Communication. Three aspects of communication were noted as important, namely communication materials and, secondly, interpersonal communication. Therapist one explained there were no promotion materials ready to supply: *“At the start we did not have any materials. Later, a nice poster came, but that was too late”* and stressed to clearly communicate with others: *“One wants to, from the start, communicate with good information.”* In addition, communication with colleagues was noted as important. First, regarding recruitment of participants, therapist two told: *“If Living to the Full was carried more widely, then a group would be more easily full.”* Complementary, to make the aftercare more known, communication with other teams and team-managers seems necessary, as, according to therapist three: *“Some teams are more complex to reach.”* Lastly, communication about train-the-trainer training. Therapist two noted: *“I found it difficult that*

some did not know that they had to come during the second day” and “that we had to start an hour late.” In addition to these training days, the communication about the intervention, about which therapist one noted: *“It was already planned on days which I was not able to come”* and, participant two: *“I did not receive an e-mail it was cancelled.”*

Content of the aftercare. Therapists one and two commented on the time investment of the intervention. Therapist one mentioned, to illustrate: *“I would not make the session longer than two hours, that would be a too heavy load”*, as, which therapist two explained: *“There must be done fairly many exercises in a short time.”* Lastly, therapists two and four mentioned that, sometimes, the content did not seem to connect with the participants. To illustrate, therapist two explained: *“If it went less well, then it was often because one of the metaphors or exercises did not seem to be understood”* and, regarding meditation: *“Even though we explained it many times, it does not seem to be fully understood.”* In addition, therapist four mentioned the impact the intervention could have on a participant who might not be ready: *“It is sometimes heavy content, and some are not ready for that.”* However, the content not connecting with participants might be explained by not matching inclusion criteria, as therapist three noted: *“Participants with chronic substance use seem to have more relapse, and maybe also they find it more exciting to handle difficult things.”*

Positive feedback. Besides points for improvement regarding communication and treatment content, all therapists provided positive feedback about the intervention. For example, therapist one noted how the goal of the aftercare was reached with her participants: *“The goal of Living to the Full, I really think, is more or less accomplished for all.”* To illustrate, therapist four explained that, after the intervention, participants learned how to stay out of their thoughts: *“Participants stayed out of their pattern of trying to explain.”* Therapist two also noted a change in the participants: *“The participants who, ultimately, finished the aftercare were very enthusiastic and positive and all have the idea they made an*

improvement.” Moreover, the protocol, including the workbook for participants, was evaluated positively, as therapist three could follow the whole book with his participants. In addition, providing the intervention with two therapists was necessary according to all therapists, mainly in combination with the flexibility asked by the COVID-19 measures. To illustrate, in combination with providing the aftercare either face-to-face or in a hybrid format, it could continue even if participants were sick. For example, therapist one described: “*If you cannot do it live, then we advise online and we do what we can.*”

Discussion

This mixed-method pilot study regarding an ACT-based aftercare intervention assessed the following three research questions: 1) What is the impact of an ACT-based aftercare intervention on mental health, the mechanisms of refusal self-efficacy and psychological flexibility, and the behavioural outcome substance use?; 2) How did participants experience the ACT-based aftercare intervention for substance use disorders, and how acceptable did participants find it?; and 3) What are facilitators and barriers during preparation and execution of the ACT-based aftercare seen from therapists’ perspective? The quantitative data were collected via a questionnaire, whereas the qualitative data with participants and therapists were collected via semi-structured interviews. Six participants finished the questionnaire and were used to assess participant satisfaction. Two were not reliable and therefore excluded, providing a sample of $n=4$ for the quantitative analyses. In addition, the final therapist sample was $n=4$.

Regarding clinical outcomes, overall results consistently suggest a positive impact on abstinence, increased refusal self-efficacy, increased psychological wellbeing, and psychological flexibility. In addition, participants experienced the ACT-based aftercare intervention positively, especially the added value from the mindfulness exercises, a smaller

group setting, and the homework. Satisfaction with the treatment was high. Combined, the aftercare intervention was accepted by participants.

Based on the results regarding implementation, barriers and facilitators were identified during the dissemination and implementation process. The dissemination process was described by Greenhalgh and colleagues (2004) as the active unrolling of a new intervention. The importance of this identification was confirmed by Damschroder and colleagues (2009), as the trainers' experiences help the implementation process. To base the results on, the Consolidated Framework for Implementation Research (CFIR) was used (Damschroder et al., 2009). This framework provides a list of five domains, each with determinants which could be encountered during the implementation process (Damschroder et al., 2009).

Main findings

Possible impact on substance use

As expected, all four participants remained abstinent during the intervention, suggesting a promising result regarding relapse prevention using an aftercare intervention. The abstinence rates after treatment in this sample were higher compared to other treatments. However, as the analysed sample of four participants after many drop-outs is small, the comparison with abstinence rates after other treatments should be made with care. Equal to previous research, this study confirms that mindfulness-based aftercare reduces relapse rates after treatment compared to TAU (Bowen et al., 2014). Comparisons could be made, as ACT-based interventions share similarities with MBIs (Shorey et al., 2017). For example, a possible working mechanism seems mindfulness, both used in ACT and MBRP, as it could reduce craving in participants (Roos et al., 2019). To illustrate, one participant noted that meditation helped to make other choices while stressed instead of using drugs.

Noteworthy, at baseline, the psychological flexibility in this sample was significantly lower than in a residential treatment sample (Shorey et al., 2017), indicating that individuals

in this sample were likely more psychologically flexible. What is interesting, is that at baseline the refusal self-efficacy of the sample in this study was significantly lower compared to an alcohol-dependent sample. One study, with a sample of individuals suffering from chronic pain, indicates that psychological flexibility predicted self-efficacy amongst individuals (Rizzo & Schwartz, 2021). There is, however, no research association between substance use, psychological flexibility, and refusal self-efficacy. It does provide an interesting hypothesis that, after primary treatment, higher levels of psychological flexibility might compensate for lower levels of refusal self-efficacy. However, only future research can examine this hypothesis.

Possible impact on refusal self-efficacy

With three out of four participants showing significant reliable change, which was as expected, the aftercare seems to impact refusal self-efficacy amongst participants. Interestingly however, as one participant noted, the aftercare was not focused on substance use. It instead focussed on looking at situations from an openness. In the literature, there seems to be limited evidence for ACT-based interventions increasing refusal self-efficacy or what the working mechanisms are, despite evidence that increased refusal self-efficacy might prevent substance use relapse (Chavarria et al., 2012). One study found that acceptance, instead of suppression, resulted in higher refusal self-efficacy post-intervention in a smoking population (Litvin et al., 2012). As participants remain abstinent after treatment, their self-efficacy might increase (Perkins et al., 2012), indicating the importance of higher levels of refusal self-efficacy. Future research might investigate the relationship between an ACT-based aftercare and refusal self-efficacy, and could question how ACT influences refusal self-efficacy while there is no explicit focus on this construct.

Possible impact on wellbeing

As expected, emotional and psychological wellbeing either remained the same or increased during the intervention, in line with previous research on ACT-based intervention in participants with depression (Fledderus et al., 2012). The most notable change occurred in psychological wellbeing, as three out of four participants showed a significant change. Ryff (2014) described six themes (development through life; personality; family life; working life; biological health; and mental health) as the core of PWB, which define the challenges individuals must overcome to realize their potential. In line with Ryff (2014), higher PWB could have a protective function for general mental health. In addition, higher levels of mental wellbeing in general could lower the incidence rates of mental disorders (Bohlmeijer & Westerhof, 2021). This also indicates the importance of the change in social wellbeing, as two out of four participants significantly changed. However, for the other two participants SWB remained constant, indicating a possible impact of the intervention. As participants at baseline already had higher levels of SWB compared to a reference population (Fledderus et al., 2012), the reliable change was noteworthy. Remarkably, one participant who remained constant in social wellbeing lowered in refusal self-efficacy. Social wellbeing and self-efficacy might be connected, as higher levels of self-efficacy can be linked to a higher level of social support (Stevens et al., 2015). This could lead to the hypothesis that, due to the lockdown (or COVID-19 sanctions in general), this participant might have experienced less social wellbeing and lowered in refusal self-efficacy. However, future studies should research this relationship.

Possible impact on psychological flexibility

All four participants have significantly changed in psychological flexibility compared to the start of the intervention, which was as hypothesized. Notably, at baseline, the current sample was more psychologically flexible than the reference sample (Shorey et al., 2017). The further significant reliable change indicates signs of effectiveness of the ACT-based aftercare on psychological flexibility. Increased psychological flexibility after the ACT-based

aftercare is in line with current research (Maia et al., 2021), as there are indications that ACT-based intervention with mindfulness increases psychological flexibility (Shorey et al., 2017). With participants discovering values, examining thoughts and emotions while in the present moment, and not moving away from these, they do seem to acknowledge changes in psychological flexibility. Being more psychologically flexible might lead to a more extended abstinence period (Lespine et al., 2022), which could implicate why participants remained abstinent during treatment. Besides, increased psychological flexibility might strengthen the resolve to remain abstinent, possibly by discovering values to live by.

Single-case approach

Participant two showed significant change on all constructs, except emotional wellbeing. The primary substance was (unspecified) designer drugs. Based on the results, it seems that the ACT-based aftercare is effective when the primary substance is a designer drug. Although one participant is a small sample, it produces interesting questions. As designer drugs (or Novel Psychoactive Substances; NPS) become increasingly popular, develop rapidly, and can be dangerous for human health (Weinstein et al., 2017), signs of an effective ACT-based aftercare offer hope for treatment. For example, one misconception is that NPS are safer than illicit drugs (Alcohol and Drug Foundation, 2021). One assumption could be that, as are NPS not illegal in various countries (UNODC, 2022), individuals could think that it is safe to use and hence replace illegal substances with NPS. ACT-based interventions could thus help individuals deal with these thoughts and cravings. However, also these results must be noted with caution. Further research is necessary to verify this claim.

Acceptability amongst participants

From the results it can be concluded that the aftercare treatment was well accepted by participants. This was as expected and in line with other research on ACT-based aftercare

interventions (Jongejan, 2017; Schnieder, 2017) and ACT-based interventions more general (Heffner et al., 2020; Karekla & Savvides, 2021).

With an overall high satisfaction of 8.8 on a 1-10 scale, the participants were especially satisfied with the therapists' way of explaining the intervention and how the participants' needs were addressed by these therapists. Besides, generally evaluated, all participants were positively surprised with what the intervention as aftercare had to offer. Mindfulness and, in accordance, the meditation exercises also were well accepted as they supported managing stress. Also, the homework exercises were accepted and found a useful complement to the counselling sessions. The exercises were found manageable timewise and accessible. Despite being manageable, participants did find the homework challenging, which was complemented by the therapists' notes that some exercises and metaphors did not catch on with participants. This suggests that more time might be spent during sessions on the homework. Furthermore, the initial group setting was well accepted. However, two out of three participants did find a smaller group of respectively four and two participants in the last sessions more comfortable because there seemed to be more space and time per individual. In addition to extended time on homework, metaphors, and exercises, a smaller group setting might further improve the effectiveness of the aftercare, as well as the acceptability, as more time will be available for individuals.

Implementation process evaluation

Resulting from the semi-structured interviews with the therapists regarding the implementation, the first barrier found falls in the domain of network and communication. It became clear that better communication in the delivery of promotion material of the intervention seems necessary to make the aftercare more known in the organisation. In addition, when the aftercare is more known inside the organisation, it seems just to assume there would be more support for the aftercare. Complementary, to increase the support for the

intervention, communication with colleagues, teams, and managers across the organisation seems invaluable (Damschroder et al., 2009). As during this pilot study there was difficulty recruiting participants for the intervention, and in the light of further development and implementation of the aftercare, support and publicity inside the organisation are factors needed to recruit enough participants.

However, the trainers can be used as facilitators of the implementation. The trainers could be seen as early adopters of the aftercare (Bartholomew et al., 2016), as they might influence opinions across the organisation concerning the intervention. As early users of the aftercare and being of a similar profession as the intended users, the intended users might adopt the innovation more quickly after being influenced by these early adopters (Damschroder et al., 2009). Engaging with other teams could increase support and publicity that the ACT-based aftercare needs to increase the participation rate.

A second barrier was found during the train-the-trainer training. As part of this training, intervision sessions were organised to further work with, and ask questions about, the aftercare. The importance of these follow-up meetings for implementation also seems evident, as described by Walser and colleagues (2013), as in their study a training alone seems not sufficient. However, the meetings were already planned on a fixed moment, which made it difficult to attend. Two considerations were not made during the planning process, as the trainers' needs were not identified, and communication was not clear during the process (Damschroder et al., 2009). An alternative option could consist of trainers arranging the intervision themselves to give them more control and involvement in the planning process.

Adaptability in the mode of delivery through which the aftercare could be provided, was found a facilitator for implementation (Damschroder et al., 2009). Due to the COVID-pandemic and the measures, participants and therapists could often not be present due to symptoms. With COVID still present, however with less measures, it seems evident to work

on a hybrid or even entirely online format of the aftercare to reduce the number of sessions participants are absent. This could improve the continuation of the aftercare, as it was still possible from home (Appleton et al., 2021). COVID affected participants' adherence to the ACT-based aftercare, as they had to go into quarantine or isolation when experiencing symptoms. A hybrid version (face-to-face and online blended) could offer effective possibilities in a SUD setting (Oesterle et al., 2020), and there is preliminary evidence which suggests that blended interventions are accepted by participants as well (Jones et al., 2015; Heffner et al., 2020). Looking at available resources of the organization as a facilitator (Damschroder et al., 2009), Oesterle and colleagues (2020) note that, in terms of cost, delivery, and safety, telehealth might be a safe alternative to implement.

Also, providing the aftercare with two therapists was thought to increase adaptability. This provides flexibility when, for example, one therapist gets ill. In addition, it provides an opportunity for one therapist during sessions to observe the group processes. However, the question arises here whether the organisation has available resources (Damschroder et al., 2009). Trompetter and colleagues (2014) confirm findings that the implementation of an ACT-based intervention may at least take two years to complete. To illustrate, two therapists could be a facilitator if the costs were compensated. However, if these costs were not compensated, two therapists per group could become expensive over time.

Limitations

As with any other study, there are limitations. First, the small sample ($n=4$) size severely limits the possibility for the sample to be representative and generalizable. A high drop-out rate of over 60% resulted in a small sample for the quantitative analysis and is likely to be biased in favour of positive results. Also, the qualitative analysis with participants had a small sample ($n=3$). Despite inviting six participants, only three were willing to participate in the interview.

Besides, during the recruitment phase, initial inclusion and exclusion criteria were changed. To illustrate, it was possible that participants were still in treatment when starting with the aftercare, which contrasted with the initial inclusion criteria of not being in treatment when starting the aftercare. This could interfere with the intervention being the main reason for significant change, as results could be interpreted more positively. During the recruitment process, changes to the inclusion criteria had to be made due to a low number of participants recruited. Groups were not able to start with below five participants. Therefore, these participants were recruited. Future studies should select, if possible, sharper to reduce the chance that primary treatment is a confounding variable. It would also be interesting to research the effect of parallel primary treatment and an ACT-based aftercare intervention.

Following inclusion criteria, one exclusion criterion was that participants with major life events, such as extensive informal care for a family member or moving out of their house, were excluded. However, assuming that the current target group often lead unstable lives with, for example, individual, psychiatric, and/or socio-demographic factors (Kabsia et al., 2021), an aftercare should preferably help participants through these times, especially in dealing with stress to cope with possible craving. In this study, not selecting strictly according to the criteria, the results might be positively biased. Therefore, future studies could select participants with major life events happening to see what the effect of the ACT-based aftercare is and also sharpen the exclusion criteria.

In addition, the lack of a follow-up measurement makes it difficult to conclude anything about the long-term effect of the aftercare, which was beyond the scope of this study. To assess relapse over time, the increase in refusal self-efficacy, psychological flexibility, and wellbeing, at least a three-month follow-up post aftercare would be desirable. Because of lacking a follow-up measure, the results of this pilot study should be taken with care, and future studies should attempt to measure changes over a more extended period.

Fifth, the studies used to compare the measured constructs in this study were only comparable to a limited extent due to the lack of comparison studies. To the author's knowledge, the specific relationship between aftercare, substance use, and an ACT-based intervention lacks comparable studies. Hence, all substances used were generalized as one outcome measure (substance use) instead of using statistics for specific substances. In addition, the standard deviations and the Cronbach's Alpha used for the RCI were taken from assumed best comparison studies. To illustrate, refusal self-efficacy was compared to a sample with alcohol-dependent participants (Oei et al., 2005) due to most participants in the present sample having alcohol as their primary substance. Instead of a substance use sample, the alternative for the MHC-SF was a sample with depressed and anxious participants (Fledderus et al., 2012). Lastly, despite a substance use sample, the study used residential participants to compare psychological flexibility (Shorey et al., 2017), who mainly had heroin as their primary substance. Future studies should focus on the one hand on ACT-based aftercare interventions and, on the other hand, use more comparable samples for the analyses.

A sixth limitation was the a posteriori use of implementation literature to base the results on. As no framework was used, the results on implementation barriers and facilitators had a limited scientific foundation. This could make the results less generalizable. It was decided that the results were linked to an implementation framework at the start of the discussion. Future research should provide an implementation framework at the start of the study. For example, based on Damschroder and colleagues' (2009) framework, intervention characteristics such as adaptability, complexity, and cost (e.g., Nedelcu & Grégoire, 2020) can be checked. Besides, networks and communication seem important factors during the implementation of an ACT-based aftercare by involving stakeholders as soon as possible (Trompetter et al., 2014).

This study being a pilot study, it has as purpose of making mistakes and seeing how to fix these mistakes and learn from them. To deal with a small sample, statistical tests appropriate for small samples were chosen. Including participants who did not meet the inclusion criteria was necessary to start the pilot, even though it could be a confounding variable. Also, due to a limited time frame, follow-up measurements were not possible. Thus, the given time was used to answer the current three research questions. The lack of comparative studies in the field of an ACT-based aftercare intervention was the reason substitute studies were used instead of comparable studies. However, assumed best substitutes were chosen to answer the research questions.

Implications

As this pilot study provided preliminary evidence on the effectiveness, the acceptability, and barriers and facilitators of implementation and dissemination, further studies on the topic of ACT-based aftercare interventions are recommended. First, a more extensive Randomized Controlled Trial (RCT) with a larger sample, and, preferably a control group, should be conducted. In addition, as previous research suggests that the effectiveness of ACT-based interventions increases at follow-up (Lee et al., 2015), follow-up data should be gathered to provide evidence of this over-time increase in effectiveness.

Regarding acceptability, implications are aimed at assessing the acceptability on a larger scale. As is the case with effectiveness, an RCT could also assess the acceptability amongst participants. Recommendations are aimed at providing the aftercare in a smaller group, for example four participants, instead of the eight participants with which the group starts currently.

Lastly, recommendations for implementations are aimed at strengthening communication within the organisation. That is, communication within the organization to improve the promotion of the aftercare and, in connection with, the recruitment of possible

participants. Therapists could play an essential role in promoting the ACT-based aftercare. Besides, regarding the train-the-trainer, communication should focus on making sure all trainees are present. Regarding the intervision after the training, it should be communicated when, where, and at what time these sessions occur. If these sessions are cancelled, that should be communicated as well. The adaptability of the intervention should be used to improve the implementation process.

Conclusion

This pilot study provides preliminary evidence on the effectiveness of an ACT-based aftercare intervention for individuals suffering from a SUD despite high drop-out rates. The aftercare intervention was well accepted with an average rating of 8.8 on a 1-10 scale. Important recommendations for implementation are strengthening organizational communication and planning. Facilitators for the implementation process were the adaptability of the aftercare and the use of trainers to increase awareness of the aftercare. Based on this study, there seems thus enough ground to start an RCT on a large scale to confirm these first findings.

References

- Alcohol and Drugs Foundation. (2021, November). *New Psychoactive Substances*. ADF.
<https://adf.org.au/drug-facts/new-psychoactive-substances/>
- AlMarri, T. S. K., Oei, T. P. S., & AbRahman, R. M. (2009). Validation of the drinking refusal self-efficacy questionnaire in Arab and Asian samples. *Addictive Behaviours*, *34*(9), 776-778. <https://doi.org/10.1016/j.addbeh.2009.05.009>
- Andersson, H. W., Wenaas, M., & Nordfjaern, T. (2019). Relapse after inpatient substance use treatment: A prospective cohort study among users of illicit substances. *Addictive Behaviours*, *90*, 222-228. <https://doi.org/10.1016/j.addbeh.2018.11.008>
- Appleton, R., Williams, J., Vera San Juan, N., Needle, J. J., Schlief, M., Jordan, H., Sheridan Rains, L., Goulding, L., Badhan, M., Roxburgh, E., Barnett, P., Spyridonidis, S., Tomaskova, M., Mo, J., Harju-Seppänen, J., Haime, Z., Casetta, C., Papamichail, A., Lloyd-Evans, B., ... Johnson, S. (2021). Implementation, Adoption, and Perceptions of Telemental Health During the COVID-19 Pandemic: Systematic Review. *Journal of Medical Internet Research*, *23*(12), e31746. <https://doi.org/10.2196/31746>
- Bautista, T., James, D., & Amaro, H. (2019). Acceptability of mindfulness-based interventions for substance use disorder: A systematic review. *Complementary Therapies in Clinical Practice*, *35*, 201–207.
<https://doi.org/10.1016/j.ctcp.2019.02.012>
- Bartholomew Eldredge, L. K., Markham, C. M., Ruiter, R. A. C., Fernández, M. E., Kok G., & Parcel, G. S. (2016). *Planning Health Promotion Programs: An Intervention Mapping Approach* (4th ed). Jossey-Bass.
- Blodgett, J. C., Maisel, N. C., Fuh, I. L., Wilbourne, P. L., & Finney, J. W. (2014). How effective is continuing care for substance use disorders? A meta-analytic review. *Journal of Substance Abuse Treatment*, *46*(2). [10.1016/j.jsat.2013.08.022](https://doi.org/10.1016/j.jsat.2013.08.022)

- Bohlmeijer, E. T., & Hulsbergen M. L. (2019). *Voluit Leven, mindfulness of de kunst van het aanvaarden, nu als praktisch hulpboek*. Boom Uitgevers.
- Bohlmeijer, E., & Westerhof, G. (2021). The Model for Sustainable Mental Health: Future Directions for Integrating Positive Psychology Into Mental Health Care. *Frontiers in Psychology, 12*. <https://doi.org/10.3389/fpsyg.2021.747999>
- Bowen, S., Witkiewitz, K., Clifasefi, S. L., Grow, J., Chawla, N., Hsu, S. H., Carroll, H. A., Harrop, E., Collins, S. E., Lustyk, M. K., & Larimer, M. E. (2014). Relative Efficacy of Mindfulness-Based Relapse Prevention, Standard Relapse Prevention, and Treatment as Usual for Substance Use Disorders. *JAMA Psychiatry, 71*(5), 547-556. <https://doi.org/10.1001/jamapsychiatry.2013.4546>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Brey, H. de. (1983). A cross-national validation of the Client Satisfaction Questionnaire: The Dutch experience. *Evaluation and Program Planning, 6*(3-4), 395-400. [https://doi.org/10.1016/0149-7189\(83\)90018-6](https://doi.org/10.1016/0149-7189(83)90018-6)
- Chavarria, J., Stevens, E. B., Jason, L. A., & Ferrari, J. R. (2012). The Effects of Self-Regulation and Self-Efficacy on Substance Use Abstinence. *Alcoholism Treatment Quarterly, 30*(4), 422–432. <https://doi.org/10.1080/07347324.2012.718960>
- Damschroder, L. J., Aron, D. C., Keith, R. E., Kirsh, S. R., Alexander, J. A., & Lowery, J. C. (2009). Fostering implementation of health services research findings into practice: a consolidated framework for advancing implementation science. *Implementation Science, 4*(1), 50. <https://doi.org/10.1186/1748-5908-4-50>
- Fledderus, M., Bohlmeijer, E. T., Pieterse, M. E., & Schreurs, K. M. G. (2012). Acceptance

and commitment therapy as guided self-help for psychological distress and positive mental health: a randomized controlled trial. *Psychological Medicine*, 42(3), 485–495.
<https://doi.org/10.1017/s0033291711001206>

- Franken, K., Lamers, S. M. A., Ten Klooster, P. M., Bohlmeijer, E. T., & Westerhof, G. J. (2018). Validation of the Mental Health Continuum-Short Form and the dual continua model of well-being and psychopathology in an adult mental health setting. *Journal of Clinical Psychology*, 74(12), 2187–2202. <https://doi.org/10.1002/jclp.22659>
- Galletta, A. (2013). *Mastering the Semi-Structured Interview and Beyond; From Research Design to Analysis and Publication*. New York University Press.
- Garland, E. L., & Howard, M. O. (2018). Mindfulness-based treatment of addiction: current state of the field and envisioning the next wave of research. *Addiction Science & Clinical Practice*, 13(1). <https://doi.org/10.1186/s13722-018-0115-3>
- GBD 2015 Mortality and Causes of Death Collaborators. (2016). Global, regional, and national life expectancy, all-cause mortality, and cause-specific mortality for 249 causes of death, 1980–2015: a systematic analysis for the Global Burden of Disease Study 2015. *The Lancet*, 388(10053), 1459-1544. [10.1016/S0140-6736\(16\)31012-1](https://doi.org/10.1016/S0140-6736(16)31012-1)
- GBD 2016 Alcohol and Drug Use Collaborators. (2018). The global burden of disease attributable to alcohol and drug use in 195 countries and territories, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016. *The Lancet*, 5(12), 987-1012. [https://doi.org/10.1016/S2215-0366\(18\)30337-7](https://doi.org/10.1016/S2215-0366(18)30337-7)
- Gloster, A. T., Walder, N., Levin, M. E., Twohig, M. P., & Karekla, M. (2020). The empirical status of acceptance and commitment therapy: A review of meta-analyses. *Journal of Contextual Behavioural Science*, 18. 181-192.
<https://doi.org/10.1016/j.jcbs.2020.09.009>
- Goldberg, S. B., Tucker, R. P., Greene, P. A., Davidson, R. J., Wampold, B. E., Kearney, D.

- J., & Simpson, T. L. (2018). Mindfulness-based interventions for psychiatric disorders: A systematic review and meta-analysis. *Clinical Psychology Review, 59*, 52-60. <https://doi.org/10.1016/j.cpr.2017.10.011>
- Greenhalgh, T., Robert, G., Macfarlane, F., Bate, P., & Kyriakidou, O. (2004). Diffusion of Innovations in Service Organizations: Systematic Review and Recommendations. *The Milbank Quarterly, 82*(4), 581–629. <https://doi.org/10.1111/j.0887-378x.2004.00325.xH>
- Hayes, S. C., Luoma, J. B., Bond, F. W., Masuda, A., & Lillis, J. (2006). Acceptance and Commitment Therapy: Model, processes and outcomes. *Behaviour Research and Therapy, 44*(1), 1–25. <https://doi.org/10.1016/j.brat.2005.06.006>
- Heffner, J. L., Kelly, M. M., Waxmonsky, J., Mattocks, K., Serfozo, E., Bricker, J. B., Mull, K. E., Watson, N. L., & Ostacher, M. (2020). Pilot Randomized Controlled Trial of Web-Delivered Acceptance and Commitment Therapy Versus Smokefree.gov for Smokers With Bipolar Disorder. *Nicotine & Tobacco Research, 22*(9), 1543–1552. <https://doi.org/10.1093/ntr/ntz242>
- Jacobson, N. S., & Truax, P. (1991). Clinical Significance: A Statistical Approach to Defining Meaningful Change in Psychotherapy Research. *Journal of Consulting and Clinical Psychology, 51*(1), 12-19.
- Jhanjee, S. (2014). Evidence Based Psychosocial Interventions in Substance Use. *Indian Journal of Psychological Medicine, 36*(2), 112–118. <https://doi.org/10.4103/0253-7176.130960>
- Jones, H. A., Heffner, J. L., Mercer, L., Wyszynski, C. M., Vilaradaga, R., & Bricker, J. B. (2015). Web-Based Acceptance and Commitment Therapy Smoking Cessation Treatment for Smokers With Depressive Symptoms. *Journal of Dual Diagnosis, 11*(1), 56–62. <https://doi.org/10.1080/15504263.2014.992588>

- Jongejan, I. K. (2017). *Focusing on the whole person in continued care for SUD-patients* [unpublished master's thesis]. University of Enschede.
- Kabisa, E., Biracyaza, E., Habagusenga, J. A., & Umubyeyi, A. (2021). Determinants and prevalence of relapse among patients with substance use disorders: case of icyizere Psychotherapeutic Centre. *Substance Abuse Treatment, Prevention, and Policy*, 16(13). 10.1186/s13011-021-00347-0
- Kallio, H., Pietilä, A.-M., Johnson, M., & Kangasniemi, M. (2016). Systematic methodological review: developing a framework for a qualitative semi-structured interview guide. *Journal of Advanced Nursing*, 72(12), 2954–2965.
<https://doi.org/10.1111/jan.13031>
- Karaś, D., Ciecuch, J., & Keyes, C. L. M. (2014). The Polish adaptation of the Mental Health Continuum-Short Form (MHC-SF). *Personality and Individual Differences*, 69, 104–109. <https://doi.org/10.1016/j.paid.2014.05.011>
- Karekla, M., & Savvides, S. N. (2021). Smoking cessation avatar-led Acceptance and Commitment Therapy digital intervention: feasibility and acceptability in young adults. *Translational Behavioral Medicine*, 11(1), 198–205.
<https://doi.org/10.1093/tbm/ibz128>
- Kelly, M. M., Sido, H., Forsyth, J. P., Ziedonis, D. M., Kalman, D., & Cooney, J. L. (2015). Acceptance and Commitment Therapy Smoking Cessation Treatment for Veterans with Posttraumatic Stress Disorder: A Pilot Study. *Journal of Dual Diagnosis*, 11(1), 50–55. <https://doi.org/10.1080/15504263.2014.992201>
- Kiluk, B. D., & Carroll, K. M. (2013). New Developments in Behavioral Treatments for Substance Use Disorders. *Current Psychiatry Reports*, 15(12).
<https://doi.org/10.1007/s11920-013-0420-1>
- Lai, H. M. X., Cleary, M., Sitharthan, T., & Hunt, G. E. (2015). Prevalence of comorbid

- substance use, anxiety and mood disorders in epidemiological surveys, 1990–2014: A systematic review and meta-analysis. *Drug and Alcohol Dependence*, *154*, 1-13.
<https://doi.org/10.1016/j.drugalcdep.2015.05.031>
- Lamers, S. M. A., Westerhof, G. J., Bohlmeijer, E. T., Ten Klooster, P. M., & Keyes, C. L. M. (2011). Evaluating the psychometric properties of the mental health Continuum-Short Form (MHC-SF). *Journal of Clinical Psychology*, *67*(1), 99–110.
<https://doi.org/10.1002/jclp.20741>
- Lappan, S. N., Brown, A. W., & Hendricks, P. S. (2019). Dropout rates of in-person psychosocial substance use disorder treatments: a systematic review and meta-analysis. *Addiction*, *115*(2), 201-217.
<https://doi-org.ezproxy2.utwente.nl/10.1111/add.14793>
- Lee, E. B., An, W., Levin, M. E., & Twohig, M. P. (2015). An initial meta-analysis of Acceptance and Commitment Therapy for treating substance use disorders. *Drug and Alcohol Dependence*, *155*, 1–7. <https://doi.org/10.1016/j.drugalcdep.2015.08.004>
- Lenaerts, E., Matheï, C., Matthys, F., Zeeuws, D., Pas, L., Anderson, P., & Aertgeerts, B. (2014). Continuing care for patients with alcohol use disorders: A systematic review. *Drug and Alcohol Dependence*, *135*, 9-21.
<https://doi.org/10.1016/j.drugalcdep.2013.10.030>
- Lespine, L. F., Rueda-Delgado, L. M., Vahey, N., Ruddy, K. L., Kiiski, H., Enz, N., Boyle, R., Rai, L., Pragulbickaite, G., Bricker, J. B., McHugh, L., & Whelan, R. (2022). Changes in inhibition-related brain function and psychological flexibility during smoking abstinence predict longer time to relapse. [10.31234/osf.io/472p5](https://doi.org/10.31234/osf.io/472p5)
- Li, W., Howard, M. O., Garland, E. L., McGovern, P., & Lazar, M. (2017). Mindfulness treatment for substance misuse: A systematic review and meta-analysis. *Journal of Substance Abuse Treatment*, *75*, 62-96. <https://doi.org/10.1016/j.jsat.2017.01.008>

- Li, T., Sato, H., Watanabe, N., Kondo, M., Masuda, A., Hayes, S. C., & Akechi, T. (2019). Psychological flexibility-based interventions versus first-line psychosocial interventions for substance use disorders: Systematic review and meta-analyses of randomized controlled trials. *Journal of Contextual Behavioural Science, 13*. 109-120. <https://doi.org/10.1016/j.jcbs.2019.07.003>
- Litvin, E. B., Kovacs, M. A., Hayes, P. L., & Brandon, T. H. (2012). Responding to tobacco craving: Experimental test of acceptance versus suppression. *Psychology of Addictive Behaviors, 26*(4), 830–837. <https://doi.org/10.1037/a0030351>
- Luoma, J., Drake, C. E., Kohlenberg, B. S., & Hayes, S. C. (2011). Substance abuse and psychological flexibility: The development of a new measure. *Addiction Research and Theory, 19*(1), 3-13. <https://doi-org.ezproxy2.utwente.nl/10.3109/16066359.2010.524956>
- Lupano Perugini, M. L., De La Iglesia, G., Castro Solano, A., & Keyes, C. L. M. (2017). The Mental Health Continuum–Short Form (MHC–SF) in the Argentinean context: Confirmatory factor analysis and measurement invariance. *Europe's Journal of Psychology, 13*(1), 93–108. <https://doi.org/10.5964/ejop.v13i1.1163>
- Maia, M. F. C., Santos, B. F. D., Castro, L. C. D., Vieira, N. S. T., & Silveira, P. S. D. (2021). Acceptance and Commitment Therapy and Drug Use: A Systematic Review. *Paidéia (ribeirão Preto), 31*. <https://doi.org/10.1590/1982-4327e3136>
- Mckay, J. R. (2021). Impact of Continuing Care on Recovery From Substance Use Disorder. *Alcohol Research: Current Reviews, 41*(1). <https://doi.org/10.35946/arcr.v41.1.01>
- Nationale Drug Monitor, editie 2021. Over NDM 1.1 Over de Nationale Drug Monitor –

- Nationale Drug Monitor. <https://www.nationaledrugmonitor.nl/over-ndm-de-nationale-drug-monitor/>. Reviewed on: 17 november 2021. Trimbos-instituut, Utrecht & WODC, Den Haag.
- Nedelcu, A., & Grégoire, S. (2020). Evaluating the Implementation of an Intervention Based on Acceptance and Commitment Therapy in Postsecondary Institutions. *Journal of College Student Psychotherapy*, 36(1), 95-112.
<https://doi.org/10.1080/87568225.2020.1806162>
- Njoroge, M. W. (2018). Review on Treatment of Substance Use Disorders. *Journal of Addiction Research and Therapy*, 9(1), 353. 10.4172/2155-6105.1000353
- O'Connor, M., Munnely, A., Whelan, R., & Mchugh, L. (2018). The Efficacy and Acceptability of Third-Wave Behavioral and Cognitive eHealth Treatments: A Systematic Review and Meta-Analysis of Randomized Controlled Trials. *Behavior Therapy*, 49(3), 459–475. <https://doi.org/10.1016/j.beth.2017.07.007>
- Oei, T. P. S., Hasking, P. A., & Young, R. (2005). Drinking refusal self-efficacy questionnaire-revised (DRSEQ-R): a new factor structure with confirmatory factor analysis. *Drug and Alcohol Dependence*, 78(3), 297-307.
<https://doi.org/10.1016/j.drugalcdep.2004.11.010>
- Oesterle, T. S., Kolla, B., Risma, C. J., Breitinger, S. A., Rakocevic, D. B., Loukianova, L. L., Hall-Flavin, D. K., Gentry, M. T., Rummans, T. A., Chauhan, M., & Gold, M. S. (2020). Substance Use Disorders and Telehealth in the COVID-19 Pandemic Era. *Mayo Clinic Proceedings*, 95(12), 2709–2718.
<https://doi.org/10.1016/j.mayocp.2020.10.011>
- Percy, W. H., Kostere, K., & Kostere, S. (2015). Generic Qualitative Research in Psychology. *The Qualitative Report*, 20(2), 76-85. <https://doi.org/10.46743/2160-3715/2015.2097>
- Perkins, K. A., Parzynski, C., Mercincavage, M., Conklin, C. A., & Fonte, C. A. (2012). Is

self-efficacy for smoking abstinence a cause of, or a reflection on, smoking behavior change? *Experimental and Clinical Psychopharmacology*, *20*(1), 56–62.

<https://doi.org/10.1037/a0025482>

Pots, W. T. M., Fledderus, M., Meulenbeek, P. A. M., Ten Klooster, P. M., Schreurs, K. M. G., & Bohlmeijer, E. T. (2016). Acceptance and commitment therapy as a web-based intervention for depressive symptoms: Randomised controlled trial. *The British Journal of Psychiatry*, *208*(1), 69–77. <https://doi.org/10.1192/bjp.bp.114.146068>

Ramadas, E., Lima, M. P. D., Caetano, T., Lopes, J., & Dixe, M. D. A. (2021). Effectiveness of Mindfulness-Based Relapse Prevention in Individuals with Substance Use Disorders: A Systematic Review. *Behavioral Sciences*, *11*(10), 133.

<https://doi.org/10.3390/bs11100133>

Rizzo, J. M., & Schwartz, R. C. (2021). The Effect of Mindfulness, Psychological Flexibility, and Emotional Intelligence on Self-Efficacy and Functional Outcomes Among Chronic Pain Clients. *Journal of Contemporary Psychotherapy*, *51*(2), 109–116.

<https://doi.org/10.1007/s10879-020-09481-5>

Roos, C. R., Kirouac, M., Stein, E., Wilson, A. D., Bowen, S., & Witkiewitz, K. (2019). An Open Trial of Rolling Admission Mindfulness-Based Relapse Prevention (Rolling MBRP): Feasibility, Acceptability, Dose-Response Relations, and Mechanisms. *Mindfulness*, *10*(6), 1062–1073.

<https://doi.org/10.1007/s12671-018-1054-5>

Roos, C., Bowen, S., & Witkiewitz, K. (2020). Approach Coping and Substance Use Outcomes Following Mindfulness-Based Relapse Prevention Among Individuals with Negative Affect Symptomatology. *Mindfulness*, *11*(10), 2397–2410.

<https://doi.org/10.1007/s12671-020-01456-w>

Ryff, C. D. (2014). Psychological Well-Being Revisited: Advances in the Science and

- Practice of Eudaimonia. *Psychotherapy and Psychosomatics*, 83(1), 10–28.
<https://doi.org/10.1159/000353263>
- Sánchez-Millán, H. A., Alicea-Cruz, A. J., & Pérez-Pedrogo, C. (2022). Measuring psychological flexibility: The cultural adaptation and psychometric properties of the AAQ for substance abuse among Spanish speaking population in correctional and community settings. *Journal of Contextual Behavioral Science*, 23, 31–37.
<https://doi.org/10.1016/j.jcbs.2021.11.002>
- Sancho, M., De Garcia, M., Rodríguez, R. C., Mallorquí-Bagué, N., Sánchez-González, J., Trujols, J., Sánchez, I., Jiménez-Murcia, S., & Menchón, J. M. (2018). Mindfulness-Based Interventions for the Treatment of Substance and Behavioral Addictions: A Systematic Review. *Frontiers in Psychiatry*, 9, 95. 10.3389/fpsy.2018.00095
- Schokker, M. (2021). *Voluit Leven* in de Verslavingszorg. In M. Hulsbergen & E. Bohlmeijer [RED.], *Voluit Leven, Handleiding voor professionals* (pp. 76-93). Boom Uitgevers.
- Schippers, G. M., Broekman, T. G., & Buchholz, A. (2011). MATE 2.1. Manual and Protocol. English Edition: W. M. Cox. Bêta Boeken.
- Schnieder, M. K. (2017). *Acceptability and acceptance of an ACT based after-care treatment for clients suffering from substance abuse* [unpublished master's thesis]. University of Twente.
- Schwebel, F. J., Korecki, J. R., & Witkiewitz, K. (2020). Addictive Behavior Change and Mindfulness-Based Interventions: Current Research and Future Directions. *Current Addiction Reports*, 7(2), 117–124. <https://doi.org/10.1007/s40429-020-00302-2>
- Scully, K. A., Mohn, R. S., & Madson, M. B. (2018). Psychometric evaluation of the drinking refusal self-efficacy scale - revised with college students in the United States. *Addictive Behaviours*, 85, 100-106. <https://doi.org/10.1016/j.addbeh.2018.05.032>
- Shorey, R. C., Elmquist, J., Gawrysiak, M. J., Strauss, C., Haynes, E., Anderson, S., & Stuart,

- G. L. (2017). A Randomized Controlled Trial of a Mindfulness and Acceptance Group Therapy for Residential Substance Use Patients. *Substance Use & Misuse*, 52(11), 1400–1410. <https://doi.org/10.1080/10826084.2017.1284232>
- Stevens, E., Jason, L. A., Ram, D., & Light, J. (2015). Investigating Social Support and Network Relationships in Substance Use Disorder Recovery. *Substance Abuse*, 36(4), 396–399. <https://doi.org/10.1080/08897077.2014.965870>
- Stotts, A.L., & Northrup, T.F. (2015). The promise of third-wave behavioral therapies in the treatment of substance use disorders. *Current Opinion in Psychology*, 2, 75–81. <http://dx.doi.org/10.1016/j.copsyc.2014.12.028>
- Tran, B. X., Moir, M., Latkin, C. A., Hall, B. J., Nguyen, C. T., Ha, G. H., Nguyen, N. B., Ho, C. S. H., & Ho, R. C. M. (2019). Global research mapping of substance use disorder and treatment 1971–2017: implications for priority setting. *Substance Abuse Treatment, Prevention, and Policy*, 14(1). <https://doi.org/10.1186/s13011-019-0204-7>
- Trompetter, H. R., Schreurs, K. M. G., Heuts, P. H. T. G., & Vollenbroek-Hutten, M. M. (2014). The systematic implementation of Acceptance & Commitment Therapy (ACT) in Dutch multidisciplinary chronic pain rehabilitation. *Patient Education and Counseling*, 96(2), 249–255. <https://doi.org/10.1016/j.pec.2014.05.019>
- Trompetter, H. R., Bohlmeijer, E. T., Veehof, M. M., & Schreurs, K. M. G. (2015). Internet-based guided self-help intervention for chronic pain based on Acceptance and Commitment Therapy: A randomized controlled trial. *Journal of Behavioral Medicine*, 38(1), 66–80. <https://doi.org/10.1007/s10865-014-9579-0>
- United Nations Office on Drugs and Crime. (2021). *World Drug Report, executive summary, policy implications*. Retrieved from https://www.unodc.org/unodc/en/data-and-analysis/wdr-2021_booklet-1.html
- United Nations Office on Drugs and Crime. (2022). *Early Warning Advisory on New*

- Psychoactive Substances*. UNODC. <https://www.unodc.org/LSS/Page/NPS>
- Vanderplasschen, W., Bloor, M., & Mckeganey, N. (2010). Long-Term Outcomes of Aftercare Participation following Various Forms of Drug Abuse Treatment in Scotland. *Journal of Drug Issues*, *40*(3), 703–728.
<https://doi.org/10.1177/002204261004000308>
- Walser, R. D., Karlin, B. E., Trockel, M., Mazina, B., & Taylor, C. B. (2013). Training in and implementation of Acceptance and Commitment Therapy for depression in the Veterans Health Administration: Therapist and patient outcomes. *Behaviour Research and Therapy*, *51*(9), 555-563. <https://doi.org/10.1016/j.brat.2013.05.009>
- Weinstein, A. V., Rosca, P., Fattore, L., & London, E. D. (2017). Synthetic Cathinone and Cannabinoid Designer Drugs Pose a Major Risk for Public Health. *Frontiers in Psychiatry*, *8*. <https://doi.org/10.3389/fpsyt.2017.00156>
- Wisselink, D. J., Kuijpers, W. G. T., & Mol, A. (2016, July). *Kerncijfers Verslavingszorg 2015*. LADIS. Stichting Informatie Voorziening Zorg
- Witlox, M., Garnefski, N., Kraaij, V., De Waal, M. W. M., Smit, F., Bohlmeijer, E., & Spinhoven, P. (2021). Blended Acceptance and Commitment Therapy Versus Face-to-face Cognitive Behavioral Therapy for Older Adults With Anxiety Symptoms in Primary Care: Pragmatic Single-blind Cluster Randomized Trial. *Journal of Medical Internet Research*, *23*(3), e24366. <https://doi.org/10.2196/24366>
- Woolf-King, S. E., Sheinfil, A. Z., Babowich, J. D., Siedle-Khan, B., Loitsch, A., & Maisto, S. A. (2018). Acceptance and Commitment Therapy (ACT) for HIV-infected Hazardous Drinkers: A Qualitative Study of Acceptability. *Alcoholism Treatment Quarterly*, *37*(3), 342-358. <https://doi.org/10.1080/07347324.2018.1539630>
- Young, R., Hasking, P. A., Oei, T. P. S., & Loveday, W. (2007). Validation of the Drinking

Refusal Self-Efficacy Questionnaire—Revised in an Adolescent Sample (DRSEQ-RA). *Addictive Behaviours*, 32(4), 862-868.

<https://doi.org/10.1016/j.addbeh.2006.07.001>

Zamboni, L., Centoni, F., Fusina, F., Mantovani, E., Rubino, F., Lugoboni, F., & Federico, A. (2021). The Effectiveness of Cognitive Behavioral Therapy Techniques for the Treatment of Substance Use Disorders. *The Journal of Nervous and Mental Disease*, 209(11), 835-845. 10.1097/NMD.0000000000001381

Appendix A

Interview scheme participants

Deel A: Vragen betreffende evaluatie met de cliënten

Deel A1: ervaringen met de interventie.

1. Hoe heeft u de Voluit Leven nazorg ervaren?
 - a. Wat heeft u geleerd? Wat waren uw verwachtingen?
 - b. Welke onderdelen/sessies zijn u het meeste bijgebleven?
 - i. Positief: op welke manier?
 - ii. Negatief: op welke manier?
 - iii. Samenhang verschillende onderdelen
 - c. Hoe heeft u de mindfulness/meditatie onderdelen ervaren?
 - i. Effecten
 - ii. Positieve/negatieve ervaringen?
 - d. Wat waren uw ervaringen met de groepssetting?
 - i. Grootte
 - ii. Ondersteuning andere cliënten
 - iii. Veiligheid
 - e. Hoe zijn de huiswerkopdrachten bevallen?
 - i. (Werk)druk
 - ii. Tijd
 - iii. Hoeveelheid
 - f. In welke opzichten heeft de nazorg bijgedragen aan het omgaan met uw klachten?
 - g. Wat kan er beter in de nazorg?
 - h. Wat ging er goed in de nazorg?
 - i. Welke overige suggesties heeft u aangaande de nazorg?
 - j. Het bijbehorende onderzoek
 - i. Communicatie
 - ii. Duidelijkheid
 - iii. Sterktes/verbeterpunten

Deel A2: impact op constructen vragenlijst: gebruik, middelen weigeren, welbevinden en psychologische flexibiliteit.

1. Op welke manier heeft de nazorg uw klachten veranderd?
 - a. Welke klachten?
 - b. Welk deel van de nazorg heeft hieraan bijgedragen?
 - c. Welk onderdeel was minder nuttig?
2. Hoe heeft de nazorg uw middelengebruik veranderd?
 - a. Welk onderdeel was nuttig?
3. Op welke manier heeft de nazorg bijgedragen aan het weigeren van middelen?
4. In welk opzicht heeft de nazorg bijgedragen aan een verandering in uw welbevinden?
 - a. Geluk,
 - b. tevredenheid,

- c. acceptatie.
5. Hoe heeft de nazorg uw psychologische flexibiliteit veranderd?
- a. Acceptatie psychische pijn,
 - b. Niet hetzelfde zijn als gedachten,
 - c. Met aandacht leven,
 - d. Besef van waarden en daarnaar leven.

Appendix B

Interview scheme therapists

Deel B: Vragen betreffende procesevaluatie behandelaars

1. Hoe heb je de train-de-trainer zelf ervaren?
 - a. Wat ging er goed? Wat kan er eventueel beter?
 - Doel van de training: theorie, praktijk, ondersteuning
 - Voluit Leven methodiek, mindfulness/ACT achtergrond, metaforen
 - De trainer
 - De training
 - Voluit Leven werkboek en handboek/materiaal
 - Informatie over het onderzoek
 - Complexiteit
 - Aansluiting huidige werkwijze
 - Informatievoorziening voorafgaande aan de trainingsdagen
 - Persoonlijke voor- en/of nadelen
 - Voldoende uitgerust om de training te geven
 - Afspraken na de trainingsdagen (evt. feedback/interviewmomenten)
2. Hoe is de werving van cliënten verlopen voor de Voluit Leven nazorg?
 - a. Wat ging er goed? Wat kan er eventueel beter?
 - Indicatiecriteria
 - Taakverdeling
 - Communicatie richting cliënten/materialen
 - Communicatie met collega's
 - Duidelijkheid van het onderzoek
 - Selectie onderzoek
 - ...
3. Hoe is de nazorg verlopen met de groep? Wat waren je ervaringen? (Na 3 en 9 weken)
 - a. Wat ging er goed? Wat kan er eventueel beter?
 - Doel bij de cliënten bereikt
 - Methodiek: mindfulness, ACT
 - Materiaal, benodigdheden
 - Duur, frequentie, (werk)druk, voldoende tijd
 - Locatie
 - Communicatie collega's
 - Ondersteuning (management)
 - Uitvoer onderzoek: vragenlijst, invullen toestemmingsformulier, communicatie
 - ...
4. Hoe wordt Voluit Leven in de organisatie opgevangen?
 - a. Wat gaat er goed, wat kan er beter?
 - i. Visie management
 - ii. Faciliteiten

- iii. Communicatie
- iv. Beschikbaarheid collega's
- v. Bespreken van resultaten
- vi. Ondersteuning leidinggevende
- vii. Barrières implementatie
- viii. Visie op implementatie

Appendix C

Final coding schemes

Coding scheme therapists

Communication <ul style="list-style-type: none"> - Contact with organisation - Familiarity - Promotion 	COVID-19 <ul style="list-style-type: none"> - Not present at session - Symptoms - Online - Restrictions 	Recruitment <ul style="list-style-type: none"> - Recruiting with teams - Support - Asking colleagues - (NL); regiebehandelaren - Laborious
Start aftercare <ul style="list-style-type: none"> - Too little time - Satisfied - Time pressure - Rough start - Two therapists 	Train-the-trainer <ul style="list-style-type: none"> - Intervention - Experience - Knowledge at the start 	Promotion <ul style="list-style-type: none"> - Too late - Materials - Intensity of promotion - Creating support
Indication criteria <ul style="list-style-type: none"> - Fitting - Contra-indication: narcissism - Deviating from the criteria - Another target group 		

Coding scheme participants

Overall impression <ul style="list-style-type: none"> - Positive experience - Toolbox a bit fuller - New insight - Surprised - Broader horizon 	Mindfulness/meditation <ul style="list-style-type: none"> - Looking at oneself with judgement - Research feelings in the body - Restless - Very effective - Doing less 	Group Setting <ul style="list-style-type: none"> - Time pressure when with many participants - Not in favour of smaller group - Safe, possible to be open - Compact provides more space
Homework <ul style="list-style-type: none"> - Useful book - Background information - Confronting - No checks - Checked together - Practical 	Psychological Flexibility <ul style="list-style-type: none"> - Prepared to accept suffering - Letting go - Focussing on other things - Less judgemental - Following values 	Substance Use <ul style="list-style-type: none"> - Feeling of not using stronger - Almost not talked about - Commitment to stopping
Self-efficacy <ul style="list-style-type: none"> - No focus - From openness - Intrinsic motivation - Providing boundaries 	Wellbeing <ul style="list-style-type: none"> - More open and honest - Less anxious, less shame - Milder to oneself - More free 	

	<ul style="list-style-type: none">- Increased trust in myself- Self-respect	
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