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Acceptance and commitment therapy for the treatment of stress among social workers: A randomized controlled trial

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ABSTRACT

Chronic stress increases the risk of health problems and absenteeism, with negative consequences for individuals, organizations and society. The aim of the present study was to examine the effect of a brief stress management intervention based on the principles of Acceptance and Commitment Therapy (ACT) on stress and general mental health for Swedish social workers ($n = 106$) in a randomized, controlled trial. Participants were stratified according to stress level at baseline in order to examine whether initial stress level moderated the effect of the intervention. Two thirds of the participants had high stress levels at baseline (Perceived Stress Scale; score of $\geq$25). The results showed that the intervention significantly decreased levels of stress and burnout, and increased general mental health compared to a waiting list control. No statistically significant effects were, however, found for those with low levels of stress at baseline. Among participants with high stress, a substantial proportion (42%) reached criteria for clinically significant change. We concluded that the intervention successfully decreased stress and symptoms of burnout, and increased general mental health. Evidence is, thus, provided supporting ACT as brief, stress management intervention for social workers.

Introduction

Every fifth employee in Sweden has experienced some form of work-related health problem during the last year, where stress and psychological distress were the most common causes (Swedish Work Environment Authority, 2008). The socio-economic costs of stress-related health problems, related to working life, was estimated at 8 billion SEK (approx. 1.1 billion USD) in terms of production loss in one year (Swedish Government Offices, 2001). Studies conducted in other countries, including the United Kingdom and the United States, have reported similar consequences of work-related stress (Hardy, Woods, & Wall, 2003; Kessler & Frank, 1997; Kessler, Merikangas, & Wang, 2008). In the worst scenario, prolonged, unresolved stress at the workplace can lead to burnout, which is characterized by physical, mental and emotional exhaustion, and discomfort and loss of empathy (Maslach & Jackson, 1981). Thus, burnout is a serious feature of stress, one which can have substantial impact on general health and productivity of employees.

Social workers are at risk of developing stress-related health problems. Often working under difficult occupational circumstances with high work demands and limited support and resources, social workers are, to a large extent, faced with the psychological effects of stress and burnout (Lloyd, King, & Chenoweth, 2002). In fact, high levels of stress and psychiatric symptoms, emotional exhaustion, and low levels of job satisfaction have repeatedly been observed in the group (e.g., Bride, 2007; Coyle, Edwards, Hannigan, Fothergill, & Burnard, 2005; Evans et al., 2006; Lloyd et al., 2002; Tham & Meagher, 2009). These negative consequences are often related to feeling undervalued at work, high work demands and low control (Evans et al., 2006; Lloyd et al., 2002; Tham & Meagher, 2009). Social workers within the public sector have shown to have higher levels of psychological stress compared to those working in other areas, regarding symptoms of burnout, anxiety, depression and irritation, as well as significantly more somatic complaints, such as tiredness, dizziness and muscle tension (Himle, Jayaratne, & Thyness, 1993). In Sweden, social workers have been found to report high workload (Tham & Meagher, 2009), high staff turnover (Tham, 2007) and long-term sick leave with stress-related health problems as the main cause (Swedish Work Environment Authority, 2008).

Stress management interventions, mainly based on behavioural and cognitive methods, have been developed with the aim of increasing the individual's psychological resources and ability to effectively cope with occupational strains (Barkham & Shapiro, 1990; Murphy, 1996). Reviews have provided support for their

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use in increasing health and well-being in employees (Murphy, 1996; Van der Klink, Blonk, Schene, & Van Dijk, 2001). Yet, room for improvement in outcomes exists (Van der Klink et al., 2001) and, thus, further development of effective procedures in the treatment of work-related stress is needed.

Acceptance and Commitment Therapy (ACT) is a modern form of behaviour therapy and is based on behavioural principles formalized in Relational Frame Theory (Hayes, Strosahl, & Wilson, 1999). The overall aim of ACT is to increase psychological flexibility through the six core processes of acceptance, defusion, self as context, committed action, values, and contact with the present moment (Hayes, Luoma, Bond, Masuda, & Lillis, 2006). Psychological flexibility is defined as "the ability to contact the present moment more fully as a conscious human being and to change, or persist in, behaviour when doing so serves valued ends" (Hayes et al., 2006, p. 7). Through the means of psychological flexibility the therapy seeks to reduce experiential avoidance, which is described as process involving any behaviour that functions to avoid or control internal experiences, such as thoughts, feelings, or physiological sensations (Hayes, Strosahl et al., 2004). The idea is that experiential avoidance over time will increase the intensity, frequency or duration of the very same experience that one is trying to avoid or control. There is some support for this notion in the literature (see, Chawla & Ostafin, 2007, for an empirical review of experiential avoidance).

Research on ACT has provided promising results for various psychological problems, with effect size estimates in the moderate range (Hayes et al., 2006; Öst, 2008). There are, however, still only a few studies on ACT within each specific area or diagnosis (Hayes, Masuda, Bisset, Luoma, & Guerrero, 2004). Studies on ACT have also been criticized for not having the same research methodology standard as studies on "traditional" CBT (Öst, 2008). Thus, further controlled trials of high methodological rigour are needed.

As ACT's primary aim is to increase flexibility rather than to eliminate pathology, it has been argued that the treatment can be especially useful when the goal is to prevent future health issues (Biglan, Hayes, & Pistorello, 2008). Biglan et al. (2008) considers the possibility that experiential avoidance may serve as meditator of the impact of stressful events on pathology. Individuals who are high on experiential avoidance may lock into a self-amplifying process by avoiding the experience that goes along with stressful events, thereby increasing the risk for prolonged stress reactions and for the development of negative effects over time. Thus, as ACT explicitly targets experiential avoidance, the therapy may help to prevent some of the harmful consequences of stress. ACT has, in fact, been modified as a preventive stress management intervention (ACT–SMI; Bond & Hayes, 2002). The intervention focuses on acceptance of unpleasant internal events rather than on changing or eliminating stressors that give rise to such events (Bond, 2004; Bond & Hayes, 2002). The intervention is given to groups and consists of three 3-h sessions: two on consecutive weeks, and the third after three months. Studies on ACT–SMI in organizational settings have provided evidence for its usefulness, showing that the intervention can have a beneficial effect on depression, general mental health, dysfunctional cognitions, occupational constraints, learning at work and propensity to innovate (Bond & Bunce, 2000; Flaxman & Bond, 2010). Furthermore, preliminary findings support that the effects of the intervention were mediated by the proposed processes of the therapy (i.e., psychological flexibility; Bond & Bunce, 2000; Flaxman & Bond, 2010).

Despite these encouraging findings, further studies on ACT–SMI in different settings and cultural contexts are warranted. In fact, studies on ACT–SMI and on key processes related to the intervention have almost exclusively been conducted in the United Kingdom and they have been limited to the private sector of working life (Bond & Bunce, 2000, 2003; Bond, Flaxman, & Bunce, 2008; Flaxman & Bond, 2010). Specifically, to our knowledge, no study has to date tested whether the intervention also can be beneficial for social workers who experience occupational strains in the public sector.

A modified version of the ACT–SMI has been developed in Sweden (Livheim, 2008). This version of ACT–SMI has a slightly different structure compared to the original version. It includes one more session with a total of four sessions of 3 h each, provided every other week. Although similar exercises are used to promote psychological flexibility, more time is devoted to homework assignments and daily practice between sessions in this version of the intervention. To our knowledge, two randomized controlled trials of the protocol have been conducted in school settings in Sweden, providing preliminary evidence for beneficial consequences for teachers (Altbo & Nordin, 2007) and youths (Livheim, 2004).

To summarize, social workers have reported high levels of stress and stress-related health problems and can therefore be assumed to benefit from a stress management intervention. The aim of the present study was to examine the effect of an ACT–SMI on stress and general mental health for Swedish social workers compared to a waiting list control in a randomized, controlled trial. Although ACT–SMI's primary aim is not to reduce pathology, stress and general mental health were chosen as primary outcomes given that these outcomes are often targeted in traditional CBT-based SMIs (e.g., Murphy, 1996). Thus, this will allow comparison of efficacy within the established research tradition. Furthermore, experiential avoidance may decrease an individual's ability to cope with stressors (see, Biglan et al., 2008, for a review on the diathesis-stress model of experiential avoidance), making stress an adequate target even from ACT perspective. In addition, general mental health has been used as primary outcome in previous studies on ACT–SMI (e.g., Flaxman & Bond, 2010). Secondary outcome variables in our trial were burnout, performance-based self-esteem, and job demand and control, as these outcomes are of importance from a work-related perspective, in particular the work of social workers (Evans et al., 2006). We also investigated the effect of the ACT–SMI on the purported process of change in the treatment, i.e., psychological flexibility. Moreover, as perceived level of stress might affect the need for improved stress management, we examined whether initial level of stress moderated the effects of the intervention. In addition, we explored whether therapist effects were present in the trial by randomizing and comparing experienced therapists with less experienced therapists. Finally, we conducted exploratory correlation analyses to examine the association between the proposed process in ACT–SMI (i.e., psychological flexibility) and the outcome.

The present study was designed to address the above stated aims. First, we predicted that the ACT–SMI would produce significant improvements on the outcome and process variables in comparison with the control condition for the entire sample of participants (Hypothesis 1). Second, we expected to observe larger effects of ACT–SMI on stress in a subgroup of participants with high stress levels at baseline in comparison with the effects seen in a subgroup of participants with low initial stress levels (Hypothesis 2). That is, effects would be significant for those with high stress levels but not for those with low stress levels. In line with this, we assumed that a greater proportion among participants with high initial stress levels would experience clinically significant improvements than participants with low initial stress levels. Third, we expected that more experienced therapists would produce greater improvements in outcomes than less experienced therapists (Hypothesis 3). Fourth, we hypothesised that psychological flexibility would be correlated with the outcomes, such that higher

increase in flexibility would be associated with greater improvements (Hypothesis 4).

Method

Participants

All social workers employed by the City of Stockholm, Sweden ($N = 1228$) were offered to participate in the study and were invited to an information meeting. A total of 108 social workers attended the meeting, making them eligible for participation in the study. Of these, 106 participants were enrolled in the study, providing informed consent and self-assessments. There were no exclusion criteria. The participants did not receive any compensation for participation. This sample of participants were representative for social workers employed by City of Stockholm considering age, sex and terms of employment (c.f., Tham, 2007; Tham & Meagher, 2009). The average age of participants was 44 years ($SD = 11.1$, range = 24–64) and 89% ($n = 94$) were women. The majority had permanent employment (95%, $n = 101$). Average working hours were 38 h per week ($M = 37.9$, $SD = 4.7$, range = 12–42). On average, participants had worked for ten years ($M = 9.8$, $SD = 9.9$, range = 0–38) at their current workplace. All participants had a university or college degree and 90% ($n = 95$) were graduates from the School of Social Studies. A majority of the participants were married/cohabiting (61%, $n = 65$) and had children (62%, $n = 66$). One third of the sample ($n = 35$) had been on sick leave for an extended period during their working life. In more than half of the cases the reasons were stress-related ($n = 21$), such as stress, anxiety or depression ($n = 17$) and possible stress-related physical diseases ($n = 4$). The majority was not undergoing treatment during the study period, though 9% ($n = 10$) of the participants were undergoing psychological/medical treatment for psychological problems and 12% ($n = 13$) were receiving medical or physiotherapy treatment due to physical conditions or diseases.

Measures

All instruments were administrated at pre-treatment (i.e., two weeks prior to the start of the intervention) and at post-treatment (i.e., two weeks after the intervention had ended).

Primary outcome

The Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983) is a self-report measure of perceived stress. The Swedish version of PSS has shown good psychometric attributes, with an internal consistency of .82 and split-half-reliability of .84 (Eskin & Parr, 1996). PSS consists of 14 questions. A higher score indicates higher perceived stress levels (0–56 points). In the present study Cronbach's alphas were .85 and .87 at pre- and post-treatment assessment respectively.

The General Health Questionnaire (GHQ-12; Banks et al., 1980) is a self-report measuring general mental health. The scale has good psychometric attributes and split-half-reliability (.87; Bhui, Bhudra, & Goldberg, 2000). Cronbach's alpha has varied between .82 and .9 (Banks et al., 1980; Bhui et al., 2000). GHQ-12 consists of 12 questions. A higher score indicates more mental health problems (0–36 points). In the present sample Cronbach's alphas were .83 and .84 for the total scale at pre- and post-assessment respectively.

Secondary outcome

The Maslach Burnout Inventory (MBI; Maslach & Jackson, 1981) is a self-report questionnaire measuring work-related burnout. MBI is divided into three subscales: emotional exhaustion (EE), depersonalization (DE) and personal accomplishment (PA). The rating scale has shown high reliability and validity (Maslach & Jackson, 1981). MBI contains 22 questions. High scores indicate more symptoms (0–132 points). In the present study Cronbach's alphas were .83 and .84 for the total scale at pre- and post-assessment respectively.

The Performance-based self-esteem scale (Pbse-scale; Hallsten, Josephson, & Torgén, 2005) is seen as complementary test measuring burnout. The measure has been found to predict symptoms of burnout (Hallsten et al., 2005). The Pbse-scale's psychometric attributes are considered satisfying with an internal consistency ranging from .67 to .85. The Pbse-scale consists of four questions. A higher score indicates higher performance-based self-esteem (4–20 points). In the current study Cronbach's alphas were .80 and .84 at pre- and post-assessment respectively.

The Demand–Control–Support Questionnaire (DCSQ; Sanne, Torp, Mykletun, & Dahl, 2005) is a modified version of the Job Content Questionnaire (Karasek, Kawakami, Brisson, Houtman, & Bongers, 1998). The scale measures work-related demand, control and support. DCSQ's psychometric attributes are considered satisfying (Sanne et al., 2005). Cronbach's alpha ranges from .67 to .85. The current study made use of the subscales measuring scope for decision-making (Control) and psychological demands (Demands), which consisted of a total of 11 questions each. Higher scores indicate higher perceived demands (5–20 points) and perceived control (6–24 points). In the present study Cronbach's alphas were .72 and .75 for the Demands subscale and .51 and .55 for the Control subscale at pre- and post-assessment respectively.

Process measure

The Acceptance and Action Questionnaire (AAQ; Hayes, Strosahl et al., 2004) measures psychological flexibility (Hayes et al., 2006). The scale has been developed to measure processes of change related to ACT interventions. Earlier versions of AAQ have demonstrated sound psychometric properties and good validity (Bond & Bunce, 2003). A non-validated, shortened, Swedish version of AAQ (Lundgren & Parling, 2010) was used in the present study, which consists of six questions. High scores indicate high psychological flexibility (6–42 points). In the present study Cronbach's alphas were .87 and .88 at pre- and post-assessment respectively.

Treatment

The treatment consisted of a Swedish version of the ACT–SMI (Bond, 2004; Bond & Hayes, 2002). A treatment protocol is available (Livheim, 2008). The overall aim of the intervention is to increase psychological flexibility. Throughout the treatment, metaphors and interactive exercises are used to illustrate key components of the intervention. It consists of four sessions of 3 h each, provided every other week. The group sizes vary between 7 and 30 participants. Each session has a specific theme and follows the same structure. Between sessions, the participants complete homework assignments, including physical exercise and mindfulness practice. Focus in the first session is stress, acceptance and language. The second session target values. The third session considers obstacles and flexibility. The fourth and final session focuses on compassion and communication, as well as maintenance of change.

Therapists and adherence

Four therapists delivered the intervention working in pairs. Two therapists were licensed psychologists (A therapists) and two were master level students in psychology (B therapists). Two of the authors served as therapists in the study, whereas the other two therapists were not otherwise involved in the study (i.e., they were blind to study design). All therapists in the study had completed

training in the method and had access to supervision. All therapists were specialized in cognitive behavioural therapy. Adherence to the manual was controlled using a checklist after each session. No exceptions from the manual were noted.

Procedure

An overview of the study is provided in Fig. 1. Based on responses to the PSS (Cohen et al., 1983), the participants were divided into groups with high ($n = 68$) and low ($n = 38$) stress levels. The cut-off used was a Swedish norm value (24.4 points; Eskin & Parr, 1996). Low stress level was defined as ≤24 points, while high stress level was defined as ≥25 points. After the first assessment and stratification according to initial stress level, the participants were randomized into intervention and control groups, with a 2:1 ratio (see Fig. 1). The random allocation sequence was generated with a true random-number service by a researcher who was blind to participants' identity and was not otherwise involved in the study. Participants were informed of allocation by e-mail. The intervention started two weeks after the baseline assessment. The two pairs of therapists were randomized to be responsible for one high stress level intervention group each. The participants with low stress levels were fewer and therefore not randomized to separate pairs of therapists, in order to keep the group sizes as equal as possible. The control groups were assigned to a waiting list. The post-intervention measures, for all participants, took place two weeks after the intervention was completed. The control group was offered the intervention at that time.

The participants were divided into groups of high and low stress levels at baseline in order to examine whether the treatment effect was moderated by initial stress level. Analyses were first conducted using all participants. The analysis for participants with high and low stress levels was then conducted separately. Analyses were also performed to examine the impact of therapists on the effects of the treatment. These analyses were based on data from intervention groups with high stress levels at baseline, as these were the groups that were randomized to different pairs of therapists (see Fig. 1). Finally, correlation analyses were performed to see whether there were any associations between the process measure (AAQ) and the outcome variables.

Statistical analysis

Dropout was treated with an intent-to-treat-analysis using the data missing principle of last observation carried forward. In this case, if individual had a missing value on post-assessment the pre-treatment score was carried forward. Hence, all participants who were randomly assigned to one of the two conditions were included in the statistical analysis. Independent *t*-tests were performed to check for differences in mean score between the groups

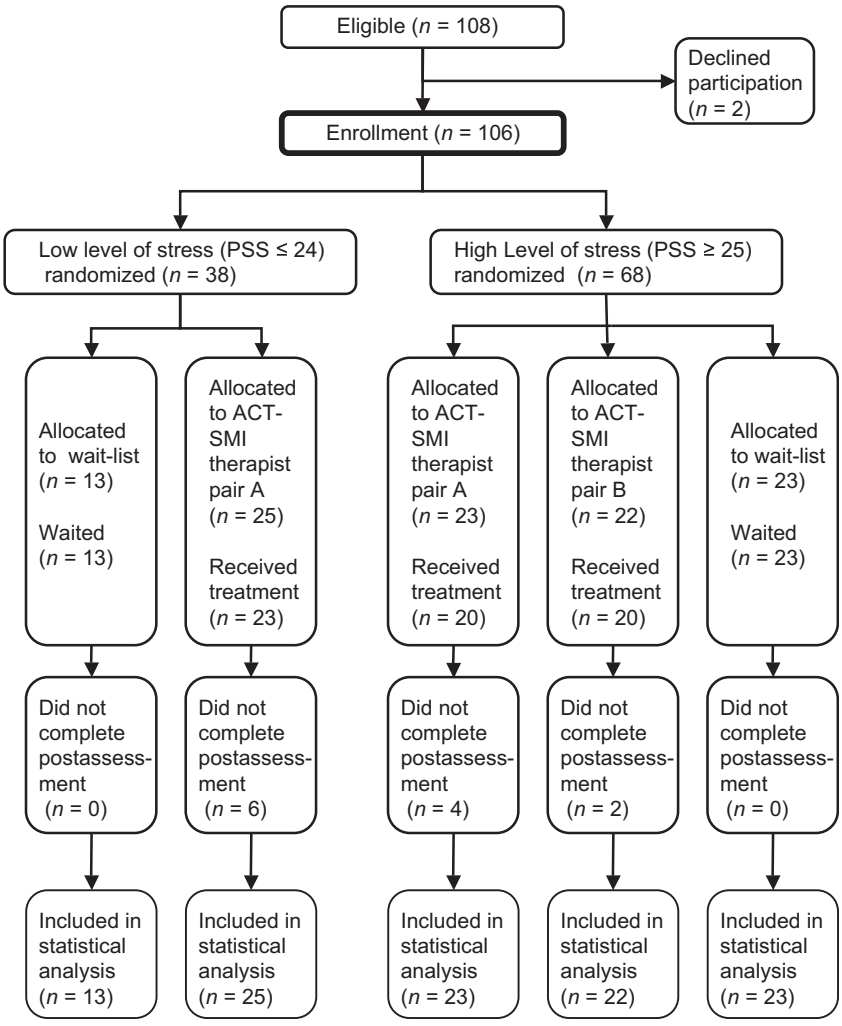

Fig. 1. Overview of the design of the study, participants at each stage and assigned pairs of therapists. PSS = Perceived Stress Scale.

at baseline. Mean differences at post-treatment between the two conditions were analysed with analysis of variance with the pre-treatment score as a covariate (ANCOVA). ANCOVA has been shown to produce greater power than ANOVA of change in randomized designs (Van Breukelen, 2006). Effect sizes were calculated using the standardized difference in means between treatment and control at post-treatment (Cohen's *d*), with the pooled standard deviation.

Clinically significant change was computed for the primary outcome measure of perceived stress (PSS) using the method suggested by Jacobson and Truax (1991). In this method clinical significance is established by two separate calculations. The first determines whether the change is statistically reliable beyond measurement error. The second aspect of clinical significance determines whether the subject's post score falls within a "healthy" or "recovered" population on the variable of interest (in this case PSS). As functional (i.e., participants with low levels of stress) and dysfunctional (i.e., participants with high levels of stress) populations overlap in the present study, the "c" criteria (Jacobson & Truax, 1991), supplemented with Swedish norm data (Eskin & Parr, 1996), was used to determine whether a score could be classified as "recovered". The c is the cut-off point that the participant's post-treatment score has to cross in order to be classified as recovered. The cut-off is calculated by entering the mean and standard deviation from the norm data and mean and standard deviation from the dysfunctional population (i.e., distressed workers in the present sample) into the formula provided by Jacobson and Truax (1991). Between-group differences in proportions of individuals who the met the criteria for clinically significant change were analysed using chi-square tests. Correlations were calculated with Pearson's correlation coefficient (*r*).

Before conducting primary analysis, the data was screened for potential problems. Data were approximate normally distributed for all outcome measures at pre- and post-assessment and no significant outliers were detected. SPSS, version 17.0, was used for all statistical analyses.

Results

Attrition

Dropout occurred when participants did not complete the intervention (which required presence at a minimum of three out of four sessions) or did not complete the post-intervention measures. Ninety-four participated in the post-intervention measures, which brought the number of participants that dropped out to twelve. Five of these never started the intervention, a further two did not finish it and the remaining five finished the intervention but did not complete the post-intervention measures. All dropout participants were part of the intervention groups. The reason for dropping out was primarily lack of time due to workload. Of the twelve dropouts, nine gave this reason. Other reasons were illness, the study did not fit in with their schedules, and other personal reasons. None were currently receiving psychological treatment. Completers and dropouts did not differ on any of the demographic variables, except that a greater proportion of participants among those who dropped out were married/cohabiting (92%) than among those who completed the treatment (57%), $\chi^2(N = 106, df = 1) = 3.9$, $p = .048$. Independent *t*-tests did not show any statistically significant differences between the participants who dropped out and those who completed the post-assessment in any of the outcome measures at pre-assessment (all *t*'s < 1.29, all *p*'s $> .21$).

Table 1
Means, standard deviations of outcome and process variables at pre- and post-treatment for each condition, effect sizes with 95% CI, and test-statistics.

Variable	Group	Pre		Post		ANCOVA *F*	*d*[c]	95% CI
		M	*SD*	*M*	*SD*			
PSS	ACT–SMI	27.6	7.2	22.2	7.5	12.88**	.72	[.30, 1.13]
0–56	Wait	28.4	7.5	27.5	7.1			
GHQ	ACT–SMI	12.8	4.4	10.6	4.6	5.48*	.38	[−.03, .79]
0–36	Wait	12.4	3.9	12.3	4.1			
MBI	ACT–SMI	44.6	15.7	37.4	14.6	15.3***	.50	[.09, .91]
0–132	Wait	43.1	11.3	44.4	12.4			
MBI	ACT–SMI	23.7	9.7	20.1	9.2	5.08*	.32	[−.09, .72]
EE	Wait	23.6	7.9	22.9	7.7			
MBI	ACT–SMI	6.3	5.2	4.8	3.9	8.17**	.33	[−.08, .73]
DE	Wait	5.7	4.2	6.1	4.1			
MBI	ACT–SMI	14.5	6.0	12.5	5.6	11.27***	.48	[.07, .88]
PA	Wait	13.8	6.3	15.4	6.8			
Pbse[a]	ACT–SMI	12.5	3.9	11.9	4.0	0.09	−.03	[−.43, .38]
4–20	Wait	12.1	3.5	11.8	3.7			
AAQ	ACT–SMI	30.0	6.4	32.2	6.4	0.40	.10	[−.31, .5]
6–42	Wait	30.0	6.3	31.6	5.7			
DCSQ[b]	ACT–SMI	15.8	2.5	16.0	2.4	0.00	.28	[−.13, .68]
Demand 5–20	Wait	16.6	2.6	16.7	2.7			
DCSQ[b]	ACT–SMI	18.9	2.1	19.2	2.2	0.43	.10	[−.31, .50]
Control 6–24	Wait	18.7	2.0	19.0	1.9			

Note. Analyses were based on intention-to-treat data ($N = 106$) using analysis of variance with pre-treatment score as a covariate (ANCOVA). $F(1, 103)$ for PSS, GHQ, MBI, AAQ; $F(1, 102)$ for Pbse; $F(1, 101)$ for DCSQ. ACT–SMI = Acceptance and Commitment Therapy–Stress management intervention; PSS = Perceived Stress Scale; GHQ = General Health Questionnaire; MBI = Maslach Burnout Inventory; MBI-EE; Maslach Burnout Inventory-emotional exhaustion; Maslach Burnout Inventory-depersonalization; MBI-PA = Maslach Burnout Inventory-personal accomplishment; Pbse = Performance-based self-esteem scale; AAQ = Acceptance and Action Questionnaire; DCSQ = Demand–Control–Support Questionnaire; CI = confidence interval.
*$p < .05$ **$p < .01$ ***$p < .001$.
[a] One did not complete the questionnaire at pre-treatment.
[b] Two did not complete the questionnaire at pre-treatment.
[c] Standardized mean between-group difference at post-treatment using the pooled standard deviation in the calculation.

Effect of the intervention for all participants

There were no group differences in terms of demographic characteristics. No significant difference was found on outcome measures between the intervention group and the waiting list at pre-treatment (all *t*'s < 1.58, all *p*'s $> .11$). To examine differences between the intervention group and the waiting list at post-assessment (Hypothesis 1), analyses were performed using ANCOVA with the pre-treatment score entered as a covariate. Means, standard deviations for each group, and results from the statistical analyses are presented in Table 1.

Primary outcome

The ACT–SMI group had a statistically significant lower level of perceived stress (PSS) ($M = 22.2$, $SD = 7.5$, $n = 70$) than the control condition ($M = 27.5$, $SD = 7.1$, $n = 36$) at post-treatment, $F(1, 103) = 12.88$, $p = .001$, Cohen's $d = 72$. The ACT–SMI also had statistically significant lower general mental health problems (GHQ) ($M = 10.6$, $SD = 4.6$, $n = 70$) than the control condition ($M = 12.3$, $SD = 4.1$, $n = 36$) at post-treatment, $F(1, 103) = 5.48$, $p = .021$, Cohen's $d = .38$.

Secondary outcome and process measure

The ACT–SMI condition had a statistically significant lower level of burnout symptoms (MBI-total scale) ($M = 37.4$, $SD = 14.6$, $n = 70$) than the control condition ($M = 44.4$, $SD = 12.4$, $n = 36$) at post-treatment, $F(1, 103) = 15.3$, $p < .001$, Cohen's $d = .50$. A similar pattern of results emerged for each of the subscales of the measure (see Table 1). The ACT–SMI had statistically significant lower values

than the control condition on emotional exhaustion (EE), depersonalization (DE) and personal accomplishments (PA). Between-group effect sizes in favour of the intervention at post-treatment for each subscale on the MBI were .32, 33, and 48, respectively. No significant effect of the intervention on the Pbse and DCSQ was found. No intervention effect was observed on AAQ.

Effect of the intervention for participants with high stress levels at baseline

For participants with high and low levels of stress, no statistically significant difference was found between the intervention group and waiting list at pre-treatment (all t's < 1.74, all p's $> .09$). To examine differences between the intervention group and waiting list at post-assessment for each subgroup (Hypothesis 2), analyses were performed using ANCOVA with the pre-treatment score entered as a covariate. Descriptive and test-statistics for participants with high and low levels of stress at baseline are provided in Table 2.

Primary outcome

The ACT–SMI had statistically significant lower level of perceived stress (PSS) ($M = 24.1$, $SD = 7.9$, $n = 45$) than the control condition ($M = 29.7$, $SD = 6.4$, $n = 23$) at post-treatment, $F(1, 65) = 8.34$, $p = .01$, Cohen's $d = .75$. The ACT–SMI had marginally significant lower general mental health problems (GHQ) ($M = 11.7$, $SD = 5.0$, $n = 45$) than the control condition ($M = 13.4$, $SD = 4.0$, $n = 23$) at post-treatment, $F(1, 65) = 3.67$, $p = .06$, Cohen's $d = .36$.

Secondary outcome and process measure

The ACT–SMI condition had statistically significant lower level of burnout symptoms (MBI-total scale) ($M = 40.8$, $SD = 16.2$, $n = 45$) than the control condition ($M = 47.6$, $SD = 11.7$, $n = 23$) at post-treatment, $F(1, 65) = 12.24$, $p < .001$, Cohen's $d = .46$. A similar pattern of results emerged for each of the subscales of the measure (see Table 1). The ACT–SMI had significantly lower values than the control condition on emotional exhaustion (EE), depersonalization (DE) and personal accomplishments (PA). Between-group effect sizes in favour of the intervention at post-treatment for each subscale on the MBI were .36, .19, and .42, respectively. No significant effect of the intervention on the secondary outcome Pbse, DCSQ was found. No intervention effect was observed on AAQ.

Effect of the intervention for participants with low stress levels at baseline

Primary outcome

The ACT–SMI had marginally significant lower level of perceived stress (PSS) ($M = 18.8$, $SD = 5.3$, $n = 25$) than the control condition ($M = 23.6$, $SD = 6.8$, $n = 13$) at post-treatment, $F(1, 35) = 4.01$, $p = .053$, Cohen's $d = 1.09$. No statistically significant effect of the intervention on the GHQ was observed (see Table 2).

Secondary outcome and process measure

The ACT–SMI condition had a marginally significant lower level of burnout symptoms (MBI-total scale) ($M = 31.3$, $SD = 8.4$, $n = 25$) than the control condition ($M = 38.9$, $SD = 12.1$, $n = 13$) at post-treatment, $F(1, 35) = 4.14$, $p = .05$, Cohen's $d = .78$. This effect was in part explained by a statistically significant effect on one of the subscales (personal accomplishments; PA; see Table 2). No other statistically significant effect of the intervention on subscales of the MBI, or on the Pbse, DCSQ was found. Between-group effect sizes at post-treatment were, however, of similar magnitude to the effects found among participants with a high level of stress at intake (see Table 2). No effect of the intervention was observed on AAQ.

Table 2
Means, standard deviations of outcome and process variables at pre- and post-treatment for each condition, effect sizes with 95% CI, and test-statistics for participants with high and low level of stress.

Variable	Group	Pre		Post		ANCOVA F	d[b]	95% CI
		M	*SD*	*M*	*SD*			
High level of stress								
PSS	ACT–SMI	31.9	4.6	24.1	7.9	8.34*	.75	[.23, 1.26]
0–56	Wait	32.4	6.4	29.7	6.4			
GHQ	ACT–SMI	14.8	3.6	11.7	5.0	3.67†	.36	[−.15, .86]
0–36	Wait	14.1	3.5	13.4	4.0			
MBI	ACT–SMI	50.6	14.5	40.8	16.2	12.24***	.46	[−.06, .96]
0–132	Wait	46.0	10.4	47.6	11.7			
MBI	ACT–SMI	27.6	8.5	22.1	9.9	5.88**	.36	[−.15, .86]
EE	Wait	25.8	7.0	25.4	7.7			
MBI	ACT–SMI	7.6	5.6	5.4	4.4	6.58**	.19	[−.32, 0.69]
DE	Wait	5.6	4.4	6.2	4.0			
MBI	ACT–SMI	15.3	6.2	13.3	6.0	5.87**	.42	[−.10, 0.92]
PA	Wait	14.6	6.1	15.9	6.7			
Pbse[a]	ACT–SMI	12.8	4.1	12.1	4.3	0.01	−.10	[−.60, .41]
4–20	Wait	12.1	3.4	11.7	3.6			
AAQ	ACT–SMI	27.5	5.7	30.6	6.7	0.01	−.08	[−.43, .58]
6–42	Wait	28.4	6.3	31.1	6.2			
DCSQ[a]	ACT–SMI	16.1	2.6	16.4	2.2	0.01	.27	[−.24, .77]
Demand 5–20	Wait	17.0	2.7	17.1	2.8			
DCSQ[a]	ACT–SMI	18.5	2.2	18.9	2.4	1.05	.09	[−.42, .59]
Control 6–24	Wait	19.0	1.7	18.7	1.9			
Low level of stress								
PSS	ACT–SMI	19.8	3.3	18.8	5.3	4.01†	1.09	[.36, 1.78]
0–56	Wait	21.3	2.1	23.6	6.8			
GHQ	ACT–SMI	9.2	3.3	8.6	3.1	2.46	.55	[−.14, 1.22]
0–36	Wait	9.5	2.6	10.5	4.0			
MBI	ACT–SMI	33.8	11.5	31.3	8.4	4.14†	.78	[.07, 1.45]
0–132	Wait	37.9	11.2	38.9	12.1			
MBI	ACT–SMI	16.6	7.4	16.4	6.5	0.05	.34	[−.34, 1.01]
EE	Wait	19.5	7.9	18.5	5.5			
MBI	ACT–SMI	4.0	3.2	3.7	2.6	0.75	.63	[−.06, 1.31]
DE	Wait	6.0	3.9	5.8	4.4			
MBI	ACT–SMI	13.2	5.6	11.2	4.7	5.29*	.59	[−.11, 1.26]
PA	Wait	12.4	6.7	14.5	7.1			
Pbse	ACT–SMI	12.0	3.6	11.4	3.5	0.20	.08	[−.59, .75]
4–20	Wait	12.0	3.7	11.7	3.9			
AAQ	ACT–SMI	32.4	4.9	35.0	4.7	1.62	.53	[−.16, 1.20]
6–42	Wait	32.9	5.3	32.5	4.8			
DCSQ[a]	ACT–SMI	15.2	2.4	15.4	2.5	0.00	.20	[−.47, .87]
Demand 5–20	Wait	15.9	2.2	15.9	2.4			
DCSQ[a]	ACT–SMI	19.5	1.6	19.9	1.7	0.00	.40	[−.29, 1.06]
control 6–24	Wait	18.3	2.4	19.2	1.9			

Note. Analyses were based on intention-to-treat data using analysis of variance with the pre-treatment score as a covariate (ANCOVA). Participants were classified into high ($n = 68$) and low stress levels ($n = 38$) using a cut-off on the PSS (score of ≥25). High levels of stress: $F(1, 65)$ for PSS, GHQ, MBI, AAQ; $F(1, 64)$ for Psbe, DCSQ; Low levels of stress: $F(1, 35)$ for PSS, GHQ, MBI, AAQ Psbe; $F(1, 34)$ for DCSQ. ACT–SMI = Acceptance and Commitment Therapy–Stress management intervention; PSS = Perceived Stress Scale; GHQ = General Health Questionnaire; MBI = Maslach Burnout Inventory; MBI-EE; Maslach Burnout Inventory-emotional exhaustion; MBI-DE = Maslach Burnout Inventory-depersonalization; MBI-PA = Maslach Burnout Inventory-personal accomplishment; Pbse = Performance-based self-esteem scale; AAQ = Acceptance and Action Questionnaire; DCSQ = Demand–Control–Support Questionnaire; CI = confidence interval.
†$p < .10$ *$p < .05$ **$p < .01$ ***$p < .001$.
[a] One did not complete the questionnaire at pre-treatment.
[b] Standardized between-group mean difference at post-treatment using the pooled standard deviation in the calculation.

Clinically significant change

To further examine the effect of the intervention, we calculated clinically significant change among participants with high and low

stress levels as well as among the whole sample of participants (Hypothesis 1 and 2). Table 3 presents the proportion of significantly improved on the primary outcome measures PSS in each condition for participants with low and high levels of stress at baseline. The intervention group had a significantly larger proportion of participants who met the criteria for significantly clinically improved ($n = 22$), i.e., reliable change and recovered, than the control condition ($n = 2$), $\chi^2(N = 106, df = 1) = 9.09$, $p = 003$. Among participants with a high level of stress, the intervention group had a significantly larger proportion of clinically improved participants ($n = 19$) than the control condition ($n = 2$), $\chi^2(N = 68, df = 1) = 8.02$, $p = 005$. Among participants with low levels of stress, no difference in proportion was observed $\chi^2(N = 38, df = 1) = 1.69$, $p = .19$. Only one participant in the intervention group made a reliable deterioration, whereas three participants in the waiting list control condition deteriorated significantly (see Table 3).

Effect of therapists on outcome

Groups with high stress levels at intake were randomized to different pairs of therapists to examine whether the experience of the therapist influenced the effect of the intervention (Hypothesis 3). Therapist impact was analysed using analysis of variance examining differences in means between the pairs of therapists at post-treatment with the pre-treatment score as a covariate (ANCOVA). Analyses showed no significant main effect of therapist on any of the outcome measures (all F's < 1.25, all p's $> .27$).

Exploratory correlation analyses of process and outcome

Although we did not detect any significant effect on the AAQ, we examined whether changes from pre- to post-treatment in psychological flexibility (AAQ) were correlated with changes in the outcomes (PSS, GHQ, MBI-total scale, Pbse, DCSQ) among participants who had received the ACT–SMI (Hypothesis 4). On all measures, higher change values reflected greater improvements. As predicted, there were statistically significant positive correlations between AAQ and PSS, GHQ, MBI-total scale, and Pbse ($r = .52$, $r = .56$, $r = .45$, $r = .24$, respectively, all p's $< .05$, all n's $= 70$). No significant correlations were found between AAQ and DCSQ-control, and DCSQ-demand (all r's $< .06$, all p's $> .6$, all n's $= 68$).

Table 3
Proportion of participants (number of participants) who made a clinically significant change on the Perceived Stress Scale (PSS) in each condition for participants with high and low level of stress.

Group	Reliable improved	Recovered and reliable improved	Reliable deterioration
High level of stress			
ACT–SMI	.49 (22)	.42 (19)	.00 (0)
Wait	.13 (3)	.09 (2)	.04 (1)
Low level of stress			
ACT–SMI	.12 (3)	.12 (3)	.04 (1)
Wait	.00 (0)	.00 (0)	.15 (2)
Total ACT–SMI	.36 (25)	.31 (22)	.01 (1)
Total Wait	.08 (3)	.06 (2)	.08 (3)

Note. Clinically significant change was determined by the method provided by Jacobson and Truax (1991) using the c criterion to establish whether the score of particular case fall within the "recovered distribution". Participants were classified into groups of high ($n = 68$) and low ($n = 38$) levels of stress using a cut-off on the PSS (score of ≥25). ACT–SMI = Acceptance and Commitment Therapy–Stress management intervention.

Discussion

This study examined the effect of a brief, stress management intervention based on the behavioural principles of ACT for social workers. The study had four specific hypotheses. In support of Hypothesis 1, the results suggest that the intervention had an effect on primary outcome of stress and general mental health as well as secondary outcome of burnout and its subscales emotional exhaustion, depersonalization and personal accomplishments for the sample as a whole. A substantial proportion (22/70) reached criteria for clinically significant change on the primary outcome, and only 1 of 70 participants in the intervention group made a reliable deterioration. The effect size was moderate for stress and burnout, and small for the remaining variables. We also found partial support of Hypothesis 2, that the effect of the intervention was moderated by participants' level of stress at baseline, with significant effects found among a subgroup with high stress levels at intake. Among participants with high stress levels a large proportion reached criteria for clinically significantly improved (42%, $n = 19$), whereas only a small number of participants with low stress made clinically significant changes (12%, $n = 3$). Results gave little support of the hypothesis that the experience of the therapist had an impact on the effect of the intervention (Hypothesis 3) as no significant difference in outcome between randomized pairs of therapists was observed. Finally, results from the exploratory correlation analyses gave support of Hypothesis 4, that higher changes in psychological flexibility (AAQ) were correlated with greater improvements. Taken together, the intervention appears to have had positive consequences for participants who experience a significant amount of stress.

This study showed that the ACT stress management intervention could increase general mental health, a result that is congruent with previous findings (Bond & Bunce, 2000; Flaxman & Bond, 2010). To our knowledge, however, the impact of ACT–SMI on stress and burnout in social workers has previously not been examined. Two thirds of the participants in the current study reported high levels of stress at baseline (PSS ≥ 25). One could therefore assume that they had experienced repeated and persistent stress, a finding that is consistent with the large body of evidence showing that social workers are at risk of experiencing stress and burnout (e.g., Evans et al., 2006; Lloyd et al., 2002; Tham & Meagher, 2009). Stress-related health problems are often associated with high socio-economic costs (e.g., Hardy et al., 2003; Kessler & Frank, 1997; Swedish Government Offices, 2001) and are one of the most common causes of sick leave and absence from work (e.g., Hardy et al., 2003; Swedish Work Environment Authority, 2008). Thus, a brief intervention targeting the individual's ability to effectively cope with stressors and, thereby, reducing symptoms of stress and burnout is likely to have long-term positive consequences for the individual as well as the society. In this respect, ACT–SMI may hold promise. This brief intervention consists of 12 h, is held in groups, and only requires handouts and worksheets. It can therefore be conducted at a relatively low cost and with little effort be implemented in various settings, including, for example, the worksite (Flaxman & Bond, 2010). Our results are in line with prior findings that support ACT to reduce stress (Dahl, Wilson, & Nilsson, 2004) and burnout (Hayes, Bissett et al., 2004), even when the treatment is provided in a very brief format. The study adds to the growing number of studies on ACT supporting the efficacy of the treatment approach for a variety of health problems (Hayes et al., 2006). Specifically, while earlier research has shown an effect of ACT–SMI in the private sector (e.g., Bond & Bunce, 2000), the present study also supports the use of the intervention in the public sector.

There is a need to identify the circumstances in which a particular individual-focused stress management intervention works and for whom the treatment is effective (Bunce, 1997). This is, to our knowledge, the first time an ACT–SMI has been examined separating participants with high and low levels of stress. The results also provided evidence that individuals with different levels of stress responded differently to the intervention. That is, the intervention had a significant effect for persons with high levels of stress. Hence, the intervention had a positive outcome for those who needed it the most. At low initial levels of stress there was no significant change. This can potentially be explained by low values at pre-assessment, leaving little room for improvement. Another explanation might be that individuals with low stress levels already have an adequate ability to cope with stress, and therefore are not in need of a stress management intervention. Since the results for these groups differed it would be interesting to replicate the study to examine this potential moderation effect in detail. If this effect holds, it could have important implications for the implementation of ACT–SMI in organizational settings. For instance, future implementation could include screening of stress levels to offer the intervention to employees most in need.

To control for a potential therapist effect, different therapists were included in the study. Our results indicate that the intervention had the same effect regardless of therapist. Given this, it is more likely that the effects of the intervention were related to the therapist training and manual, rather than the therapists per se. It should however be noted that all therapists had less than five years of clinical experience and two of the therapists were undergraduate students in psychology. Given this, we conclude that the intervention can be delivered by relatively inexperienced psychologists with positive results.

There was no significant change regarding performance-based self-esteem, and work-related demand and control. The employee's experience of demand and control might be affected by psychological interventions, but perhaps it is more adequate to use interventions aimed at organizational change to produce significant effects on these outcomes. Management, rather than the employees, is responsible for how work is organized. Thus, it is important that interventions focus on the organizations as well as on the individuals (Murphy, 1996; Van der Klink et al., 2001). ACT–SMI is limited to changing the individual's approach to stress, rather than changing the organization (Bond, 2004). Therefore, ACT–SMI should not be provided without considering the need for change on other levels.

We also examined the association between the effect of the intervention and the proposed process of change, psychological flexibility (AAQ). Exploratory analyses detected statistically significant correlations in the moderate range between AAQ and primary outcome perceived stress (PSS) and general mental health (GHQ) as well as secondary outcome burnout (MBI-total scale), suggesting that greater improvements in stress, general health and burnout were associated with higher changes in psychological flexibility among participants who had received the intervention. However, and unexpectedly, we did not find a significant effect of the intervention on AAQ. This is surprising as the intervention aim to increase psychological flexibility which AAQ is suppose to measure. Still, previous studies on ACT–SMI have shown a significant increase in psychological flexibility as a consequence of treatment and provided preliminary evidence supporting psychological flexibility as a mediator (Bond & Bunce, 2000; Flaxman & Bond, 2010). Several different explanations may be offered to account for the lack of effect on the AAQ in the present study. Participants in both groups reported, on average, high scores on the AAQ at pre-assessment (Both groups 30 out of 42 points). Thus, little room for improvement existed. Another possible explanation to be considered is that the self-report used was not sensitive enough to detect important changes at the group level. Such concerns have, in fact, been raised and it has been argued that researchers should carefully adopt the AAQ to the specific population or area under investigation in order to detect changes in intervention studies (Hayes, Strosahl et al., 2004). Finally, and more important, this shorter version of the AAQ has previously not been used in ACT–SMI research, nor has it been validated or psychometrically examined. Further studies should consider other measures, including behavioural or observer measures of the purported processes of change (Hesser, Westin, Hayes, & Andersson, 2009).

Although a positive effect of the intervention was observed, methodological limitations of the study should be noted. First, as we did not compare the intervention with another treatment, we cannot be certain that it was the intervention per se that produced the effect. It would have been preferable to use an active placebo or previously documented treatment as comparison in order to control for non-specific effects (e.g., Öst, 2008).

Second, no long-term follow-up was included. For ethical reasons, the intervention was offered to participants in the waiting list control after the study was completed. This precluded a comparison of the ACT–SMI with the control in the long-term. A recent review has provided some evidence that effect size of ACT interventions was maintained or had increased at follow-up compared to post-intervention (Hayes et al., 2006). Still, we cannot be certain that the effects seen here were maintained over time.

Third, to handle missing data at post-treatment the individual's pre-treatment score was carried forward (i.e., LOCF). This method of accounting for missing data may not accurately estimate treatment effects in certain scenarios (Lane, 2008). Yet, the relatively small amount of missing in the present study (11%, 12/106) and the fact that missing was not a function of observed variables in the present sample (i.e., missing completely at random), provided us with little evidence for that our intention-to-treat-analysis was negatively influenced by LOCF. Still, we acknowledge the fact that there are better ways of handling missing data, including maximum-likelihood estimation methods (Lane, 2008).

Fourth, the results from the statistical analyses of subgroups, in particular the subgroup of participants with low stress levels, should be interpreted with caution as the number of available participants was low. In fact, effect sizes at post-assessment on most measures were of substantial magnitude in favour of the intervention for participants with low levels of stress at intake. Thus, statistical power is an issue to consider. In fact, assuming a α-level of .05 one would need a large effect size (Cohen's $d = .93$) in a sample of the present size (i.e., $n = 38$ in the subgroup with low stress) to have an 80% chance (i.e., power) of detecting it statistically (presuming that the effect genuinely exists). Although analyses of clinically significant change in the present study support the hypothesis of moderation, further studies that address the moderation hypothesis in SMI are needed, in particular studies that employ direct statistical tests of moderation (e.g., by testing the interaction between treatment effect and initial stress level).

Fifth, regarding therapist effects, only participants with high levels of stress at baseline were randomized to different therapists and therapists had relatively similar background. Furthermore, two of the therapists were blind to the fact that participants with high and low stress levels were separated, but the other two were not blind to the study design and stratification. This might have influenced the findings.

Sixth, as previously acknowledged, one of the instrument (AAQ) used in the present study has not been psychometrically examined nor properly validated. Thus, the results on this measure should be interpreted with caution.

Finally, in the present study a Swedish manual of ACT–SMI (Livheim, 2008) was used, which may restrict comparison across studies. Compared to the original version (Bond, 2004; Bond & Hayes, 2002) this intervention includes one more session, is extended over a shorter time period, and focuses more on daily practice. However, both interventions are based on the core processes of ACT, and the same metaphors and exercises are used. Therefore, we consider the interventions to be similar, if not, equivalent.

This study indicates that ACT–SMI is useful for social workers in Sweden, especially for individuals with high levels of stress. Rather than targeting a specific group, pathology or health issue, this intervention was developed to increase flexibility in employees. This broad aim will potentially make ACT–SMI applicable across cultural contexts and it is likely that a similar intervention can be conducted for social workers in other countries. However, whether the findings from this study can be generalized beyond Swedish social workers is a question that only further studies can answer. The present study examined the effect of the intervention for social workers, mainly women. Future research should address the effect for other professions, individuals of different levels of education, and a more even distribution of men and women.

ACT–SMI may be beneficial for social workers. However, it is difficult to determine what the active components of the intervention are. The treatment consists of various procedures and exercises, including, for example, psycho-education, metaphors, group discussions, mindfulness exercises, role-playing and daily practice. Further studies need to focus on different parts of the intervention and the proposed core processes of ACT–SMI, to refine and optimize procedures. Direct treatment comparisons with stress management interventions based on traditional behavioural and cognitive procedures, could also clarify whether the intervention operate through similar or distinct processes of change (Hofmann & Asmundson, 2008; see also, Flaxman & Bond, 2010, for a comparison). In particular, mediation analysis could provide us with useful knowledge that could guide treatment development.

To conclude, ACT is a relatively new method which has, to date, delivered promising results as a brief, stress management intervention. Our results support prior findings and extend the literature by focusing on a population that experience significant occupational strains – social workers in the public sector. Our findings highlight the importance of continued exploration of ACT–SMI in the treatment of stress and burnout. In a wider context, they provide support for the ACT model as a relevant perspective on mental health and work-related stress.

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