

Mental Health Promotion as a New Goal in Public Mental Health Care: A Randomized Controlled Trial of an Intervention Enhancing Psychological Flexibility

Martine Fledderus, MSc, Ernst T. Bohlmeijer, PhD, Filip Smit, PhD, and Gerben J. Westerhof, PhD

Over the past few decades the field of public mental health has undergone a strong professionalization. There is increasing agreement on the classification and diagnosis of mental health problems attributable to the development of common frames of reference (*Diagnostic and Statistical Manual of Mental Disorders*¹ and *International Classification of Diseases*²) and the increasing availability of valid diagnostic tests. Furthermore, the prevention and treatment of mental illness has profited from the development of standardized protocols and guidelines as well as from rigorous studies on their (cost)-effectiveness. Despite the many advantages of such professionalization, however, the process also has resulted in a rather exclusive focus on what is going wrong with people. The field of public mental health widely uses an illness ideology within a medical model.³ Mental health is generally defined as the absence of psychological complaints and mental illnesses.

In recent years, there has been increasing interest in a more positive approach to mental health. This approach builds on the fundamental assumption that human beings possess an inherent developmental tendency toward personal growth and fulfillment. The World Health Organization has recently defined positive mental health in terms of (1) an individual's well-being, (2) effective individual functioning, and (3) effective social functioning.⁴ Subjective evaluations of these 3 core components can be termed emotional, psychological, and social well-being.⁵ Emotional well-being refers to the experience of feelings of happiness and satisfaction, whereas psychological well-being refers to leading a meaningful life in which one realizes one's own capacities. Social well-being refers to the feeling that one values and is valued by the society in which one lives.⁴

Objectives. We assessed whether an intervention based on acceptance and commitment therapy (ACT) and mindfulness was successful in promoting positive mental health by enhancing psychological flexibility.

Methods. Participants were 93 adults with mild to moderate psychological distress. They were randomly assigned to the group intervention (n=49) or to a waiting-list control group (n=44). Participants completed measures before and after the intervention as well as 3 months later at follow-up to assess mental health in terms of emotional, psychological, and social well-being (Mental Health Continuum–Short Form) as well as psychological flexibility (i.e., acceptance of present experiences and value-based behavior, Acceptance and Action Questionnaire-II).

Results. Regression analyses showed that compared with the participants on the waiting list, participants in the ACT and mindfulness intervention had greater emotional and psychological well-being after the intervention and also greater psychological flexibility at follow-up. Mediation analyses showed that the enhancement of psychological flexibility during the intervention mediated the effects of the intervention on positive mental health.

Conclusions. The intervention is effective in improving positive mental health by stimulating skills of acceptance and value-based action. (*Am J Public Health.* 2010;100:2372–2378. doi:10.2105/AJPH.2010.196196)

Mental health promotion can be seen as an important new goal for public mental health. The main reason for this new goal is that the absence of mental illness does not necessarily imply the presence of flourishing mental health.^{5–8} As a result, traditional public mental health interventions that are effective in alleviating mental illness do not necessarily promote mental health. Furthermore, mental health does have important individual, societal, and economic consequences. Even when one controls for symptoms of mental illness, mental health has an independent relation with psychosocial adaptation, work productivity, physical disease, health care utilization, and even mortality.^{6,8–11} An important challenge for the coming years is, therefore, to study whether and how mental health can be effectively promoted.

Mental health promotion requires moving from a risk-reduction model (e.g., Mrazek and Haggerty¹²) to a competence enhancement

model.¹³ To effectively promote mental health, interventions should be based on theories and empirical evidence of psychological competences that can explain their effectiveness.^{14–16} Psychological flexibility is one such competence.¹⁷

Psychological flexibility includes 2 mutually dependent processes: acceptance of experiences and value-based behavior. A psychologically flexible person is willing to remain in contact with negative experiences rather than trying to avoid, alter, or control negative experiences. This acceptance is facilitated by committing to actions that are based on an individual's authentic values.¹⁷ Studies have shown that psychological flexibility is related not only to fewer psychological problems,^{17,18} but also to better quality of life, emotional well-being, and job satisfaction.^{19,20} Two other studies showed that psychological flexibility mediates the effects of adaptive coping styles on emotional and psychological well-being.^{21,22}

Enhancing psychological flexibility is the focus of 2 treatment models: acceptance and commitment therapy (ACT) and mindfulness. ACT is a form of contextual behavioral therapy that aims to increase psychological flexibility.²³ Clients learn that trying to change the content of their experiences is counterproductive. Instead, clients learn to detach from these experiences and to focus instead on behaviors that support their individual values. This is explained with the use of metaphors and encouraged by experiential exercises. Meta-analyses have shown medium to large effect sizes of ACT interventions on different symptoms of psychological distress.^{17,24}

Mindfulness interventions have a different background—e.g., Buddhist philosophy—but share a goal similar to that of ACT interventions. Mindfulness refers to a state of being attentive to and aware of experiences occurring in the present moment in a nonjudgmental or accepting way.^{25,26} Mindfulness can be contrasted to a state of being caught up by memories, fantasies, or worries without paying attention to the present, as well as to automatic and habitual behavior that goes unnoticed. Mindfulness is usually taught by a variety of meditation and attention exercises and by psychoeducation. Well-known evidence-based programs include mindfulness-based stress reduction²⁷ and mindfulness-based cognitive therapy.²⁸ In a recent meta-analysis of 39 studies, mindfulness-based therapy yielded at least medium effect sizes on alleviating anxiety and depression.²⁹

A recent development has been to combine ACT with mindfulness training. This combination may be particularly effective because both interventions use strategies to increase the acceptance of negative thoughts and emotions and to promote behaving in a mindful and value-based way. For example, Roemer, Orsillo, and Salters-Pedneault developed an individual protocol combining ACT and mindfulness-based cognitive therapy and found large effects on patients with generalized anxiety disorders.³⁰

Although ACT and mindfulness focus on the acceptance of psychological distress rather than on its avoidance and control, most studies have addressed effectiveness only in terms of a decrease in symptoms of mental illness. However, it can be expected that such interventions also promote mental health:

experiential acceptance and value-based actions are supportive of a positive, engaged, and meaningful life. Only a few studies have addressed this expectation. Studies on ACT interventions have reported improvement of life satisfaction or quality of life^{31–34} whereas studies of mindfulness interventions found effects on positive affects.^{35,36} However, these studies mainly focused on emotional well-being, which constitutes only 1 aspect of positive mental health, besides psychological and social well-being. Furthermore, no studies have examined whether stimulating psychological flexibility is effective in promoting positive mental health.

We examined the effect of a preventive group intervention that builds on ACT and mindfulness. The intervention was implemented in a public health setting for persons with mild to moderate psychological distress. Our study assessed the effectiveness of the intervention on all 3 aspects of positive mental health and psychological flexibility in a randomized controlled trial with a waiting list control group. A secondary goal was to test the mediating effect of psychological flexibility on the promotion of mental health.

METHODS

The group intervention was designed as a form of indicated prevention for adults aged 18 years and older with mild or moderate psychological distress. Study participants were recruited from March to May 2008 through press articles, leaflets, and posters, and through psychologists at 7 mental health institutions in the Netherlands. A total of 140 individuals responded and were assessed for eligibility by trained psychologists in clinical face-to-face interviews. Participants with severe psychological distress were excluded from this preventive trial and referred to a mental health institution for possible treatment. Other exclusion criteria were: (1) patients currently undergoing treatment at a mental health institution, (2) patients who started less than 3 months ago with psychopharmacological treatment, (3) persons reporting no psychological complaints or symptoms, or (4) participants missing 2 or more sessions of the intervention. A total of 47 individuals were excluded on the basis of those criteria.

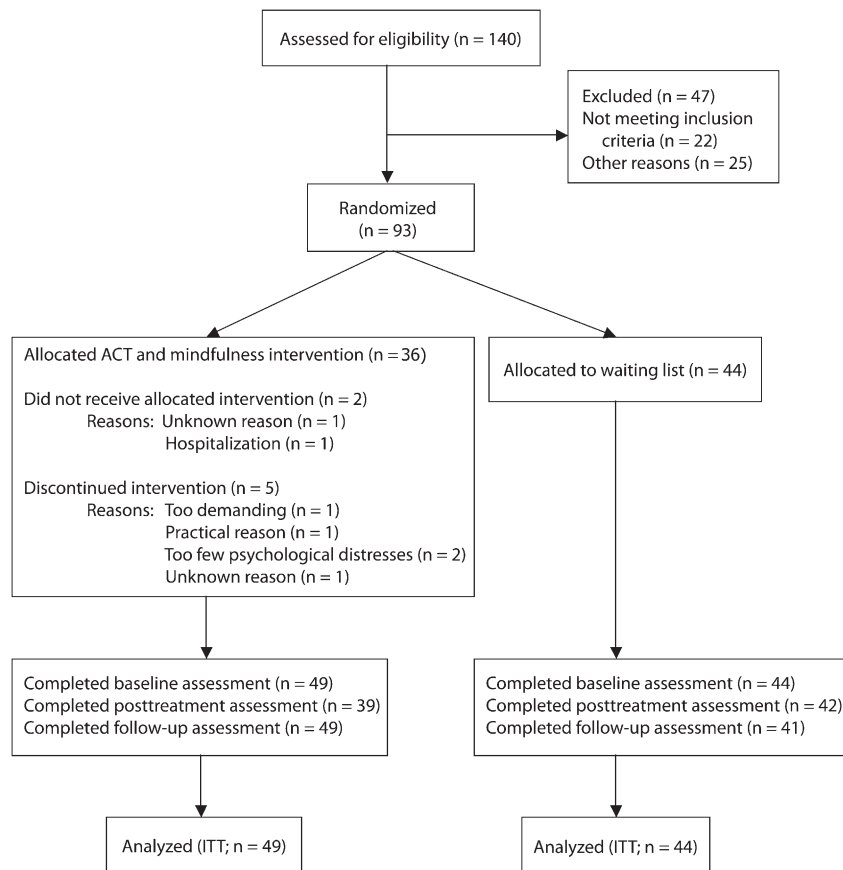
After signing informed consent forms, the remaining 93 participants were randomly assigned to the ACT and mindfulness intervention (n=49) or to a waiting list (n=44). An independent researcher carried out the block randomization for the 2 groups with stratification on gender and age (<50 years and ≥50 years), by using a computer-generated random sequence of numbers.

Participants completed measures on 3 occasions: at baseline (T0), posttreatment at 2 months (directly after the intervention; T1), and follow-up at 5 months after baseline (T2). Figure 1 provides an overview of the flow of participants. There were 75 (80.6%) participants who filled out the questionnaires 3 times. The drop-out rate for the intervention group was 14.3% (7 out of 49). The mean age of the study participants was 49 years (range=24–71). The majority were women (81.7%) and of Dutch origin (91.4%). The participants varied in level of education: 26.9% had less than 13 years of education, 39.8% had more than 16 years, and 33.3% were in between. Furthermore, 46.2% of participants were married, and 52.7% of participants were gainfully employed.

Intervention and Control Group

ACT and mindfulness. The intervention “Living to the full” consisted of eight 2-hour sessions. It was a group-based intervention with an average of 7 participants per group. The intervention was based on 6 core processes of ACT that together promote psychological flexibility: (1) acceptance (active and aware embracement of aversive internal experiences), (2) cognitive defusion (creating a context in which undesirable functions of thoughts disappear), (3) contact with the present moment, (4) self as context (experiencing that one is more than one’s thoughts, feelings, and experiences), (5) choosing values in different life domains, and (6) commitment to choices based on these values.²³

In session 1, the basic principles and visions of ACT were explained, and participants had to think about what they really wanted in life. In sessions 2 and 3, the participants reflected on the avoidance and control strategies they were using and whether these strategies were effective in the long run. In sessions 4 through 6, the participants learned how to come into



Note. ACT = acceptance and commitment therapy; ITT = intention to treat.

FIGURE 1—Flow diagram of assignment to study group: The Netherlands, 2008.

contact with their present experiences, without trying to avoid or control them. Participants practiced experiencing negative emotions, cognitive defusion, and self as context. In the last 2 sessions, the focus was on becoming aware of the most important personal values and making decisions on the basis of these values. In all sessions, participants learned mindfulness skills.

Waiting list control. Study participants assigned to the waiting list did not receive the ACT and mindfulness intervention. After the study ended, the waiting list participants were invited to take part in the intervention.

Therapists

Teams of 2 licensed psychologists provided therapy to 7 intervention groups at 7 different mental health organizations. All 14 psychologists received a 3-day training session

that was given by 2 clinical psychologists with ample experience in ACT and mindfulness. All psychologists received a manual that clearly defined the structure and exercises of the 8 sessions of the group intervention. All exercises were role-played and discussed during the training. The therapists received feedback on their performances.

Measures

The Acceptance and Action Questionnaire-II (AAQ-II) is a 10-item measure of psychological flexibility.³⁷ The AAQ-II assesses the ability to accept aversive internal experiences and to pursue goals in the presence of these experiences on a 7-point scale ranging from never true (1) to always true (7). A total score, ranging from 10 to 70, was computed by summing the scores on the individual items. Higher scores on the AAQ-II indicate higher levels of psychological

flexibility. The AAQ-II showed good construct, and convergent and divergent validity.³⁷ The psychometrical properties of the Dutch AAQ-II were comparable to those found among a general and clinical population in the Netherlands.³⁸ The AAQ-II showed good internal consistency in our study ($\alpha=0.86$; TO).

The Mental Health Continuum—Short Form (MHC-SF) is a 14-item questionnaire measuring emotional well-being (3 items), social well-being (5 items), and psychological well-being (6 items).^{6,8} Participants were asked to rate how often they had experienced feelings of well-being in the past month. Items were scored on a 6-point scale ranging from never (1) to every day (6). A mean score across the individual items was computed for each component of well-being as well as for the total scale. Higher scores indicate better well-being and mental health. The Dutch MHC-SF showed good convergent and discriminant validity as well as high internal and moderate test–retest reliability in a representative study among Dutch adults.³⁹ The MHC-SF showed good internal consistency in this study (emotional well-being $\alpha=0.85$; social well-being $\alpha=0.74$; psychological well-being $\alpha=0.83$; MHC-SF total $\alpha=0.91$; all at TO).

Statistical Analyses

We performed the analyses with the observed data and intention-to-treat. We conducted intention-to-treat analyses after imputing all missing data on the continuous measures by using the expectation maximization method (SPSS version 17, missing value analysis; SPSS Inc, Chicago, IL). This method computes missing values based on maximum likelihood estimates by using observed data in an iterative process.⁴⁰ The total percentage of imputed missing data was 11.3% (1.3% because of unanswered items and 10.0% because of incomplete assessments). Hence, all participants who were randomized were included in the statistical analyses.

The independent sample *t* test and the χ^2 test showed that there were no significant differences at baseline between the intervention group and the waiting list group for any of the demographic variables or outcome measures, indicating a successful randomization.

We conducted regression analyses to evaluate the intervention's impact on mental health

and psychological flexibility at posttreatment and follow-up by using the baseline assessment of the outcome measure and the treatment dummy (intervention vs waiting list) as independent variables. We took into account that the observations were clustered as participants were nested in each of the 7 intervention groups at different regional mental health institutions. Therefore, we computed robust standard errors by using the first-order Taylor-series linearization method as implemented in Stata version 8.2 (StataCorp LP, College Station, TX). The 2-tailed test was considered significant at $P < .05$. Standardized mean differences (Cohen d) were calculated as the difference between the means of the treatment and control condition divided by the standard deviation of the control condition ($d = 0.2$

was considered as a small effect; $d = 0.5$ as medium; and $d = 0.8$ as large).⁴¹

To examine whether improvement in psychological flexibility during and after the intervention would mediate the effects of the intervention on mental health, mediational analysis with bootstrapping procedures ($n = 5000$ bootstrap resamples) was used to assess the indirect effect of the mediational pattern outlined by Preacher and Hayes.⁴² As prescribed, an indirect effect was considered significant in the case zero was not contained in the 95% confidence interval.

RESULTS

Table 1 presents the imputed means and standard errors for the scores on psychological

flexibility and mental health as well as the results of the regression analyses and the corresponding effect sizes. All results in the table apply to the imputed data set, taking clustering into account.

The ACT and mindfulness group had significantly more improvement in mental health at posttreatment and at follow-up than did the waiting list group. The Cohen d showed medium to large effect sizes at posttreatment (0.56) and at follow-up (0.85). The intervention group reported greater emotional and psychological well-being at posttreatment and follow-up than did the control group, but not greater social well-being. We found medium effect sizes for emotional and psychological well-being. The ACT and mindfulness group showed greater improvement in psychological flexibility only at follow-up compared with the waiting list group, with a medium effect size of 0.74.

Mediating Effects of Psychological Flexibility on Mental Health

We first assessed whether improvement of psychological flexibility during the intervention (baseline to posttreatment) was a mediator for mental health at posttreatment. Step 1 in Table 2 shows that, with control for mental health and psychological flexibility at baseline, the ACT and mindfulness group showed a stronger increase in mental health at posttreatment than did the waiting list group. Step 2 in Table 2 shows that both psychological flexibility at baseline and the improvement of psychological flexibility during the intervention significantly predicted mental health at posttreatment. The treatment effect becomes nonsignificant. Mediation analysis showed that the mediating effect of improvement of psychological flexibility from baseline to posttreatment was significant ($P < .05$), with bootstrapping values between 0.078 and 0.399.⁴²

We then analyzed whether improvement of psychological flexibility during the intervention (baseline to posttreatment) and after the intervention (posttreatment to follow-up) were mediators of mental health at follow-up. Step 1 in Table 3 shows that the ACT and mindfulness group reported better mental health at follow-up than did the waiting list group. Step 2 in Table 3 shows that baseline

TABLE 1—Means and Standard Errors Set for Mental Health (MHC-SF) and Psychological Flexibility (AAQ-II) and Results of Regression Analysis and Cohen d for Treatment Effects in the Imputed Data: The Netherlands, 2008

	Intervention (n = 49), Mean (SE)	Waiting List (n = 44), Mean (SE)	B (SE)	d
Mental health				
Baseline	3.24 (0.11)	3.06 (0.11)		
Posttreatment	3.75 (0.14)	3.23 (0.14)	0.39* (0.15)	0.56
Follow-up	3.83 (0.16)	3.20 (0.11)	0.49** (0.12)	0.85
Emotional well-being				
Baseline	3.48 (0.11)	3.23 (0.12)		
Posttreatment	4.11 (0.08)	3.52 (0.18)	0.42* (0.17)	0.49
Follow-up	4.20 (0.09)	3.60 (0.06)	0.45* (0.16)	0.42
Social well-being				
Baseline	2.94 (0.15)	2.72 (0.07)		
Posttreatment	3.26 (0.17)	2.82 (0.14)	0.28 (0.16)	0.49
Follow-up	3.42 (0.22)	2.90 (0.12)	0.35 (0.14)	0.67
Psychological well-being				
Baseline	3.38 (0.10)	3.25 (0.16)		
Posttreatment	3.98 (0.17)	3.42 (0.16)	0.48* (0.16)	0.53
Follow-up	3.98 (0.17)	3.24 (0.18)	0.65** (0.13)	0.64
Psychological flexibility				
Baseline	36.83 (1.35)	36.68 (0.74)		
Posttreatment	42.98 (1.31)	37.87 (1.52)	5.04 (2.10)	0.51
Follow-up	44.66 (1.47)	38.39 (1.30)	6.19** (1.21)	0.74

Note. AAQ-II = Acceptance and Action Questionnaire-II; MHC-SF = Mental Health Continuum-Short Form. Regression analyses, which take clustering into account, were performed with the intervention versus control group, the baseline measurement as the independent variable, and the posttreatment or the follow-up as the dependent variable. B values refer to the effect of group (intervention vs control). * $P < .05$; ** $P < .01$.

TABLE 2—Results of Hierarchical Regression Analysis of Mental Health at Posttreatment (T1) in the Imputed Data Set: The Netherlands, 2008

Mental Health (T1)	Step 1, B (SE)	Step 2, B (SE)
ACT and mindfulness intervention ^a	0.384** (0.123)	0.169 (0.107)
Baseline mental health (T0)	0.743*** (0.066)	0.664*** (0.060)
Baseline psychological flexibility (T0)	-0.002 (0.007)	0.026*** (0.007)
Improvement in psychological flexibility (T1-T0)		0.046*** (0.007)
Explained variance (adjusted R ²)	0.607	0.733 ^b

Note. ACT = acceptance and commitment therapy.

^aComparison with waiting list group.

^bSignificant improvement in R² change ($P < .05$).

** $P < .01$; *** $P < .001$.

psychological flexibility and the improvement of psychological flexibility during and after the intervention predicted a better mental health at follow-up. The treatment effect was no longer significant. The mediation analysis showed that the mediating effect of the change of psychological flexibility during the intervention was significant ($P < .05$; bootstrapping values were between 0.077 and 0.457). However, the change in psychological flexibility after the intervention was not a significant mediator (bootstrapping values between -0.039 and 0.163).⁴²

Analyses With Observed Data

By way of sensitivity analysis, we examined whether the results using the intention-to-treat analysis were comparable to those using only the observed data. Figure 1 shows that we had complete data for 81 study participants at posttreatment and 77 at follow-up. The

observed data analysis showed that the means and effect sizes for the different outcome measures were quite similar to those found with the imputed data set, which attests to the robustness of our findings. However, the new results were not always statistically significant, probably because of the reduced power associated with the smaller sample of participants with complete data.

DISCUSSION

In recent decades, the focus of public mental health has been on the prevention and treatment of mental illnesses. Fewer studies have focused on developing and testing interventions that primarily aim at enhancing positive mental health. In this study, we evaluated an intervention combining ACT with mindfulness. Both methods focus on enhancing a positive, meaningful,

and engaged life rather than on the control and elimination of mental illness.^{17,28,43} The intervention “Living to the full” was offered as a group intervention for people with mild to moderate psychological distress.

The mental health at baseline was considerably lower than that in a study of the general Dutch population, indicating that there was room for improvement by the participants.³⁹ Indeed, the intervention had a significant effect on positive mental health that was sustained at follow-up. The medium effect size was similar to those found in a meta-analysis of the effect of positive psychology interventions on emotional or psychological well-being.⁴⁴

In line with the traditional perspective on mental health as the absence of mental illness, most previous studies have assessed the effects of ACT and mindfulness interventions on the reduction of psychological complaints. Our study extends previous research showing that interventions based on ACT or mindfulness also promote emotional well-being.^{31–34} We found that both emotional and psychological well-being improved: after the intervention and at follow-up participants reported not only feeling greater happiness and satisfaction but also having a more fulfilling and meaningful life than did the control group. The finding of no effect on social well-being may be explained by the fact that societal functioning was not a major topic in the intervention. Such differential findings for emotional and psychological well-being compared with social well-being make clear that interventions promoting mental health will profit from explaining carefully which aspects of mental health are being targeted.

Mental health promotion involves the transformation of a risk model to a competence enhancement model.¹³ The competence targeted in “Living to the full” is psychological flexibility. Our study corroborates previous studies that have shown that psychological flexibility can be substantially improved by ACT or mindfulness, or both.^{30–34} The effects were significant only at follow-up, suggesting that it takes time to develop such skills. Nevertheless, our study is the first to our knowledge to show that improvement in psychological flexibility during the treatment mediated the effects of the intervention on positive mental health after the intervention and at 3-months

TABLE 3—Results of Hierarchical Regression Analysis of Mental Health at Follow-Up (T2) in the Imputed Data Set: The Netherlands, 2008

Mental Health (T2)	Step 1, B (SE)	Step 2, B (SE)
ACT and mindfulness intervention ^a	0.489** (0.127)	0.213 (0.110)
Baseline mental health (T0)	0.708*** (0.073)	0.613*** (0.060)
Baseline psychological flexibility (T0)	0.008 (0.007)	0.037*** (0.007)
Improvement in psychological flexibility (T1-T0)		0.052*** (0.008)
Improvement in psychological flexibility (T2-T1)		0.036*** (0.009)
Explained variance (adjusted R ²)	0.608	0.746 ^b

Note. ACT = Acceptance and Commitment Therapy.

^aComparison with waiting list group.

^bSignificant improvement in R² change ($P < .05$).

** $P < .01$; *** $P < .001$.

follow-up. Our study thereby provides the first evidence to our knowledge that mental health can be promoted by stimulating skills for acceptance and value-based action.

Several limitations of the present study need to be addressed. First, the number of participants, especially the number of male participants, was rather small. Nevertheless, our study size would rank among the top third of the 51 studies included in a recent meta-analysis on positive psychology interventions.⁴⁴ Second, the use of a waiting list control group was suboptimal because there is no control for the possible influence of non-specific factors. Third, the follow-up period was relatively short, so it is not known whether the effects were maintained in the longer run. Last, we did not address the important question of whether the improvement in mental health was independent from a possible decline in mental illness.

Our findings provide support for the effectiveness of an ACT and mindfulness intervention in promoting emotional and psychological well-being by targeting the competence of psychological flexibility. At this moment, the intervention is implemented in almost 50% of the mental health institutions in the Netherlands. This reveals not only the need for having an intervention that is aimed at increasing positive competences, but also the ease of its implementation. An important question from a public health perspective is how the scope of such interventions can be broadened. First, the intervention can be adapted to populations in other settings, such as at work, in schools, or in medical care facilities. Two studies have already shown that a short ACT intervention added to usual medical care had a positive effect on patients with chronic illnesses such as type 2 diabetes and epilepsy.^{45,46} Furthermore, the intervention could be offered on a larger scale as a self-help or online program. Guided self-help in a written format has been shown to be as effective as face-to-face therapy for mental illnesses.^{47,48} Internet-based interventions can probably reach other populations who cannot be reached by traditional treatments,⁴⁹ and such interventions can be cost-effective.⁵⁰ Most important, however, is that focusing on positive mental health appears to be attractive to the general public. ■

About the Authors

Martine Fledderus, Ernst T. Bohlmeijer, and Gerben J. Westerhof are with the Department of Psychology and Communication of Health and Risk, University of Twente, Enschede, The Netherlands. Filip Smit is with the Centre of Prevention and Early Intervention, Trimbos Institute (Netherlands Institute of Mental Health and Addiction), Utrecht, The Netherlands, and the Departments of Epidemiology and Biostatistics and Clinical Psychology, EMGO Institute for Health and Care Research, VU University Medical Centre, Amsterdam, The Netherlands.

Correspondence should be sent to Martine Fledderus, University of Twente, Faculty of Behavioral Sciences, Department of Psychology and Communication of Health and Risk, PO Box 217, 7500 AE Enschede, The Netherlands (e-mail: m.fledderus@utwente.nl). Reprints can be ordered at <http://www.ajph.org> by clicking the "Reprints/Eprints" link.

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Contributors

M. Fledderus and F. Smit performed the analyses. E. T. Bohlmeijer originated the study. G. J. Westerhof led the writing. All authors contributed to the writing.

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Human Participant Protection

Ethical principles in the country where the study was conducted (the Netherlands) were followed. The study was approved by the Medical-Ethical Review Board for Mental Health Care Institutes (METIGG; number 8203), which is recognized by the Central Committee for Research involving human participants. Its activities fall under the Dutch law (Wet Medisch-wetenschappelijk Onderzoek met Mensen).

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