



Master Thesis

The Effects of Acts of  
Kindness on Mental Well-  
being and the Mediating  
Role of Positive and  
Negative Emotions:  
A Randomized Controlled  
Trial

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### **Abstract**

**Background:** Kindness interventions including Acts of Kindness (AoK) have proven to be effective in improving mental well-being. However, among these studies, only a few focused on possible mediators explaining the association between AoK and mental well-being.

Therefore, this study aimed to replicate the effects of AoK on well-being and, among a few studies, tested the mediating role of positive and negative emotions.

**Method:** A randomized controlled trial was conducted with a total of 653 participants. From this, 169 participants for the current study were randomly assigned to Acts of kindness (n = 85) or a wait-list control condition (n = 84). Assessments took place at baseline and 2, 4, 6 and 12 weeks after baseline. Outcome measures were well-being (MHC-SF) and positive and negative emotions (mDES).

**Results:** Results revealed that the AoK intervention compared to the wait-list control condition led to significantly greater increases in overall mental well-being and psychological well-being, but not in emotional and social well-being. In addition, no interaction effect between time and group on positive and negative emotions could be detected, and also no evidence was found for positive and negative emotions as mediators.

**Conclusion:** The current study demonstrated that AoK has potential to improve mental well-being. Future research may consider a different measurement instrument for positive and negative emotions and should also consider testing other possible mechanisms which can explain this effect. By this, it could be possible to found more about underlying mechanisms and thereby to maximise the effectiveness of kindness interventions.

**Keywords:** Positive psychological interventions, Acts of kindness, Mental well-being, Positive emotions, Negative emotions

## Introduction

The emergence of the Positive Psychology movement has brought attention to a strength-oriented approach to mental health. This strength-oriented approach focuses on maintaining and promoting well-being. More precisely, well-being is promoted through strengthening competencies such as becoming aware of and strengthening positive emotions or searching for values, intrinsic needs and talents (Bohlmeijer & Hulsbergen, 2013). As stated by the *two-continua-model* (Keyes, 2007), psychological distress and psychological well-being do not exclude each other (Westerhof & Keyes, 2010). That is, it is possible to be free of mental illnesses but at the same time to be unhappy and display a high level of dysfunctioning in daily life; and vice versa (Bergsma, Have, Veenhoven, & Graaf, 2011). It can therefore be stated that positive mental health and psychopathology are not on the same continuum, but that there are two continua that are related to each other. Positive psychology focuses on a high level of well-being besides mental illnesses.

The WHO definition of mental health includes three components of well-being: Emotional/subjective, social and psychological well-being (WHO, 2004). Emotional or subjective well-being is the subjective experience of well-being and includes besides life satisfaction, the presence of positive emotions (e.g. happiness, interest, pleasure in life) and the absence of negative emotions (e.g. pain) (Diener, 1984). Social well-being represents the effective functioning in society and consists of five dimensions with social integration and social contribution forming two important examples of it (Keyes, 1998). Psychological well-being focuses on the individual's optimal functioning and includes six dimensions among which self-acceptance and personal growth are two examples (Ryff, 1989).

A representative study by Schotanus-Dijkstra et al. (2016) examining the prevalence of high mental well-being/flourishing in the general Dutch population found that 36.5% of the Dutch population is flourishing, indicating that 63.5% of the Dutch population does not experience optimal mental health. However, a review by Jané-Llopis, Barry, Hosman, and

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Patel (2005) shows that high mental health is of value to both the individual and the economy. On the individual level a good quality of life, less (chronic physical) illnesses and having more meaningful relationships (Veenhoven, 2008) plays a role. In addition, a high level of well-being makes people more resilient and this high level is a protecting factor against the development of mental disorders (Schotanus-Dijkstra, ten Have, Lamers, de Graaf, & Bohlmeijer, 2016). On the economical level, less health care use, less absenteeism, increasing social functioning and social capital plays an important role (Keyes & Grzywacz, 2005).

These individual and economic benefits of high mental health show, that well-being despite everyday stressors, is an important element and therefore have to be considered in the treatment of mental health. Promoting well-being and flourishing in the general population can therefore be seen as an important objective of public health care (Huber et al., 2016).

### **Positive psychology interventions**

A promising approach to increase well-being is through positive psychological interventions (PPIs). These are interventions which aim to cultivate positive feelings, behaviours or cognitions through performing conscious activities (Sin & Lyubomirsky, 2009). Concepts that are central in the positive psychology paradigm are for instance, seeking out personal strengths, optimism and compassion (Bohlmeijer, Bolier, Westerhof, & Walburg, 2013). All of these concepts aim to increase well-being. With the growing positive psychological research many interventions in this area have emerged. Bolier et al. (2013) did a meta-analytical study regarding the effectiveness of PPIs for the general public and for individuals with certain psychological problems. Based on 40 articles and 39 studies including 6139 participants, a small to moderate overall effect was found on psychological well-being ( $d = .20$ ), subjective well-being ( $d = .34$ ) and depressive symptoms ( $d = .23$ ). This has shown that both an increase in mental well-being and a decrease in depressive symptoms can be promoted by using PPIs. However, the quality of the studies was limited, and a wide range of positive psychological interventions (e.g. gratitude interventions, strength-based interventions

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and well-being therapy) were included in the meta-analysis. In order to get results which are generalizable, it is therefore important to distinguish between the different types of PPIs.

**Acts of Kindness.** One theme that received more and more attention since the 2000s in positive psychology is Acts of kindness (Lyubomirsky, Sheldon, & Schkade, 2005). There are two types of Acts of kindness (AoK): (1) Friendly behaviors towards others and (2) friendly behaviours towards oneself. Kind acts towards others are, for instance, helping someone with a homework assignment or keeping the door open for someone else (Ouweneel, Le Blanc, & Schaufeli, 2014). Kind acts for oneself include, for example, buying yourself a treat or enjoying a massage (Nelson, Layous, Cole, & Lyubomirsky, 2016).

AoK interventions have been found effective in previous experimental studies (Layous, Nelson, Oberle, Schonert-Reichl, & Lyubomirsky, 2012). A systematic review and meta-analysis on the effects of kindness interventions revealed an overall effect on emotional well-being of  $d = .38$  (Curry, Rowland, Zlotowitz, McAlaney, & Whitehouse, 2018), suggesting that kindness interventions have a medium effect on emotional well-being. However, other interventions than AoK (e.g. 'prosocial purchase', 'social recycling' and 'benevolence') have also been included in the meta-analysis, which means that the results can be different for only the AoK intervention. The included AoK interventions show effects between  $d = -.42$  and  $d = .62$  on different outcome measures as for example, positive or negative affect, emotional and overall well-being in comparison with a control group. The participants of the AoK interventions were mostly recruited from the general population.

Moreover, significant effects of AoK have been found on, for example, relationship satisfaction, positive emotions, life satisfaction, academic involvement and flourishing (Alden & Trew, 2013; Buchanan & Bardi, 2010; Nelson et al., 2016; Ouweneel et al., 2014).

**Mechanisms of change in AoK.** While having evidence for the effectiveness of AoK interventions on well-being; less is known about *how* kind acts improve well-being. In a 6-week longitudinal study, Nelson et al. (2016) tested the effectiveness of prosocial behaviour

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(doing AoK for others or for the world) vs. self-oriented behaviour (doing AoK for oneself) compared to a control condition (tracking activities on the following day) on flourishing and the mediating role of positive and negative emotions in this relationship. Results show, that higher levels of positive emotions, but not lower levels of negative emotions, predicted more flourishing at the post-test and in the 2-week follow-up. However, this study did not distinguish between the three types of well-being when testing the effectiveness of the intervention on mental well-being. Additionally, participants were instructed to perform three kind acts for others during four weeks. In the current study it is assumed, that both positive and negative emotions can serve as mediators.

According to the *broaden-and-build theory* by Fredrickson (2004) positive emotions have an important role for a positive mental well-being. This theory states, that positive emotions contribute to a broadening of cognition, attention and action (*broadening effect*) and also that positive emotions ensure a build-up of long-term resources of physical, cognitive and/or social nature (*build effect*). To illustrate, as people perform AoK for other people, for instance visiting an elderly relative, they may have more opportunities to experience positive emotions, such as love and trust (Dunn & Schweitzer, 2005). These positive emotions, in turn, can lead to a broadening of attention and the thinking assets as stated by the broaden-and-build theory. These upward spiral of positive emotions and long-term resources then can lead to an increase in resilience and well-being up to reaching flourishing (Fredrickson, 2004).

However, an increase in positive emotions gives rise to a decrease in negative emotions. Nelson et al. (2016) states that focusing on the needs of others, thus engaging in kinds acts for others, may let individuals feel fewer negative emotions, such as guilt, anxiety and sadness. This can be explained through the fact, that doing acts of self-kindness, such as visiting a spa for a massage, may lead to relaxing and experiencing joy, but it does not give the opportunity to experience a range of deeper positive emotions, such as love, gratitude, trust and pride. Furthermore, self-focused behaviour may lead to feelings such as selfishness,

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which in turn can lead to feelings of guilt, because people think they should do something else than focusing on their own needs. All these negative emotions are less likely to occur when people perform kind acts for others instead of performing no AoK or AoK for themselves.

### **The current study**

The aim of the current research was to investigate the effects of an Acts of kindness intervention compared to a wait-list control group on social, psychological and emotional well-being in a randomized controlled trial. Additionally, a mediation effect of positive and negative emotions on the association between AoK and well-being was examined. It was predicted that the Acts of kindness intervention group will improve significantly more on emotional, social, psychological and overall mental well-being (primary outcome) and positive/negative emotions between baseline and post-measurement/follow-up, as compared to the wait-list control group. Secondly, it was predicted that the effect of the Acts of kindness intervention on overall well-being relative to the wait-list control group is mediated by increases in positive emotions and decreases in negative emotions.

## **Method**

### **Design**

A single-blind randomized controlled trial was conducted. The current study was carried out as part of a larger study that included additional conditions (e.g. a gratitude intervention group). The complete study consisted of five conditions of which two conditions were used in the current study: The *Experimental condition* (AoK without reflection) and the *Wait-list control condition*. Assessments took place at baseline (T0) and 2, 4, 6 (T1) and 12 weeks after baseline (T2).

### **Participants and Procedure**

The participants were recruited through advertisements in several Dutch newspapers

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(“Tubantia”, “Volkskrant” and “Gelderlander”) and through an online newsletter in a Psychology magazine and Facebook. Inclusion criteria of the study were: Participants experience a low or moderate level of well-being (‘languishers’ or ‘moderately mentally healthy’): (1) Score of  $<4$  on all items from the subscale ‘emotional well-being’ on the Mental Health Continuum-Short Form [MHC-SF] and (2) no high score (4 or 5) on six or more items from the combined subscales ‘social well-being’ and ‘psychological well-being’ on the MHC-SF), participants are older than 18 years, have a sufficient internet connection and e-mail address and master the Dutch language to fill in the questionnaires and follow the self-help intervention independently and lastly, participants give informed consent. Participants who suffer from too severe depression (score of  $>34$  on the Center for Epidemiological Studies Depression [CES-D]; Radloff, 1977; Donker, van Straten, Marks, & Cuijpers, 2009) and/or anxiety symptoms (score of  $>15$  on the Generalized Anxiety Disorder-7 [GAD-7]; Spitzer, Kroenke, Williams, & Löwe, 2006; Donker et al. (2009)) were excluded from further participation.

Interested participants were referred to a website where they can find information about the study and the registration procedure. After filling in a contact form, participants received a link to an online informed consent. After the approval of the informed consent, participants were forwarded to an online-screenings-questionnaire containing some demographic questions, the MHC-SF, the CES-D and the GAD-7. Participants who met de inclusion criteria receive an e-mail with a link to the first questionnaire of the study, the baseline assessment (T0). After this part and sufficient participants, the randomization took place. A stratified randomization has taken place considering gender (male / female), level of education (high or not) and flourishing (yes or no). The results of the randomization were given to the participants by e-mail.

Of the 653 participants that were assessed for eligibility, 423 participants were randomly allocated to the five conditions of the larger study. From this, 169 participants were



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randomly allocated over the two conditions of the current study: AoK (n = 85) and wait-list control group (n = 84). Figure 1 shows the flow-chart of participants.

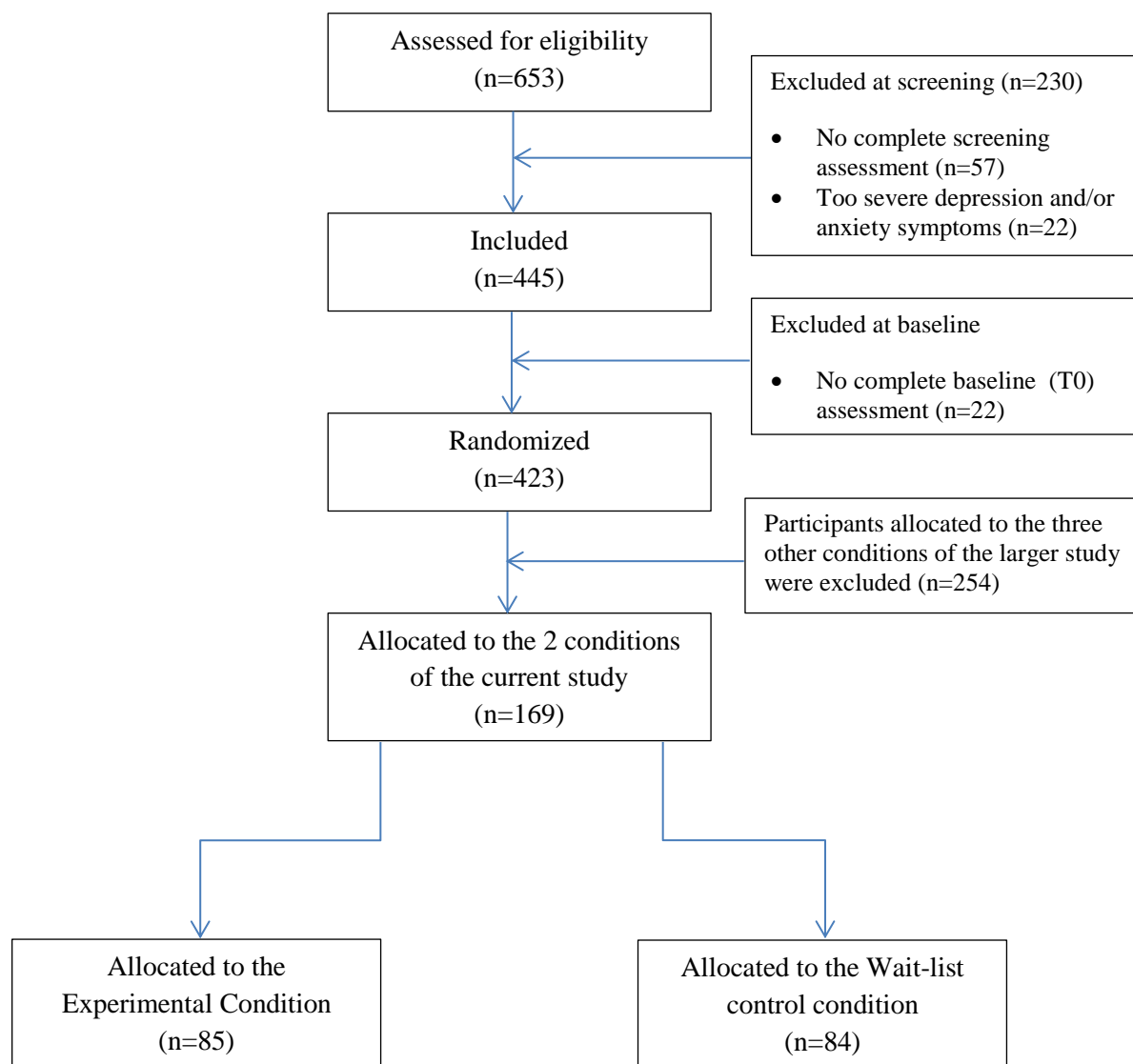


Figure 1. Flow-chart of participants.

### Intervention.

The intervention took 6 weeks. Hereby, participants received weekly an e-mail with instructions for the respective intervention week. In the intervention group, participants received the instruction to perform five Acts of kindness once a week and the next day to note - in an online diary - what kind of activities they have performed. Participants were free to choose which kind act they want to perform and also when and where they want to perform

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the kind acts. Examples of these kind acts taken from the online diary were: Donating clothes, bringing coffee to a colleague or giving a compliment to a stranger. The estimated time investment for the participants was about 45 to 60 minutes per week during six weeks, resulting in 270-360 minutes in total.

### **Wait-list control condition.**

In the wait-list control condition, participants were told that they can choose the happiness exercises they prefer to do, but before that normal fluctuations in the participants' level of happiness have to be collected. That is, participants in the wait-list control condition received the happiness exercise after the 6 weeks follow-up questionnaire and therefore got no treatment during the 6-weeks intervention.

### **Outcome measures**

**Mental well-being.** Mental well-being was measured by means of the Mental Health Continuum – Short Form (MHC-SF; Keyes, 2002; (Lamers, Westerhof, Bohlmeijer, ten Klooster, & Keyes, 2011) consisting of 14 items. The scale measures all three components of well-being: *Emotional well-being* (3 items; e.g. In the past four weeks, how often did you feel that you were happy?), *social well-being* (5 items; e.g. In the past four weeks, how often did you feel that you have contributed something important to society?) and *psychological well-being* (6 items; e.g. In the past four weeks, how often did you feel that you had warm and trusted relationships with others?). Answers were given on a 6-point scale ranging from 0 = *Never* to 5 = *(Almost) always*, with higher scores indicating a higher level of well-being. Reliability of the MHC-SF in an earlier study by Lamers et al. (2011) was high for the total MHC-SF, as well as for emotional and psychological well-being; and adequate for social well-being. In the current study, Cronbach's  $\alpha$  for overall well-being ranged from .89 to .90, for emotional well-being from .81 to .85, for social well-being from .69 to .72 and for psychological well-being from .81 to .85.

**Positive and Negative emotions.** To measure positive and negative emotions, the 16-

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items modified Differential Emotions Scale (mDES) was used (Schaefer, Nils, Sanchez, & Philippot, 2010). Both, positive and negative emotions were measured with eight items. Participants were asked to indicate to what extent they were experiencing an emotion at the current moment (e.g. for positive emotions ‘interest’ and for negative emotions ‘guilt’). Answers were given on a 7-point scale ranging from 1 = *Not at all* to 7 = *Very intense*, with higher scores indicating a higher level of positive or negative emotions. Reliability in an earlier study (Galanakis, Stalikas, Pezirkianidis, & Karakasidou, 2016) was adequate. In this study, Cronbach’s  $\alpha$  ranged from .57 to .88 for positive emotions and from .66 to .90 for negative emotions.

**Adherence.** Adherence is defined as the “extent to which a person’s behaviour [...] corresponds with agreed recommendations from a health care provider” (WHO, 2014, p.3). In the current study, the instruction was to perform five Acts of kindness per intervention week. Therefore, adherence was considered sufficient when participants performed five AoK per intervention week; less than five AoK were seen as non-adherence. The corresponding question measuring adherence during intervention week 1-6 of the current study was: How many kind acts did you perform for others yesterday?. Answers were given on a 6-point scale ranging from 1 = *five times* to 6 = *not at all*.

## Analyses

The statistical analyses were performed using SPSS (version 22). Participants who did not fill in the questionnaire completely, were excluded from the analyses ( $n = 68$ ), resulting in 101 participants in total. Prior to the main analyses, independent t-tests and  $\chi^2$ -tests were conducted in order to examine baseline differences between the AoK intervention group and the wait-list control group on demographic variables (i.e. age, gender, level of education, marital status, nationality, living situation and the employment status) and the outcome measures (i.e. well-being and positive/negative emotions). Non-significant results hereby indicate no significant differences between the two groups.

To test the first hypothesis that the AoK condition will improve significantly more on emotional, social, psychological and overall well-being (primary outcome) and positive/negative emotions, mixed ANOVAs were conducted. For well-being, ANOVAs were conducted with time (T0, T1, T2 of the MHC-SF and its three subscales) as within-subjects factor and group (AoK intervention group or wait-list control group) as between-subjects factor. By this, the main effects of condition (AoK or wait-list control) and the interaction effect between condition and the dependent variables mental well-being and its subscales were compared. For positive and negative emotions, mixed ANOVAs were conducted with time (T0, in-between measurement after 2 weeks and after 4 weeks, and the T1 measure of the mDES (for positive and negative emotions separate)) as within-subjects factor and group (AoK or wait-list control) as between-subjects factor. As effect size Partial Eta Squared ( $\eta^2$ ) is used with .01 indicating a small effect size, .06 a medium effect size and .14 a large effect size (Cohen, 1988).

The mediational model (Figure 2) starts with the condition (wait-list control / intervention group (AoK)). The *c-path* leads from condition (independent variable) directly to the outcome variable mental well-being ( $X \rightarrow Y$ ). This demonstrates the primary outcome of the current study. Then, the *a-path* leads to positive respectively negative emotions ( $X \rightarrow M$ ). Thus, the a-path shows that the independent variable condition leads to an increase/decrease in positive emotions and a decrease/increase in negative emotions. Lastly, the b-path follows. This path demonstrates that an increase in positive and a decrease in negative emotions (*b-path*) lead to an increase in mental well-being ( $M|X \rightarrow Y$ ). Thus, positive and negative emotions are serving as mediators for the effect of AoK on mental well-being. The initial causal relationship between the independent variable condition and the dependent variable mental well-being is therefore said to be indirect (*c'-path*).

To test the second hypothesis that the effect of the AoK intervention on mental well-being relative to the wait-list control condition is mediated by increases in positive emotions

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and decreases in negative emotions, single mediation analyses were performed with PROCESS based on 5,000 bootstrapping samples (Preacher & Hayes, 2008). The post-test score (T1) on overall mental well-being was entered as the dependent variable (Y). Condition (AoK=1, wait-list control condition=0) was entered as independent variable (X). The 2-weeks or 4-weeks scores on positive or negative emotions were entered as mediator (M). For positive emotions, the in-between measurement after 4 weeks and for negative emotions the in-between measurement after 2 weeks was used, because of the higher reliability with .61 and .72 respectively in contrast to .57 and .66. To control for variation in outcome score, the baseline scores (T0) of the MHC-SF and the mediators were entered as covariates. Through the use of PROCESS the indirect effect and bias-corrected confidence intervals (CI) can be estimated. When the confidence interval of the indirect effect (ab) does not include zero, the mediation effect can be considered significant. Significance of outcomes was interpreted at  $p < .05$ .

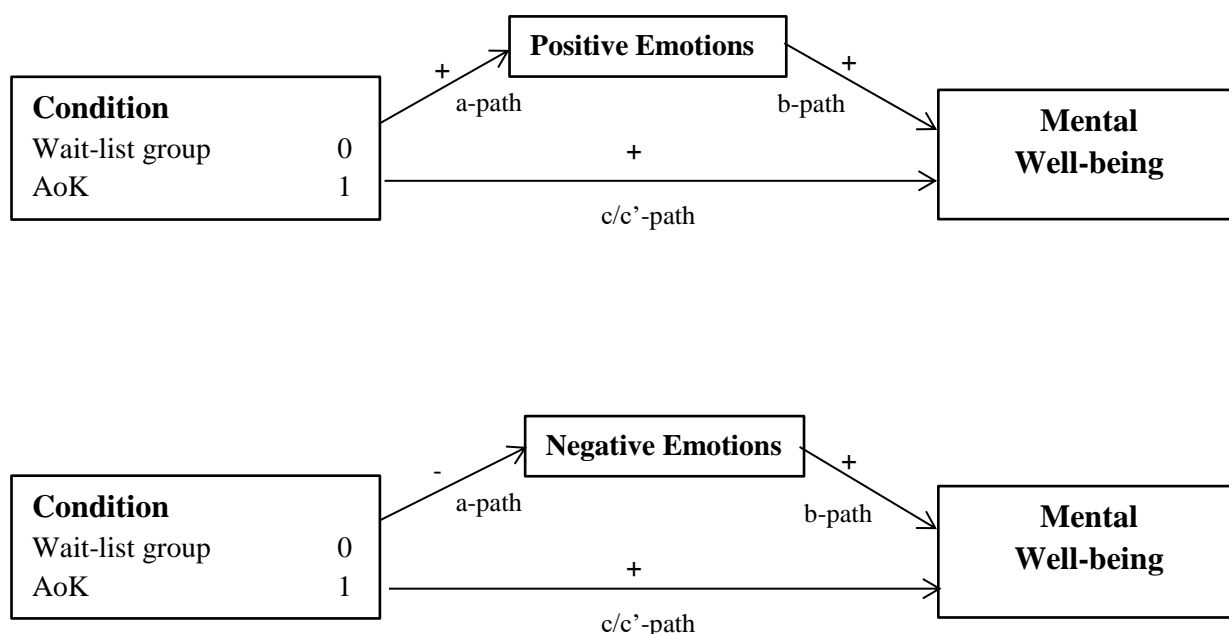


Figure 2. Mediation models of the relationship between wait-list control versus intervention group on mental well-being.

## Results

### Participants and adherence

In Table 1, the baseline characteristics of the sample are summarized. The mean age was 49.9 years ( $SD = 9.99$ ) and participants were predominantly female (89.3%) and higher educated (78.7%). More than half of the participants were married (54.4%). There were no significant group differences between participants in the AoK group and the wait-list control

Table 1

*Baseline Characteristics of Participants in the Intervention Group (AoK), Wait-list Control Group and the Total Sample (N=169)*

	AoK (n = 85)	WL (n = 84)	Total (n = 169)	<i>p</i>
Age, <i>M (SD)</i>	48.53 (10.63)	49.67 (9.34)	49.09 (9.99)	.46
Gender, <i>n (%)</i>				.98
Female	76 (89.4)	75 (89.3)	151 (89.3)	
Male	9 (10.6)	9 (10.7)	18 (10.7)	
Education, <i>n (%)</i>				.47
Low	1 (1.2)	4 (4.8)	5 (3.0)	
Intermediate	17 (20.0)	14 (16.6)	31 (18.4)	
High	67 (78.9)	66 (78.6)	133 (78.7)	
Marital status, <i>n (%)</i>				.88
Married	46 (54.1)	46 (54.8)	92 (54.4)	
Not Married	39 (45.9)	28 (45.2)	77 (45.5)	
Nationality, <i>n (%)</i>				.45
Dutch	80 (94.1)	81 (96.4)	161 (95.3)	
Other	5 (5.9)	3 (3.6)	8 (4.7)	
Living situation, <i>n (%)</i>				.03
Alone (with children)	30 (35.3)	30 (35.7)	60 (35.5)	
With partner and/or child(ren)/others	55 (64.7)	54 (64.3)	109 (34.6)	
Employment status, <i>n (%)</i>				.92
Paid employment/ Entrepreneur	59 (69.4)	62 (73.8)	121 (71.6)	
Volunteer work/ Unemployment/retired/ student/homemaker/other	26 (30.6)	18 (21.6)	48 (28.5)	

AoK = Acts of kindness; WL = wait-list.

*Note.* *p* = *p*-values of the independent *t*-tests and  $\chi^2$ -tests testing baseline differences between AoK and WL

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group on any of the demographics (Table 1), or outcome measures. Only the living situation differed significantly per group,  $\chi^2(5) = 12.47, p = .03$ . Thereby, there were significantly more participants living with their partners and children (47.1% vs. 28.6%) and less participants living with their partners without children in the AoK group compared to the wait-list control group (14.1% vs 33.3%).

Participants followed the instructions of the intervention moderately, with the average number of kind acts per week during the 6-weeks intervention ranging from 3.76 to 4.57. For weeks 1 to 6, participants performed on average 4.57 ( $SD = .65$ ), 4.31 ( $SD = .89$ ), 4.03 ( $SD = 1.10$ ), 4.08 ( $SD = 1.02$ ), 3.76 ( $SD = 1.41$ ) and 4.03 ( $SD = 1.36$ ) kind acts. Adherence varied between 11.9% and 22.8%, whereby adherence was highest in the first intervention week and lowest in the fifth intervention week. For more information about performed AoK per week see Table 2.

Table 2  
*Frequency of Performing AoK per Intervention Week*

	Frequency performing AoK (%)					
	No AoK	1 Aok	2 AoK	3 AoK	4 AoK	5 AoK
Week 1 ( $n = 35$ )	-	-	-	3 (3.0)	9 (8.9)	23 (22.8)
Week 2 ( $n = 36$ )	-	-	1 (1.0)	7 (6.9)	8 (7.9)	20 (19.8)
Week 3 ( $n = 33$ )	1 (1.0)	-	-	9 (8.9)	9 (8.9)	14 (13.9)
Week 4 ( $n = 36$ )	-	-	2 (2.0)	11 (10.9)	5 (5.0)	18 (17.8)
Week 5 ( $n = 29$ )	1 (1.0)	2 (2.0)	1 (1.0)	7 (6.9)	6 (5.9)	12 (11.9)
Week 6 ( $n = 36$ )	2 (2.0)	-	3 (3.0)	3 (3.0)	10 (9.9)	18 (17.8)

### Effects of AoK on well-being and positive/negative emotions

There was a significant main effect of time on overall well-being,  $F(2, 198) = 10.07, p$

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= .00; emotional well-being  $F(2, 198) = 6.00, p = .003$ ; social well-being  $F(2, 198) = 5.85, p = .00$  and psychological well-being  $F(2, 198) = 8.94, p = .00$ . That is, overall, emotional, social and psychological well-being scores differ significantly per measurement moment. On group, a significant main effect on overall well-being,  $F(1, 99) = 4.76, p = .046$ ; emotional well-being  $F(1, 99) = 4.45, p = .04$  and psychological well-being  $F(1, 99) = 4.55, p = .04$ , but not on social well-being could be found. That is, scores of participants in the AoK group did significantly differ from scores of the participants in the wait-list control group on overall, emotional and psychological well-being. Table 3 shows that there was a significant time x group interaction effect for overall and psychological well-being, meaning that participants in the AoK group reported a stronger increase in overall well-being ( $\eta^2 = .03$ ) and psychological well-being ( $\eta^2 = .04$ ) immediately following the intervention and at three months compared to participants in the wait-list control group. Effect sizes of both outcomes were low. For emotional and social well-being no interaction could be found.

The results regarding positive and negative emotions showed that there is a significant main effect for time on positive  $F(2, 198) = 8.94, p = .00$  and negative emotions  $F(3, 297) = 8.90, p = .00$ , and a significant main effect of group on positive emotions  $F(1, 99) = 4.55, p = .04$ , but not on negative emotions  $F(1, 99) = 2.06, p = .16$ . Thus, positive and negative emotions scores differ significantly per measurement moment and scores of the participants in the AoK group did significantly differ from scores of the participants in the wait-list control group on positive emotions, but not on negative emotions. No interaction effects between time and group on positive and negative emotions could be detected (Table 3), meaning that participants in the AoK group did not significantly improve on positive or negative emotions during the second and fourth week of the intervention and immediately following the intervention (T1) than participants in the wait-list control group.



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Table 3

*Means and Standard Deviations for Well-Being and its Subscales and Results of the Mixed ANOVA for Well-Being, its Subscales and Positive and Negative Emotions*

	AoK (n = 36) <i>M (SD)</i>	WL (n = 65) <i>M (SD)</i>	(time x group) <i>F</i>	<i>p</i>	$\eta^2$
<b>MHC-SF</b>					
Baseline	2.89 (.71)	2.75 (.69)			
Post-test	3.16 (.70)	2.79 (.69)	3.33	.04	.03
Follow-up	3.21 (.64)	2.86 (.68)			
<b>EWB</b>					
Baseline	3.04 (.83)	2.88 (.86)			
Post-test	3.42 (.81)	2.95 (.86)	2.29	.10	.02
Follow-up	3.34 (.72)	2.99 (.88)			
<b>SWB</b>					
Baseline	2.71 (.85)	2.53 (.73)			
Post-test	2.83 (.76)	2.57 (.72)	.54	.58	.01
Follow-up	2.97 (.77)	2.67 (.68)			
<b>PWB</b>					
Baseline	2.96 (.75)	2.87 (.77)			
Post-test	3.31 (.76)	2.90 (.77)	4.48	.01	.04
Follow-up	3.35 (.70)	2.95 (.76)			
<b>PosEmo</b>					
Baseline	3.68 (.84)	3.66 (.75)			
In-betw. 2	3.83 (.70)	3.58 (.77)			
In-betw. 4	3.80 (.80)	3.66 (.81)	.91	.44	.01
Post-test	4.29 (1.09)	3.96 (.75)			
Follow-up	4.51 (1.14)	4.08 (1.17)			
<b>NegEmo</b>					
Baseline	2.57 (1.08)	2.78 (1.17)			
In-betw. 2	2.17 (1.05)	2.77 (1.13)			
In-betw. 4	2.32 (1.05)	2.68 (1.06)	1.15	.33	.01
Post-test	1.75 (.66)	2.35 (1.05)			
Follow-up	1.83 (.87)	2.30 (1.11)			

### Mediation of positive and negative emotions

Mediation analyses revealed that participants in the AoK group compared to the wait-list control group significantly improved on overall well-being  $b = .09, p = .01$  (c-path).

Further, no direct effects of group on positive emotions at 4 weeks  $b = -.03, p = .61$ ; but a direct effect of group on negative emotions at 2 weeks  $b = .12, p = .01$  could be found (a-

path). The direct effects of positive emotions on well-being at post-test were significant,  $b = .17, p = .01$ ; effects of negative emotions on well-being at post-test were not significant  $b = -.04, p = .05$  (b-path). Furthermore, the bias-corrected 95% confidence intervals (CIs) for the indirect effects of the AoK intervention through positive emotions  $[-.02; .01]$  and negative emotions  $[-.03; .01]$  did contain zero. Therefore, the effect of the AoK intervention on well-being relative to the wait-list control group cannot be explained by increases in positive emotions 4 weeks after the start of the intervention and also not by decreases in negative emotions 2 weeks after the start of the intervention.

### Discussion

The aim of the study was to investigate the effectiveness of an Acts of kindness self-help intervention on (psychological, social and emotional) well-being compared to a wait-list control group. Additionally, it was tested whether positive and negative emotions mediate the effect of AoK on mental well-being. Results demonstrated that the AoK intervention compared to the wait-list control condition led to significantly greater increases in overall well-being and psychological well-being, but not emotional and social well-being at post-test and 3-month follow-up. In addition, no evidence for a mediating role of positive and negative emotions on the effect of the AoK intervention on well-being could be found. Therefore, Hypothesis 1 of the current study was confirmed partially and Hypothesis 2 is rejected.

The present study supports the results of the meta-analysis of Bolier et al. (2013) saying that PPIs promote an increase in mental well-being. In this meta-analysis there could also be found an effect on psychological well-being as it was the case in the current study. Surprisingly, no effects on emotional well-being could be detected in the current study. This is in contrast to the systematic review on the effects of kindness interventions by Curry et al. (2018), in which an overall effect on emotional well-being was found. As mentioned at the beginning, the definition of emotional well-being includes the presence of positive emotions

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and the absence of negative emotions (Diener, 1984; Keyes, 2002). As measured in this study, the amount of positive emotions and negative emotions in the AoK group compared to the wait-list control group did not significantly increase or decrease throughout the intervention. Therefore, it is a logical consequence that emotional well-being did not increase.

In addition to emotional well-being, also no effects on social well-being could be detected. Social well-being is concerned about effective functioning in society and includes, for instance, social contribution (Keyes, 1998). Given the simplicity of the intervention it seems difficult to increase this type of well-being through the use of an AoK intervention, whereby participants perform small kind acts for others such as carrying the purchase for an old man or giving a compliment to a co-worker. These acts seem not to be extensive enough in order to reach significant results in social well-being, which includes more far-reaching components such as the contribution to society. Psychological well-being, in contrast, is about the individual's optimal functioning and includes concepts such as personal growth, self-acceptance and positive relations (Ryff, 1989). More precisely, psychological well-being is concerned with the individual, and social well-being is more about the individual as a part of society. Therefore, the AoK intervention seems to effect psychological well-being by contributing the individual self (e.g. personal growth or positive relations) rather than contributing to a whole social system as it is the case in social well-being.

Another unexpected finding was that both positive and negative emotions do not serve as mediators for the association between AoK and well-being. Nelson et al. (2016) in his study found that improvements in mental well-being can be explained by increases in positive emotions, but not decreases in negative emotions. In this study, well-being was also assessed with the MHC-SF as it was the case in the current study; emotions – in contrast – were assessed with the nine-item Affect-Adjective Scale with Cronbach's  $\alpha$  ranging from .86 to .89 for negative emotions, and .91 to .93 for positive emotions. In addition, the instruction was to perform three kind acts at one day for four weeks. One possible explanation why there could

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not be found a significant interaction effect of the AoK intervention on positive and negative emotions and therefore also no mediational effect for well-being could be because of the used questionnaire for emotions. Reliability scores of the mDES questionnaire in the current study varied strongly across measurements, ranging from .57 to .88 for positive emotions and .66 to .90 for negative emotions. Particularly, the in-between measurements after two and four weeks after the start of the intervention, which were used for the mediation analyses, revealed low internal consistency, with highest Cronbach's  $\alpha$ 's being .72 and .61, respectively. Another possible explanation could be that the current intervention was less intensive compared to the study by Nelson et al. (2016). In the current study participants were instructed to perform five AoK once a week for six weeks. That is, participants could choose for themselves when to perform the five acts during an intervention week. It is therefore possible that participants did all five AoK at one day during an intervention week, but also that participants spread the five AoK over the intervention week. A study by Lyubomirsky et al. (2005) compared the intensity of the AoK exercises by having five acts performed in one day or spread over the week, for six weeks. They found that the version in which all acts were performed in one day showed a greater effect on mental well-being than when the acts were spread over the week.

According to the broaden-and-build theory (Fredrickson, 2001) well-being can be increased through an upward spiral of positive emotions by performing, for instance, kind acts. Considering the fact that positive emotions in the AoK group were not significantly increased compared to the wait-list control group, the increase in mental well-being may possibly be explained by other mediating variables such as for example optimism (Carver, Scheier & Segerstrom, 2010). Optimism is particularly interesting to study in this context, because it is an aspect of psychological well-being which has been significantly increased in this study.

### **Strengths and limitations**

The current study contributed to the positive psychological research area and has some

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noteworthy strengths to be mentioned. First of all, the current study demonstrated that it is possible to increase mental well-being by means of a positive psychological intervention including kind acts for others.

Secondly, the current study included all components of well-being, containing emotional, social and psychological well-being. This is a rarity in positive psychological studies, which mostly concentrate on one component of well-being, particularly emotional well-being or psychological well-being or on overall mental well-being without distinguishing between the three components. This research is important because it helps to understand which components of well-being are most affected through AoK and therefore could give important information for designing more effective kindness interventions.

Finally, participants were free to choose the AoK for themselves. That is, participants were not assigned to perform certain Acts of kindness. They could choose for themselves which Acts of kindness, when, how and where they want to perform the kind act. Therefore, the resulting Acts of kindness can be seen as accurately reflecting how people choose to engage in kind acts in their everyday lives. They were not imposed by the study. Research showed that these autonomously motivated AoK lead to relatively larger gains in well-being and are therefore more effective compared to AoK that are mandated by others (e.g. mandated by the study) (Nelson et al., 2015).

There were also some limitations to the study. To start with, besides that the reliability score of the mDES questionnaire used for positive and negative emotions were strongly fluctuating across measurements; the mDES, which originally is French, has not yet been validated for a Dutch sample; only a validation study for a Greek speaking population could be found (Galanakis et al., 2016). Therefore, it is uncertain whether this questionnaire is also suitable for a Dutch speaking population.

Secondly, the results of the current study should be interpreted with care because in the sample higher-educated, middle aged female participants are strongly overrepresented

(Table 1). Through this, the generalizability of the findings is limited. Besides, the actual sample used for analyses, thus the participants who completely filled in the questionnaire, consisted of 36 participants in the AoK condition and 65 participants in the wait-list control condition. That is, the evenly distribution of participants on the conditions is not given anymore. Also the statistical power is reduced through a low sample size.

Finally, adherence in the current study was low. The results of the adherence-scores per intervention week show that adherence varied between 11.9% and 22.8%. Thus, around 80% of the participants did not perform the AoK exercises as instructed.

### **Future research and practical implications**

Future research could build on this study in a number of ways. First of all, future research should consider a validation study for the mDES in a Dutch sample, to ensure that this measurement instrument is adequate for a Dutch speaking sample. Also it would be interesting to search for other possible mechanisms than positive and negative emotions which could explain the association between Acts of kindness and mental well-being. Possible mediators could be optimism (Carver et al., 2010) or relationship satisfaction (Alden & Trew, 2013).

Secondly, a more representative sample for the Dutch general population has to be considered. That is, the sample has to include more men and also different age groups than middle-aged people. It is also important to reach people who are less educated than the participants in the current sample. This could be done through a different recruiting of participants, for instance, recruiting participants through social media (e.g. Instagram) and at different places and platforms where less educated people can be met more likely.

A last practical implication to be mentioned is the use different elements to increase adherence or to decrease the amount of drop-outs. Kelders et al. (2012) in her study found that elements of ‘dialogue support’ of the Persuasive Systems Design Model (PSD; Oinas-Kukkonen & Harjumaa, 2008) can increase the adherence of participants. Elements of this

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category are for example ‘praise’ and ‘reward’. In the current study, these elements could be implemented, for instance, after participants filled in the online diary. More precisely, participants could get short messages including a praise like for example “Well done! Keep it up” to increase the motivation of participants to go on following the intervention.

### **Conclusion**

To conclude, the present study demonstrated that mental well-being can be increased through Acts of kindness. In particular, a significant increase in overall well-being and psychological well-being could be detected in participants with low or moderate levels of well-being. Regarding positive and negative emotions, no mediating effect of these on mental well-being could be found. Considering the fact that 63,5% of the Dutch population does not experience optimal mental health (Schotanus-Dijkstra et al., 2016) and thus has a negative impact on the individual themselves (e.g. less meaningful relationships, more illnesses) and on the economy (e.g. more absenteeism), investing more in kindness interventions and the underlying processes of the relationship between AoK and mental well-being seems to be an important objective for public health care. With this knowledge, it can be possible for clinical positive psychologists to develop more effective interventions to enhance emotional, social and psychological well-being in non-flourishing participants.

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