Master Thesis

Efficacy of Acts of Kindness: Examining effects on depressive symptoms and mental well-being and the mediating role of positive and negative emotions.

Proposed by

Sophie Ekrod, 1610090

Examined by

Dr. M. Sommers-Spijkerman

Dr. M. Schotanus-Dijkstra

University of Twente

Faculty of Behavioural, Management and Social Sciences

Master Programme Positive Psychology and Technology

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Abstract

Background: The efficacy of several positive psychological interventions on depressive symptoms and mental well-being has been demonstrated in the past years. One specific intervention which receives considerable interest in this field is "acts of kindness". It is proven to positively impact mental well-being. However, little attention is given to the possible effects on depressive symptoms, as this is one of the most prevalent disorders nowadays. In addition, little is known about the working mechanisms of performing acts of kindness. Positive and negative emotions seem to play a role while engaging in prosocial behaviour. This study aims to 1) examine the effectiveness of performing acts of kindness on depressive symptoms and mental well-being, 2) examine the mediating role of negative emotions on the effect of acts of kindness on depressive symptoms and 3) to examine the mediating role of positive emotions on the effect of acts of kindness on mental well-being.

Method: Within an RCT design, 169 participants were randomly assigned to the experimental condition (performing acts of kindness, $n = 85$) or to a waitlist control condition ($n = 84$). Participants in the experimental condition were asked to perform five acts of kindness on one day per week, during the six-week intervention, while recording these acts in an online diary. At pre- and posttest, depressive symptoms, mental well-being and positive/negative emotions were measured. Additionally, positive and negative emotions were measured during the intervention (at 2- and 4-weeks). Mixed ANOVA analyses and Cohen's *d* effect sizes were calculated to estimate the effectiveness of acts of kindness on depressive symptoms and mental well-being. Simple mediation analyses were performed to assess whether changes in negative emotions during the intervention serve as a mediator of the relationship between acts of kindness and depressive symptoms and whether changes of positive emotions during the intervention serve as a mediator of the relationship between acts of kindness and mental well-being.

Results: 1) Mixed ANOVA analyses revealed that performing acts of kindness leads to small improvements in depressive symptoms and mental well-being. Significant differences between the two conditions on these variables could be observed at posttest. 2) The simple mediation analyses demonstrated that a decrease in negative emotions significantly mediated the effect of prosocial behaviour on depressive symptoms. 3) However, positive emotions did not mediate the effect of performing acts of kindness on mental well-being.

Conclusion: The results of this study contribute to positive psychological research by proving that performing acts of kindness improves depressive symptoms and mental well-being and that the effect on depressive symptoms could be explained by a decrease of negative emotions. Implications for future research and practise are provided, for example promoting prosocial behaviour in the mental health sector and making it applicable across disorders.

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Introduction

Depressive symptoms and mental well-being

Today, depression is one of the most prevalent mental disorders covering 12% of all nonfatal global diseases (Murray, Ustun, Ayuso-Mateos, Chatterji & Mathers, 2004). According to the World Health Organisation (WHO), around 350 million people worldwide suffer from depressive symptoms, which makes the search for effective long-term treatment urgent (WHO, 2012). In the Netherlands, prevalence rates of subclinical depressions are high, too (Cuijpers, De Graaf & Van Dorsselaer, 2004). A subclinical depression is characterised by relevant depressive symptoms, although not all standard diagnostic criteria are met. People who experience those mild or moderate symptoms are at risk of developing a major depression, with the consequence of decreased health-related quality of life (Cuijpers, Koole, van Dijke, Roca, Li & Reynolds, 2014). However, it is difficult to estimate how many people are not searching for help to reduce their complaints, considering the fear of being stigmatised (Hipes, Lucas, Phelan & White, 2016). Traditionally, cognitive therapy and/or behavioural activation therapy are used and have been proven effective in reducing symptoms of depression by challenging thought processes to adapt irrational thinking patterns and by involving practical techniques to change the individual's unhelpful behaviour (Davey, 2014). The focus in these therapies primarily lies on reducing pathology and complaints and they are not so much focused on helping people reach their full potential (Seligman & Csikszentmihalyi, 2000).

As there is growing evidence that promoting well-being is just as important as reducing complaints (Schotanus-Dijkstra, ten Have, Lamers, de Graaf & Bohlmeijer, 2017), the WHO defines complete mental health as not only the absence of symptoms but also possessing high well-being (WHO, 2004). This idea is based on the 2-continua model of mental health which describes mental health and mental illness as two related but independent variables (Keyes, 2005). According to this model, complete mental health can only be reached by reducing the symptoms of mental disorders and improving well-being (Magyar-Moe, 2009). In reference to the WHO, this is a state of well-being "in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community" (WHO, 2004, p. 12). This definition encompasses three important aspects of well-being: 1) A thriving and flourishing individual experiences *emotional* well-being, which includes the presence of positive emotions, for example happiness and pleasure in life and the absence of negative emotions like pain; 2) *psychological* well-being, meaning that one is able to express own ideas and opinions and that life has a sense of direction and meaning; and 3) *social* well-being, which includes the feeling of belonging to a community and the feeling of contributing to society (Diener, 1984; Keyes, Wissing, Potgieter, Temane, Kruger & van Rooy, 2008).

Effectiveness of positive psychological interventions and acts of kindness

By focusing on well-being during therapy, individuals become more resilient (Rashid, 2014 and Cohn, Fredrickson, Brown, Mikels & Conway, 2009). Research shows that flourishing protects against the onset of mood and anxiety disorders (Schotanus-Dijkstra et al., 2017; Seligman & Csikszentmihalyi, 2000; Trompetter, de Kleine & Bohlmeijer, 2016). Additionally, by increasing the levels of mental well-being, psychological symptoms are more easily reduced, and people are able to flourish too (Rashid, 2014). Previous research shows that well-being-oriented interventions do have a positive effect on mild to moderate depressive symptoms (Schotanus-Dijkstra, Drossaert, Pieterse, Boon, Walburg, & Bohlmeijer, 2017). To achieve higher levels of well-being, a broad range of positive psychological interventions (PPIs) has been developed which can be described as "interventions aimed at increasing positive feelings, positive behaviours, or positive cognitions as opposed to ameliorating pathology or fixing negative thoughts of maladaptive behaviour patterns" (Sin & Lyubomirsky, 2009, p. 468), or in other words: exercises to promote flourishing and optimal functioning in individuals.

A specific PPI which receives considerable interest in the field of psychology is acts of kindness. This kind of prosocial behaviour includes every act with the intention to benefit another human being, described as minor everyday behaviour, for example carrying groceries for a relative or neighbour, as well as larger acts to improve the world, like volunteer work in local organisations (Nelson, Layous, Cole & Lyubomirsky, 2016). Several previous studies have examined the effectiveness of acts of kindness on mental well-being and depression, with multiple randomized controlled trials (RCTs) showing that doing something good for another person has a beneficial impact on among others well-being and depressive symptoms (e.g. Gander, Proyer, Ruch & Wyss, 2013; Nelson, Della Porta, Jacobs Bao, Lee, Choi & Lyubomirsky, 2015; Layous, Nelson, Oberle, Schonert-Reichl & Lyubomirski, 2012; Nelson, Layous, Cole & Lyubomirski, 2016).

Mediation patterns

Although acts of kindness interventions seem to be an effective form of intervention, current research provides little insight into its working mechanisms (Kraemer, Wilson Fairburn & Agras, 2002, p. 877). Existing interventions can be refined through the collection and analysis of further information on how and why kindness towards others is effective. Some characteristics may be more beneficial than others, which can therefore be strengthened, and less beneficial aspects can be improved, for example the delivery method or the type of exercises (MacKinnon & Dwyer, 1993).

Research on comparable PPIs provides insight into the possible mediating effects of positive and negative emotions (e.g. Fredrickson, Cohn, Coffey, Pek & Finkel, 2008; Lyubomirsky & Layous, 2013 and Nelson et al., 2016). According to Nelson and colleagues (2016), the role of positive and negative emotions is especially interesting while doing acts of kindness and helping other people, as

they "boost happiness" (p. 851). In their study on kind behaviour towards others vs. kind behaviour towards oneself, the results showed that higher levels of positive emotions mediated the effects of acts of kindness on high mental well-being, but negative emotions did not have a mediating role. These results are explained by the broaden-and-build theory of positive emotions (Fredrickson, 2004). According to this theory, positive emotions broaden ones focus of attention and their thought-action repertoires, whereas negative emotions direct the attention to negative aspects which do not allow growth or development. Experiencing positive emotions leads to lot more positive outcomes, for example improved creativity, flexibility, solution-focused thinking or becoming more helpful to others (Fredrickson, Tugade, Waugh & Larkin, 2003). However, Nelson and colleagues (2016) asked their participants to perform acts of kindness three times for four weeks and they did not take depressive symptoms as an outcome variable into account.

However, looking at the relationship of prosocial behaviour and depressive symptoms, it is assumed that negative emotions are mediating this effect. This assumption is based on a study by Folkman and Moskowitz (2000) which shows that people who can recall many positive situations and emotions are then able to recall less negative events and emotions. This means that experiencing positive and negative emotions goes hand in hand, because it is proven that there is a moderate negative correlation between these mood states (Folkman & Moskowitz, 2000). To illustrate, an individual who performs prosocial behaviour and writes it down, is forced to list its performed acts of kindness. While summing up these positive acts and emotions, according to Folkman and Moskowitz (2000), the individual would become less aware of negative situations and therefore levels of negative emotions would decrease. This process in turn may have an influence on possible depressive symptoms of the individual, as negative emotions become less present than positive emotions.

Although, it is not fully empirically researched how the effects of acts of kindness on mental well-being and depressive symptoms can be explained, it is to be expected that positive and negative emotions are active ingredients in this equation. In the current paper it is assumed that in addition to positive emotions mediating the effect of prosocial behaviour on mental well-being, negative emotions may mediate the relationship between doing acts of kindness and depressive symptoms. Thus, based on theoretical evidence, it is expected that prosocial behaviour cultivates positive emotions and decreases negative emotions (Nelson et al., 2016). However, evidence for the effectiveness of PPIs is largely based on RCTs (Gander et al., 2013), which results in a lack of evidence for mediating effects of acts of kindness interventions.

Present study

This RCT aims to replicate and further extend previous findings on the effectiveness of prosocial behaviour using mediation analysis. The present study is the first to focus on specific groups of emotions as mediators while examining acts of kindness. Therefore, the first aim of the current

study is to examine the effectiveness of performing acts of kindness on depressive symptoms and well-being. The second aim is to examine the mediating role of negative emotions on the effect of acts of kindness on depressive symptoms and the third aim is to examine the mediating role of positive emotions on the effect of acts of kindness on mental well-being. It was hypothesised that participants who performed prosocial behaviour showed greater reductions in depressive symptoms and greater improvements in mental well-being than those on a waiting list, at post-intervention. In addition, it was hypothesised that acts of kindness lead to decreases in depressive symptoms via decreases in negative emotions and that performing acts of kindness increases mental well-being via increases in positive emotions during the intervention.

Method

Design

This study draws upon a 5-armed RCT. For the current study, there is one experimental group (performing acts of kindness) and one wait-list control group relevant. Assessments took place in both conditions before the 6-week intervention (baseline, T0), during the intervention (at 2-weeks, T1; at 4-weeks, T2), and directly after the intervention (T3).

Participants and Procedure

Participants were recruited via advertisements in Dutch regional and national newspapers (Tubantia, Volkskrant, Gelderlander), an online newsletter (Psychology Magazine) and social media advertisement (Facebook). People who were interested in the study were referred to a website where further information was provided. Prospective participants had to be above 18 years, provide informed consent and master the Dutch language to fill in questionnaires and to follow the intervention independently. To be included in the study, they needed to have sufficient internet connection and an e-mail address. Participants who displayed serious depressive or anxiety symptoms were excluded from the study, with a score of >34 on the depression scale (Center for Epidemiologic Studies; CES-D) and/or a score of >15 on the anxiety scale (Generalized Anxiety Disorder; GAD-7) (Bouma, Ranchor, Sanderman, & van Sonderen, 1995; Donker, van Straten, Marks & Cuijpers, 2011).

Figure 1 shows the flow of participants. In total, 653 participants filled in an online application. After that, they received a link to a screening questionnaire which started with an online informed consent procedure. After screening, 338 qualified participants completed the baseline questionnaire in September 2017. The 338 participants were randomly assigned to five different conditions. Randomization was stratified by gender, educational level and flourishing/not flourishing, with the help of a stratified randomization procedure retrieved from randomizer.org. 85 participants were assigned to do acts of kindness and 84 participants were assigned to the waitlist (Figure 1).

The descriptive characteristics of the participants at baseline level are displayed in Table 1. Most of the participants were female (87.7%) and higher educated (80.9%). Ages ranged from 23 to 69 years, with a mean of 50.78 years (*SD* = 9.75). Furthermore, the majority was Dutch (96.1%), married (52%), lived together with their partner (63.35%) and in paid employment (70.9%). The conditions had an equal distribution of sex, age, nationality, marital status, living situation, educational level, working situation, depressive symptoms and well-being ($p \geq .42$).

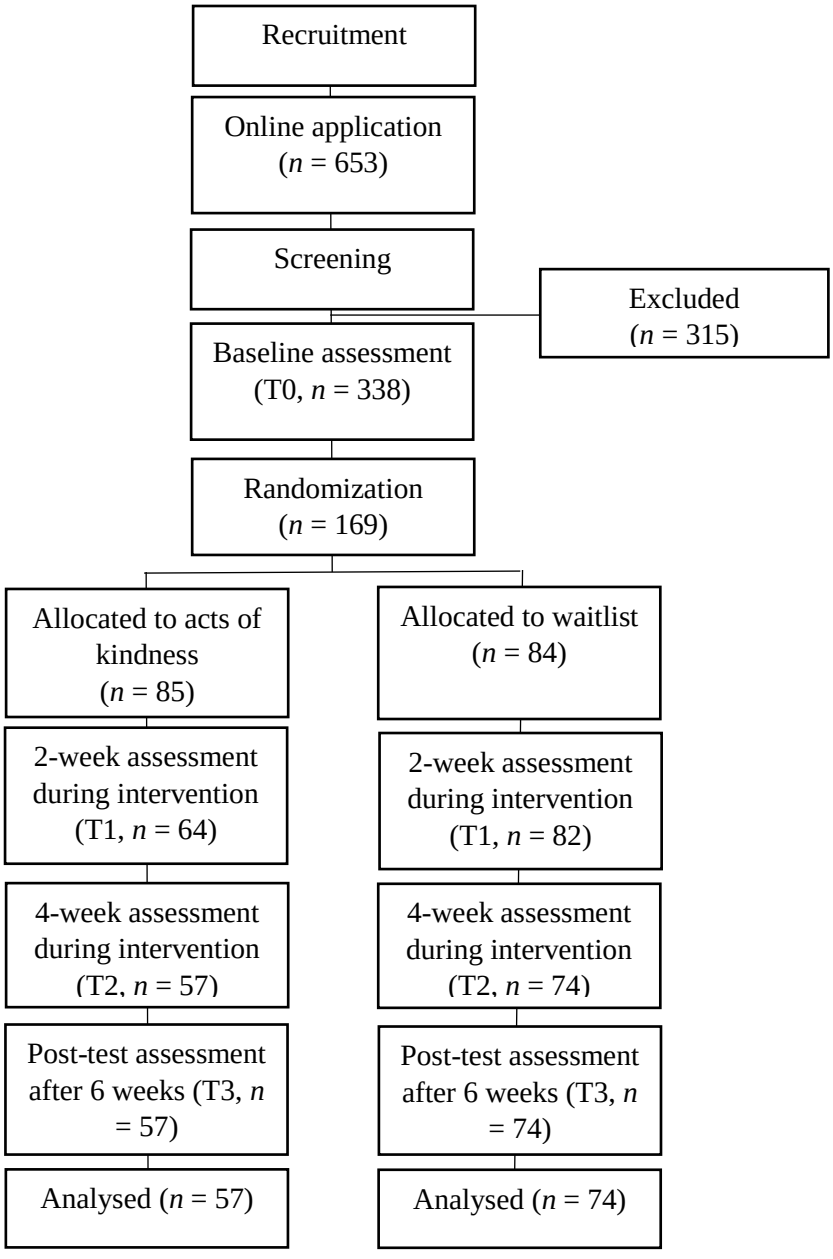


Figure 1. Flow of participants through the study.

Table 1

Baseline characteristics of participants (*n* = 131).

	Kindness (*n* = 57)	Waitlist (*n* = 74)	Total (*n* = 131)
Gender, *n* (%)			
Female	50 (87.7)	65 (87.8)	115 (87.7)
Male	7 (12.3)	9 (12.2)	16 (12.3)
Age			
Mean (*SD*)	51.33 (9.62)	50.35 (9.65)	50.78 (9.57)
Range	27 – 69	23 – 64	23– 69
Nationality, *n* (%)			
Dutch	54 (94.7)	72 (97.3)	126 (96.1)
Other	3 (5.3)	2 (2.7)	5 (3.9)
Marital situation, *n* (%)			
Married	31 (54.4)	39 (52.7)	70 (52.0)
Not married	26 (45.6)	35 (47.3)	61 (48.0)
Living situation, *n* (%)			
With partner	38 (66.6)	45 (60.81)	83 (63.35)
Without partner	19 (33.4)	28 (37.84)	47 (35.87)
With parents	0	1 (1.35)	1 (0.78)
Educational Level, *n* (%)			
Low	0	3 (4.1)	3 (2.4)
Middle	10 (17.5)	12 (16.2)	22 (16.7)
High	47 (82.5)	59 (79.7)	106 (80.9)
Work situation, *n* (%)			
Paid employment	40 (70.25)	53 (71.6)	93 (70.9)
No paid employment	16 (28.0)	20 (27.0)	36 (27.4)
Student	1 (1.75)	1 (1.4)	2 (1.7)

Intervention

Participants in the kindness condition performed five kind acts towards others on one day during the week (not later than Friday) for six weeks. They received weekly e-mail reminders with the description and definition of those acts. The e-mails included examples, like carrying groceries for a neighbour, the instructions and a weblink to a digital diary to record the performed acts (not later than Saturday), which was accessed by the researchers.

Waitlist control

Participants allocated to the control group were placed on a waitlist. They were told that before starting the intervention, normal fluctuations of their happiness levels must be documented. A schedule of when they would receive the next questionnaire was placed in the instructions. Six weeks after the intervention had ended for the experimental group, participants on the waitlist received access to the intervention.

Materials

Depressive symptoms. Depressive symptoms were measured by the self-report depression scale (CES-D) developed by the Center for Epidemiologic Studies (Radloff, 1977). The CES-D consists of 20 items, where participants answer the question how often during the past week they have felt or behaved according to the item asked. The items relate to depressive symptoms and can be answered on a four-point scale ranging from *Rarely or none of the time (less than 1 day*) to *Most or all of the time (5-7 days)*. For example: "During the past week, I was bothered by the things that usually don't bother me." (Radloff, 1977). Higher sum scores ranging between 0 and 60 on the CES-D indicate a higher level of depressive symptoms, (Beekman, Deeg, van Limbeek, Braam, de Vries & van Tilburg, 1997). Previous research shows that the CES-D is a moderately reliable instrument (Beekman et al., 1997), with this study supporting these findings ($\alpha = .65$).

Mental well-being. Mental well-being was measured using the Mental Health Continuum-Short Form (MHC-SF; Keyes et al., 2008) which consists of 14 questions concerning the three subscales emotional well-being which relate to a positive affect and satisfaction with life (3 items), social well-being, which relates to one's functioning in society (5 items), and psychological well-being, which relates to one's own individual functioning (6 items) (Lamers, Westerhof, Bohlmeijer, ten Klooster & Keyes, 2011). The participants were asked how often they have been feeling the specific item during the past month, for example: "During the past month, how often did you feel happy?". Answers were possible on a five-point scale ranging from *Never* (0) to *Every day* (5), with a score of 0 as minimum and a score of 70 as maximum. Higher sum scores indicate higher levels of mental well-being (Lamers et al., 2011). The MHC-SF has shown good psychometric properties in Dutch samples. In this sample, reliability was good with $\alpha = .89$ at baseline.

Positive and negative emotions were measured by the modified Differential Emotions Scale (mDES) (Cohn et al., 2009). This self-report survey presents 16 items to the participants, including three emotions per item. Participants were asked to rate their experiences with these emotions within the past day on a five-point scale, ranging from *Not at all* (0) to *Extremely* (5). The Positive Emotions subscale consists of eight emotions, namely amusement, awe, compassion, contentment, hope, interest, joy and love, described as groups of three words, for example: "cheerful, amused, happy" (Cohn et al., 2009). A higher sum score on this subscale indicates a higher level of positive emotions. The subscale of negative emotions consists of eight emotions, which are anger, contempt, disgust, embarrassment,

fear, guilt, sadness and shame, described also as groups of three words, for example: "frightened, scared, anxious" (Cohn et al., 2009). A higher sum score on this subscale indicates a higher level of negative emotions. The mDES has been successfully used in previous research (Schaefer, Nils, Sanchez & Philippot, 2010). In the present study, alpha was .61 at baseline for positive emotions and.73 for negative emotions at baseline.

Adherence describes "the extent to which participants [patients] follow the instructions that are given" (Bissonnette, 2008, p. 639). In the current study, the participants were asked to perform five acts of kindness during one week for the six-week duration of the intervention. Adherence was measured using one question every week: "How many acts of kindness towards others have you performed during the past week?". Answers were possible on a six-point scale ranging from *Five activities* (5) to *I did not perform any acts of kindness towards others during the past week* (0). Higher mean scores on this scale indicate more acts of kindness. Adherence was considered sufficient when the average number of performed acts of kindness per week was higher than 4, meaning that more than four acts were performed.

Statistical analyses

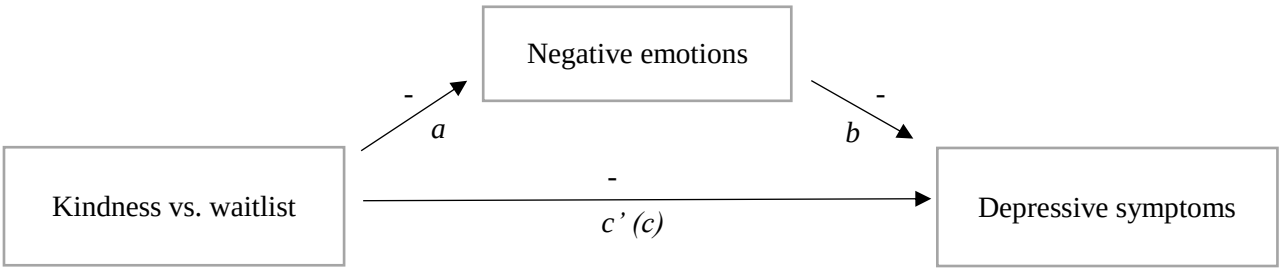
Analyses were conducted using SPSS (version 25.0). The level of significance was $p = .05$. Prior to the main analyses, descriptive statistics were used to produce an overview of the baseline characteristics of the participants. In addition, using $\chi 2$-tests, baseline differences between the conditions were examined regarding demographic variables (sex, age, nationality, marital status, living situation, educational level, working situation), as well as drop-out rates. Significant results indicate significant differences between the two conditions. Adherence was examined by calculating mean scores of performed acts of kindness per week in the experimental condition.

To test the first hypothesis, mixed ANOVAs were used to examine whether the participants performing acts of kindness showed more improvement of depressive symptoms and mental well-being at post-test, relative to the waitlist. For depressive symptoms, time (T0 and T3 of the CES-D) served as within-subjects factor and group (kindness or waitlist) served as between-subjects factor. For mental well-being, time (T0 and T3 of the MHC-SF) served as within-subjects factor whereas group (kindness or waitlist) served as between-subjects factor. For positive and negative emotions, mixed ANOVAs were conducted using time (T0, T1, T2 and T3 of the mDES) as within-subjects factor and group (kindness or waitlist) as between-subject factor. In addition, per outcome and mediator, Cohen's *d* between group effect sizes for T0-T3 are calculated if the interaction effect is significant, using this formula:

$$d = \frac{(M_{Kindness} - M_{Waitlist})}{\sqrt{\frac{(SD^2{}_{Kindness} + SD^2{}_{Waitlist})}{2}}}$$

Values for *d* which are considered small, medium and large, are .20, .50 and .80 respectively (Cohen, 1969). Corresponding 95% confidence intervals (CI's) were calculated using SPSS scripts by Wuensch (2012).

To test the second and third hypothesis, mediation analyses were conducted using the PROCESS macro by Hayes (Hayes, 2012). At first, simple mediation analyses were used to examine the indirect effect of each putative mediator separately. Figure 2 displays the regression-based path analysis framework which is followed during the single mediation analyses (Preacher & Hayes, 2004). Path *a* describes the effect of the condition X (Kindness vs waitlist) on mediating variables M (i.e. positive or negative emotions) and was analysed by calculating the cross-product of the relationship between the condition (X; waitlist = 0, Kindness = 1) and the mediator (M). The mean scores of participants of T1 and T2 on both mDES subscales were calculated and used as mediating variables. Path *b* describes the effect of the mediating variables M on the outcome measures Y (i.e. depressive symptoms or mental well-being). This is calculated using the cross-product coefficient between mediator (M) and outcome variable (Y) while correcting for baseline scores on both M and Y (path *b*). Path *c* describes the total effect of X on Y. In addition, the direct effect (*c*') when controlling for M is calculated. Within the analyses, for the outcome measure depressive symptoms it was assessed whether the T3 scores in the condition performing acts of kindness relative to the waitlist were indirectly affected by changes in negative emotions (*a* x *b*), while including baseline scores of both M and Y as covariates. For the outcome measure mental well-being it was assessed whether the T3 scores in the condition performing acts of kindness relative to the waitlist were indirectly affected by changes in positive emotions (*a* x *b*), while including baseline scores of both M and Y as covariates. For these indirect effects, corresponding 95% CI's were generated. When the CI did not include zero, the indirect effect was considered significant.



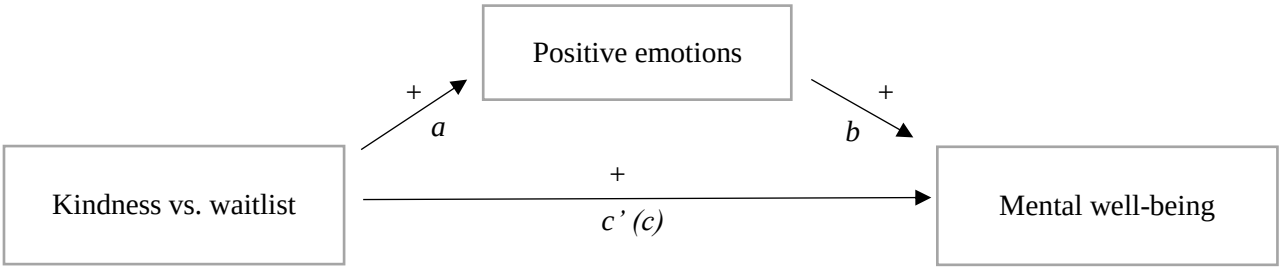


Figure 2. Regression-based path analysis frameworks of the hypothesised effect of kindness relative to the waitlist on depressive symptoms and mental well-being via changes in negative or positive emotions.

Results

Drop-out rates and adherence

In total, 38 participants dropped out of the study and did not fill in all questionnaires. Scores of participants who did not complete all questionnaires were removed, leaving 131 cases for analysis. No significant between-group differences in drop-outs were estimated at T2, $\chi 2$ (1, 338) = .08, p = .226. However, at T1, drop-out rates were significantly higher in the experimental condition in contrast to the waitlist-condition, $\chi 2$ (1, 338) = 17.91, p = .032.

During the intervention, participants moderately followed the instructions and performed on average between 3.6 and 4.41 acts of kindness per week. During the six weeks, mean scores were 4.41 (*SD* = 0.76), 4.2 (*SD* = 1.02), 3.76 (*SD* = 1.43), 3.69 (*SD* = 1.52), 3.75 (*SD* = 1.48) and 3.6 (*SD* = 1.61) respectively. During the intervention, on average 3.9 acts of kindness per week were performed. Adherence was highest in the first week of the intervention and lowest in the last week.

Effects of the intervention on depressive symptoms, well-being and negative/positive emotions

Results of the mixed ANOVA analyses are displayed in Table 2. The analyses revealed significant time x group interaction effects on depressive symptoms and mental well-being at post-test assessment (T3). These results show that levels of depressive symptoms were significantly lower and levels of mental well-being significantly higher in the experimental group, directly after the intervention compared to the waitlist. The Cohen's *d* effect sizes were small, namely .39 for depressive symptoms and .43 for mental well-being. In addition, the analyses revealed significant time x group interaction effects on negative emotions. Effect sizes ranged between .22 and .32, meaning the experimental group had from 2-weeks into the intervention and until the end of the intervention, small but significantly lower levels of negative emotions compared to the waitlist. However, no significant time x group interaction effects on positive emotions were observed. Therefore, the groups did not differ on this aspect during and after the intervention.

Table 2

Means and standard-deviations for outcome and mediation variables and results of Mixed ANOVAs, interaction effects and Cohen's *d* effect sizes for between-group effects (kindness vs. waitlist).

	Kindness (n = 57)	Waitlist (n = 74)	Time x group		Effect size
	M (*SD*)	*M* (*SD*)	*F*	*p*	*d* (95% CI)
Depressive Symptoms					
T0 (Baseline)	19.08 (4.97)	19.52 (5.27)			
T3 (6 weeks)	17.87 (4.55)	19.28 (6.09)	3.22	.04*	0.39 (0.34, 3.88)
Mental well-being					
T0 (Baseline)	39.33 (11.09)	38.94 (9.44)			
T3 (6 weeks)	44.04 (9.31)	39.75 (9.45)	5.96	.01**	0.43 (0.61, 7.52)
Positive emotions					
T0 (Baseline)	28.97 (6.52)	29.58 (5.77)			
T1 (2 weeks)	29.02 (5.87)	30.43 (6.97)	.12	.08	
T2 (4 weeks)	29.66 (4.92)	30.55 (8.04)	.07	.65	
T3 (6 weeks)	32.64 (7.02)	33.21 (8.89)	.04	.92	
Negative emotions					
T0 (Baseline)	19.65 (8.81)	21.91 (9.63)			
T1 (2 weeks)	18.01 (7.55)	20.43 (9.21)	2.21	.04*	0.22 (0.24, 2.87)
T2 (4 weeks)	15.76 (8.97)	19.44 (8.77)	3.53	.03*	0.27 (0.89, 2.18)
T3 (6 weeks)	14.24 (6.43)	19.02 (7.79)	2.40	.01**	0.32 (0.17, 3.43)

*$p < .05$ **$p \leq .01$.

Simple mediating effects of negative/positive emotions on depressive symptoms and mental well-being

Table 3 displays the findings of the simple mediation analyses. Within the mediation, all *c*-paths were significant, which means that prosocial behaviour had a significant effect on depressive symptoms and mental well-being compared to the waitlist. The results of the *a*-paths show that performing acts of kindness had a significant positive effect on negative emotions but not on positive emotions. The coefficients of the *b*-paths show that negative emotions were associated with fewer depressive symptoms and that positive emotions were associated with increased well-being. Improvements in depressive symptoms at post-intervention were mediated through decreases in negative emotions [.08; .59]. Looking at mental well-being as outcome variable, positive emotions was not a significant mediator, as the model includes zero [-.99; .09].

Table 3

Depressive symptoms (CES-D) mediated by negative emotions (mDES) and mental well-being (MHC-SF) mediated by positive emotions (mDES) and controlled for baseline levels of outcome and mediating variable.

Mediators	*a*	*b*	Total effect *c*	Direct effect *c'*	Indirect effect *a* x *b* (95% CI)
Depressive symptoms					
Negative emotions	1.34**	.24**	.73*	.41	.32 (.08, .59)
Mental well-being					
Positive emotions	-.47	.83**	-1.60**	-1.21*	.04 (-.99, .09)

Note. *$p < .05$; ** $p < .01$.

Discussion

One main goal of this paper was to examine the effectiveness of acts of kindness on depressive symptoms and mental well-being compared to a waitlist control group. The results demonstrated that, in line with the first hypothesis, participants who performed acts of kindness showed greater improvements in depressive symptoms and mental well-being than those on a waitlist at post-intervention. However, the effect sizes were small. The other main goal was to extend prior knowledge by testing whether these effects are mediated by changes in positive/negative emotions during the intervention. In line with the second hypothesis, a decrease in negative emotions during the intervention did significantly mediate the effects of acts of kindness on depressive symptoms. However, contrary to the third hypothesis, results showed that a change in positive emotions was not found to be a mediator of mental well-being.

Some of the results are worth highlighting. In terms of depressive symptoms and mental well-being, there was a significant difference between the conditions after the intervention. According to the general index for estimating effects sizes in psychological research (Cohen, 1969), the found effects of the current study must be categorised as small. However, in comparison to other studies and meta-analyses on prosocial behaviour and PPIs in general, effect sizes of around $d = .30$ are rather common (Sin & Lyubomirsky, 2009; Gander et al., 2013). In addition, the average number of performed acts per week in the current study was less than four. It is surprising that this number of acts was extensive enough to reach significant results in depressive symptoms, mental well-being and negative emotions. However, this pleasant surprise makes the current paper comparable to other research regarding the effectivity of performing acts of kindness. For example, in their study done on prosocial behaviour, Nelson and colleagues (2016) asked the participants to perform three acts of kindness for four weeks, which resulted in a significant effect on mental well-being with an effect size

of $d = .29$, which is even smaller than the effect on mental well-being observed in the current study ($d = .43$).

Furthermore, one remarkable finding is that acts of kindness had no significant impact on positive emotions. Looking at the contents of the intervention and literature in this area of research, an effect on positive emotions was expected (Lyubomirsky & Layous, 2013; Bolier et al., 2013; Sin & Lyubomirsky, 2009). In the study done by Nelson and colleagues (2016), an effect of prosocial behaviour on positive emotions was observed. However, they used the nine-item Affect-Adjective Scale to assess the level of positive and negative emotions, while in contrast, in the current study the mDES questionnaire was used. Comparing the reliability of the Affect-Adjective Scale and the mDES in the two studies, it becomes apparent that the internal consistency differs hugely and might be accounting for not observing an effect of acts of kindness on positive emotions. Nelson et al. (2016) describe Cronbach's α of .91 to .93 for positive emotions, which is an excellent reliability coefficient according to George and Mallery (2003). The internal consistency of the mDES for positive emotions in the current study was $\alpha = .61$ at baseline, which can be described as "questionable" (George & Mallery, 2003, p. 87). Low internal consistency results in a lower accuracy of measurement and higher variability of the test scores (Cicchetti, 1994). This means that the scores are wider spread due to measurement error which makes the test less reliable than a test with a high internal consistency. Consequently, due to the choice of a less reliable questionnaire, no significant effect could be observed, the presented results are less accurate, too and should be interpreted with caution.

Interestingly, only negative emotions were found to be significantly mediating the effect of acts of kindness on depressive symptoms, whereas mental well-being was not mediated by an increase of positive emotions. This unexpected result might be explained by the fact that besides the low internal consistency of the mDES for positive emotions, in the current study, the effect of performing acts of kindness on overall mental well-being was estimated and not on the underlying components, namely emotional, psychological and social well-being. As stated earlier, the definition of emotional well-being is characterized by the presence of positive emotions and the absence of negative emotions (Diener, 1984). In their study on prosocial effort, Layous, Nelson, Kurtz and Lyubomirsky (2017) concluded that positive acts are positive triggers which predict improvement in emotional well-being. In addition, Nelson et al. (2016) found positive emotions to mediate the effect of kind acts towards others on emotional well-being. Therefore, it may be expected that acts of kindness at least increase emotional well-being via an increase of positive emotions. However, in the current study the effects of acts of kindness on emotional well-being were not calculated. Considering this huge difference in methods between prior studies and the current one, and the less reliable measurement, it is not surprising that no effect of prosocial behaviour on positive emotions and therefore no mediating role of positive emotions could be found.

Strengths and Limitations

The present study combines some strengths which should be mentioned. At first, it contributes to positive psychological research by demonstrating that it is possible to improve mental well-being and depressive symptoms by engaging in prosocial behaviour. Focusing not only on mental well-being but also on depressive symptoms is a necessity in positive psychological research, which attempts to fulfil the need of finding a suitable help for people suffering from these issues. Second, the current study is unique regarding analysing the working mechanisms of a positive psychological intervention. The present study was performed within an RCT design, and the mediation analyses were done using PROCESS, the most recent developed statistical procedure to analyse mechanisms of change (Hayes, 2012). And third, in the current study, the participants were able to choose the kind acts themselves as they were not prescribed by the researchers. Research shows that autonomy and flexibility of choosing acts of kindness are very important and lead to greater improvement of mental well-being than those acts which are imposed by others (Nelson et al., 2015).

Some limitations apply to the study that should be recognised. First, selection bias emerged. Using a self-selected sample led to an overrepresentation of higher educated women which means that the findings are not generalisable to the Dutch general population. Research shows that this is often the case in samples of positive psychological research (Curry, Rowland, Van Lissa, Zlotowitz, McAlaney & Whilehouse, 2017). As many higher educated women volunteered to participate, it indicates that this type of women is generally more attracted to perform acts of kindness compared to men or people with a less educated background. Second, people with more severe depressive symptoms were excluded from the study. Previous research using clinical samples indicates that they could have benefited from the intervention (Chaves, Lopez-Gomez, Hervas & Vazquez, 2016), which also limits the generalisability of the findings because not only mild symptoms are experienced in the general public as moderate and major depressions are widespread in the Netherlands (CBS, 2018). And third, the study was advertised to attract participants who want to increase their mental well-being, which means that the participants volunteering were aware of the overall goal of the intervention. This could have influenced their answers and their acceptance to participate in the study in general, as they expected their well-being to enhance, which could have led to the overestimation of effect sizes for well-being.

Future research

In future research it is important that the effects are replicated in more representative samples. This means that predominantly more men and differences in educational backgrounds should be included. However, it seems that performing acts of kindness is more attractive for higher educated women. The next step in this area of research would be to investigate why less men and less educated people were volunteering before using a lot of resources to reach those groups. Future research should

investigate whether it is worthwhile to spend money and time on trying different recruiting strategies if men and people with a lower educational background are just not interested in enhancing their well-being. In addition, participants with major depression could be included and the study could be conducted with a clinical sample to support the effectiveness of acts of kindness in this field. Furthermore, the present study should be replicated but changed by using the underlying components emotional, social and psychological well-being instead of mental well-being as an overarching general term. With the help of this approach, nuances in the effectivity of performing acts of kindness might be observed and other mechanisms of change could become significant.

Practical implications

The need for preventing the onset of different psychological disorders and especially depression is high as it is one of the most prevalent mental disorders nowadays (WHO, 2012). A lot of people were interested in being a part of the intervention of this study, which shows once more that they felt the necessity to act upon their perceived well-being deficits. The current study shows that practicing acts of kindness reduces depressive symptoms and increases mental well-being. In practise, this type of intervention can be integrated in already established depression prevention programs and therapy offerings by promoting the importance of reducing negative emotions. In addition, the intervention could be applied to samples with other disorders which are characterized by negative emotions, for example people suffering from anxieties, eating disorders or in the addiction care. This study can be used to generate knowledge about the mechanisms of change in other psychological disorders and making acts of kindness broadly applicable across disorders.

Conclusion

To summarize, performing acts of kindness is a promising intervention that contributes towards mental health. Depressive symptoms and mental well-being were improved and the effect on depressive symptoms could, to some extent, be explained by a decrease of negative emotions. Future investigations are needed to show whether different groups of participants can be reached, to see if people with more severe issues benefit from performing acts of kindness and to overcome the limitations of the present study. In practice it is advised to promote prosocial behaviour in the mental health sector and the general population, to increase the amount of people benefiting from this intervention, as it is hereby proven to be effective in reducing complaints.

References

Beekman, A. T., Deeg, D. J. H., Van Limbeek, J., Braam, A. W., De Vries, M. Z., & Van Tilburg, W. (1997). Brief communication.: criterion validity of the Center for Epidemiologic Studies Depression scale (CES-D): results from a community-based sample of older subjects in the Netherlands. *Psychological medicine*, *27*(1), 231-235.).

Bissonnette, J. M. (2008). Adherence: a concept analysis. *Journal of Advanced Nursing*, *63*(6), 634-643. doi: 10.1111/j.1365-2648.2008.04745.x

Bolier, L., Haverman, M., Kramer, J., Westerhof, G. J., Riper, H., Walburg, J. A., … Bohlmeijer, E. (2013). An Internet-based intervention to promote mental fitness for mildly depressed adults: Randomized controlled trial. *Journal of Medical Internet Research, 15*(9), e200. doi:10.2196/jmir.2603

Bouma, J., Ranchor, A. V., Sanderman, R., & Van Sonderen, E. (1995). Het meten van symptomen van depressie met de CES-D. Een handleiding. *Groningen, Noordelijk Centrum voor Gezondheidsvraagstukken, Rijksuniversiteit Groningen*, 2-24.

CBS (2018*). Health and health care; personal characteristics*. Retrieved from: https://opendata.cbs.nl/statline/#/CBS/en/dataset/83005ENG/table?ts=1550585519388

Chaves, C., Lopez-Gomez, I., Hervas, G., & Vazquez, C. (2016). A comparative study on the efficacy of a positive psychology intervention and a cognitive behavioral therapy for clinical depression. *Cognitive Therapy and Research*, 1–17. doi:10.1007/s10608-016-9778-9

Cicchetti, D. V. (1994). Guidelines, criteria, and rules of thumb for evaluating normed and standardized assessment instruments in psychology. *Psychological assessment*, *6*(4), 284.

Cohen, J. (1969). *Statistical power analysis for the Behavioral sciences*. New York: Academic Press.

Cohn, M. A., Fredrickson, B. L., Brown, S. L., Mikels, J. A., & Conway, A. M. (2009). Happiness unpacked: Positive emotions increase life satisfaction by building resilience. *Emotion, 9,* 361–368. http://dx.doi .org/10.1037/a0015952

Cuijpers, P., de Graaf, R., & van Dorsselaer, S. (2004). Minor depression: risk profiles, functional disability, health care use and risk of developing major depression. *Journal of affective disorders*, *79*(1-3), 71-79.

Cuijpers, P., Koole, S. L., van Dijke, A., Roca, M., Li, J., & Reynolds, C. F. (2014). Psychotherapy for subclinical depression: meta-analysis. *The British Journal of Psychiatry*, *205*(4), 268-274.

Curry, O. S., Rowland, L. A., Van Lissa, C. J., Zlotowitz, S., McAlaney, J. & Whilehouse, H. (2017). Happy to help? A systematic review and meta-analysis of the effects of performing acts of kindness on the well-being of the actor. *Journal of Experimental Social Psychology, 76*, 320-329.

Davey, G. (2014). *Psychopathology*. Research, assessment and treatment in clinical psychology. Chichester: Wiley.

Diener, E. (1984). Subjective well-being. *Psychological Bulletin, 95*(3), 542. doi: 10.1037/0033-2909.95.3.542

Donker, T., van Straten, A., Marks, I., & Cuijpers, P. (2011). Quick and easy self-rating of Generalized Anxiety Disorder: validity of the Dutch web-based GAD-7, GAD-2 and GAD-SI. *Psychiatry research*, *188*(1), 58-64.

Folkman, S., & Moskowitz, J. T. (2000). Positive affect and the other side of coping. *American psychologist*, *55*(6), 647.

Fredrickson, B. L. (2004). The broaden-and-build theory of positive emotions. *Philosophical Transactions of the Royal Society B: Biological Sciences*, *359*(1449), 1367. doi: 10.1098/rstb.2004.1512

Fredrickson, B. L., Cohn, M. A., Coffey, K. A., Pek, J., & Finkel, S. M. (2008). Open hearts build lives: Positive emotions, induced through loving-kindness meditation, build consequential personal resources. *Journal of Personality and Social Psychology, 95*(5), 1045–1062. doi:10.1037/a0013262

Fredrickson, B. L., Tugade, M. M., Waugh, C. E., & Larkin, G. R. (2003). What good are positive emotions in crisis? A prospective study of resilience and emotions following theterrorist attacks on the United States on September 11th, 2001. *Journal of Personality and Social Psychology*, *84*(2), 365–376. Retrieved from http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2755263/.

Gander, F., Proyer, R. T., Ruch, W., & Wyss, T. (2013). Strength-based positive interventions: Further evidence for their potential in enhancing well-being and alleviating depression. *Journal of Happiness Studies*, *14*(4), 1241-1259.

George, D. & Mallery, P. (2003). *SPSS for Windows step by step: A simple guide and reference. 11.0 update* (4th ed.). Boston: Allyn & Bacon.

Hayes, A. F. (2012). *PROCESS: A Versatile Computational Tool for Observed Variable Mediation, Moderation, and Conditional Process Modeling.* Available at: http://is.muni.cz/el/1423/podzim2014/PSY704/50497615/hayes_2012_navod_process.pdf.

Hipes, C., Lucas, J., Phelan, J. C., & White, R. C. (2016). The stigma of mental illness in the labor market. *Social science research*, *56*, 16-25.

Keyes, C. L. M. (2005). Mental illness and/or mental health? Investigating axioms of the complete state model of health. *Journal of Consulting and Clinical Psychology, 73*, 539–548. doi:10.1037/0022-006x.73.3.539

Keyes, C. L., Wissing, M., Potgieter, J. P., Temane, M., Kruger, A., & van Rooy, S. (2008). Evaluation of the mental health continuum–short form (MHC-SF) in setswana-speaking South Africans. *Clinical Psychology & Psychotherapy, 15*(3), 181–192. doi:10.1002/cpp.572

Kraemer, H. C., Wilson, G. T., Fairburn, C. G., & Agras, W. S. (2002). Mediators and moderators of treatment effects in randomized clinical trials. *Archives of general psychiatry*, *59*(10), 877-883.

Lamers, S. M. A., Westerhof, G. J., Bohlmeijer, E. T., ten Klooster, P. M., & Keyes, C. L. M. (2011). Evaluating the psychometric properties of the Mental Health Continuum-Short Form (MHC-SF). *Journal of Clinical Psychology, 67*(1), 99-110. doi:10.1002/jclp.20741

Layous, K., Nelson, S. K., Kurtz, J. L., & Lyubomirsky, S. (2017). What triggers prosocial effort? A positive feedback loop between positive activities, kindness, and well-being. *The Journal of Positive Psychology*, *12*(4), 385-398.

Layous, K., Nelson, S. K., Oberle, E., Schonert-Reichl, K. A., & Lyubomirsky, S. (2012). Kindness counts: Prompting prosocial behavior in preadolescents boosts peer acceptance and well-being. *PLoS ONE, 7*, e51380. http://dx.doi.org/10.1371/journal.pone.0051380

Lyubomirsky, S., & Layous, K. (2013). How do simple positive activities increase well-being? *Current Directions in Psychological Science, 22*(1), 57–62. doi:10.1177/0963721412469809

MacKinnon, D. P., & Dwyer, J. H. (1993). Estimating mediated effects in prevention studies. *Evaluation review, 17*(2), 144-158.

Magyar-Moe, J. L. (2009). The intersection of positive psychology and the practice of counselling and psychotherapy. In: J. L. Magyar-Moe (Ed.), *Therapist's guide to positive psychological interventions* (pp.15-42). Cambridge: Academic Press.

Murray, C. J. L., Ustun, T. B., Ayuso-Mateos, J. L., Chatterji, S., & Mathers, C. (2004). Global burden of depressive disorders in the year 2000. *British Journal of Psychiatry, 184,* 386-392.

Nelson, S. K., Della Porta, M. D., Jacobs Bao, K., Lee, H. C., Choi, I., & Lyubomirsky, S. (2015). "It's up to you": Experimentally manipulated autonomy support for prosocial behavior improves well-being in two cultures over six weeks. *The Journal of Positive Psychology, 10,* 463–476. doi: 10.1080/17439760.2014.983959

Nelson, S. K., Layous, K., Cole, S. W., & Lyubomirsky, S. (2016). Do unto others or treat yourself? The effects of prosocial and self-focused behavior on psychological flourishing. *Emotion, 16*(6), 850–861. doi:10.1037/emo0000178

Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior research methods, instruments, & computers*, *36*(4), 717-731.

Radloff, L. S. (1977). The CES-D scale: a self-report depression scale for research in the general population. *Applied psychological measurement*, *1*(3), 385-401.

Rashid, T. (2014). Positive psychotherapy: A strength-based approach. *The Journal of Positive Psychology, 10*(1), 25–40. doi:10.1080/17439760.2014.920411

Schaefer, A., Nils, F., Sanchez, X., & Philippot, P. (2010). Assessing the effectiveness of a large database of emotion-eliciting films: A new tool for emotion researchers. *Cognition and Emotion, 24*(7), 1153-1172.

Schotanus-Dijkstra, M., Drossaert, C. H. C., Pieterse, M. E., Boon, B., Walburg, J. A., & Bohlmeijer, E. T. (2017). An early intervention to promote well-being and flourishing and reduce anxiety and depression: A randomized controlled trial. *Internet Interventions, 9,* 15–20.

Schotanus-Dijkstra, M., ten Have, M., Lamers, S. M. A., de Graaf, R., & Bohlmeijer, E. T. (2017). The longitudinal relationship between flourishing mental health and incident mood, anxiety and substance use disorders. *European Journal of Public Health, 27* (3), 563–568. doi:10.1093/eurpub/ckw202

Seligman, M. E., & Csikszentmihalyi, M. (2000). Positive psychology. An introduction. *American Psychologist, 55*(1), 5–14.

Sin, N. L., & Lyubomirsky, S. (2009). Enhancing well-being and alleviating depressive symptoms with positive psychology interventions: A practice-friendly meta-analysis. *Journal of Clinical Psychology, 65*(5), 467–487. doi:10.1002/jclp.20593

Trompetter, H. R., de Kleine, E., & Bohlmeijer, E. T. (2016). Why does positive mental health buffer against psychopathology? An exploratory study on self-compassion as a resilience mechanism and adaptive emotion regulation strategy. *Cognitive Therapy and Research,* 1–10. doi:10.1007/s10608-016-9774-0

WHO (2004). *Promoting mental health: Concepts, emerging evidence, practice* (Summary report). Geneva: WHO

WHO (2012). *Depression*. Retrieved from http://www.who.int/mentalhealth/management/depression/definition/en/

Wuensch, K. L. (2012). *Using spss to obtain a confidence interval for cohen's d*. Retrieved from http://core.ecu.edu/psyc/wuenschk/SPSS/CI-d-SPSS.pdf