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Acts of kindness: The effect of prosocial kindness versus self-focused kindness on mental well-being and the role of positive emotions and positive relations

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Abstract

Pursuing mental well-being is a crucial factor for most people in today's society and there are numerous reasons, which make investing in mental well-being and optimal functioning an essential asset. Higher levels of mental well-being have shown to be the reason for desirable life outcomes as physical health, success in finances, career and building relationships (Sin & Lyubomirsky, 2009). But how is it possible to increase one's mental well-being? Research suggests that by both performing acts that aim to be kind to oneself and acts of kindness for others, individuals are able to improve their mental well-being. The aim of the current study is to examine the efficacy of the 6-week long intervention *Acts of Kindness* versus self-focused kindness on increasing mental well-being in a randomized controlled trial (RCT) and the mediating role of positive relations and positive emotions. Through volunteer sampling in the Dutch population, 362 participants of 18 years and older were evaluated as eligible. Thereafter, randomization proceeded, whereby the participants were assigned to either the prosocial (n = 70) or the self-focused (n = 62) group. The participants were asked to fill out questionnaires regarding positive emotions (mDES), positive relations (PGGS) and mental well-being (MHC-SF) at baseline, 2 and 4 weeks into the intervention and at post-test. Independent samples t-tests showed no statistically significant difference in increasing mental well-being, positive emotions and positive relations between both groups at post-test after 6 weeks. Simple mediation analyses have shown that increases in positive emotions 2 to 4 weeks during the intervention were significantly higher in the prosocial group (*a*-path) and that positive emotions as well as positive relations (*b*-paths) lead to a significant increase in mental well-being at post-test. Yet, interpreting the results, the indirect effect was non-significant (*axb*-paths), which is why it can be ruled out that positive relations and positive emotions were mediating the efficacy of *Acts of Kindness* on mental well-being in the present study.

Introduction

Pursuing mental well-being is a crucial factor for most people in today's society. (Lyubomirsky, Sheldon & Schkade, 2005). Currently, different streams exist that form our understanding of what it means to be mentally well. Theorists differentiate between emotional-, psychological- and social well-being (Keyes, 2002; Nelson, Layous, Cole & Lyubomirsky, 2016). Emotional well-being exemplifies the human need for the amount and duration of experienced positive emotions and the minimization of negative emotions, resulting in life satisfaction. The construct of psychological well-being describes numerous factors that individuals encounter in seeking self-determination. The factors are feelings of accepting oneself, having positive relations with others, growing personally, having a purpose in life and being able to make autonomous decisions while on the same time dealing with the surrounding environmental challenges (Ryff et al., 1995). Social well-being is defined by means of functioning well in a social context, thus having experiencing social coherence, -actualization, -acceptance and –contribution. According to Keyes (2002) high levels of mental well-being on all three factors indicate optimal functioning.

There are numerous reasons, which make investing in mental well-being and optimal functioning an essential asset. Higher levels of mental well-being have shown to be the reason for desirable life outcomes as physical health, success in finances, career and building relationships (Sin & Lyubomirsky, 2009). But how is it possible to increase one's mental well-being? In a meta-analysis of Sin and colleagues (2009), 51 positive psychology interventions with a total of 4.266 participants were examined. Not all were effective but a significant large part of the interventions which ranged from mindfulness to gratitude, kindness and more. Despite the great variety of effective positive psychological interventions, kindness stands out in efficacy. It also seems that kindness and mental well-being could have a reciprocal relationship. Thus, on the one hand, as Lyubomirsky and colleagues (2005) state, being mentally well has several consequences on the individual, the family and the community, other than merely feeling happy. Happy individuals are more likely to behave cooperative, prosocial and kind to oneself and others (Lyubomirsky et al., 2005). Additionally, several studies suggest that performing acts of kindness for others as well as acts that aim to be kind to oneself have a potential to increase one's mental well-being (Curry, Rowland, Zlotowitz, McAlaney & Whitehouse, 2017; Nelson et al., 2016; Layous, Nelson, Oberle, Schonert-Reichl & Lyubomirsky, 2012; Weinstein & Ryan, 2010). Yet, current research still faces indifferences towards which kindness is more effective in improving mental well-being, which is why the

current study aims to look at the effect of prosocial kindness versus self-focused kindness on mental well-being.

Prosocial- vs. self-focused kindness

Prosocial kindness is directed towards others and can appear in different forms such as working voluntarily, donating money and other autonomous acts with the intention to aid others. Contrary, self-focused activities can for example be treating oneself with something nice to eat, watching a movie or taking more time for things that are considered recreational (Weinstein et al., 2010). Prior body of research has shown that people are able to increase their mental well-being with both prosocial as well as self-focused kindness (Nelson et al., 2016; Aknin et al., 2013; Layous et al., 2012; Weinstein et al., 2010; Dunn & Aknin, 2008). However, although studies have shown the boosting effect that self-focused kindness can have on mental well-being, research provides strong evidence that participants performing kind acts for others and not themselves experienced a significantly larger increase in mental well-being compared to when behaving self-focused (Curry et al., 2017; Nelson et al., 2016; Aknin et al., 2013; Layous et al., 2012; Weinstein et al., 2010). In one particular study, a longitudinal correlational research of 4 weeks with 19 classrooms of 9 to 11 year olds in Vancouver, the participants were instructed to either perform three prosocial acts versus visit three places anywhere they wished per week (Layous et al., 2012). It was found that pupils in the prosocial group have experienced significantly larger increases in mental well-being than pupils that visited places. Some other research investigated the effect of prosocial spending (e.g. spending money on others) among individuals from countries with different ranges of income. It was found that spending money on others would lead to a greater mental well-being than for those who were spending money on themselves (Aknin et al., 2013; Dunn & Aknin, 2008). Nelson and colleagues (2016) did a 6-week longitudinal study with students, workers and adults. They examined the effect of prosocial- in comparison to self-focused kindness on mental well-being. The participants in the prosocial kindness condition were asked to perform three good deeds for others or for the world and participants in the self-focused kindness were instructed to perform acts of kindness for themselves. Subsequently, Nelson and colleagues (2017) found that participants in the prosocial kindness condition were more effective in increasing their mental well-being.

However, in addition to the effect on mental well-being, the studies named above demonstrated that prosocial kindness could also trigger different paths to mental well-being. For example, in the study of Nelson and colleagues (2016), it was found that the rate of positive emotions would be higher for the prosocial group than for the self-focused group and indicated

that the experience of positive emotions would mediate the effect on mental well-being. Emotional benefits were also found in the study of Akin and colleagues (2013). Curry and colleagues (2017) state that helping others would lead to a more satisfying revenue and thus to an increase in positive emotions. Layous and colleagues (2012) also found that prosocial kindness would foster more positive relations with others than self-focused kindness. Also, in a mediation-study of Schotanus-Dijkstra and colleagues (2017), with an email guided positive psychological intervention aimed at improving mental well-being, the increase in positive relations was found to be the most predictable factor for the efficacy of the intervention on mental well-being. Thus, positive relations are believed to be an important component for positive psychological interventions (Schotanus-Dijkstra, 2017). Also, per definition, acts of kindness are directed towards others, facilitating peer acceptance and fostering relationships with others (Layous et al., 2012), which makes it quite remarkable that positive relations are not always measured when it comes to research of similar positive psychological interventions.

Current study

In sum, kindness to oneself and others can both boost mental well-being and we face indifferences in which kind of behavior has a greater effect on mental well-being. Also, prior research emphasizes the role of building positive relations and increasing one's positive emotions when it comes to reaching for a greater mental well-being. Therefore, the current study aims to examine the efficacy of prosocial kindness vs self-focused kindness on behalf of the 6-week long positive psychological intervention *Acts of Kindness* in a randomized controlled trial (RCT). In the intervention, participants are asked to perform good deeds for others. It was expected that the increase in mental well-being, positive emotions and positive relations would be significantly higher in the prosocial intervention group compared to the self-focused group. Another expectation was that increases in positive emotions and positive relations would mediate the efficacy of *Acts of Kindness* on increasing mental well-being in favor of the prosocial group. The current study is intended to provide valuable insight into how to further develop *Acts of Kindness*. By supporting the notion that positive emotions and positive relations form the base of mental well-being, hopefully other positive psychological interventions can be enhanced by considering these two factors.

Methods

Design

The current study is part of a primary study, using a single-blind *Randomized Controlled Trial* (RCT) with originally five intervention groups: prosocial kindness, prosocial kindness without reflection, gratitude, self-focused kindness with reflection and a waitlist-control group. The present study is based on the data retrieved from the prosocial kindness and self-focused kindness group. Both intervention groups followed a 6-week long intervention. The independent variable used is the intervention condition in which the study differs between prosocial kindness and self-focused kindness. The dependent variables are the calculated mean scores on mental well-being, positive relations and positive emotions. Mental well-being was measured at baseline (T0) and at post-test after 6 weeks (T3) and positive emotions as well as positive relations were measured at T0, after 2 weeks (T1), 4 weeks (T2) and at T3.

Participants and procedure

For the primary study, 423 respondents were in total recruited through volunteer sampling in the Dutch population. Recruiting participants was made possible with the help of several advertisements, for example in the Volkskrant, a daily Dutch newspaper, Facebook and the online Newsletter of the Dutch psychology Magazine. Potential participants then could register via the website utwente.nl/go/geluk. On the website, participants could get more detailed information over how *Acts of Kindness* is carried out, which advantages participation has and further information about privacy and whom to contact in case additional questions arise. Participants were able to read and download essential information about the intervention via the website. After filling out the contact sheet, the respondents were given a letter of consent in which they were able to give their permission for their data to be used for the research and in which they gained information about the anonymity of their personal data and that no third party would have access to the data. Further, after giving their informed consent for the participation in the study, the participants were directed to the online screening questionnaire to assess which participants to exclude and include, based on specific criteria. After completing the screening, respondents who met the inclusion criteria, were redirected to the questionnaires that were determined for the T0 measurements. Thereafter, the participants were randomized. Participants of all groups would receive the same questionnaires after 2 (T1), 4 (T2) and at post-test after 6 weeks (T3) for follow-up measurements, except the MHC-SF for mental well-being, which is participants only receive at baseline and in week 6.

Participants that scored 24 or higher on the Center for Epidemiological Studies Depression Scale (CES-D) and 15 or higher on the Generalized Anxiety Disorder 7 Items (GAD-7) were seen as having moderate to severe depression and anxiety symptoms and were therefore excluded from analysis. Participants that scored high (4 or 5) on at least one item of the subscale emotional well-being and on at least six items of the combined subscales social well-being and psychological well-being of the Mental Health Continuum-Short Form (MHC-SF) were considered flourishing and therefore excluded from analysis. Participants were required to be 18 years of age or older, have a functioning connection to the internet and an e-mail address. Also, participants were required to know the Dutch language. This lead to an exclusion of 61 participants because they were categorized as flourishers according to their scores on the MHC-SF. Apart from the comprehensive study, for the aim of the current study, only participants that belonged to the prosocial kindness and self-focused kindness groups were analyzed. Thus, 230 participants were additionally excluded because they were randomized to other intervention groups. All participants who had at least completed the baseline and follow-up measurements were included in analysis. In total, additional 5 participants were excluded due to not completing the follow-up, which thus leaves 128 participants that were used for analysis. Table 1 demonstrates the distribution across both intervention conditions per demographic category. At follow-up, of the individuals used for analysis, 66 (53%) belonged to the prosocial kindness group and 62 (47%) were in the self-focused kindness group. The respondents mean age was 49.53 and ranged between 29 and 70 years (SD = 8.46). Of the participants, 13 (10.2%) were male and 115 (89.8%) were female.

Table 1: Demographic data of the 'prosocial acts'- and 'self-focused' group, total counts, percentages within intervention conditions (N = 128), chi-square values as well as mean and standard deviation and t-test results of age.

	Prosocial acts (n = 66)	Self-focused acts (n = 62)	Total (n=128)	Pearson Chi-Square	
	n (%)	*n (%)*	*n (%)*	X^2	*p*
Gender (female)	60 (90.9%)	55 (88.7%)	115 (89.8%)	.169	.681
Marital status (with partner)	33 (50.0%)	29 (46.8%)	62 (48.5%)	.133	.715
Living situation (with other(s))	52 (78.8%)	42 (67.7%)	94 (73.4%)	2.000	.157
Highest education				.607	.738
Secondary education	6 (9.1%)	8 (12.9%)	14 (10.9%)		
Tertiary education	8 (12.1%)	6 (9.7%)	14 (10.9%)		
Higher education	52 (78.8%)	48 (77.4%)	100 (78.1%)		
Employment (paid employment)	50 (75.8%)	51 (82.3%)	101 (78.9%)	3.460	.177
Land of birth (the Netherlands)	62 (93.9%)	56 (90.3%)	118 (92.2%)	.581	.446
				t-test	
	M (SD)	*M (SD)*	*M(SD)*	*t*	*p*
Age	50.27 (8.21)	48.74 (8.72)	49.53 (8.46)	1.023	.308

Intervention

Acts of kindness is a 6-week long positive psychological intervention developed by the health, psychology and technology department of the university of Twente.

Depending on the assigned intervention group, participants got specific instructions for the following six weeks. The respondents of the prosocial- and self-focused kindness groups were told that their happiness-exercises would consist of two parts. Thus, they got the instruction to perform five kind acts of kindness for others (prosocial kindness) or for themselves (self-focused kindness) on one day per week during the course of six weeks. The participants were specifically informed that all five activities would have to take place on one day in the week. Also, the instructions provided examples of acts in order to inspire the participants. Furthermore, the participants were asked to document all activities from the prior day in an online journal, which is the reflection part. Participants in both experimental groups were specifically informed to not perform any acts that could bring harm to oneself or others. Every Wednesday and Friday, the researchers would send a reminder for their group-specific exercise.

Materials

Demographics

Before randomization, the participants answered questions regarding their demographic data. The demographic section consisted of questions about the participant's age, gender, marital status, living situation, highest education, current employment and land of birth.

Mental Well-Being

Mental Health Continuum-Short Form (MHC-SF) was used to assess the degree of positive mental well-being (Lamers, Westerhof, Bohlmeijer, ten Klooster & Keyes, 2011). A low sum score on all scales would indicate a low mental well-being (languishing), a moderate sum score a moderate well-being as would a high sum score indicate a high mental well-being (flourishing). The 14-items-questionnaire is sectioned into three scales: psychological well-being, social well-being and emotional well-being. Further, the questionnaire were answered in form of a 6-point Likert Scale, ranging from 0 (never) to 5 (almost every time). The respondents were asked to report the relative frequency of particular statements in the last four weeks ('How often did you feel happy during the last four weeks?'). Also, no items had to be recoded. The reliability analysis resulted in a Cronbach's alpha of $\alpha = .90$ for the whole questionnaire, the subscales emotional well-being $\alpha = .80$ and psychological well-being $\alpha = .83$ measured at

baseline. The internal reliability of the subscale social well-being was adequate (α = .69). The psychometric qualities comply with an earlier study of Lamers and colleagues (2011).

Positive relations

To measure positive relations, the total score of *Positieve Geestelijke Gezondheid Schaal* (PGGS) was used. The PGGS originally measures psychological well-being and consists of 6 scales measuring self-acceptance, positive relations, autonomy, environmental mastery, life goals and personal growth (van Dierendonck, 2011). In the present study, only the scale 'positive relations', consisting of 9 items was used. The scale contains questions about relationships with others and social contacts of which 5 items were recoded due to their content. The items can be answered on a 6-point Likert Scale, ranging from 1 (completely disagree) to 6 (completely agree). The participants were asked to indicate, to what extent they would agree to the statements in the questionnaire ('Most people see me as caring and affectionate'). A high sum score would thus imply a higher rate in positive relations with others. The calculated Cronbach's alpha of the PGGS was α = .54, which is relatively low. This is why, several items (1, 4, 7, 9) have been excluded from analysis in order to increase the internal reliability. This resulted in α = .84.

Positive emotions

Hedonic well-being was assessed with the questionnaire Modified Differential Emotions Scale (mDES), consisting of 16 items, measuring two scales, namely positive- and negative emotions (Galanakis, Stalikas, Pezirkianidis & Karakasidou, 2016). The 'positive emotions' scale (7 items) measured emotions of compassion, contentment, awe, amusement, gratitude, hope, interest, joy, love and pride, whereas the 'negative emotions' scale (9 items) consists of guilt, sadness, shame, embarrassment, fear, contempt and anger. The respondents were asked to rate the intensity of the experience in the moment on a 7-point Likert Scale, ranging from 1 (not at all) to 7 (very intense). The 9 items from the negative emotions scale were recoded so that when putting both scales together, the calculated sum score would indicate a higher rate of positive emotions. The internal reliability was α = .60, which is low, but still adequate. Galanakis and colleagues (2016) tested the mDES in a Greek population and found an internal reliability of α = .75.

Data analysis

Data analyses were conducted with the Statistical Package for the Social Sciences (SPSS) version 24.0. Prior to the inferential analyses, the internal consistency of each questionnaire was analyzed using Cronbach's alpha. Hereby, a Cronbach's alpha beneath .50 implies an insufficient internal consistency whereas .70 rated as sufficient and .80 as high (Kline, 2000). Further, the mean scores of all questionnaires were analyzed with descriptive statistics. Chi-square tests were conducted to examine if the characteristics of the participants were distributed evenly between conditions. Further, a t-test was conducted to check if the participant's age was distributed evenly between conditions. To examine whether baseline levels of mental well-being, positive relations and positive emotions differed between conditions, independent samples t-test were conducted. Also, drop-outs that excluded at least one follow-up questionnaire in week 6 were compared to the non-drop-outs in terms of mental well-being, positive emotions and positive relations at baseline with an independent samples t-test. Also, to accompany the independent samples t-tests, and to gain more elaborate results, the between groups Cohen's *d* effect sizes ($\frac{M_2 - M_1}{\sqrt{(\frac{SD_1^2 + SD_2^2}{2})}}$) were calculated. A Cohen's *d* of .20 is considered a small effect size, as .50 represents a medium effect size and .80 a large effect size.

Independent samples t-tests were conducted to compare possible increases in mental well-being, positive relations and positive emotions ($T3 - T0$) between prosocial- versus self-focused kindness groups. Additionally, repeated measures were conducted to examine if participant's mental well-being, positive emotions and positive relations change over the course of the intervention, regardless to which condition participants are allocated to.

Finally, mediator analyses were conducted with the PROCESS macro tool 3.0 analysis by Hayes (2017). Two simple mediation models were analyzed with the intervention condition as the predictor variable, mental well-being ($T3 - T0$) after 6 weeks as the outcome measure, and positive relations and positive emotions as possible mediators. The mediator variables resemble the average increase at 2 and 4 weeks of the intervention ($\frac{T1+T2}{2} - T0$). Thereafter, a multiple mediation model was analyzed with both positive relations and positive emotions in order to examine if the variables differ in their effect. For each path in the mediation model, as seen in Figure 1, unstandardized coefficients were calculated. *a* is the relationship between the predictor variable and one of the mediator variables. *b* is the relationship between each mediator variable and the outcome measure. *c* is defined as the direct effect of the predictor variable on the outcome measures as *c'* is the total effect. *a x b* is the indirect effect of the predictor variable on the outcome measures through the mediator variables. Based on 10.000 bootstrapped

resamples, bias-corrected 95% confidence intervals were calculated. When the confidence interval does not contain zero, it can be assumed that in 95% of the resamples, the intervention's effect on mental well-being is mediated by the respective mediator variable.

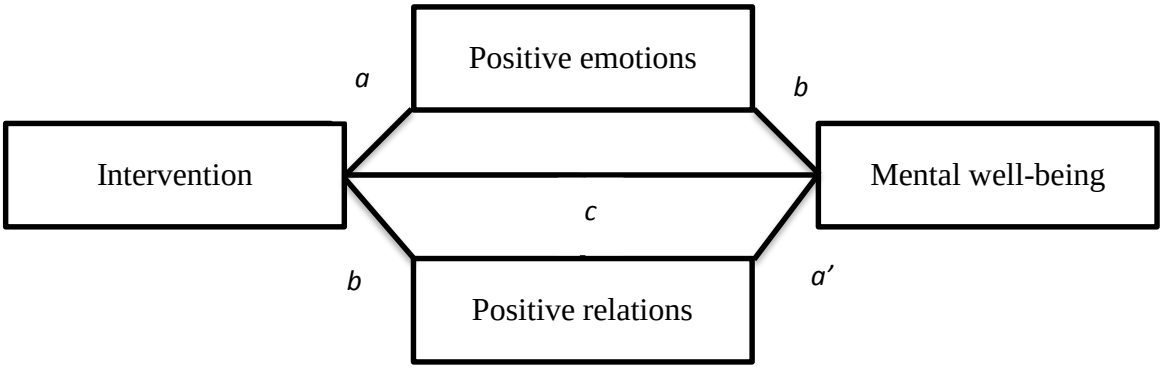

Figure 1: Mediation model with intervention as predictor, positive relations and positive emotions as mediator and 'mental well-being' as outcome

Results

Descriptive statistics

Table 1 shows the demographic data per intervention condition and the chi-squared test's results. They demonstrate that the participant's demographics did not significantly differ between the intervention conditions. In total, 49 (37.1%) of 132 participants included in the analysis did not complete all questionnaires. In week 6, 5 (3.8%) out of 132 Participants dropped out at the follow-up in week 6. Drop-outs that at least excluded one questionnaire during follow-up scored .86 SD lower on positive relations at baseline compared to completers (d = -.86, *95% CI* (4.24 – 3.58)). Additionally, independent samples t-tests showed that positive emotions differed significantly between the prosocial and self-focused group at baseline ($t(119) = -3.40$, $p = .001$). To be more specific, participants in the self-focused group showed significantly higher positive emotions on average at baseline than the prosocial group, which needs to be considered when interpreting the data.

Table 2: Means and standard deviations of mental well-being (MHC-SF; T0; T3-T0), positive emotions (mDES; T0; T1; T2; T3-T0) and positive relations (PGGS; T0; T1; T2; T3-T0) and results of the independent sample t-test and between group effect sizes.

		Prosocial kindness	Self-focused kindness	t-test	Between group effect size
		M (SD)	*M (SD)*	*t (p)*	Cohen's *d (95% CI)*
Mental well-being (MHC-SF)	Baseline (T0)	2.69 (.65)	2.81 (.69)	-1.06 (.290)	
	6 Weeks (T3-T0)	2.98 (.69)	3.05 (.80)	-.40 (.690)	.07 (.24 - .28)
Positive emotions (mDES)	Baseline (T0)	3.78 (.63)	4.19 (.69)	-3.39** (.001)	
	2 Weeks (T1)	4.90 (.65)	4.88 (.77)		
	4 Weeks (T2)	4.98 (.73)	4.95 (.78)		
	6 Weeks (T3-T0)	5.21 (.79)	5.29 (.79)	2.80* (.006)	.52 (1.06 - 1.49)
Positive relations (PGGS)	Baseline (T0)	4.10 (.86)	4.34 (.81)	-1.62 (.107)	
	2 Weeks (T1)	4.36 (.75)	4.44 (.81)		
	4 Weeks (T2)	4.50 (.83)	4.57 (.86)		
	6 Weeks (T3-T0)	4.36 (.76)	4.59 (.76)	-.248 (.804)	.04 (.24 - .22)

*p < .05; **p < .001

Efficacy on mental well-being, positive emotions and positive relations

Table 2 shows all means and standard deviations per measurement moment of mental well-being, positive emotions and relations per intervention condition. The results of the independent t-tests show that the increase in positive emotions is significantly higher in the prosocial kindness group compared to the self-focused group ($t(114) = 2.80$, $p = .006$). The between group effects size of positive emotions shows a moderate significant effect size ($d = .52$, *95% CI* (1.06 - 1.49)). Changes in mental well-being and positive relations do not differ significantly between conditions ($t(126) = -.40$, $p = .690$; $t(125) = -.248$, $p = .804$). Still, the results of the repeated measures analyses, as seen in Table 3, show that there is an overall significant difference between the means of mental well-being, positive emotions and positive relations at difference time points ($F(1) = 28.09$, $p = .000$; $F(3) = 75.52$, $p = .000$; $F(1) = 10.07$, $p = .000$). This indicates that mental well-being, positive emotions and positive relations did increase over time, regardless of the intervention condition the participants were allocated to.

Table 3: Results of the repeated measures analyses with time as within-subjects factor and mental well-being (MHC-SF), positive emotions (mDES) and positive relations (PGGS) as dependent variables

	Within-subjects effects
	F (p)
Mental well-being (MHC-SF)	28.09** (.000)
Positive emotions (mDES)	75.52** (.000)
Positive relations (PGGS)	10.07** (.000)

*p < .05; **p < .001

Mediation analyses

The role of both positive emotions and positive relations on the efficacy of the intervention on mental well-being were analyzed in simple mediation models. Table 4 shows that the coefficients for the direct effect (c'-path) are non-significant. This implies that the intervention does not directly have a significant effect on mental well-being, which is in line with prior t-tests. The same applies for all total effect (c-path) coefficients, leading to the assumption that also when including the effects of both mediator variables, the intervention does not significantly affect mental well-being. In contrast, the a-path of positive emotions is significant, leading to the conclusion that prosocial kindness led to a significantly greater increase in

positive emotions (*a* = -.13; *p* = .020) at 2 to 4 weeks ($\frac{T1+T2}{2} - T0$) during the intervention compared to self-focused kindness. Also, results demonstrate that all b-paths are significant, (*b* = .53; *p* = .000; *b* = .27; *p* = .001), meaning that the possible change in positive emotions and positive relations and positive relations ($\frac{T1+T2}{2} - T0$) significantly affected an increase in mental well-being ($T3 - T0$). The BC 95% CI of all indirect effects contained zero, which makes it highly probable that the intervention did not lead to an increase in mental well-being through positive relations and positive emotions. Hence, no mediating effect can be concluded. The results of the multiple mediation analysis do not add any new information to the results of both simple mediation analyses.

Table 4: Simple mediation of the effects in the prosocial group versus self-focused group on ($T3 - T0$) MHC-SF scores, mediated by the ($\frac{T1+T2}{2} - T0$) PGGS and mDES scores.

Mediators	*a (p)*	*b (p)*	Total effect *c (p)*	Direct effect *c´ (p)*	Indirect effect *a x b (95% CI)*
Positive relations (PGGS)	-.03 (.363)	.53** (.000)	-.03 (.442)	-.01 (.697)	-.02 (-.05 - .01)
Positive emotions (mDES)	-.13* (.020)	.27** (.001)	-.04 (.367)	-.00 (.944)	-.03 (-.08 - .00)

Bias corrected bootstrap results for the indirect effect, number of resamples is 10.000.

*p < .05; **p < .001

Discussion

The current study is one of a few studies to examine the effects of acts of kindness on mental well-being and more specific positive emotions and positive relations by using a randomized controlled trial design. Prior studies found that performing acts of kindness for others was effective on increasing mental well-being (Curry et al., 2017; Nelson et al., 2016; Layous et al., 2012; Weinstein & Ryan, 2010). Therefore, the present study aimed to investigate the efficacy of prosocial versus self-focused kindness on increasing mental well-being and whether the effect was mediated by increases in positive emotions and positive relations.

When comparing both intervention groups based on their measure of mental well-being, positive emotions and positive relations after 6 weeks, no significant difference could be found. Hence, in terms of improving mental well-being, positive relations and positive emotions, it did not matter if participants did something for others or themselves. This finding contradicts results of several studies, stating that doing good for others has a greater effect on well-being, emotional well-being and positive relationships with others compared to being kind to oneself (Schotanus-Dijkstra et al., 2017; Nelson et al., 2016; Layous et al., 2012). Still, although comparing both groups did not lead to the expected results, it became apparent that the participant's mental well-being, positive emotions and positive relations increased over the 6-week long course of the intervention, irrespective of the kind of condition the participants were allocated to, which is in line with finding from previous studies about self-compassion (Neff & Germer, 2013; Neff, Kirkpatrick & Rude, 2007). The lack in difference between the intervention groups should be interpreted in light of the following explanation. One possibility is that participants of the current study had an affinity to rather act differently than on behalf on conditions that were predetermined (Nelson et al., 2016). The weekly journals of the current study, for example, in which participants noted their total count of acts of kindness shows that a large share did not fully adhere to the intervention's instructions. Similar to an earlier RCT study of Nelson and colleagues (2016), participants were directly assigned to act prosocial, which may not have reflected their prosocial or general approach in social settings accurately. Particularly in the study of Nelson and colleagues (2016), this might have been one reason for a relatively small effect size. Although participants had the freedom to choose which five acts of kindness they would perform, they may not have been greatly motivated to act as it was required from them. To support this, autonomously motivated kindness is found to lead to greater increases in mental well-being than kindness which is mandated by others (Reis, Sheldon, Gable, Roscoe & Ryan, 2000). Hereby, the question arises, what the participants rather would have done if their choice was more autonomously motivated. It appears that a great

amount of people is motivated by self-serving and hedonistic needs (Cialdini and Kenrick, 1976). To exemplify, in a study on prosocial money-spending, Dunn and colleagues (2008) found that even when participants possessed the necessary monetary resources, they were less prone to spend money on others. They posed the question, why people would rather spend money on themselves than others. Therefore, Dunn and colleagues asked participants to select between the prosocial spending and self-focused spending condition, based on which one would increase their happiness the most. In that study, most participants assumed that self-focused spending would have a greater impact on their happiness than spending money on others (Dunn et al., 2008). These assumptions may be transferred to the current study. Thus, the results of the present study may show a non-significant estimate of the efficacy of prosocial kindness partly preset by others compared to self-focused kindness on mental well-being, positive emotions and positive relations.

Results from both simple mediation analyses demonstrated that both well-being core processes could not be seen as mediating variables in increasing mental well-being, mainly because a change in mental well-being happened irrespective of the intervention condition, the participants were allocated to. However, the mediation analyses have shown that increases in positive relations as well as in positive emotions, could be associated with a higher mental well-being, which is in line with prior research (Aknin et al., 2013; Layous et al., 2012; Nelson et al., 2016; Weinstein et al., 2010; Fredrickson. 2004; Ryan, Huta & Deci, 2013). The results highlight the essential role that positive relations and positive emotions play in facilitating a greater well-being. Earlier research demonstrates that mental well-being is increased when one's kindness complies with basic needs (Weinstein et al., 2010). This can be elucidated by means of the *Self-Determination Theory* (SDT) (Ryan, Huta & Deci, 2013). Based in SDT, Ryan and colleagues (2013) proposed a model of eudaimonia, in which the fulfillment of basic psychological needs such as having positive relations would facilitate the development of a greater mental well-being, living up to an essential role. For example, helping an elderly person passing the street would fulfill the need for relatedness as one would feel useful for the helped person, possibly receive positive feedback in form of a 'thank you', engaging in a conversation in which one would have the possibility to connect and get to know the elderly person. Next to the SDT, the focus of all weekly exercises as acts of kindness for others might have supported the development of social skills, which might have been essential basis skills for building positive relationships. Furthermore, previous work has shown that prosocial kindness may promote popularity and peer acceptance, while triggering an upward spiral of developing mental well-being (Layous et al., 2012). The role of positive emotions can be illustrated with

the *Broaden and Build Theory* (Fredrickson, 2004). According to this theory, the experience of positive emotions such as compassion, contentment, awe, amusement, gratitude, hope, interest, joy, love and pride would *broaden* the thought-action repertoire. For instance, feeling compassionate would facilitate the urge to help or soothe others when they are in need and interest would encourage engaging in interesting and inspiring conversations. These experiences would then lead to the discovery of new strategies, ideas and relationships, which in turn would benefit *building* personal resources such as psychological, physical or social resources. These resources could later on be used to cope with problems and to promote psychological resilience (Fredrickson, 2004). According to Fredrickson (2004), positive emotions would generate the basis for a greater well-being and ultimately lead to flourishing.

Strengths, limitations and directions for future research

The present research is one of a few to investigate the mechanisms of change in a positive psychological intervention (Schotanus-Dijkstra et al., 2017; Nelson et al., 2016). All analyses were performed within the background of a RCT design, which is considered the gold standard of scientific evidence, minimizing selection bias and confounding. Another strength was that the mediation analyses used were based on the most recent statistical procedures in this particular field (Hayes, 2017). Also, the specific exclusion criteria of the current study were a strength. Even until today, we have limited knowledge about the people who could benefit from this sort of intervention (Andersson & Titov, 2014). Accordingly, to measure more specific, participants that were considered as flourishing were excluded as well as participants that experienced significant depressive- and anxiety symptoms. In regard to depressive symptoms, Andersson and colleagues (2014) state that possible comorbidity is highly prevalent, meaning either the co-occurrence of affective- and anxiety disorders or other mental disorders. Thus, taking our limited knowledge about the target groups characteristics as well as possible comorbidity into account, applying specific exclusion criteria produces more reliable results as it measures a group with moderate well-being. Finally, another strength of the study was that the control group was considered an active control group, reducing the possibility that the results have been overestimated. Nelson and colleagues (2016) did use a waitlist control group for their study and by finding that self-focused kindness does not lead to a higher well-being, they suggested for future research to assign participants to a control group practicing self-focused kindness.

Several limitations of the present study could be identified by means of the results. The study's participants were mostly middle-aged, higher educated and employed Dutch women

that voluntarily chose to engage in the study. Andersson and colleagues (2014) state that it is common for self-referred interventions to include higher educated participants. Concerning generalizability, this means that the study cannot be applied to the general population. To attract participants, the study advertised with the question, if their well-being would need an impulse, which was supposed to represent a possibility to increase their mental well-being. For future research, this indicates that recruitment methods should be adjusted accordingly in order to attract a more diverse sample consisting of a broader range of people, consisting of low, middle and high levels of education, a more equal distribution of sex, age and socio-economic status. Second, the possibility that one or more unknown variables had a decisive influence on both well-being processes as well as the efficacy of the intervention on mental well-being cannot be ruled out. Earlier studies identified intention and motivation, for example the extent to which a person behaves altruistic in social contexts, to play a crucial role in the decision making process as well the tendency to act prosocial (Dunn et al., 2008; Batson, 1987; Cialdini & Kenrick, 1976). For example, prior research states that altruism is related to positive emotions, whereas the kind of relationship is still unclear. Accordingly, altruism can be classified as prosocial kindness seeking internal rewards (Batson, 1987). Hence, the next objective of future research should be to consider known constructs related to prosocial kindness such as intention and motivation behind the behavior and measure those prior or during an early stage of the intervention (Rushton, Chrisjohn & Fekken, 1981). Third and last, participants in the self-focused kindness group reported a greater amount of positive emotions in comparison to the prosocial kindness group, which yields issues in validity when interpreting the data. Being related to mental well-being, the participant's amount of positive emotions as reported prior to the intervention may have been a factor leading to the non-significant results of comparing both group's mental well-being post-intervention.

Conclusion

The current study presents some points that could contribute to future research. It showed that kindness, regardless to which direction it is aimed at, can, in fact, be effective in increasing mental well-being. In addition, the current study illuminates the role and importance of creating and maintaining positive relations and experiencing positive emotions for a greater well-being. Which indicates that it could be promising if future positive psychological interventions would focus on strengthening positive relations and positive emotions. Yet, it remains crucial to continuously develop and improve the intervention and also to conduct adjusted repetitions of the study to uncover other processes in the efficacy of *Acts of Kindness* on mental well-being,

which might lead to new, effective and accessible ways for the general population to develop a greater well-being.

Literature

Andersson, G., & Titov, N. (2014). Advantages and limitations of Internet-based interventions for common mental disorders. *World Psychiatry*, *13*(1), 4-11.

Aknin, L. B., Barrington-Leigh, C. P., Dunn, E. W., Helliwell, J. F., Burns, J., Biswas-Diener, R., ... & Norton, M. I. (2013). Prosocial spending and well-being: Cross-cultural evidence for a psychological universal. *Journal of Personality and Social Psychology*, *104*(4), 635.

Batson, C. D. (1987). Prosocial motivation: Is it ever truly altruistic?. In *Advances in experimental social psychology* (Vol. 20, pp. 65-122). Academic Press.

Cialdini, R. B., & Kenrick, D. T. (1976). Altruism as hedonism: a social development perspective on the relationship of negative mood state and helping. *Journal of personality and social psychology*, *34*(5), 907.

Curry, O.S., Rowland, L., Zlotowitz, S., McAlaney, J., Whitehouse, 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. Manuscript submitted for publication.

van Dierendonck, D. (2011). Handleiding Positive Geestelijke Gezondheids Schaal (PGGS) Versie 05. *Amsterdam: University of Amsterdam*.

Dunn, E. W., Aknin, L. B., & Norton, M. I. (2008). Spending money on others promotes happiness. *Science*, *319*(5870), 1687-1688.

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

Galanakis, M., Stalikas, A., Pezirkianidis, C., & Karakasidou, I. (2016). Reliability and Validity of the Modified Differential Emotions Scale (mDES) in a Greek Sample. *Psychology*, *7*(01), 101.

Huppert, F. A. (2009). Psychological well-being: Evidence regarding its causes and consequences. *Applied Psychology: Health and Well-Being*, *1*(2), 137-164.

Keyes, C. L. (2002). The mental health continuum: From languishing to flourishing in life. *Journal of health and social behavior*, 207-222.

Hayes, A. F. (2017). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. Guilford Publications.

Kline, P. (2013). *Handbook of psychological testing*. Routledge.

Lamers, S., Westerhof, G. J., Bohlmeijer, E. T., ten Klooster, P. M., & Keyes, C. L. (2011). Evaluating the psychometric properties of the mental health continuum-short form (MHC-SF). *Journal of clinical psychology*, *67*(1), 99-110.

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*(12), e51380

Lyubomirsky, S., Sheldon, K. M., & Schkade, D. (2005). Pursuing happiness: The architecture of sustainable change. *Review of general psychology*, *9*(2), 111.

Neff, K. D., & Germer, C. K. (2013). A pilot study and randomized controlled trial of the mindful self-compassion program. *Journal of clinical psychology*, *69*(1), 28-44.

Neff, K. D., Kirkpatrick, K. L., & Rude, S. S. (2007). Self-compassion and adaptive psychological functioning. *Journal of research in personality*, *41*(1), 139-154.

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.

Reis, H. T., Sheldon, K. M., Gable, S. L., Roscoe, J., & Ryan, R. M. (2000). Daily well-being: The role of autonomy, competence, and relatedness. *Personality and social psychology bulletin*, *26*(4), 419-435.

Ryan, R. M., Huta, V., & Deci, E. L. (2013). Living well: A self-determination theory perspective on eudaimonia. In *The exploration of happiness* (pp. 117-139). Springer Netherlands.

Ryff, C. D., & Keyes, C. L. M. (1995). The structure of psychological well-being revisited. *Journal of personality and social psychology*, *69*(4), 719.

Rushton, J. P., Chrisjohn, R. D., & Fekken, G. C. (1981). The altruistic personality and the self-report altruism scale. *Personality and individual differences*, *2*(4), 293-302.

Schotanus-Dijkstra, M., Pieterse, M. E., Drossaert, C. H., Walburg, J. A., & Bohlmeijer, E. T. (2017). Possible mechanisms in a multicomponent email guided positive psychology intervention to improve mental well-being, anxiety and depression: A multiple mediation model. *The Journal of Positive Psychology*, 1-15.

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.

Weinstein, N., & Ryan, R. M. (2010). When helping helps: autonomous motivation for prosocial behavior and its influence on well-being for the helper and recipient. *Journal of personality and social psychology*, *98*(2), 222.

Tables

Table 1: Demographic data of the 'prosocial acts'- and 'self-focused' group, total counts, percentages within intervention conditions (N = 128), chi-square values as well as mean and standard deviation and t-test results of age.

	Prosocial acts (n = 66)	Self-focused acts (n = 62)	Total (n=128)	Pearson Chi-Square	
	n (%)	*n (%)*	*n (%)*	X^2	*p*
Gender (female)	60 (90.9%)	55 (88.7%)	115 (89.8%)	.169	.681
Marital status (with partner)	33 (50.0%)	29 (46.8%)	62 (48.5%)	.133	.715
Living situation (with other(s))	52 (78.8%)	42 (67.7%)	94 (73.4%)	2.000	.157
Highest education				.607	.738
Secondary education	6 (9.1%)	8 (12.9%)	14 (10.9%)		
Tertiary education	8 (12.1%)	6 (9.7%)	14 (10.9%)		
Higher education	52 (78.8%)	48 (77.4%)	100 (78.1%)		
Employment (paid employment)	50 (75.8%)	51 (82.3%)	101 (78.9%)	3.460	.177
Land of birth (the Netherlands)	62 (93.9%)	56 (90.3%)	118 (92.2%)	.581	.446
				t-test	
	M (SD)	*M (SD)*	*M(SD)*	*t*	*p*
Age	50.27 (8.21)	48.74 (8.72)	49.53 (8.46)	1.023	.308

Table 2: Means and standard deviations of mental well-being (MHC-SF; T0; T3-T0), positive emotions (mDES; T0; T1; T2; T3-T0) and positive relations (PGGS; T0; T1; T2; T3-T0) and results of the independent sample t-test and between group effect sizes.

		Prosocial kindness	Self-focused kindness	t-test	Between group effect size
		M (SD)	*M (SD)*	*t (p)*	Cohen's *d (95% CI)*
Mental well-being (MHC-SF)	Baseline (T0)	2.69 (.65)	2.81 (.69)	-1.06 (.290)	
	6 Weeks (T3-T0)	2.98 (.69)	3.05 (.80)	-.40 (.690)	.07 (.24 - .28)
Positive emotions (mDES)	Baseline (T0)	3.78 (.63)	4.19 (.69)	-3.39* (.001)	
	2 Weeks (T1)	4.90 (.65)	4.88 (.77)		
	4 Weeks (T2)	4.98 (.73)	4.95 (.78)		
	6 Weeks (T3-T0)	5.21 (.79)	5.29 (.79)	2.80* (.006)	.52 (1.06 - 1.49)
Positive relations (PGGS)	Baseline (T0)	4.10 (.86)	4.34 (.81)	-1.62 (.107)	
	2 Weeks (T1)	4.36 (.75)	4.44 (.81)		
	4 Weeks (T2)	4.50 (.83)	4.57 (.86)		
	6 Weeks (T3-T0)	4.36 (.76)	4.59 (.76)	-.248 (.804)	.04 (.24 - .22)

*p < .05; **p < .001

Table 3: Results of the repeated measures analyses with time as within-subjects factor and mental well-being (MHC-SF), positive emotions (mDES) and positive relations (PGGS) as dependent variables

	Within-subjects effects
	F (p)
Mental well-being (MHC-SF)	28.09** (.000)
Positive emotions (mDES)	75.52** (.000)
Positive relations (PGGS)	10.07** (.000)

*p < .05; **p < .001

Table 4: Simple mediation of the effects in the prosocial group versus self-focused group on $(T3 - T0)$ MHC-SF scores, mediated by the $(\frac{T1+T2}{2} - T0)$ PGGS and mDES scores.

Mediators	*a (p)*	*b (p)*	Total effect *c (p)*	Direct effect *c´ (p)*	Indirect effect *a x b (95% CI)*
Positive relations (PGGS)	-.03 (.363)	.53** (.000)	-.03 (.442)	-.01 (.697)	-.02 (-.05 - .01)
Positive emotions (mDES)	-.13* (.020)	.27** (.001)	-.04 (.367)	-.00 (.944)	-.03 (-.08 - .00)

Bias corrected bootstrap results for the indirect effect, number of resamples is 10.000.

*p < .05; **p < .001

Table 5: Multiple mediation of the effects in the prosocial group versus self-focused group on $(T3 - T0)$ MHC-SF scores, mediated by the $(\frac{T1+T2}{2} - T0)$ PGGS and mDES scores.

Mediators	*a (p)*	*b (p)*	Total effect *c (p)*	Direct effect *c´ (p)*	Indirect effect *a x b (95% CI)*
Positive relations (PGGS)	-.05 (.095)	.45** (.000)	-.04 (.368)	-.01 (.743)	-.02 (-.06 - .00)
Positive emotions (mDES)	-.13* (.020)	.19* (.013)			-.02 (-.06 - .00)

Bias corrected bootstrap results for the indirect effect, number of resamples is 10.000.

*p < .05; **p < .001