Effectiveness of a Gratitude App on Happiness and Distress of Employees during the COVID-19 Pandemic

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Abstract

Background: The study aims to identify differences in university employees' levels of distress by using a gratitude intervention during the COVID-19 pandemic and to determine the adherence of employees to the gratitude app.

Methods: The study utilized a new developed gratitude app and a survey form as a data collection tool. The research was conducted on 19 university employees in the Dutch population using the online survey method and the gratitude app. Four scales were used for the assessment of happiness (Oxford Happiness Scale), distress (Kessler Psychological Distress Scale), and gratitude (Gratitude Questionnaire & Grateful Mood Questionnaire) levels of participants. Survey measures were administered at two time points, pre and post intervention. Descriptive statistical methods and paired sample t-tests were used in the data analysis.

Results: No significant differences were discovered between pre and post test measures for happiness and gratitude scores. Significant decreases in distress were supported across time. Pre intervention 26% of participants scored relatively high on the distress scale, indicating to have a moderate disorder. Post intervention only 5% of surveyed employees had scores indicating a moderate disorder.

Discussion: Decreases in distress levels for employees after using a gratitude intervention app might broaden the field of gratitude interventions. The effectiveness of the app gives promising implications about the same effects for different populations. However, future research needs to examine the maintenance of decreases in distress for a more versatile study sample in comparison to a control group.

Keywords: Gratitude; Happiness; Distress; Employees

1. Introduction

Large-scale disasters, no matter if traumatic, natural, or environmental are often followed by a broad range of behavioural or mental disorders, increases in depression, domestic violence, and substance use disorder (Galea et al., 2020). In the context of the current COVID-19 pandemic, fear is the most prevalent response to such a large-scale disaster and people react in different individualized ways towards the perceived threat (Usher et al., 2020). Fear of the spread of the disease and impact on health raises anxiety in both individuals with pre-existing mental health conditions but also healthy individuals (Rubin & Wessely, 2020; Vindegaard & Benros, 2020). Consequences of the ongoing pandemic ask for solutions to sustain and improve individuals' health conditions as public health emergencies can affect the health and security of individuals and communities by causing emotional isolation, economic loss, or work closures (Pfefferbaum, & North, 2020).

In recent decades, a shift to positive psychology was recognized, with its focus on well-being (Slade, 2010). More and more emphasis is put on enhancing people's mental health rather than reducing negative symptoms of mental disorders. New self-help interventions are designed to attain the goal of enhancing people's mental health. The effectiveness of those interventions show varying benefits to the individual and ultimately society (Seligman & Csikszentmihalyi, 2000; Seear & Vella-Brodrick, 2013). Moreover, gratitude exercises are one intervention in positive psychology which show promising results in increasing mental health (Cheng et al., 2015; Emmons & Mishra, 2011; Rash et al., 2011). Thus, the current study focuses on the effects of a gratitude app on employees' mental health by investigating their happiness and distress during the COVID-19 pandemic.

1.1 COVID-19 and mental health

The enduring COVID-19 pandemic severely influences mental health (Gorarke et al. 2020; Krendl & Perry, 2021; Lades et al. 2020). An individual is mentally healthy when a high level of well-being is present, in this state individuals experience good social and psychological functioning and positive emotional well-being (Keyes, 2002). Emotional well-being comprises the emotional quality of an individual's experiences, sometimes called experienced happiness (Kahneman & Deaton, 2010). Happiness is a widely presumed component of emotional well-being and depends on six key conditions, namely: economic prosperity; physical and mental

health; freedom to make life decisions; social support; and social trust (Diener et al., 1999; Durand, 2018). Happiness can mean life satisfaction, pleasure, a meaningful life, positive emotions, or well-being (Diener et al., 2009).

Moreover, the pandemic has impacts on distress, as it causes extreme anxiety and fear in some individuals (Rubin & Wessely, 2020; Vindegaard & Benros, 2020). This fear can result in post-traumatic stress disorder (PTSD) or depression in severe cases, also feelings of hopelessness, and a loss of purpose can arise because of fear and anxiety of pandemics and their consequences (Huremović, 2019; Vindegaard & Benros, 2020). Additionally, distress appears to be more prevalent in individuals with lower well-being (Bech, 1990; Rafanelli et al., 2000). Thus, missing happiness and increased distress due to the pandemic have severe consequences on well-being and are of particular interest to analyze. Therefore, the high accompany of anxiety, depression, PTSD, psychological distress, and stress and the COVID-19 pandemic (Xiong et al. 2020) underscore the need for interventions that promote and maintain mental health (Kobau et al., 2011; Schotanus-Dijkstra et al., 2019).

1.2 Gratitude

It has been found that gratitude is fundamental to mental health and is associated with psychological, physical, and relational benefits (Emmons & Mishra,2011). Thus, practicing gratitude may be an intervention to promote and maintain mental health. Gratitude has been identified as both a trait that is oriented towards perceiving positive life outcomes, a feeling of appreciation and a sense that one ought express a positive response towards other´s act of kindness (Emmons et al., 2019; McConnell, 2013) and a positive effect from the sensation of receiving a benefit from another person (McCullough et al., 2002). Killen and Macaskill (2015) found that high levels of gratitude significantly increase well-being and decrease perceived stress in older adults and young adults (Dixit & Malhotra, 2017). Another study on gratitude in Japanese workers has revealed an increase in positive affect (Otsuka et al. 2012).

Gratitude has proven to be an effective component for various constructs, such as well-being or stress reduction, however research still exhibits limitations. Gratitude has been until very recently one of the most understudied emotions and gratitude interventions represent a rather new approach (Alkozei et al., 2018; Sansone & Sansone, 2010). Research on gratitude interventions have determined several limitations that address the still developing field of

gratitude interventions and their doubt on efficiency as these interventions show weak efficacy (Davis et al., 2016; Wood et al., 2010). Davis et al, 2016 found that gratitude interventions are just as efficient as other positive psychological interventions.

As gratitude is part of positive psychology, it is to consider that recent meta-analysis (Donaldson et al. 2019) of positive psychology interventions found limits in adherence for self-help interventions and thus their effectiveness. Adherence can be defined as the degree to which individuals follow the instructions given to them for an intervention (Bissonnette, 2008). Thus, nonadherence is one possible reason for the weak efficacy of gratitude interventions. Fischer et al. (2020) found in their meta-analysis of gratitude interventions a huge variety of dose levels, including the total practice time, or the duration of individual interventions. These dose levels appear to be inconsistent and no clear guidance about the optimal level of practice is given. The extent to which individuals are using the gratitude intervention is important to consider when referring to self-help practice, as their effectiveness might depend on the level of practice. Moreover, positive psychological research in an organizational context, are relatively small in number (Donaldson et al., 2019). Existing literature focuses more on what organizations can do to enhance employees mental health rather than what employees themselves can do. Also, previous gratitude interventions on employees focus on work related measures such as work engagement, workplace mistreatment, and job satisfaction (Baker, 2011; Donaldson et al., 2019; Locklear et al., 2020). Instead organizations should focus on outcomes which directly influence mental health, such as distress and happiness (Li et al, 2019; Massé et al., 1998).

In order to address these gaps in gratitude research, the aim of the current study is to identify the effects of a gratitude app on employees of a university on happiness, distress, and on various measures of gratitude. In order to assess the impact of the intervention a pre-post-test design is used. Possible differences in happiness and distress are of interest as well to examine the overall difference in gratitude after the intervention. Additionally, the focus is on adherence of the participants using the gratitude app as previous self-help interventions were limited on that part.

Accordingly, three research questions emerge:

(1) How does the level of happiness change after the use of the gratitude app?

(2) Does the level of distress change when using the gratitude intervention?

(3) Does gratitude increase with the use of the gratitude app?
(4) Do participants adhere to the recommended dosage of use for the gratitude exercises?

It is expected that the use of the gratitude intervention has positive effects on the level of happiness (H1) . Additionally, a decrease of distress levels in individuals is expected after the use of the gratitude intervention (H2). Lastly, it is expected that the gratitude intervention has a positive effect on the level of gratitude (H3).

2. Method

2.1 Design

A quasi-experiment with pre- and post-test design with only one intervention group was adopted. The experiment neither did include a control group nor participants were randomly allocated to a group. The study lasted five weeks in which two measurements took place. Participants completed the first online assessment at baseline (T0) in week one and the second questionnaire in week five post-intervention (T1). Between measurement T0 and T1 in week 2-4 participants completed the intervention exercises for three weeks. The data was collected within a period of April to May in 2021.

2.2 Procedure and Sample

A convenience sampling method was applied to recruit employees. Participants were recruited in the University of Twente via an email distribution list through the University of Twente secretary. The email contained a link to an information website about the study, which holded details about requirements to participate and an information letter about the purpose of the study, and an informed consent form. After consenting to participate in the study, participants got access to the first questionnaire. When the first questionnaire was answered, the participants received another email with a registration code to the gratitude app (Zo Erg Nog Niet) and also the link to download the application to their smartphone. The participants were asked to spend approximately 15 minutes a day, five days a week for three weeks on the gratitude exercises. Thus, participants should spend around 225 minutes on the gratitude exercises in total. After the three weeks of using the gratitude app, the participants received the last questionnaire via email.

Inclusion criteria included being at least 18 years old and employed at the University of Twente. The possession of a computer, smartphone, or tablet with access to the internet and an email address were necessary as the measurements took place online. Additionally, a sufficient use of the Dutch language was required for the participants to fill out the questionnaires and to complete the gratitude exercises. Lastly, the participants had to accept the informed consent. No participants were excluded from using the app. Agreement of the Ethical Committee of the University of Twente was obtained (210284).

2.3 Materials

Quantitative data was gathered using questionnaires offered via the online platform Qualtrics. Both measurements (T0 & T1) included questionnaires which are not considered in this study.

2.3.1 Intervention

The online application ‘Zo Erg Nog Niet’ was provided by the University of Twente and was used by each participant on either computer or smartphone. First, when the users open the app they can log in. Then the story behind the application is explained in an informative text, which the user can read. The home screen shows a flower, which depicts the progress of the participant. The flower has six grey petals, each of them representing one week. If five gratitude exercises per week are completed one petal is colored. Thereby, the user can view the status of their accomplished episode. One example exercise is: ‘What are you grateful for? What exactly happened that you feel grateful for?’. When the exercise is finished, users can go back to the home screen. Participants received an email or a notification on their phone to remind them of not completed exercises. Additionally, different features of the application are pop up notifications with one daily quote which can be pinned to the home screen and is visible below the flower. The participants were also able to upload photos which inspire them, those could be viewed on a page left to the home screen of the app. On the right of the home screen are options to change personal information and to change notifications the user wants to receive.

2.3.2 Measures

Happiness

The Oxford Happiness Questionnaire is a 29 item measure of happiness which utilizes a six point rating scale of agreement ranging from 1 (*strongly agree*) to 6 (*strongly disagree*) (Hills & Argyle, 2002). The score is the sum of all responses and ranges between 29 and 145, with higher scores representing greater happiness. One example statement is: 'I am intensely interested in other people.'. An excellent reliability was reported by previous research (Robins et al., 2008). In this study the internal consistency was poor ranging from $\alpha = .35$ to $\alpha = .58$, indicating poor inter-relatedness.

Distress

The Kessler Psychological Distress Scale (K10) was used to measure the level of distress in the participants (Andrews & Slade, 2001). The K10 was developed as a short screening scale for psychological distress. The scale consists of 10 items with five response categories to each item: 1 (*none of the time*) to 5 (*all the time*). An example question is: 'In the past 4 weeks, about how often did you feel tired out for no good reason?'. The total score ranges between 10 and 50 as a sum of all responses. Individuals can be categorized according to their scores. A total score between 10 and 19 indicates the probability to be well, people who score 20-24 are likely to have a mild mental disorder. Scoring 25-29 indicates a moderate mental disorder and a total score of 30-50 gives indication about having a severe disorder. An official Dutch translation was used in the T0 and T1 questionnaires (Alonso et al. 2004). The current study found a good internal reliability with alphas ranging from .79 to .84.

Gratitude

Lastly, two gratitude scales were used to assess gratitude levels of participants. Both scales were included to examine the different effects of the app on gratitude as a trait as well as a temporal mood. So, trait gratitude was measured by the Gratitude Questionnaire (GQ-6-NL; McCullough, Emmons & Tsang, 2002). The questionnaire is a six item scale. Each item has a seven likert-scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). One example is: 'If I had to list everything that I felt grateful for, it would be a very long list' (McCullough et al., 2002). A high level of gratitude is suggested by a high sum score. Previous research found a good internal reliability (McCullough et al, 2002). This study found low alphas ranging from .65

to .72.

The Grateful Mood Questionnaire was used to measure state gratitude (Bohlmeijer et al. 2021). It is a four item questionnaire with a seven point rating scale of agreement ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). One of the questions was for example: 'In the past 24h I was consciously aware that life is good for me'. Higher mean scores indicate a high level of grateful mood. Previous studies found good interrater reliability (Bohlmeijer et al. 2021). The present study also found a good reliability for this scale with alphas ranging from .77 to .90.

Adherence

Two questions about the participants' usage of the app were included in the T1 measurement. One question about the average amount of days using the app (*How many days a week on average do you use the app?*) and one about the duration of time on one exercise (*How much time did you spend on average per day on an exercise?*).

2.4 Data analysis

For the statistical analyses SPSS version 27 (IBM SPSS Statistics) was used with a significant level < .05. Descriptive statistics were calculated to analyse frequencies and descriptives of participants' demographics. Frequency distributions were also used to calculate the adherence of participants to the gratitude exercises. Incomplete cases were removed by listwise deletion from the data set. The paired samples t-test was used to calculate the difference between pre and post measurements for happiness, distress, and gratitude of the sample.

3. Results

3.1 Study sample

In total, 19 participants were included in the study sample. The participants' mean age was 41.1 years (SD =13.88) and ranged from 25 to 65 years, indicating a high variety in age. Altogether, a majority of women took part in the study. All the participants were Dutch. Moreover, a vast part of the sample had a high education (University) and the second most represented form of education was secondary education (MBO). Also, more than half of the participants are married or registered and living with their partner and children (Table 1).

Table 1.
Baseline characteristics (N = 19).

	Frequency	Percentage	M (SD)
Age			41.11 (13.88)
Gender			
Male	3	16	
Female	16	84	
Family Status			
Married or Registered	13	68.4	
Divorced	2	10.5	
Widowed			
Never been married	4	21.1	
Living Situation			
Alone	2	10.5	
With Partner and Child(ren)	11	57.9	
With Partner without Child(ren)	5	26.3	
Alone with Child(ren)	1	5.3	
Education			
Secondary Education (MBO)	3	15.8	
Higher Professional Education (HBO)	1	5.3	
Scientific Education (University)	14	73.7	
Other	1	5.3	

Note. M = Mean, SD = Standard Deviation, N = 19

3.1.1 Drop-out and adherence

16 cases of the 35 participants were incomplete and excluded from the following analyses. The other 19 participants completed both the surveys (T0 & T1). The majority of participants used the gratitude app as recommended five days per week (26%). Moreover, the vast majority of participants (84%) spend five to ten minutes per exercise. Only one participant

reported spending the recommended time of 15 minutes per exercise (see Table 2). In total, 94,7% of participants did not adhere to the instructed dose of usage of 15 minutes per exercise. Also, 52.6% of participants used the app less than five days per week. Thus, the adherence was not sufficient.

Table 2.

Adherence to the gratitude app.

	Frequency	Percentage
How many days a week on average do you use the app 'Zo Erg Nog Niet'?		
less than 1 day per week	2	10.5
1 day per week	1	5.3
2 days per week	1	5.3
3 days per week	3	15.8
4 days per week	3	15.8
5 days per week	5	26.3
6 days per week	3	15.8
7 days per week	1	5.3
How much time did you spend on average per day on an exercise?		
less than 5 minutes per exercise	2	10.5
approx. 5 minutes per exercise	8	42.1
approx. 10 minutes per exercise	8	42.1
approx. 15 minutes per exercise	1	5.3

3.2 Efficiency of the gratitude app

The results of the paired sample t-tests are displayed in Table 3. It was hypothesized that the gratitude intervention has positive effects on happiness. For happiness scores, no significant differences were found between baseline measure (T0) and post-intervention measure (T1)

t(15)=1.3, p=.21. These results indicate that happiness did not improve with the gratitude app. Thus, the H1 is rejected.

Next, T0 measurements showed nine of the participants scoring between 10-19 on the K10 distress scale, which indicates a likelihood to be well and five participants had scores between 25 and 29, indicating to have a moderate disorder. After the gratitude intervention only one participant scored in the range of 25-29 points indicating an improvement in distress scores. The second hypothesis was tested: A decrease of distress levels in individuals is expected after the use of the gratitude intervention. The paired sample t-test showed significant difference in the scores for distress (M=2.21, SD=4.24); t(12)=2.27, p=0.035. On average, the baseline scores were 2.21 points higher than post-intervention scores (95% CI [.17, 4.25]). These results indicate positive effects of the intervention on distress. H2 could thus be confirmed.

No significant difference was found between scores of trait gratitude before and after intervention (M=-.63, SD=3.9); t(18)=-.71, p=.488. The same result was found for gratitude scores of the Grateful Mood Questionnaire. A significant average difference between pre- and post-test scores was not found (M=-.9, SD=5.73); t(18)=-.68, p=.505. Consequently, H3 is rejected.

Table 3.

Effects of the gratitude app on happiness, distress, and gratitude (N=19)

Outcomes	T0 Mean (SD)	T1 Mean (SD)	Sig.	t-value
Happiness	3.48 (0.29)	3.39 (0.34)	.21	1.3
Distress	20 (4.96)	17.79 (3.74)	.035	2.27
Gratitude				
Trait gratitude	33.58 (4.23)	34.21 (4.34)	.488	-.71
State gratitude	21.16 (3.55)	22.05 (4.5)	.505	-.68

4. Discussion

The purpose of this study was to examine the effectiveness of a gratitude intervention for influencing happiness and distress in a quasi-experimental design with only one intervention group. Moreover, the study was proposed to examine the adherence of the participants to the gratitude exercises.

4.1 Effects of the gratitude app on happiness, distress, and gratitude

This study found that a gratitude app was successful in influencing one outcome measure, namely distress. Previous studies have proven gratitude interventions to be effective in distress (Bohlmeijer et al. 2021). These results make primary contributions to the research of gratitude interventions on employees. As mentioned before, previous examinations of workplace gratitude interventions are relatively short in number (Mukhtar & Al-Barri 2018). Also, many existing studies do focus on gratitude and distress more generalized not specific in employees (Mukhtar, & Al-Barri, 2018). This study is one of the first to enhance distress levels in employees by using a gratitude app. Additionally, workplace gratitude interventions focus on what the organization leaders can do to enhance employee mental health versus what employees can do. Lastly, the result of a decreased distress level suggests that a relatively simple self-practice intervention can enhance mental health. Consequently, the presented gratitude app is one possibility to decrease distress and strengthen mental health in employees by self-practice. According to Veit and Ware (1983) higher psychological distress is correlated with negative mental health states and thus little to none distress indicates a higher well-being.

The present study did not provide significant evidence to support past research suggesting that significant improvements in happiness and gratitude can be gained with the implementation of gratitude exercises (Fischer et al., 2020). Prior examinations of gratitude interventions on happiness indicated higher levels of happiness for the gratitude condition (Al-Seheel, 2011). Also Watkins et al. (2002) found in their study that gratitude is an affective trait important to happiness. Several conclusions can be drawn from this result. Previous research used mindfulness exercises and training or expressive writing (Fischer et al., 2020; Al-Seheel, 2011), instead this study using a gratitude app might have caused the insignificant difference in happiness scores. Secondly, participants in this study were able to fulfill the gratitude exercises

from a place of their choice. This could have caused low adherence to the recommended time of exercising and resulted in an insignificant difference of happiness scores. Al-Seheel (2011), for example, had all participants in his study at one place to complete gratitude exercises.

Interestingly, no significant difference for both the gratitude scale scores was found. However, previous research found increases in both trait and state gratitude after a gratitude intervention (Martínez-Martí et al., 2010; Rash et al., 2011). There may be several conclusions why the results presented in previous gratitude studies were not replicated in the current one. First, the positive impact of gratitude exercises may have been suspended by increased concerns of participants about their health based on the ongoing COVID-19 pandemic. Previous studies did not measure gratitude during a pandemic (Martínez-Martí et al., 2010; Rash et al., 2011). Secondly, the dose level of using the intervention was not consistent throughout the sample and thus could have led to the insignificant difference in scores between T0 and T1 measure. However, the efficacy of the recommended time was not tested beforehand. A recent meta-analysis of gratitude interventions indicated that an optimal dose level of practicing gratitude exercises is not known yet (Fischer et al. 2020).

4.2 Strengths and limitations

This study provided deeper insights into the quality of gratitude apps to decrease the level of distress in employees during the COVID-19 pandemic. Previous research is focusing on gratitude in the same context. However, the intervention as an app makes out a strength for the presented study, as it seems to be little used in the field of gratitude (Ghandeharioun et al. 2016). Additionally, this study explicitly focuses on reducing distress in employees during the COVID-19 pandemic. Previous studies only focus on gratitude in distress for work conditions or on employees with severe mental disorders like burnout (Guan & Jepsen, 2020; Locklear et al. 2020; Komase et al. 2019). Currently, there is no other research study that examines this kind of application in such a context.

There are also some limitations in this study which should be considered in the interpretation of the results. First, the sample was not equal regarding the women-men ratio (16:3). Also, based on the gender ratio the study was not representative for all employees. The inequality in gender ratio does not give sufficient insights in happiness and distress level in an evenly distributed sample. Moreover, measurements of subjective well-being have shown that

women's happiness has declined continuously over the past years (Stevenson & Wolfers, 2009). Based on the study of Stevenson and Wolfers (2009) it could be concluded that the results are affected by this decline and the majority of women in the sample. Another limitation in this study was that a vast majority of the sample have a scientific education which means that the sample is rather one-sided and lacks insight into the whole population. Due to the sampling method, it could be possible that more women than men took part, but also more highly educated than lower educated individuals. Consequently, the results should be interpreted cautiously, which could be more adopted to women with scientific education than to individuals with other demographic characteristics.

Next, the measurements took place pre and post-intervention with only one group. No control group was included to make comparisons to the experimental group about the effects of the gratitude app. Consequently, the true effectiveness of the gratitude app could not be assessed. Also, no follow-up measurement was used to assess the effect maintenance. Thus, the reported results could be affected by other factors, such as the COVID-19 pandemic itself. The pandemic has severe impacts on happiness and distress (Yıldırım & Güler, 2021). Those influences might have caused higher or lower scores for the measured constructs. The gratitude app might seem more effective with the influence of the ongoing pandemic as the scores of distress could have been higher by negative consequences of COVID-19 (Zhang et al. 2020). By adding questions in regard to the COVID-19 pandemic the difference in scores could have been identified.

Lastly, a limitation is the low internal consistency of the Oxford Happiness Questionnaire for this study. This indicates that the items are not correlating well with each other. An unofficial Dutch translation was used for this scale which could have caused the poor correlation between items. Thus, happiness scores could have been impaired and might have given different results with an official translation.

4.3 Implications and future recommendations

The findings are relevant for positive psychological research with focus on gratitude interventions in the context of employees. The current study has shown that a three week gratitude intervention is effective in reducing distress after this period of time in mostly scientifically educated women. Future research can build on this result, as it could give promising indications about the effectiveness of gratitude apps for different populations. This

addresses the need for investigating the effectiveness of the gratitude intervention for a more versatile and representative sample of employees (Otsuka et al. 2012). A more representative sample would include an evenly distributed gender ratio as well as participants with a variety of educational backgrounds ranging from no education to the highest education (university).

Additionally, based on the reduction of distress in this study, future research can examine the maintenance of the effects of the gratitude intervention. Thus, a follow up measure three to six weeks after the intervention would be valuable to conduct. Thereby the intervention's effectiveness would be revealed. However, possible interferences need to be excluded. Qualitative research could offer interesting insights in influences during such study (Kaczmarek et al. 2014). Possible insights could be the influence of the COVID-19 pandemic on distress, happiness, or gratitude itself.

The adherence of the participants was not sufficient, indicating that the intervention did not appeal to the sample. Participants did not stick to the recommended time of 15 minutes per day. Hence, such nonadherence to the recommended time of exercise could have had an impact on the results of this study. Complying with the recommended time could have resulted in greater differences in scores for the different measures. A sufficient difference was achieved for distress scores by five or less minutes of time per exercise of the majority of participants. Future studies can include this finding in their research and adjust the recommended dose of the gratitude exercises for happiness and gratitude measures. Adjusting the intervention in terms of the dose of exercising would be lowering the recommended time or extending the exercises to make them simpler and better implemented (Bender et al. 2003). Different target groups, like people voluntarily participating in the study by interest, could also enable better adherence. Finding volunteers to participate could be achieved by advertising the study online. Thus, the participants are not asked to participate but have a free choice to do so. Online advertising would also enable a wider reach for participants.

4.4 Conclusion

In conclusion, the current study attempted to extend prior research by examining little researched constructs, such as happiness and distress for an employee population. Two hypotheses of the current study were not supported by the results, several conclusions can be drawn. First, it might be the case that happiness and gratitude depend on a more intensive usage of the gratitude app in order to enhance scores of both the constructs. Secondly, it might be to

conclude that the COVID-19 pandemic had worsening influences on happiness and gratitude of the participants, which were not measured during the study. However, one hypothesis was supported by the results. These results imply that an average usage of five to ten minutes per gratitude exercise is necessary to enhance the distress level of employees during the COVID-19 pandemic. The correlation between distress and mental health suggests that a gratitude intervention app could improve mental health. Finally, the presented study supports the importance of gratitude in general. However, more research is needed to find out which aspects of gratitude are most crucial for improving people's lives and if these aspects could have a negative impact on individuals well-being.

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