

New forms of recording gratitude: Benefits of a gratitude journal app and an exploration of appreciated design features

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Abstract

Gratitude journals have been used frequently as forms of intervention and indicate a positive effect on wellbeing. The present study explored the potential of gratitude journal apps and appreciated design features. It is empirically based on prior research and theoretically related to experience design, the Fogg Behaviour Model and domestication theory. A mixed methods design was applied that consisted of an online experiment as well as a focus group. The online experiment was conducted over two weeks with participants being randomly split into two groups. During week one, one group used a gratitude journal app whilst the other group used a traditional gratitude journal. For week two, these gratitude activities were swapped. Wellbeing was assessed at three points of measurement. Additionally, experience and preference of app versus traditional was evaluated as well as appreciated design features. To further explore the design features a focus group was assembled. 15 participants completed the online experiment, while 22 people participated in the focus group. Results show a significant increase in wellbeing from baseline to second point of measurement for the participants having used the app for one week. Overall, the experience with the gratitude exercise was positive with a slight preference towards the app. Appreciated features include the possibilities to personalise the design, to add pictures or voice memos and to have push notifications. The focus group further revealed that simultaneous wellbeing tracking, data protection and proposed sharing of entries would be much appreciated. The findings are embedded in theory and provide a basis for designing a user friendly gratitude journal app.

Keywords: *Gratitude – gratitude journal apps – wellbeing – design features – gratitude journal – intervention*

Abstrait

Les revues de gratitude ont souvent été utilisées comme des formes d'intervention et indiquent un effet positif sur le bien-être. La présente étude a exploré le potentiel des applications de journaux de gratitude et des caractéristiques de conception appréciées. Il est empiriquement basé sur des recherches antérieures et théoriquement liées à la conception de l'expérience, le modèle de comportement de Fogg et la théorie de la domestication. Une conception de méthodes mixtes a été appliquée qui consistait en une expérience en ligne ainsi qu'un groupe de discussion. L'expérience en ligne a été menée sur deux semaines, les participants étant divisés au hasard en deux groupes. Pendant la première semaine, un groupe a utilisé une application de journal de gratitude tandis que l'autre groupe a utilisé un journal de gratitude traditionnel. Pour la deuxième semaine, ces activités de gratitude ont été échangées. Le bien-être a été évalué à trois points de mesure. De plus, l'expérience et la préférence de l'application par rapport à la traditionnelle ont été évaluées ainsi que les caractéristiques de conception appréciées. Pour explorer davantage les caractéristiques de conception, un groupe de discussion a été constitué. 15 participants ont complété l'expérience en ligne, tandis que 22 personnes ont participé au groupe de discussion. Les résultats montrent une augmentation significative du bien-être entre le point de départ et le deuxième point de mesure pour les participants ayant utilisé l'application pendant une semaine. Dans l'ensemble, l'expérience de l'exercice de reconnaissance a été positive avec une légère préférence pour l'application. Les caractéristiques appréciées incluent les possibilités de personnaliser le design, d'ajouter des images ou des mémos vocaux et d'avoir des notifications push. Le groupe de discussion a également révélé que le suivi simultané du bien-être, la protection des données et le partage proposé des entrées seraient très appréciés. Les résultats sont intégrés en théorie et fournissent une base pour la conception d'une application de journal de reconnaissance conviviale.

Mots clés: *Gratitude - applications de journal de gratitude - bien-être - caractéristiques de conception - journal de gratitude - intervention*

Background

Gratitude has been shown to provide a strong direct effect on life satisfaction (Peterson, Ruch, Beermann, Park, & Seligman, 2007). Gratitude can be seen as trait as well as state like. Previous research mainly focussed on the conceptualisation of gratitude as an emotion that arises after receiving help that is perceived as costly, valuable, and altruistic (Wood, Maltby, Stewart, Linley, & Joseph, 2008). However, Wood, Froh, and Geraghty (2010) argue that gratitude may not always be directed towards a benefactor and should thus be rather looked at as a wider life orientation towards noticing and appreciating the positive in the world.

Several studies have been conducted to explore the correlations of gratitude and aspects of personality, wellbeing, relationships and health (see Wood et al., 2010 for a review). Being grateful was associated with reduced anxiety, lower risk of depression and health related behaviour like alcohol and drug abuse as well as eating disorders (Kendler, Liu, Gardner, McCullough, Larson, & Prescott, 2003). Having a grateful mind-set can lead to a happier and more optimistic life (Watkins, Woodward, Stone, & Kolts, 2003). Additionally, it is easier for grateful people to overcome adversity (Emmons & McCullough, 2003) and to form stronger interpersonal bonds (Algoe, 2012). Gratitude can also have other vital health benefits like improved sleep (Emmons & McCullough, 2003) and reduced stress (Wood et al., 2008).

With the broad variety of benefits, researchers are looking into interventions that foster gratitude. Wood et al. (2010) and Davis et al. (2016) suggest different categories of gratitude interventions that can be summarised as follows: (a) listing of things for which to be grateful or other journaling activities, (b) grateful contemplation, (c) activities involving the expression of gratitude to another person, and (d) psycho-educational groups designed to promote gratitude. The listing of things for which to be grateful can also be referred to as gratitude journals and has been frequently used as forms of intervention in research (Wood et al., 2010; Kaczmarek et al., 2015; Killen, & Macaskill, 2015). The basic idea is to write down three to five things, that you are grateful for at night before you go to bed. Past research states that there is a positive effect on wellbeing (Emmons & McCullough, 2003; Seligman, Steen, Park, & Peterson, 2005; O'Leary & Dockray, 2015). Emmons and McCullough (2003) conducted two studies with college students and one with adults with neuromuscular diseases. The college samples were randomly assigned to three experimental conditions (Completing a gratitude journal, list up hassles or events that had an impact during the week) and completed a gratitude journal weekly

(study 1) or daily (study 2). Using a weekly gratitude journal led to a more positive and optimistic appraisal of one's life. Participants were spending more time exercising and had fewer physical problems. The daily usage of gratitude journaling had even stronger effects and participants experienced higher levels of positive affect. Prosocial motivation was enhanced with participants reporting that they had helped someone or offered emotional support. In the sample of adults with neuromuscular diseases (study 3) greater levels of positive affect, improved sleeping behaviour and greater optimism as well as a sense of connectedness was self-reported as well as observed by a significant other of the participant. Gratitude journaling can thus be seen as a powerful instrument for enhancing emotional and interpersonal wellbeing.

In line with that, Seligman et al. (2005) applied a gratitude journal to a convenience online sample of website visitors and revealed stable effects on happiness and depression in a three- and six-month follow-up. Participants were happier and less depressed in comparison to baseline. O'Leary and Dockray (2015) used an online gratitude exercise and a mindfulness intervention to be completed at home. The interventions were used four times a week for three weeks and both revealed reductions in stress and depression and increases in happiness in comparison to a wait-list control group.

Given the many benefits of gratitude journaling, there is a clear rationale for conducting more research on interventions to increase gratitude journaling into people's lives. With the everyday usage of smartphones new forms of recording gain emerging interest – for example by using a gratitude journal app.

A general approach to use technologies to support wellbeing is known as Positive Computing (Calvo & Peters, 2014). Most of the research is focussed on persuasive technologies that support behavioural change to foster wellbeing. Konrath (2014) explicitly reviewed the use of mobile phones for positive technological interventions. Among the several advantages, she states that a more diverse population can be reached. Moreover, mobile phones are portable, easy to use and convenient.

Howells, Ivtzan, and Eiroa-Orosa (2016) explored the impact of a mindfulness app on wellbeing. Participants showed significant increases in positive affect and reduced depressive symptoms. Probably the first researchers combining gratitude journaling with a smartphone were Parks, Della Porta, Pierce, Zilca, and Lyubomirsky (2012). They designed an iPhone app that consisted of several happiness-increasing activities, one of them being gratitude journaling. Gratitude journaling was the third most frequently

used activity after “goal evaluation and tracking” and “savouring the moment”.

Runyan et al. (2014) focused solely on gratitude journaling. They looked at the effects of three daily gratitude prompts and one end-of-day gratitude intervention. However, it is not clearly stated if they used a specific app for that. Participants had higher in the moment mood ratings and lower variability on mood scores than the control group. Ghandeharioun, Azaria, Taylor, and Picard (2016) designed a context-sensitive app to promote gratitude through inspirational content. Dispositional gratitude and wellbeing measures improved over the time of the intervention. Moreover, they observed an increase of more than 120 per cent in average frequency of practicing gratitude in the intervention group. However, they also reported a decrease of 90 per cent in the control group. Thus, the usage of an app as means for recording gratitude journal actions seem to be a promising choice.

The present study is theoretically related to “experience design” (Hassenzahl, Eckoldt, Diefenbach, Laschke, Len, & Kim, 2013), the Fogg Behaviour Model (FBM; Fogg, 2009) and domestication theory (Silverstone & Haddon, 1996; Silverstone & Hirsch, 1994).

Experience design places the centre of all design efforts on creating the potential of pleasurable and meaningful moments (Hassenzahl et al., 2013). The authors specifically rely on the psychological needs framework of Sheldon, Elliot, Kim, and Kasser (2001). In the context of the present study especially the needs for autonomy, competence and relatedness need to be considered (also see Ryan & Deci, 2000). Autonomy can be described as seeing the cause of one’s action within oneself and not because of external forces (Hassenzahl et al., 2013). As the participants were not sent any reminders for the daily gratitude task in the app/traditional journal, the need for autonomy can be seen as fulfilled. The need for competence addresses the feeling of being capable and effective in one’s actions (Hassenzahl et al., 2013). With the daily focus on what to be grateful for, the participants must have had a feeling of competence. Relatedness can be described as having contact with people who care about oneself rather than feeling lonely (Hassenzahl et al., 2013). Thinking of three things to be grateful for every night before going to bed certainly contains being thankful for close friends and family. Thus, the three needs should be fulfilled in the proposed task of gratitude journaling.

The Fogg Behaviour Model (FBM; Fogg, 2009) proposes core motivators, simplicity factors and behaviour triggers to explain how target behaviour can be facilitated. Core motivators can either be immediate - like the seeking of pleasure or the avoidance of pain -

or focused on the outcome - like hope or fear. Another dimension of core motivators are social acceptance or rejection. Simplicity factors can be seen as aspects that facilitate the target behaviour, e.g. time, money, physical effort or social deviance. Behaviour triggers can function as a spark (to increase motivation), a facilitator (to increase ability to perform a task) or a signal (to remind someone to perform a task). In line with the need fulfilment the core motivation to perform the gratitude journaling task should be high and especially focused on the aspect of hope. Concerning the simplicity factors one has to state that gratitude journaling only takes some minutes every night before going to bed. It’s free of charge and the physical effort is rather low. Thinking of something to be grateful for should not consume too much cognitive effort and does not require someone to be socially deviant. The aspect of routine is also fulfilled, as it is a task that they should complete every night before going to bed. Concerning the behaviour triggers the participants using the app should probably fulfil the facilitator aspect even more than the traditional journal group. The app is constantly available on their phones, they just have to click on it and everything is already prepared for them to use. This facilitation process might increase that the target behaviour will be more easily shown. Gratitude journaling with paper and pencil might increase the effort.

The present study also has relations to domestication theory, which explores the different stages of how technologies are used (Silverstone & Haddon, 1996; Silverstone & Hirsch, 1994). Interaction between humans and technology and the social dynamic in between humans creates a domestication process to integrate technology into everyday life and even change it through usage behaviour. The four stages can be described as appropriation, objectification, incorporation and conversion. In the stage of appropriation technology is owned. For example, a new app about gratitude journaling is bought by potential users and needs to be downloaded. After that the objectification takes place, an app becomes an inherent part of one’s smartphone screen. The stage of incorporation is characterised by the regular usage of an app – in the way intended by the designers but also in ways desired by the user. In that interaction process the user can have a potential power to influence changes of the app, namely the stage of conversion (see Silverstone & Haddon, 1996; Silverstone & Hirsch, 1994). The present study focusses on all four stages: a proposed app is appropriated and objectified and through incorporation, conversion takes place in proposed composition of an ideal app.

Looking at past research reveals that active participation with technology was used to stimulate users. Ghandeharioun et al.

Table 1

Descriptive statistics: Frequencies, means and standard deviations

| | | |
|--|--|------------|
| Online experiment | | |
| Sex male/female, N | | 14/1 |
| Age, M (SD) | | 29.9 (9.4) |
| Apprenticeship/A-levels/University, N | | 1/2/11 |
| Psychology/Not Psychology, N | | 12/3 |
| Experience with gratitude journaling, N | | 7 |
| Experience with self-improvement apps, N | | 10 |
| Focus group | | |
| Sex male/female, N | | 16/6 |

(2016) applied inspirational cues to motivate users. Runyan et al. (2014) had participants receive three daily gratitude prompts. And examining the broad variety of gratitude journal apps offered in Apple's App store substantiates the popular use of push notifications, inspirational cues and all different kinds of input that is directed towards the users. Most gratitude journal apps offer a broad variety of design features for their users without considering that this might lead to overload effects in line with research on social networking (Lee, Son, & Kim, 2016).

Thus it might be wise to take one step back and look at the potential of gratitude journal apps in general, especially in comparison to (handwritten) traditional gratitude journaling and to explore what design features are really needed. Consequently, the present study investigates the two following research questions:

- 1. What potential do gratitude journal apps have on influencing perceived wellbeing?**
- 2. What design features are especially appreciated?**

METHOD

Participants

The present study consisted of two major components: A two-week experiment with a gratitude journal app and a traditional gratitude journal with data collected online and a subsequent focus group about appreciated app features. 32 participants completed the first part of the online experiment, with a decline to 16 and 15 at the second and third point of measurement (seven participants in group "app versus traditional", eight participants in group "traditional versus app"). The focus group had 22 participants. For a closer look at the demographic statistics see Table 1 with information on

sex, age, highest educational level, psychological study background and experience with gratitude journaling and self-improvement apps. Due to the collection of demographic information within the third point of measurement, the data only represents the participants that finished all parts of the experiment. The employed sample was a convenience sample of adults over 18 years of age. The link to the experiment was posted in several Facebook groups that are associated with psychological studies. Moreover, participants were gathered through specific university boards (UMIT Hall in Tirol, Fernuniversität Hagen, Ludwig-Maximilians-University Munich) and through emails to friends and family. Participants

who finished all parts of the experiment were able to either receive course credit for their participation or take part in a lottery to win an Amazon voucher. The focus group was implemented within a positive psychology Masters degree course at the Austrian university UMIT, Hall in Tirol.

Procedure and materials

Online experiment The experiment was conducted online through the social science survey platform „SoSciSurvey“ (<https://www.soscsurvey.de>) with three points of measurement. Each part took about 5 to 10 minutes to complete. Participants were pre-screened for iPhone usage, as the gratitude journal app was only available for the iOS operating system. Within the first part of the experiment, the participants were provided with a short introduction. After that they had to answer the four questions of the Subjective Happiness Scale (Lyubomirsky & Lepper, 1999) in order to assess their baseline wellbeing. Participants were randomly divided into two groups. While half of them received instructions to use a daily traditional gratitude journal, the other half had to use a simple gratitude journal app. Both of the groups were advised to make some time in the evening to write down three things that they had been grateful for today. After one week they would be sent an email to another questionnaire asking them about their experience. The participants in the traditional journal condition were asked to use a notebook, diary or slips of paper, while the other group had to download the "Three Gratuities" app (Koser, 2013) from the App Store. After screening several gratitude journal apps, this app was chosen because of its simple design and for it being free of charge. "Three Gratuities" offers three daily separate slots for



Figure 1: Screenshot of “Three Gratuities” app (Koser, 2013)

written gratitude entries and a calendar to view those daily entries (see Figure 1).

At the end of the first part of the experiment, participants were asked to provide their email addresses to receive a link to the next part in one week’s time. They were advised that their email addresses would be handled carefully and deleted at the end of the experiment.

The second part of the experiment had participants entering their email addresses in order to match their answers to the first part of the experiment. After that they had to state how often they had used the app/traditional journal (eight-point Likert scale, not at all to daily), how they experienced gratitude journaling and if they had felt any change (seven-point Likert scale, strongly agree to strongly disagree). In order to assess any change in wellbeing, the Subjective Happiness Scale (Lyubomirsky & Lepper, 1999) was applied again. At the end of the second part of the experiment, participants having used the app, now were instructed to use the traditional journal for another week and vice versa.

For the third part of the experiment participants once again had to enter their email addresses to ensure allocation of data. To track any change in wellbeing, the Subjective Happiness Scale (Lyubomirsky & Lepper, 1999) was used again. After that participants were asked for their preferences concerning the app/

traditional journal (seven-point Likert scale, rather the traditional journal to rather the app) and if there was anything that they had missed while using the traditional journal/app. To further assess possible design features a list was derived from a qualitative analysis of existing gratitude journal apps. Participants could select as many design features as they would like to be implemented into a gratitude journal app. Moreover, they had the possibility to provide additional design features. Another set of questions concerned the investment propensity as well as the attitude towards freeware/full version and advertising within the app (seven-point Likert scale, strongly agree to strongly disagree). The last task was to fill out demographic core data including age, highest educational level and experience with self-improvement apps (see Table 1).

Focus Group. In order to explore the optimal design of a gratitude journal app, a focus group was conducted within a positive psychology Masters degree course. In the one week preceding class, participants were advised to daily use the gratitude journal app “Three Gratuities” in line with the instructions from the online study. After asking about their experience with the app, participants were presented the proposed design features of the online study and they were instructed to discuss them. An additional brainstorming of other design features, aspects and ideas that would promote usability, was encouraged.

RESULTS

The present study examined the potential of gratitude journal apps in comparison to traditional gratitude journaling and further explored the appreciated design features of gratitude journal apps. Descriptive data of the online experiment revealed experiences with the gratitude exercise in general and preferences of traditional vs. app usage. A paired-sample t-test explored the changes in wellbeing measured with the Subjective Happiness Scale (Lyubomirsky & Lepper, 1999). Further descriptive data examined the appreciated design features and the investment propensity towards gratitude journal apps. The outcomes of the focus group were clustered into three major findings concerning the design features.

Experience with gratitude journaling

After one week participants were questioned about their experience with the gratitude journal exercise. Table 2 depicts the means of agreement to the four items divided by group. Independent t-tests were conducted to compare the answers to the experience with gratitude journaling items for the app and traditional condition.

Table 2

Independent t-test between experience with gratitude journaling and app versus traditional condition

| | App | | Traditional | | t | df | p |
|---|------|------|-------------|------|------|-------|-----|
| | Mean | SD | Mean | SD | | | |
| I enjoyed the exercise. | 6.13 | 1.13 | 5.14 | 1.57 | 1.41 | 13,00 | .18 |
| It was easy to think of three things to be grateful for every night. | 5.63 | 1.51 | 4.71 | 1.50 | 1.17 | 13,00 | .26 |
| I feel like something has changed for the better by doing the exercise. | 5.13 | 1.55 | 4.00 | 2.08 | 1.20 | 13,00 | .25 |
| I feel like something has changed for the worse by doing the exercise. | 1.25 | .71 | 1.43 | 1.13 | -.37 | 13,00 | .72 |

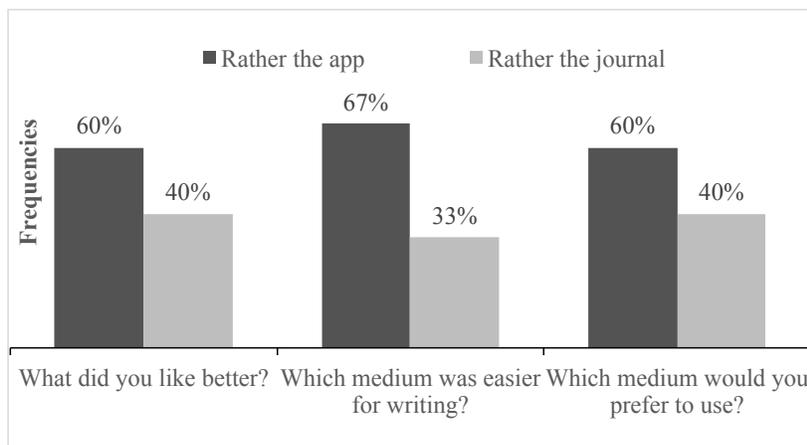


Figure 2: Frequencies of usage preferences

No significant differences could be observed, however, a slightly positive tendency towards the app is visible. Overall the gratitude exercise was well received with participants noticing apparent positive changes. Hardly any negative changes were observed. Looking at the qualitative data the positive change can be supported by statements like “To be happy about small things and to become aware of what makes you happy!”, “I started to notice the positive things around me even during the day.” and “I consciously took the time to recall the day and it was much easier to fall asleep.”

Usage preferences

After two weeks of having used the app and the traditional journal, participants had to answer questions about their preference. Figure 2 depicts the answers to three items in favour of the app. Qualitative data explains the app preference through the smartphone being

more present in everyday life, the quickness of usage and the provided structure of the app. Participants favouring the traditional journal noted that they consciously took more time writing and that they wrote down more, additionally they liked using real paper and having the possibility to writing by hand instead of typing.

Wellbeing at three points of measurement

The Subjective Happiness Scale (SHS) was used to measure wellbeing at baseline and after one week using the app/traditional journal and again after another week of using the traditional journal/app. A paired-samples t-test comparing the SHS scores

between each of the three points of measurements revealed a significant increase in wellbeing in the group that started with the app and used the traditional journal afterwards.

Data revealed a significant increase in wellbeing from the first point in time (t1) to after using the app for one week (t2) (Mt1 = 5.14, SEt1 = .40; Mt2 = 5.75, SEt2 = .36), $t(8) = 4.86, p = .001, d = .54$. The increase was stable for another week while using the traditional journal (t3). However, there was no significant increase from t2 to t3 (Mt3 = 5.69, SEt3 = .37), $t(8) = 3.16, p = .013, d = .48$. Means and standard errors of both groups can be seen in Figure 3.

Appreciated design features

The appreciated design features can be seen in Table 3. Qualitative data supports those findings. Participants would like to have the

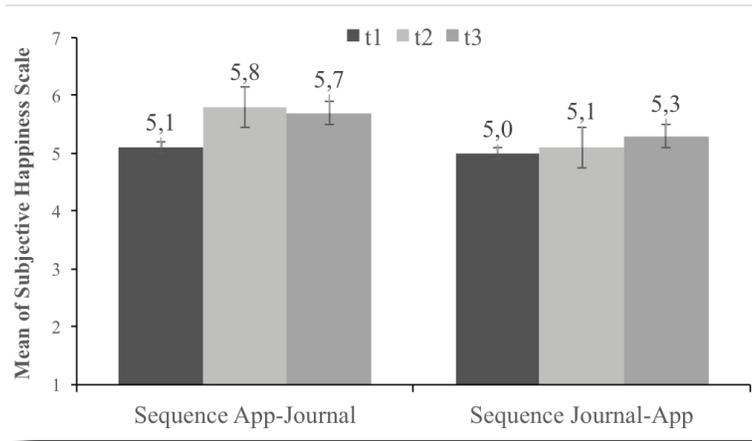


Figure 3: Means and standard errors of Subjective Happiness Scale

possibility to personalise the design of the app and add pictures or voice memos: Individual design is important and the possibility to draw something, to link a daily song to the entries and to connect it to one’s diary. In order to keep up with the daily entries, reminders are appreciated – so called push notifications. As a matter of security participants assessed a password protection and a back-up function as being useful. This is in line with qualitative data that they were afraid of losing the entries/data. Additional features proposed were an algorithm that counts how often entries contain the same data, a search function to look for specific entries, overview of all entries,

a print function and the possibility to change/write entries after the day had passed.

Investment propensity

Figure 4 depicts participants’ investment propensity towards a gratitude journal app. The willingness to pay is rather average while participants would appreciate a basic free version to test the app before spending money. Advertising within the app would push people to buy the full version. The average maximum amount that would be paid is 2.5 Euro.

Table 3

Appreciated design features

| | Frequencies |
|--|-------------|
| Possibility to personalize the design | 87% |
| Add pictures or voice memos | 67% |
| Push Notifications (reminders) | 47% |
| Password protection | 40% |
| Back-up service | 40% |
| Alarm with random reminders | 33% |
| Additional exercises (e.g. meditation) | 33% |
| Share entries on a personal level | 20% |
| Share and view entries anonymously | 13% |
| Usage tracking chart | 0.7% |
| Log in via (social) network account | 0% |
| Share entries via social network | 0% |

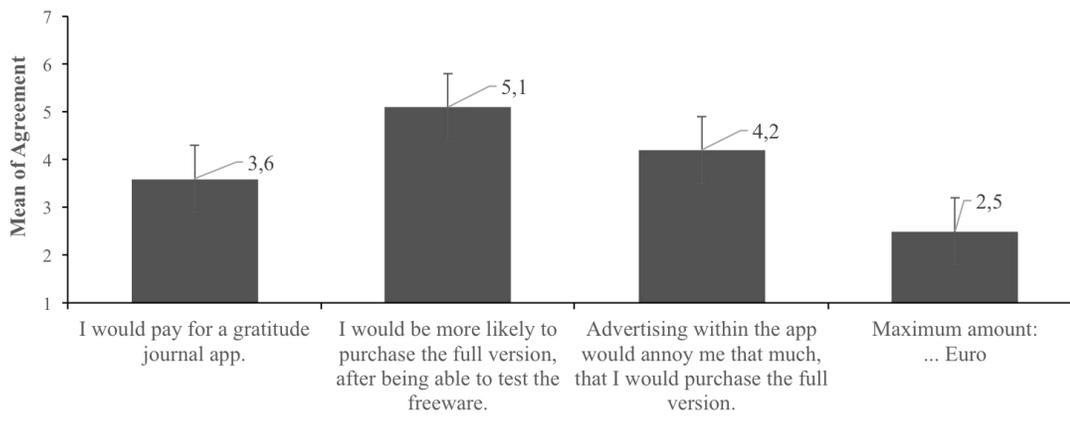


Figure 4: Means and standard errors of investment propensity

Insights from focus group

The focus group mirrored the appreciated features identified in the online study. However, three more in depth findings can be derived. In line with the online study a usage tracking chart did not receive support. To further explore on how to motivate users, participants pointed out that they would not appreciate a reward system similar to that found in sports app, as it does not feel appropriate in the context of gratitude. They would rather work with a simultaneous daily wellbeing tracking within the app. A simple additional scale asking them about how they felt in comparison to yesterday would be sufficient. Participants explicitly stated that they would like the tracking data only for themselves not sharing it with other users for comparison. Further participants proposed a selective usage of a gratitude journal app especially during times when one is not doing well.

Another aspect deeply discussed was data protection. As already stated in the online study, password protection and back-up service were appreciated design features. Participants mentioned that writing about what one was grateful for is a very personal endeavour. Anonymity is very important, thus there should be a question about whether one wants to share data with the developers. However, participants were also imagining themselves in the developer's position and proposed that anonymous tracking could enable a marketing strategy with promotional statements like "80% of the users enhanced their wellbeing after three days!"

Even though that gratitude journaling is a personal endeavour, participants discussed the design feature of a proposed sharing of entries. Thinking of Microsoft's Outlook feature that asks to attach a document when using the word "attached", a gratitude journal app could automatically propose "Do you want to share with XY?". The algorithm would need to filter specific cues like the names or relationship statements (e.g. "mom", "dad"). Asking users to share their entries could trigger them to do so via email or messengers or even just reminding them to do so the next time they encounter the person that they are grateful for.

DISCUSSION

The present study investigated the potential of gratitude journal apps and explored design features that are especially appreciated by users. Generally, the gratitude exercise was well received with participants noticing apparent positive changes. Moreover, hardly any negative changes were observed. Data revealed no significant differences between using an app or a traditional journal, however,

a positive tendency towards the app was visible. Concerning the usage preferences after having used both the app and the traditional journal, participants turned towards the app. Looking at the level of wellbeing revealed that participants having used the app for one week reported significant increases in wellbeing. However, using the traditional journal afterwards kept the effect stable but did not further enhance wellbeing. Still the rise in level of wellbeing was stable against baseline. The group using the sequence of traditional journal-app did not experience significant increases in wellbeing.

The most appreciated design features were the possibility to personalise the design of the app and to add pictures or voice memos. In order to keep up with the daily entries, reminders were also appreciated. As a matter of security participants assessed a password protection and a back-up function as being useful. To explore the economic potential of gratitude journal apps participants revealed their investment propensity. The willingness to pay is rather average while participants would appreciate a basic free version to test the app before spending money. Advertising within the app would push people to buy the full version. The average maximum amount that would be paid is 2,5 Euro.

The focus group emphasises the findings of the quantitative study and further revealed three in depth findings. Participants would appreciate a simultaneous daily wellbeing tracking to keep them motivated to use the app. Another aspect deeply discussed was data protection. Anonymity is very important, thus there should be a question in the beginning whether one wants to share data with the developers. An algorithm was proposed that asks users to share their entries with the potentially mentioned person via email or messengers or even just reminding them to do so the next time they encounter the person that they are grateful for

The potential of gratitude journal apps: a significant increase in wellbeing

Looking at the level of wellbeing revealed that participants having used the app for one week reported significant increases in wellbeing. This is in line with research that gratitude journaling has positive effect on wellbeing (Emmons & McCullough, 2003; Seligman et al., 2005; O'Leary & Dockray, 2015). Especially the daily usage of gratitude journaling is beneficial for wellbeing (Emmons & McCullough, 2003). However, the present study revealed that using the traditional journal after having used the app kept the effect stable but did not further enhance wellbeing. Still, the rise in level of wellbeing was stable against the baseline. The group using the sequence of traditional journal-app did not experience significant increases in wellbeing. So the app was only

powerful when being applied in the first week of the intervention. Additionally, gratitude journaling should generally have a positive effect on wellbeing - despite of the mode of recording – traditional journal or app. The present study did not find significant increases in wellbeing for the participants having used the traditional journal. Looking back at the Fogg Behaviour Model (FBM; Fogg, 2009) might shed some light on why the app as a mode of recording worked better. Besides motivators and simplicity factors, the FBM points out the importance of behaviour triggers to explain how target behaviour can be facilitated. The app can be seen as a facilitator, because it is constantly available on their phones, they just have to click on it and everything is already prepared for them to use. This facilitation process might be the reason that the target behaviour was shown more easily and consequently had more powerful effects. Using a traditional gratitude journal required increased effort and in line with FBM reduced the likelihood of showing the desired target behaviour of actually using it. Generally, one can state that using an app for gratitude journaling is a beneficial mode of recording, in line with previous research in that area (Ghandeharioun et al., 2016; Howells et al., 2016; Parks et al., 2012). This is also substantiated by the positive experience tendency towards the app and the preference of users for the app after having used both.

Appreciated design features of gratitude journal apps: the right choice

The most appreciated design features mirrored the fulfilment of the proposed needs. This is in line with the concept of experience design, which places the centre of all design efforts on creating the potential of pleasurable and meaningful moments (Hassenzahl et al., 2013). The need for autonomy was supported as the participants did not receive any reminders to complete the gratitude exercise. Still, 73% of participants stated that they participated on a daily basis, which should have fulfilled the need for competence at the same time. Participants appreciated the possibility to personalise the design of the app and to add pictures or voice memos. Those wishes can be seen as further enhancing the autonomy of users. Surprisingly, participants stated that in order to keep up with the daily entries, they would also appreciate reminders. To further foster the need for autonomy participants were rather concerned about the security of their entries, so they viewed a password protection and a back-up function as useful. The suggested algorithm proposing to share entries with the potentially mentioned person via email or messengers fosters the need for relatedness. This bridges gratitude journaling and the gratitude intervention of expressing gratitude,

similar to delivering a gratitude letter in person (Lyubomirsky et al., 2011). Parks et al. (2012) also proposed a sharing of entries with an app.

Another appreciated feature is a simultaneous daily wellbeing tracking to keep the users motivated to use the app. Participants stated that they would not be satisfied with a simple reward system that is usually applied in fitness apps. But according to participants, if they could track their progress in wellbeing, it would be rewarding enough to keep going. This might also be based on the fulfilment of the need for competence. In line with Ryan and Deci's (2000) self-determination theory users would be motivated by the ability to be cause of their action and to actively see that the way they feel is changing. The applied Subjective Happiness Scale (Lyubomirsky & Lepper, 1999) might not be the appropriate measurement for daily usage, thus one could apply the Scale of Positive and Negative Experience (SPANE; Diener, Wirtz, Tov, Kim-Prieto, Choi, Oishi, & Biswas-Diener, 2009). This approach might be slightly different from the predominate form of stimulating the user to support her or his endeavours, like using inspirational cues (Ghandeharioun et al., 2016) or daily gratitude prompts (Runyan et al., 2014). In line with the research on overload effects in the context of social networking sites (Lee et al., 2016), one should be wise in applying the appropriate amount and way of motivational emphasis.

Lastly, in order to design a gratitude journal app, the aspect of marketing and investment propensity needs to be addressed. Concerning marketing strategies, one has to find the right balance between collecting usage data and respect privacy of users. Participants emphasised that a gratitude journal app needs to address this issue right in the process of purchasing and installing the app. Users should have the possibility to decide what information they want to share with the developers (e.g. usage frequency) and what they want to keep to themselves (e.g. content of entries). Considering marketing strategies, it would be useful to have access to the tracking of changes in wellbeing, in order to apply promotional statements like "80% of the users enhanced their wellbeing after three days!" The investment propensity of an average maximum of 2,5 Euro is rather low. To encourage users to buy the app a basic free version is appreciated and advertising can also push the people into buying the app.

Limitations and Future Work

The present study examined the potential of gratitude journal apps and further explored appreciated design features. Even though the findings substantiate that gratitude journaling with the help of an

app is a promising form of recording, still several limitations apply to the study. First of all, the used sample size was rather small, thus it might not be advisable to generalise the findings to the general population. Especially older people with less appreciation of apps and smartphones would probably not prefer to use a gratitude journal app. Additionally, the study was conducted online, thus, some participants might not have been fully committed to answer all of the questions considerably. And there was no control if they really did the gratitude exercise, even if they agreed to having participated daily, those answers might have been a result of social desirability.

Further studies might take that problem into account and use a gratitude journal app that records whether or not participants did use the app. However, in order to motivate users, the current study highlights a simultaneous wellbeing tracking as highly recommended. Prior research already stated that there is a positive effect of gratitude journaling on wellbeing (Emmons & McCullough, 2003; Seligman, Steen, Park, & Peterson, 2005; O'Leary & Dockray, 2015). Thus, incorporating such a feature as means of motivation might be a fruitful collaboration: To motivate users and measure the effectiveness of the intervention at the same time.

CONCLUSION

Using a gratitude journal app is a potential new way to apply the positive psychology intervention of gratitude journaling into the everyday life of users. The smartphone is an increasing daily companion especially for younger people and thus provides a promising medium to incorporate wellbeing interventions into daily life. However, there needs to be more follow up research on how those apps should be designed. The app industry already produced a broad variety of gratitude journal apps to choose from. Still, little is known about how those apps are experienced by users and what design features are appreciated.

The current study shed some light on those questions applying a basic version of a gratitude journal app. For more in depth knowledge about user experience in the context of gratitude journaling additional fine-grained studies need to be undertaken. Generally, designers might take a deeper look into what is really appreciated by users without leaving them with an abundance of features. Thoroughly identifying those features and designing a user-friendly gratitude journal app can further enhance the power of this positive psychological intervention. ■

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