

EFFECT ON HAPPINESS OF HAPPINESS SELF-MONITORING AND COMPARISON WITH OTHERS

Using the Happiness Indicator¹

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ABSTRACT

The Happiness Indicator (www.happinessindicator.nl) is a website containing self-help tools designed to make people more aware of their own happiness. The theory behind the tools is that a keener awareness of one's own happiness helps users find an optimal lifestyle and consequently promotes happiness among its users.

Users of the website periodically record how happy they feel on the present day and how happy they have felt over the past month, using the Happiness Comparer. They also have the option of indicating in the Happiness Diary how happy they felt during the various activities of the previous day. Users receive instant feedback in the form of comparisons with their earlier scores and with the average scores of similar participants.

In this chapter we assess the effect of using this tool on happiness considering the change in happiness among 5,411 users who have participated at least twice. We found that using the Happiness Diary 10 times, results in an average increase in happiness of 2%. Repeated use of the Happiness Diary had a particularly strong effect for those who initially felt the least happy.

Use of the Happiness Indicator may have prevented a decline in happiness among our participants, such as observed in the control-groups of 10 studies among self-selected participants in happiness trainings. If so, the net effect of using the Happiness Indicator was about 5%, which is quite substantial and comparable to the short-term effects of real-life events, such as the birth of a first child.

1 Shortened version of a paper entitled 'Happiness raised by raising awareness' (Bakker et al 2015).

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1 INTRODUCTION

1.1 In search of greater happiness

It is our nature to prefer feeling good over feeling bad (Grinde 2007) and this tendency extends to a universal quest for a satisfying life, for ‘happiness’ (Veenhoven 2011). Today, we pursue happiness probably more than in the past (Veenhoven 2015a). One way to promote happiness is to create situations in which most people will enjoy their life, such as conditions of material comfort and safety. Though quite successful, this approach involves the danger of paternalism, which may backfire on happiness (Omerod & Johns 2007). Another approach is to help people find happiness by themselves. In this chapter, we look at this pathway and present a tool by means of which people can be used to get a better view on their happiness and adjust their way of life accordingly. We also report a first effectiveness check of that tool.

1.2 Methods for becoming happier

The search for greater happiness has led to the development of a growing range of happiness-help products, such as advisory books (e.g. Lyubomirski 2008), training courses (e.g. Fordyce 1977) and life-coaching services (e.g. Spence & Grant, 2007). These products use different techniques, such as training social skills, increasing personal insight, reducing stress and promoting positive thinking, for example to encourage people to see the glass as half full instead of half empty. The majority of these techniques originate from psychology; in recent years, they have drawn mainly from the field of positive psychology. Other methods that aim to increase happiness draw on esoteric inspiration such as Buddhist meditation.

1.3 Approach of the Happiness Indicator

In collaboration with the Dutch health insurance company VGZ, a new online method has been developed at the Erasmus University Rotterdam in the Netherlands⁷ aimed at providing people with greater insight into their own happiness. Users monitor how well they feel in general and during specific daily activities and are informed of how other users of the website feel, in particular other users of a similar in age, sex, education and employment status. The method is based on the expectation that a better awareness of one’s own happiness will help you find a personally optimal life style, which will subsequently lead to increased happiness.

We will first discuss the psychological theory on which this expectation is based in section 1.3.1. Then in section 1.3.2 we explicate a focus on the affective component of happiness. We note similarities with other self-tracking techniques in section 1.3.3 and differences with other approaches in Positive Psychology in section 1.3.4, to place the

⁷The first version of the Happiness Indicator was developed for a study of elderly people by Veenhoven in collaboration with VanHerpen and Vermeulen-Kersten (2008). Veenhoven was also involved in the development of the current version.

approach of the Happiness Indicator in context

1.3.1 Underlying theory

The expectation that a better awareness of one's happiness will be helpful is based on the theory that affective experience is functional in the process of adaptation to life, but that our awareness of how well we feel falls short in several ways.

Information function of affective experience

Our feelings have a signaling function (e.g. Schwartz 2012), and feeling happy basically indicates that our way of life matches our nature (Grinde 2007). In this perspective, it is functional to be well aware of how happy we feel, feeling good indicating that we are on the right track and feeling bad signaling that there is something wrong. Feeling bad will only be functional when there is opportunity to improve our situation; locked in hell, it is probably better to reduce awareness of one's feelings as far as possible, since one cannot change the situation despite the painful signal. Awareness of one's happiness is also not functional in cases of affective disorder.

Inaccurate view on how happy one typically feels

Memories of how happy we felt in the past are often distorted and may feed us with false information. Several sources of bias in affective recall have been identified. One is that salient memories of ups and downs limit our perception of the average experience (Wilson, Gilbert & Meyers 2003). Another source of memory bias is in 'cognitive framing'; the longer ago the affective experience, the more its afterglow is adapted to existing views on the world and the more we are blinded to divergent information (Kahneman & Krueger 2006).

A related insight is that we are bad at predicting how our choices will affect our future happiness (Gilbert 2005). We tend to project our biased memories of past affective experience on the future, typically neglecting uncertainties and differences in conditions and being susceptible to suggestion (e.g. Wilson et. al 2000). For this reason, we frequently make misinformed choices, such as accepting a better paying job further from home, which in the end makes us less happy because better pay does not compensate the happiness lost to commuting (Frey & Stutzer, 2004).

In this respect, it is plausible that the view on our affective experience will be less biased if we monitor it systematically and can retrieve in writing how well we have felt in the past and how well we typically feel during specific activities. It is also plausible that this will subsequently result in better informed choices when it comes to making decisions in which happiness is at stake, and that a better view on our happiness will therefore tend to result in a higher level of happiness in the long term.

Limited view on how happy one could be, given one's situation

Next to a better view on how happy one feels personally, we could benefit from more accurate information on how our own happiness compares to the happiness of other

people, similar people in particular. If these other people are typically less happy than you are, then there is apparently little chance of a more satisfying life and you would better spend your energy on what you *are* enjoying. Pursuing happiness only makes sense if a more satisfying life appears to be possible in your situation (Veenhoven 2015b).

It is not easy to assess how much happiness is realistically possible for ourselves. We are bombarded with misleading information in fiction and advertisement, skewed to suit the propagators interests. Media reports of happiness research concerns mostly the general population, e.g. how happy the average citizen is, while what you need to know is how happy people like you typically are: for example, a physically handicapped widow will want to know how happy other people in her situation are. Good talks with intimates may provide you with information on this, but there are limits to people's openness and the size of one's circle of intimates. Anonymous reports of larger numbers of similar people are therefore helpful.

A further, more common sense, insight underlying the Happiness Indicator is that we can learn from each other and that we typically do so. If you appear to be less happy than otherwise comparable people are and want to improve, it is worth knowing what these other people do differently. One of the most palpable things in this context is how these people usually spend their time, such as how much of the day they spend with others or alone, how long they commute and how many hours they sleep. It is also of interest to know how comparable people feel during particular activities. If they feel less miserable when the alarm clock goes off or enjoy dinner more than you do, that is another clue in your search for a more satisfying way of life.

Limited view on effects of behavioral change

Bias in affective recall makes it difficult to grasp the effect of behavioral changes on one's happiness. For instance, if you go to a gym, you are probably well aware of how you feel right after leaving the gym, but may have little awareness of how daily exercise has affected your average mood in the last month. Systematic mood monitoring should such small and delayed effects more visible.

The idea behind the Happiness Indicator is that accurate and tailored information will be helpful in the pursuit of happiness. As such, it fits a wider plea for 'informed pursuit of happiness' (Veenhoven 2015). How that information is provided is shown in section 1.4.

1.3.2 Focus on feeling

The Happiness Indicator addresses how happy one feels, in other words, how pleasant or unpleasant one's mood is most of the time. In the academic literature on subjective well-being, this is referred to as the 'affective component' of happiness and is distinguished from the 'cognitive component', a more rational assessment of the extent to which life brings what one wants it to bring (Veenhoven 1984: Section 2.2). Research has shown that the affective component dominates our overall evaluation of life (Kulainen et al.

2018) and that the effect of happiness on our health is mainly via the affective component (Veenhoven 2009).

1.3.3 Related self-monitoring techniques

Self-tracking techniques are commonly used in health care, for example to help people control their weight or drinking and form part of the ‘Quantified Self’ movement⁸ (e.g. Neff & Natus 2016) also called ‘life-logging’. The aim of using these techniques is mostly to help people achieve *particular* behavioral changes. The Happiness Indicator is designed rather to help people to find out *what* to they might need to change. The use of these techniques increase considerably once self-tracking tools became available on smart phones and other wearable electronic devices. Though mostly welcomed, these self-tracking practices are also criticized, e.g. as data-fetishism and promoting self-obsession, see Lipton (2016) for a review.

1.3.4 Difference with other approaches in Positive Psychology

As noted above in section 1.3.2, the focus of the Happiness Indicator is on how happy one *feels*. In Positive Psychology, this is called ‘hedonic happiness’ and distinguished from ‘eudaimonic happiness’, which denotes a wider set of desirable mental and moral features and is also referred to as ‘positive mental health (Jahoda 1960).

Next to this difference in kind of wellbeing addressed, there is also a difference in method. The Happiness Indicator is aimed specifically at providing us with a better view on the *facts* of our happiness, with the assumption that this will enable us to make more informed life-choices Positive Psychology interventions cover a much broader range of mental changes, such taking another view of one’s self and practicing new behaviors.

Contrary to mainstream happiness advice, the Happiness Indicator does not provide generic recipes, such as ‘count your blessings’, but is aimed at helping you find what works for you in particular. This approach will not fit everybody, since it requires an ability to digest complex information and to behave accordingly.

1.4 Tools in the Happiness Indicator

The website provides ‘Tools for working on your happiness’ and is available free of charge on www.happinessindicator.nl⁹. Upon visiting the website for the first time, the user will be asked to create an account and complete a profile questionnaire. They will then receive an e-mail every month with a link to the website, asking them to complete the ‘Happiness Comparer’ and, if desired, the ‘Happiness Diary’. At the end of each calendar year, the user will also be asked to specify what has changed in their lives.

1.4.1 Happiness Comparer

⁸ https://en.wikipedia.org/wiki/Quantified_Self

⁹ The version in Dutch: www.gelukswijzer.nl

The users' first task each month is to answer two questions: first, how happy they feel that day, and next, how happy they have felt over the past month. The answers are rated using a visual faces scale, ranging from zero (very unhappy) to 10 (very happy); see Figure 1. By first asking the participants how they feel that day, we focus the participants' attention on the affective component of happiness and minimize the influence of their current mood on their answer to the second question on their happiness over the past month. After answering the two questions, the participants will receive instant feedback in the following two ways.

[*Figure 1 about here*](#)

Comparison with others

The program compares the answer to the two questions with the average score of all participants and with the average score of all participants with the same profile; e.g. those in same age category, with same gender and with a similar level of education. A screenshot of this feedback is shown in Figure 2. This feedback is meant to provide the participant with insight into the likelihood of becoming happier than they are at present. We expect that this will reduce the problem of a 'limited view on how happy one could be' noted above in section 1.3.1.

[*Figure 2 about here*](#)

Comparison over time

If the user has previously made an entry in the Happiness Comparer, the program will generate a trend line, see Figure 3. This trend line shows the user whether they have made progress in their happiness and whether they have fared better or worse than similar users. We expect that this will reduce the problem of a 'limited view on effects of behavioral change' discussed in section 1.3.1.

[*Figure 3 about here*](#)

1.4.2 Happiness Diary

The Happiness Diary (Figure 4) comprises an internet application of the Day Reconstruction Method (DRM) developed by Kahneman et al. (2004).¹⁰ Users are first asked to record everything they did the day before, such as eating, completing household tasks, working and resting. They are also asked to state how much time they spent on each activity, where the activity was carried out (e.g., at home or at work) and with whom (e.g., alone, with a partner, with family, or with colleagues) and to rate their happiness during these activities on a scale ranging from 0 (very unhappy) to 10 (very happy),

¹⁰ For a recent review of this method, see Diener & Tay (2014). Other studies that have applied DRM to the study of happiness include Kahneman et al. (2006), Oishi et al. (2009), Knabe et al. (2010), and Hendriks et al. (2014).

similar to that shown in Figure 1. As Figure 5 shows, users can indicate on this scale how happy they felt during each activity.

[Figure 4 about here](#)

[Figure 5 about here](#)

The happiness Diary provides the user with instant feedback in the following ways.

Feelings during each activity

The program generates an at-a-glance overview that shows the activities during which the user felt the least and most comfortable, see Figure 6. This overview can help users allocate their time optimally.

Comparison with other participants

This part of the program provides instant comparison with other users with similar life situations, see Figure 6. This comparison can help when the user is making choices, for example, when deciding whether to look for a new job. The fact that a person does not feel great at work is in itself not a reason to change jobs, because most people feel one point less happy at work than at home. However, if your difference between work happiness and home happiness is greater than that of similar users, it is most likely worthwhile to look for a job that suits you better.

[Figure 6 about here](#)

Feelings throughout the total activity pattern.

The average happiness level of the day is calculated based on the time spent on each activity. This helps users to assess more accurately their own happiness level. We expect that this will reduce the problem of an inaccurate view on how well one typically feels noted in section 1.3.1. This technique also provides us with an estimate of the size of that imprecision; if the daily averages obtained with the Happiness Diary differ substantially from the global estimates made on the Happiness Comparer, the latter estimates may be biased.

1.5 This chapter

In this chapter, we give an account of the first study of the short-term effects of using the Happiness Indicator. The website has attracted a sufficient number of participants to demonstrate the effect of repeated participation on a participant's happiness. Is this effect positive, as we expect it to be? If so, what is the size of this effect, and does it differ across types of participants?

2 METHOD

2.1 Users

The participants were, and continue to be, recruited using various channels, including different types of customer communications from the health insurer VGZ, social media (Facebook, LinkedIn, Twitter) and Dutch popular magazines. Since its start in January 2011, the Happiness Indicator has attracted 40.495 participants all of whom completed a profile and the Happiness Comparer at least one time. Of these 40.495 participants, 9.091 (22%) subsequently filled out the Happiness Diary at least once. The average happiness of these visitors at first participation was a 6.32 on scale 0-10, which is well below average life satisfaction scores reported in Dutch surveys¹¹; 9 out of 20 people scored their monthly happiness a 6 or lower. This indicates that the Happiness Indicator attracts individuals who are less happy than the average citizen is and probably for this reason would like to work on their happiness.

Most of the users (86%) only participated once; therefore, we could not ascertain whether these users became happier because of using the Happiness Indicator. Consequently, we limited this study to examining the effect of Happiness Indicator use for people who participated twice or more. A total of 5.411 users met this criterion and these participants used the Happiness Indicator for an average of 233 days, measured as the difference between the first day and last day of use, with on average 3 months between participations. Well educated women were overrepresented among the participants considered in this effect study. Further details of the participants are available in Bakker et al. (2015).

2.2 Descriptive Statistics

The means, standard deviations and inter-correlations of the variables used in this effect study are presented on Table 1. These descriptive statistics are based on 13.320 participations by 5.411 users.

Inspection of the means shows that average happiness ‘today’ (6.89) is somewhat higher than retrospective happiness over the last month (6.61). This may mean that participants are more inclined to use the Happiness Indicator on good days and/or that they underestimated their happiness over the preceding month.

[Table 1 about here](#)

2.3 Analysis

In this study, we focused on the feeling of happiness in the past month, as measured using the second question shown in Figure 1. The research question was whether happiness in the past month increases with the repeated use of the Happiness Comparer and the Happiness Diary. As a first test, we assessed whether a participant’s happiness had

¹¹ Average response to the question “How happy would you say you are?” was 7,9 in the Dutch sample of the European Social Survey in 2014.

changed between their first and their last use of the Happiness Indicator, and, if so, by how many points to the positive or negative. As a next step, we performed a more sophisticated analysis taken from econometrics, which allowed us to obtain a better estimate of the size and significance of the effects. A standard reduced-form happiness model was estimated (see also DiTella et al. 2003 and Arampatzi et al. 2015).

$$H_{it} = \alpha_0 + \alpha_1 H_{i(t-1)} + \alpha_2 P_{i(t-1)} + \alpha_3 X_{i(t)} + \mu_i + \varphi_t + \varepsilon_{it},$$

where H is the self-reported happiness over the past month, at participation time t ; P is a set of variables capturing the number of times the participant has used the Happiness Comparer and the Happiness Diary¹²; X is a set of control variables capturing happiness that day, the number of days the participant has already used the Happiness Indicator, and the number of days since the last use; μ_i is a vector of participant fixed effects to control for time-invariant participant characteristics, such as gender, marital status, income, and level of education; and φ_t is a vector of month and year dummies to capture time-related circumstances, such as the weather and economic situation. The lagged dependent variable $H_{i(t-1)}$ is included to allow for adjustment dynamics and to tackle serial correlation and avoid potential omitted variable bias. Please note that we use a *within-person* design, where we look at variation of happiness within a person and not between people.

3 RESULTS

An overview of the observed changes in the last-month' happiness following use of the Happiness Indicator is presented in Figure 7.

[*Figure 7 about here*](#)

3.1 Happiness is changeable

First, we examined whether individual happiness fluctuates over time. This was found to be true. It can be seen from Figure 7 that among the users of the Happiness Diary, only some 30% remained evenly happy and some 20% experienced changes of 2 points or more. The average monthly change was 0.09 point on scale 0-10, that is, about 1% of the possible range.

At first sight, this small change supports the 'set point' theory, which holds that happiness is a stable 'trait' (e.g. Cummins 2010). Yet cumulated over time, such minor monthly changes can result in substantial alterations of happiness, such as these demonstrated in long-term follow-up studies, see for example Headey (2008).

¹² Please note that our Happiness Diary variable is winsorized at the 1% level.

3.2 Happiness increases following repeated use of the Happiness Indicator

We considered whether individuals experienced an increase in monthly happiness following the use of the Happiness Indicator. As we can see from Figure 7, there was more change to the positive than to the negative. This was confirmed using the econometric analysis reported in Table 2. In this analysis, all models were estimated using fixed-effects estimators and cluster robust standard errors. Of the control variables included in the model (Table 1, Column 1), only happiness that day was statistically significant ($b = 0.314$, $SE = 0.016$, $p < 0.01$). Surprisingly, we did not find an effect of happiness of last month in the previous period ($t-1$) on happiness of the last month in the current time period. It should be noted that this effect might be confounded by individual fixed effects and the Nickell bias induced by fixed-effects estimation, discussed in the extended version of this text (Bakker et al. 2015).

3.2.1 No effect of the Happiness Comparer

We examined whether there was an increase in monthly happiness over time because of repeated use of the Happiness Comparer. We observed a positive effect that did not reach statistical significance ($b = 0.008$, $SE = 0.005$, $p = 0.113$; Table 2, Column 2). Just knowing whether comparable users are more or less happy than you are has apparently little influence on change in happiness, at least not on average and for the 3 months period studied here.

3.2.2 Significant effect of the Happiness Diary

We found a significant effect of use of the Happiness Diary ($b = 0.013$, $SE = 0.005$, $p < 0.01$; Table 1, Column 3), even when controlling for use of the Happiness Comparer ($b = 0.014$, $SE = 0.007$, $p < 0.05$; Table 2, Column 4). This effect may be due to the increased awareness of how one spends one's time and how well one feels during daily activities, as well as to the comparison one can make with how similar participants are doing. This latter comparison of one's self with how other similar people feel is likely to provide more clues for making changes in one's way of life than the comparison with average happiness of others discussed above in section 3.2.1.

How strong is this effect of using the Happiness Diary? Using it ten times increased a participant's monthly happiness by approximately 0.14 points on a 0 to 10 scale when all other factors were held constant. However, fewer than 4% of the respondents completed the diary 10 times or more, and the average use was only 2.4 times.

The Happiness Comparer and Happiness Diary cannot be considered as substitutes in terms of their contribution to well-being. The participants who only used the Happiness Comparer and not the Happiness Diary did not benefit more from the Happiness Comparer than the participants who used both tools (Table 2, Column 5).

We found decreasing marginal benefits of using the Happiness Comparer and Happiness Diary. In other words, the effect of repeated participation on monthly happiness decreases

slightly with increasing use of the Happiness Comparer and the Happiness Diary. These interaction effects are shown in Table 3 of Bakker et al. (2015).

[*Table 2 about here*](#)

3.3 Effect is larger among those who initially were the least happy

Further analysis of the use of the Happiness Diary indicated that the effect of use was larger for the participants who were less happy at the first use of the Happiness Indicator (table not shown). The participants who were initially the happiest profited less from participation compared with the participants who were initially the least happy. Using the Happiness Comparer or the Happiness Diary 10 times resulted in a 0.3-point increase the happiness of the people who scored 4 on their first use, whereas on average, no effect was found for people who were relatively happy (7 or higher) at the start.

3.4 No differences in effect across participant types

We examined whether the increase in monthly happiness with repeated participation differed according to a participant's background. We found no differences in the effect of using the Happiness Comparer or the Happiness Diary on happiness across age, gender, income level, and education.

4 DISCUSSION

This first exploration of the effect of using the Happiness Indicator confirmed our expectation that increased awareness of one's own happiness contributes to the likelihood of one finding a more satisfying way of life. The findings give rise to the following questions.

4.1 Causal effect?

Possibly the observed gain in happiness following use of the Happiness Indicator is due to other causes than a participant's greater awareness of their happiness as postulated in section 1.3.1 of this chapter. The following alternative causes could be involved.

4.1.1 Spontaneous recovery from a temporary dip?

Users of the Happiness Indicator are probably occupied with their own happiness to an above-average degree. Would these people have become happier without using the Happiness Indicator? We are familiar with the 'waiting room effect' described in psychotherapy¹³. A part of that effect is seen in spontaneous healing and another part in sharper problem awareness, i.e. there is something wrong with me, and consequent coping. In our case, the problem lies not in sharper awareness, because that is what the

¹³ Waiting for treatment often appears to be conducive to spontaneous healing.

Happiness Indicator aims to promote, but in spontaneous recovery, in this case, overcoming a dip in happiness, one that could have been overcome anyway. We consider two variants of this alternative explanation below.

Difference with observed gains in control groups in effect studies of happiness trainings
In effect studies, this possibility of spontaneous improvement is commonly handled using ‘control groups’, typically randomly assigning part of the applicants to a waiting list or a placebo treatment. The Happiness Indicator does not have such a control group, but we can learn from other studies.

We looked for earlier studies among self-selected participants in wellbeing trainings that involved a control group in which change in happiness was assessed and we subjected these findings to a mini meta-analysis. We used the Bibliography of Happiness¹⁴, which lists some 90 studies on the effects on happiness of individual level interventions on wellbeing, of which 10 were among self-selected participants and had a control group¹⁵. The observed changes in happiness among these controls are reported in table 6 of Bakker et al. (2015). The changes are typically small and mostly negative, the average decline of happiness in these control groups was 3.8% of the possible scale ranges. So, denying treatment to people who seek treatment, lowers these people’s happiness. If spontaneous recovery exists at all, it is apparently an exception rather than the rule.

This means that the observed rise in happiness following use of the Happiness Diary is unlikely to have happened without use of this tool. It can also mean that the observed rise in happiness since start of use was an underestimation of the total effect. Below in section 4.5, we will see that frequent use of the Happiness Diary raised happiness by 1,4% of the scale range. If using this tool also prevented a 3.8% decline in happiness, the net effect is about 5%.

Regression to the mean?

The observed changes in happiness may also be due to random variation, an atypical bad month at baseline might be followed by increased happiness at follow-up. Yet this regression to the mean applies also to an atypical good month at start and both fluctuations balance in the average change in happiness, which is positive as we have seen in section 3.2.

However, such a regression to the mean may be involved in the observed greater gain in happiness made by the initially least happy (cf. section 3.3). It is also plausible that the least happy benefit most from this intervention, as they can win more and are probably more motivated.

¹⁴ Bibliography of Happiness, section Rf02.08 ‘[Psychological training/therapy](#)’

¹⁵ We did not consider studies that rewarded participants with money or course credits

4.1.2 *Response shift?*

It is conceivable that repeated use of the Happiness Indicator led the participants to score themselves higher on the happiness scale even though their happiness remained unchanged. In the literature, this is known as a ‘response shift’. Previous follow-up research into happiness has shown a reverse pattern; happiness was estimated to be lower at the second measurement, apparently because respondents had formed a clearer picture of what happiness is for them (e.g. VanLandingham 2012). Therefore, if response shift is involved at all, it is more likely to repress the happiness rating and thus cause under-estimation of the effect rather than over-estimate it.

4.1.3 *Difference in gains between participants who used and did not use Happiness Diary*

Another way to assess the probability of the above alternative explanations, spontaneous recovery and regression to the mean, is to assess evidence for the expected effect of increased awareness. For that purpose, we compared the gains made by participants who used only the Happiness Comparer, with the gains in happiness made by participants who also used the Happiness Diary. The latter spend more time monitoring their happiness and are thus likely to become more aware of how well they feel. Indeed, we found that use of the Happiness Diary affected happiness more, than use of the Happiness Comparer did (cf. section 3.2) and we also found a stronger effect on happiness, the more often the Happiness Diary was used.

4.2 **Sleeper effect?**

In this study, the average difference between the first and the last use of the Happiness Indicator was 3 months, which means that we observed the short-term effects of using this self-help tool. The long-term effects of use on happiness could be greater, in particular if one gains a greater awareness of one’s happiness, which leads to major life-chances, such as taking another job or divorcing. Such decisions come with considerable delay, and so do the effects of these decisions on happiness, which often are negative in the beginning. The Happiness Indicator is an ongoing project, and we hope to learn more about this topic in future analyses.

4.3 **Effect size**

The observed increase in happiness that resulted from using the Happiness Diary ranged between 0.1 and 0.3 points on a scale of 0-10, i.e., approximately 1,5%. Is this a lot or a little?

One way to answer this question is to compare with effects of real-life changes on happiness. To this end, we scanned the research literature for observed changes in happiness following major life events over periods of about a year. The best comparable findings are presented in Figure 8. Although the effect of using the Happiness Diary can be considered modest compared with these real-life changes, it is a relatively easy road to take in the pursuit of happiness.

As noted above in section 4.1.1, use of the Happiness Indicator may also have prevented a bigger decline in happiness in this group of people seeking to improve their happiness. Together the

prevented loss and the achieved gain amount to some 5% of the scale range, which is substantial and equals the effect of getting married.

[Figure 8 about here](#)

4.4 Use of the Happiness Indicator by colleagues

We welcome use of the Happiness Indicator technique by colleague researchers and practitioners. Now that the system has been developed, large-scale applications are possible at low cost. ‘Satellite projects’ will run on the same server at Erasmus University. Variants tailored to specific interest can be made, if a common core of variables is maintained. Data will be added to a common pool, which all projects can use, among other things, for comparison. For further information, please go to https://www.eur.nl/sites/corporate/files/HappinessIndicator_SatelliteProjects_Prospectus2016.pdf

5 CONCLUSION

This first study confirms the expectation that use of the Happiness Indicator leads to an increase in happiness, especially when the Happiness Diary is used repeatedly. The effect of this intervention is positive but modest.

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Figure 1
Questions about how happy the user feels

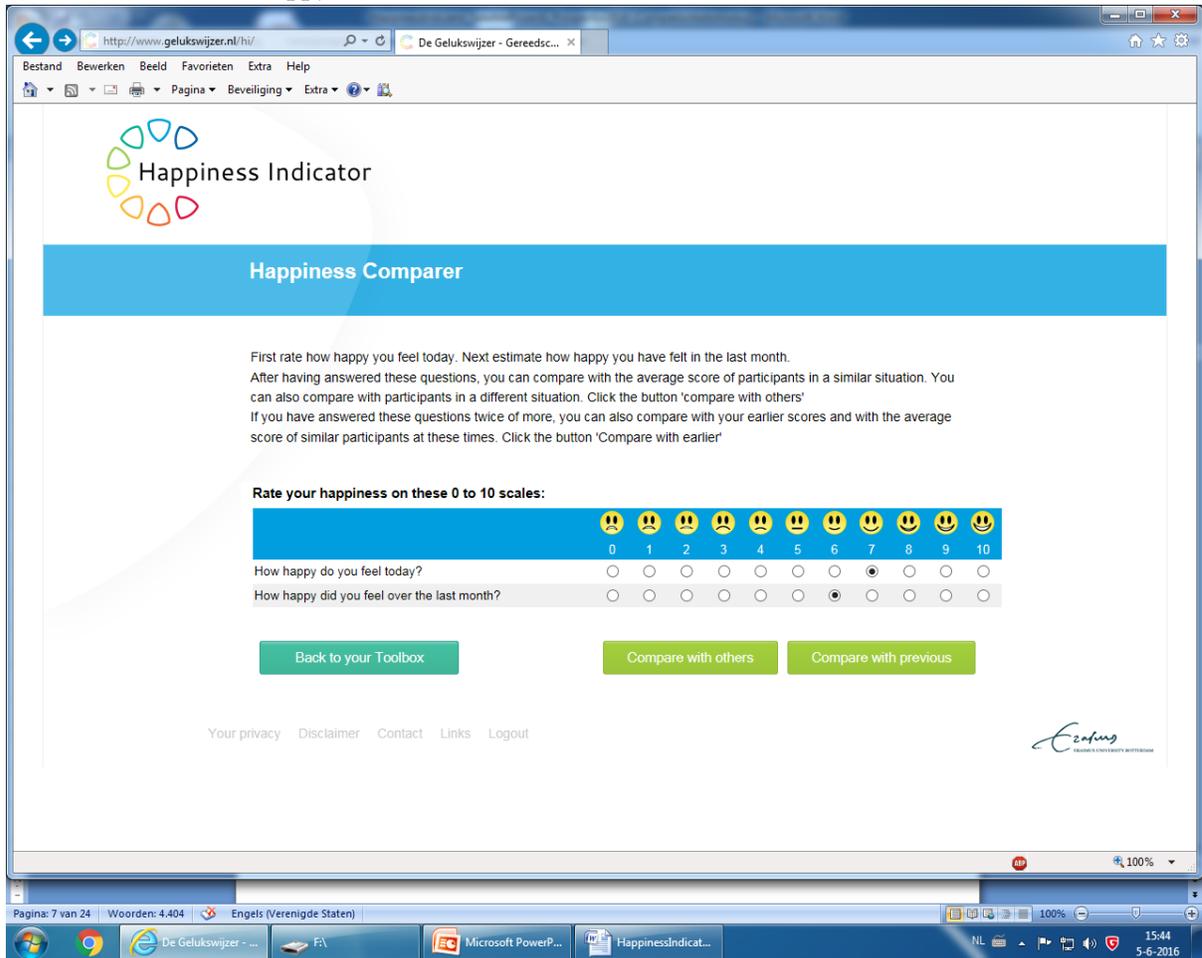


Figure 2

The user's happiness compared with the happiness of other users

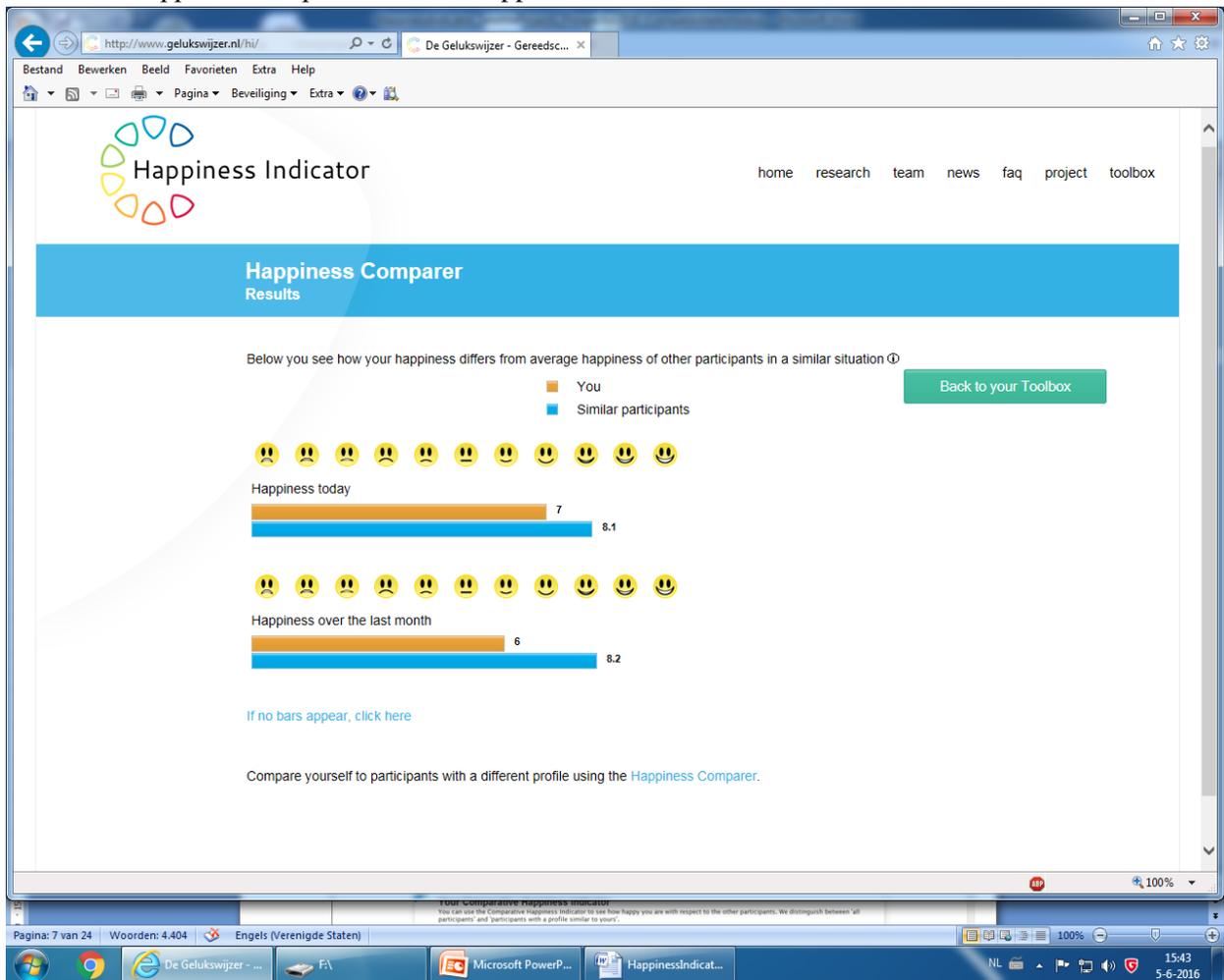


Figure 3
Example of a comparison over time

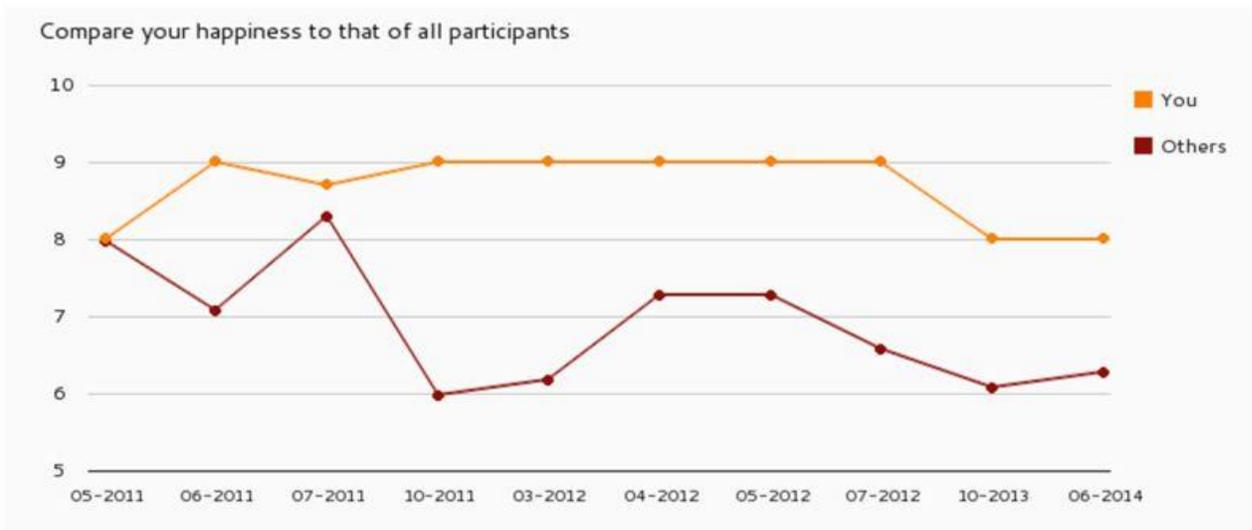


Figure 4:
Example of a diary

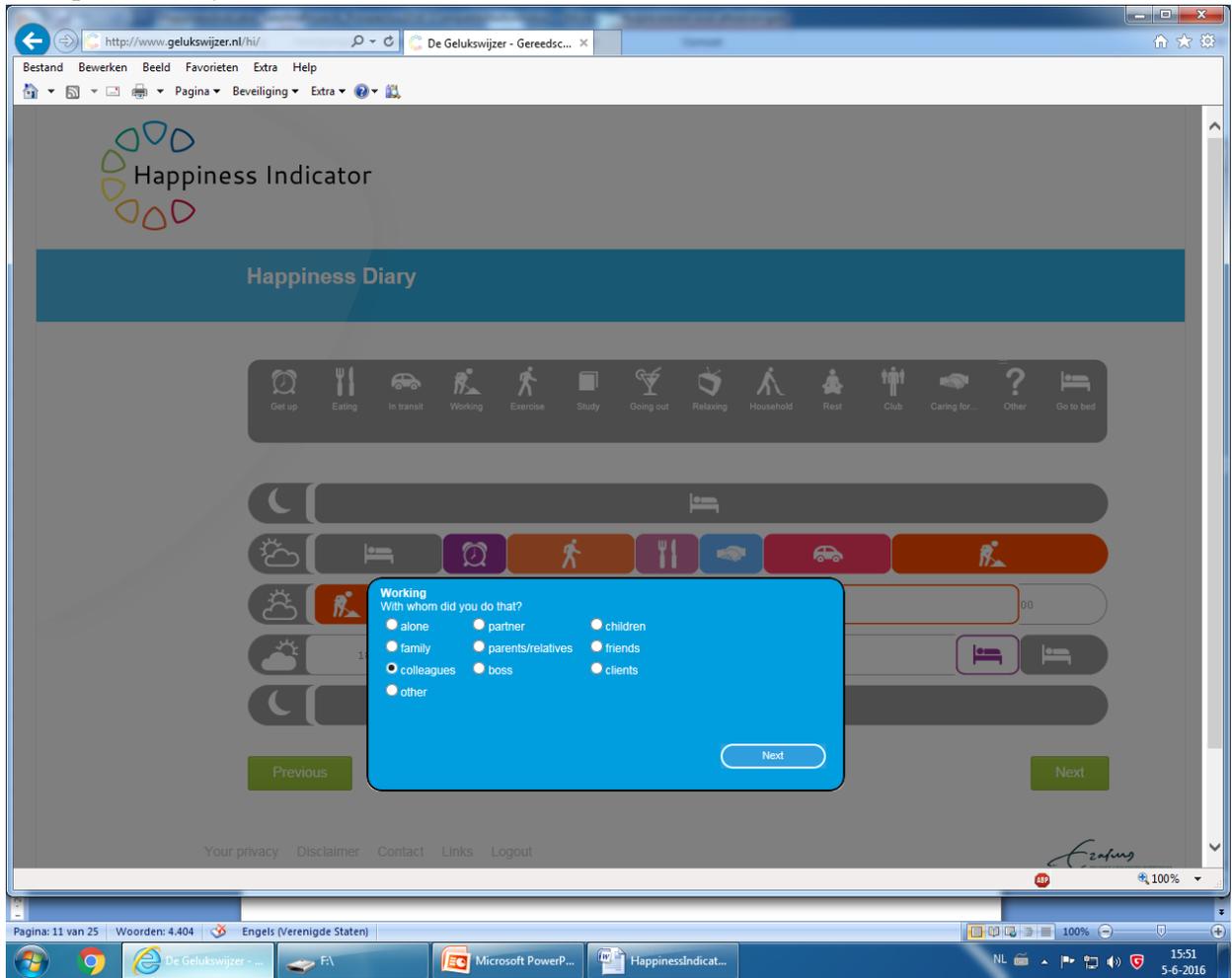


Figure 5
Rating of how happy the user felt during each activity

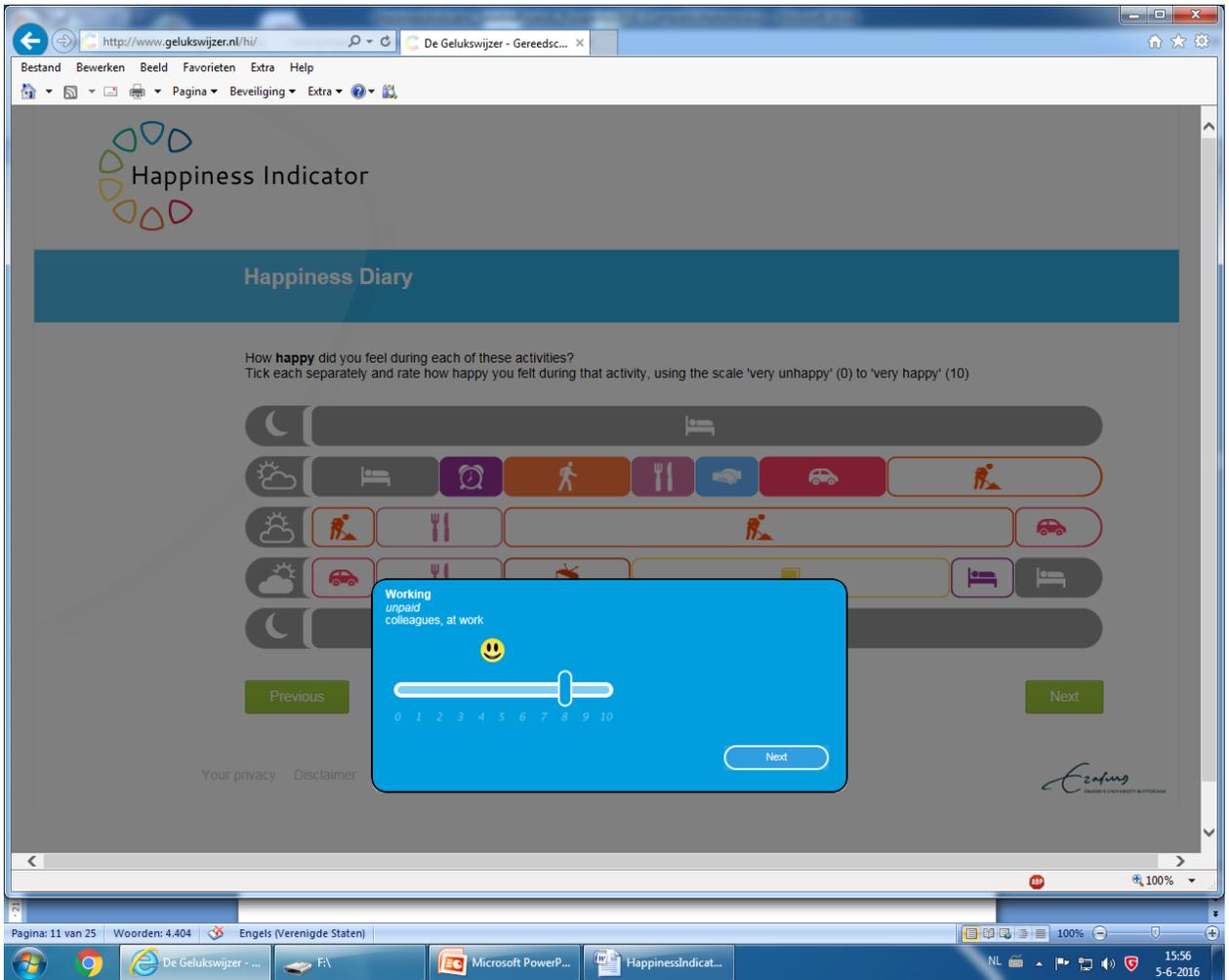


Figure 6

Example of a comparison of a user's happiness profile with that of similar people

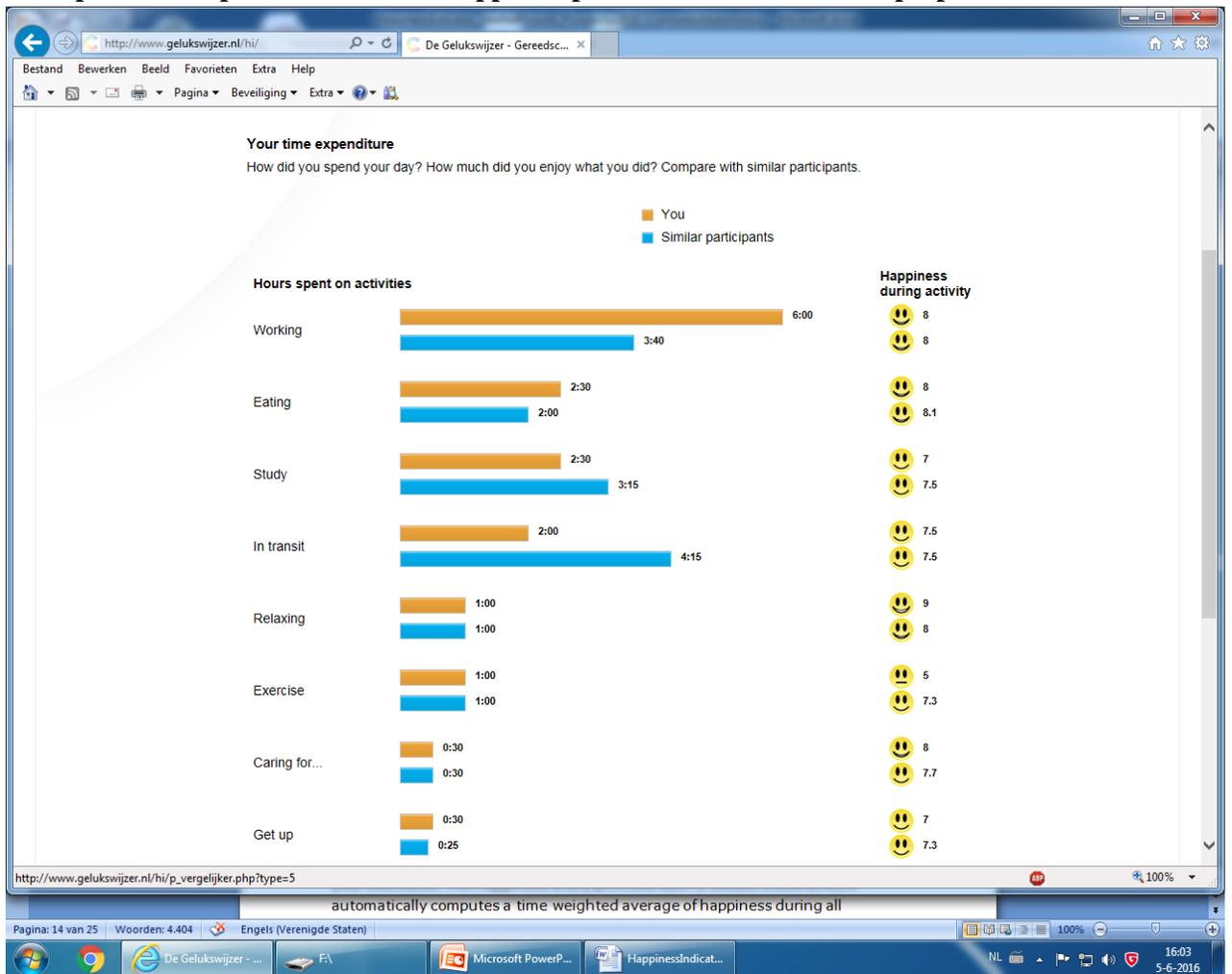
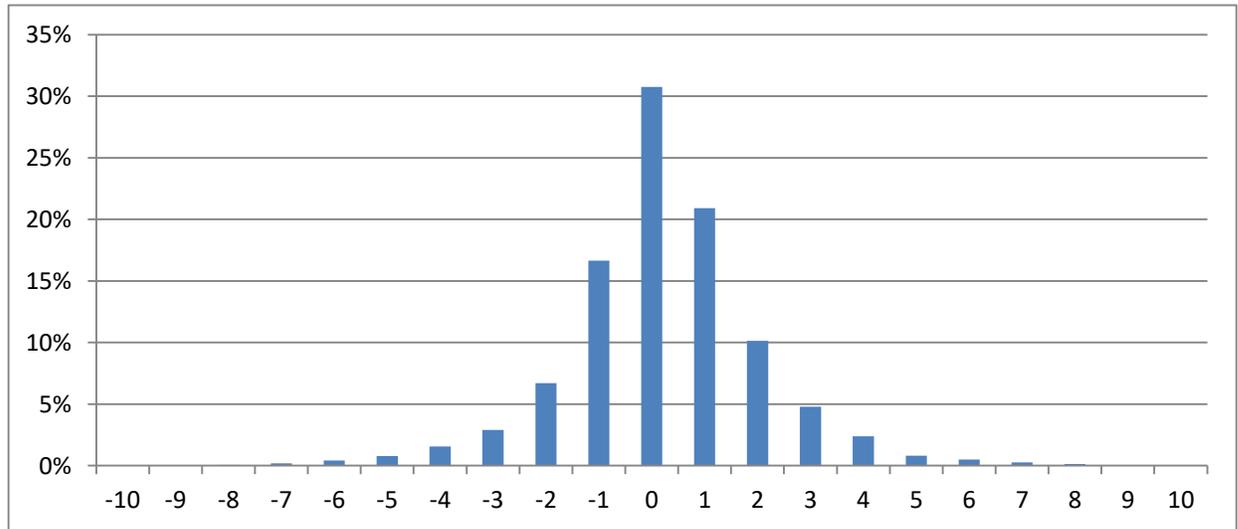


Figure 7

% change in last month's happiness between first and last use of the Happiness Diary

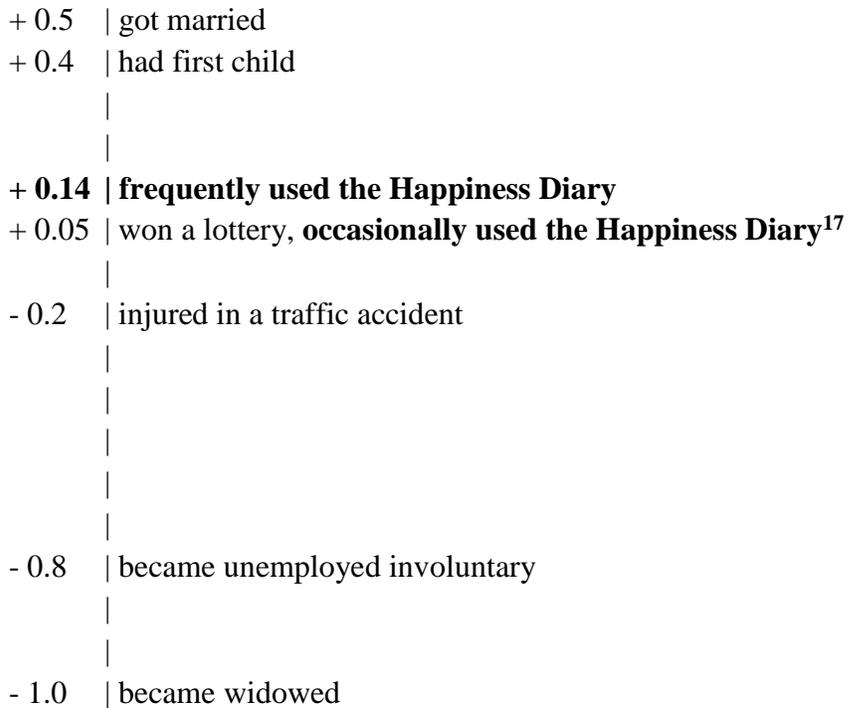


Horizontal: Change happiness in points on 0-10 scale.

Vertical: % of participants who went through a change of that size

Figure 8

Effects of the Happiness Indicator and specific life events on happiness, measured using a 0-10 scale¹⁶



¹⁶ References to the publications in which these effect sizes were reported in Bakker et al. (2015)

¹⁷ This study

Table 1

Descriptive statistics and correlation matrix of most important variables in the analysis

	Mean	SD	1	2	3	4	5	6	7
1. Happiness Last Month	6.61	1.68	1.00						
2. Happiness Today	6.89	1.64	0.64	1.00					
3. Times Comparer Used	4.29	5.44	0.10	0.07	1.00				
4. Times Diary Used	2.91	5.60	0.11	0.07	0.68	1.00			
5. Number of Days Participating	93.31	198.3	0.04	0.04	0.24	0.01	1.00		
6. Days since Last Participation	90.24	177.4	-0.01	0.01	-0.15	-0.14	0.68	1.00	
7. Change Happiness Last Month	0.09	1.48	0.41	0.20	-0.03	-0.02	-0.03	-0.01	1.00

Table 2

Determinants of Happiness Last Month – Fixed Effects Estimation

	(1) Only Control Variables	(2) + Happiness Comparer	(3) + Happiness Diary	(4) Full Model	(5) + No diary use Effect
Times Happiness Comparer Used t_{-1}		0.008 (0.005)		-0.001 (0.007)	0.001 (0.008)
Times Happiness Comparer Used t_{-1} x No Diary Used					-0.010 (0.012)
Times Happiness Diary Used t_{-1}			0.013*** (0.005)	0.014** (0.007)	0.012* (0.007)
Happiness Last Month t_{-1}	0.024 (0.020)	0.023 (0.020)	0.022 (0.019)	0.022 (0.020)	0.022 (0.020)
Days Using Happiness Indicator (x100)	0.156 (0.146)	0.126 (0.149)	0.119 (0.148)	0.121 (0.150)	0.123 (0.149)
Days Since Last Use (x100)	-0.020 (0.014)	-0.012 (0.015)	-0.012 (0.015)	-0.013 (0.015)	-0.014 (0.015)
Happiness Today	0.314*** (0.016)	0.314*** (0.016)	0.314*** (0.016)	0.314*** (0.016)	0.314*** (0.016)
Respondent FE	Yes	Yes	Yes	Yes	Yes
Month-Year FE	Yes	Yes	Yes	Yes	Yes
Observations	13320	13320	13320	13320	13320
Number of Respondents	5411	5411	5411	5411	5411
Within R-Square	0.15	0.15	0.15	0.15	0.15
Between R-Square	0.26	0.29	0.30	0.29	0.29
Overall R-Square	0.27	0.29	0.30	0.29	0.29

Cluster-robust standard errors in parentheses ***p<0.01, ** p<0.05, * p<0.10.

FE = Fixed Effects. R = explained variance.