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Do-it-yourself

An online positive psychology intervention to promote positive emotions, self-efficacy, and engagement at work

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Abstract

Purpose – The purpose of this paper is to investigate the effects of an individual oriented positive psychology intervention on positive emotions, self-efficacy, and work engagement.

Design/methodology/approach – The online self-enhancement intervention program consists of three types of online assignments: happiness assignments, goal setting assignments, and resource building assignments. The authors expected the self-enhancement intervention group to show a significantly stronger increase in the outcome variables compared to a self-monitoring control group.

Findings – The results revealed that the self-enhancement group showed a stronger increase in positive emotions and self-efficacy compared to the control group, but not on engagement. Additional analyses showed that the positive effects of the self-enhancement intervention are present for employees who are initially low in engagement, but not for those medium or high in engagement.

Research limitations/implications – The study was conducted via a semi-public web site. The participants were all working in different organizations throughout the country and did not have the advantage of having the support of their supervisors and colleagues who were participating in a similar intervention.

Practical implications – Positive psychology interventions should target employees who are low in engagement, because they have the most unused potential and therefore have more to gain.

Originality/value – Traditionally speaking, individual interventions are carried out when something is wrong or malfunctioning, and with the sole objective of fixing it. The intervention presented in this paper includes the entire workforce, because it is based on the belief that improving employee well-being is relevant for all.

Keywords Positive psychology intervention, Positive emotions, Self-efficacy, Work engagement, Self-enhancement

Paper type Research paper



Introduction

Organizations are struggling to survive, and more than ever before, they are dependent on the productiveness of their employees. Research has shown that mentally healthy employees are more productive than those who are not (Harter *et al.*, 2002).

The emergence of positive organizational behavior (Bakker and Schaufeli, 2008; Luthans, 2002) has paved the way for individual interventions that are aimed at enhancing well-being at work. The question is, however, how exactly can this be accomplished? Simple as this question might seem at first glance, the answer is far from self-evident. Traditionally speaking, individual interventions are based on the medical disease model. This means that interventions are carried out when something is wrong or malfunctioning, and with the sole objective of fixing it. However, soon the importance of prevention was discovered in order to reduce the risk of developing occupational disease: after all, preventing disease from occurring is more efficient than curing it (Seligman *et al.*, 1999). Currently, it seems that after the shift in focus from curation to prevention, we are entering into a second paradigm shift. Namely, from prevention to “amplition”, after the Latin “amplio” meaning to enlarge, increase, or magnify (Ouweneel *et al.*, 2009). In contrast to curing and prevention, amplition is not based on the medical disease model – fix what is broken or what is about to break – but on the principle of improvement. Amplition is about promoting and improving employee well-being. In a way, this is a logical next step to widen the scope of interventions because curing or treatment is – by definition – restricted to employees who suffer from an identified disease, whereas prevention is restricted to those who potentially may suffer from it. Amplition goes one step beyond to include the entire workforce, because it is based on the belief that improving employee health and well-being is relevant for all. Indeed, positive psychology interventions have been shown to have a positive effect on well-being in non-clinical samples (for a meta-analysis, Sin and Lyubomirsky, 2009). In the current article, we describe and evaluate the effect of a positive psychology intervention that is focused on amplition, i.e. that is focused on enhancing individual well-being at work.

Individual well-being at work

We propose work engagement as a suitable well-being construct in testing the effects of a work-related intervention, since it is both affective and cognitive in nature similarly to general well-being (Diener *et al.*, 1999). Work engagement is particularly interesting in that it is an active measure of well-being instead of a passive measure, like job satisfaction, that is characterized by satiation (Warr, 2007). Hence *et al.* (2008) argue that engaged employees are activated towards behaving positively and performing better in the workplace. Work engagement is defined as “a positive, fulfilling, and work-related state of mind that is characterized by vigor, dedication and absorption” (Schaufeli and Bakker, 2004, p. 295). Vigorous employees experience high levels of energy at work and motivation to invest effort into work. They are dedicated by being strongly involved into work and experience feelings of pride and enthusiasm about their work. Finally, absorbed employees are immersed in and concentrated on work, and they feel that time is flying at work.

Though ample research has established the role of work characteristics as main initiators of the process that leads to work engagement (Bakker and Demerouti, 2007), it has also been suggested that positive individual characteristics are crucial antecedents of employee well-being (Judge *et al.*, 2004, 2005). Indeed, longitudinal research found that individual characteristics, like optimism and self-efficacy, are strong predictors of engagement too (Avey *et al.*, 2010; Ouweneel *et al.*, 2011; Xanthopoulou *et al.*, 2009). Especially, self-efficacy has been found to be strongly related to engagement (Salanova *et al.*, 2011; Vera *et al.*, (n.d)). Bandura’s social cognitive theory (SCT) defines

self-efficacy as the “[...] belief in one’s capabilities to organize and execute the course of action required to produce given attainments” (Bandura, 1997, p. 3). Self-efficacious employees are likely to be engaged at work because self-efficacy leads to a greater willingness to spend additional energy and effort on completing a task and hence to more task involvement and absorption (Schaufeli and Salanova, 2007). Efficacious individuals are more likely to regulate their motivation by setting challenging goals for themselves (Diseth, 2011), and are therefore more likely to be engaged. Obviously, goal setting and planning may contribute to engagement through goal attainment. Attainment, though, is not a necessary precondition linking goal setting and planning to engagement. Progress towards goals rather than attainment seems to be the key to engagement. People feel good when they think about achieving desirable future outcomes. For example, some studies demonstrated that having meaningful goals and plans to pursue those goals is likely to result in higher levels of engagement in study tasks (MacLeod *et al.*, 2008; Sansone and Thoman, 2006).

Next to self-efficacy, we expect the experience of positive emotions to be an important predictor of work engagement. Work-related positive emotions are described as relatively intense, short-lived affective experiences that are focused on specific objects or situations at work (Gray and Watson, 2002). Whereas positive emotions are immediate responses to the work environment, work engagement is relatively more enduring in nature (Schaufeli *et al.*, 2002). Therefore, it is plausible to assume that short-term positive emotions precede work engagement (Schaufeli and Van Rhenen, 2006). Furthermore, positive emotions are likely to have an effect on work engagement because they facilitate approach behavior, which prompts individuals to set goals and to be engaged in attaining these goals and work-related activities (Cacioppo *et al.*, 1999).

Fredrickson (1998) posits that positive emotions signal the presence of optimal well-being. Yet, she also states that positive emotions not only make people feel good at a particular point in time, they may also produce future well-being. According to Broaden-and-Build (B&B) theory (Fredrickson, 1998), positive emotions broaden thought-action repertoires by fostering exploratory behaviors that create learning opportunities and goal achievement, and help to build enduring resources. Thus, by experiencing positive emotions and engaging in concomitant exploratory behaviors, people enhance their resources, for example self-efficacy. As a result, people experience a more enduring positive state of well-being such as work engagement. Although we do not test the relationships between positive emotions, self-efficacy, and work engagement – we cannot confirm these relationships with our current study design – we theorize that intervening on positive emotions and self-efficacy could also enhance the level of work engagement. In sum, we investigate the effects of our intervention not only on work engagement, but also on positive emotions and self-efficacy as a personal resource.

To date, positive interventions were mostly conducted in student samples (MacLeod *et al.*, 2008). In contrast, we know of only a few positive work-related interventions that generated promising results. For example, Demerouti *et al.* (2011) found that a positive intervention focusing on enhancing personal effectiveness had a positive effect on several personal resources, such as self-efficacy. A Finnish study showed that employees benefitted from a career management intervention as regards their level of work engagement (Vuori *et al.*, 2012). Finally, an online intervention in which participants were guided to set and achieve personal work-related goals, resulted in enhanced levels of personal resources (e.g. hope and self-efficacy) among

employees (Luthans *et al.*, 2008). The present paper reports on the effects of a work-related positive psychology intervention that was designed according to the principles advocated in the general literature on positive psychology (Lyubomirsky *et al.*, 2005).

Effective individual positive interventions

In our intervention, we focus on what the individual employee can do in order to flourish and thrive at work. This does not mean we do not acknowledge the role of the organization in providing an appropriate and challenging work environment for employees in order to enhance their well-being. Our individual focus is in line with the concept of empowerment, a principle by which employees are intrinsically motivated to take initiative and make decisions to solve problems at work and improve their performance (Spreitzer, 1995). Empowerment is based on the idea that providing employees with resources and opportunities for development, as well holding them responsible and accountable for outcomes of their own actions, leads them to adopt an active orientation toward their work and contribute to their own resources and engagement (Spreitzer, 1995).

In line with this, research has shown that individuals are able to change their well-being levels by means of intentional activities. Despite the fact that employee's well-being is partly determined by genetic and situational influences, employees may improve their well-being by volitional actions (Lyubomirsky *et al.*, 2005). For employees to improve their own work-related well-being by means of an intervention program:

- (1) *They should have selected themselves in engaging in certain activities (i.e. motivated cognition).* When employees choose for a certain intervention program, it implies that they are motivated to engage in this program. They deliberately choose to participate and are aware of the objective of the program, namely to enhance their level of well-being (Lyubomirsky *et al.*, 2011). Self-selection (Fordyce, 1977; Seligman *et al.*, 2005) has been shown to be far more effective than random assignment of participants to either the intervention- or control condition (Sheldon and Lyubomirsky, 2006). A meta-analysis of the effectiveness of positive psychology interventions indeed confirmed that self-selected participants showed a stronger increase in their well-being than non-self-selected participants (Sin and Lyubomirsky, 2009). This is probably the case because you need to be extra motivated to benefit from positive interventions when there is no problem at hand; nothing is broken and is in need to be fixed.
- (2) *The activities should have been validated regarding their effectiveness.* A second important point is that the intervention should contain validated content (Lyubomirsky *et al.*, 2011), i.e. evidence-based methods (Seligman *et al.*, 2005). Although this point may seem evident, quite some self-help interventions are not designed based upon theory and/or empirical evidence. Obviously, instead of only believing the intervention will help you in feeling better at work, the program also should consist of activities that have been proven to be effective in enhancing well-being. As Lyubomirsky *et al.* (2011, p. 393) state: "[...] people need both a "will" and a "way" to gain maximum benefits from a happiness intervention". Whereas the "way" refers to the content of the program, the "will" refers to the motivation to participate in the intervention and the effort the participants put into participating.
- (3) *The employee should actively participate in the entire intervention program.* Finally, it is essential that participants actively participate in an

intervention program. Choosing to engage in an intervention is a good starting point, but not the whole story. The more the participants exert sustained effort throughout the intervention, the higher the probability that they will enhance their well-being in the end (Lyubomirsky *et al.*, 2011). Sustained effort in intervention activities (i.e. assignments) is more likely when activities and the related work-goals are congruent with the internal values and hopes of the participants, in other words, when the activities and goals are self-concordant (Sheldon and Elliot, 1999). A self-concordant activity entails that it contains personal meaning for the participants. Personal meaning is of extra importance to ensure participants to invest effort into the intervention since there is no pressing problem to guarantee this. And of course, this is more likely to be the case when employees voluntarily decided to participate in the intervention program (i.e. self-selection).

Content of the intervention

To enhance participants' levels of positive emotions, self-efficacy, and work engagement, we designed an intervention program according to the three principles mentioned above. Studies have shown that online instruction during an intervention program may be as effective as face-to-face classroom instruction (Luthans *et al.*, 2008). Especially, when it comes to learning and individual development, the web-based approach is more effective (Sitzmann *et al.*, 2006). This is mainly because participants can keep their own pace compared to face-to-face group training. Also, web-based interventions are more cost-efficient and are flexible in nature as assignments can be conducted anywhere and everywhere (Tate and Zabinski, 2004). So, we designed an online program consisting of three types of assignments:

- (1) *Happiness assignments*. For example, participants were asked to act kindly at work and to report on the positive reactions this evoked, to keep a positive diary (Seligman *et al.*, 2005), and to recapitulate happy memories from work (Bryant *et al.*, 2005). This way, participants focused on a positive past and on a positive here and now at work. Based on previous studies, we expect that these positive experiences will result in higher levels of positive emotions.
- (2) *Goal setting assignments*. Participants were asked to set personal work-related goals based on individual feedback of an online survey (see Method section). For example, when supervisory support was low and this mattered to the participant, a goal could be to ask one's supervisor for performance feedback. By means of online guidelines, an e-coach and tips from other participants, the participant was supported in formulating steps toward the goal and trying out several of these steps in the actual work environment. Progress was monitored and successes were celebrated by congratulating and complementing the participants. By making progress, i.e. experiencing mastery (Bandura, 1997), and celebrating this, we expected to increase participants' self-efficacy and positive emotions (Brunstein, 1993).
- (3) *Resource building assignments*. These assignments were designed to cope with future stressful events at work. For example, obstacles in reaching your personal goals and ways to overcome them were addressed. The online program also taught participants skills to ask for help and social support.

In addition, possible setbacks at work were toned down and strategies were discussed on how to handle them. We expected that these assignments would make participants more confident in their capabilities (i.e. self-efficacy) to handle any future adversities at work (Schunk, 1990; Vuori *et al.*, 2012).

As is previously theorized, positive emotions and self-efficacy are likely to be related to work engagement over time. Therefore, we expect that a program made up of these three types of assignments not only enhances the level of positive emotions and self-efficacy, but also has the potential to increase participants' levels of work engagement. In addition, Van Berkel *et al.* (2011) state that goal setting activities and happiness assignments are presumed to relate to work engagement directly.

Overview and hypotheses

The participants of the online positive psychology intervention (i.e. self-enhancement group) were compared to a group of participants who did not participate in the intervention but only received a feedback report on their work-related well-being (i.e. self-monitoring group):

- H1. Participants in the self-enhancement group show a significantly stronger increase in positive emotions compared to employees participating in the self-monitoring group.
- H2. Participants in the self-enhancement group show a significantly stronger increase in self-efficacy levels compared to participants in the self-monitoring group.
- H3. Employees who participated in the self-enhancement intervention show a significantly stronger increase in work engagement compared to employees who participated in the self-monitoring group.

Method

Procedure self-enhancement group

Participants of the self-enhancement and self-monitoring group were recruited via two separate interactive web sites. In the self-enhancement group, participants were asked to fill in an online questionnaire (pre-measurement: Time 1 (T1)) and they received an automatically generated feedback report on their results in return. This report was then used as input for the online intervention program that took eight weeks. At the end of the questionnaire, participants were asked for their e-mail address in case they were willing to fill in the questionnaire again after the intervention, eight weeks later. At the end of the Introduction section, the intervention is described in general terms. More specifically, participants were given three assignments per week – except for the final week when four assignments were given – at predetermined time points with time lags of one, two or three days depending on the size of the previous assignment. In total, the intervention consisted of 25 assignments focused either on increasing positive experiences at work (ten assignments), on goal setting (ten assignments) or resource building at work (five assignments). The assignments are shortly described in Table I. The assignments were mostly a combination of watching a movie clip, describing something on paper, and actually conducting particular behavior in the workplace. Next to the individual assignments, participants could log on to a digital forum on which they could share experiences with other participants and an e-coach.

Weeks	Type of assignment	Short description
1	Goal setting Happiness Resource building	Describing your personal goals based on the first questionnaire Committing acts of kindness at work Getting aware of possible obstacles on the road to your personal goals
2	Goal setting Goal setting Goal setting	Getting aware of the influence you have on your (working) environment Creating an action plan to achieve your personal goals Further developing the action plan
3	Resource building Happiness Resource building	Organizing support at work for achieving your goals Counting your blessings (at work) Preparing yourself in case you have a setback on the road to achieving your goals
4	Happiness Resource building Goal setting	Thinking positively about work characteristics or events at work Pinpoint your own pitfalls which might work against you achieving your goals Convincing others at work of your goals in order to involve them in your action plan
5	Goal setting Resource building Happiness	Take action in your own work environment in order to get closer to your goals (e.g. make an appointment with your supervisor) Dealing with the actual setbacks you encountered at work Teaching yourself to act kind at work
6	Happiness Happiness Happiness	Getting aware of the positive effects of the earlier conducted happiness assignments Giving compliments to others (colleagues or participants) Bringing up happy memories when you were in flow
7	Goal setting Happiness Happiness	Evaluating the progress you made towards your goals Learning about what motivates your colleagues (getting positive inspiration from others) Taking mini-holidays: planning small breaks at work
8	Goal setting Goal setting Goal setting Happiness	Assessing the progress you made: what is still left to do? Making plans for the future: what is next? Creating an action plan to achieve goals in the future Displaying gratitude towards yourself and others who helped you achieve your goals

Table I.
Descriptions of the
self-enhancement
intervention assignments

After the intervention, participants were invited via e-mail to fill in a follow-up questionnaire (post-measurement: Time 2 (T2)).

Procedure self-monitoring group

As stated before, participants of the self-monitoring group were recruited via an interactive web site. In the self-monitoring group, participants were invited to fill in a similar questionnaire and received a feedback report – similar to the self-enhancement group – in return (pre-control measurement: T1). At the end of the questionnaire, participants were asked for their e-mail address in case they were willing to fill in the questionnaire again at a later occasion. These e-mail addresses were then used to send the participants a follow up online questionnaire two months

later (post-control measurement: T2). The participants of the self-monitoring group were not given any assignments in between of the two measurements.

Participants

At the pre-measurement, 878 participants of the self-enhancement group filled in the questionnaire, at the post-measurement 158 participants filled in the questionnaire (T1-T2 dropout of 82 percent). Of these 158 participants, 86 participants completed the intervention (intervention dropout of 46 percent). Of the self-monitoring group 1,330 participants filled in the questionnaire at the pre-measurement, and 225 filled in the same questionnaire at the post-control measurement (T1-T2 dropout of 83 percent). Figure 1 for the flow of participants.

With regard to the self-enhancement group and their T1-T2 dropout, independent samples *t*-test revealed that the dropout group did not differ significantly from the panel group with regard to age[1]. In addition, χ^2 -tests revealed that the dropout and panel group did not differ as regards level of education, or gender. Independent samples *t*-tests further revealed that the dropout group and the panel group differed significantly as regards the T1 measurement of the outcome variables, namely positive emotions ($M = 3.17$ versus $M = 3.35$; $t(876) = -2.77$, $p = 0.006$), self-efficacy ($M = 3.50$ versus $M = 3.64$; $t(876) = -2.75$, $p = 0.006$), and work engagement ($M = 2.82$ versus $M = 3.19$; $t(217.82) = -3.41$, $p = 0.001$). The panel group scored significantly higher than the dropout group on all T1 measurements of the research variables.

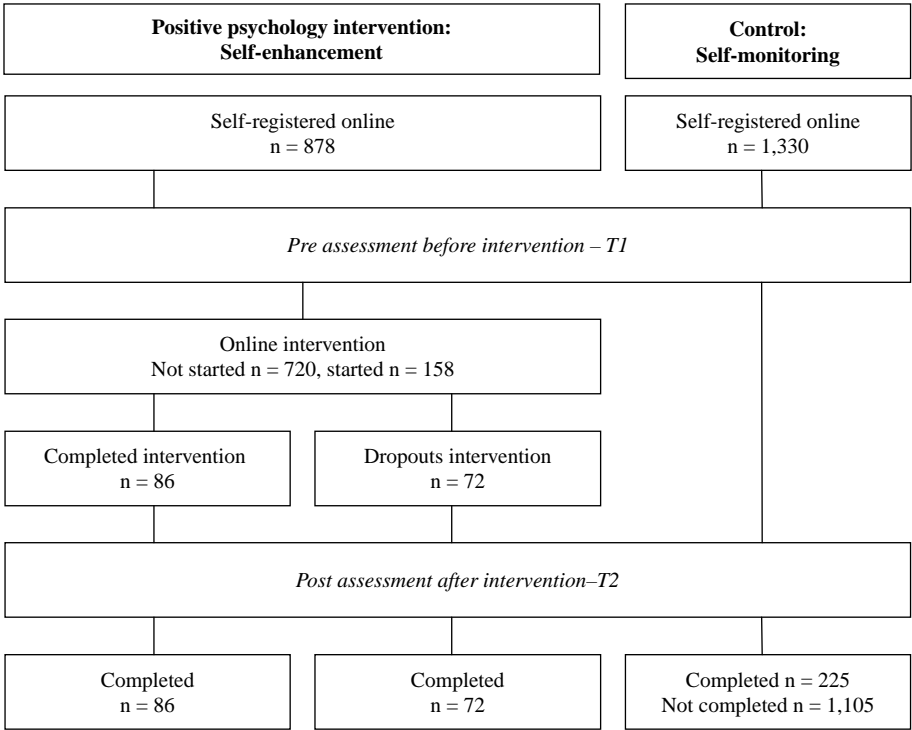


Figure 1.
Flow of participants
in the intervention
(self-enhancement)
group and control
(self-monitoring) group

Moreover, it is important to note that the intervention dropout of the self-enhancement group was selective with regard to the outcome variables as well. Independent samples *t*-tests revealed that dropouts scored lower on positive emotions ($M = 3.23$ versus $M = 3.45$), self-efficacy ($M = 3.54$ versus $M = 3.74$), and work engagement ($M = 2.98$ versus $M = 3.36$). Although only the difference in self-efficacy ($t(156) = 2.38, p = 0.019$) between the dropouts and the participants who completed the intervention was significant, the difference in positive emotions ($t(156) = 1.83, p = 0.069$) and work engagement ($t(156) = 1.88, p = 0.062$) also nearly reached significance. Possible selection effects are important in this type of research, so we will elaborate on this in the Discussion section. Moreover, with regard to demographics, the dropouts significantly differed from the final intervention group in age, gender, and educational level. Dropouts were younger, more often female, and lower educated relatively to those who finished the intervention. Dropouts of the self-enhancement intervention were not incorporated in the analyses since this group was too diverse; participants who dropped out could either have stopped during the first assignment or after having performed for example half of the assignments. For this reason, the scores of the drop-out group are difficult to interpret. Moreover, the drop-out group was too small ($n = 72$) to split the group out in specific subgroups.

With regard to the self-monitoring group, independent samples *t*-test revealed that the T1-T2 dropout group differed significantly from the panel group with regard to age. In addition, χ^2 -tests revealed that the dropout and panel group also differed as regards levels of education. Younger and lower educated participants were more likely to drop out. However, the difference in gender was not significant. Independent samples *t*-tests further revealed that the dropout group and the panel group did not differ as regards the T1 measurement of the outcome variables, namely positive emotions ($M = 3.51$ versus $M = 3.42$; $t(1,328) = 1.78, p = 0.075$), self-efficacy ($M = 3.68$ versus $M = 3.66$; $t(1,328) = 0.30, p = 0.761$), and work engagement ($M = 3.12$ versus $M = 3.20$; $t(1,328) = 0.94, p = 0.345$).

The final self-enhancement and self-monitoring panel groups appeared to be rather similar with regard to demographics. The mean age of the participants of the self-enhancement group was 46.8 years ($SD = 10.0$) versus 46.0 years ($SD = 10.2$) of the self-monitoring group. Of the self-enhancement group, 58.1 percent was male versus 52.4 percent of the self-monitoring group. Only with reference to educational level it was obvious that the self-monitoring group is more highly educated than the self-enhancement group. Of the self-enhancement group, only 29.1 percent had at least a university degree, whereas in the self-monitoring group 43.6 percent had at least a university degree (for difference tests, see Preliminary analyses). Tests to see whether the self-enhancement and self-monitoring group differed significantly with regard to demographics are described in the Preliminary results section.

Measures

Positive emotions were assessed using the positive items of the job-related affective well-being scale (JAWS; Van Katwyk *et al.*, 2000; shortened to six items by Schaufeli and Van Rhenen, 2006). A sample item is "For the past month, my work made me feel inspired". The participants answered using a five-point Likert scale (1 – (almost) never, 5 – (almost) always). The reliability was good ($\alpha_{T1}: 0.78, \alpha_{T2}: 0.79$).

Self-efficacy was assessed with a five-item scale that was self-constructed following Bandura's (2012) recommendations, in that we applied the scale to an

occupational setting. An example item is: "I can always manage to solve difficult problems at work if I try hard enough". The items were scored on a six-point Likert scale (1 – strongly disagree, 6 – strongly agree). The reliability of the scale was good (α_{T1} : 0.85, α_{T2} : 0.86).

Work engagement was assessed with the nine-item version of the Utrecht work engagement scale (UWES; Schaufeli *et al.*, 2006) to measure work engagement. A sample item is "I am proud of the work that I do". All items were scored on a seven-point Likert scale (0 – never, 6 – always). The reliability was very good (α_{T1} : 0.93, α_{T2} : 0.94).

Data analyses

By means of independent samples *t*-tests, we checked whether participants differed with regard to the outcome variables prior to the interventions. We also conducted an independent samples *t*-test to check for the possible differences in age. We performed χ^2 -tests to check for possible gender and education level differences between the groups. To test our hypotheses, we carried out 2 (time: pre-(T1) and post-(T2) measurement) \times 2 (group: self-enhancement and self-monitoring) repeated measures (multivariate) analyses of variances (RM-(M)ANOVA's), with time as a within-subject factor, and group as a between-subject factor. Subsequently, we conducted paired samples *t*-tests in case of main effects of time to check the differences within groups. In case of a main effect of group, we conducted independent samples *t*-tests to see whether the separate group means significantly differed within time points on the outcome variables.

Results

Preliminary analyses

Independent samples *t*-test revealed that the self-enhancement group and self-monitoring group did not differ with regard to age ($t(309) = 0.59$, $p = 0.56$). In addition, χ^2 -tests revealed that the two groups did not differ as regards gender ($\chi^2(1) = 0.81$, $p = 0.37$), whereas, the difference in level of education between the two groups was significant ($\chi^2(5) = 17.01$, $p = 0.04$). However, regression analyses revealed that educational level did not have a significant effect on T1 positive emotions ($F(1, 309) = 1.45$, $p = 0.23$), self-efficacy ($F(1, 309) = 3.01$, $p = 0.08$), and work engagement ($F(1, 309) = 0.14$, $p = 0.71$). Therefore, demographics were excluded from further analyses. In addition, independent samples *t*-tests on the T1 measurement of the outcome variables revealed that the self-enhancement group and the self-monitoring group did not differ as regards positive emotions ($M = 3.45$ versus $M = 3.42$; $t(309) = 0.35$, $p = 0.73$), self-efficacy ($M = 3.74$ versus $M = 3.66$; $t(309) = 1.15$, $p = 0.25$), and work engagement ($M = 3.36$ versus $M = 3.12$; $t(309) = 1.57$, $p = 0.12$). Finally, Levene's tests of equality of variances revealed that the self-enhancement group and the self-monitoring group had equal variances with regard to positive emotions, self-efficacy, and work engagement at both time points.

Testing hypotheses

The RM-MANOVA with positive emotions, self-efficacy, and work engagement as dependent variables revealed a main effect of time, Wilks' Lambda = 0.89, $F(3, 307) = 12.44$, $p = 0.000$, $\eta^2 = 0.11$, but no effect of group, Wilks' Lambda = 0.98, $F(9, 307) = 2.41$, $p = 0.067$. Finally, the interaction effect of time and group was significant, Wilks' Lambda = 0.96, $F(9, 307) = 4.18$, $p = 0.006$, $\eta^2 = 0.04$.

For positive emotions, we found a main effect of time (Wilks' Lambda = 0.94, $F(1, 309) = 21.59$, $p = 0.000$, $\eta^2 = 0.07$), but again no main effect of group ($F(1, 309) = 1.62$, $p = 0.204$). The interaction effect of time and group on positive emotions was significant (Wilks' Lambda = 0.99, $F(1, 309) = 4.78$, $p = 0.029$, $\eta^2 = 0.02$). The interaction effect was in the expected direction; the self-enhancement group showed a stronger increase in positive emotions than the self-monitoring group (Figure 2). Hence, $H1$ was confirmed.

Further, paired samples t -tests showed that both the self-enhancement group ($t(85) = -3.41$, $p = 0.001$) and the self-monitoring group ($t(224) = -3.19$, $p = 0.002$) increased significantly in positive emotions. The effects size of the self-enhancement group was moderate to high (Cohen's $d = -0.53$), whereas the effects size of the self-monitoring group was small (Cohen's $d = -0.30$).

For self-efficacy, no main effect of time was found (Wilks' Lambda = 0.99, $F(1, 309) = 3.15$, $p = 0.077$). However, we did find a main effect of group ($F(1, 309) = 6.79$, $p = 0.010$, $\eta^2 = 0.02$), and a significant interaction effect of time and group (Wilks' Lambda = 0.98, $F(1, 309) = 6.48$, $p = 0.011$, $\eta^2 = 0.02$) on self-efficacy. Again, the interaction effect was in the expected direction; the self-enhancement group showed a stronger increase in self-efficacy than the self-monitoring group (Figure 3). So, $H2$ was confirmed as well.

Further, independent samples t -tests showed that the self-enhancement and self-monitoring group did not differ significantly in self-efficacy at T1 ($t(309) = 1.15$, $p = 0.25$), but the self-enhancement group scored significantly higher in self-efficacy at T2 compared to the self-monitoring group ($t(309) = 3.57$, $p = 0.000$). The effect was moderate to high (Cohen's $d = 0.46$).

For work engagement, we found no main effect of time (Wilks' Lambda = 0.99, $F(1, 309) = 0.35$, $p = 0.555$), no main effect of group ($F(1, 309) = 2.42$, $p = 0.121$), and no interaction effect (Wilks' Lambda = 0.99, $F(1, 309) = 0.06$, $p = 0.805$). The self-enhancement and self-monitoring group were both stable over time as far as work engagement is concerned (Figure 4). So, $H3$ was rejected: the self-enhancement group did not increase more strongly in work engagement compared to the self-monitoring group. All results are depicted in Table II.

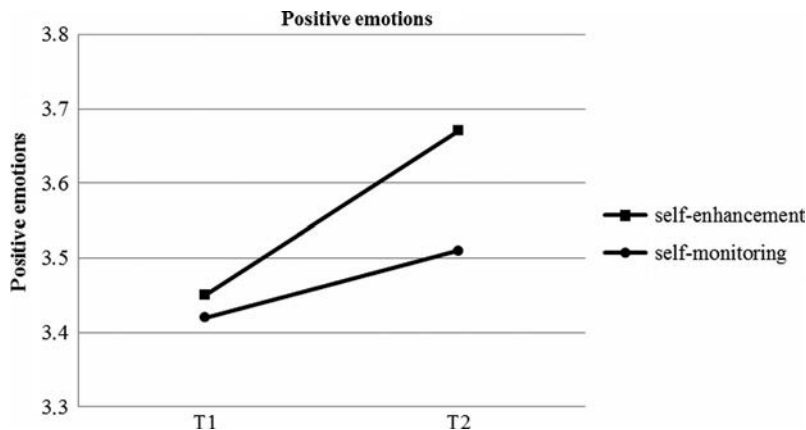


Figure 2.
The effects of time
(T1 and T2) and group
(self-enhancement and
self-monitoring) on
positive emotions

Figure 3.
The effects of time
(T1 and T2) and group
(self-enhancement and
self-monitoring) on
self-efficacy

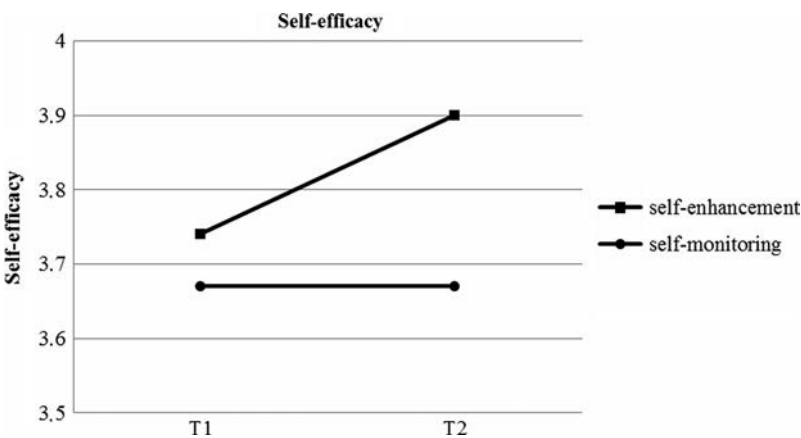


Figure 4.
The effects of time
(T1 and T2) and group
(self-enhancement and
self-monitoring) on
work engagement

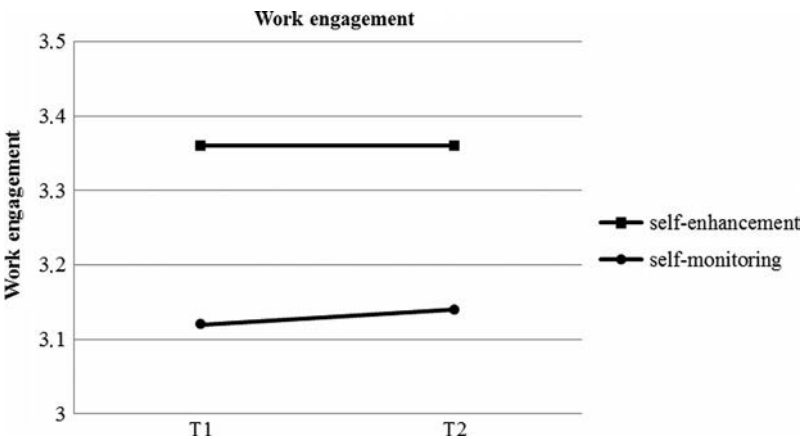


Table II.
Means and standard
errors (in brackets) of the
outcome variables as a
function of time (T1 and
T2) and group
(self-enhancement and
self-monitoring)

Variables	Self-enhancement (n = 86)		Self-monitoring (n = 225)		Time $F(3, 307) = 12.44^{***}$ $\eta^2 = 0.11$	Group $F(9, 307) = 2.41^{ns}$	Time \times group $F(9, 307) = 4.18^{**}$ $\eta^2 = 0.04$
	T1	T2	T1	T2			
Positive emotions	3.45 (0.07)	3.67 (0.07)	3.42 (0.04)	3.51 (0.04)	$F(1, 309) = 21.59^{***}$ $\eta^2 = 0.07$	$F(1, 309) = 1.62^{ns}$	$F(1, 309) = 4.78^*$ $\eta^2 = 0.02$
Self-efficacy	3.74 (0.06)	3.90 (0.05)	3.67 (0.04)	3.67 (0.03)	$F(1, 309) = 3.15^{ns}$	$F(1, 309) = 6.79^{**}$ $\eta^2 = 0.02$	$F(1, 309) = 6.48^*$ $\eta^2 = 0.02$
Work engagement	3.36 (0.13)	3.36 (0.13)	3.12 (0.08)	3.14 (0.08)	$F(1, 309) = 0.35^{ns}$	$F(1, 309) = 2.42^{ns}$	$F(1, 309) = 0.06^{ns}$

Notes: Significant at: $^*p < 0.05$, $^{**}p < 0.01$ and $^{***}p < 0.001$; ns – not significant; n – total of participants

Additional analyses

Since we did not find consistent effects with regard to the effects of the self-enhancement intervention – only *H1* and *H2* were confirmed, *H3* was rejected – we looked at the moderating effects of T1 levels of the research variables. Due to the selection effects within the self-enhancement group described in the Method section, we hypothesized that differential effects of the intervention could have occurred within the self-enhancement group. The assumption is that participants of the self-enhancement intervention, who are low in positive emotions, self-efficacy or work engagement prior to the intervention at T1, are more likely to experience an increase in positive emotions, self-efficacy or work engagement compared to participants of the self-monitoring group. Alternatively, participants of the self-enhancement intervention who are medium or high in initial positive emotions, self-efficacy or work engagement at T1, are not expected to show a significant increase compared to the self-monitoring participants who are medium or high in initial positive emotions, self-efficacy or work engagement at T1 because they are assumed to benefit less from the self-enhancement intervention. So, we expect that the effect of the self-enhancement intervention is more pronounced for participants who start off scoring low on positive emotions, self-efficacy or work engagement than for participants who initially are scoring medium or high. To test this additional hypothesis, we checked for interaction effects of time and group for every T1 category (low, medium, and high) separately by means of RM-ANOVA's. Also, by means of independent *t*-tests, we checked within the T1 categories whether the self-enhancement and self-monitoring group differed significantly at T2.

First, we categorized T1 positive emotions, self-efficacy, and work engagement in low, medium, and high, using a procedure based on the corresponding cut points of tertiles, resulting in three subgroups for every research variable. Thus, we used T1 levels of positive emotions, self-efficacy, and work engagement as a categorical variable to predict the changes in scores (T1-T2) over time. We carried out 2 (time: pre (T1) and post (T2) measurement) \times 2 (group: self-enhancement and self-monitoring) RM-ANOVA's, with time as a within-subject factor and group as a between-subject factor. By means of independent *t*-tests, we performed additional post-hoc tests to assess the significance of the differences between the self-enhancement and self-monitoring group within each T1 group (low, medium, or high). All main and interaction effects and *t*-test results are shown in Tables III and IV.

Positive emotions. Within the low T1 positive emotions group, we found a significant interaction effect of time and group (Wilks' Lambda = 0.93, $F(1, 124) = 9.25$, $p = 0.003$, $\eta^2 = 0.07$). Within the medium T1 positive emotions group, we found no interaction effect of time and group (Wilks' Lambda = 0.98, $F(1, 73) = 1.21$, $p = 0.274$). Within the high T1 positive emotions group, we also found no interaction effect of time and group (Wilks' Lambda = 1.00, $F(1, 108) = 0.39$, $p = 0.532$). In line with our expectations, additional independent *t*-tests confirmed the results of the RM-ANOVA's and showed that the only significant difference between the self-enhancement group and the self-monitoring group was found within the low category of T1 positive emotions at the post-intervention measurement ($M = 3.29$ versus $M = 3.03$; $t(124) = 2.68$, $p = 0.008$). Figure 5 shows the results of the additional analyses for positive emotions.

Self-efficacy. Within the low T1 self-efficacy group, we found a significant interaction effect of time and group (Wilks' Lambda = 0.97, $F(1, 144) = 4.18$, $p = 0.043$, $\eta^2 = 0.03$). Within the medium T1 self-efficacy group, we also found a

Table III.
Means and standard errors (in brackets) of the outcome variables as a function of time (T1 and T2) and group (self-enhancement and self-monitoring) per T1 category on the research variables (low, medium, and high)

T1 category	Self-enhancement (<i>n</i> = 86)		Self-monitoring (<i>n</i> = 225)		Time	Group	Time × group
	T1	T2	T1	T2			
<i>Positive emotions</i>							
Low	2.75 (0.07) <i>n</i> = 35	3.29 (0.08)	2.80 (0.04) <i>n</i> = 91	3.03 (0.05)	<i>F</i> (1, 124) = 56.84*** $\eta^2 = 0.31$	<i>F</i> (1, 124) = 2.05 ^{ns}	<i>F</i> (1, 124) = 9.25*** $\eta^2 = 0.07$
Medium	3.52 (0.03) <i>n</i> = 18	3.69 (0.10)	3.51 (0.02) <i>n</i> = 57	3.55 (0.06)	<i>F</i> (1, 73) = 3.85 ^{ns}	<i>F</i> (1, 73) = 1.81 ^{ns}	<i>F</i> (1, 73) = 1.21 ^{ns}
High	4.16 (0.05) <i>n</i> = 33	4.06 (0.07)	4.09 (0.03) <i>n</i> = 77	4.04 (0.05)	<i>F</i> (1, 108) = 3.91 ^{ns}	<i>F</i> (1, 108) = 0.49 ^{ns}	<i>F</i> (1, 108) = 0.39 ^{ns}
<i>Self-efficacy</i>							
Low	3.30 (0.06) <i>n</i> = 38	3.66 (0.08)	3.23 (0.04) <i>n</i> = 108	3.41 (0.05)	<i>F</i> (1, 144) = 36.99*** $\eta^2 = 0.07$	<i>F</i> (1, 144) = 1.62 ^{ns}	<i>F</i> (1, 144) = 4.78* $\eta^2 = 0.02$
Medium	3.92 (0.02) <i>n</i> = 34	3.98 (0.06)	3.92 (0.01) <i>n</i> = 89	3.84 (0.06)	<i>F</i> (1, 121) = 0.08 ^{ns}	<i>F</i> (1, 121) = 3.27 ^{ns}	<i>F</i> (1, 121) = 4.00* $\eta^2 = 0.03$
High	4.51 (0.05) <i>n</i> = 14	4.34 (0.07)	4.52 (0.03) <i>n</i> = 28	4.15 (0.05)	<i>F</i> (1, 40) = 14.10*** $\eta^2 = 0.26$	<i>F</i> (1, 40) = 0.74 ^{ns}	<i>F</i> (1, 40) = 1.91 ^{ns}
<i>Work engagement</i>							
Low	1.88 (0.10) <i>n</i> = 23	2.26 (0.14)	1.76 (0.06) <i>n</i> = 69	1.84 (0.08)	<i>F</i> (1, 90) = 14.16*** $\eta^2 = 0.14$	<i>F</i> (1, 90) = 4.82*	<i>F</i> (1, 90) = 5.94* $\eta^2 = 0.06$
Medium	3.04 (0.08) <i>n</i> = 30	2.99 (0.13)	3.07 (0.04) <i>n</i> = 88	3.18 (0.07)	<i>F</i> (1, 116) = 0.22 ^{ns}	<i>F</i> (1, 116) = 1.35 ^{ns}	<i>F</i> (1, 116) = 1.61 ^{ns}
High	4.68 (0.09) <i>n</i> = 33	4.48 (0.13)	4.56 (0.06) <i>n</i> = 68	4.42 (0.09)	<i>F</i> (1, 99) = 7.16*** $\eta^2 = 0.07$	<i>F</i> (1, 99) = 0.61 ^{ns}	<i>F</i> (1, 99) = 0.18 ^{ns}

Notes: Significant at: * *p* < 0.05, ** *p* < 0.01 and *** *p* < 0.001; ns – not significant; *n* – total of participants

Notes: Significant at: * $p < 0.05$, ** $p < 0.01$ and *** $p < 0.001$; ns – not significant; n – total of participants

T1 category	<i>t</i> -test results self-enhancement versus self-monitoring	
	T1	T2
<i>Positive emotions</i>		
Low	$t(124) = -0.70^{\text{ns}}$	$t(124) = 2.68^*$
Medium	$t(73) = 0.33^{\text{ns}}$	$t(73) = 1.15^{\text{ns}}$
High	$t(45.75^{\text{a}}) = 1.14^{\text{ns}}$	$t(43.27^{\text{a}}) = 0.21^{\text{ns}}$
<i>Self-efficacy</i>		
Low	$t(144) = 1.04^{\text{ns}}$	$t(144) = 2.80^*$
Medium	$t(121) = -0.19^{\text{ns}}$	$t(121) = 1.97^{\text{ns}}$
High	$t(20.46^{\text{a}}) = -0.06^{\text{ns}}$	$t(40) = 1.28^{\text{ns}}$
<i>Work engagement</i>		
Low	$t(90) = 1.11^{\text{ns}}$	$t(90) = 2.62^*$
Medium	$t(116) = -0.40^{\text{ns}}$	$t(116) = -1.37^{\text{ns}}$
High	$t(99) = 1.12^{\text{ns}}$	$t(99) = 0.41^{\text{ns}}$

Notes: Significant at: $*p < 0.01$; ns – not significant; ^aLevene's test of equality of variances was violated, so adjusted degrees of freedom and *t*-values were reported

Table IV.
Results of *post hoc* independent *t*-tests testing mean differences between the self-enhancement and self-monitoring group per T1 category on the research variables (low, medium, and high)

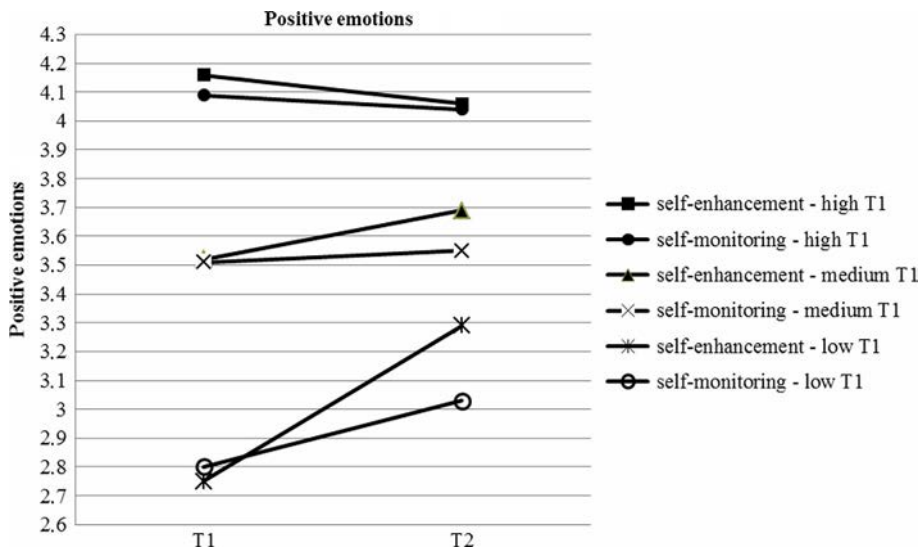
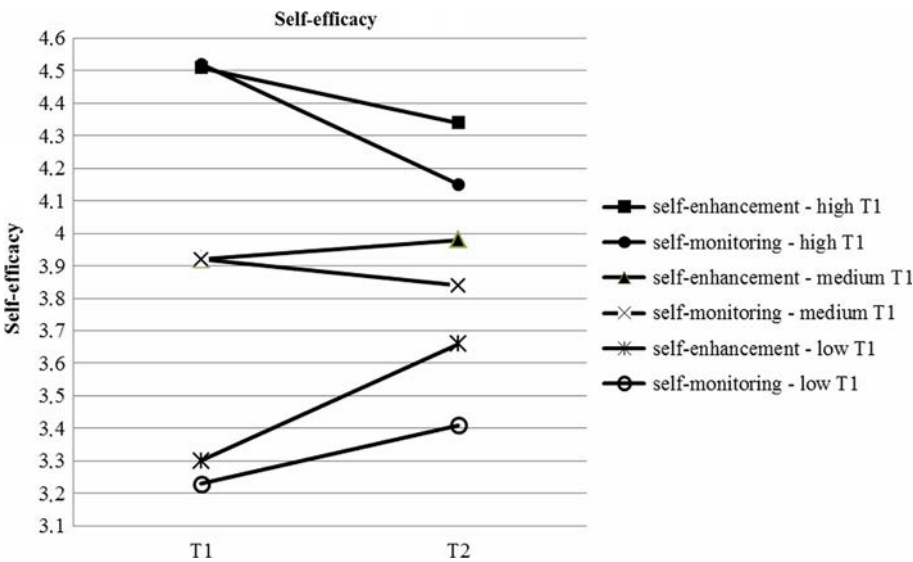


Figure 5.
Results of RM-ANOVA's per group (self-enhancement and self-monitoring) and per T1 positive emotions category (low, medium, and high)

significant interaction effect of time and group (Wilks' Lambda = 0.97, $F(1, 121) = 4.00$, $p = 0.048$, $\eta^2 = 0.03$). Within the high T1 self-efficacy group, we found no interaction effect of time and group (Wilks' Lambda = 0.95, $F(1, 40) = 1.91$, $p = 0.174$). Additional independent *t*-tests showed, however, that the only significant difference between the self-enhancement group and the self-monitoring group was within the low category of T1 self-efficacy at the post-intervention measurement ($M = 3.66$ versus $M = 3.41$; $t(144) = 2.80$, $p = 0.006$). Figure 6 shows the results of the additional analyses for self-efficacy.

Figure 6.
Results of RM-ANOVA's
per group
(self-enhancement and
self-monitoring) and per
T1 self-efficacy category
(low, medium, and high)



Work engagement. Within the low T1 work engagement group, we found a significant interaction effect of time and group (Wilks' Lambda = 0.94, $F(1, 90) = 5.94$, $p = 0.017$, $\eta^2 = 0.06$). Within the medium T1 work engagement group, we found no interaction effect of time and group (Wilks' Lambda = 0.94, $F(1, 116) = 1.61$, $p = 0.208$). Within the high T1 work engagement group, we found no interaction effect of time and group (Wilks' Lambda = 1.00, $F(1, 99) = 0.18$, $p = 0.669$). In line with our expectations, additional independent t -tests confirmed the RM-ANOVA's and showed that the only difference between the self-enhancement group and the self-monitoring group was within the low category of T1 work engagement at the post-measurement ($M = 2.26$ versus $M = 1.88$; $t(90) = 2.62$, $p = 0.010$). Figure 7 shows the results of the additional analyses for work engagement.

In conclusion, the additional analyses showed that participants of the self-enhancement intervention who scored low in positive emotions, self-efficacy, and work engagement prior to the intervention, benefitted significantly more than participants who scored medium or high in positive emotions, self-efficacy, and work engagement at T1.

Discussion

Conclusions

The objective of our study was to investigate whether an intervention based on principles of positive psychology could be applied to a work-related setting in order to enhance positive emotions, self-efficacy, and work engagement. The online self-enhancement intervention that was designed containing happiness activities, goal setting at work, and resource building assignments, appeared to have a significant positive effect on what we believe to be antecedents of engagement, namely positive emotions and self-efficacy. This is in line with results of previous studies on positive psychology interventions. Interventions consisting of a single happiness activity showed positive effects on general well-being, e.g. using signature strength, expressing gratitude (Lyubomirsky *et al.*, 2011;

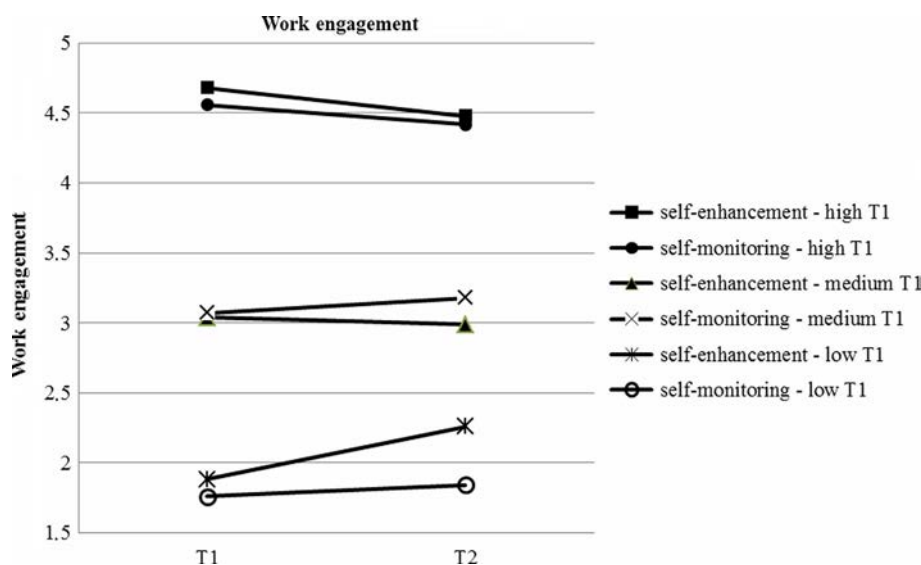


Figure 7.
Results of RM-ANOVA's
per group
(self-enhancement and
self-monitoring) and per
T1 work engagement
category (low, medium,
and high)

Mitchell *et al.*, 2009; Seligman *et al.*, 2005), using a goal setting method (MacLeod *et al.*, 2008), and using resource building interventions (Luthans *et al.*, 2008). Only Vuori *et al.* (2012) reports on a positive psychology intervention, namely a combination of goal setting and resource building, which had a positive effect on the level of work-related well-being (i.e. work engagement) instead of general well-being.

The intervention had a positive effect on both positive emotions and self-efficacy, positive emotions being an affective and self-efficacy being a cognitive antecedent of work engagement. In that sense, we showed that a positive psychology intervention can actually initiate the building process towards engagement. The fact that we found effects on antecedents of work engagement but not on engagement itself could have to do with proximity. According to B&B theory (Fredrickson, 1998), well-being follows positive emotions and resources, so a follow-up assessment measuring the long-term effect of the intervention, would probably have resulted in an increase in work engagement as well.

Our self-enhancement intervention had no significant short-term effect on work engagement, at least, not at first glance. Additional analyses showed, however, that effects on engagement were found when taking participants' initial levels of work engagement prior to the intervention into account. Splitting up the self-enhancement (intervention) and self-monitoring (control) groups in low, medium and high on initial work engagement scores, showed that participants in the intervention group with low initial scores on work engagement scores did increase significantly in work engagement, and that the corresponding subgroup in the self-monitoring group did not. This finding confirms that the positive activities that were initiated by the online intervention were more beneficial for those who were expected to gain from it most (Lyubomirsky *et al.*, 2011). The validity of this finding is supported by the fact that similar results were found for positive emotions and self-efficacy (Tables III and IV). This has to do with behavioral plasticity: the extent to which an employee is affected by external factors,

such as the opportunities for development. Brockner (1988) hypothesized that there are differences in the degree to which individuals attend and react to external cues, such as online assignments. So, as a consequence, those online assignments affect their attitudes and behaviors differently. Those employees, who are more in need (i.e. low in positive emotions, self-efficacy, and work engagement), benefit more because they have more to gain with regard to their well-being. Moreover, Vuori *et al.* (2012) found a similar pattern in their intervention study. Their study showed that especially employees that were highly exhausted at baseline, benefitted from a career management intervention as regards their level of work engagement. Similar results were found in intervention studies on self-efficacy (Eden and Aviram, 1993; Gibson, 2001).

A critical reflection

The attrition rate of our study was relatively high (82-83 percent). Internet interventions tend to have higher attrition rates compared to other types of interventions, because human interaction (e.g. face-to-face contact, telephone) reduces attrition (Mitchell *et al.*, 2009). As stated in the Results section, we conducted additional analyses because of the selective attrition of participants with regard to positive emotions, self-efficacy, and work engagement. Looking at the selective attrition in the self-enhancement group regarding pre- and post-measurement and the selective dropout during the online self-enhancement intervention, we conclude that especially participants who started off the intervention with relatively high initial levels of positive emotions, self-efficacy, and work engagement are more likely to engage in (and complete) the online intervention. Based on this, we expected to find differential effects of the intervention for participants who differed with regard to pre-intervention level of positive emotions, self-efficacy, and work engagement. At first glance, the results of our additional analyses may be caused by the statistical artifact “regression to the mean”. However, Yudkin and Stratton (1996) state that regression to the mean cannot account for results when the scores of a group of participants were significantly affected by the intervention whereas the scores of those belonging to a control group were not. That is, a general development over time (difference between T1 and T2) can be explained by regression to the mean, but a significant difference between the intervention and control group at the post-measurement (T2) – in case there is no significant difference at T1 – cannot. Accordingly, the finding is more robust and it is likely that the intervention actually had an effect on positive emotions, self-efficacy, and work engagement. Namely, our results showed that there were no differences in positive emotions, self-efficacy, and work engagement at the pre-measurement (T1), but that the participants who participated in the online intervention program, and were low on positive emotions, self-efficacy, and work engagement, scored significantly higher at T2 on the three outcome variables compared to the participants in the control group (Table IV). Therefore, we can be pretty sure that our results cannot be explained by regression to the mean.

Sin and Lyubomirsky (2009) recommend using what they call a “shotgun approach” to enhance well-being. This type of approach is likely to be effective, since multiple positive activities are conducted by the participants instead of only one (Sin and Lyubomirsky, 2009). Our intervention had a similar approach and was indeed effective in enhancing positive emotions, self-efficacy, and – for part of the participants – also work engagement. However, we do not really know what elements of the intervention were most effective: the happiness activities, goal setting, resource building activities

or any combination of these. Nevertheless, we could also argue that all elements are needed to make the intervention program effective enough to enhance participants' level of well-being.

Implications and recommendations

In the Method section, we described that participants of the self-enhancement intervention who both intended to start the intervention as well as completed the intervention, are those participants who experience relatively high levels of positive emotions, self-efficacy, and work engagement. However, this gives rise to a paradox, which we would like to dub selection benefit paradox. As previously stated in the Discussion section, the intervention in particular has positive effects on those participants who experience initially low levels of positive emotions, self-efficacy, and work engagement. In other words, the participants who potentially benefit the most from the self-enhancement intervention are those who are the most likely to drop out of the intervention or not even to start with it. This paradox has serious implications for future research as well as practice. On the one hand, we recommend focusing on employees who experience little positivity in the workplace. Recruitment of these employees for positive psychology interventions seems to be an important endeavor because they can be expected to have the most significant gain with regard to their levels of positive emotions, self-efficacy, and work engagement. That is, these employees have the most unused potential. However, these employees are likely to be less intrinsically motivated to participate in this type of activities. Supervisors have a key role within organizations to make especially these types of employees enthusiastic to participate. In a sense, supervisors should function as ambassadors of the positive intervention within the organization. Because of our design – using participants nationwide instead of within one organization – we could not use supervisors that way. The opposite also applies: employees who experience high levels of positive emotions, self-efficacy and work engagement are enthusiastic and motivated to participate in a self-enhancement intervention. However, they are less likely to gain anything from it as regards their level of work-related well-being: they had less to gain from the intervention to start with. Although from a methodological perspective, a randomized controlled trial (RCT) is a stronger design than using a self-selection design, we would not have recovered this important insight using an RCT. Moreover, in order to find positive effects of self-enhancement interventions, voluntary participation seems to be of the utmost importance.

Our study was conducted via a semi-public web site. That means that the participants of the intervention were all working in different organizations throughout the country. As stated, they did not have the advantage of having the support of their supervisors and colleagues who were participating in a similar intervention. So, the fact that no effects were found on work engagement for the total sample could also have been caused by the fact that the working context of the participants was not integrated into the content of the intervention. Namely, previous research showed that the social working environment is important in predicting the level of engagement among employees (Bakker *et al.*, 2007). Therefore, we advise to implement this online intervention within an organizational context. This way, it is possible to create a learning environment in which colleagues and supervisors are actively participating as well. Furthermore, it is important to put a lot of energy in promoting the intervention within the organization beforehand, and in explaining what individual employees could gain by participating in the intervention. So, motivating them to participate by making clear

what is in it for them. This in reference to what was previously stated, that it is hard to intrinsically motivate every employee in participating in a self-enhancement intervention. Why would this be? Probably, the strength of interventions focused on amplification, namely that everyone can potentially benefit from it, is also its pitfall. Because there is no specific problem, complaint or disease, employees sometimes do not understand the need for (participating in) this type of intervention. So, practitioners have to explain to potential participants why they would want to be more engaged in their work. Namely, that employees could have a more positive perception on the current work environment but can also have an actual influence on their work environment, and as such, they can be more happy and confident at work.

Needless to say positive psychology interventions that are focused on amplification cannot replace interventions that are based on the medical model. Just as prevention does not replace curing, amplification does neither replace treatment nor prevention. Of course, sick employees need to be cured and occupational hazards need to be prevented. So instead of replacing each other, the three perspectives supplement each other by widening the scope, from diseases via potential diseases to enhancing employee health and well-being.

Conclusion

In conclusion, positive psychology interventions have major potential in enhancing well-being at work, but it will only work when employees want it to. That is, especially employees who already are engaged and experiencing positive emotions and self-efficacy at work are likely to be motivated in enhancing their own well-being even further. It is up to supervisors, HR managers, trainers, and coaches to make sure that also those who experience lower levels of well-being get motivated to attend positive interventions. In other words, they have to convince these employees that they can benefit from positive interventions. Researchers should support this by providing more research on what types of activities have the potential to work.

Note

1. Results of all t -tests and χ^2 -tests as regards demographical differences can be obtained from the first author upon request.

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