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RESEARCH PAPER

Your Strengths are Calling: Preliminary Results of a Web-Based Strengths Intervention to Increase Calling

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Abstract Cross-sectional research indicated that the application of signature strengths at work seemed to be crucial for perceiving a job as a calling. The present study aimed at testing this assumed causality in a random-assignment, placebo-controlled web-based intervention study. The intervention group ($n = 83$) was instructed to use their four highest character strengths more often at work for 4 weeks. Meanwhile the control group ($n = 69$) reflected about four situations (independent from the current workplace) where they excelled. For the evaluation of the effects of the two conditions, participants completed measures on calling and global life satisfaction before (Pretest), directly after the four-week training period (Posttest 1), and 3 (Posttest 2) and 6 months (Posttest 3) later. Calling significantly increased in the intervention group but not in the control group from Pretest to Posttest 1, and remained constant until Posttest 3. Global life satisfaction significantly increased in the intervention group but not in the control group from Pretest to Posttest 2 and from Posttest 1 to Posttest 3. That indicated that the changes on global life satisfaction were less steep than the changes in calling and lagged, but significant long lasting changes were observed likewise. Results supported the assumption that the application of strengths at work impacts calling and life satisfaction. Limitations as well as implications for research and practice are discussed.

Keywords Positive intervention · Character strengths · Signature strengths · Calling · Global life satisfaction

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1 Introduction

Within the present paper two research fields that discuss the role person-job fit have been combined. First, within positive psychological research on *character strengths*, researchers stated that people prefer a job congruent to their signature strengths (Park and Peterson 2007). Second, within the research on *calling*, researchers highlighted that a job is more likely perceived as a calling when there is a match between a person and his/her job (Dik and Duffy 2009; Novak 1996; Weiss et al. 2004). Accordingly, Seligman (2002, p. 169) hypothesized that adults might transform their jobs into callings by finding ways to systematically use their signature strengths at work. Seligman (2002) argued that individuals behave more authentically, realize how their work contributes to the greater good, and are more positively engaged at work, when they use their signature strengths at work. That is what "makes work into a calling" (Allan and Duffy 2014, p. 325). Therefore, the present study is aimed at investigating whether an intentionally increased use of signature strengths at work leads to an increase in the degree to which individuals consider their work as a calling. Compared to already existing research on the relation between the use of signature strengths and calling (Allan and Duffy 2014; Harzer and Ruch 2012), the paper at hand does not present results from cross-sectional data, but from an intervention study targeting the use of signature strengths at work in order to increase calling.

1.1 Character Strengths and Signature Strengths

Peterson and Seligman (2004) introduced the Values in Action (VIA) classification of strengths to describe good character as an important instance of optimal human functioning (e.g., at the workplace, in family life, in the leisure time). The VIA classification comprises 24 *character strengths* (e.g., love of learning, prudence, teamwork) that represent the cross-culturally valued components of good character as trait-like and measurable positive individual differences. Character strengths manifest in individual behaviors (e.g., engage in learning activities), thoughts (e.g., think about consequences of own behavior before acting), and feelings (e.g., enjoy to work in a team). They are seen as the inner determinant of a satisfied, happy, and successful life (i.e., the good life), in addition to external factors like good education, stable social environment, or financial security (cf. Peterson 2006). Character strengths are valued in their own right and are not engaged in for the tangible outcomes they may produce, although character strengths do produce desirable outcomes.

The 24 character strengths can be ranked for each individual with respect to how central they are to the person (for more detailed descriptions of the 24 character strengths please refer, for example, to Harzer and Ruch 2015; Peterson and Seligman 2004). Most people develop up to seven top or core strengths among the set of 24. These strengths are labeled as 'signature' strengths. Each person has an individual set of *signature strengths* that he/she especially owns and appreciates (Peterson and Seligman 2004). Activities (like one's work tasks) that allow the use of the individual signature strengths are expected to be fulfilling and most valued (Harzer and Ruch 2012, 2013; Park and Peterson 2007; Peterson and Seligman 2004; Seligman 2002, 2011). Peterson and Seligman (2004) put forward ten criteria to define and identify signature strengths. A signature strength is, for example, characterized by the wish to use it, by a drive to behave in accordance to it, and by an intrinsic motivation to use the strength. Furthermore, after applying a signature strength one feels invigorated rather than tired.

Several studies highlighted the relations between the application of individual signature strengths and various positive outcomes. For example, the application of individual signature strengths is related to positive experiences in life, like life satisfaction, well-being, and meaning in life as well as to positive experiences at work, like job satisfaction, pleasure at work, meaning at work, and job performance (e.g., Harzer and Ruch 2013, 2014; Littman-Ovadia and Steger 2010; Proctor et al. 2011; Wood et al. 2011). Furthermore, Seligman et al. (2005) reported data from a healthy convenience sample of adults that were randomly assigned to one of six conditions (n ranged between 59 and 70 for each of the conditions). The results indicated that the condition "using signature strengths in a new way" led to a significant decrease in depressive symptoms from pretest to the first posttest directly after the 1 week of training, and this decrease remained even after 6 months. Furthermore, happiness significantly increased, but the effect was lagged. More precisely, happiness increased from the Pretest to the Posttest 2 (1 week after the one-week training period), and remained stable even 6 months after the training period (Seligman et al. 2005). The positive effects of the "using signature strengths in a new way"-intervention have been shown in various studies (e.g., Forest et al. 2012; Gander et al. 2013; Mitchell et al. 2009; Quinlan et al. 2012).

1.2 Calling

Calling has been defined in different ways in the literature, and different efforts were made to combine diverse conceptualizations into one definition (e.g., Dik and Duffy 2009; Dobrow and Tosti-Kharas 2011). Within the scope of the present study we focused on the definition presented by Dobrow and Tosti-Kharas (2011) because it is unidimensional. Therefore, it provides a parsimonious way to acquire first insights on the effects of an intervention targeting the use of signature strengths in order to increase calling. According to Dobrow and Tosti-Kharas (2011), calling is a "consuming and meaningful passion that people experience toward a domain" like one's work (p. 1003). A calling is defined as consuming, because it is central to the identity of a person who perceives his or her work as calling. Additionally, it is characterized by a strong engagement in work (Dobrow and Tosti-Kharas 2011). Furthermore, individuals with a calling perceive their work as being meaningful, due to helping other people or the broader society (directly or indirectly; Dik and Duffy 2009). Individuals with a calling regard their work to be their purpose in life rather than a means for financial rewards or career advancement (Elangovan et al. 2010; Wrzesniewski et al. 1997). Calling in the sense presented here does not necessarily entail a religious connotation of being called by god (cf. Bunderson and Thompson 2009; Steger et al. 2010; Weiss et al. 2004), but refers to having uncovered the "personal destiny […] something that we are good at and something we enjoyed" (Novak 1996, p. 18).

Various studies highlighted the relations between perceiving one's work as a calling and positive outcomes. For example, working adults who consider their work as a calling report higher work satisfaction, enjoyment of work, organizational commitment, and career-related self-efficacy as well as less frequent turnover and withdrawal intentions (e.g., Duffy et al. 2011; Hirschi and Herrmann 2013; Peterson et al. 2009; Wrzesniewski et al. 1997). On a more general, not work-related level, calling is also related to higher levels of life satisfaction (e.g., Peterson et al. 2009; Wrzesniewski et al. 1997).

1.3 Application of Signature Strengths at Work and Calling

The person-environment (PE) fit theory (e.g., Caplan 1987; Kristof 1996) provides a framework, which explains why the application of signature strengths at work may enhance calling. PE fit can be defined as the congruence between the person (e.g., personality, abilities, interests, and values etc.) and the environment (e.g., work) (cf. Edwards and Shipp 2007; Kristof 1996). The underlying assumption of the PE fit theory is that the closer the match between the person and the environment, the better the outcomes and that people are more likely to thrive (e.g., Edwards and Shipp 2007; Holland 1997; Kristof-Brown and Billsberry 2013). Accordingly, numerous studies showed the relations between the use of individual capacities and positive outcomes like job satisfaction, engagement, or productivity at work (e.g., Lauver and Kristof-Brown 2001; Lowe 2010; Walton 1975).

The congruence between the job tasks and the individual signature strengths can be subsumed within the concept of complementary person-job fit (cf. Kristof 1996), which represents the degree to which job and individual each supply what the other needs. The individual's signature strengths form the individual's need to be allowed to behave congruent with those strengths (cf. Peterson and Seligman 2004). The more job tasks allow for the use of signature strengths, the more the job supplies this need (cf. Harzer and Ruch 2013) and the closer the match, which should be related to positive work-related outcomes like meaning, engagement, and calling.

In line with this argumentation, research showed that the application of signature strengths at work correlates with the degree to which people consider their job as a calling (e.g., Allan and Duffy 2014; Harzer and Ruch 2012). Furthermore, Harzer and Ruch (2012) reported that those employees, who applied four or more of their signature strengths at work, were more likely to experience their job as a calling than employees applying none to three signature strengths. This result highlights the role of (strengths-related) person-job fit for calling which has also been highlighted in theoretical contributions about calling (e.g., Dik and Duffy 2009; Novak 1996; Weiss et al. 2004) as one of the factors influencing calling. Nevertheless, the data reported by Harzer and Ruch (2012) were cross-sectional, and did not allow for an examination of the assumed causal relation between the application of signature strengths and calling (i.e., the application of strengths at work causes calling).

1.4 Aims of the Present Study

The prime aim of the present study is to investigate this assumed effect of the application of signature strengths at work on perceiving one's job as a calling within the scope of a random-assignment, placebo-controlled web-based intervention study. Drawing on PE fit theory and previous research we expected that an intervention targeting the application of signature strengths at work leads to an increase in calling whereas a control condition does not. Furthermore, in order to study whether the expected effects of the intervention are short-term in nature or whether they last medium- to long-term, the participants were followed for 6 months after the intervention, with calling being periodically measured.

Additionally, research showed that the application of signature strengths and calling are related to global life satisfaction (e.g., Allan and Duffy 2014; Peterson et al. 2009; Seligman et al. 2005, Wrzesniewski et al. 1997). Therefore, global life satisfaction was also periodically measured in order to monitor the effects of the exercises of the conditions on a more general level as well.

2 Method

2.1 Participants

The total sample consisted of 152 German-speaking employees (84 males, 68 females) working for diverse employers and in different jobs. Their mean age was 42.07 years ($SD = 9.83$; ranging from 19 to 70 years). The most prevalent occupational fields ($n \geq 5$) were $n = 35$ department managers, $n = 23$ teachers, $n = 9$ information technology technicians, $n = 8$ project managers, $n = 7$ HR staff members, and $n = 5$ research assistants. Participants were highly educated; $n = 96$ indicated having a Master's degree, $n = 7$ had a doctoral degree, $n = 41$ had finished vocational training, and $n = 8$ had finished secondary school. Participants at least worked 50 percent of full time hours ($M = 90.51$ %, $SD = 16.61$; $n = 106$ worked full time). Mean job tenure was 11.15 years ($SD = 8.56$).

2.2 Instruments

The *Values in Action Inventory of Strengths* (*VIA-IS*; Peterson et al. 2005) is a questionnaire consisting of 240 items with a 5-point answer format (from 1 = *very much unlike me* to 5 = *very much like me*) measuring the 24 character strengths of the VIA classification (10 items for each strength). The responses are averaged across the 10 items per character strength. A sample item is "I am always coming up with new ways to do things" (creativity). The 24 scales of the German version of the VIA-IS (Ruch et al. 2010b) showed high reliability (median $\alpha = .77$) and high stability over 9 months (median test–retest correlation = .73). Self- and peer-rating forms correlated in the expected range (median correlation = .40). In the present study, the VIA-IS was administered in the Pretest, and the scales yielded satisfactory internal consistencies (ranging from $\alpha = .73$ for kindness to $\alpha = .92$ for spirituality with a median of $\alpha = .79$ in the total sample).

The *Calling Scale* (Dobrow and Tosti-Kharas 2011) is a questionnaire consisting of 12 items with a 7-point answer format (from 1 = *strongly disagree* to 7 = *strongly agree*) measuring the extent to which an individual perceives his/her job as a calling. The responses are averaged across the 12 items to compute the calling score. The internal consistencies were satisfactory, and ranged between $\alpha = .88$ and .94 across different samples (Dobrow and Tosti-Kharas 2011). Dobrow and Tosti-Kharas (2011) examined validity (i.e., factorial structure, convergent and discriminant validity) of the Calling Scale in four different samples, and reported, for example, confirmatory factor analyses supported unidimensionality. Furthermore, the Calling Scale was positively correlated with measures assessing related conceptualizations of calling (e.g., Bunderson and Thompson 2009; Wrzesniewski et al. 1997). In order to use the Calling Scale in German speaking samples, the original items were translated into German language by five psychologists independently from each other, and the initial version was compiled by committee approach (Butcher and Pancheri 1976). A bilingual psychologist back-translated this initial version and, subsequently, an English-language native speaker compared the back-translated version with the original Calling Scale to make sure the contents were equal. Slight changes were needed for two of the items. Back-translation of the revised items and original items were compared again; contents were equal now. In order to be suitable for various job groups items were slightly modified from, for example, "The first thing I often think about when I describe myself to others is that I'm a manager" was changed into "The

first thing I often think about when I describe myself to others is that I'm a (insert your job title)". The German adaptation of the Calling Scale was utilized at all measurement times. It showed a high internal consistency in the total sample of the present study (αs = .93–.95 across measurement times).

The *Satisfaction with Life Scale* (*SWLS*; Diener et al. 1985) is a five-item measure for the assessment of global life satisfaction using a 7-point answer format (from 1 = *strongly disagree* to 7 = *strongly agree*). Responses are summed up to compute a total score for global life satisfaction. A sample item is "The conditions of my life are excellent". The SWLS is widely used and showed good psychometric properties in various studies (e.g., Diener 1994; Pavot and Diener 1993). A German version was utilized here that has already been used in previous research (e.g., Peterson et al. 2007; Ruch et al. 2010a, b, c). It was presented at all measurement times. It showed high internal consistency in the total sample of the present study (αs = .89–.92 across measurement times).

2.3 Procedure

2.3.1 Intervention Mapping

The present study was embedded in an intervention mapping process to ensure high standards (cf. Campbell et al. 2000; Goldenhar et al. 2001; Kok et al. 2004). This intervention mapping process is linear and iterative (Campbell et al. 2000) but also circular (Goldenhar et al. 2001), and included four steps: literature research, development of methods, implementation (research), and evaluation. *Literature research* was aimed at collecting the relevant background information (e.g., published work on signature strengths, calling, positive interventions, and intervention design) that helped to define and describe the theoretical and research-related background for the study at hand. Additionally, literature research helped to identify strategies useful for the development and implementation of the intervention methods. The *development of methods* included the definition of the conditions (i.e., intervention and control group), and the chronology as well as the selection of measurements and means of communication (i.e., web-based). Furthermore, techniques (e.g., if-then-plans) and measurement for behavioral change (e.g., frequency of implementation) were selected. Finally, the web-based training platform and measurements were prepared and pretested (e.g., to test the functionality, and to check for the time needed to complete the material). *Implementation* (research) focused on the monitoring of the ongoing implementation in order to be aware of any implementation-related problems the participants might have to deal with and to be able to solve those. The *evaluation* included the data analyzes to identify the effects of the conditions on the dependent variables and the feedback of the individual and general results to the participants.

2.3.2 Data Collection

Participants were recruited in several ways to obtain a heterogeneous sample. For example, people were informed about the survey by press coverage (e.g., newspaper and magazine), by online advertisement (e.g., through a website offering information about psychological studies), by flyers distributed in the city center, as well as by snowball system via email and social networks. Participants signed up in an online system, received basic information regarding the study, and finally expressed (dis)interest of participation (i.e., informed consent). Basic information included the persons who were responsible for the

development and organization of the "strengths intervention" (i.e., name of the study as announced to the participants) as well as the chronology of the study, the measurement times, and the time needed to fill in the questionnaires. Furthermore, participants were informed about the requirements for participation (i.e., at least working 50 percent of full time hours, commitment to participate in the follow-up surveys). They also received information about the theoretical background of the strengths interventions and that they would be randomly assigned to different approaches. Additionally, they were informed that they would receive personal feedback regarding their individual scores in all the questionnaires they have filled in across the measurement times at the end of the study, if interest was expressed. Participants did not receive any other compensation. Anonymity of the participants' was protected, as the email addresses and the individual answers were stored independently from each other.

The randomized assignments to the conditions as well as the data collection have been administered online, utilizing a web-based research platform. The individual email addresses of the participants were used to contact and inform them about upcoming data collections, as well as to ask them about the implementation of their exercise in their daily life. In order to assist the participants with the implementation of their exercise during the four-week training period, weekly emails were sent out to ask them how they were doing and whether there were any questions. Answers to questions were emailed to every participant in order to keep the information parallel.

2.3.3 Conditions

The conditions of the present intervention study were based on activities reported by Seligman et al. (2005). Nevertheless, they were modified to better fit the current research question. Furthermore, in order to provide more time for the participants to get used to their exercises, a longer training period of 4 weeks was chosen instead of the one-week training period (cf. Seligman et al. 2005). According to the findings of Harzer and Ruch (2012), the intervention group was instructed to use the four highest character strengths (i.e., operationalization of their signature strengths) more often and in new ways at work. The control group was asked to think about situations in four different contexts (i.e., within family, among friends, at school, at work in the first year after apprenticeship) where they excelled (i.e., "You at your best"). This exercise was chosen for the control group instead of the placebo intervention reported by Seligman et al. (2005), because it had the best fit regarding the cover story (i.e., the study is aimed at comparing different strengths interventions), and it did not have lasting effects (i.e., can serve as "inert" or placebo condition within the scope of the present study). Consequently, both the intervention group and the control group focused on four different aspects within their exercises (i.e., highest character strengths or situations where they excelled) for 4 weeks.

In more detail, the *intervention group* ($n = 83$) was instructed to use the individually four highest character strengths (i.e., operationalization of signature strengths) more often and in new ways at work in a stepwise procedure at the beginning of the training period. Participants were invited to the web-based training platform; there they learned about their four highest character strengths (derived from the rank order of the VIA-IS scales in the pretest) in step 1. In step 2 they thought about daily activities and tasks at work, and subsequently, in step 3, collected the ways they currently use their signature strengths in daily activities and tasks at work. Finally, in step 4, they developed if-then-plans about how to use the four highest character strengths in new and different ways in daily activities and tasks at work (cf. Hagger and Luszczynska 2014, for the importance of if-then-plans

for effective behavioral engagement). These plans were summarized on the last page of the web-based training platform, so that the participants could print them out and take them with them to work (labeled as "Your individual training plan"). Participants of the intervention group were instructed to implement their plans about how to use their signature strengths at work more often in new and different ways during the four-week training period.

The *control group* ($n = 69$) was instructed to reflect about real situations in four different contexts where they excelled (i.e., within family, among friends, at school, at work in the first year after completing vocational training); also in a stepwise procedure at the beginning of the training period. Participants of the control group were invited to the web-based training platform. In the first step, they were asked to think about one situation within each context and to write down short notes on what happened when and where, and who was involved. In the second step, they were instructed to write down one story for each context as detailed and vivid as possible. These stories were summarized on the last page of the web-based training platform, and the participants were instructed to print them out and take them with them (labeled as "Your individual training plan"). During the 4 weeks of the training period the control group was instructed to read the four stories every night and to reflect about the personal strengths displayed in the stories and how the strengths had helped to excel. This was without any particular focus on participants' signature strengths, because—contrary to the intervention group—the control group did not receive any feedback on their signature strengths.

2.3.4 Design

The present paper reports a random-assignment, placebo-controlled, web-based intervention study. Figure 1 summarizes the design and procedure.

Figure 1 shows that participants completed the Pretest in month 1; they filled in all questionnaires and provided information on demographics. Those who completed the pretest were invited to the web-based training platform in the beginning of the second month. There they were randomly assigned to one of the conditions (i.e., intervention group or control group). With the completion of this web-based training platform, participants prepared their individual, condition-specific training plans and received condition-specific instructions about what to do during the four-week training period. To be able to investigate both immediate and prolonged effects of the conditions, participants were followed for 6 months with posttests directly after the four-week training period (Posttest 1) as well as 3 (Posttest 2) and 6 months later (Posttest 3). The study follows a 2×4 repeated measures design; two conditions with four measurement times for the dependent variables calling and global life satisfaction.

3 Results

3.1 Information on Dropouts and Implementation of Intervention

In order to estimate the effects of the conditions on calling and global life satisfaction, all those participants were included in the data analyzes who filled in the pretest, received treatment (i.e., developed an individual training plan according to the condition they were randomly assigned to), and filled in at least one of the posttests. A total of 276 volunteers

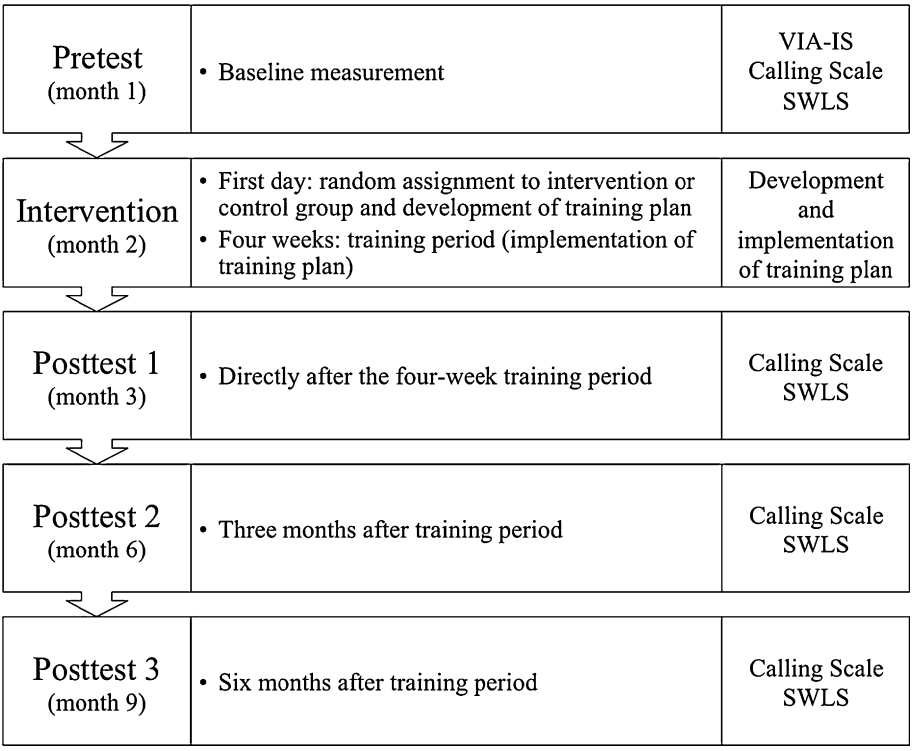

Fig. 1 Overview of the design and procedure of the present intervention study presenting the chronology, measurement times, and measures administered

filled in the pretest. Subsequently, $n = 194$ of them visited the web-based training platform to develop their individual training plan ($n = 82$ dropouts from pretest to development of training plan). Finally, 42 did not fill in at least one posttest what resulted in 152 analyzable data sets from the pretest up to the six-month follow-up (Posttest 3).

No differences were found between those who developed their individual training plan ($n = 194$), and those who quit after the Pretest ($n = 82$) with respect to gender ratio—$\chi^2(1) = .01$, $p = .908$, age—$F(1, 275) = .49$, $p = .483$, education—$\chi^2(5) = 9.77$, $p = .082$, the Calling Scale—$F(1, 275) = .63$, $p = .428$, and the SWLS—$F(1, 275) = .02$, $p = .902$. Furthermore, there were no differences between those who completed at least one of the three posttests ($n = 152$), and those who did not ($n = 42$), with respect to gender ratio—$\chi^2(1) = .37$, $p = .601$, education—$\chi^2(5) = 1.05$, $p = .903$, Calling Scale—$F(1, 193) = 2.49$, $p = .116$, and the SWLS—$F(1, 193) = .34$, $p = .561$. Those who completed at least one of the three posttests were slightly older than those who did not, $F(1, 193) = 8.34$, $p = .004$ ($M = 42.07$ years vs. $M = 37.21$ years). Furthermore, dropout rate did not differ between the two conditions, $\chi^2(1) = 1.26$, $p = .262$. Given that the age difference was relatively small (i.e., less than one half of the standard deviation) and none of the other variables showed any differences, dropouts were considered to be random. Therefore, those participants, who completed at least one of the three follow-ups, were included in the subsequently presented data analyses without including any control variables. This led to a data basis for the subsequently presented data analyzes of $N = 152$ ($n_{\text{intervention group}} = 83$,

$n_{\text{control group}} = 69$) in the Pretest, $N = 149$ ($n_{\text{intervention group}} = 81$, $n_{\text{control group}} = 68$) in Posttest 1, $N = 115$ ($n_{\text{intervention group}} = 60$, $n_{\text{control group}} = 55$) in Posttest 2, and $N = 109$ ($n_{\text{intervention group}} = 53$, $n_{\text{control group}} = 56$) in Posttest 3. A total of 101 participants filled in every posttest ($n_{\text{intervention group}} = 50$, $n_{\text{control group}} = 51$).

To monitor the extent to which the participants implemented their individual training plans, they were asked how often they were able to do so during the 4 weeks of the training period in the Pretest 1 (i.e., new use of a strength at work for intervention group, read the four stories every night and to reflect about the personal strengths displayed in the story for control group). On average, the participants were able to implement their individual training plans $M = 10.68$ times ($SD = 6.53$ times; skewness = .53, kurtosis = −.32) within the 4 weeks of the training period. The high standard deviation indicated that participants varied strongly with respect to how often they implemented their individual training plan. The intervention group and the control group did not differ in the frequency of implementation, $F(1, 144) = .35$, $p = .727$.

3.2 Preliminary Analyzes of the Measures of the Dependent Variables

For an examination of the measurements of the dependent variables calling and global life satisfaction, minima, maxima, means, standard deviations, skewness, and kurtosis were computed for the Calling Scale and the SWLS. Table 1 presents an overview of the results in the total sample for the four measurement times.

Table 1 shows that the means of the Calling Scale were around the scale midpoint of 4 across the measurement times. Minima and maxima of the Calling Scale highlighted that a broad range of the possible scores (i.e., 1–7) could be found in the total sample across all measurement times (i.e., there were individuals in the data set that indicate perceiving their work as a calling, and individuals who did not do so). Skewness and kurtosis of the Calling Scale were consistent with normal distribution. Means of the SWLS were between 25.21 and 26.09, and lied considerably above the scale midpoint of 17.50. Minima and maxima of the SWLS highlighted that a broad range of the possible scores (i.e., 5–35) could be found in the total sample across all measurement times. Skewness and kurtosis indicated a slight deviation from normal distribution. Accordingly, Kolmogorov–Smirnov-Test showed significant deviations from normal distribution in the SWLS in the Pretest ($p = .001$), Posttest 1 ($p = .006$), and Posttest 3 ($p = .014$), but not in Posttest 2 ($p = .147$). However, we decided against applying any transformations as visual

Table 1 Descriptive statistics for the Calling Scale and the SWLS for the four measurement times

Scales	M	SD	Min	Max	Skewness	Kurtosis
Calling scale						
Pretest	4.08	1.12	1.00	6.67	−0.28	−0.01
Posttest 1	4.21	1.15	1.00	6.58	−0.57	0.08
Posttest 2	4.14	1.20	1.17	7.00	−0.29	−0.38
Posttest 3	4.20	1.24	1.00	6.33	−0.33	−0.44
SWLS						
Pretest	25.21	6.09	5.00	34.00	−1.23	1.38
Posttest 1	25.63	5.94	5.00	35.00	−1.25	1.64
Posttest 2	26.09	5.68	7.00	35.00	−1.09	1.50
Posttest 3	26.05	5.39	8.00	35.00	−1.02	1.16

$N_{\text{Pretest}} = 152$, $N_{\text{Posttest 1}} = 149$, $N_{\text{Posttest 2}} = 115$, and $N_{\text{Posttest 3}} = 109$

inspection, and values of skewness and kurtosis indicated only minor deviations from normal distribution (i.e., skewness <|2|, and kurtosis <|4|; cf. West et al. 1995).

3.3 Effects of Conditions on Calling

To examine the effects of the conditions on calling, a linear mixed model was computed with measurement time (four levels: Pretest, Posttests 1, 2, and 3) and condition (two groups: intervention and control group) as the independent variables. Calling (i.e., the scores in the Calling Scale at the four measurement times) entered the analysis as the dependent variable. Intercepts were allowed to vary randomly in order to take into account that participants varied in their individual levels of calling. Main effects of measurement time, $F(3, 378.24) = 2.05$, $p = .107$, and condition, $F(1, 154.08) = 1.61$, $p = .207$, were not significant. More importantly, the results showed a significant interaction of measurement time and condition, $F(3, 378.24) = 3.15$, $p = .025$; this indicated that the conditions had different effects on calling. Figure 2 illustrates the development of the means in calling over time for each of the conditions.

Figure 2 indicates that the intervention group showed an increase in calling whereas the control group did not change. In the beginning both the intervention and the control group neither agreed nor disagreed to see their job as a calling (i.e., average scores in the Calling Scale were around the scale midpoint of 4). After the 4 weeks of the training period the intervention group more strongly judged their jobs as callings (i.e., average score in the Calling Scale was above the scale midpoint of 4, representing a slight endorsement of statements representing calling).

Subsequently, a linear mixed model was computed for each group independently to examine whether and when there were significant changes within the intervention group and the control group. In the intervention group calling significantly changed over time, $F(3, 197.63) = 5.53$, $p = .001$. Pairwise comparisons (LSD) of the means of the four measurement times showed that the intervention group showed a significant increase in

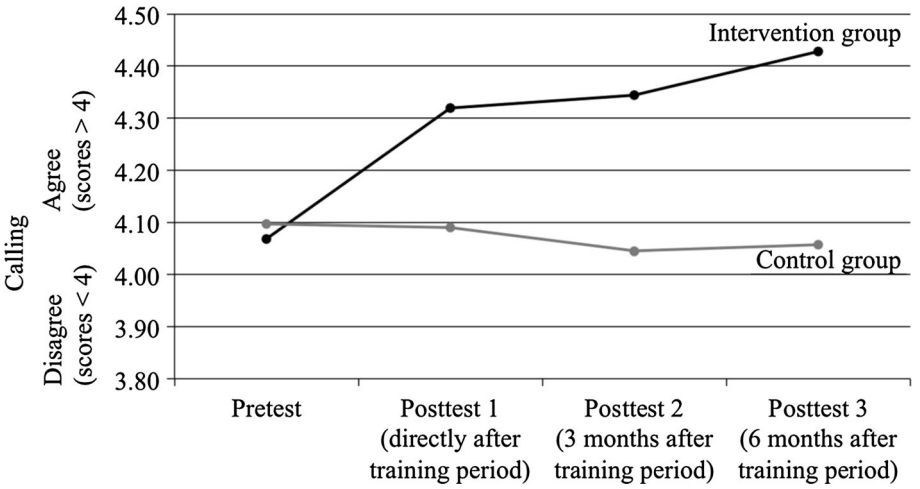

Fig. 2 Development of means in calling over time for each of the conditions. Scores above the scale midpoint of 4 represent an endorsement of statements representing calling, whereas scores below the scale midpoint of 4 represent a disagreement with statements representing calling

calling from Pretest ($M = 4.07$) to Posttest 1 ($M = 4.32$), $t(194.19) = -2.95$, $p = .004$. Paired samples Cohen's d was .38 for the difference between Pretest and Posttest 1, and indicated a small to medium sized effect on calling (Cohen 1988). Furthermore, this higher level of calling remained stable in Posttest 2 [$M = 4.34$; comparison with Pretest: $t(198.37) = -2.89$, $p = .004$, Cohen's d = .29] and Posttest 3 [$M = 4.43$; comparison with Pretest: $t(198.91) = -3.60$, $p < .000$, Cohen's d = .46]. The scores in the Calling Scale did not differ between Posttest 1 and Posttest 2 [$t(198.89) = -.25$, $p = .802$], Posttest 2 and Posttest 3 [$t(196.51) = -.82$, $p = .419$] as well as Posttest 1 and 3 [$t(198.78) = -1.09$, $p = .277$]. In the control group calling did not significantly change over time, $F(3, 180.67) = .11$, $p = .953$ ($M_{\text{Pretest}} = 4.10$, $M_{\text{Posttest1}} = 4.09$, $M_{\text{Posttest2}} = 4.05$, $M_{\text{Posttest3}} = 4.06$).

Furthermore, an ANCOVA was computed for each posttest independently to examine whether there were significant differences in calling between the intervention group and the control group after the intervention. Calling (i.e., the scores in the Calling Scale at the specific measurement time) entered the analysis as the dependent variable, the condition (two groups: intervention & control group) as the independent variable, and the pretest scores in the Calling Scale as the control variable. The intervention group and the control group differed significantly from each other in the Calling Scale in the three posttests, $F_{\text{Posttest 1}}(1, 148) = 4.89$, $p = .029$, $\eta^2 = .033$, $F_{\text{Posttest 2}}(1, 116) = 3.98$, $p = .048$, $\eta^2 = .034$, $F_{\text{Posttest 3}}(1, 110) = 6.78$, $p = .011$, $\eta^2 = .060$. Again, effect sizes indicated small to medium sized effects (Cohen 1988).

3.4 Effects of Conditions on Global Life Satisfaction

To examine the effects of the conditions on global life satisfaction, a linear mixed model was computed with measurement time (four levels: Pretest, Posttests 1, 2, and 3) and condition (two groups: intervention and control group) as the independent variables. Global life satisfaction (i.e., the scores in the SWLS at the four measurement times)

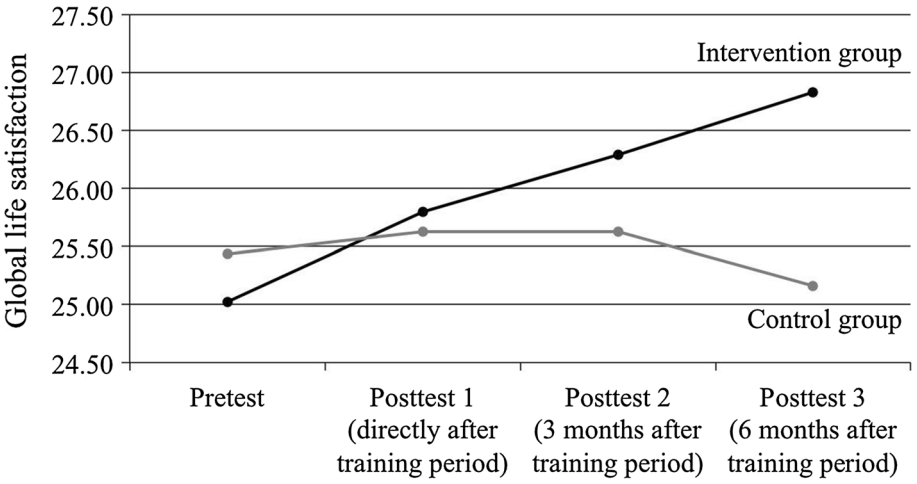

Fig. 3 Development of means in global life satisfaction over time for each of the conditions

entered the analysis as the dependent variable. Intercepts were allowed to vary randomly in order to take into account that participants differed in their individual levels of global life satisfaction. Main effect of intervention condition was not significant, $F(1, 152.14) = .34$, $p = .563$. Main effect of measurement time was significant, $F(3, 374.74) = 2.81$, $p = .039$. This might be mainly due to the highly significant interaction effect between measurement time and intervention condition, $F(3, 374.74) = 3.99$, $p = .008$, which indicated that the conditions had different effects on global life satisfaction. Figure 3 illustrates the development of the means in global life satisfaction over time for each of the conditions.

Figure 3 indicates that the intervention group showed an increase in global life satisfaction over time whereas as the control group did not change over time. Subsequently, a linear mixed model was computed for each group independently to examine whether and when there were significant changes within the intervention group and the control group. In the intervention group, global life satisfaction significantly changed in over time, $F(3, 194.59) = 5.86$, $p < .001$. Pairwise comparisons (LSD) of the measurement times showed that the intervention group showed a significant increase in global life satisfaction from Pretest ($M = 25.02$) to Posttest 2 ($M = 26.29$), $t(195.34) = -2.91$, $p = .004$. Additionally, there were significant changes from Posttest 1 ($M = 25.79$) to Posttest 3 ($M = 26.83$), $t(195.04) = -2.27$, $p = .024$. That indicated that the changes on global life satisfaction were less steep than the changes in calling and lagged, but significant long lasting changes were observed likewise. Paired samples Cohen's d was .37 and .41 for the difference between Pretest and Posttest 2, and between Posttest 1 and Posttest 3, respectively. Both Cohen's d indicated small to medium sized effects (Cohen 1988). The control group did not show significant changes in global life satisfaction over time, $F(3, 180.44) = .56$, $p = .645$.

Furthermore, an ANCOVA was computed for each posttest independently to examine whether there were significant differences in global life satisfaction between the intervention group and the control group after the intervention. Global life satisfaction (i.e., the scores in the SWLS at the specific measurement time) entered the analysis as the dependent variable, the condition (two groups: intervention & control group) as the independent variable, and the pretest scores in the SWLS as the control variable. The intervention group and the control group differed significantly from each other in the SWLS in Posttest 3, $F(1, 111) = 12.81$, $p < .001$, $\eta^2 = .106$. The effect size indicated a medium sized effect on global life satisfaction (Cohen 1988). There were no significant differences between the two conditions in Posttest 1 and Posttest 2, $F_{\text{Posttest }1}(1, 148) = .97$, $p = .327$, $F_{\text{Posttest }2}(1, 117) = 1.60$, $p = .209$.

Pavot and Diener (1993) presented a categorization of different levels of satisfaction measured with the SWLS. The groups derived from the scores in the SWLS include, for example, dissatisfied individuals with scores below 20, slightly satisfied individuals with scores from 21 to 25, and satisfied individuals with scores from 26 to 30. In the beginning the participants in the two intervention groups could be categorized as slightly satisfied. After the 4 weeks of training the intervention group showed averaged SWLS scores that could be categorized as satisfied (i.e., one category higher than before) whereas the control group did not change.

4 Discussion

The present study examined the effects of a strengths-based intervention (i.e., targeting the application of signature strengths at work, intervention group) on calling and global life satisfaction. Results were in line with the expectations that an enhancement of the application of individuals' signature strengths at work leads to an increase in the degree of perceiving one's job as a calling. This can be interpreted as empirical evidence for theoretical assumptions by (a) Seligman (2002) who proposed that adults might transform their jobs into callings by finding ways to systematically use their signature strengths at work; by (b) Dik and Duffy (2009), Novak (1996), and Weiss et al. (2004) who stated that a calling is more likely to occur when there is a match between a person and his/her job (i.e., person-environment fit); and by (c) PE fit theory that the use of individual capacities at work leads to positive outcomes (e.g., Edwards and Shipp 2007; Holland 1997; Kristof-Brown and Billsberry 2013).

Furthermore, this causal relation could be interpreted on a more intra-personal, experience-related level and with respect to the defining criteria for signature strengths (cf. Peterson and Seligman 2004). Accordingly, the application of signature strengths at work may cause individuals to feel more authentic, invigorated, and fitting in their work environment with respect to the requirements. Individuals who use their signature strengths at work might experience that what they are best at is useful, needed, and asked for at work. Taken all together, that in turn might enable more passionate, meaning-providing involvement in one's job what in turn makes the work a more central part in life; and all that is what defines a calling (cf. Dobrow and Tosti-Kharas 2011). These intra-personal processes could be addressed in future studies to unravel these experiences and mechanisms in more detail to further develop a theoretical framework on why and how the application of signature strengths enhances calling.

Furthermore, the strengths-based intervention led to an increase in global life satisfaction, although this was not the prime aim of the intervention. The effects on global life satisfaction can be interpreted as evidence for the assumptions that the use of signature strengths is fulfilling (cf. Peterson and Seligman 2004). In line with the results reported in Seligman et al. (2005), we found a lagged effect on satisfaction. Positive effects within a specific life domain (here: work) may need to solidify first, in order to impact the overall evaluation of one's life (i.e., global life satisfaction). However, these mechanisms need to be addressed in future studies as they go beyond the scope of the present paper.

Within the character strengths research there are two approaches to increase individuals' life satisfaction: (1) fostering the character strengths most strongly related with life satisfaction (e.g., gratitude, zest, and curiosity; cf. Proyer et al. 2013), and (2) enhancing the use of signature strengths as demonstrated in the present study or by Seligman et al. (2005) and Gander et al. (2013). The *first* approach focuses on the enhancement of character strengths that individuals might not have developed in a pronounced way. The engagement in thoughts, actions, and feelings related to those character strengths in turn should lead to an increase in life satisfaction (Proyer et al. 2013). The *second* approach focuses on what is already good in people (i.e., what is already existing in terms of signature strengths) in order to further develop and foster it by enhancing the use of signature strengths. It might be of interest to further study the differences between these approaches, for example, in terms of acceptance by participants, long-term effects, and whether a combination of both approaches is even more potent than the single ones.

4.1 Limitations and Future Research

Although the four-week training period utilized in the present study is longer than the training periods of programs reported earlier (e.g., Seligman et al. 2005), 4 weeks still seemed to be too short. The workplace is a very formal and strong environment (cf. Ten Berge and De Raad 1999), and as a consequence, the required change in the individuals' behavior at work is a very difficult, demanding task that might need more time. Furthermore, the frequency of implementation with an average of about 11 times during the four-week training period (i.e., less than three times a week) was rather low and approximately one third of the participants did not implement their plan more than five times in total. Considering this, the small to medium effect of the strengths-based intervention on calling and global life satisfaction is even more considerable. Given the fact that there are a total of 20 workdays with 8 h of working time each day during a four-week period (for a fulltime job with 5 workdays per week), there is a lot of potential for improvement. With an enhancement of intensity (i.e., longer training period, more frequent implementation) of the intervention we expect an even stronger impact on outcomes like calling and life satisfaction.

We suggest a training period of at least 3 months (cf. Sin and Lyubomirsky 2009) and periodic meetings (e.g., in form of workshops or individual coaching; cf. Hagger and Luszczynska 2014) in order to improve the effects of the strengths-based intervention. Those adjustments in the design of the intervention may provide more time for a better routine in changing behavior. The web-based training platform was very convenient for the participants and easy to use with any computer with Internet access (e.g., it allows for automatically generated individual feedback and summarizes the entries of the participants regarding their individual training plans for printouts). However, additional personal meetings might be better for keeping participants on track because they could lower the threshold to ask questions regarding the implementation of the individual training plan during the training period.

Furthermore, sample size was rather restricted with 53–83 participants in the intervention group across measurement time. This did not allow for more fine-grained analyzes to identify the specifics of subgroups for which the strengths-based intervention was most effective in increasing calling and/or global life satisfaction, for example, with respect to the applicability of their signature strengths at work prior to the intervention and frequency of implementation. Future research may deepen the understanding of the best circumstances and conditions (i.e., high commitment of participants and large enduring effects) for the strengths intervention by studying larger samples, which allow for the analysis of subgroups. This may help to examine for whom the strengths-based intervention presented here is best fitting and under which circumstances (cf. Lyubomirsky et al. 2005b). For example, those who had a relatively low frequency of applicability may have the most space to develop hereof, and the impact of the intervention should be stronger for them. Furthermore, those participants who used their strengths not at all or rarely during the training period (i.e., low frequency of implementation) might not report any changes in calling or global life satisfaction compared to those who used their character strengths more often due to the higher frequency of implementation of their individual training plan. Additionally, conducting an intervention to increase a person's calling by using signature strengths at work seems only useful, when it is ensured that the person's signature strengths fit to the requirements of a job. This was not an issue in the data as there was no participant who was not able to develop if-then-plans for at least three of his/her four signature

strengths. This might be interpreted as indicator that the person's signature strengths fit to the requirements of his/her job. As job tenure was around 11 years on average in the sample, it appears to be very likely, that our sample consists of individuals with a certain person-job fit; else they would have very likely quit the job (cf. Kristof-Brown et al. 2005). It seems like that a bad fit is a relatively seldom exception in samples with job tenures of several years. Therefore, we did not expect that to jeopardize the effects of the intervention. In line with this, the effects within the intervention group appeared despite this unwanted variance in the data. However, future studies are needed to get a deeper understanding of the effects of whether and how many of the signature strengths (1) do actually fit, (2) do not necessarily fit but can be accommodated, and (3) are actually incompatible to the requirements of the job of a person. For example, it is not clear whether it is calling that increases when a person applies a signature strength that actually does not fit to the requirements (but the person does apply it, and finds it gratifying). Moreover, future studies might specifically recruit samples with low or medium education (e.g., blue-collar worker) as the data presented here stemmed from a highly educated sample. Therefore, generalizability of results to less educated groups of the work force can be questioned and needs to be addressed in future research.

Additionally, data collection was based on self-reports only. However, as the experience of calling and global life satisfaction were considered to be in large parts intra-individual experiences, the self-ratings were considered the most valid judgments. Nevertheless, future studies could utilize multiple data sources to eliminate the effects associated with common method variance (cf. Doty and Glick 1998).

Another limitation of the present study refers to the conceptualization and measurement of calling utilized here. Drawing on the definition presented by Dobrow and Tosti-Kharas (2011) we utilized a unidimensional scale. This could be criticized however, because such a unidimensional approach prevents studying complexities with respect to the expression or experience of a sense of calling (cf. Dik et al. 2012; Elangovan et al. 2010). We consider the unidimensional approach utilized here as a starting point in order to get first insights in the effects of an intervention targeting the use of signature strengths at work to increase calling. Future research is needed to further disentangle the relation between the application of signature strengths or character strengths at work and different aspects of calling like, for example, the search for calling, the presence of calling, and living a calling (e.g., Allan and Duffy 2014; Dik et al. 2012; Duffy et al. 2013). Calling as utilized here comprised both the presence of and living a calling. However, it needs to be further examined whether a strengths intervention as presented here might increase the presence of calling or living a calling or both.

In order to study the assumed causal effect of the application of signature strengths at work on calling and global life satisfaction, a random-assignment, placebo-controlled web-based intervention study design was utilized. An integral part of the procedure was the manipulation of the independent variable (i.e., application of signature strengths at work) in the intervention group (but not in the control group) and the observation of the changes in the dependent variables. The results showed that there were significant changes in the intervention group but not in the control group. Although these results can be interpreted as indicating a causal relation (cf. Field 2009), the design does not allow for further disentangling more complex causal relations (e.g., reciprocal effects) between the application of signature strengths at work and the outcomes that may exist. In order to do so, future research might utilize a cross-lagged design for which the application of signature strengths and outcomes like calling and global life satisfaction are measured several times across a larger time span (cf. Finkel 2004).

Taking these limitations together, the pilot nature of the present study is highlighted. However, the preliminary results presented here appear promising, and may inform future studies examining the application of character strengths and calling.

4.2 Practical Implications

The present paper highlights the usefulness of positive interventions in the work context (cf. Meyers et al. 2013). Work is a place where capabilities (here: character strengths) can be fostered (e.g., by job crafting[1]) to enhance the positive perception of work (here: calling) and overall life (here: global life satisfaction). By focusing on individuals' signature strengths instead of specific character strengths like teamwork or leadership, the present study shows one way to acknowledge diversity (here: diversity regarding personality) among the workforce, for example, within the scope of personnel development.

Fostering the application of signature strengths in employees to increase calling and life satisfaction may lead to a win–win-situation for both employees and employers. Enhancing calling may result in other positive outcomes as well, for example, less frequent turnover (i.e., more years in current position), less frequent absence days, and higher income (Wrzesniewski et al. 1997). Furthermore, life satisfaction (or happiness more broadly speaking) is, for example, related to less counterproductive work behavior, less job withdrawal, higher job performance, better health, and perceived friendliness (Lyubomirsky et al. 2005a). Moreover, the application of signature strengths at work is related to job performance as well (Harzer and Ruch 2014).

References

Allan, B. A., & Duffy, R. D. (2014). Examining moderators of signature strengths use and well-being: Calling and signature strengths level. *Journal of Happiness Studies, 15*, 323–337. doi:10.1007/s10902-013-9424-0.

Bunderson, J. S., & Thompson, J. A. (2009). The call of the wild: Zookeepers, callings, and the double-edged sword of deeply meaningful work. *Administrative Science Quarterly, 54*, 32–57. doi:10.2189/asqu.2009.54.1.32.

Butcher, J. M., & Pancheri, P. (1976). *A handbook of cross-national MMPI research*. Minneapolis, MN: University of Minnesota Press.

Campbell, M., Fitzpatrick, R., Haines, A., Kinmonth, A. L., Sandercock, P., Spiegelhalter, P., & Tyrer, P. (2000). Framework for design and evaluation of complex interventions to improve health. *British Medical Journal, 321*, 694–696. doi:10.1136/bmj.321.7262.694.

Caplan, R. D. (1987). Person-environment fit theory and organizations: Commensurate dimensions, time perspectives, and mechanisms. *Journal of Vocational Behavior, 31*, 248–267. doi:10.1016/0001-8791(87)90042-X.

Cohen, J. (1988). *Statistical power analysis for behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.

Diener, E. (1994). Assessing subjective well-being. Progress and opportunities. *Social Indicators Research, 31*, 103–157. doi:10.1007/BF01207052.

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction with Life Scale. *Journal of Personality Assessment, 49*, 71–75. doi:10.1207/s15327752jpa4901_13.

[1] Intervention group was instructed to use the individually four highest character strengths more often and in new ways at work. As most jobs require the interaction with others, this intervention is very likely to alter the nature of interactions at work; this is one of the job crafting practices presented by Wrzesniewski and Dutton (2001). However, job crafting practices may also include changes in the design of the job (e.g., alter type and number of job tasks; Wrzesniewski and Dutton 2001), and that was not part of the strengths intervention.

Dik, B. J., & Duffy, R. D. (2009). Calling and vocation at work: Definitions and prospects for research and practice. *The Counseling Psychologist, 37*, 424–450. doi:10.1177/0011000008316430.

Dik, B. J., Eldridge, B. M., Steger, M. F., & Duffy, R. D. (2012). Development and validation of the Calling and Vocation Questionnaire (CVQ) and Brief Calling Scale (BCS). *Journal of Career Assessment, 20*, 242–263. doi:10.1177/1069072711434410.

Dobrow, S. R., & Tosti-Kharas, J. (2011). Calling: The development of a scale measure. *Personnel Psychology, 64*, 1001–1049. doi:10.1111/j.1744-6570.2011.01234.x.

Doty, D. H., & Glick, W. H. (1998). Common method bias: Does common methods variance really bias results? *Organizational Research Methods, 1*, 374–406. doi:10.1177/109442819814002.

Duffy, R. D., Allan, B. A., Autin, K. L., & Bott, E. M. (2013). Calling and life satisfaction: It's not about having it, it's about living it. *Journal of Counseling Psychology, 60*, 42–52. doi:10.1037/a0030635.

Duffy, R. D., Dik, B. J., & Steger, M. F. (2011). Calling and work-related outcomes: Career commitment as a mediator. *Journal of Vocational Behavior, 78*, 210–218. doi:10.1016/j.jvb.2010.09.013.

Edwards, J. R., & Shipp, A. J. (2007). The relationship between person-environment fit and outcomes: An integrative theoretical framework. In C. Ostroff & T. A. Judge (Eds.), *Perspectives on organizational fit* (pp. 209–258). San Francisco: Jossey Bass.

Elangovan, A. R., Pinder, C. C., & McLean, M. (2010). Callings and organizational behavior. *Journal of Vocational Behavior, 76*, 428–440. doi:10.1016/j.jvb.2009.10.009.

Field, A. (2009). *Discovering statistics using SPSS* (3rd ed.). Thousand Oaks, CA: Sage Publications Ltd.

Finkel, S. (2004). Cross-lagged. In M. S. Lewis-Beck, A. Bryman, & T. F. Liao (Eds.), *The SAGE encyclopedia of social science research methods* (pp. 229–230). Thousand Oaks, CA: Sage Publications, Inc. doi:10.4135/9781412950589.n202.

Forest, J., Mageau, G. V. A., Crevier-Braud, L., Bergeron, L., Dubreuil, P., & Lavigne, G. V. L. (2012). Harmonious passion as an explanation of the relation between signature strengths' use and well-being at work: Test of an intervention program. *Human Relations, 65*, 1233–1252. doi:10.1177/0018726711433134.

Gander, F., Proyer, R. T., Ruch, W., & Wyss, T. (2013). Strength-based positive interventions: Further evidence on their potential for enhancing well-being and alleviating depression. *Journal of Happiness Studies, 14*, 1241–1259. doi:10.1007%2Fs10902-012-9380-0.

Goldenhar, L. M., LaMontagne, A. D., Katz, T., Heaney, C., & Landsbergis, P. (2001). The intervention research process in occupational safety and health: An overview from the National Occupational Research Agenda Intervention Effectiveness Research Team. *Journal of Occupational and Environmental Medicine, 43*, 616–622.

Hagger, M. S., & Luszczynska, A. (2014). Implementation intention and action planning interventions in health contexts: State of the research and proposals for the way forward. *Applied Psychology: Health and Well-Being, 6*, 1–47. doi:10.1111/aphw.12017.

Harzer, C., & Ruch, W. (2012). When the job is a calling: The role of applying one's signature strengths at work. *The Journal of Positive Psychology, 7*, 362–371. doi:10.1080/17439760.2012.702784.

Harzer, C., & Ruch, W. (2013). The application of signature character strengths and positive experiences at work. *Journal of Happiness Studies, 14*, 965–983. doi:10.1007/s10902-012-9364-0.

Harzer, C., & Ruch, W. (2014). The role of character strengths for task performance, job dedication, interpersonal facilitation, and organizational support. *Human Performance, 27*, 183–205. doi:10.1080/08959285.2014.913592.

Harzer, C., & Ruch, W. (2015). The relationships of character strengths with coping, work-related stress, and job satisfaction. *Frontiers in Psychology, 6*, 165. doi:10.3389/fpsyg.2015.00165.

Hirschi, A., & Herrmann, A. (2013). Calling and career preparation: Investigating developmental patterns and temporal precedence. *Journal of Vocational Behavior, 83*, 51–60. doi:10.1016/j.jvb.2013.02.008.

Holland, J. L. (1997). *Making vocational choices: A theory of work personalities and work environments*. Odessa, FL: Psychological Assessment Resources Inc.

Kok, G., Schaalma, H., Ruiter, R. A. C., van Empelen, P., & Brug, J. (2004). Intervention mapping: Protocol for applying health psychology theory to prevention programmes. *Journal of Health Psychology, 9*, 85–98. doi:10.1177/1359105304038379.

Kristof, A. L. (1996). Person-organization fit: An investigative review of its conceptualizations, measurement, and implication. *Personnel Psychology, 49*, 1–49. doi:10.1111/j.1744-6570.1996.tb01790.x.

Kristof-Brown, A. L., & Billsberry, J. (2013). Fit for the future. In A. L. Kristof-Brown, & J. Billsberry (Eds.), *Organizational fit: Key issues and new directions* (pp. 1–18). Oxford, UK: Wiley. doi:10.1002/9781118320853.ch1.

Kristof-Brown, A. L., Zimmermann, R. D., & Johnson, E. C. (2005). Consequences of individuals' fit at work: A meta-analysis of person-job, person-organization, person-group, and person-supervisor fit. *Personnel Psychology, 58*, 281–342. doi:10.1111/j.1744-6570.2005.00672.x.

Lauver, K., & Kristof-Brown, A. (2001). Distinguishing between employees' perceptions of person-job fit and person-organization fit. *Journal of Vocational Behavior, 59*, 454–470. doi:10.1006/jvbe.2001.1807.

Littman-Ovadia, H., & Steger, M. F. (2010). Character strengths and well-being among volunteers and employees: Toward an integrative model. *The Journal of Positive Psychology, 5*, 419–430. doi:10.1080/17439760.2010.516765.

Lowe, G. (2010). *Creating healthy organizations*. Toronto, Canada: University of Toronto Press.

Lyubomirsky, S., King, L., & Diener, E. (2005a). The benefits of frequent positive affect: Does happiness lead to success? *Psychological Bulletin, 131*, 803–855. doi:10.1037/0033-2909.131.6.803.

Lyubomirsky, S., Sheldon, K. M., & Schkade, D. (2005b). Pursuing happiness: The architecture of sustainable change. *Review of General Psychology, 9*, 111–131. doi:10.1037/1089-2680.9.2.111.

Meyers, M. C., van Woerkom, M., & Bakker, A. (2013). Added value of the positive: A literature review of positive psychology interventions in organizations. *European Journal of Work and Organizational Psychology, 22*, 618–632. doi:10.1080/1359432X.2012.694689.

Mitchell, J., Stanimirovic, R., Klein, B., & Vella-Brodrick, D. A. (2009). A randomised controlled trial of a self-guided internet intervention promoting well-being. *Computers in Human Behavior, 25*, 749–760. doi:10.1016/j.chb.2009.02.003.

Novak, M. (1996). *Business as a calling: Work and the examined life*. New York, NY: The Free Press.

Park, N., & Peterson, C. (2007). Methodological issues in positive psychology and the assessment of character strengths. In A. D. Ong & M. H. M. van Dulmen (Eds.), *Handbook of methods in positive psychology* (pp. 292–305). New York, NY: Oxford University Press.

Pavot, W., & Diener, E. (1993). Review of the Satisfaction with Life Scale. *Psychological Assessment, 5*, 164–172. doi:10.1037/1040-3590.5.2.164.

Peterson, C. (2006). The Values in Action (VIA) classification of strengths. In M. Csikszentmihalyi & I. S. Csikszentmihalyi (Eds.), *A life worth living: Contributions to positive psychology* (pp. 29–48). New York, NY: Oxford University Press.

Peterson, C., Park, N., Hall, N., & Seligman, M. E. P. (2009). Zest and work. *Journal of Organizational Behavior, 30*, 161–172. doi:10.1002/job.584.

Peterson, C., Park, N., & Seligman, M. E. P. (2005). Assessment of character strengths. In G. P. Koocher, J. C. Norcross, & S. S. Hill (Eds.), *Psychologists' desk reference* (2nd ed., pp. 93–98). New York, NY: Oxford University Press.

Peterson, C., Ruch, W., Beermann, U., Park, N., & Seligman, M. E. P. (2007). Strengths of character, orientation to happiness, and life satisfaction. *The Journal of Positive Psychology, 2*, 149–156. doi:10.1080/17439760701228938.

Peterson, C., & Seligman, M. E. P. (2004). *Character strengths and virtues: A handbook and classification*. Washington, DC: American Psychological Association.

Proctor, C., Maltby, J., & Linley, P. A. (2011). Strengths use as a predictor of wellbeing and health-related quality of life. *Journal of Happiness Studies, 12*, 153–169. doi:10.1007/s10902-009-9181-2.

Proyer, R. T., Ruch, W., & Buschor, C. (2013). Testing strengths-based interventions: A preliminary study on the effectiveness of a program targeting curiosity, gratitude, hope, humor, and zest for enhancing life satisfaction. *Journal of Happiness Studies, 14*, 275–292. doi:10.1007/s10902-012-9331-9.

Quinlan, D., Swain, N., & Vella-Brodrick, D. A. (2012). Character strengths interventions: Building on what we know for improved outcomes. *Journal of Happiness Studies, 13*, 1145–1163. doi:10.1007/s10902-011-9311-5.

Ruch, W., Harzer, C., Proyer, R. T., Park, N., & Peterson, C. (2010a). Ways to happiness in German-speaking countries: The adaptation of the German version of the orientations to happiness questionnaire in paper-pencil and internet samples. *European Journal of Psychological Assessment, 26*, 224–231. doi:10.1027/1015-5759/a000030.

Ruch, W., Proyer, R. T., Harzer, C., Park, N., Peterson, C., & Seligman, M. E. P. (2010b). Values in Action Inventory of Strengths (VIA-IS): Adaptation and validation of the German version and the development of a peer-rating form. *Journal of Individual Differences, 31*, 138–149. doi:10.1027/1614-0001/a000022.

Ruch, W., Proyer, R. T., & Weber, M. (2010c). Humor as character strength among the elderly: Empirical findings on age-related changes and its contribution to satisfaction with life. *Zeitschrift für Gerontologie und Geriatrie, 43*, 13–18. doi:10.1007/s00391-009-0090-0.

Seligman, M. E. P. (2002). *Authentic happiness: Using the new positive psychology to realize your potential for lasting fulfillment*. New York, NY: The Free Press.

Seligman, M. E. P. (2011). *Flourish: A visionary new understanding of happiness and well-being*. New York, NY: The Free Press.

Seligman, M. E. P., Steen, T. A., Park, N., & Peterson, C. (2005). Positive psychology progress: Empirical validation of interventions. *American Psychologist, 60*, 410–421. doi:10.1037/0003-066X.60.5.410.

Sin, N., & Lyubomirsky, S. (2009). Enhancing well-being and alleviating depressive symptoms with positive psychology interventions: A practice-friendly meta-analysis. *Journal of Clinical Psychology, 65*, 467–487. doi:10.1002/jclp.20593.

Steger, M. F., Pickering, N. K., Shin, J. Y., & Dik, B. J. (2010). Calling in work: Secular or sacred? *Journal of Career Assessment, 18*, 82–96. doi:10.1177/1069072709350905.

Ten Berge, M. A., & De Raad, B. (1999). Taxonomies of situations from a trait psychological perspective. A review. *European Journal of Personality, 13*, 337–360. doi:10.1002/(SICI)1099-0984(199909/10)13:5<337:AID-PER363>3.0.CO;2-F.

Walton, R. E. (1975). Criteria for quality of working life. In L. E. Davis & A. B. Cherns (Eds.), *The quality of working life* (Vol. 1, pp. 91–104). New York, NY: The Free Press.

Weiss, J. W., Skelley, M. F., Haughey, J. C., & Hall, D. T. (2004). Calling, new careers and spirituality: A reflective perspective for organizational leaders and professionals. In M. L. Pava & P. Primeaux (Eds.), *Spiritual intelligence at work: Meaning, metaphor, and morals* (pp. 175–201). Amsterdam: Elsevier.

West, S. G., Finch, J. F., & Curran, P. J. (1995). Structural equation models with nonnormal variables: Problems and remedies. In R. H. Hoyle (Ed.), *Structural equation modeling: Concepts, issues and applications* (pp. 56–75). Newbery Park, CA: Sage.

Wood, A. M., Linley, A. P., Maltby, J., Kashdan, T. B., & Hurling, R. (2011). Using personal and psychological strengths leads to increases in well-being over time: A longitudinal study and the development of the strengths use questionnaire. *Personality and Individual Differences, 50*, 15–19. doi:10.1016/j.paid.2010.08.004.

Wrzesniewski, A., & Dutton, J. E. (2001). Crafting a job: Revisioning employees as active crafters of their work. *Academy of Management Review, 26*, 179–201. doi:10.5465/AMR.2001.4378011.

Wrzesniewski, A., McCauley, C. R., Rozin, P., & Schwartz, B. (1997). Jobs, careers, and callings: People's relations to their work. *Journal of Research in Personality, 31*, 21–33. doi:10.1006/jrpe.1997.2162.