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From strengths use to work performance: The role of harmonious passion, subjective vitality, and concentration

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Research has shown that strengths use and development can foster individual performance and well-being at work. However, to date little is known about the underlying psychological processes that might be operating in this relation. The purpose of this study was first to confirm the strengths use to work performance association and, second, to assess theoretical models of strengths use by testing a path model from strengths use to work performance, through harmonious passion, subjective vitality, and concentration. This study was conducted on a sample of 404 French-speaking Canadian workers and structural equation modeling analyses were performed in order to test the proposed model. Results show an association between strengths use and work performance. Further, this relation is completely mediated by the proposed variables. Theoretical and applied implications are discussed.

Keywords: strengths; performance; passion; vitality; concentration; positive psychology

Introduction

Strengths use and development is a subject that fascinated people for a long time. According to Linley (2008), it can be traced as far back as the writings of ancient Greek philosopher Aristotle in *The Nicomachean Ethics*, in which he called to 'strain every nerve to live in accordance with the best thing in us'. However, it is only about half a century ago that strengths use and development was brought to light in a few textbooks and journals as a worthwhile topic of study. Career development professional Bernard Haldane (1947) first acknowledged in the Harvard Business Review the importance of strengths use in organizational context, followed closely by management guru Peter Drucker (1967) in *The Effective Executive*, stating that 'the unique purpose of any organization is to make strengths productive' (p. 60).

The pioneering work of Donald Clifton and his research team at the Gallup Organization during the '80s and '90s literally opened a new field, studying and conceptualizing strengths for the first time in a scientific manner. As such, strengths were defined as the ability to provide 'consistent, near-perfect performance in an activity' (Buckingham & Clifton, 2001, p. 25) and were conceptualized as talents, which were refined with knowledge and skills. Based on this knowledge and a large database of interviews with top-performing employees in a variety of fields, the Gallup Organization built a classification of 34 themes of talents and developed the Clifton Strengthsfinder[®] (Asplund, Lopez, Hodges, &

Harter, 2007), an instrument designed to help individuals identify their talents and build enduring strengths. For the last two decades, the Gallup Organization has consistently shown that focusing on strengths development is profitable for organizations, increasing engagement, productivity, and sales (Asplund & Blacksmith, 2012; Clifton & Harter, 2003) as well as reducing employee turnover (Clifton & Harter, 2003; Hodges & Asplund, 2010).

At the turn of the twenty-first century, the strengths movement took another leap forward with the birth of positive psychology (Seligman & Csikszentmihalyi, 2000). Its founders soon acknowledged the need for a classification of human strengths (Peterson & Seligman, 2004) in order to provide the field with a common vocabulary and a direction for research and interventions aimed at promoting human potential. The character strengths and virtues classification was therefore created, along with the VIA Inventory of Strengths Survey, stemming from a considerable research effort to identify strengths and virtues that consistently emerged across history and culture (Dahlsgaard, Peterson, & Seligman, 2005; Peterson & Seligman, 2004). This classification, which comprises 24 character strengths under 6 broad categories of virtues, is now one of the main pillars of positive psychology. Recent research has shown that these 24 character strengths are indeed universal (Biswas-Diener, 2006; Park, Peterson, & Seligman, 2006) and that their identification and use can lead,

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among others, to higher levels of well-being (Forest et al., 2012; Gander, Proyer, Ruch, & Wyss, 2013; Mitchell, Stanimirovic, Klein, & Vella-Brodrick, 2009; Mongrain & Anselmo-Matthews, 2012; Niemiec, 2014; Seligman, Steen, Park, & Peterson, 2005), satisfaction with life (Proctor et al., 2011; Ruch, Huber, Beermann, & Proyer, 2007; Rust, Diessner, & Reade, 2009), academic and personal achievement (Elston & Boniwell, 2011; Linley, Nielsen, Wood, Gillett, & Biswas-Diener, 2010; Park & Peterson, 2008), and mindfulness (Niemiec, 2012; Niemiec, Rashid, & Spinella, 2012). In the workplace, research has also shown that character strengths use and development can foster job satisfaction, well-being, meaning, and engagement (Harzer, & Ruch, 2012, 2013; Littman-Ovadia & Davidovitch, 2010; Littman-Ovadia & Steger, 2010), and that specific character strengths (i.e. curiosity, zest, hope, and gratitude) can contribute to work satisfaction (Peterson, Stephens, Park, Lee, & Seligman, 2010) as well as healthy and ambitious work behavior (Gander, Proyer, Ruch, & Wyss, 2012).

In an effort to further extend research and application of positive psychology theories, researchers and professionals at the Centre of Applied Positive Psychology (CAPP) added many contributions to the strengths movement. One of their major contributions was the proposition of a new definition of strengths: ‘a pre-existing capacity for a particular way of behaving, thinking, or feeling that is authentic and energizing to the user, and enables optimal functioning, development and performance’ (Linley, 2008, p. 9), which brings together the essence of previous conceptualizations of strengths (Linley & Harrington, 2006) and is coupled with their own classification of 60 strengths and their Realise2® strengths assessment (Linley, 2009). Their research and collaborations on strengths revealed positive associations between strengths use and beneficial outcomes such as subjective vitality, well-being, and self-esteem (Govindji & Linley, 2007; Proctor, Maltby, & Linley, 2011; Wood, Linley, Maltby, Kashdan, & Hurling, 2011), provided insightful recommendations on strengths use, development, and coaching (Biswas-Diener, 2009; Biswas-Diener, Kashdan, & Minhas, 2011; Linley & Burns, 2010; Linley, Garcea, et al., 2010; Linley, Woolston, & Biswas-Diener, 2009) and reported positive results of strengths interventions in the workplace (Smedley, 2007; Stefanyszyn, 2007; Woolston & Linley, 2008).

Strengths use and work performance

Although strengths use has been widely associated with work performance (Asplund & Blacksmith, 2012; Clifton & Harter, 2003; Hodges & Asplund, 2010; Hodges & Clifton, 2004), so far very little is known about the underlying psychological processes that might be operat-

ing in this relation. Indeed, some of the most influential authors of the field recently called for more research in this area in order to identify and better understand variables involved in this relation (Asplund & Blacksmith, 2012; Linley, Nielsen, et al., 2010; Peterson et al., 2010). To date, as most publications on strengths simply enumerate strengths’ main characteristics, two authors have made an attempt to go further and proposed dynamic models involving psychological processes through which strengths use might be responsible for workers’ performance: Linley’s model (2008) and Buckingham’s model (2007).

According to Linley’s model (2008), two hallmarks of strengths use are energy and authenticity. As such, when people use their strengths, they feel as if they have more energy available to them – they are more alive, more vigorous, and recover faster. This heightened feeling of energy would be in part responsible for optimal functioning and performance, allowing people to work more vigorously and for longer periods of time. As well, when people use their strengths, they also experience a feeling of authenticity, described as a feeling of being true to oneself and following one’s own directions and preferences in life. This heightened feeling of authenticity would also be responsible for optimal functioning and performance, making people feel genuine and in the right role while at work.

According to Buckingham’s model (2007), another central feature of strengths use is that people experience a state of deep concentration, similar to flow (Csikszentmihalyi, 1990), while using their strengths. This state of deep concentration and involvement in an activity, which is termed ‘growth’ in Buckingham’s SIGN model (2007), would entail greater cognitive activity and be in part responsible for the attainment of success. This experience of concentration while using strengths is also acknowledged by Linley (2008), although not explicitly stated in his model.

These three psychological processes possibly involved in the strengths use to work performance relation (i.e. energy, authenticity, and concentration), although never combined together in a single dynamic model, are however supported by different publications and research. As such, energy and authenticity were mentioned early by Peterson and Seligman (2004) in their list of criteria for character strengths, stating ‘invigoration rather than exhaustion when using the strength’ and ‘a sense of ownership and authenticity vis-à-vis the strength’ (p. 18). Energy and authenticity were also recognized as hallmarks of strengths by Hodges and Clifton (2004), who referred to ‘spontaneous reactions’ and feelings of ‘yearning’ and ‘satisfaction’ towards activities involving strengths (p. 258). In a similar way, Buckingham (2007) also acknowledged the presence of energy and authenticity around strengths, referring in his work

to feelings of anticipation and excitement before activities involving strengths, as well as feelings of ‘authenticity’ and ‘need fulfillment’ after these activities (p. 90). Recent research has also supported these affirmations, revealing significant associations between strengths use and feelings of energy and aliveness (i.e. subjective vitality, Forest et al., 2012; Govindji & Linley, 2007; Wood et al., 2011), as well as between vigor (a concept similar to subjective vitality) and work performance (Carmeli, Ben-Hador, Waldman, & Rupp, 2009; Salanova, Agut, & Peiró, 2005). Further, strengths use has also been associated to flow and concentration through the engaged life orientation to happiness, Duckworth, Steen, and Seligman (2005) namely stating that ‘the wise deployment of strengths and talents leads to more engagement, absorption, and flow’ (p. 635). It is believed that strengths use in the workplace could also lead to flow, given that flow is experienced at work when the environment provides people with challenges that meet their highest abilities (Csikszentmihalyi, 2003) and that high strengths use entails that those abilities are fully applied at work. Again, recent research also tends to support these affirmations, as character strengths have been associated with flow and the engaged life orientation to happiness (Buschor, Proyer, & Ruch, 2013; Peterson, Ruch, Beermann, Park, & Seligman, 2007) and flow has been associated with performance at work (Demerouti, 2006; Eisenberger, Jones, Stinglhamber, Shanock, & Randall, 2005; Kuo & Ho, 2010), as well as in sports (Bakker, Oerlemans, Demerouti, Slot, & Ali, 2011; Schuler & Brunner, 2009; Stavrou, Jackson, Zervas, & Karteroliotis, 2007) and academic settings (Engeser & Rheinberg, 2008). Finally, it must also be stated that the emerging concept of work engagement (Bakker, Schaufeli, Leiter, & Taris, 2008), which is defined as a ‘positive, fulfilling, affective-motivational state of work-related well-being that is characterized by vigor, dedication and absorption’ (p. 187) – three concepts respectively similar to subjective vitality, authenticity, and flow – has been shown to positively predict work performance (Bakker & Bal 2010; Bakker & Demerouti, 2008; Bakker, Demerouti, &

Brummelhuis, 2012; Salanova et al., 2005; Schaufeli, Taris, & Bakker, 2006; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009), although so far never associated with strengths use.

The present research

Despite the fact that Linley’s model (2008) and Buckingham’s model (2007) provide clues about the psychological processes through which strengths use might foster workers’ performance (i.e. energy, authenticity, and concentration) and that these propositions are endorsed in a body of different theories and research, until now no research has attempted to verify these assumptions in a single empirical study. Thus, it is precisely the aim of this research to test these purported relations in a single design and to help extend the scientific discussion on strengths use. Drawing on Linley’s model (2008) and Buckingham’s model (2007) of strengths use and the most recent scientific evidence available, the following model is therefore proposed and tested in this research (see Figure 1). According to this model, strengths use would be associated to work performance through two sets of consecutive mediators: first through harmonious passion, and second through subjective vitality and concentration. In the three sections that follow, we will explain in more detail the different parts of the present model.

Strengths use, harmonious passion, and work performance

As many researchers suggest (Hodges & Clifton, 2004; Linley, 2008; Peterson & Seligman, 2004), people experience a sense of authenticity while using their strengths, which is described by Linley (2008) as a feeling of being true to oneself and following one’s own directions and preferences in life. This description is closely related to the concept of harmonious passion developed by Vallerand et al. (2003), which can be defined as a strong inclination towards an activity that people like, find

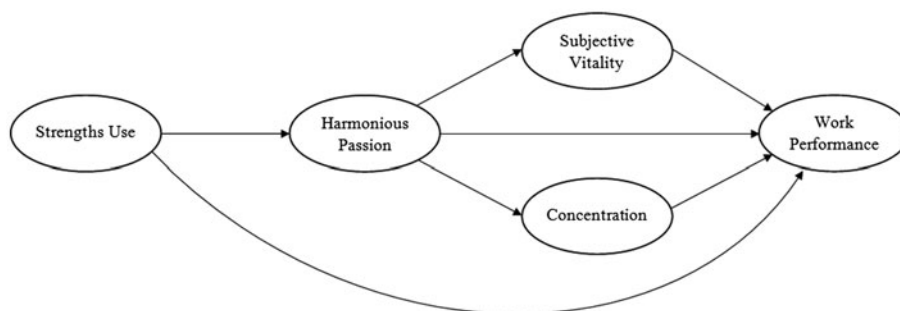


Figure 1. Strengths use to work performance model.

important, invest significant time and energy in, and internalize in their identity. For example, people who are passionate about swimming, like and value this activity, but they do not merely swim; they literally are 'swimmers:' the activity is part of who they are. According to Vallerand and Houlfort (2003), passion for work could be experienced in two different ways: harmonious (the activity is internalized in an autonomous way and individuals stay in control of their passion) or obsessive (the activity is internalized in a dependant way and individuals feel 'controlled' and obsessed by their passion). The model we propose in this study suggests that the more individuals will use their strengths at work, the more they will like their work and identify themselves to it (i.e. experiencing harmonious passion) and the better they will perform at work. Research evidence tends to support these relationships, as increases in strengths use have been associated to increases in harmonious passion (Forest et al., 2012), and higher harmonious passion has been associated to better performances in a variety of settings, such as work (Ho, Wong, & Lee, 2011), sports (Li, 2010; Vallerand et al., 2008) and arts (Bonneville-Roussy, Lavigne, & Vallerand, 2011; Vallerand et al., 2007).

Harmonious passion, subjective vitality, and work performance

The model we propose further suggests that subjective vitality plays a mediating role in the relationship between harmonious passion and work performance. As stated earlier, many researchers have put forward that people experience a feeling of energy and aliveness when they use their strengths (Hodges & Clifton, 2004; Linley, 2008; Peterson & Seligman, 2004). This description exactly matches Ryan and Frederick's (1997) concept of subjective vitality, which is defined as 'one's conscious experience of possessing energy and aliveness' (p. 530). Research on passion has consistently demonstrated that increases in harmonious passion were associated with increases in subjective vitality (Forest et al., 2012; Forest, Mageau, Sarrazin, & Morin, 2011; Li, 2010), which has also been associated with work performance (Carmeli et al., 2009; Salanova et al., 2005). Thus, according to the model we propose, the more people will experience harmonious passion while using their strengths at work, the more they will feel energized about their work and the better they will perform at work.

Harmonious passion, concentration, and work performance

In the same way, the model we propose suggests that concentration also plays a mediating role in the relationship between harmonious passion and work performance. As put forward by Buckingham (2007) and Linley

(2008), people enter a state of deep concentration and involvement in their activity when they use their strengths. This state closely refers to the concentration on task at hand factor of flow, which is defined as 'a feeling of being intensively focused on what one is doing in the present moment' (Kawabata & Mallett, 2011, p. 393) and is considered a core component of the immediate experience of flow (Kawabata & Mallett, 2011; Landhauber & Keller, 2012; Nakamura & Csikszentmihalyi, 2002; Straume, 2008). Recent research on passion and flow has shown that harmonious passion has a positive effect on the emergence of flow (Carpentier, Mageau, & Vallerand, 2012; Forest et al., 2011, 2012; Lavigne, Forest, & Crevier-Braud, 2012; Vallerand et al., 2003) and that flow can positively contribute to work performance (Demerouti, 2006; Eisenberger et al., 2005; Kuo & Ho, 2010). Further, research has also shown that flow can play a mediating role in the relationship between harmonious passion and work performance (Ho et al., 2011). Thus, according to the model we propose, the more people will experience harmonious passion while using their strengths at work, the more they will be focused and concentrated on their tasks and the better they will perform.

Objectives and hypotheses

The goal of this research is to test the hypothesized model of strengths use to work performance (see Figure 1). Therefore, two hypotheses are drawn. Hypothesis 1: strengths use will relate positively to work performance. Hypothesis 2: in the strengths use to work performance relationship, harmonious passion will be the first mediator and both subjective vitality and concentration will be second mediators. More specifically, (a) harmonious passion will relate positively to work performance; (b) harmonious passion will relate positively to subjective vitality and concentration; (c) subjective vitality will relate positively to work performance; (d) concentration will relate positively to work performance.

Method

Participants and procedure

Participants were French-speaking members of a human resources professional association in the province of Québec, Canada, and were invited through the association's listserv to participate in an academic study about strengths use at work. The invitation was sent by email and contained a brief description of the project, an agreement form explaining in detail the aims and scope of the study and a link referring to the online questionnaire. All participants had first to agree with the terms and conditions of research before being allowed to complete the

questionnaire. A total of 430 individuals (75% women, which is representative of the association's membership) participated in the study and completed the questionnaire. In order to reduce possible bias induced by the adaptation to a new job, six participants who had an organizational tenure of less than six months were removed from the study. Of the final 424 remaining participants, 18% were less than 30-years old, 53% between 30- and 45-years old, 23% between 46- and 55-years old, and 6% were 56 years or older. Regarding education, 67% had an undergraduate degree while 33% had graduate education (31% Master's degree and 2% Doctoral degree). With respect to work experience with the current employer, 14% cumulated between 6 months and one year of experience, 38% between 2 and 5 years, 29% between 6 and 15 years, and 19% more than 15 years. Regarding the work sector, 65% of participants were in the private sector while 35% were in the public sector. Finally, 16% of participants were working in an organization counting less than 100 employees, 30% between 101 and 500 employees, 11% between 501 and 1000 employees, 21% between 1001 and 5000 employees, and 22% in a larger than 5000 employees organization.

Measures

Strengths use

Strengths use at work was assessed using a French translation, which was adapted for work, of the strengths use scale (Forest et al., 2012) originally developed by Govindji and Linley (2007). This 14-items instrument asked participants to rate their level of agreement with sentences relating to strengths use (sample items: 'At work, I use my strengths everyday;' 'At work, most of my time is spent doing the things that I am good at doing') on a 1 (strongly disagree) – 7 (strongly agree) Likert-type scale. Previous studies have shown acceptable internal consistency levels for this instrument, with $\alpha=0.96$ (Govindji & Linley, 2007) and $\alpha=0.94-0.97$ (Wood et al., 2011), as well as a single-factor structure and adequate test-retest reliability ($r=0.85$; Wood et al., 2011). The internal consistency for this instrument was also acceptable in the current study, with $\alpha=0.96$.

Harmonious passion

Harmonious passion at work was measured by the harmonious passion subscale of the passion toward work scale, originally developed in French by Vallerand and Houlfort (2003). This six-items subscale asked participants to indicate their level of agreement with sentences relating to harmonious passion at work (sample items: 'My work reflects the qualities I like about myself;' 'My work is in harmony with the other activities in my life')

on a 1 (strongly disagree) – 7 (strongly agree) Likert-type scale. Validation studies performed on this scale revealed a single factor structure and acceptable internal consistency levels, with $\alpha=0.70-0.85$ (Vallerand & Houlfort, 2003). The internal consistency was also acceptable in the current study, with $\alpha=0.91$.

Subjective vitality

Subjective vitality was assessed using a French translation, which was adapted for work, of the subjective vitality scale (Rousseau, 2002) originally developed by Ryan and Frederick (1997). This seven-items instrument asked participants to rate their level of agreement with sentences relating to subjective vitality (sample items: 'At work, I feel alive and vital;' 'At work, I have energy and spirit') on a 1 (strongly disagree) – 7 (strongly agree) Likert-type scale. Previous studies have shown that the internal consistency coefficients levels for this instrument are acceptable, with $\alpha=0.84-0.86$ (Ryan & Frederick, 1997) and $\alpha=0.85$ (Li, 2010). In a validation study, Bostic, Rubio, and Hood (2000) confirmed the single factor structure and the acceptable internal consistency levels ($\alpha=0.80-0.89$) of this scale, but recommended the removal of the only negatively worded item ('I don't feel very energetic'). A reliability analysis performed in the present study yielded the same results and therefore this item was removed, raising the internal consistency levels from $\alpha=0.85$ to $\alpha=0.91$.

Concentration

Concentration was assessed using a French translation, which was adapted for work, of the concentration on task at hand subscale of the flow state scale (Forest, LeBrock, Madore, & Boudrias, 2005) originally developed by Jackson and Marsh (1996). This three-items subscale asked participants to indicate their level of agreement with sentences relating to concentration at work (sample items: 'At work, my attention is entirely focused on what I am doing;' 'At work, I am completely focused on the task at hand') on a 1 (strongly disagree) – 7 (strongly agree) Likert-type scale. Previous studies have shown that the internal consistency coefficients levels for this instrument are usually acceptable, with $\alpha=0.82-0.87$ (Jackson & Marsh, 1996) and $\alpha=0.92$ (Forest et al., 2011). It was also acceptable in the current study, with $\alpha=0.89$.

Work performance

Work performance was assessed using an adaptation of the work performance model (Griffin, Neal, & Parker, 2007), which was translated into French by a translation-back-translation procedure with independent

bilingual judges (Vallerand, 1989). The work performance model is based on a 3×3 matrix considering employee proficiency (adequately fulfilling prescribed role requirements), adaptivity (effectively coping with, responding to, and supporting change) and proactivity (initiating better ways of working and being future-oriented) at the individual, team, and organizational levels and proposes sentences that evaluate performance on each of these points. For parsimonious reasons, only one item was retained for each point, reducing the 27-items original questionnaire to a shorter nine-items-adapted version. This final version asked participants to rate the frequency to which they presented different behaviors relating to work performance in the past six months (sample items: [proficiency – team level] ‘I coordinated my work with my colleagues;’ [adaptivity – organizational level] ‘I responded flexibly to overall changes in the organization;’ [proactivity – individual level] ‘I initiated better ways of doing my tasks’) on a 1 (seldom) – 5 (very often) Likert-type scale. In the present study, an exploratory factor analysis using the maximum likelihood method with promax rotation was conducted on the nine work performance items in order to assess whether they represented a single factor. Close inspection of the results (1 factor, 2 factors, and 3 factors solutions) indicated that the optimal solution was the single factor model, (KMO = 0.80) accounting for 38.0% of total variance, because it eliminated the cross-loading and low internal consistency problems which were present in the 2 factors and 3 factors solutions. All factor loadings were satisfactory (ranging from 0.40 to 0.74; Tabachnick & Fidell, 2007) and the internal consistency coefficient level was acceptable, with $\alpha = 0.79$.

Results

Preliminary analyses

Data were normally distributed with kurtosis and skewness values within the +1 and –1 range (Tabachnick & Fidell, 2007). No evidence of multicollinearity was found,

as tolerance levels ($1 - R^2$) were above the 0.1 threshold (Kline, 2011) for all variables (0.310–0.797). Twenty participants were removed from the original sample because of univariate (16) and multivariate (4) outliers, resulting in a total of 404 participants. Missing values were replaced by means in all analyses, as less than 5% of values were missing in all variables (Tabachnick & Fidell, 2007). Means, standard deviations, correlations, and alpha coefficients are presented in Table 1. Given that sociodemographic variables age, gender, and organizational tenure were correlated ($p < 0.05$) with outcome variables concentration and performance, they were included as control variables in the SEM model.

Strengths use and work performance

In order to test hypothesis 1, which states that strengths use will be positively related to work performance, a linear regression using SPSS 22.0 was conducted on strengths use and work performance while controlling for age, gender, and organizational tenure. Results showed that strengths use was positively associated to work performance ($\beta = 0.41$; $p < 0.001$) and explained 16.0% of its total variance (Adj. $R^2 = 0.160$). This result thus confirmed hypothesis 1.

Mediators in the strengths use to work performance relationship

In order to test hypothesis 2, which states that in the strengths use to work performance relationship, harmonious passion will be first mediator, and both subjective vitality and concentration will be second mediators, structural equation modeling was performed using Mplus 7.11. As recommended by MacCallum and Austin (2000), a full latent variables model design was used. This type of design, which uses items as indicators and measured concepts as latent variables, provides a better estimation because it allows for estimation of the unique variance in each indicator, and estimates of relationships

Table 1. Means, standard deviations and correlations.

Variable	M	SD	r									
			1	2	3	4	5	6	7	8	9	
1. Age	–	–	–									
2. Gender	–	–	0.13**	–								
3. Education	–	–	0.04	0.01	–							
4. Organizational tenure	9.31	10.47	0.01	–0.03	0.05	–						
5. Strengths use	5.18	1.00	0.10*	0.02	–0.04	0.13**	(0.96)					
6. Harmonious passion	5.17	1.07	0.02	0.03	–0.08	0.07	0.73**	(0.91)				
7. Vitality	5.20	0.94	0.04	0.03	–0.07	0.09	0.74**	0.77**	(0.85)			
8. Concentration	4.97	1.09	0.13**	0.08	–0.08	0.09	0.69**	0.62**	0.68**	(0.89)		
9. Work performance	4.25	0.49	0.10*	–0.13**	–0.02	0.10*	0.41**	0.39**	0.40**	0.41**	(0.79)	

Notes: $N = 404$. SD = Standard deviation. Alpha coefficients on the diagonal. * $p < 0.05$. ** $p < 0.01$.

among latent variables are therefore not biased by the presence of error in the indicators. The measurement portion of the model was tested in a first step using confirmatory factor analysis (CFA), followed by the structural part of the model in a second step (Kline, 2011). Estimation was performed using WLSMV method (weighted least squares – mean and variance adjusted), as variables were measured by Likert-type scales (Beauducel & Herzberg, 2006; Finney & DiStefano, 2006; Forero, Maydeu-Olivares, & Gallardo-Pujol, 2009). Since the chi-square test is sensitive to sample size, minor deviations of normality, and minor specification errors, other fit indices such as the comparative fit index (CFI), the Tucker Lewis Index (TLI), and the root mean square error of approximation (RMSEA) were also used to evaluate model fit (Cheung & Rensvold, 2002; Hayduk, Cummings, Boadu, Pazderka-Robinson, & Boulianne, 2007; Hu & Bentler, 1999). Values greater than 0.90 for CFI and TLI indicate acceptable fit, although values greater than 0.95 are preferable (Hu & Bentler, 1999; Yu, 2002). Likewise, values up to 0.08 for RMSEA indicate acceptable fit (Browne & Cudeck, 1993; MacCallum, Browne, & Sugawara, 1996) although values lower than 0.06 are preferable (Hu & Bentler, 1999; Yu, 2002).

Measurement model

The measurement portion of the model was tested in a first step using CFA. Results indicated an acceptable fit to the data (χ^2 (df=772, N=404) = 2533.80, $p < 0.001$, CFI=0.96, TLI=0.95, RMSEA=0.075 [95% CI=0.072–0.078]). All factor loadings were significant ($p < 0.001$) and showed acceptable levels (strengths use = 0.69–0.94; harmonious passion = 0.83–0.93; subjective vitality = 0.72–0.94; concentration = 0.87–0.91; and work

performance = 0.54–0.81). As the measurement model showed an acceptable fit to the data and an adequate validity, the analysis was carried on with the next step.

Structural model

The structural part of the model described in hypothesis 2 (see Figure 2) was tested in a second step. Results indicated suboptimal levels of fit to the data (χ^2 (df=768, N=404) = 2894.40, $p < 0.001$, CFI=0.95, TLI=0.94, RMSEA=0.083 [95% CI=0.080 to 0.086]), thus not confirming our hypothesis. However, close inspection of the modification indexes (MI) between latent variables revealed that the strongest and most relevant MI (114.44) involved adding a direct path from strengths use to subjective vitality. As previous research had also shown a direct link between strengths use and subjective vitality (Govindji & Linley, 2007; Wood et al., 2011) and this proposition was also consistent with theory (Hodges & Clifton, 2004; Linley, 2008; Peterson & Seligman, 2004), the model was respecified to include this path.

The respecified model was tested in a third step. Although model fit significantly improved, as revealed by the chi-square difference test ($\Delta\chi^2$ (1) = 64.34; $p < 0.001$), overall fit levels were still over acceptable levels (χ^2 (df=767, N=404) = 2796.06, $p < 0.001$, CFI=0.95, TLI=0.95, RMSEA=0.081 [95% CI=0.078–0.084]). Again, close inspection of modification indexes between latent variables revealed that the strongest and most relevant MI (121.516) involved adding a direct path from strengths use to concentration. As this path was consistent with previous theory (Buckingham, 2007; Duckworth et al., 2005) and research (Buschor et al., 2013; Peterson et al., 2007), the model was respecified to include this path.

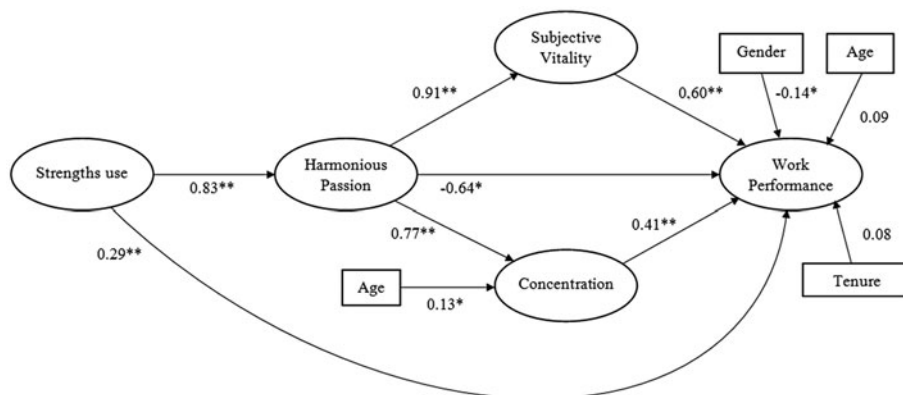


Figure 2. Initial model.

Notes: For clarity reasons, only latent variables are represented in this figure. Standardized parameters reported. * $p < 0.05$. ** $p < 0.01$.

The respecified model was tested in a fourth step. Results revealed that model fit significantly improved, as shown by the chi-square difference test ($\Delta\chi^2(1) = 61.51$; $p < 0.001$). Further, overall fit levels were now acceptable ($\chi^2(df = 766, N = 404) = 2679.03$, $p < 0.001$, CFI = 0.95, TLI = 0.95, RMSEA = 0.079 [95% CI = 0.075 to 0.082]). However, close inspection of model parameters indicated that two paths (strengths use to performance; passion to performance) were non-significant in this new specification. The model was therefore respecified to remove these paths.

The respecified model (see Figure 3) was tested in a fifth step. Results revealed that overall fit levels were again acceptable ($\chi^2(df = 768, N = 404) = 2650.55$, $p < 0.001$, CFI = 0.95, TLI = 0.95, RMSEA = 0.078 [95% CI = 0.075 to 0.081]). According to the chi-square difference test, model fit did not significantly improve ($\Delta\chi^2(2) = 1.98$; $p = 0.37$), which shows that removal of paths did not significantly alter model fit and therefore confirms the superiority of this simpler model over the previous one. Examination of modification indexes revealed that only adding a path from concentration to subjective vitality could significantly improve model fit. As this new specification was not supported by any known research or theoretical perspective, it was not considered and this model was retained as the final one. This model explains 36.2% of total variance in work performance, 75.0% of total variance in subjective vitality, 56.9% of total variance in concentration, and 56.0% of total variance in harmonious passion.

Mediation effects

In order to confirm mediation effects, the following procedure was used (Cheung & Lau, 2008; MacKinnon, Fairchild, & Fritz, 2007; Rucker, Preacher, Tormala, & Petty, 2011). First, one must demonstrate that the independent variable (IV) predicts the mediator variable (MV), which corresponds to the α effect. Second, one

must also demonstrate that the MV predicts the dependant variable (DV), which corresponds to the β effect. Third, one must demonstrate that the indirect effect, represented by the product of $\alpha \times \beta$, is also significant. Finally, one will conclude to partial or complete mediation if the relation between the IV and the DV, controlling for the presence of the MV, is significant (partial mediation) or non-significant (complete mediation). Therefore, in order to confirm the mediating roles of harmonious passion, subjective vitality, and concentration in the final model, indirect effects were calculated. These indirect effects were estimated using Mplus 7.11 INDIRECT function, which provides a bootstrapped (5000 samples in the present study) confidence interval (95%) around the indirect effect. When these confidence interval values exclude zero, the indirect effect obtained can be considered to differ significantly from zero (Preacher & Hayes, 2004). Table 2 presents the results of direct, indirect, and total effects calculations performed on the final model. First, results indicate partial mediation of the strengths use to subjective vitality and strengths use to concentration relationships by harmonious passion. Second, results indicate complete mediation of the harmonious passion to work performance relationship by both subjective vitality and concentration, as indirect effects are significant and the path from harmonious passion to work performance becomes non-significant when included in the model (see structural model results, step four). Third and most notably, results indicate complete mediation of the strengths use to work performance relationship by subjective vitality, concentration, and harmonious passion (through second mediators), as indirect effects are all significant and the path from strengths use to work performance becomes non-significant when included in the model (see structural model results, step four). Taken together, these results show the central role played by harmonious passion, subjective vitality, and concentration in the strengths use to work performance relation. However, since these results show complete

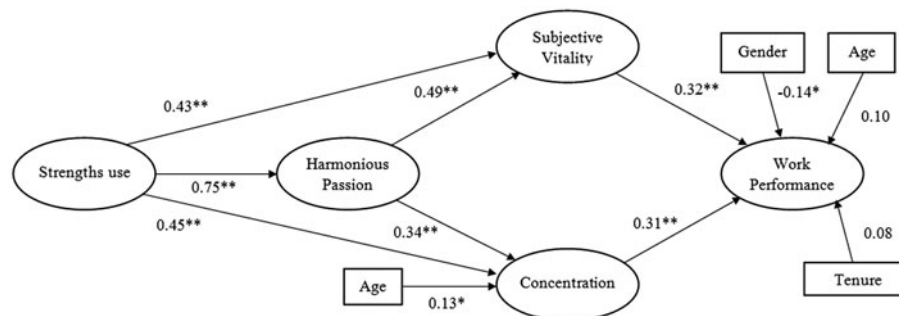


Figure 3. Final model.

Notes: For clarity reasons, only latent variables are represented in this figure. Standardized parameters reported. * $p < 0.05$. ** $p < 0.01$.

Table 2. Direct, indirect, and total effects in the final model.

Path	Standardized parameters			
	β	SE	p	95% CI
Direct effects				
SU-HP	0.747	0.024	<0.001	[0.701, 0.794]
SU-SV	0.434	0.048	<0.001	[0.341, 0.528]
SU-C	0.453	0.072	<0.001	[0.311, 0.594]
HP-SV	0.492	0.046	<0.001	[0.403, 0.581]
HP-C	0.341	0.071	<0.001	[0.201, 0.480]
SV-WP	0.315	0.054	<0.001	[0.210, 0.420]
C-WP	0.310	0.056	<0.001	[0.201, 0.419]
Indirect and total effects				
SU-HP-SV				
Indirect effect	0.368	0.036	<0.001	[0.297, 0.439]
Total effect	0.802	0.021	<0.001	[0.761, 0.842]
SU-HP-C				
Indirect effect	0.255	0.055	<0.001	[0.147, 0.362]
Total effect	0.707	0.034	<0.001	[0.641, 0.773]
HP-SV-WP				
Indirect effect	0.155	0.031	<0.001	[0.095, 0.215]
Total effect	0.260	0.039	<0.001	[0.185, 0.336]
HP-C-WP				
Indirect effect	0.106	0.027	<0.001	[0.054, 0.158]
Total effect	0.260	0.039	<0.001	[0.185, 0.336]
SU-SV-WP				
Indirect effect	0.137	0.028	<0.001	[0.083, 0.191]
Total effect	0.472	0.039	<0.001	[0.396, 0.548]
SU-C-WP				
Indirect effect	0.140	0.036	<0.001	[0.069, 0.212]
Total effect	0.472	0.039	<0.001	[0.396, 0.548]
SU-HP-SV-WP				
Indirect effect	0.116	0.024	<0.001	[0.069, 0.163]
Total effect	0.472	0.039	<0.001	[0.396, 0.548]
SU-HP-C-WP				
Indirect effect	0.079	0.020	<0.001	[0.040, 0.118]
Total effect	0.472	0.039	<0.001	[0.396, 0.548]

Notes: SE = Standard error. CI = Confidence interval. SU = Strengths use. HP = Harmonious passion. SV = Subjective vitality. C = Concentration. WP = Work performance.

mediation (partial mediation was expected), hypothesis 2 is partially confirmed.

Discussion

The objectives of this research were first to verify the positive association between strengths use and work performance, and second to assess whether harmonious passion, subjective vitality, and concentration could play a mediator role in this relationship.

Strengths use and work performance

Our first hypothesis stated that strengths use would be positively associated with work performance. This hypothesis is confirmed, as the linear regression analysis shows a direct and positive relation between strengths use and work performance. Thus, the more individuals

have opportunities to put their strengths to use at work, the more they are likely to demonstrate work performance behaviors, not only by adequately fulfilling their required tasks, but also by adapting better to change and by acting more proactively in their work environments. These results are consistent with previous research that showed positive relations between strengths use and work performance (Asplund & Blacksmith, 2012; Clifton & Harter, 2003; Hodges & Asplund, 2010; Hodges & Clifton, 2004). Moreover, it is also to our knowledge the first completely independent study, not done by a consultation firm, showing a positive association between these variables, thus answering in a way a call made by researchers in the field (Kaiser & Overfield, 2011).

Mediators in the strengths use to work performance relationship

Our second hypothesis stated that in the strengths use to work performance relationship, harmonious passion would be first mediator, while subjective vitality and concentration would be second mediators. This hypothesis is partially confirmed as results show, first, that the relation between strengths use and work performance is not partially, but entirely explained by the mediators and, second, that instead of being consecutive, all three mediators are rather on the same level. These results are notable, because they imply that these mediator variables are not trivial, but play jointly a fundamental role in the explanation of the effect of strengths use on work performance. Moreover, it seems that the effect of strengths use on subjective vitality and concentration was underestimated in our initial model, as these variables were not merely byproducts of harmonious passion, but directly related to strengths use. These results are consistent with Linley's (2008) and Buckingham's (2007) theoretical models, which state that people experience feelings of authenticity, vitality, and concentration while using their strengths, and that these dispositions positively influence work performance. On a broader level, these results are also consistent with general models of strengths that describe these processes as central features of strengths use (Buckingham & Clifton, 2001; Duckworth et al., 2005; Peterson & Seligman, 2004). As such, it seems plausible that individuals who experience higher vitality at work while using their strengths would perform better, as the heightened feelings of energy and aliveness would enable them to work harder and for longer periods of time, to engage in more creative and proactive behaviors, and to better adapt to change (Carmeli et al., 2009; Salanova et al., 2005; Shirom, 2011). In the same way, it is also plausible that individuals who experience deep levels of concentration at work while using their strengths would perform better, as the elevation of cognitive resources towards the task at hand might foster

better performance through higher attention to detail and superior information processing (Demerouti, 2006; Engeser & Rheinberg, 2008; Landhauber & Keller, 2012). Interestingly, it seems that while strengths use would foster harmonious passion towards work, this latter variable would exert its effect on work performance entirely through subjective vitality and concentration. This is a remarkable result, which is in line with previous research on passion at work (Carpentier et al., 2012; Forest et al., 2011, 2012; Ho et al., 2011; Lavigne et al., 2012; Vallerand et al., 2003) and which means that people experiencing a stronger harmonious passion towards their work would perform better because this type of passion would help drive their vitality and their concentration to higher intensities.

Limitations and future research directions

Results from this study should be interpreted with caution as they remain subject to some limitations. The first limitation concerns the cross-sectional design of the present study, which implies that no relations of causality can be inferred from these results. The second limitation concerns the use of self-report measures for all variables, and particularly for work performance, which confines the interpretations of the results to the subjective level. Indeed, using a self-report measure of work performance, it is impossible to know if participants were actually performing as expected on the job. Results only indicate that participants believed they were using their strengths and thought they were performing well at work. Still, the present study remains a first step in the right direction, indicating empirically valid clues about factors that might be involved in the strengths use to work performance relation. The third limitation concerns the reliance on a sample obtained from a professional association, which reduces the generalizability of the results and stresses the need for further replication in other organizations and types of jobs. It must however be stated that although participants share the same professional title, they are spread throughout the province of Québec and occupy different hierarchical positions in various sectors of the economy. A fourth limitation concerns the high proportion (75%) of women present in this sample. This was not a problem within the sample (as it is representative of the association's membership), however it is not representative of the general population. This limit must be taken into account when generalizing the results. The fifth limitation concerns the use of a single source of assessment for all variables, which may introduce biases in the results, such as common-method-variance biases that tends to overestimate the size of the observed relations between variables (Podsakoff, MacKenzie, & Podsakoff, 2012). However, a recent mathematical demonstration (Siemsen, Roth, & Oliveira, 2010) has shown

that this study is less affected by this problem, as many of the estimated effects on criterions involve multiple predictors, which allows for the estimation of the effects of the unique (not shared) part of variance of these variables and reduces the influence of common method bias on the results.

Future research should consider further investigating the strengths use to work performance relationship, as well as the mediator variables involved, using an experimental or quasi-experimental design involving measures of evolution in strengths use, harmonious passion, subjective vitality, concentration, and work performance. For example, an experimental design could be constructed in which participants would engage in an intervention program aimed at developing strengths use (see, e.g. Forest et al., 2012; Gander et al., 2013; Roberts, Dutton, Spreitzer, Heaphy, & Quinn, 2005; Seligman et al., 2005). Measures of strengths use, harmonious passion, subjective vitality, concentration, and work performance could then be taken at different time intervals (pretest, posttest, 1 month, 3 months, 6 months, and 1 year) and compared with a control group. In order to increase the validity of findings, objective measures of work performance could be used (e.g. sales, productivity data, supervisor ratings, etc.), as well as immediate, instead of retrospective, measures of strengths use, harmonious passion, subjective vitality, and concentration (e.g. experience sampling method; Csikszentmihalyi & Larson, 1987). Such an experiment would have the benefit of reaching three important goals at once: (a) validating to the strengths use to work performance relationship, (b) verifying the roles played by harmonious passion, subjective vitality and concentration in that relationship, and (c) testing the efficiency of the selected strengths intervention program. In a more ambitious study, different strengths intervention programs could also be compared by attributing different participants to different conditions (i.e. strengths intervention programs). Preliminary results from a longitudinal research conducted with 78 health sector workers indicate that increases in strengths use (following a strengths development intervention) do indeed lead to increases in positive outcomes (i.e. harmonious passion, subjective vitality, and concentration), which in turn lead to increases in work performance and satisfaction with life (Forest, Dubreuil, Thibault-Landry, Girouard, & Crevier-Braud, 2013).

On a broader level, research efforts should also consider examining more closely the role played by other variables possibly involved in the strengths use to work performance relation, such as confidence (Govindji & Linley, 2007; Hodges & Clifton, 2004; Ouweneel, Schaufeli, & Le Blanc, 2013; Weber, Ruch, Littman-Ovadia, Lavy, & Gai, 2013), hope (Gander et al., 2012; Hodges & Clifton, 2004), meaning (Grant, 2012; Harzer & Ruch, 2012; Littman-Ovadia & Steger, 2010), and job

satisfaction (Bouckenooghe, Raja, & Butt, 2013; Harter, Schmidt, & Hayes, 2002; Harzer & Ruch, 2013; Judge, Thoresen, Bono, & Patton, 2001; Littman-Ovadia & Davidovitch, 2010). Further, researchers should also consider exploring the general role played by positive emotions in this relationship, as it can be reasonably believed that positive emotions are experienced while people use their strengths, notably as they are closely associated with harmonious passion (Carpentier et al., 2012; Forest et al., 2011, 2012; Philippe, Vallerand, & Lavigne, 2009), subjective vitality (Ryan & Frederick, 1997) and concentration (Landhauber & Keller, 2012). In turn, consistent with Frederickson's (2003) broaden-and-build theory and with Lyubomirsky, King and Diener's (2005) work, which state that positive emotions play a central role in performance by broadening people's modes of thinking and action and by building their personal and social resources, it can be expected that these positive emotions could be involved in the explanation of the prosocial, innovation, and adaptation to change behaviors displayed in their work performance.

Conclusion

This study provides important information for researchers and professionals interested in the field of strengths use and work performance. On a theoretical perspective, it extends actual knowledge by adding an independent validation of the association between strengths use and work performance. It also empirically supports theories proposed by mainstream authors of the field, suggesting that passion, vitality, and concentration might be involved in this relationship. On an applied perspective, it entails that encouraging strengths identification, use, and development in human management practices can be an excellent way to promote work performance, thereby stimulating passion, vitality, and concentration at work. For instance, at the individual level, employees could benefit from learning about their personal strengths and then crafting their jobs in order to maximize their use (Buckingham, 2007; Roberts, Spreitzer, et al., 2005). At the team level, supervisors could actively try to learn more about the individual strengths of their employees (e.g. during performance management reviews, during team meetings) and organize work in order to optimize strengths use and development (Buckingham, 2007; Clifton & Harter, 2003; Linley, 2008). At the organizational level, management could foster a culture of strengths use by developing human resources management processes around the maximization of individual strengths (e.g. employee recruitment, selection and integration, employee development, and employee performance management; Biswas-Diener, 2010; Fox Eades, 2008; Linley, 2008; Linley, Garcea, Harrington, Trenier, & Minhas, 2011).

To conclude, while strengths as a general topic of study was brought to light in the first decade of this new century, it is now entering a stage of tangible application in organizational settings. Strengths use and development, as a field, represent a great opportunity for positive psychology to demonstrate its value and provide people with concrete ways of understanding how to fully take advantage of their own potential and apply it in their daily lives, including important spheres such as work.

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