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What good are character strengths beyond subjective well-being? The contribution of the good character on self-reported health-oriented behavior, physical fitness, and the subjective health status — Source link

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Abstract

Character strengths were tested in relation to subjective (life satisfaction) and physical (self-evaluated health and physical fitness) well-being (440 adults). Health-behaviors and the mediating role of health-behaviors in explaining the relationship between character and well-being were also considered. Emotional, intellectual strengths and strengths of the heart were positively associated with life satisfaction and physical fitness. Emotional strengths correlated positively with the self-evaluation of feeling healthy. All strengths (except for modesty and religiousness) were related to health-behaviors; e.g., healthy eating and watching ones food consumption were associated with self-regulation and intellectual strengths. Health behaviors partially mediated the relation of broader strengths factors on subjective and physical well-being. The largest indirect effects were found for leading an active way of life. The study suggests that there are positive relations between character strengths and subjective but also physical well-being. Furthermore, potential mechanisms, which might account for these relations (i.e., health-behaviors) are assessed.

Keywords. character strengths; health; life satisfaction; physical well-being; VIA-IS; well-being

What Good Are Character Strengths Beyond Subjective Well-Being? The Contribution of the Good Character on Self-Reported Health-Oriented Behavior, Physical Fitness, and the Subjective Health Status

This study addresses the role of morally positively valued traits (strengths of character) and different facets of self-assessed physical well-being. The study is based on Peterson and Seligman's (2004) *Values in Action* (VIA) classification, which allows a comprehensive study on the role of the good character for physical well-being on the basis of a *health behavior model*.

Many studies have already addressed the relation of character strengths and different aspects of *subjective* well-being. Typically, the strengths of *curiosity*, *gratitude*, *hope*, *love*, and *zest* demonstrate the numerically highest correlation coefficients with life satisfaction (see Brdar, Anić, & Rijavec, 2011; Buschor, Proyer, & Ruch, in press; Gander, Proyer, Ruch, & Wyss, 2012; Khumalo, Wissing, & Themane, 2008; Littman-Ovadia & Lavy, 2012; Park, Peterson, & Seligman, 2004; Park & Peterson, 2006a, 2006b; Peterson, Ruch, Beermann, Park, & Seligman, 2007; Proyer, Gander, Wyss, & Ruch, 2011; Ruch, Proyer et al., 2010). There is also preliminary evidence that the relations are not only correlational but also causal (Proyer, Ruch, & Buschor, in press). Strengths-based intervention studies show that they can effectively increase life-satisfaction and ameliorate depression (e.g., Gander, Proyer, Ruch, & Wyss, in press; Mitchell, Stanimirovic, Klein, & Vella-Brodrick, 2009; Seligman, Steen, Park, & Peterson, 2005). However, character strengths have been suggested to play a role in mental *and* physical health (Park, 2004). To the best of our knowledge, no study has yet tested the relations between the "good character" and *physical well-being*.

Character strengths and Physical well-being

Various studies have already established a link between personality and different forms of physical health and well-being (for an overview see Smith & Spiro, 2002). Overall, relations have been reported on the level of broad personality traits (such as the big five;

Kubzansky, Martin, & Buka, 2009), specific traits such as positive affect (e.g., Pressman & Cohen, 2005), personal strivings (e.g., Emmons & King, 1988), and also for single character strengths such as optimism (e.g., Scheier & Carver, 1992), or humor (for an overview see Ruch, Rodden, & Proyer, 2011) to name but a few. Other studies have suggested that specific personality traits can have aversive effects; e.g., psychoticism has been related to risky health behaviors (Wistow, Wakefield, & Goldsmith, 1990). When testing relations between physical well-being and the "good character" as a whole, relations between the indicators of physical well-being and character strengths were expected to be lower in size than those reported for subjective well-being. Nevertheless, a substantial contribution of character strengths to domains of physical well-being was hypothesized.

We tested relations between character strengths and three types of well-being; namely, (a) satisfaction with life, as an indicator of subjective well-being (i.e., a replication of earlier findings; see above); and two indicators of physical well-being; (b) a general appraisal of one's own health status; and (c) self-evaluated physical fitness (e.g., strengths or flexibility).

Character strengths and health-oriented behaviors

The *health behavior model* suggests that personality indirectly affects health through influencing one's compliance with health-oriented behaviors (Kubzansky et al., 2009; Vollrath, Knoch, & Cassano, 1999; Wiebe & Smith, 1997). Work using this model has shown that specific traits affect health by preventing from health-damaging and facilitating health-promoting actions, such as health-oriented behaviors. We aim for extending the model toward a specific group of traits; namely, morally positively valued traits (character strengths). We expect that the basic assumptions formulated in the model also apply to the character as represented in the VIA-classification. Hence, this study allows comprehensively testing the relation of the good character, health-oriented behaviors, and well-being.

Whereas the relation between health-oriented behaviors and health or physical well-being is apparent, studies have also shown stable relations between health-oriented behaviors

and personality (e.g., the big five; Booth-Kewley & Vickers, 1994; Hampson, Goldberg, Vogt, & Dubanoski, 2006). Character strengths coincide with health-promoting behavior and experience patterns at work (Gander et al., 2012). This speaks for a positive relation between character strengths and health-oriented behavior. However, a comprehensive study of the contribution of character strengths to health-oriented behaviors is still missing. We used the *Questionnaire of Multiple Health Behavior* (MHB-39; Wiesmann, Timm, & Hannich, 2003) for assessing health behavior in general as well as six types of specific health behaviors; i.e., (1) pursuing an active way of life; (2) complying with societal standards; (3) avoiding (potentially) harmful substances; (4) caring for hygiene; (5) security orientation; and (6) dietary behavior.

Previous literature allows testing specific hypotheses. For example, Park et al. (2004) see physical health and safety as "naturally occurring precursors" (p. 617) of zest, and in a study by Ryan and Frederick (1997), ratings of subjective vitality were associated with fewer reports of physical symptoms and better ratings of health. It is further argued that particular strengths facilitate the pursuit of health-promoting mechanisms; e.g., watching one's weight regularly (e.g., self-regulation, prudence, perspective), being aware of physical symptoms (e.g., perspective, prudence), or engaging more frequently in sports or physical activity in general (e.g., zest, curiosity; for an overview see Peterson & Seligman, 2004). Furthermore, self-regulatory behavior was proposed to prevent from excess (Peterson & Seligman, 2004). Amongst others, relations of self-regulation with healthy eating behavior (Kalavana, Maes, & De Gucht, 2010) or avoidance of alcohol and risky sexual behavior (Quinn & Fromme, 2010) have been described in the literature.

At the level of the different facets of the MHB-39, we expected the largest relations between strengths and the pursuit of an active way of life; various strengths are directly related to specific active behaviors (e.g., creativity, curiosity, or humor) or to activity in general (e.g., zest or persistence). We expected associations between compliance with societal

standards, security orientation, and primarily strengths addressing interpersonal aspects but also strengths directed at others as well as an association between self-regulation and dietary behavior and the avoidance of substances.

While the literature seems to support a robust positive relation between health-related behaviors and character strengths there may be exceptions. For example, strengths like forgiveness do not necessarily display a clear link with indicators of physical well-being (cf. Thoresen, Harris, & Luskin, 2000) and, therefore, were expected to be widely unrelated with health behavior.

Character strengths, health-oriented behaviors and well-being

Finally, the present study aimed at assessing the mediating role of health-oriented behaviors in the relation between character strengths and subjective and physical well-being. Previous studies found health-oriented behaviors to mediate the relation between personality traits and well-being (Hampson et al., 2006), which is also suggested by health behavior models (Wiebe & Smith, 1997). We expect that health-oriented behaviors partially mediate the relations between character strengths and physical well-being and, therefore, help for a better understanding of the nature of the beneficial effects of strengths.

Method

Sample

The sample consisted of 440 (135 men) adults between 18 and 75 (M = 28.6, SD = 10.2). Most participants were German-speaking Swiss (77.5%), followed by Germans (17.5%). The largest portion indicated being single (46.1%) followed by those being in a partnership (39.1%), and those being married (10.9%). The sample was rather well educated with half of the participants having a degree that would allow them to attend a university, and close to a third having a degree from a university or a university of applied sciences (30.8%), and 14.5% reported having completed a vocational training.

Instruments

The *Values in Action Inventory of Strengths* (VIA-IS; Peterson, Park, & Seligman, 2005; German adaptation by Ruch, Proyer et al., 2010) is a 240 item (10 items per strength) questionnaire assessing the 24 strengths covered by the VIA classification. Answers are given on a 5-point Likert-scale from 1 (*very much unlike me*) to 5 (*very much like me*). A sample item is "I never quit a task before it is done" (persistence). Ruch and colleagues report high internal consistencies (all ≥ .72) and test-retest correlations (all ≥ .69 for a 3-, ≥ 65 for a 6-, and ≥ .62 for a 9-months interval). Additionally, they provided information on the factorial as well as convergent validity of the scale, and found substantial convergence between self- and peer ratings as well as a low impact of social desirability. The German version has already been used in several studies supporting its good psychometric properties (e.g., Buschor et al., in press; Gander et al., 2012; Güsewell & Ruch, 2012ab; Harzer & Ruch, in press; Müller & Ruch, 2011; Proyer & Ruch, 2009; Proyer et al., 2011; Proyer & Ruch, 2011). Alpha-coefficients in the present sample ranged between .73 and .91 (median = .80).

Through factor analyses of the VIA-IS, Peterson and Seligman (2004) identified five second-order factors, which have also been reproduced for the German (Ruch, Proyer et al., 2010) and for the Hebrew version (Littman-Ovadia & Lavy, 2012); i.e., *emotional* (e.g., zest, hope), *interpersonal* (e.g., kindness, leadership), *intellectual* (e.g., curiosity, creativity) as well as *theological strengths* (e.g., gratitude, religiousness), and *strengths of restraint* (e.g., persistence, self-regulation). Peterson (2006) and Ruch, Proyer et al. (2010) also reported a two-factor solution; i.e., *strengths of the mind* (e.g., open-mindedness, self-regulation) vs. *heart* (e.g., gratitude, love) and *self* (e.g., curiosity, creativity) vs. *other-directed* (e.g., teamwork, fairness) strengths. These factor-solutions have been replicated in various samples collected with the German version of the scale (e.g., Güsewell & Ruch, 2012a; Müller & Ruch, 2011; Proyer & Ruch, 2011). Both solutions were also reproduced in the present sample and yielded similar loading matrices to those in previous studies. We report analyses

for the 24 strengths and for the broader five and two factors.

The *Subjective Health Status* was assessed by a single item; participants indicated the present state of their health on a 11-point Likert scale from 0 (*very bad*) to 10 (*very good*) (Wiesmann et al., 2003). Single-item ratings of the subjective health status were found to be stable (Miilunpalo, Vuori, Oja, Pasanen, & Urponen, 1997) and substantially related to external criteria; e.g., number of physician visits (Miilunpalo et al., 1997), morbidity (Molarius & Janson, 2002), or mortality (for an overview see Idler & Benyamini, 1997).

The *Questionnaire of Multiple Health Behavior Questionnaire* (MHB-39; Wiesmann et al., 2003) assesses the frequency of performing 39 different health-related behaviors. The items are rated on a 5-point scale from 1 (*never*) to 5 (*always*). Sample items are "use of safety belt," or "repair defective electrical devices." The scale yielded good internal consistency ($\alpha = .82$). As in Wiesmann et al. (2003), a principal component analysis was conducted and six orthogonally rotated factors were extracted (labeled "active way of live" [e.g., living an active sociable live, pursuing sports, and getting fresh air], "compliance" [e.g., complying with medical prescriptions], "substance avoidance" [e.g., avoid consumption of alcohol, nicotine, or illegal drugs], "security orientation" [e.g., driving carefully, repairing defective electrical devices, avoiding violence], "diet" [e.g., eating healthy], and "hygiene" [e.g., regular personal hygiene]). The resulting factor scores were also used in all analyses. This instrument has been widely used in research and its reliability and validity are well established (e.g., Wiesmann & Hannich, 2011; Wiesmann, Niehörster, Hannich, & Hartmann, 2008).

The short form of the *Physical Fitness Questionnaire* (FFB-MOT, orig. "Fragebogen zur Erfassung des motorischen Funktionsstatus"; Bös et al., 2002) consists of 12 items, assessing four basic motor abilities (i.e., cardio-respiratory fitness, strength, flexibility, and coordination). Each item is a specific activity, which has to be rated with regards to how easily it can be carried out, on a 5-point scale from 1 (*I'm not able to do this activity*) to 5 (*I*

can do this activity without difficulties). Sample items are "do a somersault" (coordination), or "jog for an hour without a break" (cardio-respiratory fitness). Internal consistencies for the total scale was $\alpha = .80$ (cardio-respiratory fitness: $\alpha = .87$, strength: $\alpha = .76$, flexibility: $\alpha = .62$, and coordination: $\alpha = .57$). It is widely used in research and its reliability and validity are well established (e.g., Meyer, Niemann, & Abel, 2004; Wagner, Singer, Woll, Tittlbach, & Bös, 2004).

The *Satisfaction with Life Scale* (SWLS; Diener, Emmons, Larson, & Griffin, 1985) assesses global and cognitive satisfaction with one's own life (5 items; e.g., "In most ways, my life is close to my ideal"). It uses a 7-point Likert-style format from 1 (*strongly disagree*) to 7 (*strongly agree*). As in earlier studies we used a German version of the scale (e.g., Ruch, Harzer, et al., 2010; Ruch, Proyer et al., 2010; Ruch, Proyer, & Weber, 2010). Internal consistency in this sample was high, $\alpha = .84$.

Procedure

Participants completed German versions of all instruments in an online study hosted by an institution of higher education. The study was advertised by means of leaflets (e.g., at large public transport stations), via email newsletters, newspapers, and online forums. Participants were not paid for their services (and did not have to pay for their participation) but received an individual feedback on their strengths profile via email after completion of the study. Although online data collection has been criticized (e.g., for possible sample biases), there is empirical evidence showing that the results are comparable to data collected in more conventional ways (e.g., Gosling, Vazire, Srivastava, & John, 2004). The study has been conducted in accordance to the guidelines for "good practice" in Internet-delivered testing (Coyne & Bartram, 2006).

Results

Preliminary analyses

There were small correlations in the expected direction between the assessed variables and demographics. For example, security orientation (MHB-39) increased with age (r = .20) while coordination skills (FFB-MOT) decreased (r = -.30, all $p < .001$). Women (M = 3.50, SD = 0.35) exceeded men (M = 3.33, SD = 0.33) in their health behaviors (total score of MHB-39), $t(438) = 4.81$, $p < .001$, $d = 0.50$. Men (M = 3.29, SD = 0.58) exceeded women (M = 3.11, SD = 0.58) in the VIA-IS self-regulation scale; $t(438) = 2.94$, $p < .01$, $d = 0.31$. Therefore, the impact of age and gender was controlled for in the subsequent analyses.

Character strengths, satisfaction with life, subjective health status, and physical fitness

For the character strengths and the strengths factors, partial correlations (controlling for age and gender) with satisfaction with life, subjective health status, and physical fitness were computed. We also computed squared multiple correlation coefficients between (a) the single strengths and the four facets of physical fitness as covered by the FFB-MOT (i.e., how much variance a single strength explains in physical fitness); and (b) between all strengths and satisfaction with life (i.e., how much variance all strengths explain in satisfaction with life, the subjective health rating, as well as each of the scores of the FFB-MOT; see Table 1).

Insert Table 1 about here

Table 1 shows that the relations with satisfaction with life replicated earlier findings very well; i.e., numerically largest relations with hope, humor, gratitude, zest, love, and curiosity. At the level of the broader strengths factors, emotional and intellectual as well as strengths of the heart increased with life satisfaction. Subjective health status showed numerically largest relations to hope, zest, and emotional strengths. Smaller relations were found for the strengths of persistence, self-regulation, and humor.

Self-regulation played a key role in the relation between strengths and physical fitness (14% shared variance). The strengths of curiosity, zest, leadership, and hope yielded positive

relations with different indicators of fitness. Flexibility existed widely independently from the expression of strengths. Strengths contributed numerically strongest to the expression of cardio-respiratory fitness (27% overlapping variance). At the level of the broader strengths factors, emotional and intellectual strengths demonstrated relations to (indicators of) physical fitness, as did strengths of the heart (total score, strength, and cardio-respiratory fitness). As expected, coefficients for the relation of strengths to subjective health status and physical fitness (13% and 23% explained variance) were numerically lower than those reported for satisfaction with life (43% explained variance).

Character strengths and health behavior

The total score and the facets of the MHB-39 were correlated with the twenty-four VIA-scales and with the broader strengths factors (controlled for age and gender). Multiple squared correlation coefficients were computed between (a) the single strengths and the six dimensions of health behavior; and (b) the twenty-four strengths and the scores of the MHB-39. All coefficients are given in Table 2.

Insert Table 2 about here

All strengths except *modesty* and *religiousness* were positively associated with health behavior. This supports the notion of a greater awareness for health-related aspects of life with greater virtuousness (41% overlapping variance between the MHB-39 and all twenty-four VIA strengths). The numerically largest correlation coefficients were found for self-regulation, zest, kindness, honesty, love, and social intelligence. Self-regulation yielded the numerically highest multiple correlation coefficients with the health behaviors covered by the facets of the MHB-39. Multiple squared correlation coefficients ≥ .20 were also found for appreciation of beauty and excellence, gratitude, hope, humor, and curiosity.

With regard to the facets of health behaviors, a greater endorsement of an *active way of life* was strongly related to virtuousness (43% shared variance). All strengths, except for fairness, modesty, prudence, and religiousness, demonstrated positive relations. The numerically largest coefficient was found for zest (32% overlapping variance) followed by hope, humor, and curiosity. Health behavior directed at *compliance* (e.g., practicing safe sex, getting vaccinations) demonstrated positive relations with interpersonal strengths (i.e., those facilitating relationships with others). However, the median of the correlation coefficients was considerably lower (= .11) compared to the total score and endorsing an active way of life. Strengths that address wisdom and knowledge (e.g., open-mindedness, love of learning, or perspective) but also honesty and fairness as well as strengths that protect against excess (e.g., self-regulation, prudence) and some that refer to theological strengths (e.g., appreciation of beauty and excellence and gratitude) yielded positive relations with *security orientation* (e.g., driving carefully, repairing defective electrical devices; 23% overlapping variance). The *avoidance of substances* (i.e., not consuming alcohol, nicotine) was related to greater prudence and self-regulation while the other strengths existed unrelated from this orientation. People greater in persistence, honesty, and prudence endorsed personal *hygiene* to a greater degree (e.g., regular dental hygiene) while self-regulation was the only strength related with *dietary behavior* (e.g., well-balanced eating).

At the level of the five broader strengths factors, the emotional strengths yielded the largest multiple correlation coefficients with the health behaviors (30% overlapping variance). All apart from theological strengths were positively related to health behavior in general (total score of the MHB-39). Emotional strengths were most strongly related to the endorsement of an active way of life. Theological strengths were associated with security orientation. The only significant negative coefficient was found between theological strengths and dietary behavior, while the latter was positively related to intellectual strengths. Greater strengths of the heart were strongly related to an active way of life (36% shared variance) and greater

endorsement of health behaviors in general (total score). Other-oriented strengths demonstrated positive relations with the total score of the MHB-39, compliance, security orientation, and hygiene.

Health behaviors as mediators for the relations between character strengths and life satisfaction, subjective health status, and physical fitness

In order to examine whether health behaviors account for the relations between character strengths (predictors) and life satisfaction, subjective health status or physical fitness (outcomes), mediation analyses were conducted. At the level of bivariate correlations (partial correlations controlling for age and gender), life satisfaction, subjective health status, and physical fitness showed less than 12% of overlapping variance with each other, thereby allowing the three variables to be tested separately in the subsequent analyses. Analyses were computed for each of the five strengths factors derived from the VIA-IS as predictors and the three outcome variables (life satisfaction, subjective health status, and physical fitness). In each case, the same model was tested, with health behaviors as multiple mediating variables. The mediation model is shown in Figure 1.

Insert Figure 1 about here

Mediation analyses were conducted with an SPSS Script using bootstrapping to compute confidence intervals for the indirect effects (Preacher & Hayes, 2008). Bootstrapping was performed using z = 5,000 samples. In all analyses, standardized values for all variables were used. Results of the mediation analyses are given in Table 3.

Insert Table 3 about here

Table 3 shows that the effects of all strengths factors on life satisfaction were mediated by the health-behavior dimensions *active way of life* (except for interpersonal strengths) and *compliance* (except for intellectual strengths). The strength of the mediated effect was estimated by computing the product of $a_x \times b_x$ (indirect effect). These effects ranged between .01 and .08 and were, therefore, small in size. The total effects of emotional and intellectual strengths on life satisfaction (not controlling for health behaviors) were significant and the coefficients were .50 and .15, respectively. The direct effect was significant for emotional strengths (.41) and theological strengths (-.13). As theological strengths showed no total effect on life satisfaction, but were positively related to living an active way of life, which was also positively related to life satisfaction, it results in a negative direct effect.

Except for interpersonal strengths, the health-behavior dimension "active way of life" mediated all effects of strengths factors on subjective health status. Emotional strengths and intellectual strengths yielded again significant total effects, but no direct effects, whereas theological strengths had negative total and direct effects on subjective health status.

All effects of the strengths' factors on physical fitness were also mediated by health behaviors. Again, the effects of the strengths were mediated mainly by the health behavior "active way of life". There was a large indirect effect of emotional strengths on physical fitness (.15). Substance avoidance had a small effect on the relation between interpersonal strengths and physical fitness. Furthermore, there were small indirect effects via the health-behavior "security orientation": Due to its positive relation with the strengths factors (i.e., negative for emotional strengths) and its negative relation to physical fitness, the indirect effects were negative (i.e., positive for emotional strengths.)

Finally, the health-behavior dimension "diet" mediated the relations between the strengths of restraint, intellectual strengths (both positive indirect effects), and theological strengths (negative indirect effect due to a negative relation between theological strengths and

dietary behavior) on physical fitness. Again, emotional, intellectual, and theological strengths had a total effect on physical fitness, whereas a direct effect was found for interpersonal strengths (positive) and theological strengths (negative). Finally, it should be highlighted that all mediations demonstrated significant R^2-coefficients (the proportion of variance in life satisfaction/subjective health status, which was predictable from the overall model).

Discussion

This study provides initial evidence for an association of virtuousness with the endorsement of health behaviors and physical well-being. Findings were in line with theoretical accounts (Park, 2004) and expectations derived from the *health-behavior model* (Wiebe & Smith, 1997), which we applied for character strengths (i.e., morally positively valued traits). The study also allows for a comparison of the relative contribution of strengths for the cognitive component of subjective well-being (life satisfaction) and physical well-being. Earlier findings on the relations between strengths and indicators of subjective well-being were replicated (e.g., Buschor et al., in press; Gander et al., 2012; Park et al., 2004; Park & Peterson, 2006a, 2006b; Peterson et al., 2007; Ruch, Proyer et al., 2010). The present study also provides initial support for a positive relation between certain strengths and the subjective health status; most notably, emotional strengths. Findings suggest that the strengths with the most relations to the subjective health status only partially overlap with those that are typically the most related with subjective well-being.

Additionally, some of the strengths were also related to (facets of) self-assessed physical fitness: Self-regulation, but also curiosity, zest, leadership, and hope, demonstrated positive relations with overall fitness. At the level of the strengths-factors, primarily emotional and intellectual strengths yielded robust relations. A tentative explanation for these findings could be that the pursuit of specific strengths (mainly emotional and intellectual) relates to greater levels of activity that translate into better physical status. However, it has to be noted that the effect sizes of the relations between character and physical well-being are

small (if compared to those of the relations to subjective well-being) and caution against over-interpretation is needed. Nevertheless, the good character seems to be related with indicators of physical well-being.

All strengths except for modesty and religiousness demonstrated positive relations to multiple health behaviors; they shared overlapping variance of more than 40%. Self-regulation (i.e., regulating what one feels and does) yielded the numerically highest relations. Its function (preventing from excess) may help build and strengthen health-related behaviors. Strong contributions to health-related behaviors were also found for the strengths of curiosity, appreciation of beauty and excellence, gratitude, hope, and humor. All of them had squared multiple correlation coefficients ≥ .20 with indicators of health behavior. In the case of curiosity, hope, and humor almost all of this seems to be accounted for by greater expressions in the endorsement of an *active way of living*. As expected, the latter showed the numerically strongest relation with zest (i.e., approaching life with excitement and energy). It is argued that living one's strengths and deliberately cultivating them enables greater levels of activity and engagement. Living an active way of life was also strongly related with strengths that are referred to as *strengths of the heart* (i.e., strengths focused on emotional expression). Of course, the question of causality cannot be answered in this study but it seems reasonable to assume that strengths facilitate the endorsement towards a more health-oriented lifestyle.

Findings at the level of the broader strengths factors were also in line with expectations. For example, people who value compliance with societal rules and standards demonstrated greater expressions in interpersonal strengths. This means that caring for others in the sense of complying with rules (e.g., when driving) seems to be facilitated by strengths such as love, kindness, social intelligence, or teamwork. This aspect of caring for others has also been reflected in greater expressions of other-directed strengths.

Theological strengths—primarily via the appreciation of beauty and excellence as well as gratitude—but also single strengths like perspective, honesty, and prudence demonstrated

robust relations to having a security orientation. As expected, the avoidance of potentially health-threatening substances seemed to be related with greater expressions in prudence and self-regulation. The latter was also strongly related with dietary behavior. Greater expressions in prudence, persistence, and honesty were related to behaviors associated with hygiene. Overall, self-regulation also seemed to play an important role in these relations. This is in line with findings from a preliminary experimental study on strength-based interventions. Proyer et al. (in press) found that an increase in self-regulation was causally associated with an increase in life-satisfaction in a 10-week strength-based intervention program. Thus, self-regulation seems to be crucial in this respect. While self-regulation as a character strength is not among the "top strengths" regarding its size of correlation with life satisfaction, it seems to contribute strongly to the well-being of people in a different way. More research on the role of self-regulation as a strength of character and its relation to well-being seems warranted.

Results of mediation analyses indicate that the effects of all strengths factors on subjective and physical well-being are mediated by healthy behaviors; i.e., mainly by the health behavior "leading an active way of life". Especially the relation between emotional strengths and subjective and physical well-being were influenced by health-oriented behavior. Even if the effects are small, this finding contributes to the explanation as to why strengths are related to positive outcomes. This study provides ground for future studies in this direction. Physical well-being has not yet been a mainstream topic of research in positive psychology. More studies in this direction are encouraged.

It needs to be highlighted that the mediation analyses were conducted with cross-sectional data, and no conclusions on directionality or causality can be made. Furthermore, there can be other mediators (and moderators), which contribute to the relations than those studied here. Furthermore, the operationalization of various aspects of "physical well-being", which has been used in this study, can be debated. Of course, not all facets that may relate to physical well-being could be considered in this study. Another strong limitation of the present

study is that it is based solely on self-reports collected online. Therefore, future studies should include more facets of health-related behaviors; e.g., in a longitudinal or an experimental design. This helps to answer the questions of directionality and causality. Future studies should also include objective physical health measures and observer reports. Additionally, this study needs replication with a more representative sample. Furthermore, it would be interesting to examine to what extent strengths are able to predict health-behaviors and physical well-being beyond the contribution of personality. Nonetheless, the present findings argue for a more in-depth and detailed analysis of these relations, and we are planning to address these limitations in future studies.

A positive upward spiral as described in Fredrickson's (2001) broaden and build theory of positive emotions might be an explanation for the findings: People can experience positive emotions while being physically active and this activation could enable a positive upward spiral, which motivates further physical activity. Moreover, it was argued that strengths have a buffering effect against psychological or physical stressors and can, therefore, also contribute to well-being (Park, 2004). Earlier research has shown that positive interventions, like practicing strengths, are effective in boosting well-being and ameliorating depression (Sin & Lyubomirsky, 2009). However, comparatively few of these studies have taken physical markers of well-being into account. The study might also have a practical implication. For example, the findings of the present study suggest that positive interventions targeted at specific strengths might be able to also enhance physical well-being (e.g., by fostering a more active way of life). One may think of interventions targeting emotional strengths such as as, for example, zest or humor. This, however, needs to be tested empirically.

The present study provides further support for the notion that the character is plural and that strengths contribute to a "good life" in different ways. While relations with subjective well-being already have been documented, strengths such as zest, hope, or self-

regulation are also positively associated with physical well-being. It is argued that strengths influence subjective and physical well-being via health-oriented behaviors (e.g., by facilitating a healthy life by enabling activities that lead to physical fitness). This helps towards a better understanding of the postulated fulfilling nature of character strengths. The present study can be seen as a first step in the exploration of the nature of the relation of strengths and physical well-being. Future research will show whether there is a potential of strengths-based interventions in helping to foster physical well-being.

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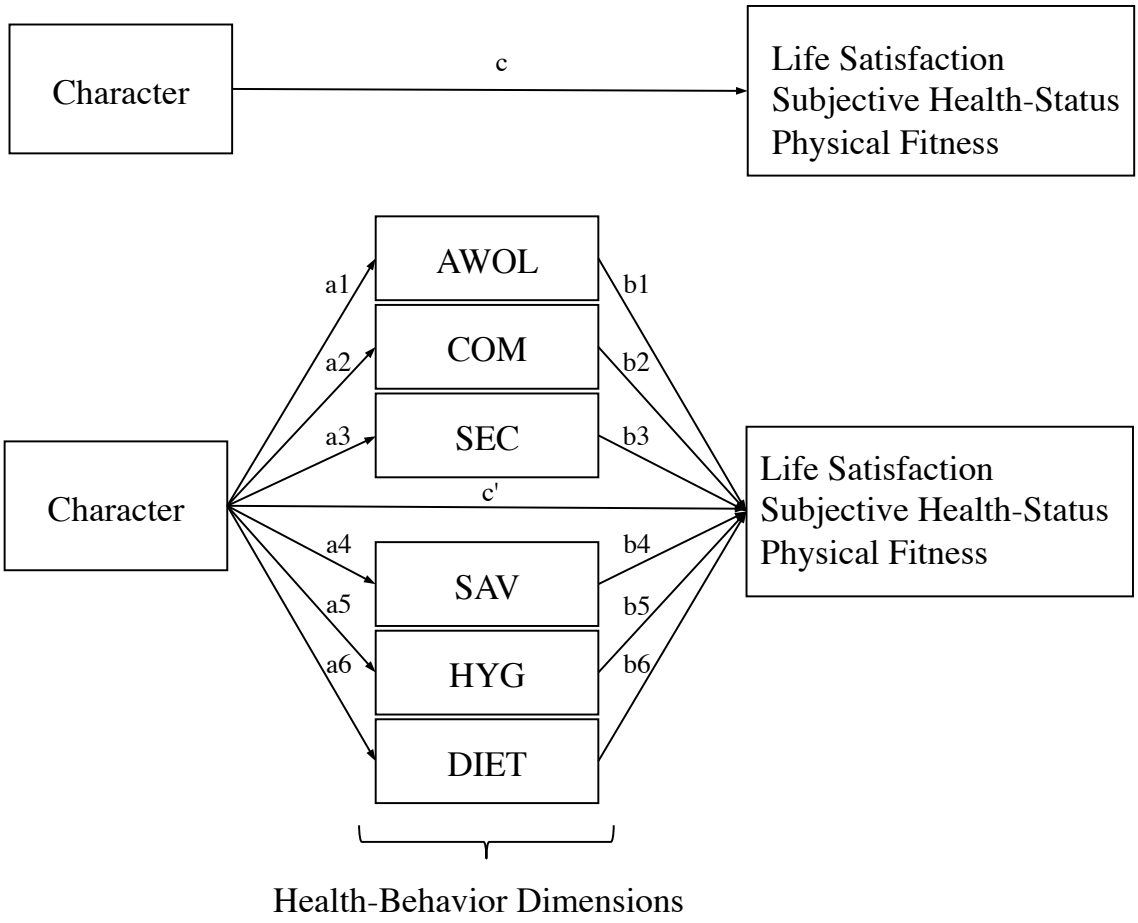

Figure 1. The mediating role of health-behavior dimensions in explaining the relation between five broader strengths factors ("character"; emotional, interpersonal, intellectual, theological strengths, and strengths of restraint) and the three outcome variables (life satisfaction, subjective health-status, and physical fitness); tested separately for each strengths factor and each outcome variable. AWOL = Active way of life; COM = Compliance; SEC = Security orientation; SAV = Substance avoidance; HYG = Hygiene; DIET = Dietary behavior.

Table 1

Partial Correlations (Controlled for Age and Gender) Between the Strengths of Character of the VIA-IS Classification, Satisfaction with Life, Subjective Health Status and Physical Fitness.

			Physical Fitness					
VIA-IS	SWLS	Health	Total	CRF	Strength	Flex	Coord	R^2
Creativity	.04	-.03	.08	.06	.06	.09	.02	.01
Curiosity	.31*	.14	.23*	.24*	.20*	.11	.13	.05
Open M	.06	.02	.11	.13	.12	.03	.05	.02
LoL	.09	-.01	.15	.17	.16	.07	.07	.03
Perspective	.17*	.07	.03	.02	.04	.00	.06	.02
Bravery	.19*	.03	.14	.10	.11	.08	.15	.02
Persistence	.23*	.17*	.16	.17	.11	.05	.15	.03
Honesty	.15*	.04	.05	.04	.04	.02	.06	.00
Zest	.50*	.23*	.23*	.25*	.20*	.10	.11	.06
Love	.40*	.11	.07	.05	.04	.01	.11	.01
Kindness	.18*	.06	.09	.09	.08	.04	.05	.01
Social I	.20*	.12	.11	.14	.10	.02	.06	.02
Teamwork	.18*	.12	.14	.17*	.13	.02	.11	.05
Fairness	.07	.09	.12	.14	.08	.05	.09	.02
Leadership	.19*	.13	.20*	.18*	.18*	.09	.18*	.05
Forgiveness	.18*	.09	.15	.17	.13	.05	.07	.03
Modesty	-.07	.03	-.05	.02	-.01	-.12	-.07	.02
Prudence	-.05	-.01	-.04	.00	-.04	-.06	-.04	.01
Self-regulation	.19*	.15*	.33*	.36*	.22*	.13	.20*	.14
Beauty	.03	.01	.06	.03	.02	.10	.02	.02

(Table 1 continues)

(Table 1 continued)

			Physical Fitness					
VIA-IS	SWLS	Health	Total	CRF	Strength	Flex	Coord	R^2
Gratitude	.30*	.13	.09	.10	.08	.06	.03	.01
Hope	.53*	.23*	.18*	.18*	.16	.02	.18*	.05
Humor	.33*	.15*	.14	.14	.10	.06	.12	.05
Religiousness	.07	-.01	.05	.02	.01	.05	.05	.01
Median	.18	.09	.12	.13	.10	.05	.07	--
R^2	.43	.13	.23	.27	.18	.08	.16	--
5 factors								
Emotional	.50*	.22*	.20*	.18*	.16	.08	.18*	.06
Interpersonal	-.01	.06	.06	.11	.05	-.03	.02	.01
Restraint	.02	-.01	.01	.00	.01	.00	.04	.00
Intellectual	.16*	.08	.24*	.26*	.20*	.11	.10	.06
Theological	-.05	-.09	-.07	-.10	-.06	.04	-.08	.04
2 factors								
Heart (vs. Head)	.41*	.13	.21*	.18*	.17*	.13	.15	.04
Others (vs. Self)	.04	.07	.05	.10	.06	-.05	.03	.01

Note. $N = 440$. VIA-IS = Values-In-Action Inventory of Strengths; SWLS = Satisfaction with Life Scale; Health = one item rating of perceived health (subjective health rating; 0 = "very bad" to 10 = "very good"); Open M = Open Mindedness; LoL = Love of Learning; Social I = Social Intelligence; Beauty = Appreciation of beauty and excellence; CRF = Cardio-respiratory fitness; Flex = Flexibility; Coord = Coordination; R^2 = multiple squared correlation coefficient (rows = four factors of physical fitness and single strengths/strengths factors, columns = twenty-four VIA-strengths and total score for fitness and four factors of physical fitness).

R^2 = multiple squared correlation coefficient (rows = six health behaviors and single strengths/strengths factors, columns = twenty-four VIA-strengths and health rating and health behavior).

*$p < .05$ (after controlling for multiple comparisons; Bonferroni-correction).

Table 2

Partial Correlations (Controlled for Age and Gender) Between the Strengths of Character of the VIA-IS Classification, and Multiple Health Behavior

	Health Behavior							
VIA-IS	Total	AWOL	COM	SEC	SAV	HYG	DIET	R^2
Strengths								
Creativity	.21*	.37*	-.10	.10	.00	.00	.09	.17
Curiosity	.36*	.40*	.06	.15	.02	.05	.08	.20
Open M	.31*	.19*	.13	.21*	.00	.11	.10	.12
LoL	.32*	.24*	.09	.18*	.04	.08	.11	.10
Perspective	.28*	.25*	.11	.21*	-.01	-.04	.06	.10
Bravery	.34*	.39*	.13	.10	-.03	.00	.14	.03
Persistence	.31*	.23*	.16	-.02	.08	.20*	.16	.04
Honesty	.37*	.20*	.20*	.20*	.06	.18*	.05	.06
Zest	.42*	.56*	.09	.06	.02	-.02	.12	.04
Love	.37*	.37*	.30*	.10	-.08	.06	-.09	.07
Kindness	.39*	.34*	.21*	.11	.05	.12	-.02	.10
Social I	.37*	.36*	.20*	.13	-.01	.07	.01	.05
Teamwork	.31*	.25*	.25*	.07	-.02	.07	.01	.12
Fairness	.31*	.15	.14	.22*	.05	.12	.04	.11
Leadership	.36*	.33*	.12	.15	.05	.03	.11	.15
Forgiveness	.30*	.21*	.11	.23*	.06	.02	-.02	.11
Modesty	.10	-.12	.05	.20*	.07	.12	-.08	.08
Prudence	.27*	-.08	.19*	.28*	.17*	.17*	.01	.18
Self-regulation	.51*	.28*	.15	.18*	.20*	.14	.40*	.31
Beauty	.25*	.26*	-.02	.33*	-.12	.08	-.06	.20

(Table 1 continues)

(Table 2 continued)

	Health Behavior							
VIA-IS	Total	AWOL	COM	SEC	SAV	HYG	DIET	R^2
Gratitude	.34*	.34*	.11	.27*	-.05	.03	-.07	.21
Hope	.35*	.42*	.16	.08	-.06	.02	.02	.21
Humor	.18*	.41*	.02	.02	-.15	-.05	-.05	.20
Religiousness	.14	.16	-.05	.20	.07	-.12	.00	.09
Median	.31	.25	.11	.15	.02	.05	.02	--
R^2	.41	.43	.21	.23	.18	.19	.27	--
5 factors								
Emotional	.29*	.51*	.14	-.08	-.08	-.04	.02	.30
Interpersonal	.28*	-.05	.20*	.23*	.13	.19*	.00	.14
Restraint	.26*	.18*	.11	.15	.02	.06	.12	.08
Intellectual	.30*	.24*	.00	.13	.10	.10	.20*	.16
Theological	.05	.15	-.09	.28*	-.12	-.08	-.20*	.15
2 factors								
Heart (vs. Head)	.38*	.60*	.07	.11	-.07	-.05	.04	.38
Others (vs. Self)	.36*	.06	.21*	.26*	.13	.19*	.05	.16

Note. $N = 440$. VIA-IS = Values-In-Action Inventory of Strengths; Health = one item rating of perceived health (subjective health rating; 0 = "very bad" to 10 = "very good"); AWOL = Active Way of Life; COM = Compliance; SEC = Security Orientation; SAV = Substance Avoidance; HYG = Hygiene; Open M = Open Mindedness; LoL = Love of Learning; Social I = Social Intelligence; Beauty = Appreciation of beauty and excellence; R^2 = multiple squared correlation coefficient (rows = six health behaviors and single strengths/strengths factors, columns = twenty-four VIA-strengths and health rating and health behavior).

*$p < .05$ (after controlling for multiple comparisons; Bonferroni-correction).

Table 3

Results of Mediation Analyses for each of the five Strengths Factors as Predictors of Life Satisfaction and Subjective Health Status, with Health Behaviors, Physical Fitness, and Enjoyable Activities as Mediators.

	Total effect	Direct effect	Mediation by Health Behaviors (indirect effects a × b)					
	c	c'	AWL	COM	SEC	SAV	HYG	D
Life Satisfaction								
Emotional Strengths	.50***	.41***	.07†	.01†	-.01	.00	-.01	.0
Interpersonal Strengths	.00	-.02	-.02	.03†	.01	.01	.00	.0
Strengths of Restraint	.01	-.07	.06†	.02†	.01	.00	.00	.0
Intellectual Strengths	.15**	.09	.08†	-.01	.00	.00	.00	-.0
Theological Strengths	-.06	-.13**	.06†	-.02†	.02	-.01	.00	.0
Subjective Health Status								
Emotional Strengths	.13**	.08	.06†	.01	-.01	.00	-.01	.0
Interpersonal Strengths	.07	.05	-.01	.01	.01	.00	.01	.0
Strengths of Restraint	-.03	-.10	.03†	.01	.01	.00	.00	.0

(Table 4 continues)

(Table 3 continued)

	Total effect	Direct effect	Mediation by Health Behaviors (indirect effects a × b)					
	c	c'	AWL	COM	SEC	SAV	HYG	D
Intellectual Strengths	.11*	.06	.03†	.00	.01	.00	.01	.0
Theological Strengths	-.11*	-.14**	.03†	-.01	.03	.00	.00	-.0
Physical Fitness								
Emotional Strengths	.22***	.05	.15†	.00	.01†	-.01	.00	.0
Interpersonal Strengths	.04	.10*	-.02	.00	-.02†	.01†	.00	.0
Strengths of Restraint	.04	-.05	.05†	.00	-.01†	.00	.00	.0
Intellectual Strengths	.19***	.08	.07†	.00	-.02†	.01	.00	.0
Theological Strengths	-.11*	-.10*	.05†	.00	-.02	-.01	.00	-.0

Note. $N = 440$. AWOL = Active Way of Life; COM = Compliance; SEC = Security Orientation; SAV = Substance Avoidance; HYG = Hygiene.

† the 95% CI obtained for the indirect effect by bootstrapping did not include 0.

Coefficients for the a- and b-paths are not shown but can be obtained from the authors upon request.

*$p < .05$; **$p < .01$; ***$p < .001$.