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Do the core self-evaluations moderate the relationship between subjective well-being and physical and psychological health?

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Abstract

This study investigates the role that core self-evaluations (CSE) plays on the relationship between subjective well-being (SWB) and health functioning. The findings from a sample of 160 undergraduate students revealed that CSE explains incremental variance in physical and psychological health functioning, above and beyond the effect of SWB. The results also revealed that CSE moderated the relationship of two indicators of SWB (PA/NA and satisfaction with life) with physical functioning, suggesting that individuals who have positive emotions and/or are satisfied with their lives and simultaneously are high CSE are more likely to demonstrate good physical health functioning. Contrary to expectations, the results revealed that CSE did not moderate the relationship between SWB and psychological health functioning. The findings are discussed in the context of the importance of CSE on health psychology, while implications for practice and directions for future research are proposed.

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1. Introduction

Over the past several decades, there has been increasing interest in the construct of subjective well-being (SWB) in an attempt to understand how people evaluate their lives (Diener, 1984; Diener, Suh, Lucas, & Smith, 1999). SWB is a broad category of phenomena that includes people's emotional responses, domain satisfactions, and global evaluations of life satisfaction. When people formulate judgments of SWB, the evaluations can be either cognitive, when a person gives conscious evaluative judgments about his life, or may consist of the frequency with which the person experiences positive and negative emotions (Diener & Lucas, 2000). Diener, Eunkook, and Oishi (1997) suggest a three component model for the SWB construct: (a) satisfaction, (b) pleasant affect, and (c) low levels of unpleasant affect. The first component (the cognitive aspect of SWB) has to do with how individuals make judgements about their satisfaction with various life domains – including job, marriage, parenting, friendship, as well as with their life as a whole. The other two components of the construct are better known as Positive Affect (PA) and Negative Affect (NA), and are the most general dimensions that describe everyday affective experience. Briefly, PA reflects the extent to which a person feels excited, strong, active, and inspired. On the other hand, NA reflects the extent to which a person feels distressed, hostile, irritable, and nervous. These two factors represent affective state dimensions which are closely related to the corresponding affective trait dimensions of extraversion and neuroticism (Watson, Clark, & Tellegen, 1988).

In an attempt to identify the causal factors of the construct of SWB, researchers have adopted two different approaches: top-down and bottom-up (Diener, 1984). Supporting the bottom-up perspective, evidence indicates that situational variables such as income, employment, marital status, religion, health, as well as some demographic variables such as gender, age, and education, have an impact on SWB, although there are people who argue that this impact accounts less than 20% of the total variance in SWB (Campbell, Converse, & Rogers, 1976).

Evidence also supports the top-down approach. Researchers have identified a genetic source of SWB; findings from a longitudinal study suggest that approximately half of the variability in positive and negative affect is genetic (Tellegen et al., 1988). Within the same framework, personality seems to be an important predictor of SWB. A growing body of literature indicates that personality dimensions such as Extraversion and Neuroticism mainly, and Agreeableness and Conscientiousness to a lesser extent, account for variance in SWB (see DeNeve & Cooper, 1998; for a review). High self-esteem is also one of the strongest predictors of SWB (Campbell et al., 1976; Diener & Diener, 1995), while optimism is another personality related construct which has been found to correlate positively with SWB (Diener & Lucas, 2000; Salovey, Rothman, Detweiler, & Steward, 2000).

A research question which has garnered considerable attention lately is the role that SWB plays on physical and psychological health. According to many researchers, SWB is relevant to the health area not only because it is an integral component of mental health but also because satisfaction with one's physical health is a component of SWB (Pressman & Cohen, 2005). In particular, research demonstrates that there are beneficial influences of SWB on recovery from a diverse set of health conditions, such as stroke (Ostir, Markides, Black, & Goodwin, 2000), coronary

artery disease diagnosis (Valkamo, Hintikka, Niskanen, & Viinamaki, 2001), and AIDS (Moskowitz, 2003). Similarly, Maier and Smith (1999) have found that higher SWB was associated with lower mortality rates, a result which was supported by findings from other studies as well (Levy, Slade, Kunkel, & Kasl, 2002).

The aforementioned research findings indicate a connection between SWB and health functioning, although there are many issues that should be re-examined in order to determine the nature and the consequences of such a relationship (Pressman & Cohen, 2005). These findings revealed also that there is substantial variance in this relationship that remains unaccounted. For example, there is a trend to move from merely examining personality as a main effect to focusing on moderator effects that explain how specific personality traits and other constructs from the individual differences area influence this relationship. A growing body of literature documents the moderating role of such constructs within the SWB-health framework (Schlosser, 1990). In particular, Lachman and Weaver (1997) provided evidence regarding the moderating role of the sense of control on the relationship between well-being and health. Similarly, Slaski and Cartwright (2003) found that emotional intelligence moderates the relationship between well-being and health. Donnell (2003) also found that hardiness is a moderator between stress and well-being, and Siddique and D'Arcy (1984) examined the moderator effects of locus of control (LOC) on the stress-well-being relationship.

A relatively new construct within the personality domain which can serve as a potential moderator of the relationship between SWB and health functioning is the concept of the core self-evaluations (CSE). CSE is a broad personality construct indicated by four specific traits: (a) self-esteem (i.e., the basic appraisal that a person's makes of his worth), (b) generalized self-efficacy (i.e., a person's global estimate of his ability to mobilize the motivation and abilities needed to achieve important outcomes), (c) locus of control (i.e., the degree to which an individual believes that he/she [rather than the environment or fate] controls events in his/her life), and (d) neuroticism, which defines the lack of emotional stability of an individual and his tendency to dwell on the negative (Judge, Van Vianen, & De Pater, 2004). According to Judge et al. (2004), "Individuals with positive core self-evaluations appraise themselves in a consistently positive manner across situations; such individuals see themselves as capable, worthy, and in control of their lives" (pp. 328–329).

CSE has been examined mostly within the organizational context (Judge, Erez, & Bono, 1998; Judge et al., 2004). Recently, however, attempts have been made to expand the exploratory potential and the implications of the CSE in other areas of human behaviour research. For example, Best, Stapleton, and Downey (2005) explored the role of CSE on burnout, a form of poor, work-related health. Their results demonstrated that CSE has a negative effect on burnout, suggesting the importance of CSE on health functioning. Additionally, Judge, Thoresen, Pucik, and Welbourne (1999) found that CSE is related with both forms of affectivity, while Judge et al. (1998) reported a significant positive correlation between CSE and life satisfaction. Piccolo, Judge, Takahashi, Watanabe, and Locke (2005), further reported a positive correlation between CSE and happiness.

Taken together, the above evidence suggests that CSE is a construct which appears to be related to both SWB and to health. In order to substantiate this argument, we investigated whether CSE is correlated with the aforementioned variables. In particular, we hypothesized that CSE will positively correlate with PA and with life satisfaction, and negatively correlate with NA and with physical and psychological health functioning. In order to validate the above arguments, we decided to investigate whether CSE will explain additional variance of health functioning above

and beyond the effect of SWB. Finally, we were interested in investigating whether CSE moderates the SWB – health functioning relationship. Baron and Kenny (1986) defined moderator as the variable that alters the direction or strength of the association between two other variables.

Therefore, we assumed that the relationship between SWB and health functioning would be stronger in those with high CSE scores since health may be affected by positive personal evaluations.

2. Method

2.1. Participants

The sample of this study consisted of 160 undergraduate students. The majority of the sample was comprised of women (60%), and most were third-year undergraduate students, with an average age of 21.44 years ($SD = 2.57$).

2.2. Measures

Core self-evaluations scale (CSES; Judge, Erez, Bono, & Thoresen, 2003). The CSES is a 12-item questionnaire that has been developed to operationalize the construct of core self-evaluations. The main advantage of this questionnaire is that it has been designed to measure the underlying concept itself rather than the particular indicators of the concept. Despite the salience of the traits that compose this construct (self-esteem, generalized self-efficacy, locus of control, and neuroticism), it has been relatively uncommon for researchers to study these traits together. Even in the relatively rare case when the traits are studied together in personality research, generally they are treated as entirely separate variables with no discussion of their interrelationships or possible common core (Judge et al., 2003). Example items include, “I complete tasks successfully”, “Overall, I am satisfied with my self”, “Sometimes I feel depressed”. The alpha coefficient for CSES total score for this particular study was .80.

Positive and Negative Affect Schedule (PANAS; Watson et al., 1988). The PANAS includes 10 positive (happy, joyful, pleased, etc.) and 10 negative (depressed, frustrated, angry, etc.) emotion adjectives, and the participants are asked to indicate the extent to which they experience these adjectives in general. Alpha reliabilities for the PA and NA scales were .80 and .75, respectively.

Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985). This is a five-item questionnaire that is used to measure the participants’ global, cognitive assessment of their life as a whole. The SWLS typically uses a seven-point response format. We changed the response format to a five-point scale (1 = strongly disagree, to 5 = strongly agree) to preserve consistency with the other scales. The alpha reliability was .82 in this study.

Physical and psychological health measure. Physical and psychological health was measured using a 17 item scale from ASSET (Cartwright & Cooper, 2002). ASSET is an occupational stress diagnostic tool, which also provides scores for physical and psychological health functioning. The physical functioning subscale comprises 6 items, while the psychological functioning subscale contains 11 items. Example items include, “Insomnia - sleep loss”, “Headaches”, “Constant irritability”, “Mood swings”. Individuals were asked to indicate on a 4-point scale (1 = *never* to 4 = *very*

often), how often they were experiencing such behaviours. High scores on these scales indicate poor physical or psychological health. We decided to use this particular scale in order to measure physical and psychological health, since it is the most reliable and valid instrument available in Greek (Nikolaou & Tsaousis, 2002; Vakola & Nikolaou, 2005). For this study, both scales demonstrated acceptable alpha reliabilities (i.e. .75 and .79, respectively).

2.3. Procedure

Students filled out the questionnaires as a partial fulfilment of the research participation option in their psychology course. A third of the participants completed the PANAS first, another third completed the SWLS first, while the remaining third completed the ASSET sub-scale first, in order to control for possible order effects. Researchers informed the participants about confidentiality issues and that they had the right to withdraw from the administration at any time and any stage.

3. Results

Table 1 presents the intercorrelation matrix along with the descriptive statistics of the study's variables. In line with previous findings, CSE was positively correlated with PA and satisfaction with life, and negatively correlated with NA, and physical and psychological health functioning.

In order to explore the additive effect of CSE on health functioning above and beyond the effect of SWB, we estimated two hierarchical regressions – one using physical health as criterion variable, and another using psychological health. We used age as a control variable, since previous findings have identified links between this variable and health. Following the guidelines of Cohen, Cohen, West, and Aiken (2003), CSE was entered last following the control variable and the three SWB constructs. The results of these analyses are presented in Table 2.

The results of the hierarchical regression analyses demonstrate that CSE explains a statistically significant proportion of variance in health. In particular, the analyses show that CSE explains a significant amount of incremental variance in physical ($\Delta R^2 = 4\%$) and psychological ($\Delta R^2 = 7\%$) health functioning, above and beyond the effect of SWB, emphasizing the significance of this newly established personality constellation in other areas of research and practice, apart from

Table 1
Descriptive statistics and Correlation Matrix of Study Variables

	Mean	SD	2	3	4	5	6
Core self-evaluations	40.14	6.57	.53**	-.43**	.51**	-.35**	-.60**
Positive affect	36.66	6.47		-.09	.32**	-.15	-.28**
Negative affect	22.40	5.88			-.27**	.41**	.58**
Satisfaction with life	20.49	6.23				-.17	-.37**
Physical health	13.09	3.24					.56**
Psychological health	24.16	5.66					

Notes: * $p < .05$.

** $p < .001$.

Table 2

Hierarchical regression analysis examining the additive effect of core self-evaluations (CSE) on physical and psychological health functioning

Criterion variable	Predictors	R^2	R^2 change	F change	β
Physical health	Step 1				
	Age	.00	.00	.01	.05
	Step 2				
	Satisfaction with life	.03	.03	5.10*	.02
	Step 3				
	Positive affect	.04	.01	.80	.02
	Negative affect	.18	.14	26.78**	.32
	Step 4				
	Core self-evaluations	.21	.03	5.10**	-.24
Psychological health	Step 1				
	Age	.01	.01	1.24	.01
	Step 2				
	Satisfaction with life	.15	.15	26.46**	-.07
	Step 3				
	Negative affect	.39	.24	61.67**	.39
	Positive affect	.42	.03	7.20*	.01
	Step 4				
	Core self-evaluations	.49	.07	21.48**	-.39

Notes: “ β s” are taken from the last equation.

* $p < .05$.

** $p < .01$.

job performance and employee satisfaction. Another noteworthy result from this analysis is the important impact of NA on both physical and psychological health functioning.

The hypotheses pertaining to the moderating effect of CSE were examined using moderated hierarchical regression analyses, following the instructions provided by Baron and Kenny (1986) and Frazier et al. (2004). The results of the six regression analyses are shown in Table 3. The results revealed a significant interaction between CSE and all the components of SWB, when physical health functioning was used as a criterion variable: positive affect ($\Delta R^2 = .02$, $p = .04$), negative affect ($\Delta R^2 = .03$, $p = .01$), and satisfaction with life ($\Delta R^2 = .03$, $p = .02$). In particular, individuals who were high PA and scored high on CSE, were more likely to demonstrate good physical health functioning, as opposed to individuals who scored high on SWB but low on CSE. Additionally, individuals who were both high NA and with average or high CSE were more likely to demonstrate poor physical health functioning, as opposed to individuals with low CSE for whom there was no relationship between NA and poor physical health.

Regarding the individuals who appeared to be happy or satisfied with their lives in general, it seems that they tended to feel physically well. This is certainly the case not only for those who scored high on CSE but also for those with average scores. The nature of these interactions is shown in Figs. 1–3. Regression lines were plotted for high, average, and low levels of CSE and physical health (+1, 0, and –1 standard deviations from the mean). Finally, contrary to expectation, no significant interactions were found when psychological health functioning was used as the outcome variable.

Table 3

Hierarchical regression analysis examining the moderating effect of core self-evaluations, subjective well-being (positive-negative affect and satisfaction with life) and health functioning

Variable	Physical health				Psychological health			
	R^2	R^2 change	F change	β	R^2	R^2 change	F change	β
Step 1								
Age	.01	.01	.01	.07	.01	.01	1.26	.02
Step 2								
CSE	.12	.12	21.62**	-.33	.35	.35	85.28**	-.62
PA	.13	.01	.35	-.01	.36	.01	.63	.04
Step 3								
CSE \times PA	.15	.02	4.35*	-.17	.37	.01	.81	-.06
Step 1								
Age	.01	.01	.01	.08	.01	.01	1.24	.01
Step 2								
CSE	.12	.12	21.50**	-.22	.36	.36	84.75**	-.43
NA	.21	.09	16.29**	.36	.49	.13	37.41**	.39
Step 3								
CSE \times NA	.24	.03	6.16**	.18	.49	.00	.12	-.02
Step 1								
Age	.01	.01	.01	.08	.01	.01	1.26	.02
Step 2								
CSE	.12	.12	21.62**	-.35	.36	.36	85.28**	-.55
SWL	.12	.00	.01	.01	.37	.01	1.91	.10
Step 3								
CSE \times SWL	.15	.03	5.20*	-.17	.37	.00	.52	-.05

Notes: " β s" are taken from the last equation.

CSE = Core self-evaluations; PA = Positive affect; NA = Negative affect; SWL = Satisfaction with life.

* $p < .05$.

** $p < .01$.

4. Discussion

This study examined the link between core self-evaluations and health, and also investigated whether CSE moderated the relationship between SWB and physical and psychological health functioning. Results of this study revealed two key points. First, there were significant relationships among CSE, SWB, and health functioning. Specifically, it was found that CSE explains additional variance of health functioning above and beyond the effect of SWB. There is ample evidence suggesting the positive role of SWB on health functioning (Pressman & Cohen, 2005; Valkamo et al., 2001). Hence, the results of this study strengthen the argument that there are other personality related variables which intervene and influence this relationship (Donnell, 2003; Lachman & Weaver, 1997; Siddique & D'Arcy, 1984; Slaski & Cartwright, 2003). It becomes evident

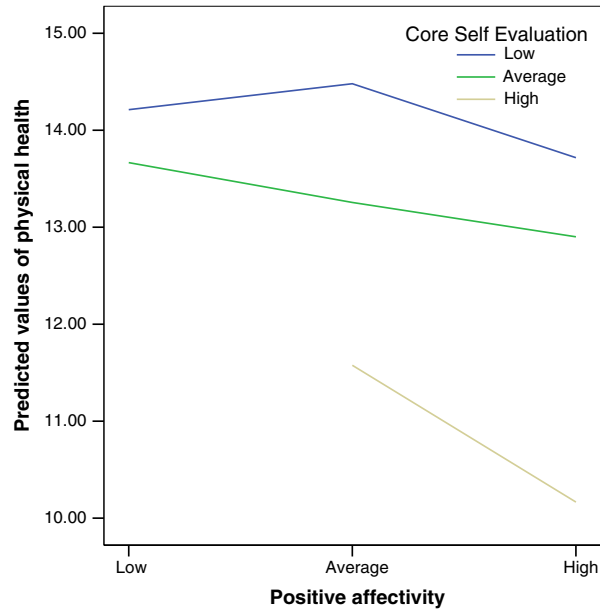


Fig. 1. Significant interaction between positive affectivity and core self-evaluations on predicted values of physical health functioning.

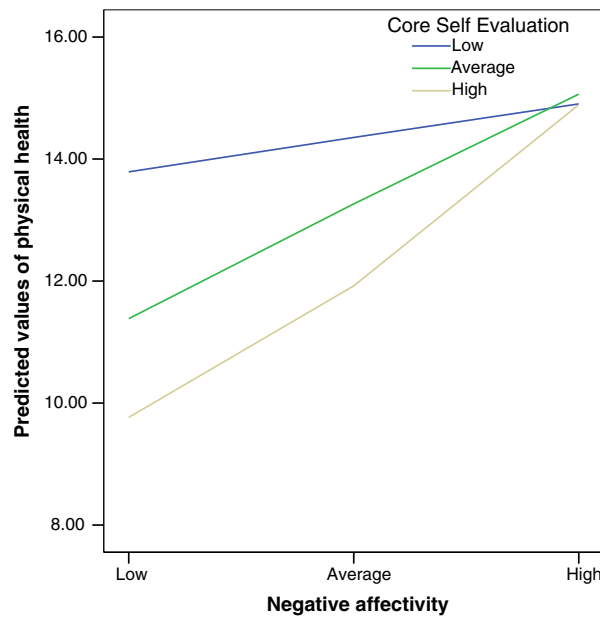


Fig. 2. Significant interaction between negative affectivity and core self-evaluations on predicted values of physical health functioning.

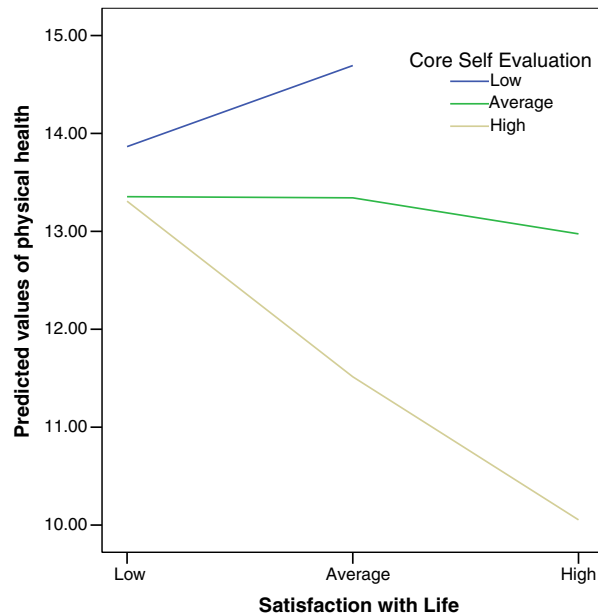


Fig. 3. Significant interaction between satisfaction with life and core self-evaluations on predicted values of physical health functioning.

that the way that individuals make inferences about themselves seems to affect on the one hand their emotional reactions to events and their judgments they form about their life satisfaction, and on the other hand their physical and psychological condition.

The second key point of this study is that CSE moderates the relationship between SWB and physical health functioning. Previous research has demonstrated that when people feel happy or are satisfied with their lives in general, they tend to face fewer medical problems than people who feel unhappy and are dissatisfied (Diener, 1984; Parker, Thorslund, & Nordstrom, 1992). However, the results reported in this study suggest that this relationship is moderated by the ability of the individuals to make successful evaluations about themselves (high CSE). The higher the ability of the individual to make positive self-evaluations, the stronger is the positive relationship between SWB and physical health functioning. The same also applies for the emotional aspect of the SWB construct (i.e., positive and negative affect). In particular, although numerous studies provide evidence on the influential role of positive affect on physical health functioning (Cohen et al., 2003; Ostir et al., 2000; Pressman & Cohen, 2005), it seems that this relationship is enhanced when individuals have a characteristic positive self-regard (high CSE). Similarly, although the relationship between negative affect and poor health functioning is well justified from previous research (Maier & Smith, 1999; Riley, 1999), the findings of the current study revealed that this relationship is influenced positively when high or even average levels of CSE are present. In particular, individuals who report more negative than positive emotions in their everyday life transactions and score average or high on CSE are more likely to demonstrate poor physical health functioning, as opposed to individuals with low CSE for whom there is no relationship between NA and poor physical health. This means that the strong relationship between NA and poor health

functioning applies only for individuals who are effective in making successful evaluations about themselves.

Apart from the role that CSE could play on the relationship between SWB and physical health functioning, we were also interested in the role of CSE on the relationship between SWB and psychological health functioning. Particularly, we hypothesized that CSE would have a moderating effect on the SWB-psychological health relationship. Contrary to expectations, the results from the analysis revealed that CSE has no significant interaction on the relationship between SWB and psychological health functioning. A possible explanation of this result could be the weak relationship between SWB and psychological health. According to Diener et al. (1997), this relationship is not well justified, since there is evidence which shows that SWB is not a sufficient condition for psychological health. Similarly, Ryff (1989) and Ryff and Keyes (1995) argue that there are other more important characteristics that are essential for mental health (e.g., environmental mastery, personal growth, and purpose in life) and SWB accounts only for a small amount of variance.

The results from this study have important theoretical implications for the study of the self-concept, since they demonstrate the additive role that CSE plays on aspects of human behavior not previously studied, in addition to the organizational variables of job satisfaction and job performance that have been exhaustively examined. Judge et al. (2004) introduced the concept of CSE as a broad personality trait, which can serve as an important predictor of job satisfaction and job performance. Since then, very few studies have attempted to investigate the role of CSE on other aspects of human behavior (Judge et al., 1998; Judge et al., 1999; Piccolo et al., 2005). The results of this study are novel to the relevant literature and suggest that CSE is a personality related construct which can be used as an important factor in an attempt to explain some degree of variance at an interpersonal and intrapersonal level.

A possible limitation of this study could be that our results are based on cross-sectional self-reports, resulting in possible contamination from common method variance. In this case, the correlation between the measures will be higher than it ideally should be because participants will apply the same biases to each task. However, the different pattern and direction of results observed across the variables of the study suggest that common method bias is an unlikely explanation for the results. Nevertheless, even if it exists, there is no reason to expect that the differences in correlations among CSE, SWB, and health functioning are due to the effect of common method variance, since its presence would not be expected to exert differential bias on the observed relationships. Moreover, we do not believe that it can explain the significant moderating effects discovered here. Another possible limitation concerns the nature of the sample used in this study. Since it is comprised entirely by young individuals who are probably mostly in good physical and psychological health, this might have implications for the generalizability of the findings to the general population.

Despite the above limitations, the study has potential theoretical and research implications. The significance of this research shifts the focus of understanding health-related issues to a merely dispositional perspective. Specifically, this study explored successfully the relationship between CSE, SWB, and health—and also provided partial support for the moderating effect of CSE in the aforementioned relationship. These results suggest the significance of CSE in health psychology. Future research might investigate the mechanisms by which self-evaluative characteristics, such as the CSE and SWB, might affect well-being, using research designs that may explore cause-and-effect

relationships, such as longitudinal research or experimental designs. Adding measures of individual differences to studies of health functioning can, thus, extend our understanding of the health process.

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