

When Less is More: A Short Version of the Personal Optimism Scale and the Self-Efficacy Optimism Scale

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Abstract The past few years have seen increased theoretical and applied research on the relations between constructs related to positive expectations. However, instruments capable of distinguishing positive expectancy constructs are still lacking. This study evaluated the psychometric properties of the 18-item Personal Optimism Scale and Self-Efficacy Optimism Scale. Two student samples from the University of Novi Sad in Serbia were recruited for the present research, with a total of 728 participants. The results of the exploratory and confirmatory factor analyses did not support the theoretically expected structure. The results of the confirmatory factor analysis and content validity support shortening the scale to 9 items. The short versions of the scales demonstrated adequate reliability in internal consistency and adequate concurrent and convergent validity by significant correlations with dispositional optimism, general self-efficacy, hope, resilience and subjective well-being. The analyses lead us to conclude that a shorter 4-item Personal Optimism Scale and a 5-item Self-Efficacy Optimism Scale provide a clear, precise measures of two types of positive expectations. The authors argue that the limitations of the original scales emanate from their vague theoretical-substantive validity, and call for future research to replicate these findings.

Keywords POSO-E · Positive expectancies · Personal optimism · Self-efficacy optimism · Reliability · Validity

1 Introduction

The significance of positive expectations in understanding human behavior was emphasized at the beginning of the twentieth century by psychologists dealing with the question of motivation (e.g., Tolman 1938). In the mid-twentieth century, the constructs of positive expectations emerged again in cognitive approaches to theory of learning and social psychology, and were largely studied from the perspective of the expectancy-value model

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(e.g., Brewin 1988; Forsterling 1988; Rotter 1954; Snyder and Forsyth 1991). According to this model, the human motivation for implementing and maintaining a certain behavior arises from two basic cognitive factors: perceived values of goals achieved by a certain behavior, and positive expectations related to success. The expectancy-value model was a matrix for the development of various theories about human motivation and goal-related behavior. According to Wigfield and Eccles (2000), the key constructs of this model, which were further developed through various theories, are ability and expectancy beliefs. Expectancy beliefs, especially positive expectations, came under intensive research at the close of the twentieth century in the field of positive psychology as well, and comprise a key construct in this rapidly developing area of psychology (Seligman and Csikszentmihalyi 2000). Elaboration of the concepts was paralleled by the development of instruments to measure them. Without doubt, the value of the results obtained and the knowledge we have today about positive expectations is inextricably linked with their operationalization and assessment by means of various psychological instruments. For this reason it is important to inform researchers about both the range of instruments available and their varying measurement capacities. The main purpose of the current study was to examine the psychometric properties of the relatively new and understudied *Questionnaire for the Assessment of Personal Optimism and Social Optimism—Extended* (POSO-E) (Schweizer and Koch 2001), particularly its subscales: Personal Optimism Scale and Self-Efficacy Optimism Scale. Given that POSO-E is multidimensional scale which aims to capture a broad range of positive expectations, the present research emphasized construct validity, particularly the questions of conceptual overlap and divergence between construct patterns as operationalized in the instrument.

1.1 Relations Between Positive Expectations Constructs: The Unresolved Questions

Over the past few decades, there has been a growing number of studies on the structure of positive expectations and their role in developing and maintaining both functional and non-functional forms of behavior (Snyder and McCullough 2000). Positive expectations are seen as a self-regulatory mechanism which plays an important role in creating and maintaining specific types of behavior, increasing the possibility of successful outcomes, with these outcomes raising the possibility of developing and maintaining positive expectations in turn (Scheier and Carver 1985). Authors such as Bandura (1997) and Carver and Scheier (1998) claim that one of the functions of positive expectations is to ensure accessibility to schemas of personal abilities or success, while Karamadas et al. (2007) find that positive expectations (dispositional optimism and generalized self-efficacy) are related to information bias, which partially explains the relations between general expectations and well-being.

Theorists and researchers have developed a variety of theoretical models and perspectives on constructs of positive expectations (Bandura 1997; Schunk and Zimmerman 2006). They have dealt mostly with the conceptualizations of positive expectations related to a person's competences to implement a specific activity (efficacy expectancies, competence beliefs, ability beliefs) and expectations related to outcomes (outcome expectancies, control beliefs). However, a review of the literature relevant to positive expectations reveals the absence of consensus among theoreticians and researchers related to the following questions: whether the various constructs related to positive expectations are redundant and to what extent (Aspinwall and Leaf 2002); or whether they are independent constructs and, if so, how they are mutually related. Pajares (1996) attributes researcher failure in answering these questions to the proliferation of constructs with overly similar or

insufficiently specific conceptualizations, as well as to diverse and conceptually inconsistent questionnaires. The lack of commonality hinders researchers in comparing the results from different studies and determining the potential contribution of each expectancy construct to understanding human behavior and the quality of adaptation. In order to overcome this problem, it is necessary to explore and clarify the conceptual as well as operational commonalities and differences between constructs of positive expectations.

1.2 Optimism: Conceptualization and Relationships with Similar Constructs

The foundational construct for studying positive expectations, and a frequent topic of theoretical discussion and research, is undoubtedly optimism (Carver et al. 2010; Rauch et al. 2008). Although the meaning of optimism may seem self-evident, a literature review suggests the existence of several slightly different theoretical approaches to this construct (Fournier et al. 2002). Further difficulty in the study of optimism stems from inconsistent use of terms and the fact that optimism is sometimes viewed broadly, as a comprehensive set of various positive expectations and beliefs, and sometimes narrowly, as the precise and immediate specific expectations of positive outcomes, which are then frequently described as the complement to self-efficacy beliefs. Two of the most theoretically elaborated and empirically supported approaches to optimism are the attribution framework (Seligman 1998) and the dispositional optimism framework (Carver and Scheier 1998). According to Seligman (1998), the optimistic explanatory style refers to internal, stable, and global attributions regarding positive events, and to external, unstable, and specific causes for negative events. On the other hand, within the theory of behavioral self-regulation, dispositional optimism has been defined as a direct self-regulatory system of expectations. Optimism is seen as a trait-like disposition to expect that good things will happen, which leads to more efficient problem-solving, developing pleasant emotions and seeing the positive side of things despite adversity (Scheier et al. 2001). According to the authors, optimism as outcome expectation is a better predictor of behavior than efficacy expectations (Scheier and Carver 1985).

A great theoretical debate regarding the relationship between optimism and similar constructs by which positive expectations are conceptualized has emerged in recent years. Researchers have been especially interested in the relationship of optimism and the constructs of hope and self-efficacy, due to their significant conceptual overlap (Robinson and Snipes 2009). Compared to these constructs it seems that the key distinctive characteristic of dispositional optimism is its general positive outcome expectation, independent of what or who contributes to the positive outcome.

Snyder (2002) claimed that optimism is similar to hope in that it represents "...a goal-based cognitive process that operates whenever an outcome is perceived as having substantial value" (p. 257). However, he postulated that hope is a wider construct than optimism, because it includes outcome expectancy as control beliefs as well as competence beliefs, while optimism is predominantly a construct referring to the expectation of the outcome. Magaletta and Oliver (1999), based on the results of the exploratory factor analysis, concluded that optimism, self-efficacy and hope were separate constructs. In addition, they found that hope predicted well-being above and beyond optimism and self-efficacy, which further supported relative independence of these constructs. Rand (2009) did not confirm this assumption. He found confirmation for the integrative approach to these constructs such that optimism and hope represent lower-order facets of an overarching trait—goal attitude. Bryant and Cvengros (2004) also investigated the relationship between optimism and hope. They suggested that Snyder's concept of hope, as the

combination of efficacy based agency and goal-specific pathways, is more directly focused on self-initiated actions and on the personal attainment of specific goals, while optimism represents a broadly generalized outcome expectancy for the future. This assumption has been confirmed in the aforementioned study, which concluded that hope as compared with optimism bears a greater resemblance to the concept of self-efficacy, encompassing dispositional beliefs about personal capabilities. Despite these results, Bryant and Cvengros (2004) found that researchers persist in treating hope and optimism as interchangeable. A preponderance of research indicates that hope and optimism are highly interrelated yet nevertheless independent constructs (Wong & Lim 2009). This conclusion is also supported by recent meta-analysis conducted by Alarcon et al. (2013), yielding an average correlation of .53 between optimism and hope.

Also, the relationship between optimism and self-efficacy is insufficiently clear, especially when authors neglect to specify whether the subject of investigation is optimism in the broader sense (general optimistic expectations and beliefs) or in the narrower sense (positive outcome expectations). While Bandura (1997) assumes that behavior is significantly more determined by perceived self-efficacy than by outcome expectations, and that outcome expectations are significantly influenced by efficacy beliefs, expectancy-value theorists (Wigfield and Eccles 2000) express doubt in this relationship. Eastman and Marzillier (1984) argue that self-efficacy judgments depend on outcome expectations. In contrast, Karademas (2006) found that self-efficacy predicts life satisfaction and depression through optimism. Both constructs emphasize positive expectation, and a consensus exists that self-efficacy refers to more specific expectations that the individual will reach some goal or achieve a positive outcome by means of personal recourses (e.g., knowledge, skills, motivation, abilities). Furthermore, optimism has been defined as the general expectation of positive outcome without emphasis on the agent who controls the outcome. However, it remains unclear whether these constructs are complementary or somehow hierarchically organized. This dilemma is exacerbated by the different conceptualizations of the self-efficacy construct. Unlike Bandura, who believes that self-efficacy is a situation-specific process and can be meaningfully assessed only as such, some authors (e.g., Judge et al. 1998) conceptualize self-efficacy as trait-like beliefs in one's competence, which are manifested across various contexts and situations. Self-efficacy defined in this way can be understood as a component of a broader set of optimistic expectations, encompassing expectations of personal competence as a unique characteristic. For example, Schwarzer and Jerusalem (1995) defined general self-efficacy as a set of beliefs and expectations of achieving goals and overcoming the difficulties and challenges in numerous novel and stressful situations. Thus, people with high self-efficacy beliefs will invest more effort and perseverance and develop an optimistic expectation that they will be able to overcome obstacles or to recover quickly from stress. Previous studies showed that the correlation between optimism and self-efficacy was typically low to moderate, depending on the conceptualization and operationalization of the constructs and instruments used for the assessment (Alarcon et al. 2013).

Also interesting is the relation between self-efficacy and hope. According to Robinson and Snipes (2009), both self-efficacy and hope represent beliefs related to personal capabilities, thus leading us to expect a significant interrelationship between these constructs and a similar pattern of relations with various indicators of psychosocial adaptation. While self-efficacy is a belief in the ability of a person to undertake certain actions or to achieve a goal despite hindrances, hope is a belief with a more explicitly motivational component, containing the assurance that the person will indeed achieve the goal in question.

The majority of authors emphasize the relative independence and uniqueness of various positive expectation constructs, such as optimism, self-efficacy and hope (Scheier et al. 1994; Snyder 2002). On the other hand, some authors suggest that these are complementary phenomena which form a unique and interrelated cognitive system of competence and control (Robinson and Snipes 2009). Individuals who believe that they can achieve goals (self-efficacy), who have the will to reach goals (agency), who believe that they can find a way to implement actions (pathways) and who generally develop positive outcome expectations (optimism) possess an interactive system of beliefs which lead to action resulting in greater accomplishments, positive emotions, adaptive coping strategies and greater subjective well-being. There have been few attempts to integrate and organize hierarchically the existing conceptualizations of positive expectations (Rand 2009), although a certain movement in that direction can be noted (e.g., positive psychological capital; Luthans et al. 2007).

Table 1 summarizes the substantial similarities and differences between core positive expectation constructs. This overview should be considered as contingent, given that the analysis was carried out on only some of the existing theoretical models; specifically, on the dispositional optimism model developed by Scheier and Carver, Snyder's two-component model of hope and Schwarzer's model of general self-efficacy. It is especially important to make explicit such similarities and differences when evaluating the ways in which the constructs are operationalized and assessed in the various instruments available.

Table 1 Similarities and differences among three positive expectation constructs

Features	Dispositional optimism	General self-efficacy	Hope
Positive expectations as cognitive set	+	+	+
Future outcome expectations	+	+	+
Goal-oriented thinking	+	+	+
Associated with physical and psychological well-being	+	+	+
Associated with positive emotions and life satisfaction	+	+	+
Associated with adaptive coping strategies	+	+	+
Associated with high levels of effort and better achievement	+	+	+
Competence beliefs		+	+
Control beliefs	+		+
Control beliefs important but as outcome of competence beliefs		+	
Competence beliefs important but as outcome of control beliefs	+		
Both beliefs are equally important, with reciprocal interaction as key			+
Sense of personal responsibility for goal attainment assumed		+	+
Expectation focused on competence beliefs that goals <i>can</i> be achieved		+	
Expectation is focused on competence beliefs that goals <i>will</i> be achieved			+

+ implicit or explicit feature of the construct

1.3 The POSO-E: A Promising Development in the Assessment of Optimism?

One of the best-known and most frequently used instruments for assessing individual differences in dispositional optimism is the *Life Orientation Test—Revised* (LOT-R; Scheier et al. 1994). The LOT-R has been applied and evaluated in several research areas in psychology (see Carver et al. 2010). However, the scale has also attracted much criticism, despite its apparently adequate psychometric properties. Contrary to the expectations of the scale's authors, the greatest number of studies have suggested the bidimensional nature of dispositional optimism (e.g., Herzberg et al. 2006; Jovanović and Gavrilov-Jerković 2012). Because of inconsistent research results regarding the dimensionality and heterogeneity of the LOT-R, some authors have suggested that the scale is an imprecise measure of optimism (Rauch et al. 2008).

Motivated by the limitations of existing instruments for measuring positive expectations, and by the goal of conceptualizing optimism in a much broader way, Schweizer and Koch (2001) have developed a multidimensional questionnaire: the *Questionnaire for the Assessment of Personal Optimism and Social Optimism—Extended* (POSO-E).

These authors believe that it is inadequate to conceptualize optimism solely through general expectation of positive outcomes; rather, they maintain that it is necessary to widen and organize optimism as a multidimensional construct which encompasses the interaction of personal expectations, self-efficacy and social expectations. Within this framework, the construct of optimism is defined in a more comprehensive manner and operationalized to include three components: self-efficacy optimism (positive expectations that one is competent to solve problems), personal optimism (personal expectations that the outcomes will be positive, independently of whatever caused the situation), and social optimism (positive expectations regarding social and environmental issues).

The POSO-E was accordingly developed as an instrument to assess three types of optimism: self-efficacy optimism, personal optimism and social optimism. The *Social Optimism Scale* was developed first (Schweizer and Schneider 1997). It includes items aimed at measuring expectations concerning social issues (e.g., drug abuse, violence, quality of life) and environmental issues (e.g., pollution, misuse of energy). In the next step, the *Personal Optimism Scale* (Schweizer et al. 2001) was developed to assess general positive expectations about the future. Finally, the *Self-Efficacy Optimism Scale* was developed and added to the battery of questionnaires for the assessment of optimism entitled the POSO-E (Schweizer and Koch 2001). Subscales can be administered separately without using the full test, depending on the research topic.

In analyzing the items of the personal and self-efficacy optimism scales of the POSO-E, it is apparent that optimism defined in this way is very similar and conceptually akin to Snyder's construct of hope (although this is not explicitly mentioned by the authors of the POSO-E). Similar to Snyder's two-component concept of hope, optimism is also postulated as a construct which subsumes indicators of competence expectations and outcome expectations.

The authors of the scale defined self-efficacy optimism as a component of the wider construct of optimism and positive expectations. Self-efficacy optimism differs from personal optimism because it includes positive future expectations based on the beliefs that a person can execute the behaviors required to achieve the desired outcome. On the other hand, we should expect these two constructs to partly overlap because they both encompass a positive set of beliefs and cognitive evaluations regarding the future. It is notable that self-efficacy optimism, as defined by the authors of the POSO-E, is similar to the construct of generalized self-efficacy. For example, Schwarzer and Jerusalem (1995) have defined

self-efficacy as a stable personal disposition to develop positive expectations of self-competence, as opposed to Bandura's definition of self-efficacy as an individual's perception of his or her own ability to perform specific tasks and solve specific problems. On the other hand, personal optimism denotes positive expectations which are not necessarily the result of beliefs about personal control, but can be also the result of good luck and other external factors.

2 The Current Study

In the present study, we investigated the psychometric properties of the Serbian translation of the Personal Optimism Scale and the Self-Efficacy Optimism Scale of the POSO-E.¹ More specifically, we examined: (a) internal consistency reliabilities; (b) structural validity by means of exploratory and confirmatory factor analyses; (c) concurrent and convergent validity by investigating correlations with general self-efficacy, dispositional optimism, hope, resilience and subjective well-being.

Several reasons motivated us to examine the psychometric properties of the two scales. First, other than the original German versions, we know of no comprehensive psychometric evaluation to date of the Personal Optimism Scale and the Self-Efficacy Optimism Scale. Second, adequate instruments are lacking for the assessment of optimism. As previously mentioned, existing instruments have a number of limitations, which warrant further endeavors to investigate the conceptual and psychometric adequacy of new measures for assessing positive expectations. Third, debate continues among researchers regarding the similarities and differences between various types of positive expectations, such as self-efficacy and optimism. Consequently, besides examining standard psychometric properties, this study addressed the question of whether the constructs of self-efficacy and optimism are successfully operationalized and differentiated within the POSO-E.

In the present research, we followed Benson's (1998) recommendations for construct validation, highlighting three components: (a) substantive stage (specification and evaluation of a theoretical model upon which the conceptualization of optimism is based); (b) structural stage (testing the relations between optimism and self-efficacy as specified by the authors of the POSO-E); (c) external stage (examining the relations of the POSO-E scales with other measures of positive expectations and subjective well-being).

3 Method

3.1 Participants and Procedure

Two student samples from the University of Novi Sad in Serbia were recruited for the present research. Sample 1 consisted of 339 students (214 females, 125 males), with a mean age of 21.59 years ($SD = 2.76$, range 18–44). Sample 2 consisted of 389 students (226 females, 163 males), with a mean age of 21.97 ($SD = 2.52$, range 18–50). Participants in both samples completed the same battery of measures described below. Data were

¹ The Social Optimism Scale was not taken into consideration at this moment for two reasons: (1) we were interested in two types of optimism which are specified at a personal level; (2) the Social Optimism Scale consists of many items that are highly specific for Western culture and that might be inappropriate for Serbian culture.

collected anonymously and subjects were informed that their participation in the study was voluntary.

Exploratory factor analysis was performed using Sample 1 data, Confirmatory factor analysis was carried out with a Sample 2 data, while other analyses were yielded using data from the whole sample ($N = 728$).

3.2 Instruments

For all questionnaires, the Serbian-language versions were used. All measures used in the research are official translations of the instruments which were obtained through back-translation with evaluation by the original authors.

The Questionnaire for the Assessment of Personal Optimism and Social Optimism—Extended (POSO-E; Schweizer and Koch 2001) is a 42 self-report measure designed to assess three components of optimism: social optimism (24 items), personal optimism (8) and self-efficacy optimism (10). For this study, only the Personal Optimism Scale and the Self-Efficacy Optimism Scale were used. Items are rated on a 4-point Likert scale (0 = *completely incorrect* to 3 = *completely correct*).

The General Self-Efficacy Scale (GSE; Schwarzer and Jerusalem 1995) is a 10-item self-report measure aimed at assessing general sense of self-efficacy (e.g., “If I am in trouble, I can usually think of a solution”). Respondents rate each item using a 4-point Likert type scale (0 = *not at all true* to 3 = *exactly true*). The GSE has been found to have excellent psychometric properties and one-dimensional structure in previous research (Scholz et al. 2002).

The Serbian translation of the *Life Orientation Test—Revised* (LOT-R; Scheier et al. 1994) was used to assess dispositional optimism. The LOT-R consists of 10 items (4 filler items), rated across a five point Likert-type scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Three items are positively worded (e.g., “Overall, I expect more good things to happen to me than bad”) and three are negatively worded (e.g., “If something can go wrong for me, it will”). The reliability and validity of the LOT-R has been considered adequate (Jovanović and Gavrilov-Jerković 2012).

The Adult Hope Scale (HS; Snyder et al. 1991) is a 12-item instrument (4 fillers), aimed at assessing two components of hope: Pathways—the perceived ability to find routes to goals (4 items; e.g., “I can think of many ways to get out of a jam”) and Agency—the motivation to use those routes (4 items; e.g., “I meet the goals that I set for myself”). The responses range from 1 (*definitely false*) to 4 (*definitely true*). Psychometric properties of the HS are considered to be adequate (Snyder 2002).

The 10-item Connor-Davidson Resilience Scale (CD-RISC-10; Campbell-Sills and Stein 2007) is an abridged version of the 25-item CD-RISC scale (Connor and Davidson 2003). It contains 10 items (e.g., “I can deal with whatever comes”) that measure resilience and capacity to cope with adversity. Items are scored on a 5-point Likert-type scale from 0 (*not true at all*) to 4 (*true nearly all the time*). The scale showed good psychometric properties in previous research (Windle et al. 2011).

The Serbian Inventory of Affect based on the Positive and Negative Affect Schedule-X (SIAB-PANAS; Novović and Mihić 2008) is a Serbian translation and adaptation of the Positive and Negative Affect Schedule-X (PANAS-X; Watson and Clark 1994). The scale demonstrated excellent psychometric properties in previous studies (Novović et al. 2008). In the current research, we used the short form to measure Positive affect (PA) and Negative affect (NA), with ten items each. Participants were asked to report how they feel

in general, using a 5-point scale from 1 (*never or almost never*) to 5 (*always or almost always*).

The Serbian translation of the *Satisfaction with Life Scale* (SWLS; Diener et al. 1985) was used to assess life satisfaction. The responses to each of the five items (e.g., “If I could live my life over, I would change almost nothing”) range from 1 (*strongly disagree*), to 7 (*strongly agree*). This scale has been widely used and has shown good psychometric properties (e.g., Pavot and Diener 1993).

4 Results

4.1 Descriptive Statistics and Correlations Among Study Variables

Means, standard deviations, skewness and kurtosis statistics, internal reliability coefficients, and correlations among study variables are given in Table 2. All of the correlations were significant and in the expected direction. All scales demonstrated adequate internal consistency, with Cronbach’s alpha values ranging from .79 to .88. As shown in Table 2, skewness and kurtosis values indicated no significant departure from normality.

4.2 Exploratory Factor Analysis

Using Sample 1 ($N = 339$), a Principal Axis Factoring analysis (PAF) with promax rotation was performed to explore the latent structure of the 18-item POSO-E. Kaiser–Meyer–Olkin measure of sampling adequacy ($KMO = .89$) and significant Bartlett’s test of sphericity ($\chi^2_{(153)} = 2283.00$, $p < .001$) indicated that the correlation matrix was adequate for conducting the PAF. The PAF yielded four eigenvalues greater than 1 (6.46, 1.72, 1.30, 1.16), but the Cattell scree test suggested the two factor solution. After performing the additional Horn’s parallel analysis which yielded two eigenvalues (5.90, 1.17) higher

Table 2 Descriptive statistics and correlations among study variables ($N = 728$)

	1	2	3	4	5	6	7	8	9
1. Personal optimism	(.82)								
2. Self-efficacy optimism	.60	(.86)							
3. General self-efficacy	.52	.77	(.85)						
4. Optimism	.69	.47	.44	(.80)					
5. Hope	.51	.69	.71	.38	(.83)				
6. Resilience	.56	.72	.72	.48	.63	(.86)			
7. Life satisfaction	.50	.41	.37	.42	.45	.39	(.79)		
8. Positive affect	.55	.53	.48	.44	.52	.54	.45	(.88)	
9. Negative affect	−.49	−.36	−.31	−.42	−.30	−.41	−.34	−.50	(.87)
M	2.20	1.99	2.22	3.79	3.28	2.89	4.99	3.38	1.81
SD	.50	.40	.42	.72	.46	.57	1.06	.71	.66
Skewness	−.49	−.06	−.54	−.72	−.25	−.44	−.61	−.47	1.18
Kurtosis	−.39	.46	.38	.94	.06	−.10	−.14	−.18	.85

All correlations are significant at $p < .01$; italicized entries are the Cronbach’s alpha coefficient

than the mean of those obtained from the random uncorrelated data (Horn 1965), the two-factor solution was retained (accounting for 45.47 % of the total variance).

The Table 3 shows the unrotated factor matrix and the rotated factor pattern matrix of the 18-item POSO-E after the promax rotation of the forced two-factors solution. The analysis failed to replicate the model proposed by Schweizer and Koch (2001), and significantly differed from the authors' expectations. The first factor included 5 self-efficacy optimism items with loadings greater than .50. The second factor was defined by 4 pessimism items and 1 optimism item with loadings greater than .50. There were items that had low to moderate loadings on both factors (7, 8, 10, 12, 13, 15), while the item 2 ("I believe in my own success") loaded onto the self-efficacy factor, but not onto the optimism factor to which it belonged according to the original version. In addition, in both factors the factor loadings had a large range and grouped into high and moderate loadings. The five highest loadings on the self-efficacy factor range from .66 to .77 and the lowest five loadings range from .36 to .43, while on the optimism factor the five highest loadings range from .59 to .76 and the three lowest from .31 to .36. The results of the PAF suggested that the scale does not follow the original two-factor structure and that there were items which are less representative of their respective dimension. These problems with the original scale led us to propose abridged versions of the scales for the assessment of personal optimism and self-efficacy optimism. The short versions of the scales contained only items

Table 3 Factor analysis of the Personal Optimism Scale and the Self-Efficacy Optimism Scale of the POSO-E

Item	Unrotated factor loadings		Rotated factor loadings		Item-subscale r
	1	2	1	2	
17. <i>I always find a solution to a problem</i>	.63	.35	.77	-.11	.61
1. <i>For each problem I will find a solution</i>	.63	.32	.75	-.07	.60
3. <i>In difficult situations I will find a way</i>	.52	.38	.74	-.19	.49
5. <i>I master difficult problems</i>	.62	.30	.72	-.06	.62
14. <i>I can master difficulties</i>	.64	.24	.66	.03	.60
2. I believe in my own success	.63	.03	.43	.27	.45
4. No task is too difficult for me	.54	.08	.43	.17	.55
15. I have a lot of confidence in myself	.68	-.01	.41	.34	.56
10. I even master new tasks without problems	.61	-.01	.37	.31	.57
7. There is no task which is too demanding for me	.51	.04	.36	.19	.50
16. <i>I worry about my future^a</i>	-.51	.43	.16	-.76	.48
18. <i>It often seems to me that everything is gloomy^a</i>	-.62	.37	.02	-.73	.64
9. I fear hard times ahead ^a	-.42	.38	.16	-.65	.48
6. <i>I am facing my future in an optimistic way</i>	.61	-.27	.08	.62	.62
11. <i>I can hardly think of something positive in the future^a</i>	-.52	.29	.00	-.59	.51
13. I will not lose my zest for life, even during bad days	.54	-.08	.25	.36	.46
8. I am looking forward to every new day	.48	-.07	.22	.32	.40
12. I welcome every new challenge	.51	-.06	.26	.31	.43

^a Reverse coded items, suggesting pessimism; Factor loadings of .50 or higher are in bold; Italicized items mean that these items were selected for the abridged version

that had strong loadings on their respective factors and significant item-subscale correlation (see Table 3).

4.3 Confirmatory Factor Analysis (CFA)

A CFA was performed on the data collected within the second sample ($N = 389$), using SEPATH module of STATISTICA 7.1. It was conducted on the covariance matrix and parameter estimates were obtained using the maximum likelihood method. In order to evaluate absolute fit: Chi square (χ^2), Chi square to degrees of freedom ratio (χ^2/df), the root-mean-square error of approximation (RMSEA; Steiger and Lind 1980), standardized root mean square residual (SRMSR; Joreskog and Sorbom 1981) and goodness-of-fit index (GFI) were used. Comparative fit index (CFI; Bentler 1989) and Bentler–Bonett normed fit index (NFI; Bentler and Bonett 1980) were calculated as incremental fit indices. A χ^2/df less than 2, RMSEA and SRMSR of .05 or less, and CFI, GFI and NFI values above .95 were considered to indicate a good fit (Hu and Bentler 1999; Kline 2005; Schumacker and Lomax 1996).

The CFA was conducted to test the single factor models of the original and the abridged scales, the two-factor model suggested by the results of the PAF, with the omission of eight items having problematic content and loadings lower than .50, as well as the crossloadings. The procedure of covariance adding was not performed within any of the models tested.

The single factor model including 18 items (1-factor in Table 4), the single factor model of the abridged version including 10 items (1-factor A in Table 4), as well as the original two factor model (2-factor) yielded poor fit indices. The two-factor model based on the PAF results (2-factor A in Table 4) showed acceptable fit indices ($\chi^2_{(34)} = 91.35$, $p < .01$; SRMSR = .043; RMSEA = .066; CFI = .95; GFI = .95; NFI = .93). However, a strong evidence of correlated residuals between items 9 and 16 (modification index = 35.75) and a high standardized residual for the covariance between these two items (2.61) suggested that the relationship between these two items is not well accounted for by the model. Hence, we decided to eliminate item 9 to reduce item content overlap, and to test model with item 9 omitted (2-factor B in Table 4). Eliminating item 9 resulted in a significant improvement in model fit over the 2-factor A model ($\Delta\chi^2_{(8)} = 48.13$, $p < .001$), with good

Table 4 Goodness-of-fit indices of the confirmatory factor analysis

Model	χ^2	df	χ^2/df	SRMSR	RMSEA	CFI	GFI	NFI
1-factor	819.66**	135	6.07	.090	.138	.73	.76	.70
1-factor A	408.38**	35	11.67	.115	.207	.69	.76	.67
2-factor	564.14**	134	4.21	.078	.090	.83	.86	.79
2-factor A	91.35**	34	2.68	.043	.066	.95	.95	.93
2-factor B	43.22	26	1.66	.034	.039	.98	.98	.96

$N = 389$; 1-factor model (General factor items: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18); 1-factor model A (Trimmed general factor items: 1, 3, 5, 6, 9, 11, 14, 16, 17, 18); 2-factor model (personal optimism items: 2, 6, 8, 9, 11, 13, 16, 18; self-efficacy optimism items: 1, 3, 4, 5, 7, 10, 12, 14, 15, 17); 2-factor model A (personal optimism: 6, 9, 11, 16, 18; self-efficacy optimism: 1, 3, 5, 14, 17); 2-factor model B (identical to 2-factor model A, excluding item 9)

SRMSR standardized root mean square residual, RMSEA root mean square error of approximation, CFI comparative fit index, GFI goodness-of-fit index, NFI normed fit index

** $p < .01$

fit indices ($\chi^2_{(26)} = 43.22$, $p < .05$; SRMSR = .034; RMSEA = .039; CFI = .98; GFI = .98; NFI = .96). The correlations between the two factors was moderate ($r = .48$).

The results of the CFA supported shortening the scale to 9-items, with the Personal Optimism Scale consisting of four items (6, 11, 16, 18), and the Self-Efficacy Optimism Scale consisting of five items (1, 3, 5, 14, 17). This revised, 9-item version can be found in “[Appendix](#)”.

4.4 Psychometrics for the Abridged and the Original Version of the POSO-E

Means, standard deviations, internal consistency reliability coefficients, and mean inter-item correlation (MIC) for the Personal Optimism Scale and the Self-Efficacy Optimism Scale of the abridged and the original version of the POSO-E are reported in Table 5. The data are broken down by gender. The abridged scales demonstrated adequate reliability (estimated by Cronbach’s alpha) and homogeneity (as indexed by the mean inter-item correlation), despite being 50 % shorter than the original.

The intercorrelations between the abridged and the original version of the scales are shown in Table 6. The high correlations between the short and the original versions of the Personal Optimism Scale ($r = .94$) and two versions of the Self-Efficacy Optimism Scale ($r = .89$) provide evidence that both versions assess the same underlying construct. However, the correlation between the short versions of the two scales ($r = .39$) is significantly lower ($z = 5.35$, $p < .001$), than the correlation between the original full-length scales ($r = .60$). This result provides further support that shortening the scale resulted in less overlap between the two scales.

The intercorrelations between scales did not differ by gender as indicated by the Fisher r-to-z transformation. In addition, no statistically significant gender differences were found in the mean scores on the scales.

Table 5 Descriptive statistics and reliability of the abridged and the original version of the POSO-E

	Abridged 9 item version		Original 18 item version	
	Personal optimism	Self-efficacy optimism	Personal optimism	Self-efficacy optimism
<i>Total sample</i>				
M	2.32	2.07	2.20	1.99
SD	.59	.41	.20	.40
α	.78	.82	.82	.86
MIC	.47	.47	.37	.38
<i>Females</i>				
M	2.31	2.08	2.17	1.98
SD	.57	.40	.51	.40
α	.77	.83	.84	.87
MIC	.46	.49	.40	.40
<i>Males</i>				
M	2.33	2.07	2.23	2.01
SD	.61	.43	.48	.40
α	.79	.80	.79	.84
MIC	.49	.45	.33	.36

α Cronbach’s alpha coefficient, MIC mean inter-item correlation

Table 6 Correlations between the abridged and the original version of the POSO-E

	1	2	3	4
1. Personal optimism—abridged	—			
2. Self-efficacy optimism—abridged	.39	—		
3. Personal optimism—original	.94	.47	—	
4. Self-efficacy optimism—original	.50	.89	.60	—

4.5 Concurrent and Convergent Validity of the Original and the Abridged Version

Correlations were calculated between the two scales of the original POSO-E, two scales of the abridged version, and measures of optimism, general self-efficacy, hope, resilience and subjective well-being. The results showed that both the original and the abridged versions had adequate concurrent and convergent validity. All correlations were significant and in the expected direction (see Table 7). The abridged scales hold similar correlations with concurrent measures of positive expectations (LOT-R and GSE), thus, showing comparable concurrent validity to the original complete scales (see Table 7 for Fisher's r to z transformation, testing the significance of the difference between two correlations).

However, there were significant differences between the abridged and the original scales in their relations with hope and resilience, with the original scales showing significantly higher correlations. These results suggested stronger conceptual overlap between the original scales and measures of hope and resilience and greater content specificity of the abridged scales.

Table 7 Concurrent and convergent validity

	Personal optimism			Self-efficacy optimism		
	Abridged 4-item	Original 8-item	z	Abridged 5-item	Original 10-item	z
<i>Concurrent validity</i>						
GSE	.43	.52	2.22*	.73	.77	1.74 ^{ns}
LOT-R Total	.68	.69	.30 ^{ns}	.39	.47	1.58 ^{ns}
Optimism	.60	.65	1.32 ^{ns}	.44	.50	1.24 ^{ns}
Pessimism	−.59	−.56	.72 ^{ns}	−.25	−.31	1.05 ^{ns}
<i>Convergent validity</i>						
HS Total	.42	.51	2.19*	.60	.69	2.94**
Agency	.38	.46	1.85 ^{ns}	.48	.58	2.65**
Pathways	.38	.46	1.85 ^{ns}	.60	.66	1.89 ^{ns}
CD-RISC-10	.46	.56	2.57*	.66	.72	2.18*
SWLS	.44	.50	1.46 ^{ns}	.33	.41	1.76 ^{ns}
PA	.47	.55	2.06*	.40	.53	3.17**
NA	−.42	−.49	1.68 ^{ns}	−.28	−.36	1.70 ^{ns}

All correlations are significant at $p < .01$; For Fisher's r to z transformation: ns = non-significant

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

It is noteworthy that the abridged and the original scales yielded similar correlations with measures of negative affect and life satisfaction, while the original scales demonstrated significantly higher correlations with positive affect.

4.6 The Unique Predictive Power of the Original and the Abridged Version of the POSO-E Scales on Subjective Well-Being

In order to test the unique relations of the original and the abridged POSO-E scales with affective and cognitive components of subjective well-being (SWB), a series of simultaneous multiple regression analyses were performed (see Table 8), after controlling for the effects of age and gender. It is important to note that no multicollinearity was found in the data.

The results of the regression analyses showed that within the original POSO-E scales, personal optimism was better predictor of both affective well-being and life satisfaction than self-efficacy optimism. Within the abridged POSO-E scales, personal optimism had also the largest unique contribution to predicting SWB. It is noteworthy that the models which included the original POSO-E scales ($R^2 = .41$ and $R^2 = .28$ in predicting affective well-being and life satisfaction, respectively) slightly outperformed the models which included the abridged scales ($R^2 = .33$ and $R^2 = .23$ in predicting affective well-being and life satisfaction, respectively) for explaining the total amount of variance in subjective well-being. However, these differences are relatively minor, given that half of the original

Table 8 Simultaneous multiple regression analyses for the original and the abridged version of the POSO-E scales predicting subjective well-being

	Affective well-being		Life satisfaction		Collinearity statistics	
	β	R^2	β	R^2	<i>Tol</i>	<i>VIF</i>
<i>Equation 1</i>						
Step 1: Gender and age		.02**		.00		
Gender	.14**		-.02		.99	1.01
Age	.06		-.06		.99	1.01
Step 2: Gender, age and the original POSO-E scales		.41**		.28**		
Gender	.10**		-.05		.99	1.01
Age	.02		-.09**		.99	1.01
Personal optimism—original	.44**		.40**		.64	1.56
Self-efficacy optimism—original	.25**		.18**		.64	1.55
<i>Equation 2</i>						
Step 1: The same as in Equation 1						
Step 2: Gender, age and the abridged POSO-E scales		.33**		.23**		
Gender	.13**		-.02		.99	1.01
Age	.03		-.08		.99	1.01
Personal optimism—abridged	.42**		.36**		.84	1.19
Self-efficacy optimism—abridged	.24**		.19**		.84	1.19

Affective well-being is the average of NA subtracted from the average of PA

Tol tolerance, *VIF* variance inflation factor

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

scale items were omitted from the abridged scale scores, thus not affecting the significance of the results.

5 Discussion

The main aim of this research was to evaluate the psychometric properties of the Serbian translation of the Personal Optimism Scale and the Self-Efficacy Optimism Scale of the POSO-E (Schweizer and Koch 2001). More specifically, we examined the internal consistency and validity (structural, concurrent and convergent) of the two scales. To our knowledge, this is the first study to investigate the psychometric qualities of the POSO-E scales since their development and initial validation, despite the fact that they are occasionally used in research.

Two scales showed structural validity which did not adhere to the model proposed by Schweizer and Koch (2001). The results of the exploratory and confirmatory factor analyses did not support the theoretically expected structure. The following exceptions occurred: several items were proved to have a weak relations to their respective scales; one optimistic item (2) loaded onto the self-efficacy factor, two items (10 and 15) had significant cross-loadings, and three optimistic items (8, 12 and 13) had relatively low loadings on both factors.

The results of the exploratory factor analysis and item analysis suggest elimination of these items, due to their questionable psychometric qualities. Examination of the semantic content of the problematic items suggested that they do not represent clear indicators of their underlying factors as defined by the authors of the scale. Item 2 (“I believe in my own success”) seems to be more specific than other optimistic items since it does not imply a generally positive outlook, but rather positive expectancy of personal success. The content of items 8 (“I am looking forward to every new day”) and 13 (“I will not lose my zest for life, even during bad days”) fails to discriminate between *expectations* of positive outcomes and the related constructs, such as resilience and dispositional positive affect.

In addition to the three optimistic items, two items (12 and 15) included in the Self-Efficacy Optimism Scale might be considered to have questionable content validity. Item 12 (“I welcome every new challenge”) fails to discriminate between positive expectations which are contingent upon one’s behavior and those which are not, because it does not imply that a person will succeed due to his or her own actions. Finally, item 15 (“I have a lot of confidence in myself”) seems to be more closely related to self-esteem than self-efficacy. Both the Global self-esteem scale (as described in Vonk and Smit 2012), measuring the global trait self-esteem, and the Rosenberg self-esteem scale (Rosenberg 1965), measuring ability-related self-esteem, include a number of similar items. Although previous research did not yield unambiguous answers regarding the relations between self-efficacy and self-esteem, some studies have shown that these constructs are distinct and should therefore be differentiated (Lightsey et al. 2006).

The results of the confirmatory factor analysis support shortening the scale to 9 items, with the Personal Optimism Scale consisting of 4 items and the Self-Efficacy Optimism Scale consisting of 5 items. The abridged scales provided superior fit to the data than did the original full scales.

The short versions of the scales demonstrated adequate reliability in terms of internal consistency and adequate concurrent and convergent validity by significant correlations with dispositional optimism, general self-efficacy, hope, resilience and subjective well-being. The abridged scales hold similar correlations with concurrent measures of positive

expectations, thus showing comparable concurrent validity to the original scales. Due to content heterogeneity, it is not surprising that the original POSO-E scales, as compared to the abridged versions, showed stronger associations with measures of hope and resilience. Moderate to large positive correlations with hope and resilience suggested that the original scales overlap substantially with similar constructs, and that they may be redundant. This result indicated that the refinement of the scales led to the greater content specificity of the scales and less item overlap with conceptually similar yet different constructs of hope and resilience (Luthans et al. 2007).

High intercorrelations between the abridged and the original version of the scales provide evidence that shortening the scale did not result in a significant loss of nomological validity. In addition, there were significantly lower correlations between the short versions of the two scales than between the original full scales, thus showing that shortening the scale generated clearer, more precise measures of optimism and self-efficacy.

It is important to note that the scales of the abridged version, as compared to the original, demonstrated slightly weaker correlations with subjective well-being. In addition, the abridged scales showed somewhat lower predictive value for affective well-being and life satisfaction. This finding is not surprising, because the original scales seem to include several items that assess diffuse positive constructs which are nevertheless not necessary features of positive expectations. As argued by Kashdan (2004), questionnaires that capture diverse positive characteristics and traits are expected to have artificially inflated relationships with subjective well-being. In addition, the strength of correlations obtained between the abridged Personal Optimism Scale and two components of subjective well-being is almost identical to those yielded in the recent meta-analysis conducted by Alarcon et al. (2013).

We argue that the limitations of the original POSO-E scales emanate from its vague theoretical-substantive validity. Specifically, we believe that there are some omissions in the conceptualization and operationalization of the optimism construct. The authors of the original scale explained only in part why optimism should be operationalized through the components proposed; that is, they failed to explicate a clear and coherent theoretical framework from which the proposed operationalization of optimism was derived. Instead, Schweizer and Koch (2001) took constructs from different theoretical models: personal optimism, based on the behavioral self-regulation theory of Carver and Scheier (1998), and self-efficacy beliefs, based on the social learning theory of Bandura (1986). Further, in attempting to explain the supposed relationship between the components of optimism, the authors referred to Schwarzer's assumption that self-efficacy is a component of the broader construct of optimism as it relates to the subset of the optimism outcomes (Schwarzer 1994). The inconsistency is particularly noticeable when authors describe the components of personal optimism. It remains unclear what the place of personal optimism should be in a given multi-dimensional instrument, as personal optimism is treated as a subscale or a component of general optimism, but when introducing self-efficacy optimism, personal optimism is then defined as a general, broader construct of optimism with a subcomponent of self-efficacy optimism. The POSO-E is described as a self-report questionnaire for the assessment of three components of optimism: personal optimism, self-efficacy optimism and social optimism. At the same time, self-efficacy optimism is described as a subordinate component of personal optimism. This vague relationship among the components described above is further clouded by the operationalization of the component of personal optimism, resulting as heterogeneous due to incomplete conceptualization. The items of this scale aim to encompass dispositional optimism as a subcomponent of general positive expectations while comprising a construct of optimism which is broader than self-efficacy

optimism. The dilemma remains: exactly which constructs are examined by each subscale, and which information is gained by using a full scale. The incremental contribution of each subscale remains unclear in understanding the construct of optimism and its role in predicting the quality of adaptation. With such incomplete and uneven conceptualization and operationalization of the constructs to be measured by this questionnaire, researchers are left with no clear guidelines for interpreting the results. We agree with Pajares (1996) that special attention to the clear conceptualization and consistent operationalization of related constructs is needed in order to progress in the field of studying positive expectations.

Without adequate substantive validity and a clear theoretical framework as necessary preconditions for subsequent phases of construct validation (Benson 1998), it is not surprising that the validity of the POSO-E scales has been found to be problematic in the current study. However, the current research has some important limitations that must be taken into account when considering the study results. The main limitation of the study is the use of student volunteers as research subjects; the results may therefore not be generalizable to adolescents and older adults. At the same time it should be noted that, for age and education, the sample matches the participants in the original studies by Schweizer and Koch (2001).

The elimination of items with diffuse content resulted in the abridged versions of the two POSO-E scales which are psychometrically clearer, yet consistency remains questionable with the theoretical conceptions and empirically supported models of positive expectations. It remains an open question whether shortening the scale increases its utility in the study and measurement of optimism. At the same time, good indicators of reliability, as well as results indicating adequate concurrent and convergent validity of the shortened scale, suggest that this instrument could be a useful tool for the study of optimism. Its particular value lies in the ability to assess not only the unique contribution of the scales for the assessment of optimism and self-efficacy, but also their shared contribution in predicting mental health and other important outcomes. Further research on the POSO-E scales is warranted, especially in the field of examining the construct validity and their utility in the assessment of positive expectations across different samples and different settings.

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Appendix: The 9-item Version of the Personal Optimism and Self-Efficacy Optimism Scales

1. For each problem I will find a solution.
2. In difficult situations I will find a way.
3. I master difficult problems.
4. I am facing my future in an optimistic way.
5. I can hardly think of something positive in the future.
6. I can master difficulties.
7. I worry about my future.
8. I always find a solution to a problem.
9. It often seems to me that everything is gloomy.

Items 4, 5, 7, and 9 reflect personal optimism.

Items 1, 2, 3, 6, and 8 reflect self-efficacy optimism.

References

- Alarcon, G. M., Bowling, N. A., & Khazon, S., (2013). Great expectations: A meta-analytic examination of optimism and hope. *Personality and Individual Differences*, 54, 821–827.
- Aspinwall, L. G., & Leaf, S. L. (2002). In search of the unique aspects of hope: Pinning our hopes on positive emotions, future-oriented thinking, hard times, and other people. *Psychological Inquiry*, 13, 276–288.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice Hall.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: W.H. Freeman and Company.
- Benson, J. (1998). Developing a strong program of construct validation: A test anxiety example. *Educational Measurement: Issues and Practice*, 17, 10–17.
- Bentler, P. M. (1989). *EQS structural equations program model*. Los Angeles: BMDP Statistical Software.
- Bentler, P. M., & Bonett, D. G. (1980). Significance tests and goodness of fit in the analysis of covariance structures. *Psychological Bulletin*, 88, 588–606.
- Brewin, C. (1988). *Cognitive foundations of clinical psychology*. London: Lawrence Erlbaum.
- Bryant, F. B., & Cvengros, J. A. (2004). Distinguishing hope and optimism: Two sides of a coin, or two separate coins? *Journal of Social and Clinical Psychology*, 23, 273–302.
- Campbell-Sills, L., & Stein, M. B. (2007). Psychometric analysis and refinement of the Connor–Davidson Resilience Scale (CD-RISC): Validation of a 10-item measure of resilience. *Journal of Traumatic Stress*, 20(6), 1019–1028.
- Carver, C. S., & Scheier, M. F. (1998). *On the self-regulation of behavior*. New York: Cambridge University Press.
- Carver, C. S., Scheier, M. F., & Segerstrom, S. C. (2010). Optimism. *Clinical Psychology Review*, 30, 879–889.
- Connor, K. M., & Davidson, J. R. T. (2003). Development of a new resilience scale: The Connor–Davidson resilience scale (CD-RISC). *Depression and Anxiety*, 18, 76–82.
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment*, 49, 71–75.
- Eastman, C., & Marzillier, J. S. (1984). Theoretical and methodological difficulties in Bandura's self-efficacy theory. *Cognitive Therapy and Research*, 8, 213–229.
- Forsterling, F. (1988). *Attribution theory in clinical psychology*. Chichester: Wiley.
- Fournier, M., de Ridder, D., & Bensing, J. (2002). Optimism and adaptation to chronic disease: The role of optimism in relation to self-care options of type I diabetes mellitus, rheumatoid arthritis and multiple sclerosis. *British Journal of Health Psychology*, 7, 409–432.
- Herzberg, P. Y., Glaesmer, H., & Hoyer, J. (2006). Separating optimism and pessimism: A robust psychometric analysis of the Revised Life-Orientation Test (LOT-R). *Psychological Assessment*, 18, 433–438.
- Horn, J. L. (1965). A rationale and technique for estimating the number of factors in factor analysis. *Psychometrika*, 30, 179–185.
- Hu, L. T., & Bentler, P. M. (1999). Cut-off criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modelling*, 6, 1–55.
- Joreskog, K., & Sorbom, D. (1981). *LISREL V: Analysis of linear structural relationships by the method of maximum likelihood*. Chicago, IL: National Educational Resources.
- Jovanović, V., & Gavrilov-Jerković, V. (2012). Dimensionality and validity of the Serbian version of the Life Orientation Test-Revised. *Journal of Happiness Studies*. doi:10.1007/s10902-012-9354-2.
- Judge, T. A., Erez, A., & Bono, J. A. (1998). The power of being positive: The relation between positive self-concept and job performance. *Human Performance*, 11, 167–187.
- Karademas, E. C. (2006). Self-efficacy, social support and well-being: The mediating role of optimism. *Personality and Individual Differences*, 40, 1281–1290.
- Karamadas, E. C., Kafetsios, K., & Sideridis, G. D. (2007). Optimism, self-efficacy and information processing of threat- and well-being related stimuli. *Stress and Health*, 23, 285–294.
- Kashdan, T. B. (2004). The assessment of subjective well-being (issues raised by the Oxford Happiness Questionnaire). *Personality and Individual Differences*, 36, 1225–1232.
- Kline, R. B. (2005). *Principles and practices of structural equation modeling* (2nd ed.). New York: Guilford Press.
- Lightsey, O. R., Jr, Burke, M., Ervin, A., Henderson, D., & Yee, C. (2006). Generalized self-efficacy, self-esteem, and negative affect. *Canadian Journal of Behavioural Science*, 38, 72–80.
- Luthans, F., Avolio, B. J., Avey, J. B., & Norman, S. M. (2007). Positive psychological capital: Measurement and relationship with performance and satisfaction. *Personnel Psychology*, 60, 541–572.

- Magaletta, P. R., & Oliver, J. M. (1999). The hope construct, will, and ways: Their relations with self-efficacy, optimism, and general well-being. *Journal of Clinical Psychology*, 55, 539–551.
- Novović, Z., & Mihić, Lj. (2008). *Srpski inventar afekata baziran na Positive and Negative Affect Schedule-X (SIAB-PANAS)*. Unpublished manuscript. Novi Sad: University of Novi Sad.
- Novović, Z., Mihić, Lj., Tovilović, S., & Jovanović, V. (2008). Relations among positive and negative affect, dysphoria and anxiety. *Psihologija*, 41(4), 413–435.
- Pajares, F. (1996). Self-efficacy beliefs in academic settings. *Review of Educational Research*, 66(4), 543–578.
- Pavot, W., & Diener, E. (1993). Review of the satisfaction with life scale. *Psychological Assessment*, 5, 164–172.
- Rand, K. L. (2009). Hope and optimism: Latent structures and influences on grade expectancy and academic performance. *Journal of Personality*, 77, 231–260.
- Rauch, W. A., Schweizer, K., & Moosbrugger, H. (2008). An IRT analysis of the personal optimism scale. *European Journal of Psychological Assessment*, 24, 49–56.
- Robinson, C., & Snipes, K. (2009). Hope, optimism and self-efficacy: A system of competence and control enhancing African American college students academic well-being. *Multiple Linear Regression Viewpoints*, 35, 16–26.
- Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton Press.
- Rotter, J. R. (1954). *Social Learning and clinical psychology*. Englewood Cliffs, NJ: Prentice-Hall.
- Scheier, M. F., & Carver, C. S. (1985). Optimism, coping, and health: Assessment and implication of generalized outcome expectancies. *Health Psychology*, 4, 219–247.
- Scheier, M. F., Carver, C. S., & Bridges, M. W. (1994). Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): A reevaluation of the Life Orientation Test. *Journal of Personality and Social Psychology*, 67, 1063–1078.
- Scheier, M. F., Carver, C. S., & Bridges, M. W. (2001). Optimism, pessimism, and psychological well-being. In E. C. Chang (Ed.), *Optimism and pessimism: Implications for theory, research, and practice* (pp. 189–216). Washington, DC: American Psychological Association.
- Scholz, U., Gutiérrez-Doña, B., Sud, S., & Schwarzer, R. (2002). Is general self-efficacy a universal construct? Psychometric findings from 25 countries. *European Journal of Psychological Assessment*, 18, 242–251.
- Schumacker, R., & Lomax, R. (1996). *A Beginner's Guide to Structural Equation Modeling*. Mahwah, NJ: Lawrence Erlbaum Associates Inc.
- Schunk, D. H., & Zimmerman, B. (2006). Competence and control beliefs: Distinguishing the means and ends. In P. A. Alexander & P. H. Winne (Eds.), *Handbook of educational psychology* (pp. 349–367). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.
- Schwarzer, R. (1994). Optimism, vulnerability, and self-beliefs as health-related cognitions: A systematic overview. *Psychology and Health*, 9, 161–180.
- Schwarzer, R., & Jerusalem, M. (1995). Generalized self-efficacy scale. In J. Weinman, S. Wright, & M. Johnston (Eds.), *Measures in health psychology: A user's portfolio. Causal and control beliefs* (pp. 35–37). Windsor, UK: NFER-Nelson.
- Schweizer, K., & Koch, W. (2001). The assessment of components of optimism by POSO-E. *Personality and Individual Differences*, 31, 563–574.
- Schweizer, K., & Schneider, R. (1997). Social optimism as generalized expectancy of a positive outcome. *Personality and Individual Differences*, 22, 317–325.
- Schweizer, K., Schneider, R., & Beck-Seyffer, A. (2001). Personaler und Sozialer Optimismus [Personal and social optimism]. *Zeitschrift für Differentielle und Diagnostische Psychologie*, 22, 13–24.
- Seligman, M. E. P. (1998). *Learned optimism*. New York: Pocket Books.
- Seligman, M. E. P., & Csikszentmihalyi, M. (2000). Positive psychology: An introduction. *American Psychologist*, 55, 5–14.
- Snyder, C. R. (2002). Hope theory: Rainbows of the mind. *Psychological Inquiry*, 13, 249–275.
- Snyder, C. R., & Forsyth, D. R. (Eds.). (1991). *Handbook of social and clinical psychology: The health perspective*. Elmsford, New York: Pergamon Press.
- Snyder, C. R., Harris, C., Anderson, J. R., Holleran, S. A., Irving, L. M., et al. (1991). The will and the ways: Development and validation of an individual-differences measure of hope. *Journal of Personality and Social Psychology*, 60, 570–585.
- Snyder, C. R., & McCullough, M. (2000). A positive psychology field of dreams: “If you build it, they will come...”. *Journal of Social and Clinical Psychology*, 19, 151–160.
- Steiger, J. H., & Lind, J. C. (1980). *Statistically-based tests for the number of common factors*. Paper presented at the annual Spring Meeting of the Psychometric Society. Iowa City: Iowa.
- Tolman, E. C. (1938). The determiners of behavior at a choice point. *Psychological Review*, 45, 1–41.

- Vonk, R., & Smit, H. (2012). Optimal self-esteem is contingent: Intrinsic versus extrinsic and upward versus downward contingencies. *European Journal of Personality*, 26, 182–193.
- Watson, D., & Clark, L. A. (1994). *The PANAS-X: Manual for the positive and negative affect schedule-expanded form*. Iowa City: University of Iowa.
- Wigfield, A., & Eccles, J. S. (2000). Expectancy-value theory of achievement motivation. *Contemporary Educational Psychology*, 25, 68–81.
- Windle, G., Bennett, K. M., & Noyes, J. (2011). A methodological review of resilience measurement scales. *Health and Quality of Life Outcomes*, 9, 8. doi:[10.1186/1477-7525-9-8](https://doi.org/10.1186/1477-7525-9-8).
- Wong, S. S., & Lim, T. (2009). Hope versus optimism in Singaporean adolescents: Contributions to depression and life satisfaction. *Personality and Individual Differences*, 46, 648–652.

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