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RESEARCH PAPER

Positive Expectancies and Subjective Well-Being: A Prospective Study Among Undergraduates in Serbia

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Abstract

The present study investigates the relationship between two types of positive expectancies—dispositional optimism and general self-efficacy—and four indicators of subjective well-being—life satisfaction, positive affect, negative affect, and depression—at three time points over a 2-year period. In addition, the moderating role of positive expectancies in the relationship between negative life events and subjective well-being were examined. A total of 367 undergraduate students from Serbia (M_{age} = 21.57 years) completed measures at each time point. The results of the path analysis showed that optimism was concurrently associated with all indicators of subjective well-being, whereas self-efficacy had consistent concurrent associations only with positive affect. Positive expectancies were generally weak prospective predictors of subjective well-being, with higher levels of optimism at Time 2 (6-month follow-up) predicting higher levels of life satisfaction at Time 3 (2-year follow-up), and higher levels of self-efficacy at Time 2 predicting a higher positive affect at Time 3. Some evidence of reverse causality was also found, with a higher positive affect at Time 1 and Time 2 predicting higher levels of both optimism and self-efficacy at later time points. Positive expectancies did not moderate the relationship between negative life events and subjective well-being. Our results suggest that findings of cross-sectional studies on the relationship between positive expectancies and subjective well-being cannot be generalized to longitudinal data and that causal contribution of positive expectancies to subjective well-being might be overestimated.

Keywords Optimism · Self-efficacy · Subjective well-being · Negative life events · Moderation · Longitudinal

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1 Introduction

Positive expectancies play an important role in human behavior and functioning (e.g., Carver et al. 2010). They represent a vital component in the psychotherapy process (Greenberg et al. 2006) and an important target of resilience-building interventions (Helmreich et al. 2017). The two probably most widely researched positive expectancy constructs and the key constructs in the area of expectancy research are optimism and self-efficacy (e.g., Rand 2018). Optimism is typically conceptualized as an individual's generalized expectancies about the future (Carver 2014), whereas self-efficacy captures beliefs in his or her capacity to achieve goals and overcome problems, i.e., the perceived capability to perform a behavior (Williams 2010). Optimism and self-efficacy are a central feature of a number of models trying to explain different aspects of human behavior (e.g., Bandura 1997; Carver and Scheier 1998; Snyder 2002). The model of dispositional optimism defines optimism as a stable personality trait encompassing general expectancies that good things will happen in the future and argues that 'outcome expectancies per se are the best predictors of behavior' (Scheier and Carver 1985, p. 223). On the other hand, Social Cognitive Theory (Bandura 1986) posits that perceived self-efficacy, defined as 'belief in one's capabilities to organise and execute the courses of action required to produce given attainments' (Bandura 1997, p. 3) is a major predictor of behavior. The original Bandura's conceptualization of self-efficacy is situation- or task-specific (i.e., refers to a perceived ability to perform a specific behavior), but self-efficacy has also been defined as a general, stable trait capturing personal competence across different contexts and domains (e.g., Sherer et al. 1982). Therefore, general self-efficacy refers to individuals' perceptions of their ability to achieve goals and solve problems across a variety of situations (Judge et al. 1998). To date, there is no consensus on the conceptual relationship between optimism and self-efficacy. Some authors suggest that optimism and self-efficacy are components of a common higher-order construct, one termed core confidence (Stajkovic 2006) and the other psychological capital (Luthans and Youssef-Morgan 2017). On the other hand, some models place optimism and self-efficacy at different levels of analysis, with self-efficacy operationalized as the more basic and fundamental belief which precedes optimism (e.g., Caprara and Steca 2005). Despite differences in definitions and conceptualizations, most authors agree that optimism and self-efficacy are distinct constructs and should be examined separately (Aspinwall and Leaf 2002).

The role of positive expectancies has been thoroughly investigated in various domains of human functioning, with most studies dealing with the effects of positive expectancies on well-being and mental health (e.g., Gallagher et al. 2020). Given that dispositional optimism and general self-efficacy are broad, trait-like generalized positive beliefs, they are expected to improve well-being, promote resilience, and lead to better mental health outcomes through a number of mechanisms and across different contexts (Bandura 1997; Carver and Scheier 1998). The results of previous studies are remarkably consistent and suggest that both optimism and general self-efficacy are important predictors of various well-being outcomes. For example, optimism has consistently shown positive correlations with positive indicators of subjective well-being (SWB), such as life satisfaction (e.g., Bailey et al. 2007; Karademas 2006) and positive affect (Jovanović and Gavrilov-Jerković 2013), and negative correlations with indicators of ill-being, such as depression (Giltay et al. 2006). Similarly, general self-efficacy has been shown to have positive correlations with life satisfaction and positive affect (Judge et al. 2002; Luszczynska et al. 2005) and negative correlations with symptoms of depression and anxiety (Fiori et al. 2006;

Luszczynska et al. 2005). Robust associations between positive expectancies and well-being led authors to conclude that both optimism (Carver et al. 2010) and self-efficacy (Maddux 2009) were essential for well-being and had a key role in mental health.

Although a plethora of studies have been conducted on the relationships between positive expectancies and SWB, there are a number of unresolved questions and several domains in which the study of the positive expectancies-SWB relationship could be improved. First, most studies that examined the relationship between positive expectancies and SWB dealt with a single positive expectancy construct; i.e., researchers measured only optimism or self-efficacy. Thus, it is largely unknown whether optimism and general self-efficacy make unique contributions to SWB. This is an important question, given that these constructs overlap substantially and relationships between them are yet to be clarified. Thus, the present study aimed to compare the predictive power of dispositional optimism and general self-efficacy in depression, life satisfaction, positive affect, and negative affect to examine the unique effects of different types of positive expectancies on various components of SWB.

Second, most previous studies used the cross-sectional design to examine the effects of positive expectancies on SWB. However, these studies do not allow researchers to conclude that the differences in SWB are caused by positive expectancies. Due to similar content of measures aimed at assessing SWB and positive expectancies, the observed correlations might be the effect of common method variance. In addition, cross-sectional studies cannot unravel the directionality of the relationship between positive expectancies and SWB. Although concurrent correlations between positive expectancies and well-being are commonly interpreted as evidence that positive expectancies causally determine well-being, there is also the theoretical and empirical justification for a reverse causality (e.g., Huppert 2009). For example, higher SWB has been shown to lead to many positive outcomes (for reviews, see Diener et al. 2017; Lyubomirsky et al. 2005), which in turn might increase positive expectancies. The present study addressed this gap in literature by investigating the associations between positive expectancies and SWB across three time points over a period of 24 months.

Third, although there is a vast empirical literature on the stress-buffering effects of dispositional optimism suggesting that optimism acts as a protective buffer between negative life events and well-being (e.g., Lai 2009; Thomas et al. 2011), the stress-buffering effects of general self-efficacy have been less studied and have not been unambiguously confirmed (Schönfeld et al. 2017). Furthermore, the stress-buffering effects of different types of positive expectancies on multiple indicators of well-being have rarely been examined in a single study. Both optimism and self-efficacy are important components of the complex self-regulation process influenced by negative life events (Wrosch et al. 2003), and both are inextricably linked to adaptive coping. For example, previous studies have shown that optimists use more of approach coping and problem-focused strategies and adapt their coping to the demands of the stressors (Solberg Nes and Segerstrom 2006). Similarly, individuals high on general self-efficacy have been shown to use adaptive coping strategies, which led some authors to conclude that perceived general self-efficacy may be a dispositional protective factor in the context of stress (Schwarzer et al. 2005). Given that individuals with high optimism and self-efficacy use adaptive coping and respond in a flexible way to stressors, one might expect that both serve as protective resources that alleviate the adverse effects of negative life events on well-being. Thus, the present study also examined the stress-buffering effects of positive expectancies on various indicators of SWB over time to clarify whether dispositional optimism and general self-efficacy have a protective role in the context of negative life events.

2 The Present Study

The present longitudinal study had two main goals: (1) to investigate concurrent and prospective associations between positive expectancies and SWB; and (2) to examine whether positive expectancies have stress-buffering effects on various components of SWB, i.e., to investigate the moderating roles of positive expectancies in the relationship between negative life events and SWB. Our main hypothesis was that both optimism and general self-efficacy will predict SWB concurrently and longitudinally, as these two types of positive expectancies share common cognitive and motivational processes (e.g., both are goal-directed and future-oriented), and both have been shown to be strong predictors of well-being (e.g., Rand 2018). We also expected the reciprocal link between positive expectancies and SWB, i.e., that higher well-being will be associated with higher levels of positive expectancies over time. In addition, we hypothesized that positive expectancies would moderate the relationships between negative life events and SWB, such that the effects of negative life events on SWB would be weaker among individuals reporting higher levels of dispositional optimism and general self-efficacy. This hypothesis was based on prior research showing that positive expectancies have protective roles in the context of negative life experiences.

It is important to note that most studies on positive expectancies and SWB have been conducted in Western, developed countries, so the generalizability of the findings to non-Western and developing countries is questionable. Given that little empirical evidence exists for the effects of positive expectancies on SWB in non-Western countries, the present study used a young adult sample from Serbia to investigate associations between positive expectancies and SWB within an under-researched cultural context. The need for research on this topic in non-Western, developing countries is supported by findings that show that the strength of the associations between optimism and well-being varies across different cultures (Gallagher et al. 2013).

3 Method

3.1 Sample and Procedure

The data for the present longitudinal study were collected at three time points. Participants were undergraduate students at the University of Novi Sad, Serbia. A total of 1197 students (78.4% females; $M_{age} = 19.70$ years, $SD_{age} = 1.37$) participated at Time 1 (T1), with 694 students (81.4% females; $M_{age} = 20.11$ years, $SD_{age} = 1.31$) completing measures at Time 2 (T2; 6-month follow-up), and 530 students (81.7% females; $M_{age} = 21.56$ years, $SD_{age} = 1.05$) completing measures at Time 3 (T3; 2-year follow-up). A total of 367 students (84.2% females; $M_{age} = 21.57$ years, $SD_{age} = 1.12$) completed measures at all three time points. The attrition rate was relatively high, but the results showed that there was no substantial difference between attenders and non-attenders on any of the study variables (Cohen's d range from .00 to .15).

At each time point, participants completed the measures of optimism, self-efficacy, depression, life satisfaction, positive affect, and negative affect, whereas the measure of negative life events was administered only at T2 and T3. The questionnaires were administered in group settings, during a regular class period. All participants gave written informed consent to participate in the study. The participation in the study was voluntary

and participants did not receive any compensation for participating in the study. This study is a part of a larger longitudinal study of well-being and resilience conducted by researchers at the University of Novi Sad. The study was approved by the ethics committee at the Department of Psychology, Faculty of Philosophy, University of Novi Sad, and it was conducted in accordance with the Declaration of Helsinki.

3.2 Instruments

For all instruments, the official Serbian-language versions of the scales were used.

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). In the present research, only the Personal Optimism Scale was used to assess dispositional optimism. Four items are positively worded (e.g. *I am facing my future in an optimistic way*) and four items are negatively worded (e.g. *It often seems to me that everything is gloomy*). Items are rated on a 4-point Likert scale (1 = *completely incorrect* to 4 = *completely correct*). The scale showed adequate psychometric properties in previous studies (Gavrilov-Jerković et al. 2014).

The General Self-Efficacy Scale (GSE; Schwarzer and Jerusalem 1995) was used to assess general self-efficacy. The GSE consists of 10 items (e.g., *I am confident that I could deal efficiently with unexpected events*), with responses on a 4-point Likert type scale from 0 (*not at all true*) to 3 (*exactly true*). The scale showed excellent psychometric properties in previous studies (Lazić et al. in press; Scholz et al. 2002).

Satisfaction with Life Scale (SWLS; Diener et al. 1985) was used to assess life satisfaction. The SWLS consists of 5 items (e.g., *So far I have gotten the important things I want in life*), rated on 7-point scale, from 1 (*strongly disagree*) to 7 (*strongly agree*). The scale has shown excellent psychometric properties in previous studies (e.g., Jovanović 2019; Pavot and Diener 2008).

The Depression Anxiety and Stress Scale (DASS-21; Lovibond and Lovibond 1995) consists of 21 items for measuring symptoms of depression, anxiety and stress, with 7 items each. In the present study, we used only the Depression subscale (e.g. *I found it difficult to work up the initiative to do things*). Respondents were asked to indicate how they felt over the past week, on a 4-point scale from 0 (*did not apply to me at all*) to 3 (*applied to me very much, or most of the time*). The scale showed excellent psychometric properties in previous studies (Jovanović et al. 2014).

The Positive and Negative Affect Schedule (PANAS; Watson et al. 1988) is a 20-item scales designed to measure positive affect (PA; 10 items: interested, excited, strong, enthusiastic, proud, alert, inspired, determined, attentive, active) and negative affect (NA; 10 items: distressed, upset, guilty, scared, hostile, irritable, ashamed, nervous, jittery, afraid). Participants were asked to report how they felt during the past month, using a 5-point scale from 1 (*never or almost never*) to 5 (*always or almost always*). A Serbian version of the PANAS showed good psychometric properties in previous studies (Mihić et al. 2014).

The Serbian Life Events Check-List: Student Form (SLEC-SF; Gavrilov-Jerković et al. 2012; Lazić et al. 2017) was used to assess negative life events. The SLEC-SF is a 54-item scale listing events that may have occured in the student's life in the last 6 months. Participants indicate which events have occured during the last 6 months, evaluate whether the event was negative or positive, and rate the intensity of event on a scale from 0 to 100. The SLEC-SF covers various life domains such as studying (e.g., conflict with the teacher),

health (e.g., chronic pain), family (e.g., death of a family member), romantic relationships (e.g., infidelity), social relationships (e.g., lack of social support), security and safety (e.g., threat), material hardship (e.g., lack of money), and miscellaneous (e.g., natural disaster, pregnancy). In the present study, we used the total number of recent negative life events.

3.3 Statistical analyses

Item analysis, time invariance, and factor scores. In the present study, we have 6 scales of interest which contain multiple ordinal items. Ideally, one should perform a simultaneous modeling approach in which the 6 scales are operationalized as latent variables with the observed item scores serving as indicator variables. However, as we have 3 time points, the resulting model is computationally too demanding (including 18 latent variables). Therefore, we based our analyses on the factor scores of these 6 scales. That is, to the items of each of the 6 scales, we fit a three-factor model for ordinal data (one factor for each time point) using weighted least squares estimation in the Lavaan R-package (Rosseel 2012). In the model, the factors are allowed to be correlated, and the same items on the different time points are allowed to be correlated (i.e., by residual correlation). Next, the factor loadings and the intercepts are constrained to be equal over time. These constraints are necessary to enable a meaningful comparison of the factor scores over time (see Widaman et al. 2010). Within these time-invariant models, we estimated the factor scores and used them in subsequent analyses.

Path models without and with reciprocal relationships. To test our main hypotheses, we specified a path model for each target variable (depression, life satisfaction, positive affect, and negative affect).[1] Within these path models, we regressed the T1 target variable on the T1 predictor variables (optimism and self-efficacy). Next, within the same model, we regressed the T2 target variable on the T2 predictor variables and the T1 predictor variables. Finally, we regressed T3 target variable on the T3 predictor variables and the T2 predictor variables. In the model, all independent variables are allowed to be correlated. In addition, the residuals of the target variable are allowed to be correlated over time.

In addition to the model above, we also focus on a model that includes the reciprocal relation between the predictors and the target variable. That is, in the model with reciprocal relations, we also consider the regressions of the T2 predictor variables on the T1 target variable, and the regressions of the T3 predictor variables on the T2 target variable. See Fig. 1 for a graphical representation of the model (excluding correlations).

Our modeling approach is related to the cross-lagged panel model (e.g., Hamaker et al. 2015) in the sense that we predict our target variable by predictor variables over time (i.e., cross-lagged regressions). However, in contrast to the cross-lagged panel model, in our model we intentionally did not include autoregression (e.g., the regression of the T3 target variable on the T2 target variable). Including the autoregression parameters is useful if one is interested in studying change (e.g., predicting the change in the target variable from T1 to T2 by individual differences in optimism and self-efficacy; see e.g., Hamaker et al. 2015). However, we are not interested in predicting change in the target variables, rather in predicting the target variable itself using our predictor variables. As mentioned above,

[1] We use the term 'target variable' instead of 'dependent variable', as the latter can be a bit confusing. That is, what we call 'the target variable' occurs both as a dependent variable and as an independent variable in our model (as is explained in the text).

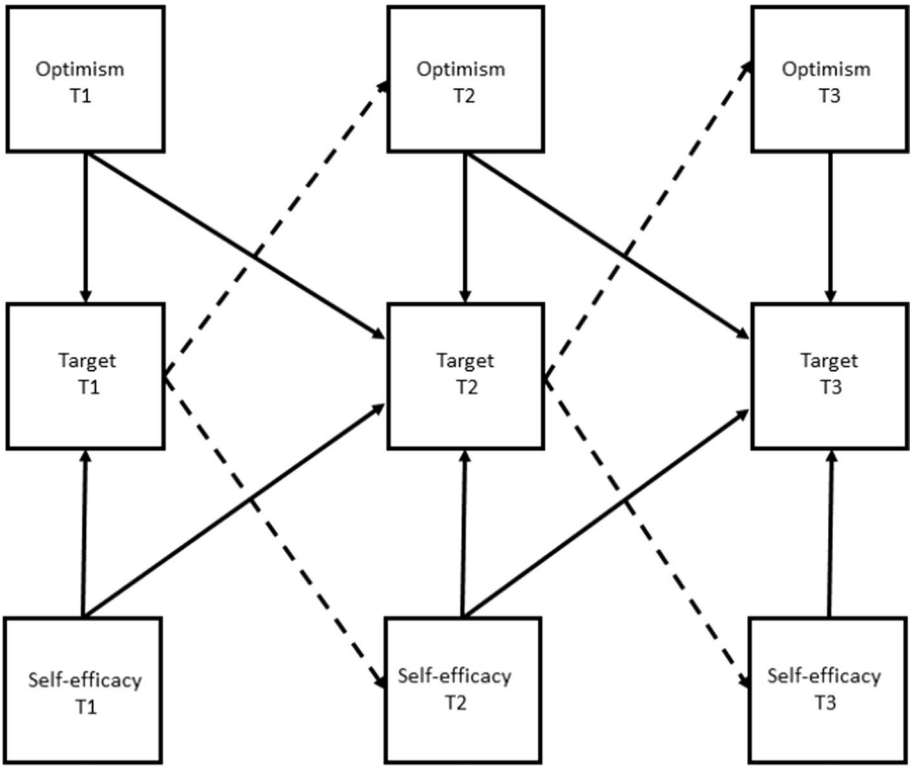

Fig. 1 Graphical representation of the path model used in the present study. The target variable denotes: depression (Model 1), life satisfaction (Model 2), positive affect (Model 3), and negative affect (Model 4). Optimism and self-efficacy are included in all models. We consider both a model with and without the reciprocal relation between the predictor variables (optimism and self-efficacy) and the target variable (striped lines). In addition, for clarity, correlations are not depicted in the figure

we do include the correlations between the target variables on subsequent time points, so the absence of autoregression will not be a significant source of misfit. Another difference between our model and the cross-lagged panel model is that we have explicit predictor variables (optimism and self-efficacy), while in the crossed-lag panel model, this distinction does not exist (at least statistically).

We also tested for moderation (i.e., the stress-buffering effects of positive expectancies) in both the model with and without reciprocal relation between the target variable and the predictor variables. Specifically, we included the main effect of T2 negative life events on the T2 target variable together with the interaction between T2 negative life events and the T1 predictor variables, as well as the main effect of T3 negative life events on the T3 target variable together with the interaction between T3 negative life events and the T2 predictor variables. Note that negative life events were not measured at T1. See Fig. 2 for a graphical representation of the model. Note that for clarity, the main effects of negative life events are omitted from the figure. Again, all independent variables were allowed to be correlated (these are also not depicted in Fig. 2 for clarity). All models are fit in Mplus 7.31 (Muthén and Muthén 2015). Due to multiple testing in our models, we used conservative thresholds for levels of significance ($p < .01$, $p < .001$) in order to reduce type I error.

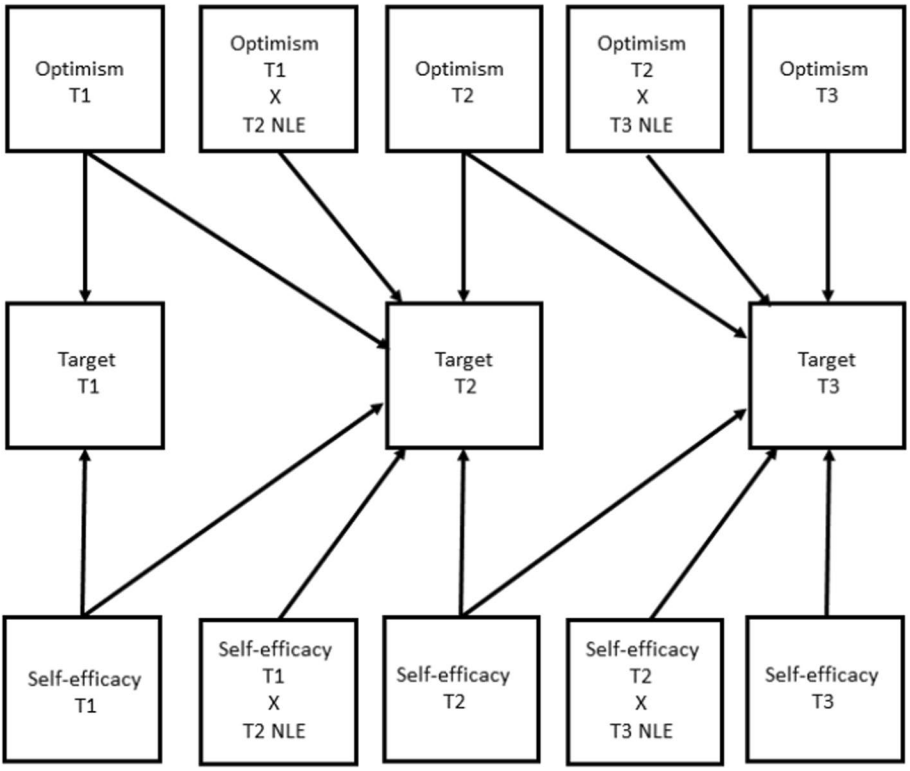

Fig. 2 Graphical representation of the moderation model. NLE denotes Negative Life Events. For clarity we omitted the reciprocal relations (striped lines in Fig. 1), the correlations, and the main effects of NLE on the target variable. The target variable denotes: depression (Model 1), life satisfaction (Model 2), positive affect (Model 3), and negative affect (Model 4). Optimism and self-efficacy are included in all models

Missing data As discussed above, the data contain missing values. Therefore, in fitting the path models discussed above, we used full-information maximum likelihood so that all available information is taken into account in parameter estimation. Note that cases with missing values on all variables in a given analysis are omitted. This comprised 307 cases for depression, 306 cases for life satisfaction and positive affect, and 305 cases for negative affect.

4 Results

4.1 Descriptives, Reliability and Correlations Among Study Variables

Descriptive statistics and internal consistency reliabilities are shown in Table 1. All scales demonstrated adequate reliability, with Cronbach's alphas above .80, except for the SWLS at T1 ($\alpha = .76$) and POSO-E Personal Optimism Scale at T2 ($\alpha = .78$).

The results of correlation analysis (Table 2) showed that both optimism and self-efficacy had positive correlations with life satisfaction and positive affect, and negative correlations with depression and negative affect at each time point. Concurrent correlations between

Table 1 Descriptive statistics and reliability

	M	SD	Min	Max	α
Time 1					
Optimism	3.22	.46	1	4	.81
Self-efficacy	2.24	.43	0	3	.84
Depression	.43	.56	0	3	.86
Life satisfaction	4.99	1.11	1	7	.76
Positive affect	3.73	.50	1	5	.81
Negative affect	2.21	.54	1	5	.84
Time 2					
Optimism	3.27	.42	1	4	.78
Self-efficacy	2.24	.40	0	3	.87
Depression	.36	.50	0	3	.87
Life satisfaction	5.20	1.06	1	7	.82
Positive affect	3.62	.58	1	5	.86
Negative affect	2.05	.61	1	5	.87
Negative life events	3.84	3.07	0	54	.85
Time 3					
Optimism	3.23	.46	1	4	.80
Self-efficacy	2.28	.45	0	3	.89
Depression	.32	.50	0	3	.88
Life satisfaction	5.02	1.10	1	7	.84
Positive affect	3.58	.63	1	5	.88
Negative affect	2.14	.64	1	5	.87
Negative life events	3.06	2.53	0	54	.84

M = mean, SD = standard deviation, Min = minimum, Max = maximum, α = Cronbach's alpha coefficient

optimism and four SWB indicators were in the range from |.46| to |.58|, whereas concurrent correlations between self-efficacy and SWB were lower and varied more in magnitude (range from |.22| to |.51|). A similar pattern of results was observed in correlations between T1 (or T2) positive expectancies and T2 (or T3) SWB, but these correlations, as expected, were lower (see Table 2 for details).

4.2 Fit of the Time-Invariant Models

Fit indices for the time-invariant item-level models discussed above are depicted in Table 3. Using the general guidelines for these indices by Schermelleh-Engel et al. (2003), the fit can be considered acceptable for all models (i.e., CFI and TLI are larger than .95, RMSEA is smaller than .08, and SRMR is smaller than .10 for all models). We therefore accepted that these three-factor models adequately represent the data, and we used the factor scores from these models in the subsequent analyses.

Table 2 Correlations among study variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1. T1 Optimism	–																		
2. T1 Self-efficacy	.43**	–																	
3. T1 Depression	−.56**	−.28**	–																
4. T1 LS	.50**	.31**	−.35**	–															
5. T1 PA	.58**	.50**	−.32**	.44**	–														
6. T1 NA	−.53**	−.26**	.51**	−.34**	−.35**	–													
7. T2 Optimism	.68**	.39**	−.51**	.44**	.53**	−.49**	–												
8. T2 Self-efficacy	.43**	.64**	−.25**	.21**	.51**	−.32**	.53**	–											
9. T2 Depression	−.41**	−.19**	.55**	−.31**	−.23**	.36**	−.52**	−.22**	–										
10. T2 LS	.36**	.19**	−.30**	.67**	.29**	−.30**	.46**	.22**	−.38**	–									
11. T2 PA	.41**	.30**	−.30**	.28**	.56**	−.31**	.57**	.47**	−.41**	.38**	–								
12. T2 NA	−.44**	−.30**	.44**	−.30**	−.29**	.61**	−.56**	−.35**	.58**	−.35**	−.38**	–							
13. T2 Life events	−.13*	−.06	.19**	−.14**	−.05	.16**	−.22**	−.01	.25**	−.19**	−.03	.29**	–						
14. T3 Optimism	.51**	.29**	−.34**	.30**	.37**	−.34**	.57**	.31**	−.33**	.33**	.42**	−.33**	−.16**	–					
15. T3 Self-efficacy	.37**	.54**	−.23**	.23**	.46**	−.21**	.37**	.52**	−.24**	.20**	.41**	−.20**	.01	.55**	–				
16. T3 Depression	−.26**	−.11*	.41**	−.18**	−.07	.30**	−.34**	−.07	.43**	−.26**	−.23**	.28**	.16**	−.53**	−.26**	–			
17. T3 LS	.37**	.25**	−.21**	.58**	.35**	−.25**	.41**	.20**	−.24**	.63**	.35**	−.28**	−.19**	.54**	.41**	−.36**	–		

Table 2 (continued)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
18. T3 PA	.28**	.28**	−.18**	.20**	.48**	−.17**	.39**	.36**	−.16**	.24**	.55**	−.21**	.05	.47**	.51**	−.35**	.38**	–	
19. T3 NA	−.26**	−.19**	.31**	−.18**	−.17**	.40**	−.29**	−.19**	.30**	−.23**	−.24**	.47**	.19**	−.47**	−.32**	.54**	−.39**	−.41**	–
20. T3 Life events	−.08	.01	.12*	−.08	−.02	.08	−.11	.03	.18**	−.16**	−.05	.14**	.46**	−.17**	−.01	.26**	−.17**	−.01	.32**

T1 = Time 1, T2 = Time 2 (6-month follow-up), T3 = Time 3 (2-year follow-up), LS = Life satisfaction, PA = Positive affect, NA = Negative affect

** $p < .01$, * $p < .05$

Table 3 Fit indices for the three-factor model on the item data of the 6 scales

Scale	χ^2	df	CFI	TLI	RMSEA	SRMR
Optimism	1931.44	285	.957	.958	.057	.083
Self-efficacy	1406.65	448	.988	.988	.035	.055
Depression	324.39	217	.997	.997	.017	.048
Life satisfaction	380.20	138	.991	.993	.031	.038
Positive affect	1491.52	468	.983	.984	.035	.052
Negative affect	3034.56	468	.964	.966	.056	.073

χ^2 = Chi square value, df = degrees of freedom, CFI = Comparative Fit Index, TLI = Tucker–Lewis Index, RMSEA = Root Mean Square Error of Approximation, SRMR = Standardized Root Mean Square Residual

4.3 Concurrent and Prospective Associations Between Positive Expectancies and SWB

The results of the path analysis are presented in Table 4. All models provided a good fit to the data [for depression: $\chi^2_{(4)} = .69$, CFI = 1.00, RMSEA = .000 (90% CI = .000, .000); for life satisfaction: $\chi^2_{(4)} = 6.78$, CFI = .999, RMSEA = .020 (90% CI = .000, .044); for positive affect: $\chi^2_{(4)} = 23.85$, CFI = .990, RMSEA = .053 (90% CI = .033, .074); for negative affect: $\chi^2_{(4)} = 6.40$, CFI = .998, RMSEA = .018 (90% CI = .000, .043)]. As shown, concurrent associations between optimism and four SWB indicators were strong at each time point, whereas self-efficacy had significant associations at each time point only with positive affect. Positive expectancies were generally weak prospective predictors of SWB. Higher levels of optimism at T2 predicted higher levels of life satisfaction at T3, whereas higher levels of self-efficacy at T2 predicted higher positive affect at T3. The remaining prospective associations (14 out of 16) between positive expectancies (as predictors) and SWB were not statistically significant.

We also investigated whether levels of SWB at T1 and T2 predicted levels of positive expectancies at T2 and T3, respectively (see Table 4). All models provided a good fit to the data [for depression: $\chi^2_{(4)} = 1.14$, CFI = 1.00, RMSEA = .000 (90% CI = .000, .017); for life satisfaction: $\chi^2_{(4)} = 5.02$, CFI = 1.00, RMSEA = .012 (90% CI = .000, .039); for positive affect: $\chi^2_{(4)} = 9.31$, CFI = .999, RMSEA = .027 (90% CI = .000, .050); for negative affect: $\chi^2_{(4)} = 2.77$, CFI = 1.00, RMSEA = .000 (90% CI = .000, .000)]. Higher positive affect at T1 and T2 consistently predicted higher levels of both optimism and self-efficacy at T2 and T3. In addition, lower levels of depression at T1 significantly predicted higher optimism at T2. However, although statistically significant, this association was weak.

4.4 Do Positive Expectancies Moderate The Relationship Between Negative Life Events and SWB?

To evaluate whether positive expectancies moderate the relationship between negative life events and SWB, we conducted moderated path analyses with interactions between positive expectancies and negative life events (see Supplementary Material). The results showed that the effects of negative life events on SWB did not depend on the levels of optimism and self-efficacy, as none of the interaction effects was significant.

Table 4 Concurrent, prospective, and reciprocal associations between positive expectancies and well−being

Well-being indicator	Depression		Life satisfaction		Positive affect		Negative affect	
Positive expectancies	Optimism	Self-efficacy	Optimism	Self-efficacy	Optimism	Self-efficacy	Optimism	Self-efficacy
	β (SE)	*β* (SE)	*β* (SE)	*β* (SE)	*β* (SE)	*β* (SE)	*β* (SE)	*β* (SE)
Concurrent associations								
T1 PE → T1 WB	−.53*** (.02)	−.08** (.03)	.49*** (.02)	.09** (.03)	.45*** (.02)	.34*** (.02)	−.49*** (.02)	−.14*** (.03)
T2 PE → T2 WB	−.58*** (.06)	−.02 (.05)	.54*** (.07)	.02 (.05)	.39*** (.07)	.32*** (.05)	−.43*** (.05)	−.09 (.05)
T3 PE → T3 WB	−.53*** (.05)	−.06 (.05)	.37*** (.04)	.17*** (.04)	.35*** (.05)	.18*** (.04)	−.52*** (.07)	−.04 (.05)
Prospective associations								
T1 PE → T2 WB	−.02 (.06)	−.02 (.05)	−.02 (.06)	.03 (.05)	.02 (.07)	−.02 (.05)	−.05 (.07)	−.03 (.05)
T2 PE → T3 WB	−.04 (.06)	.04 (.06)	.23*** (.05)	−.13 (.05)	.01 (.06)	.17*** (.05)	.05 (.06)	−.04 (.06)
Reciprocal associations								
T1 WB → T2 PE	−.06** (.02)	−.01 (.03)	.05 (.02)	−.06 (.03)	.08** (.02)	.16*** (.03)	−.05 (.02)	−.04 (.03)
T2 WB → T3 PE	−.06 (.02)	−.04 (.04)	.07 (.03)	−.02 (.04)	.11*** (.04)	.18*** (.04)	−.06 (.04)	.06 (.04)

β = standardized path coefficient, SE = standard error; T1 = Time 1, T2 = Time 2 (6-month follow-up), T3 = Time 3 (2-year follow-up), PE = Positive expectancies, WB = Well-being

**$p < .01$, ***$p < .001$

5 Discussion

In the present longitudinal study, we were primarily interested in investigating the roles of dispositional optimism and general self-efficacy in predicting four commonly used indicators of SWB: depression, life satisfaction, positive affect, and negative affect. We also tested reciprocal associations between positive expectancies and SWB, and examined stress-buffering effects of positive expectancies on SWB. The present study aimed to overcome some important limitations of the majority of previous studies examining the relationships between positive expectancies and SWB, such as cross-sectional design, the failure to examine the unique roles of optimism and general self-efficacy, and the omission of negative life events as a contextual variable.

The results of path analyses showed that dispositional optimism and general self-efficacy differed substantially with regard to their concurrent associations with SWB, whereas both optimism and self-efficacy had generally weak predictive power in explaining future levels of SWB. Contrary to previous empirical findings and theoretical expectations (e.g., Luszczynska et al. 2005), general self-efficacy was mostly non-significant or a weak concurrent predictor of depression, life satisfaction, and negative affect, and it was concurrently associated only with positive affect at all three time points. On the other hand, optimism was a robust, concurrent predictor of all indicators of SWB at each time point, which is consistent with theoretical predictions (Carver and Scheier 2018) and a rich empirical data supporting optimism as a major predictor of well-being (Alarcon et al. 2013).

Possible pathways linking optimism with well-being have been widely discussed and multiple mechanisms that might explain benefits of optimism have been proposed, mostly relying on self-regulatory processes (Carver and Scheier 2014). For example, optimists exert continuing effort when dealing with difficulties (Wrosch and Scheier 2003), flexibly adjust their goals as a form of motivational coping (Hanssen et al. 2015), and report more perceived progress in their pursued personal goals (Monzani et al. 2015). In addition, several studies have also shown that optimists perceive greater social support and have broader social networks than pessimists (for a review, see Carver et al. 2010), suggesting that interpersonal mechanisms may partially explain the benefits of optimism for well-being. Finally, Segerstrom (2001) suggested that greater attentional bias for positive stimuli may contribute to the better adjustment among optimists. Thus, our findings on the concurrent associations between optimism and SWB are in line with both theory and previous empirical evidence, and the concurrent analysis clearly showed that optimism had stronger unique effects on SWB than general self-efficacy.

Why would one expect optimism to have stronger concurrent associations with SWB than general self-efficacy? The question is not easy to answer for at least two reasons. First, there is no widely accepted theory that would integrate or differentiate various positive expectancy constructs conceptually and explain their shared and unique effects on well-being. However, some conceptual differences between optimism and general self-efficacy might help explaining a closer association between optimism and SWB than between self-efficacy and SWB. In contrast to general self-efficacy which is self-focused and captures the perceived ability to perform a given behavior (i.e., one's competence), optimism comprises generalized beliefs that good things will happen (Rand 2018). In other words, whereas general self-efficacy refers solely to an individual's personal resource beliefs, optimism is not restricted to internal (e.g., personal resource beliefs), but also includes external causes (e.g., luck, fate, God) (Schwarzer et al. 1997). Therefore, it appears that optimism is a broader construct than general self-efficacy, as it reflects a broad tendency to expect

good outcomes, irrespective of how the outcomes occur. As hypothesized by Margolis and Lyubomirsky (2018), individuals high on optimism may be less concerned about future negative events and hold more positive construals, not only about the future, but also about the self, the past, and the present. Some authors even argue that optimism and SWB share a common factor of positive orientation capturing general positive evaluations (Caprara et al. 2010), which might lead to close associations between optimism and various aspects of well-being.

Second, research comparing the differential effects of optimism and self-efficacy on well-being is scarce and produced inconsistent findings. Some studies found that optimism, but not general self-efficacy, is a unique predictor of stress among students (Morton et al. 2014), while others indicated that both optimism and self-efficacy explain unique variance in depression (Chang et al. 2011) and general well-being (Magaletta and Oliver 1999). On the other hand, studies which separately examined optimism and self-efficacy, consistently found that both types of positive expectancies have beneficial effects on well-being (Daukantaitė and Zukauskiene 2012; Strobel et al. 2011). Interestingly, inconsistent findings have also been observed in well-being research comparing the role of optimism and hope, a positive expectancy construct which overlaps substantially with general self-efficacy, to the extent even that some authors argue that hope and general self-efficacy might be just two measures of the same underlying construct (Zhou and Kam 2016). For example, Gallagher and Lopez (2009) investigated differential effects of hope and optimism on well-being, and found that optimism was more strongly associated with positive affect, life satisfaction, and negative affect, whereas Bailey and colleagues (2007) found that optimism was a weaker predictor of life satisfaction than the agency component of hope.

An important finding of our study is that positive expectancies were rather weak prospective predictors of SWB, with only 2 out of 16 prospective associations being statistically significant. Optimism at T2 predicted higher levels of life satisfaction at T3, whereas self-efficacy at T2 predicted higher levels of positive affect at T3. However, neither optimism nor self-efficacy contributed significantly to future levels of negative affect and depression. Our findings partially corroborate the results of previous prospective studies on positive expectancies and well-being. A longitudinal study on a sample of German adults (Heinitz et al. 2018) found that both optimism and self-efficacy at baseline predicted SWB (a composite of life satisfaction, positive and negative affect) after a three-year period, whereas only optimism predicted future depression. In a prospective study among undergraduates in the United States, Kleiman et al. (2017) found that different types of positive expectancies had different effects on well-being. More specifically, positive expectations for the future, but not overconfidence, was a significant predictor of future depression, but different dimensions of positive expectancies did not predict future anxiety. In sum, these findings suggest that positive expectancies do not lead to higher SWB generally. Instead, positive expectancies are likely influenced by an individual's affective state, and occur simultaneously with high SWB. Thus, it appears that a person is more likely to experience higher SWB when having a positive view of her/his future, but an optimistic outlook may not predispose a person to higher SWB in the future. Our results show that findings of cross-sectional studies on the relationship between positive expectancies and SWB cannot be generalized to longitudinal data and that causal contribution of positive expectancies to SWB might be overestimated. An important avenue for future research is to investigate whether the associations between positive expectancies and SWB are moderated by culture and societal conditions, as determinants of SWB, including personality dispositions, have been shown to vary across nations (Kim et al. 2018). It is possible that positive expectancies, especially general self-efficacy, are less relevant for SWB in non-Western,

collectivistic cultures, as positive beliefs about the self have been shown to be more relevant for SWB in Western, individualistic cultures (Suh and Choi 2018). Thus, our findings might be limited to cultural contexts similar to Serbia, predominantly characterized by collectivistic values and challenging living conditions, in which factors such as social support and satisfaction with standard of living and household income are key predictors of well-being (e.g., Jovanović and Joshanloo 2019).

In addition, although not a primary focus of our study, we found evidence of reverse causality in the directionality of the relationship between positive expectancies and SWB. More specifically, higher positive affect has been shown to consistently predict higher levels of future positive expectancies, with the prospective effects of positive affect being somewhat larger for general self-efficacy than optimism. This finding is in accordance with the Broaden-and-build theory of positive emotions (Fredrickson 2001), which posits that positive emotions build personal resources, and in line with previous studies on the role of positive emotions in building positive expectancies and resilience resources. For example, Schutte (2014) found that an increase in positive affect was associated with a later increase in general self-efficacy, which in turn led to a higher experience of general mental health. In a similar vein, Cohn et al. (2009) found that positive emotions predict increases in the perceived ability to adapt to changing environments. Thus, it appears that experiencing positive emotions can generate positive expectancies as one of the key resilience resources, but this assumption is yet to be directly investigated.

Finally, it is important to note that the present study did not support the stress-buffering effects of general self-efficacy and optimism. Models of general self-efficacy and optimism predict that individuals high on self-efficacy and optimism should report not only lower levels of depression and negative affect and higher levels of life satisfaction and positive affect, but also that a strong sense of self-efficacy and optimism would have beneficial effects for individuals who had recently experienced negative life events. Our findings are not in accordance with previous studies which showed that general self-efficacy moderated the relationship between stressors and mental well-being (e.g., Siu et al. 2007), and that optimism moderated the relationship between perceived stress and psychological well-being (Chang 1998). Interestingly, although general self-efficacy has been theoretically defined as an important resource factor which might play a protective role in high-stress conditions, only a limited number of studies have reported that general self-efficacy was a protective factor for mental health. General self-efficacy has been shown to have positive associations with personal resources, such as adaptive coping strategies (e.g., Luszczynska et al. 2005; Trouillet et al. 2009), but its protective role per se has been rarely evaluated. The findings of the present study suggest that in the context of negative life events it would be more appropriate to assess specific positive expectancies, i.e., a perceived self-efficacy for coping with negative life events (e.g. Chesney et al. 2006) rather than generalized positive expectancies, such as optimism and general self-efficacy.

Some limitations to the present study should be noted. First, our sample included only undergraduate students, so our findings should not be generalized to other age groups. Previous studies have indicated that the effects of positive expectancies on well-being might differ across age groups (e.g., Palgi et al. 2011), so future studies should investigate whether the positive expectancies-SWB relationship differs across age. Second, given the cultural influences on positive expectancies (e.g., Chang 2001), future studies would benefit from examining the role of positive expectancies in SWB using samples recruited from different cultural contexts. Third, we assessed only two types of positive expectancies and four dimensions of SWB, so our findings should be replicated in longitudinal studies including additional types of positive expectancies (such as hope and specific self-efficacy)

and well-being (such as psychological and social well-being). Finally, our study relied on self-report data, which have a number of well-known limitations. Despite these limitations, our prospective study provides initial insight into the relative importance of different types of positive expectancies for SWB among young adults.

To conclude, the present study indicated that general positive expectancies about the future were more closely associated with SWB than generalized beliefs about one's ability to perform well across different situations. However, strong concurrent associations between optimism and SWB did not hold for prospective associations which were substantially weaker. The discrepancy between cross-sectional and longitudinal data regarding the relationships between positive expectancies and SWB warrants rigorous experimental and longitudinal research that would evaluate the validity of mechanisms proposed to explain the beneficial effects of positive expectancies on well-being.

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Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

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