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Stress, Resilience and Life Satisfaction in College Students

Ana-Maria CAZAN¹, Camelia TRUȚA²

Abstract

The current study aims to assess the construct validity of the Adolescent Resilience Scale and its psychometric properties in order to determine its relevance when used within the Romanian context. The second aim of the study is to investigate the associations between resilience, perceived stress and life satisfaction. A number of 341 Romanian students from several faculties were recruited. The results suggest that the Adolescent Resilience Scale has good psychometric properties after its translation into Romanian, which is an argument for its future use in Romanian settings. The confirmatory factor analysis supports the construct of adolescent resilience even after the Romanian translation. Consistent with previous studies, the path analyses shows that stressors function as a mediator between resilience, reactions to stress and life satisfaction.

Keywords: life satisfaction, perceived stress, reaction to stress, resilience, stressors.

Introduction

The term resilience has gained great popularity during last decade as the necessity for predicting the ability to tolerate stress and negative events has increased not only in clinical settings but also in organizational and educational ones (Hjemdal, Friborg, Stiles, & Martinuss, 2006). The ability to recover from negative emotional experiences and to flexibly adapt to stressful events is essential to individual's well-being and life satisfaction (Tugade & Fredrickson, 2004).

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Yet, the dynamic interplay between stressful experiences, well-being and successful adaptation is still under debate. It is known that those low in psychological resilience exhibit higher reactivity to daily stressful events, while those who score high in psychological resilience rebound more easily from adversity (Ong, Bergeman, Bisconti, & Wallace, 2006) and are more satisfied with their life (Tugade & Fredrickson, 2004), but the underlying mechanisms are not very clear.

Psychological resilience has been approached from three different perspectives, as an outcome of effective coping to stress, as the process of successful adaptation despite adversity, or as a psychological ability to successfully recover from negative emotional experiences.

Conceptualized as an outcome, resilience implies a pattern of effective behaviours in individuals exposed to risk (Olsson, Bond, Burns, Vella-Brodick, & Sawyer, 2003). In this perspective, resilience is defined in terms of competencies under stress, several studies showing that young people functioning efficiently despite stressful events demonstrate a high form of resilience (Ong *et al.*, 2006). In particular, resilience has been studied in relation with academic stress, viewed as a risk factor. If the academic related demands exceed an individual's adaptive resources, then several health symptoms may appear (Wilks, 2008). For example, Zalenski, Levey-Thors and Schiaffino (1998) found a strong association between the number of stressful life events and physical symptoms in college students.

Resilience is also seen as a dynamic process that modifies the impact of significant negative events and leads to successful adaptation to adversity (Olsson *et al.*, 2003). Process- focused research assesses both risk factors and protective mechanisms (resources on the individual, social or family level). Competencies, skills, peer-support or family support are considered to be protective factors as they moderate risk and reduce the negative impact of risk on resilience (Wilks, 2008). The process-focused perspective aims at developing interventions to improve psychological and physical health by enhancing resilience and decreasing high-risk behaviours (Ahern, Kiehl, Sole, & Byers, 2006).

The third research approach implies that resilience is a personality trait. Resilience has been repeatedly associated with the Big Five personality factors, all studies showing evidence that a high resilient personality is characterized by high score on all factors (emotional stability, extraversion, openness, agreeableness and consciousness) (Hjemdal *et al.*, 2006). Defining features of highly resilient individuals are positive social orientation towards other, the achievement orientation (Werner & Smith, 1992), optimistic and energetic approach to life and the positive emotionality (Cohn, Fredrickson, Brown, Mikels, & Conway, 2009; Tugade & Fredrickson, 2004). In a longitudinal study, Asendorpf and van Aken (1999) associated resilience with the three personality types derived from J.H. Block and J. Block theory on ego-control and ego-resilience. Their findings show

that resilience is best conceptualized as a continuous trait that reflects an individual's ability to adapt to changing environments.

Successful adaptation is the core element of each conceptualization of resilience. Highly resilient people have adaptive coping skills and perform better in specific tasks, such as academic ones (Wilks, 2008). Resilience does not imply a low vulnerability to stress, but rather the ability to effectively recover from negative events (Garmezy, 1981). Most often, trait resilience is considered a personality characteristic that moderates the relation between stress and adaptation or health outcome (Ahern *et al.*, 2006).

Previous studies on the relationships between resilience and life satisfaction show that change in resilience over time predicted change in life satisfaction (Cohn *et al.*, 2009). Resilience acts not only as a predictor, but also mediates the relationship between positive emotions and life satisfaction. Also, in a longitudinal study on Norwegian medical students, (Kjeldstadli *et al.*, 2006) was found that not only resilience but also perceived stress differentiate those with high levels of life satisfaction from students with low or fluctuating levels of life satisfaction. Most of the previous research approached resilience and perceived stress as predictors of life satisfaction, as already shown (Abolghasemi & Varaniyab, 2010; Kjeldstadli *et al.*, 2006).

Even though much research on resilience used samples of students due to convenience, Oshio, Kaneko, Nagamine, and Nakaya (2003) argue that the measurement of resilience during adolescence is justified by the significant psychological and social changes an individual must face during this stage. Resilience is conceptualized as a key factor in coping with these changes and the associated difficulties. Another argument is the high prevalence of risk behaviours in adolescence, such as alcohol or drug use, sexual behaviours, eating behaviours, behaviours leading to injury (Ahern *et al.*, 2006). All these behaviours may have a high impact on adolescents' mental health, functional capacity or social competence (Olsson *et al.*, 2003).

Method

The current study aims to assess the construct validity of the Adolescent Resilience Scale (Oshio *et al.*, 2003) and its psychometric properties in order to determine its relevance when used within the Romanian context. Thus, one purpose of this paper is to propose an instrument to measure resilience, for the use of educators and researchers, which is valid and easy to administer. Another aim is to investigate the associations between resilience, perceived stress and life satisfaction.

Participants

A convenience sampling procedure was used. A number of 341 Romanian students from several faculties were recruited, 260 female, 81 male, with a mean age of 20.65.

Measures

The Adolescent Resilience Scale (Oshio *et al.*, 2002) consists of 21 items covering three factors: Novelty Seeking, Emotional Regulation, and Positive Future Orientation. Novelty seeking refers to the ability to show interest in and concern about a wide variety of events. Emotional regulation is a trait of individuals who exhibit composure and control their internal emotions. Positive future orientation concerns the approach to goals in the future (Nakaya, Oshio, & Kaneko, 2006). The scale was translated and adapted for the Romanian population and the psychometric analysis revealed high reliability coefficients for all the dimensions: .76 for Novelty Seeking, .70 for Emotional Regulation, .82 for Positive Future Orientation and .81 for the entire scale.

The Student-life Stress Inventory (SSI) (Gadzella, 1994) measures academic stressors and reactions to stressors. The academic stressors subscale assesses five stressor categories: frustrations, conflicts, pressures, changes, and self-imposed. Reactions to stressors refer to four categories describing reactions to physiological, emotional, behavioural, and cognitive stressors. The 51 items require a 5-point Likert-type response format. The Alfa Cronbach coefficient shows good psychometric properties, ranging between .70 and .84.

The Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985) is one of the most widely used scales for the measurement of subjective well – being. The scale includes five items rated on a seven - point Likert scale (1 = Strongly disagree, 7 = Strongly agree). The Satisfaction with Life Scale was developed to assess satisfaction with the respondents' life as a whole. According to the SWLS, higher scores indicate greater life satisfaction. Previous studies using the Romanian version of SWLS reported good psychometric properties, the Alfa Cronbach coefficient obtained for the entire scale being .82 (Cazan, 2014).

Procedure

The participants were informed about the study aims and its confidentiality. Participants responded to the questionnaires in large-group settings, after completing the informed consent forms. Participants were compensated with extra credits.

Results

Reliability and construct validity of the Adolescent Resilience Scale – the Romanian Version

The first phase of the study aimed to assess the construct validity of the Adolescent Resilience Scale (Oshio *et al.*, 2003) and its psychometric properties. The Alfa Cronbach coefficient for the entire scale was .81, highlighting a high internal consistency of the scale, although inferior to the original version with an Alfa Cronbach of .85, reported by Oshio and his colleagues (2003). For the three subscales, the Alfa Cronbach coefficients were similar to those reported in previous research for the Romanian version: .76 for Novelty Seeking, .70 for Emotional Regulation, .82 for Positive Future Orientation. Similar to the findings of Oshio and his colleagues (2003), significant positive inter correlations among all factors of the Adolescent Resilience Scale were found.

Table 1. *Person correlation coefficients among the resilience subscales*

	1	2	3	4	M	SD
1. Total resilience	1				78.27	8.88
2. Novelty seeking	.756**	1			28.88	3.88
3. Emotion regulation	.767**	.311**	1		28.93	4.82
4. Positive orientation	.675**	.401**	.233**	1	20.45	3.31

Note. **. Correlation is significant at the 0.01 level (2-tailed). $N = 341$

Assessment of normality and outliers suggests that there were no multivariate outliers, Mahalanobis distance showing minimal evidence of multivariate outliers. The authors of the instrument suggested that a total score of the scale can be computed and given the significant correlations between the subscales and the total score, we tested two second order models, the first model without correlated errors and the second one, with correlated errors. The last model seemed to be the most efficient (*Table 2*).

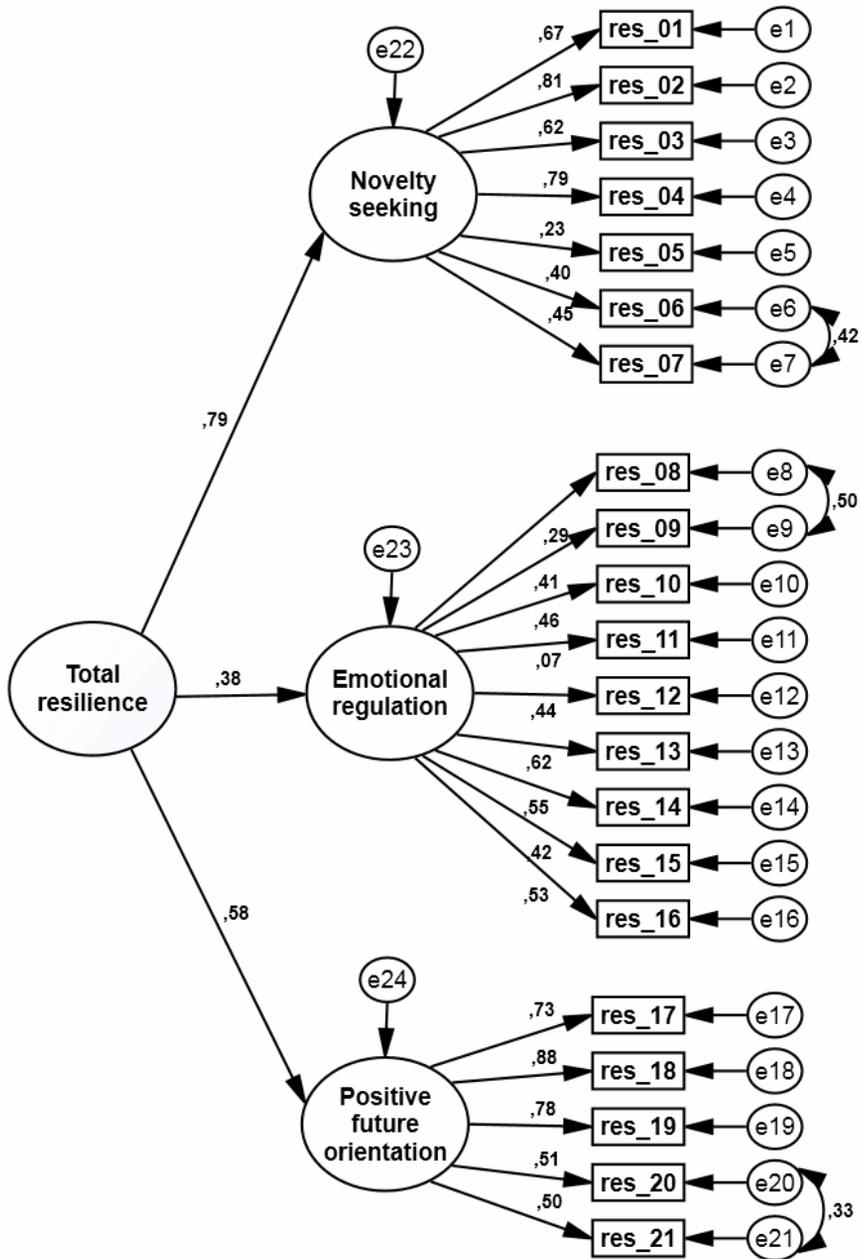


Figure 1. *Confirmatory Factor Model of the Adolescent Resilience Scale*

Table 2. Goodness-of-fit measures for the tested models – First order and second order CFA for the Adolescent Resilience Scale

Model	Correlated errors	χ^2 (df)	GFI	CFI	AIC	RMSEA (90% CI)
1. Second order - uncorrelated errors	-	633.228 (186) $p < .001$	.825	.776	732.228	.084 (.077-.091)
2. Second order - correlated errors	err6 ↔ err7 err8 ↔ err9 err20 ↔ err21	541.336 (183) $p < .001$	.876	.866	547.336	.066 (.058-.073)

Note. GFI: Goodness-of-Fit Index, CFI: Comparative Fit Index, AIC: Akaike Information Criterion, RMSEA: Root Mean Square Error of Approximation, 90% CI: 90% confidence interval for RMSEA.

Based on the initially hypothesized model (Model 1), the modification indexes related to the covariances showed evidence of misspecification associated with the pairing of error terms of the items 6 and 7 (err6↔err7; MI = 57.80), the items 8 and 9 (err8↔err9; MI = 71.47) and with items 20 and 21 (err20↔err21; MI = 32.27). Thus, the second model included the correlated errors. As the model fit was better than for the first model, we considered model 2 to represent the final best-fitting and most parsimonious model to represent the data (Figure 1).

The results suggest that the Adolescent Resilience Scale has good psychometric properties after its translation into Romanian, which is an argument for its future use in Romanian settings. Although previous studies argued that very little theoretical rationale is presented for the scale, and that the manner in which the psychological characteristics were chosen to represent resilience is unclear (Windle, Bennett, & Noyes, 2011), the present study demonstrated acceptable reliability and validity.

Resilience, stress, and life satisfaction

The second objective of the study was to investigate the associations between resilience, perceived stress and life satisfaction. Our hypothesis was that stressors mediate the relationship between resilience, reactions to stress and life satisfaction. Results showed moderate but significant correlation coefficients between resilient personality, academic stress dimensions and life satisfaction (Table 3).

Table 3. Means, standard deviations (SD), and zero-order correlations for all study variables

	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Novelty seeking	28.87	3.89	1															
2. Emotion regulation	28.92	4.83	.31**	1														
3. Positive future orientation	20.46	3.31	.40**	.23**	1													
4. Resilience overall score	78.27	8.89	.75**	.76**	.67**	1												
5. Satisfaction with life	25	5.51	.27**	.25**	.34**	.38**	1											
6. Frustrations	13.82	4.36	-.19**	-.35**	-.22**	-.36**	-.49**	1										
7. Conflicts	6.45	2.59	.01	-.28**	-.12*	-.19**	-.22**	-.44**	1									
8. Pressure	12.72	3.38	-.03	.34**	-.10	-.24**	-.27**	-.51**	.35**	1								
9. Change	7.75	2.93	-.12*	.36**	-.12*	-.29**	-.33**	-.57**	.33**	.51**	1							
10. Self-imposed	21.24	3.64	.08	.29**	.03	-.11*	-.02	.23**	.13*	.42**	.22**	1						
11. Stressors	61.99	12.06	-.08	.46**	-.15**	-.34**	-.37**	.81**	.59**	.79**	.73**	.58**	1					
12. Physiological reactions	28.07	8.17	-.09	.32**	-.17**	-.28**	-.24**	-.48**	.28**	.50**	.49**	.33**	.60**	1				
13. Emotional reactions	10.88	3.67	-.16**	.37**	-.18**	-.34**	-.33**	-.54**	.30**	.57**	.47**	.40**	.65**	.63**	1			
14. Behavioural reactions	13.87	4.23	-.19**	.44**	-.12*	-.37**	-.34**	-.48**	.35**	.41**	.42**	.31**	.56**	.49**	.58**	1		
15. Cognitive reactions	6.77	1.93	.15**	-.05	.10	.07	-.02	.30**	.18**	.34**	.26**	.29**	.39**	.33**	.34**	.26**	1	
16. Reactions	58.91	14.57	-.12*	.41**	-.169**	.346**	-.32**	-.59**	.36**	.59**	.55**	.42**	.72**	.90**	.82**	.74**	.48**	1

Note. **. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed). N = 340.

Given the significant correlations between the stressors and between the reactions to stress, we used in the structural model the overall scores to avoid the overlapping. In order to test the mediation hypothesis we tested two alternative structural models: a full versus a partial mediation model. The models included as endogenous variable the overall score for the stressors scale, the score for the life satisfaction scale and the overall score for the reactions to stress scale (Figure 1).

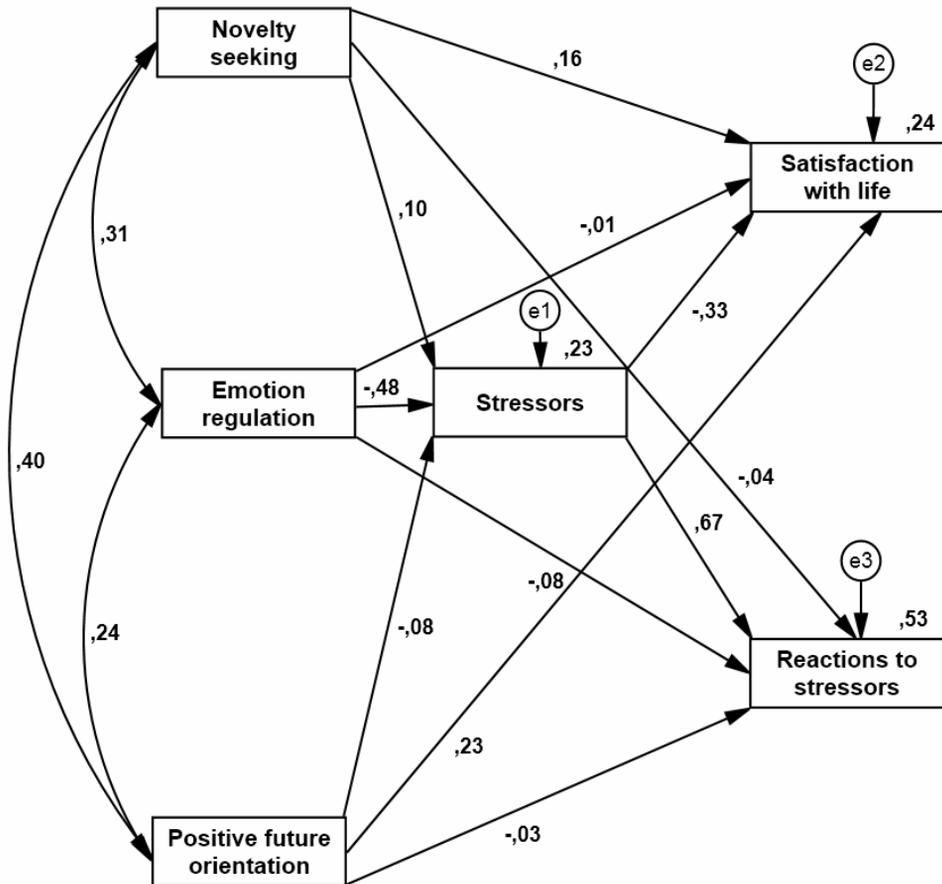


Figure 2. The structural equation model regarding the mediating effect of stressors on the association between resilient personality, academic stress reactions and satisfaction with life

Compared to the partial mediation model, the full mediating model was tested with the direct paths from the three dimensions of the resilient personality to the satisfaction with life and to the reactions to stressors dimension. The differences between the two models regarding the fit indices led to the conclusion that the full mediation model was the best model (Table 3). According to Hu & Bentler (1999) and Kline (2011), the goodness-of-fit criteria were used in the current study acknowledged the potential for acceptable (λ^2/df ratio <3 , CFI and TLI $>.90$, SRMR $<.10$, RMSEA $<.08$) and excellent fit (λ^2/df ratio <2 , CFI and TLI $>.95$, SRMR $<.08$, RMSEA $<.06$).

Table 3. Goodness-of-fit measures for the tested models – First order and second order CFA for the Adolescent Resilience Scale

Model	$\chi^2(df)$	CFI	TLI	AIC	RMSEA (90% CI)
1. Partial mediation model	51.14 (7) $p < .001$	.916	.820	91.141	.136 (.103-.173)
2. Full mediation model	.838 (1) $p = .360$	1.000	1.000	40.838	$<.001$ (.000-.139)

Note. GFI: Goodness-of-Fit Index, CFI: Comparative Fit Index, AIC: Akaike Information Criterion, RMSEA: Root Mean Square Error of Approximation, 90% CI: 90% confidence interval for RMSEA.

The significance of the mediating effect of stressors was tested using the Bootstrap estimation procedure in AMOS. The standardized path coefficients and standardized indirect effect of stressors and its associated 95% confidence intervals are displayed in Table 4.

Table 4. Direct, indirect and total effects (Standardized estimates) for the structural model

Variables	Stressors	Satisfaction with life			Reactions to stressors		
		Direct/Total	Direct	Indirect	Total	Direct	Indirect	Total
Novelty seeking	.10	.16*	-.03	.13*	-.04	.07	.03
Emotion regulation	-.48**	-.01	.16*	.15*	-.08	-.32**	-.40**
Positive future orientation	-.08	.23**	.03	.26**	-.03	-.06	-.09
Stressors	-	-.33**	-	-.33**	.67**	-	.67**

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

According to the results, *Novelty seeking* has a positive direct effect on *Satisfaction* with life, *Emotion* regulation has a negative direct effect on *Perceived* stressors, an indirect positive effect on *Satisfaction* with life, and an indirect negative effect on *Reactions* to stress, *Positive future orientation* has only a positive direct effect on *Satisfaction* with life. As expected, *Perceived* stressors

have negative indirect effects on *Satisfaction* with life and positive direct effects on Reactions to stress. Thus, the hypothesis concerning the mediating effect of stressors is confirmed.

Discussion

The primary aim of our study was to examine the factor structure of the Adolescent Resilience Scale and to analyse the mediating effect of stressors on the associations between resilient trait, satisfaction with life and reactions to stress. The present study confirmed acceptable reliability and validity for the Romanian version of the scale. The results support the construct of adolescent resilience even after the translation, which lead to the idea that the findings obtained through the Adolescent Resilience Scale could be generalized to other populations than Japanese, contrary to other results reported in the literature (Ahern *et al.*, 2006). As previous studies highlighted, adolescent resilience measures are reliable and valid across diverse youth populations (Connor & Davidson, 2003; Smith-Osborne & Bolton, 2013).

The associations between resilience and other psychological aspects were also investigated: negative life events and resilience have significant influences on mental health problems (Peng *et al.*, 2012); resilience predicts successful adaptation (Ahem *et al.*, 2006); positive emotions play a mediating role between psychological resilience and stress recovery (Tugade & Fredrickson, 2004); resilience is positively related to life satisfaction (Abolghasemi & Varaniyab, 2010; Cohn *et al.*, 2009). In the current study, as expected and consistent with previous results, the path analyses showed that stressors functioned as a mediator between resilience and reactions to stress and life satisfaction.

An important implication of the study concerns the possibility to design interventions aiming to help resilient individuals to recover from stressful situations and to increase their life satisfaction, contributing to a successful adaptation. The main conclusion of the study is that individuals with high resilience are expected to cope well with adverse events and to adapt more successfully. Another contribution of the study regards the use on a Romanian sample of a relatively short and easy to administer instrument but with good psychometric properties assessing resilience, given the lack of measurement tools in resilience research for adolescents. However, some limitations of the present study should be noted. The convenience sample used in this research imposes the need to replicate and to verify the psychometric properties of the Adolescent Resilience Scale in other populations. There are also many variables related to the resilience which were not included in the research, the study being limited to the academic environment and to the academic stressors and reactions to stressors. Lately, the study of resilience in adolescence focused on topics such as teenagers' pregnancy (Black

& Ford-Gilboe, 2004), prediction of psychiatric symptoms (Hjemdal *et al.*, 2006), health problems (PrinceEmbury, 2008; Tian & Hong, 2013), adjustment difficulties (Ungar & Liebenberg, 2009), suicide risk among depressed adolescents (Nrugham, Holen, & Sund, 2010). A longitudinal design would also demonstrate the stability or the changes regarding the level of resilience during attending university.

Conclusions

The results showed that the Adolescent Resilience Scale is a valid measure for the assessment of resilience in Romanian college students. The reliability and the construct validity of the scale proved that it is an efficient instrument, the results being important for the Romanian context given the fact that there are no other similar scales used in the recent research in the field. Although several scales reported in the international literature are in the early stages of development, the validation studies are very important, given the increasing interest in resilience. In order to extend the validation work, further research will intend to identify if the measurement parameters are invariant across gender, age and cultural origin groups. Studies with different subjects as discussed in the previous section are also necessary to better understand these results and to understand the factor structure of the scale.

The appropriate values of the fit indices and the high reliability of the scales included in the study represented the starting point for demonstrating that stressors mediate the relationship between resilience, reactions to stress and life satisfaction. The results showed that emotion regulation has the most significant mediated effects on reactions to stress, highlighting the fact that the stressors could activate the emotional resources necessary to a successful adjustment. On the other hand, positive future orientation had the most significant mediated effects on satisfaction with life, showing that stressors could set the subjective perception of individuals regarding their own life.

The results sustain, therefore, further investigation of resilience as a personality trait and that individual differences in psychological resilience may constitute the key towards a better understanding of adolescents' and students' reactions to stress within Romanian academic context. Highly resilient students are more likely to perceive stressors as less demanding and, therefore, to better cope with them and to adapt more efficiently to academic requirements. In addition to evidencing greater emotional regulation skills, highly resilient students seem to master their competencies and internal and external resources to face challenging circumstances, which, in turn, leads to higher levels of satisfaction with life.

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