Psychometric evaluation of the Authenticity Scale on the sample of students in Serbia

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The aim of this study, conducted at two time points, was to evaluate the psychometric properties of the Serbian translation of the Authenticity Scale on the sample of students. The paper presents the results of testing the validity construct of the Authenticity Scale by confirmatory factor analysis at two time points, on the initial sample of 706 students and on the test-retest sample of 206 students within a 10-week interval. The model in which there are three separate, mutually related dimensions with the superordinate factor of authenticity best describes the scale structure. The test-retest sample was used to test the convergent validity of the Authenticity Scale by evaluating its relation to the measures of both positive and negative affect, self-esteem, psychological distress and psychological well-being and mental health index. The results showed that the Serbian translation of the Authenticity Scale represents a reliable and valid measure of authenticity.

Keywords: Authenticity Scale, students, psychometric properties

An authentic personality is a personality that is original, spontaneous, free, humane and creative and appropriate synonyms for it are mature personality, productive character, self-actualized personality and well-functioning personality (Trebješanin, 2001). Some authors object to this explanation, believing that it rather defines personality as it ideally should be than as real personality. The authenticity concept is vital for understanding the human in different fields of psychology (Goldman & Kernis, 2002; Harter, 2002; Harter Marold, Whitesell, & Cobbs, 1996; Horney, 1951; Joseph & Linley, 2005; Lopez & Rice, 2006; May, 1981; Yalom, 1980; Sheldon, 2004;).

When defining authenticity in general, the starting point was the lack of authenticity or “false self” behavior, which was given the most attention in clinical, social-psychological and developmental-psychological literature (Harter, 2002). Still, different behavior in different relationships is not necessarily an example of “fake self” behavior, since each person has the right to adjust their behavior to different relationships (Snyder, 1987). The result can be

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psychological tension between the manifested fake self and the experience of the real self which is defined by the authentic question – Who am I? Freud’s early findings related to the frequency of unconscious motifs support the assumption that some parts of the true self remain unavailable even to the person themselves (Goldman & Kernis, 2002; Harter, 2002). When it comes to pathology in general, i.e. fake self behavior itself, clinical psychologists started focusing on the obstacles to authenticity which can be noticed in socialization processes and cultural limitation.

Humanists, Maslow and Rogers, spoke about authenticity as the ultimate goal of personal development. Maslow suggested that authenticity occurs when individuals discover their true inner nature and actualize their inherent potentialities by sufficiently satisfying their psychological needs, furthering one’s path toward self-actualization (Goldman & Kernis, 2002; Maslow, 1968). Rogers claimed that authenticity may be conceptualized as a dynamic process whereby one’s potentials, characteristics, emotions, values and motivation are discovered and explored, accepted, imbued with meaning or purpose, and actualized (Rogers, 1961; Thomas & Segal, 2006). In the field of positive psychology, authenticity is defined as owning one’s personal experiences, their thoughts, emotions, needs, preferences, or beliefs, processes captured by the injunction to know oneself and behaving in accordance with the true self (Peterson & Seligman, 2004; Seligman, 2002; Sheldon, 2004). In the humanistic conception, authenticity was defined as a tripartite construct by Barrett-Lennard (1998) as involving consistency between the three levels of a person – (a) person’s primary experience (the true self, including actual psychological states, emotions and beliefs), (b) their symbolic awareness (experience represented in cognitive awareness) and (c) their outward behavior and communication. The first aspect of authenticity (self-alienation) involves the inevitable mismatch between the conscious awareness and actual experience. Perfect congruence between these aspects of experience is never possible, and the extent to which a person experiences self-alienation between conscious awareness and actual experience (the true self) composes the first aspect of authenticity and leads to psychopathology. The second aspect of authenticity (authentic living) involves the congruence between experience as consciously perceived and behavior. Authentic living involves behaving and expressing emotions in such a way that is consistent with the conscious awareness of psychological states, emotions, beliefs and cognitions. In other words, authentic living involves being true to oneself in most situations and living in accordance with one’s values and beliefs. The third aspect of authenticity (accepting external influence) involves the extent to which one accepts the influence of other people and the belief that one has to conform to the expectations of others. Humans are fundamentally social beings, and the social environment affects both self-alienation and authentic living (Schmid, 2005). Introjecting the views of others and accepting external influence affects both feelings of self-alienation and the experience of authentic living. Taken together, these aspects compose the tripartite construct and a humanistic perspective of authenticity which offers the
The broadest and clearest explanation of authenticity. Wood and associates (Wood, Linley, Maltby, Baliousis, & Joseph 2008) constructed an Authenticity Scale based on the humanistic definition of authenticity as a result of an agreement between different counseling, clinical and empirical perspectives. In many mainstream counseling psychology perspectives, authenticity is seen as the most fundamental aspect of well-being (Horney, 1951; Rogers, 1961; Winnicott, 1965; Yalom, 1980). These researchers see authenticity not simply as an aspect or precursor to well-being but rather the very essence of well-being and healthy functioning. As such, departures from authenticity are seen as involving increasing psychopathology, i.e. damaging one’s mental health. However, many of these approaches have not been subjected to empirical verification, and the empirical evidence that does exist regarding the relationship between authenticity and well-being is mostly indirect and focuses primarily on one or another of the three factors of authenticity.

The Authenticity Scale appears to have good psychometric properties on the sample of students (Wood et al., 2008). The test-retest reliabilities within the two-week interval suggested that responses on the scale are stable across short intervals, as would be expected for a trait measure. The original Authenticity Scale has a small percentage of shared variance with the model Big Five and a statistically significant relation to it. The Authenticity Scale is related to the scale of Self-esteem and the scale of Subjective well-being which includes both positive and negative affect, anxiety, stress and satisfaction with life, which confirms the idea of several conceptions of psychological counseling that authenticity is fundamental for well-being (Wood et al., 2008).

Iranian (Shamsi, Ghamarani, Samadi, & Ahmadzadeh, 2012), Turkish (Ilhan & Özdemir, 2013) and French (Grégoire, Baron, Ménard, & Lachance, 2014) adaptation of the Authenticity Scale, each on the sample of students, showed that the instrument in question, in Iranian, Turkish and French language, is reliable and valid. To the best of our knowledge, the current study is the first aimed to evaluate psychometric properties of Serbian translation of Authenticity Scale (Wood et al., 2008).

Method

Sample and procedure

The research sample was comprised of 706 students (76.5% females) from the University in Novi Sad, Business Academy in Novi Sad and State University in Novi Pazar. The average age of respondents was 22.58 ($SD = 5.19$, age span 18–39). The participation in study was voluntary and participants were advised that they are free to withdraw at any time. As it was a paper-and-pencil survey, all instruments were given after lectures during academic year 2014/15. After completion of the survey, participants were debriefed on the nature of the research and all questions were answered.

The sample used for calculating the test-retest validity of the scale, its convergent validity and the second evaluation of its factor structure was comprised of 206 students (93.2% females) of average age of 21.8 ($SD = 3.31$). The respondents from the initial sample
completed the questionnaire Authenticity Scale 10 weeks after the initial testing. Research procedure was the same as in the initial testing.

Instruments

Authenticity. In the study, the Authenticity Scale constructed by Wood and associates (Wood et al., 2008) from the humanistic model on tripartite authenticity was used. The scale consists of 12 items, and respondents were asked to give a subjective assessment of the extent to which each item describes them – from 1 (does not describe me at all) to 7 (describes me very well). The scale consists of three subscales – Authentic living (4 items), Accepting external influence (4 items) and Self-alienation (4 items). The subscale Authentic living questions to what extent a person adjusts their behavior and emotions to their beliefs, values and actual psychological states. The subscale Accepting external influence shows the respondent’s belief that they have to conform to the expectations of others. The subscale Self-alienation tests how well the respondent knows themselves, their values and beliefs.

Self-esteem. Rosenberg’s 10-item Self-Esteem Scale assessed global self-esteem (Rosenberg, 1965). Five items are oriented in a positive direction and five in a negative direction. The respondents rate statements on a 1 (strongly agree) to 4 (strongly disagree) scale. The internal consistency of the Self-Esteem Scale in this study is \( \alpha = .89 \) (\( M = 29.75, SD = 6.93 \)).

Affect. The Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegan, 1988) consists of two scales, one assessing the positive affect (10 items) and the other assessing the negative affect (10 items). The respondents answered the question of how they felt during the past week, on a 1 (never or almost never) to 5 (always or almost always) scale. The results were ranked from 10 to 50 and a lesser score indicated lower positive, i.e. negative affect. In this study, the subscale of positive affect showed internal consistency \( \alpha = .83 \) (\( M = 33.07, SD = 6.86 \)), and the subscale of negative affect \( \alpha = .88 \) (\( M = 19.61, SD = 7.19 \)).

MHI-38 (Mental Health Inventory – 38; Veit & Ware, 1983). MHI-38 includes 38 items divided into six subscales, consisting of two general scales, Psychological distress (Anxiety – 9 items, Depression – 4 items, Loss of behavioral/emotional control – 9 items) and Psychological well-being (General positive affect – 10 items, Emotional ties – 2 items and Satisfaction with life – 1 item). The respondents answered questions of Likert type, and the results were ranked from 1 – 65, depending on the subscale, i.e. 14 – 124, depending on the general scale. Mental health index covers all the items and high values imply high psychological well-being and relatively low psychological distress. Also, high values on the general scale Psychological distress imply a positive status of mental health. In this study, the general scale Psychological distress had internal consistency \( \alpha = .89 \) (\( M = 57.14, SD = 16.04 \)), and the subscale Psychological well-being \( \alpha = .75 \) (\( M = 51.11, SD = 10.64 \)). Three subscales of general scale Psychological distress had internal consistency – Anxiety \( \alpha = .89 \) (\( M = 24.91, SD = 7.68 \)), Depression \( \alpha = .83 \) (\( M = 8.96, SD = 3.52 \)) and Loss of control over behavior/emotional control \( \alpha = .73 \) (\( M = 23.27, SD = 5.80 \)). Subscales of general scale Psychological well-being had internal consistency – General positive affect \( \alpha = .88 \) (\( M = 39.01, SD = 8.39 \)), Emotional ties \( \alpha = .60 \) (\( M = 7.97, SD = 2.59 \)). The subscale Emotional ties has only two items and it could be the cause of low internal consistency. The subscale Satisfaction with life has only one item with descriptive statistics (\( M = 4.13, SD = 1.14 \)).
Results

Descriptive Statistics

Table 1 shows the results of the descriptive statistics for the Authenticity Scale and the subscales Authentic living, Accepting external influence, and Self-Alienation. The values shown are: arithmetic mean, standard deviation, correlation between subscales and the overall score on the Authenticity Scale and the indicators of normal distribution for the overall score on the Authenticity Scale and each subscale in the initial and retest measuring. Names of items and subscales are also given in Serbian language.

Table 1
Descriptive statistics and reliability of the Authenticity Scale

<table>
<thead>
<tr>
<th></th>
<th>Authentic living</th>
<th>Accepting external influence</th>
<th>Self-alienation</th>
<th>Total score</th>
</tr>
</thead>
<tbody>
<tr>
<td>$M$</td>
<td>5.75</td>
<td>2.72</td>
<td>2.68</td>
<td>44.69</td>
</tr>
<tr>
<td>$M_2$</td>
<td>5.73</td>
<td>2.62</td>
<td>2.74</td>
<td>44.33</td>
</tr>
<tr>
<td>$SD$</td>
<td>1.95</td>
<td>2.54</td>
<td>3.15</td>
<td>8.48</td>
</tr>
<tr>
<td>$SD_2$</td>
<td>3.77</td>
<td>4.84</td>
<td>5.26</td>
<td>8.45</td>
</tr>
<tr>
<td>$r$</td>
<td>.18</td>
<td>.81</td>
<td>.76</td>
<td>-</td>
</tr>
<tr>
<td>$r_2$</td>
<td>.19</td>
<td>.74</td>
<td>.78</td>
<td>-</td>
</tr>
<tr>
<td>„Ceiling“ effect</td>
<td>13%</td>
<td>.4%</td>
<td>.3%</td>
<td>.1%</td>
</tr>
<tr>
<td>„Ceiling“ effect$_2$</td>
<td>10.7%</td>
<td>.5%</td>
<td>.5%</td>
<td>1%</td>
</tr>
<tr>
<td>„Floor effect“</td>
<td>3%</td>
<td>13.9%</td>
<td>7.6%</td>
<td>.1%</td>
</tr>
<tr>
<td>„Floor effect$_2$</td>
<td>.5%</td>
<td>8.3%</td>
<td>13.1%</td>
<td>.5%</td>
</tr>
<tr>
<td>$Sk$</td>
<td>-.91(.09)</td>
<td>.85(.09)</td>
<td>.61(.09)</td>
<td>.45(.09)</td>
</tr>
<tr>
<td>$Sk_2$</td>
<td>1(.17)</td>
<td>.81(.17)</td>
<td>.57(.17)</td>
<td>.49(.17)</td>
</tr>
<tr>
<td>$Ku$</td>
<td>.96(.18)</td>
<td>.91(.18)</td>
<td>-.19(.18)</td>
<td>.68(.18)</td>
</tr>
<tr>
<td>$Ku_2$</td>
<td>+1(.34)</td>
<td>.34(.34)</td>
<td>.33(.34)</td>
<td>.29(.34)</td>
</tr>
<tr>
<td>$K-M$</td>
<td>.12</td>
<td>.11</td>
<td>.11</td>
<td>.06</td>
</tr>
<tr>
<td>$K-M_2$</td>
<td>.13</td>
<td>.13</td>
<td>.1</td>
<td>.07</td>
</tr>
<tr>
<td>$KMO$</td>
<td>.71</td>
<td>.78</td>
<td>.75</td>
<td>.84</td>
</tr>
<tr>
<td>$KMO_2$</td>
<td>.62</td>
<td>.73</td>
<td>.65</td>
<td>.74</td>
</tr>
</tbody>
</table>

Note. $M = \text{mean in the first phase of measuring}$, $M_r = \text{mean in retest}$, $SD = \text{standard deviation in the initial sample}$, $SD_r = \text{standard deviation in the retest}$, $r = \text{correlations of the subscales with the scale in the initial sample}$, $r_r = \text{correlations of the subscales with the scale in the retest}$ (all the values at both points of measuring are significant on the level $p < .01$), $Sk = \text{skewness in the initial sample}$, $Sk_r = \text{skewness in the retest}$, $Ku = \text{kurtosis in the initial sample}$, $Ku_r = \text{kurtosis in the retest}$, $K-M = \text{Kolmogorov-Smirnov test in the initial sample}$, $K-M_r = \text{Kolmogorov-Smirnov test in the retest}$ (all the values are significant on the level $p < .01$), $KMO$ – $\text{Kaiser-Meyer-Oklin measure in the initial sample (representativeness of the items)}$, $KMO_r$ – $\text{Kaiser-Meyer-Olkin measure in the retest (representativeness of the items)}$. Standard error value for skewness is .09, and for kurtosis .18.

The average score of the respondents on the Authenticity Scale in the initial sample is 44.69 ($SD = 8.48$), and in retest 44.33 ($SD = 8.45$). The „ceiling“ effect for all the subscales was below the acceptable maximum of 20% in both time points of measuring (in the first measuring 13%, .4%, .3%, and in
the second 10.7%, .5%, and .5% of the respondents achieved highest results, respectively, on the subscales Authentic living, Accepting external influence and Self-alienation). The „floor“ effect for all the subscales was below the acceptable maximum of 20% in both time points of measuring (in the initial measuring 3%, 13.9%, 7.6%, and in the retest measuring .5%, 8.3% and 13.1% of the respondents achieved lowest results, respectively, on the subscales Authentic living, Accepting external influence and Self-alienation).

The values of the indicators of skewness and kurtosis of the distribution in both measurings on the subscale Authentic living show mild skewness toward lower results, whereas on the subscales Accepting external influence and Self-alienation they show mild skewness toward higher results. The results of Kolmogorov-Smirnov test show that the data on the overall scale on all the subscales are not normally distributed (from .06 to .13, all \( p < .01 \)).

The values of Kaiser-Meyer-Olkin measure \((KMO)\) show an acceptable and meritorious representativeness (Fajgelj, 2003) of all the items on the scale \((KMO = .84\) and \(KMO_2 = .74\)), and the items on each subscale at both time points of measuring (in the initial measuring the values of \(KMO\) range from .71 to .78. In the retest measuring the values of \(KMO\) range from .62 to .73).

The correlations of the subscales to the scale also confirm representativeness of the subscales. The correlations of the subscales to the Authenticity Scale are positive and \(r\) ranges from .18 to .81. Pearson correlation coefficients imply negative correlations of the subscale Authentic living to the subscales of Accepting external influence and Self-alienation \((r = -.278\) and \(r = -.214\)), and a positive correlation between the second and third subscale \((r = .652)\). All correlations are significant on the level of \(p < .01\). These results could indicate that scale has two higher-order objects of measurement. The one is Authentic living and the other one is consisted of Accepting external influence and Self-alienation.

Reliability

In Table 2, are showed the indicators of reliability of subscales Authentic living, Accepting external influence and Self-alienation at two time points of measuring (internal consistency and test-retest).

<table>
<thead>
<tr>
<th>Table 2</th>
<th>Indicators of reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Authentic living</td>
</tr>
<tr>
<td>(\alpha)</td>
<td>.68</td>
</tr>
<tr>
<td>(\alpha^2)</td>
<td>.63</td>
</tr>
<tr>
<td>Test-retest</td>
<td>.04</td>
</tr>
</tbody>
</table>

*Note. \(\alpha\) – Cronbach’s alpha coefficient in the first measuring, \(\alpha^2\), Cronbach’s alpha coefficient in the second measuring, Values of test-retest reliability are not statistically significant.*
Internal consistencies of the subscales Accepting external influence and Self-alienation in initial and retest measuring are good and range from .71 to .76. Internal consistency of the subscale Authentic living is acceptable and equals to $\alpha = .68$ for the initial, and $\alpha = .63$ for the retest measuring. Original subscales Authentic living, Accepting external influence and Self-alienation showed internal consistency as follows: .62, .67 and .79 (Wood et al., 2008), in Iranian adaptation .82, .81 and .77 (Shamsi et al., 2012), in French adaptation between .77 and .82 (Grégoire et al., 2014), and in Turkish adaptation .62, .67 and .79 (Ilhan & Özdemir, 2013). The results confirm the internal consistency of the scale.

Test-retest reliability depends on the time that passes between the two measuring, the longer the time, the lower the correlations, and vice versa. The results of test-retest reliability in this research are low, statistically insignificant correlations which may indicate that during the 10-week period authenticity is unstable as a personality trait. Test-retest reliability of the original Authenticity Scale, as well as its adaptations, showed stability of authenticity as a personality trait during two weeks (Ilhan & Özdemir, 2013; Shamsi et al., 2012; Wood et al., 2008), and eight weeks (Grégoire et al., 2014). Also, the majority of female participants (93%) strongly influence the gender structure of the sample and might affected these results of test-retest reliability.

Confirmatory factor analysis

Confirmatory factor analysis was used to check the factor structure of the Serbian translation of the Authenticity Scale that includes three subscales of Authentic living, Accepting external influence and Self-alienation so the results could be compared to the results of the confirmatory factor analysis obtained with the original scale and the subscales. Factor structure of the Authenticity Scale was evaluated by using confirmatory factor analysis (hereinafter CFA) in the program LISREL 8.80 using the maximum likelihood model of estimation. Multivariate normality was assessed using Mardia’s multivariate kurtosis coefficient, which showed that the data are not normally distributed. This finding was expected, given that research sample consisting of students from non-clinical population. For large samples ($N > 500$), such as is the case in this study, disrupted normality is not a problem because simulation studies show that fit indicators (except the chi-square) are robust to non-normality of data distribution and the interpretation of the model should rely on them, not on the value of chi-square (Lei & Lomax, 2005). To assess the model fit, the following indicators were used: chi-square ($\chi^2$), the relation between the chi-square and the degree of freedom ($\chi^2/df$), Root mean square error of approximation (RMSEA; Steiger & Lind, 1980), Standardized root mean square residual (SRMR), Comparative fit index (CFI; Bentler, 1989) and Bentler-Bonett normed fit index (NFI; Bentler & Bonnet, 1980).

Chi-square is the most common method of evaluating goodness-of-fit. A low $\chi^2$ value, indicating nonsignificance, would point to a good fit. This is
because chi-square test is used to assess actual and predicted matrices. Thus, non-significance means that there is no considerable difference between the actual and predicted matrices (Hair, Anderson, Tatham, & Black, 1998). Chi-square test is sensitive to sample size. With large sample size (larger than 200, as in this study) $\chi^2$ will be inflated (statistically significant), and thus might erroneously imply a poor data-to-fit model (Schumacker & Lomax, 2004). This is why the alternative check of $\chi^2$ is the calculation of the ratio between $\chi^2$ and the degree of freedom ($df$) model, wherein ratio $\chi^2/df \leq 3$ is a good indicator of model fit (Kline, 1998). \textit{RMSEA} is an extremely informative criterion in evaluating model fit. The \textit{RMSEA} index measures the discrepancy between the observed and estimated covariance matrices per degree of freedom (Steiger, 1990). The values of \textit{RMSEA} run on a continuum from 0 to 1. Values less than 0.05 indicate good fit, values up to 0.08 indicate reasonable fit, and values between 0.08 and 1 indicate mediocre fit (Hoe, 2008). It is also suggested that for large samples (larger than 500, as in this study) authors should use \textit{RMSEA} > .05 (or .06) as one of the more alternative tests for evaluating the model fit (Hu & Bentler, 1999). Therefore, in this research, indicators of a good fit are the following values of $\chi^2$ with $p>.05$, ratio $\chi^2/df \leq 3$, \textit{RMSEA} and \textit{SRMR} $\leq .05$, \textit{NFI} >.90 and \textit{CFI} > .93 (Byrne, 1994).

CFA was done at two time points, on two samples described earlier, and were tested the same models that were evaluated in the original research (Wood et al., 2008). Firstly, one-factor model was tested to evaluate whether the Authenticity Scale represents a one-dimensional, general measure of authenticity. The results shown in Table 4 show that the values of all the indicators of this model fit are below acceptable limits. Then followed the evaluation of tripartite model of the Authenticity Scale as the theoretically expected scale structure according to the assumptions of the original authors (Ilhan & Özdemir, 2013; Wood et al., 2008). In both samples, values of all indicators point to a good model. Then followed the bi-factor model in which three orthogonal factors were specified (Authentic living, Accepting external influence and Self-alienation) together with one superordinate factor of authenticity which is saturated by all 12 items. As with the original scale, this model showed the best indicators, whose values fall within the span of good ones. The same model showed the best values in the repeated measuring as well, in the retest, 10 weeks later. Then followed two factors model with two higher order objects of measurement. The results of negative correlation between Authentic living and other two subscales suggest that Authentic living is “adaptive” while two other scales can be “maladaptive” aspects of authenticity. This hypothesis is tested via second-order model, where two factors are modeled at the level above the three subscales. This model showed good indicators in initial sample, but not in the repeated measuring.
Table 3
Indicators of fit in confirmatory factor analysis

<table>
<thead>
<tr>
<th>Model</th>
<th>χ²</th>
<th>df</th>
<th>p</th>
<th>χ²/df</th>
<th>RMSEA (90%CI)</th>
<th>SRMR</th>
<th>CFI</th>
<th>NFI</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-factor model</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Initial sample</td>
<td>878.99</td>
<td>54</td>
<td>.00</td>
<td>16.3</td>
<td>.15 (.14-.16)</td>
<td>.09</td>
<td>.82</td>
<td>.80</td>
</tr>
<tr>
<td>Retest</td>
<td>315.55</td>
<td>54</td>
<td>.00</td>
<td>5.84</td>
<td>.15 (.14-.17)</td>
<td>.11</td>
<td>.73</td>
<td>.69</td>
</tr>
<tr>
<td>3-factor model</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Initial sample</td>
<td>133.07</td>
<td>51</td>
<td>.00</td>
<td>2.61</td>
<td>.05 (.04-.06)</td>
<td>.04</td>
<td>.98</td>
<td>.96</td>
</tr>
<tr>
<td>Retest</td>
<td>95.57</td>
<td>51</td>
<td>.00</td>
<td>1.87</td>
<td>.06 (.04-.08)</td>
<td>.05</td>
<td>.95</td>
<td>.90</td>
</tr>
<tr>
<td>bi-factor model</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Initial sample</td>
<td>81.56</td>
<td>36</td>
<td>.00</td>
<td>2.26</td>
<td>.04 (.03-.06)</td>
<td>.03</td>
<td>.99</td>
<td>.98</td>
</tr>
<tr>
<td>Retest</td>
<td>55.03</td>
<td>36</td>
<td>.02</td>
<td>1.52</td>
<td>.05 (.02-.08)</td>
<td>.04</td>
<td>.98</td>
<td>.94</td>
</tr>
<tr>
<td>Second-order model</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Initial sample</td>
<td>134.54</td>
<td>49</td>
<td>.00</td>
<td>2.74</td>
<td>.05 (.04-.06)</td>
<td>.04</td>
<td>.98</td>
<td>.96</td>
</tr>
<tr>
<td>Retest</td>
<td>164.52</td>
<td>49</td>
<td>.00</td>
<td>3.35</td>
<td>.08 (.07-.11)</td>
<td>.13</td>
<td>.87</td>
<td>.83</td>
</tr>
</tbody>
</table>

Note. 1-factor = all the items saturate one factor; 3-factor = three theoretically presupposed, correlated factors Authentic living, Accepting external influence and Self-alienation; bi-factor = three theoretically correlated factors and one superordinate authenticity factor; RMSEA = Root mean square error of approximation; SRMR = Standardized root mean square residual; CFI = Comparative fit index; NFI = Normed fit index.

Convergent Validity

Convergent validity of Authenticity Scale was checked on the retest sample which consisted of 206 students (93.2% females), of average age of 21.8 (SD = 3.31).

Table 4
Convergent validity

<table>
<thead>
<tr>
<th>P.A.</th>
<th>N.A.</th>
<th>S</th>
<th>MHI – 38</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Psychological distress</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>A</td>
</tr>
<tr>
<td>Authentic living</td>
<td>.25**</td>
<td>-.10</td>
<td>.32*</td>
</tr>
<tr>
<td>Accepting external</td>
<td>-.13*</td>
<td>.03</td>
<td>-.08</td>
</tr>
<tr>
<td>influence</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-alienation</td>
<td>-.29**</td>
<td>.25**</td>
<td>-.18**</td>
</tr>
<tr>
<td>M</td>
<td>33.07</td>
<td>19.61</td>
<td>29.75</td>
</tr>
<tr>
<td>SD</td>
<td>6.86</td>
<td>7.19</td>
<td>6.93</td>
</tr>
</tbody>
</table>

Note. P.A.-positive affect; N.A. – negative affect; S – self-esteem; MHI – 38 – Mental Health Inventory-38, A– Anxiety, D – Depression, LC – Loss of control over behavior/emotional control, PD– Psychological distress, GPA – General positive affect, ET – Emotional ties, SL– Satisfaction with life, PWB – Psychological well-being, MHI – Mental health index, M = mean, SD = standard deviation, * p < .05; ** p < .01

The results showed that the Authenticity Scale is in correlation with positive affect, negative affect, self-esteem, psychological distress and psychological
well-being. Subscale Self-Alienation is in significant positive correlation with the negative affect, psychological distress and mental health index (r ranges from .31 to .37) and significant negative correlation with positive affect, self-esteem and psychological well-being (r ranges from .14 to -.32). Subscale Authentic living is in positive correlation with positive affect (r = .25) and self-esteem (r = .32). Subscale Accepting external influence is in positive correlation with psychological distress and mental health index (r ranges from .13 to .22) and in negative correlation with positive affect (r = -.13). These results confirm the results of the correlations of the original version of the scale (Wood et al., 2008) as well as the convergent validity of the Authenticity Scale.

Discussion

The goal of this study was the evaluation of the psychometric properties of the Serbian translation of the Authenticity Scale on a sample of students. Considering this was the first research in which the Authenticity Scale was tested on a sample of students in Serbia, it was done at two time points, on the initial sample (N = 706) and another sample on which, 10 weeks later, research was repeated.

Construct validity of the Authenticity Scale was tested by confirmatory factor analysis. Several models were tested, all of which were chosen on the basis of previous studies and theoretical expectations of the original scale’s authors. It was shown that the scale structure is best described by bi-factor model which is indicative of a satisfactory fit. This model was defined through three dimensions of authenticity: Authentic living, Accepting external influence and Self-alienation and one superordinate authenticity factor. The results of confirmatory analysis were confirmed again in the repeated measuring on the sample of 206 students. The confirmed reliability of the results on the factor structure of the scale suggests that, when applied on the sample of young grown-ups, Authenticity Scale is an instrument based on one superordinate authenticity factor and three presupposed authenticity dimensions (Wood et al., 2008). Here we have to be careful because of the results of correlation between subscale Authentic living and other two – Accepting external influence and Self-alienation that suggests Authentic living is “adaptive” while two other scales can be “maladaptive” aspects of Authenticity. This hypothesis was tested via second-order model and showed a good fit in initial sample and mediocre fit in repeated measuring. Possible reason for this mediocre fit model could be a majority of female participants (93%) in retest sample. Despite of results of CFA, these correlations between the subscales strongly recommend not to calculate the total score (at least without recoding the items so all the subscales have positive correlations). This further implies that in future researches authors can use three separate scores for Authentic living, Accepting external influence and Self-alienation as aspects of authenticity, but not the overall score as an indicator of a person’s authenticity.

The items are representative of the subscale they belong to, but also for the overall scale (KMO = .84 and KMO₂ = .74) and the items on all the subscales.
at both time points of measuring (KMO values range from .71 to .78, and KMO\textsubscript{2} range from .62 to .73). The reliabilities of the subscales are good, considering a small number of items on each subscale (4 items), which lessens the coefficient of internal consistency. Internal consistency of the subscales Accepting external influence and Self-alienation at both time points of measuring ranged from .71 to .76. Subscale Authentic living showed internal consistency of $\alpha = .68$ in the first measuring, and $\alpha = .63$ in the second, thus confirming previous researches on students (Ilhan & Özdemir, 2013; Wood et al., 2008). A small number of items on each of the subscales probably caused this result. Test-retest reliability is very low for all the subscales (from .02 to .07), which implies that authenticity is unstable during the 10-week period. This confirms the results from previous researches which showed that authenticity is stable within a 2-week (Ilhan & Özdemir, 2013; Shamsi et al., 2012; Wood et al., 2008), i.e. 8-week period (Grégoire et al., 2014). Authenticity exists in a person as a dynamic process in which personal potentials, characteristics, emotions, motifs and other are revealed, researched, accepted, given sense and meaning and realized (Rogers, 1961). Other reason for these results of test-retest reliability could be a gender structure of test-retest sample where was 93% of female participants. Structural models were not controlled for gender because of results in previous studies where CFA showed that correlations between authenticity and other factors were invariant across gender (Lopez & Rice, 2006; Maltby, Wood, Day, & Pinto 2012; Wood et al., 2008).

Research showed that the Authenticity Scale has satisfactory convergent validity. Correlations between the Authenticity Scale and other instruments for construct assessment, which are assessed by the Authenticity Scale (Authentic living, Accepting external influence and Self-alienation) are in accordance with the theoretical expectations. The Authenticity Scale is in highest correlation with self-esteem, psychological distress, psychological well-being and mental health index (mental health index value indicates high scores on one general scale and low scores on the other general scale – for example, high value of MHI shows high scores on the scale of psychological well-being, and low scores on the scale of psychological distress). Subscale Self-alienation has large positive correlation with negative affect, psychological distress and mental health index and large negative correlation with positive affect, self-esteem and psychological well-being. The results are as expected, given that this aspect of authenticity, self-alienation, is defined as a mismatch between the conscious awareness (experience represented in the cognitive sphere) and actual experience (the true self, including actual psychological states, emotions and beliefs). Even though perfect congruence between these aspects of experience is never possible, low self-esteem and psychological well-being, i.e. high psychological distress surely contributes to an increased sense of self-alienation. Subscale Authentic living has positive correlation with positive affect and self-esteem. Authentic living as an aspect of authenticity is defined as coordination between perceived experience and behavior, i.e. coordination of behavior and expressing emotions with actual psychological states, beliefs and thoughts. Results show that positive emotions and self-esteem positively influence honesty to oneself and living in accordance
with one’s values and beliefs. Of further interest was the relation between authenticity measures and subscales of MHI-38. There are no correlation between subscale Authentic living and subscales of MHI-38. This finding suggests that a more authentic lifestyle conduces to less stress, whereas accepting external influence and self-alienation may even lead individuals to “get into trouble,” perhaps by invoking maladaptive or disadvantageous behavior. This suggests directions for future research into the roles of three aspects of authenticity in preventing negative outcomes and events. Subscale Accepting external influence has positive correlation with psychological distress and mental health index and negative correlation with positive affect. This third aspect of authenticity involves the belief that one needs to conform to the expectations of others. A reason for this result may be found in the fact that the respondents were young people who, developmentally speaking, are more authentic when their self is being accepted by other people (Harter et al., 1996; Neff & Harter, 2002). Humans are fundamentally social beings, and the social environment affects both self-alienation and authentic living (Schmid, 2005). All the results confirm previous researches (Grégoire et al., 2014; Ilhan & Özdemir, 2013; Shamsi et al., 2012; Wood et al., 2008) and imply satisfactory convergent validity of the Authenticity Scale.

**Conclusion**

This paper represents the results of psychometric validation of the Serbian translation of the Authenticity Scale.

Based on the results gained, we can conclude that the Authenticity Scale is an instrument with excellent psychometric properties, which can be used to assess three separate, but closely connected components of authenticity: Authentic living, Accepting external influence and Self-alienation which are all based on the authenticity factor. The Authenticity Scale is a short instrument (12 items) that is easy to apply and proves to be successful in measuring the components of authenticity which recommends it for further use in researches on the samples of young adults. Even though this was the first research in which psychometric properties of the Serbian translation of the Authenticity Scale were evaluated, it is important to point out several suggestions for further research.

From the gender perspective, further research of Authenticity scale should consider influence of gender factor on latent structure of the scales.

From the developmental point of view, it would be significant to conduct a longitudinal study in which authenticity of the same respondents would be evaluated in different ages. This would provide data on its developmental aspect, but also on how the change of environment affects authenticity. Authenticity is rooted in one’s self, but not as a static self-representation. Rather, authenticity may be conceptualized as a dynamic process whereby one’s potentials, characteristics, emotions, values and motivation are discovered and explored, accepted, imbued with meaning or purpose, and actualized (Rogers, 1961).

Furthermore, this was the first research in authenticity in students, so it would be of great significance to test authenticity at different ages and life...
periods. Rogers (Rogers, 1961) believed that people are authentic only in the early age, and that authenticity is lost during life as a direct consequence of personal beliefs. Future researches should check the relation of authenticity to other personality traits and test invariance of authenticity over time as a more sophisticated approach to the investigation of temporal stability.

The conclusion is that this research has given a reliable and valid instrument in Serbian which evaluates authenticity and shall be useful to researchers, clinical psychologists and psychotherapists.

References


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## Appendix A

### Analysis of the items of the Authenticity Scale

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Item</th>
<th>Subscale</th>
<th>$M$</th>
<th>$SD$</th>
<th>$Sk$</th>
<th>$Ku$</th>
<th>$K-S$</th>
<th>$R$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I think it is better to be yourself than to be popular</td>
<td>Authentic living (Autentični život)</td>
<td>6.14</td>
<td>1.35</td>
<td>-1.74</td>
<td>2.6</td>
<td>0.34</td>
<td>0.30</td>
</tr>
<tr>
<td>2</td>
<td>I do not know how I really feel inside I am strongly influenced by the opinions of others</td>
<td>Self-alienation (Samootuđenje) Accepting external influence (Prihvatanje spoljašnjeg uticaja)</td>
<td>3.48</td>
<td>1.97</td>
<td>0.2</td>
<td>-1.19</td>
<td>0.17</td>
<td>0.38</td>
</tr>
<tr>
<td>3</td>
<td>I usually do what others tell me to do</td>
<td>Accepting external influence (Prihvatanje spoljašnjeg uticaja)</td>
<td>2.75</td>
<td>1.67</td>
<td>0.74</td>
<td>-0.36</td>
<td>0.19</td>
<td>0.58</td>
</tr>
<tr>
<td>4</td>
<td>I feel out of touch with the ‘real me’</td>
<td>Self-alienation (Samootuđenje)</td>
<td>2.61</td>
<td>1.81</td>
<td>0.92</td>
<td>-0.31</td>
<td>0.22</td>
<td>0.50</td>
</tr>
<tr>
<td>5</td>
<td>I live in accordance with my values and beliefs</td>
<td>Authentic living (Autentični život)</td>
<td>5.69</td>
<td>1.36</td>
<td>-1.06</td>
<td>0.77</td>
<td>0.22</td>
<td>0.50</td>
</tr>
<tr>
<td>6</td>
<td>Other people influence me greatly</td>
<td>Accepting external influence (Prihvatanje spoljašnjeg uticaja)</td>
<td>5.65</td>
<td>1.39</td>
<td>-1.15</td>
<td>1.08</td>
<td>0.24</td>
<td>0.58</td>
</tr>
<tr>
<td>7</td>
<td>I feel alienated from myself</td>
<td>Self-alienation (Samootuđenje)</td>
<td>2.67</td>
<td>1.83</td>
<td>0.87</td>
<td>-0.45</td>
<td>0.24</td>
<td>0.57</td>
</tr>
<tr>
<td>8</td>
<td>I am true to myself in most situations</td>
<td>Authentic living (Autentični život)</td>
<td>5.52</td>
<td>1.47</td>
<td>-1.06</td>
<td>0.85</td>
<td>0.2</td>
<td>0.51</td>
</tr>
<tr>
<td>9</td>
<td>I think it is better to be yourself than to be popular</td>
<td>Authentic living (Autentični život)</td>
<td>1.97</td>
<td>1.43</td>
<td>1.57</td>
<td>1.77</td>
<td>0.3</td>
<td>0.56</td>
</tr>
</tbody>
</table>

**Note.** $M$ = mean, $SD$ = standard deviation, $Sk$ = skewness, $Ku$ = kurtosis, $K-M$ = Kolmogorov-Smirnov test (all the values are significant on the level $p<.01$), $r$ = correlation of the items with the overall score on the subscale they belong to (corrected item-total correlation), standard error value for skewness is .09, and for kurtosis .18.