

Measuring time attitudes in Slovenia: Psychometric proprieties of the Adolescent and Adult Time Attitude Scale (AATI-TA)

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Abstract: In the present study, we examined the psychometric properties of scores on the newly developed Slovenian version of the Adolescent and Adult Time Inventory-Time Attitudes Scale (AATI-TA) in a sample of 182 Slovenian adolescents. The 30-item AATI-TA assesses positive and negative attitudes towards the past, present, and the future. Time attitudes are particularly important in adolescence due to their association with various educational and psychological outcomes. The AATI-TA is a robust instrument and AATI-TA scores have already been validated in several national contexts worldwide. Due to language differences between Slovene and English, a 24-item version of the AATI-TA was examined in Slovenia. As hypothesized, scores on the 24-item Slovenian version of AATI-TA were internally consistent and structurally valid. Moreover, meaningful correlations between time attitudes and positivity, a basic disposition determining individual well-being, provided evidence of concurrent validity. The results suggest that the Slovenian version of the AATI-TA will be useful in Slovenian research examining time attitudes.

Keywords: Adolescent and Adult Time Inventory-Time Attitudes Scale AATI-TA, adolescence, time perspective, positivity, validation

Merjenje stališč do časa v Sloveniji: psihometrične značilnosti Inventarja o času za mladostnike in odrasle – Lestvica stališč do časa (AATI-TA)

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Povzetek: V raziskavi smo ugotavljali psihometrične značilnosti slovenske različice inštrumenta Inventar o času za mladostnike in odrasle – Lestvica stališč do časa (AATI-TA) na vzorcu 182 slovenskih mladostnikov. Lestvica vsebuje pozitivna in negativna stališča do preteklosti, sedanjosti in prihodnosti. Ta stališča so še posebej pomembna za obdobje mladostništva, saj so povezana z različnimi izobraževalnimi in psihološkimi izidi. AATI-TA je robusten instrument, ki je že bil validiran v različnih nacionalnih kontekstih po vsem svetu. Kot je bilo predpostavljeno, so bili slovenski rezultati notranje konsistentni in strukturno veljavni. Lestvica stališč je izkazala tudi ustrezno sočasno veljavnost, saj se je pokazala smiselna povezanost med stališči do časa in pozitivnostjo; slednja je opredeljena kot dispozicija, ki določa posameznikovo blagostanje. Rezultati kažejo, da bo slovenska različica AATI-TA koristen inštrument za raziskovanje stališč do časa.

Ključne besede: Inventar o času za mladostnike in odrasle – Lestvica stališč do časa AATI-TA, časovna perspektiva, mladostništvo, pozitivnost, validacija

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Constructs related to time have been implicated in psychological functioning for more than seven decades (Andretta, Worrell, & Mello, 2014; Frank, 1939; Lewin, 1942). However, much of the research has focused on constructs related to the future, such as hope (Snyder, Lopez, Shorey, Rand, & Feldman, 2003), optimism (Scheier & Carver, 1985) and perceived life chances (Jessor, Donovan, & Costa, 1990). In 1999, Zimbardo and Boyd reminded researchers that time consists of three periods – past, present, and future – and noted that researchers should assess all three periods to get a complete understanding of an individual's time perspective. These researchers introduced the Zimbardo Time Perspective Inventory (ZTPI) that provided scores related to all three periods, but psychometric properties of ZTPI scores have varied tremendously across studies (Sircova et al., 2014; Worrell & Mello, 2007; Worrell, Temple et al., 2016), perhaps due to the fact that the subscales assess other constructs (e.g., fatalism, hedonism, planning) in addition to time (Crockett, Weinman, Hankins, & Marteau, 2009; Worrell, Mello, & Buhl, 2013). In 2007, Mello and Worrell developed the Adolescent Time Inventory (ATI), a multidimensional instrument that assessed individuals' perceptions of time. The ATI included measures of time meaning (ATI-TM), time frequency (ATI-TF), time orientation (ATI-TO), time relation (ATI-TR), and time attitudes (ATI-TA; Mello & Worrell, 2015). The current study focused on time attitudes.

To date, most of the research with the ATI has used the time attitude subscales, which assess positive and negative attitudes toward each of the three time periods, and there have been extensive psychometric analysis of the time attitude scores on Adolescent Time Inventory (ATI-TA). Researchers have found ATI-TA scores to be reliable and structurally valid in adolescent samples in several national contexts, including China (Ling, Xu, Worrell, & Mello, 2014), Germany (Buhl & Lindner, 2009; Worrell et al., 2013), Iran (Mello, Rashid, Worrell, & Fathi, 2014), Japan (Chisima, Murakami, Worrell, & Mello, 2016), New Zealand (Alansari, Worrell, Rubie-Davies, & Webber, 2013), Turkey (Şahin-Baltacı, Tagay, Worrell, & Mello, 2017), the United Kingdom (McKay, Cole, Percy, Worrell, & Mello, 2015), and the United States (Worrell et al., 2013).

Moreover, in two recent studies, ATI-TA scores have been shown to be reliable and structurally valid in samples of young adults attending college (Cole, Andretta, & McKay, 2017; Mello et al., 2016), as well as middle and older adults (Mello et al., 2016), leading the authors to rename the instrument the Adolescent and Adult Time Inventory (AATI). The goal of the current study was to examine the psychometric properties of scores on a Slovenian version of the AATI-TA. More specifically, we examined the internal consistency, structural validity, and concurrent validity of the scores to ascertain if AATI-TA scores can be useful in understanding adolescent and adult functioning in Slovenia. We begin with a brief overview of the AATI-TA and research using the instrument.

The Adolescent and Adult Time Inventory-Time Attitude scales

The AATI-TA consists of six 5-item subscales assessing Past Positive, Past Negative, Present Positive, Present Negative, Future Positive, and Future Negative attitudes. Alpha and omega reliability estimates for scores on the past and present subscales have ranged from .72 to .95 across 13 countries (Chisima et al., 2016; McKay et al., 2015; Şahin-Baltacı et al., 2017; Worrell, Mello, & International Collaborators, 2015). Future Positive scores have generally been in the same range, except for Iran (Farsi; $\alpha = .64$, $\omega = .65$) and Albania (Albanian; $\alpha = .61$, $\omega = .68$; Worrell, 2016). Reliability estimates for Future Negative scores have been the most variable. Although reliability estimates for these scores have been $> .70$ in many countries (Worrell, 2016), they have been in the .60 range in the United Kingdom ($\alpha = .61$, McKay et al., 2015), Nigeria ($\alpha = .64$, Finan et al., 2012), and Peru ($\alpha = .62$, Worrell et al., 2015), and have been below .50 in Albania ($\alpha = .39$, $\omega = .60$), Italy ($\alpha = .43$, $\omega = .62$), and Turkey ($\alpha = .53$, $\omega = .53$, Şahin-Baltacı et al., 2017; Worrell et al., 2015).

The six-factor theoretical structure has been supported on the basis of confirmatory factor analyses using both maximum-likelihood and weighted least squares estimation in the 11 countries in which it has been examined (Chisima et al., 2016; McKay et al., 2015; Şahin-Baltacı et al., 2017; Worrell et al., 2015), despite the reliability issues with Future Negative scores. Additionally, scores on the AATI-English show scalar invariance across gender (Worrell, McKay, & Andretta, 2017), configural invariance across a three-year time period in early adolescence (Worrell et al., 2017), configural invariance across early, middle, and older adulthood (Mello et al., 2016), and scalar invariance for five of the six subscales (excluding Future Negative) across early and middle adulthood (Mello et al., 2016).

There has also been evidence supporting the convergent and discriminant validity of AATI-TA scores. Worrell and Mello (2009) reported that AATI-TA scores were not meaningfully related (i.e., $r \leq .30$, indicative of a small effect size) to age, grade point average, or academic self-concept. However, AATI-TA scores were meaningfully related to several time constructs (e.g., state hope, perceived life chances, optimism, expectation of future success) and to other important constructs (e.g., global self-esteem, perceived stress). Alansari et al. (2013) reported similar findings; they found that AATI-TA scores were not related to academic achievement, cutting school, and academic self-ranking, but the scores were related to attitudes to school and teacher. In Cole et al.'s (2017) study of British adults, AATI-TA scores on the positive subscales were negatively related to anxiety and depression ($-.41 \leq r \leq .23$), scores on the negative subscales were positively related to depression ($.25 \leq r \leq .41$), but no scores were associated with problematic alcohol use ($-.11 \leq r \leq .13$).

Although correlates of AATI-TA scores are interesting, one goal of developing a multidimensional scale assessing past, present and future attitudes is to examine profiles based on all of the subscales, as Zimbardo and Boyd (1999) suggested. Several researchers have used either cluster analysis or latent profile analysis to identify time attitude profiles based on the six subscales. Several profiles have been found, including Positives, Optimists, Balanced, Ambivalents, Negatives, and Pessimists. Importantly, individuals with different profiles differ meaningfully on outcomes, with more positive profiles associated with more adaptive outcomes, including life satisfaction, mental health, and academic success (Alansari et al., 2013; Andretta et al., 2014; Buhl & Lindner, 2009; Cole et al., 2017; McKay, Percy, Cole, Worrell, & Andretta, 2016; Prow, Worrell, Andretta, & Mello, 2016). These differences across profiles have been found in Germany, New Zealand, the UK, and the US.

The current study

As the literature reviewed above indicates, AATI-TA scores have been found to be reliable and valid in several different countries. These scores have also been found to yield interpretable time attitude profiles, which result in differences on a variety of psychological constructs. The findings, to date, suggest that time attitudes may be useful constructs to look at in different national contexts, providing the rationale for this study. Although there is interest in conducting research on time constructs in Slovenia, ZTPI scores have not held up psychometrically in Slovenia (Worrell et al., 2016).

The goal of the current study was to develop a Slovenian version of AATI-TA and assess the internal consistency, structural validity, and concurrent validity of the scores in a sample of adolescents in Slovenia. We hypothesized that (a) AATI-TA Slovenian scores would be internally consistent with estimates of .70 or higher and (b) that the six-factor model supported in other national contexts (e.g., Alansari et al., 2013; Buhl & Lindner, 2009; Chisima et al., 2016; McKay et al., 2015; Şahin-Baltacı et al., 2017; Worrell et al., 2013) would yield the best fit to the data with fit indices in the acceptable range or higher. With regard to concurrent validity, we hypothesized that positive time attitude subscales would have statistically and practically significant positive correlations with the Positivity Scale and that negative subscales would have statistically and practically significant negative correlations with the Positivity Scale (Caprara et al., 2012). The Positivity Scale assesses “a general tendency to evaluate self, life, and future in a positive way” (i.e. as an interplay among self-esteem, life satisfaction, and optimism; Heikamp et al., 2014, p. 140).

Method

Participants

Participants consisted of a convenience sample of 182 students (64% female; $M_{age} = 20.17$, $SD_{age} = 2.20$), eight of whom did not report age and gender. Seventy-six percent of the sample were from urban high schools in four Slovenian cities ($n = 133$; $M_{age} = 17.05$, $SD_{age} = 1.66$) and 24% were from

two university programmes at the University of Ljubljana ($n = 41$; $M_{age} = 23.29$, $SD_{age} = 2.73$).

Instruments

In addition to the time attitude and positivity scales used in the study, participants were asked to self-report on three demographic variables: age, sex, and educational level.

Adolescent and Adult Time Inventory-Time Attitudes. The AATI-TA is one of the five components of the larger AATI battery, which also includes time meaning, time frequency, time orientation, and time relation, and was used to measure students' attitudes towards time (Mello & Worrell, 2015). The AATI-TA English consists of six 5-item subscales: Past Positive, Past Negative, Present Positive, Present Negative, Future Positive, and Future Negative. Responses are on a 5-point Likert scale (1 = Totally Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Totally Agree) with higher scores indicating a greater endorsement of the attitude. No items are negatively worded, and subscale scores are calculated as a mean of the five items.

The Slovenian version of AATI-TA (Mello, Worrell, Musil, Živkovič, & Juriševič, 2017) was developed through a five-stage translation procedure using a team approach, based on the principles and strategies for translation proposed by Brislin (1986) and other authors (e.g., Cha, Kim, & Erlen, 2007; Harkness, Villar, & Edwards, 2010; Hoffmeyer-Zlotnik & Harkness, 2005). In the first stage, AATI-TA items were translated using parallel translation by two Slovenian researchers fluent in English and familiar with the domain of the study. In the second stage, both translators and a third independent Slovenian researcher discussed the first two drafts and came to consensus on the third draft. In the third stage, one of the translators met with an author of the original AATI-TA to discuss the translation and reconcile any discrepancies. At this meeting, the Slovenian researcher reported that four words used in AATI-TA to express positive attitudes in English (i.e., satisfied, content, happy, and pleased) are meaningfully translated by a single word in Slovenian language (i.e., *zadovoljen*), which resulted in several items being identical. It was decided at this stage to still include all 30 items and to ask respondents to comment on the items after they completed them.

In Stage 4, a pilot study was carried out and respondents reported that items were clear but 31% of the respondents commented negatively on the identically worded items and complained that there are too many similar items in the questionnaire. On the basis of their feedback and the results of reliability analyses, we excluded 6 of the 30 items from the Slovene version of AATI-TA, that is, one item from each subscale. Excluded items were either redundant with another item (e.g., Item 11: *Zadovoljen sem s svojo sedanostjo / I am pleased with the present* with Item 14: *Zadovoljen sem s svojo sedanostjo / I am content with the present*, or Item 5: *Zadovoljen sem s svojim trenutnim življenjem / I am happy with my current life*) and had the lowest contribution to internal consistency among items from the same subscale. Thus, the content equivalence between the original and the translated version was maintained after excluding items 3, 6, 8, 11, 16, and 28. The 24-item Slovenian version of the

AATI-TA and the list of excluded items are provided in the Appendix (Table 5).

The Positivity Scale. The Positivity (P) scale (Caprara et al., 2012) was used as a measure of “the respondents’ tendency to view and address life and experiences with a positive outlook” (p. 710). The scale consists of 8-items that load on a single latent factor. Responses are on a 5-point Likert scale from 1 = Strongly Disagree to 5 = Strongly Agree, with greater scores indicating more positive outlook. Item 6 (i.e., “At times, the future seems unclear to me”) is reverse-scored, and the scale score consists of the mean of the eight items. Caprara et al. reported adequate internal consistency ($.75 \leq \alpha \leq .79$) for the scores and adequate test-retest reliability (females = .69; males = .73) over a 5-week period. They also reported scalar invariance across gender and configural invariance across nationality (Italy, Japan, Spain, and the United States). Convergent and discriminant validity evidence was established through correlations with self-esteem, life-satisfaction, and optimism, depression, and the Big Five, and scores were not meaningfully related to age.

Juriševič (2015) translated the P-scale into Slovene with the permission of the authors. In a Slovenian sample of 746 adolescents ($M_{age} = 16.80$, $SD_{age} = 1.16$), scores on the translated P scale had a similar factor structure and internal consistency ($\alpha = .81$) as reported by Caprara et al. (2012; see also Heikamp et al., 2014) and the descriptive statistics were also similar.

Procedure

E-versions of AATI-TA and P-scale were prepared and sent to high schools and university students after the consent to collaborate in the study, using the ICS, which is a Slovenian open source application for online surveys. High school students completed both instruments during their regular classes, whereas university students were contacted directly by faculty’s internal network and completed both instruments individually. All data were collected over a 2-week period from January to February in 2017. Parental consent for minors

was not requested because anonymity of the respondents was guaranteed in accordance with the purpose of the study. Data were analysed using the statistical software packages SPSS v23 (IBM Corporation, 2016) and Mplus 7 (Muthén & Muthén, 1998–2012). As data were missing on relatively few AATI-TA, missing data were not replaced and analyses were conducted with 169 participants for the AATI and 171 participants for the P-scale.

Results

Preliminary analyses

Table 1 contains the means and standard deviations for scores on the AATI-TA Slovenian subscales and the P-scale, as well as coefficients of skewness and kurtosis. As can be seen, means ranged from 2.15 to 3.73, with means on the positive subscales generally higher than means on the negative subscales, in keeping with the extant literature. None of the scores was substantially skewed or leptopl/atykurtic. Alpha reliability estimates based on raw scores as well as a 95% confidence interval are also reported in Table 1. These coefficients ranged from .75 to .91, with Future Negative having the lowest coefficient. Internal consistency estimates were also examined by gender and all but one – Future Negative scores in females (.67) – were $> .80$.

When the alpha estimates for Positivity scores were calculated, Item 6 had a negative correlation with the total score, and was eliminated from further analyses. The alpha estimate for Positivity scores based on the seven items was high (see Table 1). We also examined the structural validity of the model based on seven items and results were supportive of the scale. Factor coefficients ranged from .77 to .90, and three of the four fit indices were in the excellent range: comparative fit index (CFI) = .979, Tucker Lewis index (TLI) = .968, root mean square error of approximation (RMSEA) = .099 (90% CI: .061–.138), and the standardized root mean square residual (SRMR) = .023. As the elimination of a poorly-contributing item from a scale can inflate the alpha coefficient, we used the seven factor coefficients to calculate omega, another

Table 1. Descriptive statistics for Adolescent Time Inventory-Time Attitude Scores and for P-Scale in a Slovenian sample

	<i>M</i>	<i>SD</i>	Skew (SE)	Kurtosis (SE)	α	95% CI (α)	ω_h
Past Positive	3.73	0.78	−0.77 (0.182)	0.99 (0.361)	.85	.81–.88	.86
Past Negative	2.22	0.93	0.71 (0.181)	−0.18 (0.359)	.89	.86–.91	.89
Present Positive	3.56	0.80	−0.48 (0.181)	0.16 (0.359)	.89	.86–.92	.89
Present Negative	2.49	0.88	0.44 (0.182)	−0.24 (0.361)	.86	.82–.89	.86
Future Positive	3.74	0.77	−0.68 (0.183)	0.81 (0.363)	.91	.89–.93	.91
Future Negative	2.15	0.78	0.72 (0.182)	0.41 (0.362)	.75	.69–.81	.77
Positivity ^a	3.64	0.63	−0.26 (0.187)	0.67 (0.373)	.85	.81–.88	.95

Note. CI = confidence interval. Omega estimates are based on the coefficients from the six-factor model, which are reported in Table 3.

Table 2. Correlation matrix for Adolescent Time Inventory-Time Attitude and P-Scale

	1	2	3	4	5	6
1. Past Positive		-.83	.53	-.54	.36	-.37
2. Past Negative	-.73		-.45	.64	-.38	.49
3. Present Positive	.45	-.34		-.94	.71	-.62
4. Present Negative	-.47	.58	-.78		-.69	.71
5. Future Positive	.31	-.29	.66	-.57		-.83
6. Future Negative	-.31	.39	-.51	.58	-.69	
7. Positivity ^a	.43	-.39	.74	-.71	.73	-.67

Note. Correlations below the diagonal are for the manifest variables and above the diagonal are for latent variables. All correlations are significant at the .001 level.

^aThe Positivity score was based on seven of the eight items.

estimate of internal consistency, and this value was also quite high (see Table 1).

Intercorrelations among the AATI-TA scores are reported in Table 2. As has been seen in previous research, scores on subscales with the same valence were positively correlated and scores on subscales with the opposite valence were negatively correlated. Also as in previous research, past subscales had higher correlations with present subscales than with future subscales. Males and females did not report significantly different mean scores on any of the six AATI-TA subscales or on the P-scale ($p > .07$), with the largest difference being .27 on Future Negative in favour of females (Hedges $g = .36$).

Major analyses

As the AATI-TA is a well-established model with substantial research support, confirmatory factor analyses were used to examine structural validity. As recommended,

viable alternative models were also examined (Byrne, 2012; Thompson, 2004). The first model was the hypothesized 6-factor model. Model 2 was a 3-factor model representing the three time periods – past, present, and future. Model 3 was a 2-factor model representing positive and negative subscales. Several indices were used to assess model fit, including the CFI, TLI, RMSEA and its 90% confidence interval, and SRMR. CFI and TLI values $\geq .90$ are considered acceptable and values $\geq .95$ are considered excellent (Byrne, 2012; Marsh, Hau & Wen, 2004). For the indices of misfit, that is, the RMSEA and SRMR, values $\leq .08$ are considered acceptable and values $\leq .05$ are considered excellent. The maximum-likelihood estimator (MLM) with Satorra-Bentler robust standard errors (Satorra & Bentler, 1994) was used initially, as this estimator has been used most frequently with AATI-TA scores.

The results of the confirmatory factor analyses are reported in Table 3 and Table 4. As can be seen, the 6-factor model displayed excellent fit based on all four indicators. When the 3-factor model was run, it did not converge. The 2-factor model yielded poor fit across all indicators. Given the lack of convergence for the 3-factor model, all three models were rerun using both MLR, a robust estimator in *Mplus* that uses the Yuan-Bentler test statistic, and the robust weighted least squares estimator, which is recommended for ordinal data. These results are also reported in Table 3. Based on the MLR estimator, the 6-factor model had excellent fit and the 3-factor and 2-factor models had poor fit. The WLSMV estimator indicated excellent fit for the 6-factor model, good fit for the 3-factor model, and poor fit for the 2-factor model. In sum, the results all provided strong support for the 6-factor theoretical model. Omega estimates for AATI-TA scores based on the factor coefficients from the MLR estimator were .77 or higher (see Table 1).

Correlations between the six AATI-TA subscales and Positivity scores are reported in Table 2, providing concurrent

Table 3. Fit indices for the AATI-TA Scores derived from confirmatory factor analyses

Model	χ^2	<i>df</i>	CFI	TLI	RMSEA	90% CI for RMSEA	SRMR
MLM Estimator							
1. 6-Factor (theorized)	310.08*	237	.970	.965	.043	.028–.055	.043
2. 3-Factor (time periods) ^a	664.32*	251	.813	.794	.099	.090–.108	.072
3. 2-Factor (valence)	1065.54*	251	.665	.632	.139	.130–.147	.121
MLR Estimator							
1. 6-Factor (theorized)	317.45*	237	.964	.958	.045	.031–.057	.043
2. 3-Factor (time periods)	664.32*	251	.813	.794	.099	.090–.108	.072
3. 2-Factor (valence)	1037.62*	251	.644	.608	.136	.128–.145	.121
WLSMV Estimator							
1. 6-Factor (theorized)	356.94*	237	.983	.980	.053	.041–.064	–
2. 3-Factor (time periods)	814.64*	251	.919	.911	.111	.103–.120	–
3. 2-Factor (valence)	1591.25*	251	.807	.787	.171	.163–.179	–

Note. AATI-TA = Adolescent and Adult Time Inventory-Time Attitude; CFI = Comparative Fit Index; TLI = Tucker-Lewis Index; RMSEA = Root Mean Square Error of Approximation; CI = Confidence Interval; SRMR = Standardized Root Mean Square Residual.

^aModel did not converge with the Satorra-Bentler robust errors (MLM) and was run with the Huber/Pseudo ML/sandwich corrections (MLR).

* $p < .001$.

Table 4. Factor coefficients from confirmatory factor analyses for 24-item Slovenian AATI-TA

Subscales	Standardized coefficients (item from AATI-TA)			
Past Positive	.71 (i6)	.83 (i16)	.78 (i19)	.79 (i24)
Past Negative	.77 (i8)	.91 (i11)	.82 (i13)	.77 (i22)
Present Positive	.84 (v4)	.89 (v10)	.74 (v12)	.82 (v21)
Present Negative	.77 (i2)	.80 (i15)	.79 (i18)	.75 (i23)
Future Positive	.81 (i1)	.86 (i5)	.86 (i9)	.87 (i14)
Future Negative	.67 (i3)	.58 (i7)	.81 (i17)	.62 (i20)

validity support. As hypothesized, all of the correlations were statistically significant, and ranged in size from moderate to large. Correlations with present and future subscales were also substantially larger than correlations with past subscales.

Discussion

The goal of this study was to develop a Slovenian version of AATI-TA yielding reliable and valid scores. The results provide psychometric evidence confirming the theoretical model of the measured construct and supporting the use of the AATI-TA as a measure of time attitudes in Slovenian adolescents. Specifically, the results show that scores on a Slovenian version of AATI-TA with 24 items are internally consistent, structurally valid, and associated in theoretically congruent ways with scores on the P-scale. The findings of this study provide a basis for being able to examine time attitudes and time attitude correlates in Slovenia.

The introduction of the ZTPI (Zimbardo & Boyd, 1999) to the literature resulted in a substantial increase in time perspective studies, with the ZTPI as the primary research instrument. Since 1999, the ZTPI has been translated into multiple languages and used in more than 20 countries (Sircova et al., 2014, 2015). Unfortunately, ZTPI scores have not yielded adequate fit in many countries (Sircova et al., 2014). Indeed, Worrell et al. (2016) reported low internal consistency estimates for scores on four of the five ZTPI (Zimbardo & Boyd, 1999) subscales and poor structural fit for ZTPI scores in Slovenia. Thus, the supportive results for AATI-TA scores provide another instrument to use in this country. The strong validity evidence for AATI-TA scores in this study is in keeping with findings in several other non-English speaking countries, including China, Germany, and Japan. Moreover, unlike results from Albania, Italy, and Turkey, scores on both future subscales are working well, which will allow for the examination of profiles based on the six subscales.

Is there a compelling rationale for looking at time constructs? There are several studies that suggest that these constructs are quite important in both adolescents and

adults. Zimbardo and Boyd (1999) reported meaningful correlations between time perspective subscales and several psychological constructs, including aggression, depression, emotional stability, ego control, and trait anxiety, among other constructs. Meaningful associations have also been found with variables related to educational achievement and psychological well being in studies in Germany, New Zealand, the United Kingdom, and the United States (Alansari et al., 2013; Buhl & Lindner, 2009; McKay et al., 2016; Worrell & Mello, 2009).

In addition to the correlational findings, as reported in the Introduction, recent person-centred analyses have also demonstrated substantial associations between time attitude and time perspective profiles and indicators of well being (Alansari et al., 2013; Andretta et al., 2014; Cole et al., 2017; McKay et al., 2016). Importantly, in a longitudinal study, Wells, Morgan, Worrell, Sumnall, and McKay (2016) showed that adolescents who started and remained in positive profiles were less likely to use alcohol and had healthier attitudes towards alcohol, whereas those who transitioned to negative profiles reported more unhealthy drinking behaviors. These findings suggest that time constructs may be useful to understand in terms of assessing probability of risky behaviour and in developing interventions.

Limitations and conclusion

This study also had several limitations. The first is the small sample size, which was also limited to adolescents and young adults. Although the results are supportive, it will be important to examine AATI-TA scores in a large and more representative sample of Slovenian adolescents and adults. Attention will also need to be paid to different regions of the country, SES, levels of academic achievement, and personality constructs to see if these variables interact with time attitudes. Another limitation is the use of only one scale to examine convergent validity. Although the P-scale has several items related to the future (e.g., "I have great faith in the future"), it is not considered a measure of time perspective, and future studies should examine more common time constructs such as consideration of future consequences, hope, and optimism to provide additional evidence of criterion-related validity. Despite the shortcomings due to the limitations of the initial sample, we conclude that findings of this study provide additional support for the generalizability of AATI-TA scores, which have the potential to be used in the Slovenian context as a measure of time attitudes.

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Appendix

Table 5. The 24-item Slovenian version of the AATI-TA

Pri vsaki trditvi izberi samo en odgovor.	nikakor se ne strinjam	ne strinjam se	nevtralen	se strinjam	popolnoma se strinjam
1. Veselim se svoje prihodnosti.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. S svojim življenjem trenutno nisem zadovoljen.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Dvomim, da bom kaj naredil iz sebe.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Zadovoljen sem s svojim trenutnim življenjem.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Moja prihodnost me radosti.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Na svoje odraščanje imam lepe spomine.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Mislim, da v svojem nadaljnjem razvoju ne bom veliko pridobil.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Nisem zadovoljen s svojo preteklostjo.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Razveselim se ob misli na svojo prihodnost.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Zadovoljen sem s svojo sedanostjo.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Moja preteklost me žalosti.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. Na splošno sem zadovoljen s tem, kar trenutno počnem.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. Želim si, da ne bi imel take preteklosti, kot sem jo imel.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. Moja prihodnost me navdušuje.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. S svojo sedanostjo nisem zadovoljen.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. Na svojo preteklost imam lepe spomine.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. Ne maram razmišljati o svoji prihodnosti.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. V svojem sedanjem življenju nisem srečen.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. Rad razmišljam o svoji preteklosti, saj je bil to zame zelo srečen čas.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. Razmišljanje o prihodnosti je nesmiselno.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. Na splošno sem v tem trenutku srečen v svojem življenju.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22. Na svojo preteklost imam neprijetne spomine.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23. Skrbi me moje trenutno življenje.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
24. Moja preteklost je polna lepih spominov.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Excluded items from the original scale:

- (3) Na svoje otroštvo imam zelo lepe spomine.
- (6) Moja preteklost je čas v mojem življenju, ki ga bi rad pozabil.
- (8) Imam slabe občutke glede svoje trenutne situacije.
- (11) Zadovoljen sem s svojo sedanostjo.
- (16) Razmišljanje o moji prihodnosti me žalosti.
- (28) Pozitivno me vznemirja misel na mojo prihodnost.