

Time Perspective Constructs in Albanian and Italian Adolescents: Exploratory Analyses

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Abstract

Time perspective is an important correlate of developmental outcomes in adolescence, and research has highlighted the importance of assessing the past, the present, and the future. However, there are few instruments that assess all three time periods. In the current study, we examined the responses of Italian and Albanian adolescents on the time frequency, time orientation, time relation, and time attitude subscales of the Adolescent and Adult Time Inventory. Participants consisted of two samples of adolescents—246 Italians and 312 Albanians—who completed translated versions of the Adolescent and Adult Time Inventory. Italian and Albanian adolescents had similar responses to time frequency and time attitudes but differed in time orientation and time relation. Additionally, psychometric evidence supported the internal consistency and structural validity of scores on five of the six time attitude

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subscales—Past Positive, Past Negative, Present Positive, Present Negative, and Future Positive—but provided less support for Future Negative subscale scores. Time attitude scores showed strong invariance across countries. Comparisons of time attitude mean scores in this study with time attitude means in samples from Germany, Japan, Italy, New Zealand, Turkey, and the United States revealed similarities and differences. Finally, time constructs did not have substantial associations with risky behaviors or seatbelt use. The findings suggest that the Adolescent and Adult Time Inventory can be used in cross-cultural research on time perspective and may help us understand adolescents in these contexts.

Keywords

Adolescent and Adult Time Inventory, time attitudes, time frequency, time orientation, time relation, validity

Introduction

Variables related to time have been of tremendous importance in psychological research for many years. As early as 1935, Lewin contended that behavior is not dependent solely on individuals' thoughts about the present but is also affected by their reflections on the past and expectations for the future. Time constructs have also been frequently studied in adolescent populations with much of this research focusing on future-oriented constructs such as perceived life chances (Jessor et al., 1990), possible selves (Leondari et al., 2009), future orientation (Seginer, 2008), hope (Snyder et al., 1996) and optimism (Scheier & Carver, 1985), among others, and these studies have suggested that many of these future-oriented time constructs are related to adaptive functioning (e.g., Oyserman & Markus, 1990; Worrell & Hale, 2001).

In 1999, Zimbardo and Boyd introduced the Zimbardo Time Perspective Inventory (ZTPI). The ZTPI revitalized time perspective research, in large part due to having subscales that assessed attitudes toward all three time periods: Past Positive, Past Negative, Present Hedonistic, Present Fatalistic, and Future. Since the initial validation study in 1999, the ZTPI has become the most frequently used time perspective instrument in the extant literature (McKay et al., 2014). Zimbardo and Boyd reported that time perspective scores are correlated with a host of variables. Some of the strongest associations were between Present Hedonism scores and ego control ($r = .60$), novelty seeking ($r = .57$), and sensation seeking ($r = .57$). In other studies, Zimbardo et al. have reported that males report significantly higher *present* time perspective scores than females and that present time perspective is associated with drinking, smoking, using drugs, and risky driving (Keough et al., 1999; Zimbardo et al., 1997).

Despite its popularity, concerns have been raised about construct validity of ZTPI scores in several countries and languages (Apostolidis & Fieulaine, 2004; Carelli et al., 2011; Cretu & Vegovan-Zbăganu, 2013; Liniauskaitė & Kairys, 2009; McKay, Worrell, et al., 2015; Milfont et al., 2008; Perry et al., 2015; Reuschenbach et al., 2013; Sircova et al., 2014). As the ZTPI was developed and validated primarily with college samples, Mello and Worrell (2007, 2012) developed the Adolescent Time Inventory, a measure of time perspective that examines five facets of time perspective. In 2016, Mello et al. renamed the instrument the Adolescent and Adult Time Inventory (AATI) after demonstrating that the time attitude scores demonstrated internal consistency, structural validity, and convergent and discriminant validity in adult samples (see also Cole et al., 2017). The goal of the present study was to examine and compare samples of Italian and Albanian adolescents on AATI scores. To set the stage for this study, we provide a brief overview of the literature on the development, validation, and utility of AATI scores and a discussion of time perspective correlates.

The Adolescent and Adult Time Inventory

In developing the AATI, Mello and Worrell (2015) had several goals. First, they wanted a broad measure of time perspective that would assess multiple dimensions. Second, they wanted an instrument that would allow for the examination of time perspective across cultural groups and national boundaries. Third, they wanted an instrument that was focused solely on time constructs, as three ZTPI subscales—Present Hedonistic, Present Fatalistic, and Future—assess other constructs in addition to time, and some have speculated that these additional constructs contribute to the psychometric concerns of ZTPI scores (Worrell et al., 2013). The AATI assesses five aspects of time perspective: time meaning, time frequency, time relation, time orientation, and time attitudes.

Time meaning. The time meaning (AATI-TM) subscale asks adolescents how they *define* the past, the present, and the future. Responses to time meaning questions are provided in writing, and qualitative analyses are used to interpret them. An initial study on time meaning indicated that there were differences in how adolescents conceptualized time periods, although males and females gave similar responses (Mello, Bhadare, et al., 2009). Mello, Bhadare et al. found that adolescents conceived of time in absolute versus fluid terms, saw the time periods as related, and often had strong affective responses to specific time periods. In another study examining the meaning of time, McKay et al. (2012) found three general themes about time—objective or clock time, time pressures, and references to the three time periods. They also found that adolescents conceptualized the past, present, and future “in terms of *short*, *medium* and *long-term* past, present and future” (McKay et al., 2012, p. 354). Future research needs to

investigate whether these different conceptualizations result in different behaviors and correlates.

Time frequency. The time frequency (AATI-TF) subscales assess how often adolescents *think about* the three time periods based on four options: *never*, *monthly*, *weekly*, and *daily*. Mello, Worrell, et al. (2009) reported that the majority of American adolescents think about the past (57%), present (85%), and future (69%) on a daily basis. In contrast, Mello et al. (2014) found that only 30% of Iranian adolescents reported thinking about the past on a monthly, weekly, and daily basis, with the other 10% indicating that they never thought about the past. However, 80% of Iranian adolescents reported thinking about the present and the future on a daily basis, with the majority of the other 20% thinking about these two time periods on a weekly basis. Similarly, Mello et al. (2018) found that more than 90% of Nigerian adolescents and young adults reported thinking about the present and future daily and 62% reported thinking about the past on a daily. In the Nigerian sample, past, present, or future time frequency was not associated with risky behaviors. These preliminary studies suggest that substantially more American adolescents and Nigerian adolescents and young adults think about the past and present than Iranians and more Iranian adolescents and Nigerian adolescents and young adults think about the future than Americans.

Time relation. Time relation (AATI-TR) is assessed using configurations of three circles, with each time period represented by a different circle (Mello & Worrell, 2012). Respondents choose from four time relation configurations, which indicate how they perceive the relationships *among* the time periods. In the first configuration, the circles representing the past, present, and future are not touching (past, present, and future *Unrelated*). In Option 2, the circle representing the past is separate and the circles representing the present and future overlap (*Present-Future Related*). The third option has all three circles—that is, past, present, and future connected linearly (*Linearly Related*) with the past overlapping with the present and the present overlapping with the future. The fourth and final configuration is a Venn diagram with the past, present, and future all overlapping (*Interrelated*).

Mello et al. (2013) examined responses to time relation in two samples of adolescents. In Study 1, which did not have the Present-Future Related option, more than half of the adolescents (53%) chose the Interrelated option, with 35% choosing the Linearly Related option. In Study 2, only 38% chose the Interrelated option, with 33% choosing the Present-Future Related option, and 20% choosing the Linearly Related option. The Unrelated option was chosen by 12% and 10% in Studies 1 and 2, respectively. Iranian adolescents' responses (Mello et al., 2014) were quite similar to the responses of American adolescents in Mello et al.'s (2013) Study 2: 40% chose the Interrelated option,

35% chose the Present-Future option, 20% chose the Linearly Related option, and 5% chose the Unrelated option.

In a study of Nigerian adolescent and young adults, 23% chose the Interrelated option, 35% chose the Present-Future option, 34% chose the Linearly Related option, and 9% chose the Unrelated option (Mello et al., 2018). Thus, in Nigeria, more participants chose the Linearly Related option and fewer chose the Interrelated option than in the United States and Iran. In the American sample, adolescents who chose the Linearly Related and Interrelated options also reported significantly higher academic achievement than the other groups ($.32 \geq d \geq .75$), and in Study 2, adolescents who chose the Interrelated option also reported having higher hope ($d = 0.44$) and engaging in fewer risky behaviors ($d = 0.37$) than the group that chose the Unrelated option (Mello et al., 2013).

Time orientation. The time orientation dimension (AATI-TO) also consists of configurations of three circles representing the past, the present, and the future (see Mello & Worrell, 2012). The AATI-TO item uses circles of two sizes—small and large—with the larger circle indicating a greater orientation to a specific time period. There are seven time orientation choices, which include the following: (a) *large* past, small present, small future (Past); (b) small past, *large* present, small future (Present); (c) small past, small present, *large* future (Future); (d) *large* past, small present, *large* future (Past-Future); (e) *large* past, *large* present, small future (Past-Present); (f) small past, *large* present, *large* future (Present-Future); and (g) *large* past, *large* present, and *large* future (Balanced).

Mello et al. (2013) examined four and five time orientation options in Study 1 and Study 2, respectively. In both studies, the Present-Future orientation was chosen by more than half of the sample, with all other options being chosen by fewer than 30%; the Balanced option, which was only available in Study 2, was chosen by 29% of American adolescents. A similar pattern was found for Iranian adolescents; 50% of them chose the Present-Future orientation, 25% chose the Balanced orientation, and fewer than 10% chose the other orientation options (Mello et al., 2014). Similar findings were observed with Nigerian adolescents and young adults; 42% chose the Present-Future orientation, 20% chose the Balanced orientation, 21% chose the Future option, and 10% or fewer chose the other orientation options (Mello et al., 2018).

American adolescents with a Present-Future orientation reported significantly higher self-esteem than adolescents with a Past-Future orientation ($d = 0.48$) in Study 1, and Balanced and Present-Future-oriented adolescents reported significantly higher self-esteem than adolescents with a Future orientation ($d = 0.47$ and 0.59 , respectively) in Study 2 (Mello et al., 2013). Present-Future-oriented adolescents also reported engaging in significantly fewer risk behaviors than Present-oriented or Future-oriented adolescents ($d = 0.58$ and 0.51 , respectively)

in Study 2. These results suggest that orientations that include the Present and Future may be more adaptive than an orientation to any single period. If this is correct, it might indicate that many of the future-oriented constructs that have proven to be adaptive (e.g., hope, optimism) are tapping into the present as well as the future.

Time attitudes. The fifth aspect of time perspective assessed by the AATI is the time *attitudes* (AATI-TA) dimension. The AATI-TA (Mello & Worrell, 2012) assesses positive and negative attitudes toward the three time periods: Past Positive, Past Negative; Present Positive, Present Negative; and Future Positive, Future Negative. AATI-TA scores are the most similar to ZTPI scores and have been the most frequently used aspect of the AATI in the extant literature. According to Worrell et al. (2013), the final version of the AATI-TA was developed with input from developmental experts and adolescents. Scores on the six AATI-TA subscales have been shown to be reliable and structurally valid in samples of adolescents in Germany (Buhl & Linder, 2009; Worrell et al., 2013), New Zealand (Alansari et al., 2013), the United States (Worrell et al., 2013), the United Kingdom (McKay, Cole, et al., 2015), Slovenia (Jurišević et al., 2017), Turkey (Şahin-Baltacı et al., 2017), Italy (Donati et al., 2019), Spain (Konowalczyk et al., 2018), and Japan (Chishima et al., 2019).

AATI-TA scores are also reliable in racial/ethnic subgroups in both the United States (Andretta et al., 2013) and New Zealand (Alansari et al., 2013), and there is also strong concurrent validity evidence for AATI-TA scores with perceived life chances, hope, and self-esteem (Worrell & Mello, 2009), and attitudes toward school (Alansari et al., 2013). Finally, there is a growing body of evidence supporting the generalizability and predictive validity of time attitude profiles based on AATI-TA scores (e.g., Alansari et al., 2013; Andretta et al., 2014; Buhl & Linder, 2009; Worrell & Andretta, 2019). Time attitude profiles are associated with self-efficacy (McKay et al., 2016), anxiety and depression symptomology (Cole et al., 2017), and problematic alcohol use (McKay et al., 2016) in the United Kingdom, with clusters predicting adolescent alcohol use longitudinally over a one-year period (Wells, Morgan, et al., 2018) and self-efficacy over a two-year period (Wells, McKay, et al., 2018).

The current study

There is a growing body of evidence that time perspective is an important variable in adolescent populations (Andretta et al., 2014; Laghi et al., 2008, 2009; Wells, McKay, et al., 2018). At the same time, there are only a few instruments developed for adolescents that assess time perspective in all three time periods. The AATI is one such measure and AATI scores have been associated with a range of outcomes supported in several adolescent samples as outlined above. In the current study, we examined the scores on the frequency, orientation,

relation, and attitudes dimensions in Italian and Albanian translations of the AATI. We also examined the association between the time constructs and two outcome measures, risky behaviors and seatbelt use. Although time attitudes have already been validated in samples of Italian adolescents and young adults (Donati et al., 2019), they have not been examined in Albanian adolescents.

Albania and Italy are countries in Southern Europe that are relatively close to each other, geographically and historically. They are situated less than 400 miles from each other across the Adriatic Sea, and there is both air service and ferry service between the two countries. Italy occupied parts of Albania in both World Wars and served as a protectorate of Albania from 1917 to 1920 and from 1939 to 1943. More than 50% of Albania's exports are to Italy and more than 25% of Albania's imports are from Italy (https://www.cia.gov/library/publications/the-world-factbook/geos/print_al.html).

Hypotheses were based on the extant literature on the AATI. With regard to time frequency, it was hypothesized that Albanian and Italian adolescents would report thinking about the present and the future more frequently than the past (Mello, Worrell et al., et al., 2009, 2014). We examined the association between frequency of thinking about time and risky behaviors but did not put forward any hypotheses, given that Mello et al. (2018) found no association between time frequency and risky behaviors. Second, we hypothesized that the time relation options would be chosen in the following order from most frequent to least frequent: Interrelated, Present/Future, Linearly Related, and Unrelated (Mello et al., 2013, 2014). Third, with regard to time orientation, it was hypothesized that the Present-Future orientation would be the most common one chosen by participants, with the Balanced orientation being the second most common (Mello et al., 2013, 2014), and that adolescents choosing these two orientations would report lower scores on risky behavior than those choosing other orientations.

Fourth, we hypothesized that (a) scores on the six AATI-TA subscales would have strong internal consistency estimates (i.e., $\alpha \geq .70$), (b) structural coefficients for all five items on each of the six factors would be $\geq .40$, (c) the six-factor structure would have acceptable fit indices on the basis of confirmatory factor analyses (CFAs) in both samples, and (d) that the six-factor structure would result in better fit than two-factor (valence) or three-factor (time period) structures (Donati et al., 2019; Worrell et al., 2013). Fifth, we hypothesized that scores would be invariant across Albanian and Italian samples (Worrell et al., 2013). We also compared mean time attitude scores in this sample with mean time attitude scores in the extant literature from adolescents in Germany (Worrell et al., 2013), Turkey (Şahin-Baltacı et al., 2017), Japan (Chishima et al., 2019), New Zealand (Alansari et al., 2013), and the United States (Worrell et al., 2013). This question was purely exploratory, and we had no hypotheses. We were merely interested in seeing if there were differences in

the pattern of time attitude means across Europe, North America, Asia, and the South Pacific, given that these data are present in the refereed literature.

Finally, we looked at the association of time attitudes to risky behavior and seatbelt use. Previous research using the ZTPI suggests that the present-oriented scales should have substantial associations with both outcomes (e.g., Keough et al., 1999; Zimbardo et al., 1997). However, the ZTPI's Present Hedonism subscales have several items that focus on hedonism which may be driving the associations with novelty- and sensation seeking. Additionally, neither AATI scores nor AATI profiles are meaningfully related to negative outcomes such as sensation seeking (McKay, Cole, et al., 2015; McKay et al., 2016). Thus, we were not convinced that time attitudes would be associated with risky behavior and no hypotheses were advanced.

Method

Participants

Data were collected on two independent samples of convenience. Sample 1 consisted of 246 Italian adolescents and young adults (60.2% female, $n = 148$) attending four public high schools in Rome. They ranged in age from 16 to 22 ($M = 17.53$, standard deviation (SD) = 0.77), and 16 students were older than 18. Sample 2 consisted of 312 Albanian adolescents and young adults (56.7% female, $n = 177$) attending three public high schools in Tirana. These participants were 14 to 19 years old ($M = 16.67$, $SD = 1.05$), and nine of them were 19. No data on socioeconomic status were collected, but the schools served children from working- and middle-class backgrounds.

Procedure

The same procedure was followed in all schools. Questionnaires were administered in the classroom during a regular class period and took approximately 30 minutes to complete. Instructions stated that the questionnaires were voluntary and that responses were anonymous. All students responded to the same questionnaire packet, with measures administered in counterbalanced order to each group of participants. The survey was reviewed and approved by the Ethics Board at the Italian institution of several of the authors. Data files are available from the first author.

Measures

AATI-Albanian and AATI-Italian. Italian participants completed the AATI-Albanian (Mello et al., 2011a) and Albanian adolescents completed the AATI-Italian (Mello et al., 2011b) obtained from the AATI website (<https://faculty.sfsu.edu/~zmello/content/adolescent-and-adult-time-inventory-aati>). The AATI-Italian and AATI-Albanian have five sections: *time meaning* (not used in this study); *time frequency*,

asking participants to indicate how frequently they think about the past, the present, and the future using a four-point scale (1 = *never*, 2 = *monthly*, 3 = *weekly*, 4 = *daily*); *time relation*, consisting of four configurations of related circle options, including Unrelated, Present-Future, Linearly Related, and Interrelated; *time orientation*, consisting of seven circle options, including Past, Present, Future, Past-Future, Past-Present, Present-Future, and Balanced; and *time attitudes* consisting of 30 items across six 5-item subscales: Past Positive, Past Negative, Present Positive, Present Negative, Future Positive, and Future Negative items. Items on the time attitudes subscales were rated on a five-point Likert-type scale ranging from 1 (*totally disagree*) to 5 (*totally agree*), and scores on the five items were averaged to generate total subscale scores, with higher values indicating greater endorsement of the attitudes.

The Italian version was translated from English to Italian by one translator and back-translated to English by another translator, both of whom were bilingual in Italian and English. The process was the same for the Albanian version: items were initially translated into Albanian by one translator and back-translated by a different translator, both of whom were bilingual in English and Albanian. The back-translation procedure from Italian to English and from Albanian to English resulted in scales that were almost identical in content with the original AATI. Italian AATI-TA scores were examined extensively by Donati et al. (2019). They collected data from 383 high schoolers and 256 college students in Florence. AATI scores were found to be internally consistent ($.74 \leq \alpha \leq .90$) for the whole sample and by subsample and gender. Scores were also structurally valid in both subsamples and displayed strong invariance by gender and by age (i.e., high school vs. college students) and concurrent validity with self-esteem (high school subsample) and strategic learning (college subsample).

Risky behaviors. Risky behavior was assessed in two ways. One variable was a 14-item risky behavior composite with items such as smoking in school, getting into trouble with the law, and damaging school property responded to on a five-point Likert-type scale (1 = *never*, 2 = *rarely*, 3 = *sometimes*, 4 = *often*, 5 = *very often*). The internal consistency estimates for risky behavior scores were .77 for the Italian subsample and .85 for the Albanian subsample, and exploratory factor analysis supported a one-factor structure in both samples. The risky behavior composite has been used in prior studies of adolescents (Worrell & Hale, 2001). The second variable was a single-item question on the frequency of wearing seatbelts when in a moving car (1 = *seldom*, 3 = *sometimes*, and 5 = *most of the time*).

Results

Time frequency

Time frequency results are presented in Figure 1 by nationality. As can be seen, more Albanian and Italian adolescents reported thinking about the present and

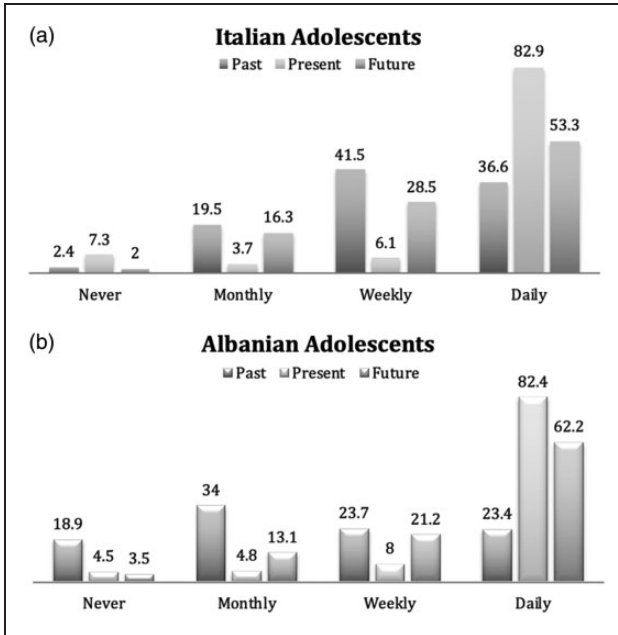


Figure 1. Time frequency percentages by nationality.

the future on a daily basis than the past as hypothesized. However, the pattern for AATI-TF Past was significantly different between the two groups, $\chi^2(3) = 64.38, p < .001, V = .34$, with a higher percentage of Albanians reporting never thinking about the past. Analyses also revealed some gender differences within and between the groups. More Italian males (56.1%) reported thinking about the past on a weekly basis than females (31.8%), whereas females (45.3%) were more likely to think about the past on a daily basis than males (23.5%). Albanian females (90.4%) were also more likely to think about the present on a daily basis than Albanian males (72.4%).

Italian adolescents ($M = 26.13, SD = 6.09$) reported engaging in more risky behavior than Albanian adolescents ($M = 22.1, SD = 7.86, p < .001, d = 0.56$), but Italian adolescents ($M = 4.32, SD = 0.91$) also reported wearing seatbelts more often than Albanian adolescents ($M = 2.60, SD = 1.19, p < .001, d = -1.59$). However, analyses indicated that time frequency was not significantly or meaningfully related to seatbelt use or risky behaviors in either sample.

Time orientation and time relation

Figure 2(a) contains results for time orientation. As hypothesized, the Present-Future orientation was chosen by greater numbers of Italian and Albanian

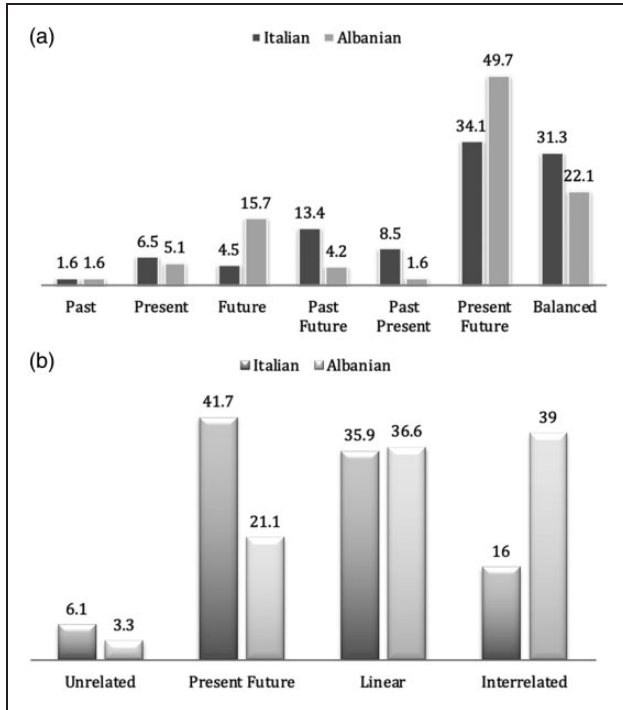


Figure 2. Time orientation (a) and time relation (b) percentages by nationality.

adolescents, and the Balanced orientation was the second most frequently selected. However, the broader patterns revealed differences. Whereas half of the Albanian adolescents chose the Present-Future orientation and fewer than 25% of them chose the Balanced orientation. However, approximately one-third of the Italians chose both orientations. Also, although the percentages are small, Albanians were three times more likely to choose the Future orientation and Italians were five times more likely to choose the Past-Present orientation.

Our hypothesis with regard to time relation was only partially supported (see Figure 2(b)). The Interrelated option was the one most frequently chosen by Albanian adolescents, but their second choice was the Linearly Related option rather than Present-Future, and the difference between the two was less than 3%. Present-Future was the third choice for the Albanians, and as hypothesized, the Unrelated option came in a distant fourth. The pattern was quite different for the Italian adolescents. The Present-Future option was chosen by more than 40% of this group, and the Linearly Related option was the second most frequently chosen, followed by Interrelated, and Unrelated.

Table 1. Descriptive statistics for time attitudes.

| Variables | <i>M</i> | <i>SD</i> | Skew | Kurtosis | α (95% CI) | ω |
|---------------------------|----------|-----------|-------|----------|-------------------|------------------|
| Italy (<i>n</i> = 246) | | | | | | |
| Past Positive | 3.70 | 0.83 | -0.79 | 0.64 | .88 (.86, .91) | .92 |
| Past Negative | 2.27 | 0.88 | 0.69 | -0.20 | .85 (.82, .88) | .88 |
| Present Positive | 3.67 | 0.74 | -0.33 | 0.04 | .91 (.90, .93) | .94 |
| Present Negative | 2.39 | 0.82 | 0.33 | -0.56 | .87 (.85, .90) | .90 |
| Future Positive | 3.42 | 0.73 | -0.20 | 0.04 | .84 (.80, .87) | .89 |
| Future Negative | 2.08 | 0.56 | 0.38 | -0.43 | .43 (.31, .53) | .62 ^a |
| Albania (<i>n</i> = 312) | | | | | | |
| Past Positive | 3.85 | 0.77 | -1.04 | 1.26 | .80 (.77, .84) | .85 |
| Past Negative | 2.44 | 0.82 | 0.61 | -0.17 | .78 (.74, .82) | .82 |
| Present Positive | 3.78 | 0.65 | -1.04 | 1.70 | .80 (.76, .83) | .84 |
| Present Negative | 2.36 | 0.68 | 0.59 | 0.02 | .72 (.67, .77) | .77 |
| Future Positive | 3.53 | 0.64 | -0.19 | 0.03 | .61 (.54, .67) | .68 |
| Future Negative | 2.56 | 0.63 | 0.09 | -0.01 | .39 (.27, .49) | .60 ^a |

Note: Omega (ω) values are based on the coefficients from the six-factor confirmatory factor analyses. *M*: mean; *SD*: standard deviation; CI: confidence interval.

^aFuture Negative omegas are based on three items; all other omegas are based on five items.

Time orientation was not related to risky behavior in either the Albanian, $F(6, 245) = .92$, $p = .482$, or the Italian samples, $F(6, 311) = 1.06$, $p = .39$. Time relation was not related to risky behavior in Albanian adolescents, $F(3, 311) = .93$, $p = .43$, but was significantly related to the risky behavior in Italian sample, $F(3, 245) = .92$, $p = .01$. However, the effect size for largest difference, which was between the Unrelated and Interrelated groups, was modest, $d = 0.34$. Findings were similar for seatbelt use in the two groups with no significant or meaningful differences.

Time attitudes

Preliminary analyses. Descriptive statistics are reported in Table 1 for Italian and Albanian participants. In general, Albanians reported higher scores on all the subscales than did Italians, and skewness and kurtosis values indicated that the distributions were normal. A gender by country multivariate analysis of variance indicated that there were no gender differences on time attitudes and only Future Negative differed significantly between the two groups, $F(1, 424) = 20.24$, with Albanian adolescents reporting substantially higher scores, $d = 0.80$. Correlations for raw scores and latent variables are presented in Table 2 and were in keeping with theory and past research: correlations between contiguous periods (e.g., Past/Present, Present/Future) were higher than correlations between Past and Future. Correlations between Future Negative and Future Positive scores were lower than in previous research, especially with regard to

Table 2. Correlations among time attitudes.

| | Past Positive | Past Negative | Present Positive | Present Negative | Future Positive | Future Negative |
|------------------------------|------------------|------------------|---------------------|---------------------|--------------------|--------------------|
| Italian (n = 246) | | | | | | |
| Past Positive | – | –.83 | .36 | –.38 | –.06 | .24 |
| Past Negative | –.73 | – | –.40 | .48 | .03 | –.13 |
| Present Positive | .32 | –.34 | – | –.94 | .26 | –.23 |
| Present Negative | –.34 | .40 | –.85 | – | –.19 | .14 |
| Future Positive | –.05 | .03 | .24 | –.17 | – | –.88 |
| Future Negative ^a | –.01 | .06 | –.22 | .18 | –.49 | – |
| Albanian (n = 312) | | | | | | |
| Past Positive | – | –.59 | .57 | –.50 | .10 | –.12 |
| Past Negative | –.48 | – | –.29 | .56 | .18 | .31 |
| Present Positive | .49 | –.25 | – | –.66 | .31 | –.16 |
| Present Negative | –.40 | .41 | –.49 | – | –.09 | .47 |
| Future Positive | .05 | .13 | .20 | –.03 | – | –.58 |
| Future Negative ^a | –.15 | .25 | –.11 | .31 | –.20 | – |

Note: Correlations below the diagonal are for raw scores and correlations above the diagonal are for the latent variables from the six-factor models reported in Table 3.

^aFuture Negative correlations above the diagonal are based on three items.

raw scores in the Albanian sample. The typical pattern was found for the correlations among the latent variables.

Two sets of internal consistency estimates were calculated for the time attitude scores: alpha and hierarchical omega based on the factor coefficients from the six-factor models. Both sets of reliability estimates (see Table 1) were modest to strong for five of the six subscales; the alpha estimates for Future Negative scores were very low for both subgroups, and the alpha for Future Positive scores was also modest in the Albanian sample. Omega estimates were generally higher than the alpha estimates.

Confirmatory factor analyses. CFAs using Mplus 7 (Muthén & Muthén, 1998–2012) were used to examine AATI-TA scores, as the theorized model has considerable empirical support and CFAs also allowed us to assess the goodness of fit of alternative models (MacCallum et al., 1993) based on valence and time periods. Several criteria were used to assess the goodness of fit of the models (Byrne, 2008, 2012; Thompson, 2004). These included (a) the comparative fit index (CFI; Bentler, 1990), which takes sample size into account; (b) the Tucker–Lewis index (TLI), which takes model complexity into account; and (c) the root mean square error of approximation (RMSEA), as well as a 90% confidence interval around RMSEA values.

Although Hu and Bentler (1998) suggested that CFI and TLI values should be greater than .95 for acceptable fit, several researchers (e.g., Byrne, 2012; Marsh et al., 2004) have suggested that values in the .92 to .95 range, and RMSEA values in the .05 to .08 range are indicators of acceptable fit for item-level scales. T. Little (personal communication, May 8, 2010) contended that CFI and TLI values of .95 to .99 and RMSEA values of .01 to .05 indicate *close* fit, whereas values of .90 to .95 (for the CFI and TLI) and .05 to .08 (for the RMSEA) indicate *acceptable* fit. The robust weighted least squares estimator (WLSMV) was used to analyze the covariance matrices based on raw scores. To scale the latent variables, a single indicator for each of the factors was set at unity. The models were run in both samples separately and then invariance analyses were conducted.

The results of the CFAs are presented in Table 3 and Figures 3 (Italians) and 4 (Albanians). Two Future Negative items (4 & 10) had factor coefficients < .35 in both samples and were not included in subsequent analyses. The two-factor *valence* model—13 negative and 15 positive items—did not fit the data well in

Table 3. Fit indices for the Adolescent and Adult Time Inventory-Time Attitudes scores from confirmatory factor analyses (WLSMV).^a

| Model ^a | χ^2 | df | CFI | TLI | RMSEA | (90% CI) | | |
|-----------------------------------|------------|-----|------|------|-------|------------|------------------|--------------|
| Italy (n = 246) | | | | | | | | |
| 1. Null | 12,690.36* | 378 | | | | | | |
| 2. Two-factor (valence) | 3876.14* | 349 | .714 | .690 | .203 | .197, .208 | | |
| 3. Three-factor (time periods) | 633.51* | 347 | .977 | .975 | .058 | .051, .065 | | |
| 4. Six-factor (theoretical model) | 530.79* | 335 | .984 | .982 | .049 | .041, .056 | | |
| Albania (n = 312) | | | | | | | | |
| 5. Null | 4675.60 | 378 | | | | | | |
| 6. Two-factor (valence) | 1437.62* | 349 | .747 | .726 | .100 | .095, .105 | | |
| 7. Three-factor (time periods) | 955.88* | 347 | .858 | .846 | .075 | .069, .081 | | |
| 8. Six-factor (theoretical model) | 576.51* | 335 | .944 | .937 | .048 | .041, .055 | | |
| Invariance (gender) | | | | | | | Model comparison | Δ CFI |
| 9. Configural | 1108.06* | 670 | .975 | .972 | .048 | .043, .053 | | |
| 10. Metric | 1151.65* | 692 | .974 | .972 | .049 | .044, .054 | 9–10 | .001 |
| 11. Scalar | 1390.67* | 770 | .965 | .966 | .054 | .049, .058 | 9–11 | .010 |

Note: CFI: comparative fit index; TLI: Tucker–Lewis index; RMSEA: root mean square error of approximation; CI: confidence interval.

^aAll models run with 28 items.

* $p < .001$.

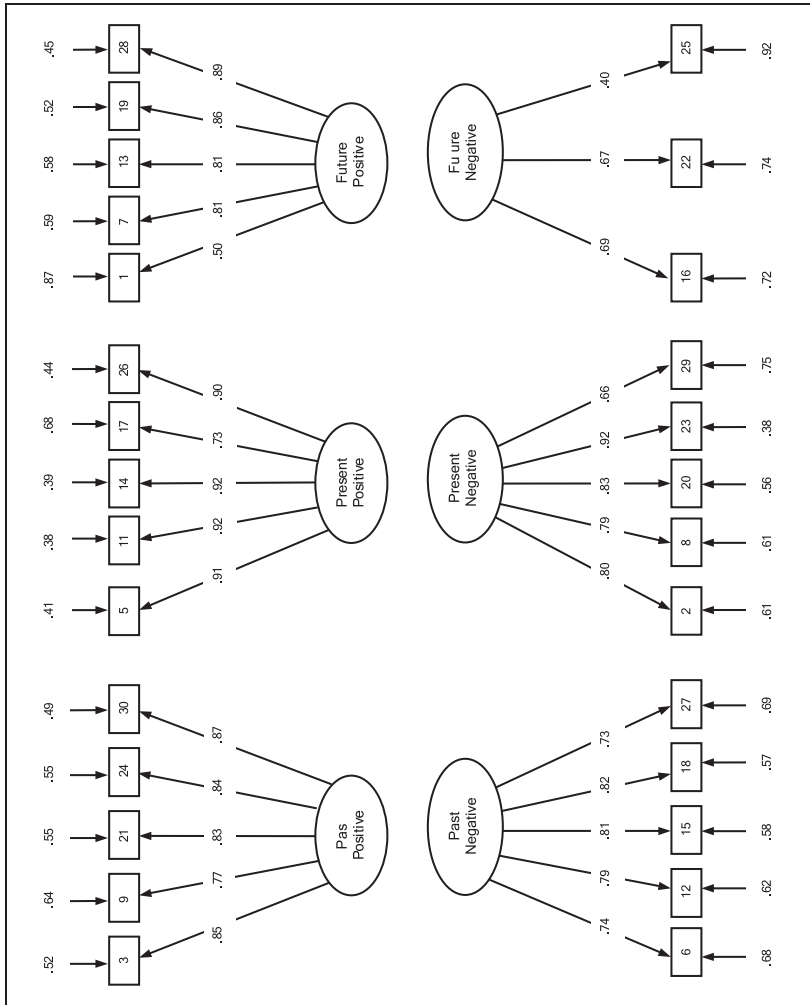


Figure 3. Twenty-eight item six-factor model for Adolescent Time Inventory-Italian Time Attitude scores. All coefficients are standardized parameter estimates. Correlations among the latent variables are reported above the diagonal in Table 2.

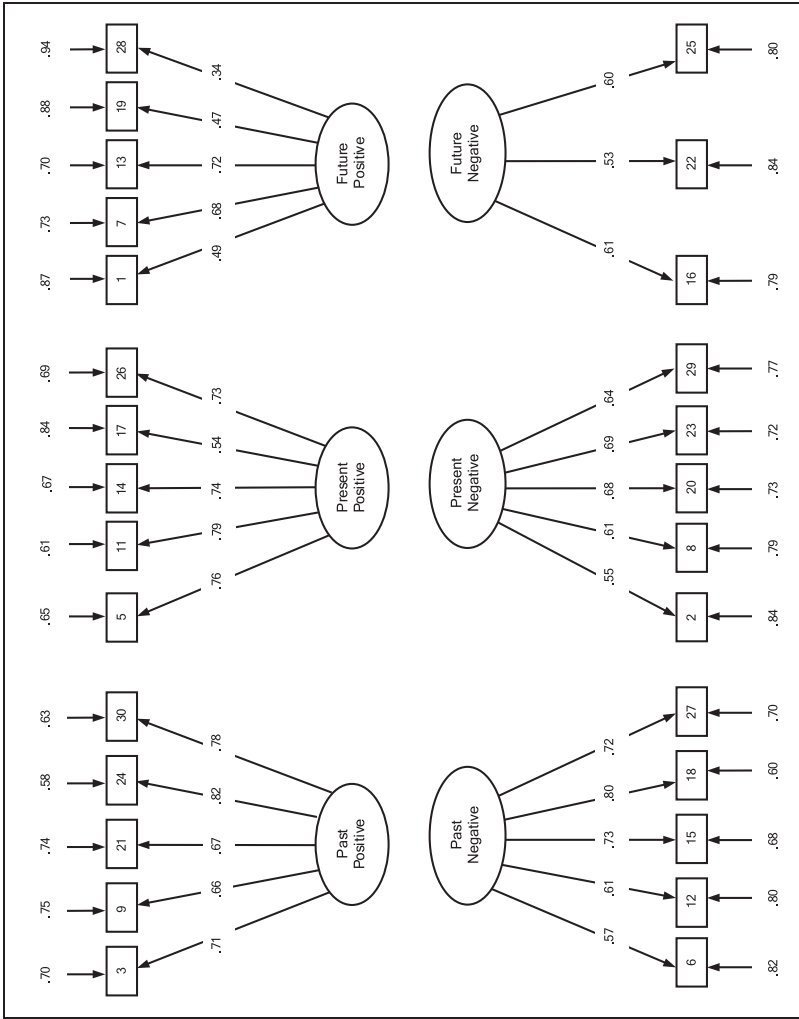


Figure 4. Twenty-eight item six-factor model for Adolescent Time Inventory- Albanian Time Attitude scores. All coefficients are standardized robust maximum likelihood parameter estimates. Correlations among the latent variables are reported above the diagonal in Table 2.

either sample. The three-factor *time period* model—10 past, 10 present, and 8 future items—achieved close or acceptable fit in the Italian sample, but this model did not achieve acceptable fit in the Albanian sample. The 28-item six-factor structure had the best fit in both samples, with all of the indices within the acceptable or close range. In this model, only one of the 28 items had a standardized coefficient below .45 in the Italian (Future Negative #25) and Albanian (Future Positive #28) samples. Intercorrelations among the factors are included above the diagonal in Table 2. Invariance analyses—also reported in Table 3—indicated that the six-factor model had configural, metric invariance, and scalar invariance across the two samples, based on Cheung and Rensvold's (2002) criterion of $\Delta CFI \leq .01$.

National comparisons. Figure 5 presents time attitude mean scores from seven countries: Albania (this study), Italy (this study), Italy (Donati et al., 2019), Turkey (Şahin-Baltacı et al., 2017), Germany (Worrell et al., 2013), New Zealand (Alansari et al., 2013), the United States (Worrell et al., 2013), and Japan (Chishima et al., 2019). As can be seen in Figure 5, mean scores on positive attitudes are consistently higher than mean scores on negative attitudes, with the former in the 3.3 to 3.8 range and the latter in the 2.0 to 2.5 range. Albanian adolescents reported substantially higher future negative scores than adolescents in the other six countries ($.40 \leq d \leq .77$, $Mdn = .54$), but Italian adolescents in this study did not differ substantially from adolescents in those countries ($.01 \leq d \leq .35$, $Mdn = .12$), nor from the Donati et al. samples ($.03 \leq d \leq .33$). Albanians reported the highest Past Positive scores, which differed meaningfully from New Zealanders ($d = 0.44$) and Americans ($d = 0.64$), but not from the other countries. Turkish adolescents reported meaningfully higher Future Positive scores than Japanese, Albanian, Italian, and New Zealander adolescents ($ds > 0.50$) but not German and American adolescents ($ds < .20$).

Associations with risky behavior. In the Italian sample, no AATI-TA subscale scores had meaningful correlations (i.e., $r > |.30|$) with risky behavior or seatbelt use (see Table 4). The pattern was similar for seatbelt use in the Albanian sample; however, both present positive and present negative attitudes had statistically significant associations with risky behavior in the Albanian sample, albeit with correlations in the .20 to .25 range.

Discussion

Time perspective is an important variable and has been associated with several positive and negative outcomes in adolescence. However, there are very few time perspective instruments that assess all three time periods and multiple

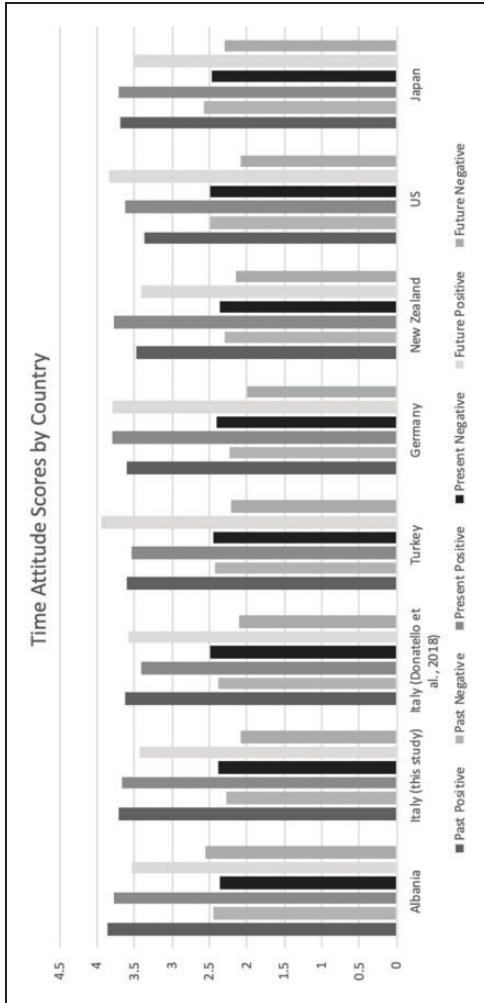


Figure 5. Mean scores on Adolescent and Adult Time Inventory-Time Attitudes by country. Mean scores for Italy ($N = 246$, $M_{age} = 17.53$) and Albania ($N = 312$, $M_{age} = 16.67$) are from this study. Mean scores for Germany ($N = 342$, $M_{age} = 15.97$) and the United States ($N = 300$, $M_{age} = 16.06$) were taken from Worrell et al. (2013). Mean scores for Turkey ($N = 244$, $M_{age} = 16.2$) were from Study I of Şahin-Baltacı et al. (2017), mean scores for New Zealand ($N = 579$, ages 13–15) were taken from Alansari et al. (2013), and mean scores for Japan ($N = 382$, $M_{age} = 16.22$) were taken from Chishima et al. (2019). Weighted mean scores for the Donatelli et al.'s (2018) study were calculated using scores for male and female adolescents presented in that study.

Table 4. Correlations between time attitudes and outcomes.

| Sample | Past Positive | Past Negative | Present Positive | Present Negative | Future Positive | Future Negative |
|----------------------------|---------------|---------------|------------------|------------------|-----------------|-----------------|
| Italian (<i>n</i> = 246) | | | | | | |
| Seatbelt use | .05 | -.02 | .05 | -.04 | -.01 | .01 |
| Risky behavior | -.05 | .02 | -.06 | .06 | .06 | .09 |
| Albanian (<i>n</i> = 312) | | | | | | |
| Seatbelt use | .01 | .01 | .03 | -.00 | .07 | -.04 |
| Risky behavior | -.15 | .06 | -.25* | .22* | -.05 | .12 |

* $p < .001$.

dimensions of time perspective in adolescents. The goal of the present study was to examine scores on the time frequency, time orientation, time relation, and time attitude subscales on Italian (Mello et al., 2011b) and Albanian (Mello et al., 2011a) versions of the AATI in samples of adolescents from those countries. Albanian and Italian adolescents were generally similar in time frequency and time attitudes but differed in time relation and time orientation profiles. Scores on four of the six time attitude subscales were reliable and structurally valid in both samples, with one subscale (Future Negative) exhibiting psychometric weakness in both samples and Future Positive also being less than ideal in the Albanian sample. We discuss the implications of the current findings.

Time frequency, time orientation, time relation

There is a general belief that adolescents are present-oriented and the time frequency results in this study support that contention, as more than 80% of both Albanian and Italian adolescents reported thinking about the present on a daily basis. However, substantial numbers of adolescents also reported thinking about the future on a daily basis, suggesting that at least with regard to time frequency, there are many adolescents who are focused on more than one time period. This interest in the present and the future has also been shown by adolescents in the United States (Mello, Worrell, et al., 2009), Iran (Mello et al., 2014), and Nigeria (Mello et al., 2018), although the percentages differ somewhat across countries. Nonetheless, the common finding is that the present and future are more frequent than the past in the thoughts of adolescents. As in Nigeria, time frequency was not associated with engaging in risky behavior.

The time orientation results in this study and in a study of Iranian adolescents (Mello et al., 2014) also support the hypothesis that a substantial proportion of adolescents are focused on both the present and the future. In both of these studies, a majority of adolescents chose the Present-Future orientation. To date, these are the only two studies to use the seven-option time orientation measure. However, in a previous study with American adolescents and fewer

time orientation options (Mello et al., 2013), the Present-Future option was also the one most frequently selected. Mello et al. (2013) also found that the Present-Future option was associated with higher academic achievement and self-esteem and fewer risky behaviors, suggesting that this orientation may be adaptive for adolescents. However, no association was found between time orientation and risky behavior in this sample, suggesting that if this association does exist, it may differ by country. It will be important to test this hypothesis in future studies and to compare adolescents with a Present-Future orientation to adolescents with other orientations on important outcomes.

Zimbardo and Boyd (1999) argued that a Balanced orientation is ideal, and this orientation was chosen by the second largest group in both this study and the Mello et al.'s (2013) study. However, McKay et al. (2014) found that the Future profile based on ZTPI scores was the most adaptive with regard to problem drinking. In this study, the Future orientation was chosen by fewer than one-fifth of the Albanians and by less than 5% of the Italians. The discrepancy in findings may be due to the fact that the ZTPI profiles used by McKay et al. are more similar to time attitudes and are based on the five ZTPI scores rather than a single Future orientation option as in the current study.

The time relation findings provided mixed support for the Present-Future hypothesis, however. This time relation option was chosen not only by the majority of Italian adolescents but not by the Albanians. However, results from American, Albanian, and Iranian adolescents suggest that the majority of adolescents see time periods as related in that the most consistent finding across studies is the small percentage of adolescents who choose the Unrelated time relation option. Mello et al. (2013) found that adolescents who chose the Unrelated option had the lowest academic achievement, the lowest level of hope, and the highest level of risky behaviors. Italian adolescents who chose the Unrelated option did not report lower risky behavior scores or seatbelt use than those choosing the Interrelated option. However, the Unrelated group was quite small ($n = 8$). There were no differences in risky behaviors or seatbelt use among the Albanian adolescents based on their time relation choices

Time attitudes

The results for the time attitude subscales were generally supportive. Four of the six time attitude subscales—Past Positive, Past Negative, Present Positive, and Present Negative—worked well in both samples, with internal consistency estimates in the .70 to .90 range and the majority of the factor coefficients $> .50$. Future Positive scores also worked well in the Italian sample. However, Future Negative scores had the lowest internal consistency estimates in both groups, and in the final scale, Future Negative consisted of only three of the five items. Despite the removal of two items and the less than ideal internal consistency estimates, the six-factor structure fit the data well for the two groups. Moreover, the pattern of

positive and negative means in the two samples are similar to the pattern in other countries in which AATI-TA scores have been examined (see Figure 5). The results with the Italian sample were surprising given the strong results for scores on this translation reported by Donati et al. (2019), but the adolescent sample in that study had 136 more participants than the adolescent sample in the current study.

The two Future Negative items that were problematic and dropped from the model included Item 4 (“I doubt that I will make something of myself”) and Item 10 (“I don’t think I’ll amount to much when I grow up”). In the Farsi and Turkish versions of the scale, Item 10 also did not work well and was dropped (Mello et al., 2014; Şahin-Baltacı et al., 2017). However, both of these items worked well in English versions of the scale administered in New Zealand (Alansari et al., 2013), the United States (Worrell et al., 2013), and the United Kingdom (McKay, Cole, et al., 2015). In this study, another Future Negative item (#25, Thinking ahead is pointless), which was not dropped, had a low coefficient in the Italian sample, and a Future Positive item (#28, Thinking about my future excites me) had a similarly low coefficient in the Albanian sample. Many of these phrases are common or idiomatic expressions in English and their meanings may not be as clear to participants in other languages.

However, as these items worked well in Donati et al.’s (2019) Italian sample, as well as in German (Worrell et al., 2013) and Japanese (Chishima et al., 2019), the overall findings suggest that it is possible for all of the items to work well in languages other than English. A review of the initial validity study for AATI-TA scores (i.e., Worrell et al., 2013) revealed that there were far fewer negative than positive items during the scale development process and that Future Negative began with only six English items. Thus, it may be the case that Future Negative items are more difficult to generate in English and more difficult to capture in translations. The successful measurement of a personality or attitudinal construct in another linguistic context is more dependent on the accuracy with which the translation captures the *essence* of the construct than on the similarity of the translated item to the original item. Our recommendation is that the scales are assessed in different and larger samples to see whether the problems found in this study are sample-specific or more generalizable, which might them require another translation of the two items.

Finally, the results suggest that present time attitudes are not meaningfully related to risky behaviors or seatbelt use, in keeping with findings reported in previous studies (McKay, Cole, et al., 2015; McKay et al., 2016). Thus, it may be the case that attitudes to the present may not predict sensation seeking as suggested by the findings based on the present hedonistic scale on the ZTPI. The ZTPI findings may be being driven by the items related to risk-taking on that subscale. Also, several studies indicate that time attitude *profiles* based on the six time attitude scores are more predictive of behavior than individual time attitude scores (e.g., Alansari et al., 2013; Worrell & Andretta, 2019), and this hypothesis should be examined in Italy and Albania.

Limitations and conclusion

As with all studies, there were several limitations in the current study. First, the samples were taken from a limited number of schools in a single city and are not representative of Italian and Albanian adolescents more generally. Additionally, these schools served working- and middle-class families and thus did not represent the full range of participants by socioeconomic status. Second, the sample sizes in both countries were relatively small. The smaller samples with restricted socioeconomic range could have had an effect on the results, especially the CFAs, which are more stable with larger samples. Third, despite the apparent psychometric strengths of the majority of the time attitude subscales, additional information such as concurrent validity and test–retest reliability will be needed to provide additional evidence in support of the scores in these national contexts, and the utility and predictive validity of time frequency, time relation, and time orientation scores also need to be established. Finally, it will be important to examine all of these constructs in longitudinal studies. Longitudinal research on these time constructs has only been conducted in the United Kingdom to date (e.g., Wells, McKay, et al., 2018; Wells, Morgan, et al., 2018).

Limitations notwithstanding, the results of this study provide a solid basis for the examination of time frequency, time relation, time orientation, and time attitudes in Italian and Albanian adolescents. This study is also unique in that it is only the second study to date to examine four aspects of the AATI in the same sample. The findings in this study are generally similar to those from other countries, albeit studies with similarly limited samples. Nonetheless, the initial evidence across these national and cultural contexts provide a basis for studies of time perspective in Italian and Albanian adolescents as well as adolescents in other countries where the AATI has been used, including Germany, Turkey, Japan, New Zealand, Slovenia, Spain, and the United States. Moreover, with six working time attitude subscales, the stage is also set for the examination of AATI-TA profiles in Italian and Albanian adolescents, an important point, as these profiles have predicted educational outcomes and psychological functioning in several studies of adolescents in other countries.

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