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Measuring time perspective in Ethiopian young adults using the Adolescent and Adult Time Inventory (AATI)

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Time perspective is an under-researched social construct in Africa. We examined scores on an Amharic translation of the Adolescent and Adult Time Inventory (AATI) in a sample of 422 young adults attending two types of educational institutions in Ethiopia: preparatory school ($n = 191$) and university ($n = 231$). Results indicated that Ethiopian young adults thought about the present and the future more frequently than the past. The modal option for time orientation was present-future, and the modal options for time relation were present-future and linearly related. There were differences in the choice of time orientation options in the two school types. Although the largest group from both school types chose present-future, future and past were the second and third choices for the preparatory school students, and past and present were the second and third choices for the university students. Scores from the AATI supported a six-factor time attitudes model: past positive, past negative, present positive, present negative, future positive, and future negative. The results of this study indicate that the AATI can be used to study time perspective in Ethiopia.

Keywords: Adolescent and Adult Time Inventory, Amharic, Ethiopia, time perspective

Introduction

Thoughts and feelings about time influences the behaviours and attitudes of children and adults (e.g., Andretta et al., 2014; Cole et al., 2017; Jessor et al., 1990; Wyman et al., 1992). These thoughts and feelings, collectively referred to as time perspective, indicate how individuals integrate their past, their present, and their future. Earlier studies on time perspective focused on future-oriented constructs, including consideration of future consequences (Strathman et al., 1994), optimism (Scheier & Carver, 1985), hope (Snyder et al., 2002), perceived life chances (Jessor et al., 1990), possible selves (Oyserman & Markus, 1990), and future orientation (Nurmi, 1991; Seginer, 2008). Youth who obtained higher scores on these future-oriented constructs were often found to be at lower risk for maladaptive outcomes (e.g., Worrell & Hale, 2001; Wyman et al., 1992). Contemporary research is focused on future-oriented constructs, such as hope (e.g., Dixon et al., 2017; Dixon & Stevens, 2019), but also on constructs assessing past, present, and future simultaneously (e.g., Buhl & Lindner, 2009; Konowalczyk et al., 2018; Mello & Worrell, 2015; Zimbardo & Boyd, 1999).

Additionally, research has shown that different time constructs have differential relationships with other variables. Scores on the Zimbardo Time Perspective Inventory (Zimbardo & Boyd, 1999) have been shown to be associated with aggression, depression, sensation seeking, conscientiousness, novelty seeking, self-esteem, sensation seeking, trait anxiety, and substance use (Keough et al., 1999). Similarly, time attitude scores on the Adolescent and Adult Time Inventory have been shown to be related to depression, alcohol use, perspective taking, life satisfaction, self-esteem, self-efficacy, and perceived stress (Andretta et al., 2014; Buhl & Lindner, 2009;

McKay et al., 2016; Worrell & Andretta, 2019). Much of the research on time perspective has been conducted in the United States and Europe, and less so in developing countries. In the current study, we used the Adolescent and Adult Time Inventory (AATI: Mello & Worrell, 2007) to measure time frequency, time relation, time orientation, and time attitudes among Ethiopian children and youth, with the goal of extending time perspective research to this national context. The AATI operationalises the Mello model of time perspective (Mello & Worrell, 2015).

The Mello Model of time perspective

Mello and Worrell (2015) contended that there are many domains in time perspective and that studying more than one domain will provide a more complete picture of an individual's time perspective. The Mello model of time perspective (Mello & Worrell, 2015) includes five time perspective domains, all of which are assessed with the AATI. The five domains assessed by the AATI represent only *some* of the possible time perspective domains.

Time meaning

The time meaning domain qualitatively assesses individuals' understanding of the time periods using three questions:

- How do you define the past?
- How do you define the present?
- How do you define the future?

Responses to these questions are coded for themes and there is one study on time meaning in the extant literature. Mello and colleagues (2009) reported the responses of several focus groups in which adolescents responded to the three questions. They identified a theme of absolute versus fluid conceptions of time, and descriptions of time

as a river, a window, and a novel. We could find no other studies of time meaning based on the Mello model in the extant literature and this domain was not included in the present study. However, in another focus group study on time, McKay and colleagues (2012) identified themes of objective and abstract time. In their study, participants thought of the short-term past and present in more objective terms and the long-term past and present in more abstract terms.

Time frequency

The second domain in the Mello model is time frequency (Mello & Worrell, 2015), or how frequently individuals think about the three time periods. Time frequency is assessed with three questions:

- How often do you think about the past?
- How often do you think about the present?
- How often do you think about the future?

Response are given on a 5-point Likert scale, with verbal anchors ranging from 1 = almost never, to 5 = almost always. In keeping with the view that adolescents are more present-oriented, Mello and colleagues (2009) reported that 85% of American adolescents thought about the present on a daily basis in contrast to 57% thinking about the past daily and 69% thinking about the future. In a more recent study, Mello colleagues (2018) reported that adolescent runaways thought about the present less frequently than their non-runaway peers; however, the runaways and non-runaways did not differ meaningfully in how frequently they thought about the past ($g = 0.07$) and the future ($g = 0.22$).

Time relation

Time relation refers to how individuals think the time periods are related and is the third domain (Mello & Worrell, 2015). To assess this construct, adolescents respond to a single item with four diagrammatic options. Each of the four options has three circles, representing the past, present, and future. In Option 1, the circles are not touching, indicating that the three time periods are unrelated to each other. In Option 2, the past is separate, but the present and future circles are overlapping (present-future related). The third option has the past circle overlapping with the present circle, and the present circle overlapping with the future circle, representing a linear relationship from past to present to future. In Option 4, the circles are all overlapping in a Venn diagram formation, indicating that the past, present, and future are interrelated. There is evidence to suggest that viewing the three time periods as related, whether linearly or interrelated, is associated with more adaptive outcomes (Mello et al., 2013).

Time orientation

The fourth domain, time orientation, is also measured using configurations of three circles representing the three time periods. However, the time orientation circles are either small or large, with the larger circle indicating the time-period an individual is oriented toward (Mello & Worrell, 2015). There are seven possible orientations, dictated by which of the three circles are large. These include (i) past,

(ii) present, (iii) future, (iv) past-present, (v) past-future, (vi) present-future, and (vii) past-present-future. Mello and colleagues (2013) found that 60% of the adolescents had a present-future orientation, which was also associated with higher academic achievement scores ($d = 0.59$) and higher self-esteem compared to a present time orientation. Adolescents choosing present-future and past-present-future reported meaningfully higher scores ($d > 0.45$) on self-esteem than students only oriented to the future (Mello et al., 2013). Students oriented toward the present-future also reported lower risky behaviour scores ($d > 0.40$) than students oriented to single time periods (i.e., the present and the future). In a subsequent study, non-runaways were oriented to the present-future more than runaways, and runaways were oriented more to the present, the future, or the past-future than non-runaways (Mello et al., 2018).

Time attitudes

The time attitudes section of the AATI is the most similar to the other instruments in the literature, including the Zimbardo Time Perspective Inventory (ZTPI), and has been frequently used in research studies (McKay et al., 2020). It consists of six, 5-item subscales assessing positive and negative attitudes toward time: Past Positive, Past Negative, Present Positive, Present Negative, Future Positive, and Future Negative. Respondents indicate their agreement using 5-point Likert scales, with verbal anchors ranging from 1 = totally disagree, to 5 = totally agree. AATI-TA scores have been found to be reliable and structurally valid in several countries and languages including the United States (English: Worrell et al., 2013), Turkey (Turkish: Şahin-Baltacı et al., 2017), Italy (Italian: Donati et al. 2019), and Japan (Japanese: Chishima et al., 2019), and moderately stable across 1- and 2-year periods (Worrell et al., 2018). These scores have been used to create time attitude profiles in Germany (Buhl & Lindner, 2009), the United States (Andretta et al., 2013), New Zealand (Alansari et al., 2013), and the United Kingdom (Cole et al., 2017). Further, time attitude profiles have been associated with a variety of educational and psychological outcomes, both cross-sectionally (Worrell & Andretta, 2019) and longitudinally (e.g., Wells, McKay et al., 2018; Wells, Morgan et al., 2018).

Time perspective studies in Africa

Although a PsycINFO search using the keyword “time perspective,” conducted by one of the authors in August 2020 yielded more than 1 000 articles, only 10 of these articles referred to Africa. Eight studies were empirical (Bentley, 1983; Bouffard et al., 1993; Keyser, 2017; Khumalo et al., 2016; Mello et al., 2019; Mpofu et al., 1995; Potgieter et al., 2011; Van Lill & Naude, 2014). These eight studies’ findings are briefly summarised.

Bentley (1983) and Bouffard and colleagues (1993)

In a cross-cultural study, Bentley (1983) examined future time perspective in first year Scottish and Swazi college students. Scottish men and women reported longer future time extension scores (10 years and 9 years, respectively) than Swazi men and women (8 years and 4 years, respectively). Bouffard and colleagues (1993)

examined the future time perspective scores in two groups of Rwandan students, those in frustrated status (not admitted to university) and non-frustrated status (admitted to university). The students self-reported on future time perspective extension (i.e., how far into the future students thought in terms of years) and desires in the near and far future. Students in the frustrated group had lower time extension scores and a lower proportion of references to the near future relative to the far future.

Mpofu and colleagues (1995) and Potgieter and colleagues (2011)

Mpofu and colleagues (1995) examined time management in a sample of 472 student teachers of Shona background in Zimbabwe. After establishing the validity of scores on four time subscales – short term planning, perceived control of time, time attitudes, and long term planning – only short term planning and perceived control of time were related to student achievement. Potgieter and colleagues (2011) examined several aspects of time perspective in older South Africans. Participants who had, or had recently, lost spouses suffering from dementia were much more oriented to the present than participants whose spouses did not have dementia. Additionally, participants who had lost their spouses had higher past negative than past positive scores, with the pattern reversed for participants whose spouses were still alive.

Van Lill and Naude (2014), Keyser (2017), and Khumalo and colleagues (2019)

Three of the studies conducted in Africa used the ZTPI (Zimbardo & Boyd, 1999). Van Lill and Naude (2014) examined the association between the five ZTPI scores and academic competence in a sample of 178 first year college students in South Africa. Internal consistency estimates for ZTPI scores were low to moderate, and none of these scores had a correlation > 0.20 with academic competence. Keyser (2017) examined the factor structure of ZTPI scores in a sample of white and black South African undergraduates ($N = 200$). After confirmatory factor analyses failed to support the six-factor structure, exploratory factor analyses yielded four factors: future, present hedonistic, past negative, and past positive. The third ZTPI study (Khumalo et al., 2019) had 744 university students from Kenya and Ghana as participants. These authors examined the relationship between the five ZTPI scores and hedonic and eudaimonic motives. After modifications to the present hedonistic and past positive scales based on confirmatory factor analyses, Khumalo and colleagues (2019) reported present fatalistic and present hedonistic scores were associated with a hedonic orientation and past positive, present fatalistic, present hedonistic, and future scores were associated with a eudaimonic orientation.

Mello and colleagues (2019)

Using the AATI, the instrument used in this study, Mello and colleagues (2019) examined time frequency, time relation, time orientation, and time attitudes in a sample of 194 Nigerian college students aged 16 to 29. More participants reported thinking about the present (95%)

and future (97%) than the past (62%) on a daily basis. A third of the sample chose either the present-future (34%) or linearly related (35%) time relation options with fewer choosing the interrelated (23%) or unrelated time options (9%). Present-future (42%) was the modal time orientation option, with fewer choosing the future (21%), the past-present-future (20%), the past-future (10%), and the other three options.

In sum, a review of the literature indicates that there are only a few studies examining time perspective in Africa. Three of the four more recent studies have used the ZTPI and one has used the AATI. None of these studies has been conducted in Ethiopia. As the AATI measures multiple aspects of time perspective and has been used recently in Nigeria, it was chosen for the current study.

Goals of the study

The goal of the current study was to examine four time perspective domains – time frequency, time relation, time orientation, and time attitudes – in an Ethiopian sample of young adults. Based on the extant literature, we had three hypotheses:

- Participants would think about the future more frequently than the present and the past.
- Present-future would be the modal time orientation and time relation option chosen.
- Time attitude scores would be internally consistent and structurally valid with evidence supporting the theorised six-factor model: past positive, past negative, present positive, present negative, future positive, and future negative.

As psychological research on time perspective continues to increase in frequency across countries and contexts, it will be important to have measures that work in multiple settings to allow for comparisons.

Method

Participants and setting

Participants consisted of 422 Ethiopian young adults (49.3% female, $n = 208$) attending a preparatory school ($n = 191$) and several universities ($n = 231$) in the Central and Southern regions of the country. 99% were between 18 and 25 years old, with only 4 participants indicating that they were older than 25. Participants were majoring in the Natural Sciences (25.8%), Social Sciences (19.7%), Engineering (25.6%), and the Humanities (28.5%). Participants were randomly sampled in keeping with their proportion attending the university and preparatory high school. Students who agreed to participate completed paper and pencil surveys under supervision by teachers in a school hall. Most identified Orthodox Christians (71.6%), with Muslims (10.4%), and Protestants (14.2%) making up the majority of the other participants. Almost half of the participants (44.1%) were from Addis Ababa, Ethiopia's capital. Nine of Ethiopia's 10 ethnic regions were represented in the sample, with most individuals (95.1%) coming from four regions: Amhara; Oromia; Addis Ababa; and the Southern Nations, Nationalities, and Peoples' Region.

Fathers' occupations included government workers (27.3%), workers in private industry (30.1%), merchants

(19%), and farmers (23.7%). Mothers' occupations also included government workers (19.7%), workers in private industry (18.5%), merchants (14.9%), and farmers (14.5%). Almost a third (32.5%) of the mothers were housewives. Most participants' mothers (52.6%) had secondary education or less, 14.3% had some college education, and 18.2% had a Bachelor's degree or higher. The percentages for fathers in these three groups were 45.5%, 14.9%, and 26.3%, respectively. Less than half of the participants ($n = 172$, 41%) provided estimates of their family's monthly income. Most ($n = 99$) came from families making less than 5 000 Ethiopian Birr (\$156 US) a month.

Measures

Demographic variables

Participants reported information on age, sex, religious affiliation, and the region of the country that they were from. Additionally, they indicated the highest level of education that their parents obtained as well as their parents' current occupations, and some of them provided an estimate of their family's monthly income.

Adolescent and Adult Time Inventory – Amharic

Participants completed the AATI in the Amharic language of Ethiopia with back translation from English version (Mello et al., 2017). As previously noted, four domains of the AATI were used. The time frequency domain (how often participants think about the past, present, and future) is scored on a 5-point Likert scale (1 = almost never, 2 = seldom, 3 = sometimes, 4 = often, 5 = almost always).

The time relation and time orientation domains consist of configurations of circles. Time relation has four options (unrelated, present-future, linearly related, and interrelated) and time orientation has seven options (past, present, future, past-future, past-present, present-future, and past-present-future).

The time attitudes domain contains six 5-item subscales with Likert-scale responses (1 = totally disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = totally agree). Internal consistency estimates for time attitude scores have generally been acceptable (e.g., Chishima et al., 2019; Cole et al., 2017; Donati et al., 2019; Konowalczyk et al., 2018; Şahin-Baltacı et al., 2017; Worrell et al., 2013, 2020). Specifically, previous research indicates the following alpha score ranges: Past positive (0.72 to 0.90), past negative (0.71 to 0.91), present positive (0.75 to 0.94), present negative (0.61 to 0.91), future positive (0.61 to 0.93), and future negative (0.39 to 0.89).

Data analysis

Frequencies and other descriptive analyses were conducted using SPSS Version 26 (IBM, 2019). We used Mplus 8 (Muthén & Muthén, 2012–2017) to conduct the confirmatory factor analyses on the time attitude scores. Three competing models were examined: a valence model (past and present items), a time period model (past, present, and future items), and the hypothesised six-factor model based on the six subscales. The weighted least squares robust estimator, recommended for Likert-type data (see Thompson, 2004), was used. Acceptable fit was based on

the comparative fit index (CFI: ≥ 0.90 = acceptable fit; ≥ 0.95 = close fit), the Tucker-Lewis index (TLI: ≥ 0.90 = acceptable fit; ≥ 0.95 = close fit), and the root mean square error of approximation (RMSEA: ≤ 0.08 = acceptable fit; ≤ 0.50 = close fit).

Ethical considerations

The study was approved by the Jigjiga University Ethical Review Committee (JJU-RERC027/2017). After receiving ethics approval from the university, approval was sought and received from the administration of the sites where the data were collected, and participants were invited to participate. Participation was voluntary and individuals who agreed to participate gave written informed consent.

Results

Results from the Adolescent and Adult Time Inventory – Amharic

Results are presented by domain in the following order: time frequency, time relation, time orientation, and time attitudes.

Time frequency

As indicated in Figure 1, the modal choice for thinking about the past was *sometimes* and the modal choice for thinking about the future was *almost always*. Thinking about the present yielded two modes, *often* and *almost always*. Participants in the two types of schools did not differ significantly or meaningfully by frequency or mean score. Sex differences were also not statistically or practically significant.

Time relation

As indicated in Figure 2, results for time relation indicated that there were small differences among the two school types, although none of the differences were $> 5\%$. For participants in the preparatory school, 35.6% chose present-future, followed by linearly related (29.8%) and interrelated (24.1%). For university participants, linearly related (32.5%) and present-future (30.7%) were chosen by approximately the same percentage, with interrelated (26.4%) being chosen by a slightly smaller number. In both groups, time periods as unrelated came in a distant fourth, being chosen by 10% of each group. The groups did not differ significantly or meaningfully. Although

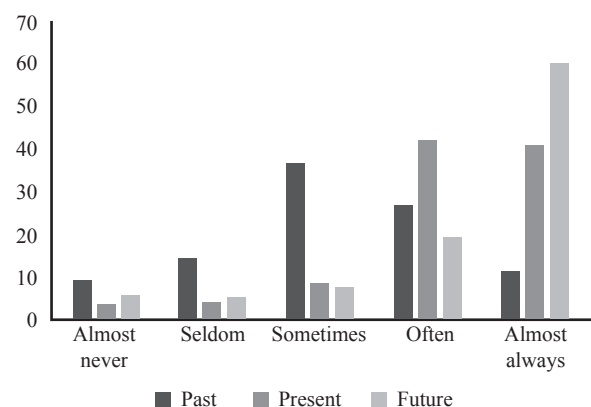


Figure 1. Time frequency results

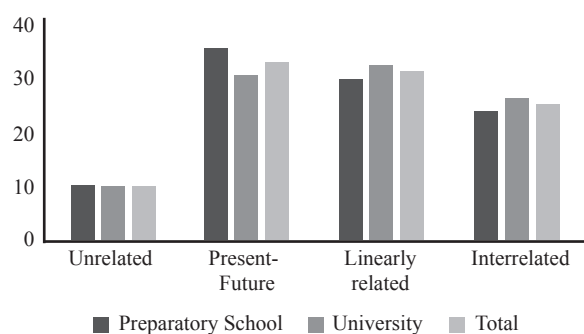


Figure 2. Time relation results by school type

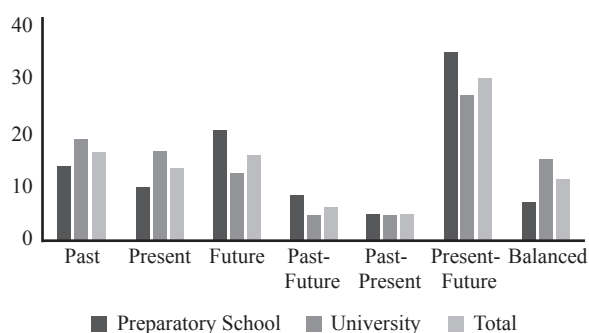


Figure 3. Time orientation results by school type

sex did not differ significantly either, present-future was the modal choice for females (35.9%) and linearly related was the modal choice for males (34.1%).

Time orientation

Unlike time relation, there were differences between the groups on time orientation, which was reflected in a statistically significant chi square, $p = 0.004$, and a meaningful effect size, Cramer's $V = 0.21$ (see Figure 3). Present-future was the modal choice for both groups; it was chosen by 34.6% of the preparatory school participants and 26.8% of the university participants. Future (20.4%) and past (14.1%) were the second and third most frequent choices for the preparatory school students; whereas the university students' second and third choices were past (19%) and present (16.9%), respectively. Present-future was also the modal choice for females (30.3%) and males (30.4%). Differences between sex occurred in the choice of future (19.7% of females, 12.6% of males), past-present

(3.8% of females, 6.1% of males), and past-future (4.3% of females, 4.3% of males) but the differences were not statistically significant.

Time attitudes

Descriptive statistics for the time attitude scores are presented in Table 1. In keeping with the extant literature, mean scores on positive subscales are higher than mean scores on negative subscales. Additionally, scores were normally distributed with minimum skewness or kurtosis. Analyses of the time attitude subscales indicated that two had acceptable (i.e. > 0.70) internal consistency estimates based on Cronbach's alpha (past positive and present negative, and future positive), and the estimate for future positive scores was 0.67. Estimates for the other three subscales were < 0.60 . Subsequent analyses indicated that one item ("I am content with my present") had a negative correlation with the other items, and when this item was eliminated, the internal consistency for present positive scores fell in the acceptable range ($\alpha = 0.77$).

Next, we individually examined the six subscales using exploratory factor analyses. These analyses indicated that two past negative items ("I wish I did not have the past that I had", and "I have unpleasant thoughts about my past") had factor coefficients < 0.25 . These items were also excluded from subsequent analyses. As indicated in Table 1, the resulting coefficients from the final confirmatory factor analysis based on 27 items resulted in omega internal consistency estimates of 0.69 and higher for scores on five of the subscales, and 0.64 for past negative scores.

Confirmatory factor analysis

Results of the confirmatory factor analyses are presented in Table 2. These analyses were based on 27 items. Specifically, the two past negative items and one present positive item that were attenuating the reliability of these scores were not included. As can be seen, both the 2-factor (valence) and 3-factor (time period) models had poor fit. However, the six-factor model had acceptable fit based on the CFI, TLI, and RMSEA. Factor coefficients, included at the bottom of Table 2, ranged from 0.44 to 0.75. Correlations among the subscales and the factors are both presented in Table 3, with the former ranging from -0.03 to 0.41 and the latter from -0.09 to 0.65. Time attitudes did

Table 1. Descriptive statistics for AATI-TA Scores ($N = 422$)

Subscales	<i>M</i>	<i>SD</i>	Skewness	Kurtosis	α	ω
Past Positive (5)	3.45	0.91	-0.46	-0.27	0.75	0.80**
Past Negative (5)	2.69	0.74	0.26	0.27	0.50	0.53*
Past Negative (3)	2.43	0.95	0.53	-0.33	0.59	0.64**
Present Positive (5)	3.23	0.77	-0.47	0.49	0.58	—
Present Positive (4)	3.32	0.98	-0.37	-0.59	0.77	0.81**
Present Negative (5)	2.51	0.87	0.40	-0.30	0.71	0.76**
Future Positive (5)	3.82	0.75	-0.46	0.49	0.67	0.76**
Future Negative (5)	2.29	0.78	0.40	-0.39	0.57	0.69**

Note. AATI-TA = Adolescent and Adult Time Inventory Time Attitudes. Number of items on subscale are in parentheses.

*Omega estimates calculated with coefficients from a one-factor, principal-axis extraction. **Omega estimates calculated from coefficients from the confirmatory factor analysis reported in Model 6 in Table 2.

Table 2. Confirmatory factor analysis results for AATI-TA scores (Weighted Least Squares Robust)

Model ^a	χ^2	df	χ^2/df	CFI	TLI	RMSEA	90% CI
Null	4221.41*	351	12.03				
1. 2-Factor	1859.30*	323	5.76	0.603	0.569	0.106	0.101, 0.111
2. 3-Factor	1598.85*	321	3.98	0.593	0.555	0.108	0.103, 0.113
3. 6-Factor	648.28*	309	2.09	0.925	0.914	0.051	0.046, 0.057
Subscales	Standardised coefficients from Model 6						
Past Positive (5 items)	0.60, 0.69, 0.73, 0.67, 0.67						
Past Negative (3 items)	0.52, 0.63, 0.67						
Present Positive (4 items)	0.68, 0.75, 0.70, 0.74						
Present Negative (5 items)	0.60, 0.58, 0.55, 0.63, 0.74						
Future Positive (5 items)	0.48, 0.69, 0.75, 0.62, 0.60						
Future Negative (5 items)	0.45, 0.44, 0.60, 0.68, 0.60						

Note. AATI-TA = Adolescent and Adult Time Inventory Time Attitudes; CFA = Confirmatory Factor Analysis; CFI = Comparative Fit Index; TLI = Tucker-Lewis Index; RMSEA = Root Mean Square Error of Approximation; C. I. = Confidence Interval (for RMSEA). ^aAll models based on 27 items. * $p < 0.001$.

Table 3. Correlation matrix for the Adolescent and Adult Time Inventory – Time Attitude Scales-Amharic

	1	2	3	4	5	6
1. Past Positive (5)	–	–0.42	0.46	–0.10	0.39	–0.09
2. Past Negative (3)	–0.27	–	–0.20	0.59	–0.19	0.64
3. Present Positive (4)	0.34	–0.09	–	–0.51	0.50	–0.19
4. Present Negative (5)	–0.06	0.34	–0.37	–	–0.23	0.65
5. Future Positive (5)	0.27	–0.09	0.34	–0.14	–	–0.58
6. Future Negative (5)	–0.03	0.36	–0.11	0.41	–0.34	–

Note. $N = 422$. Number of items are in parentheses. Correlations below the diagonal are for the manifest variables. Correlations above the diagonal are for the latent variables and were obtained from Model 4 of the confirmatory factor analysis reported in Table 2.

not differ significantly or meaningfully by sex or school type.

Discussion

In this study, we examined time frequency, time relation, time orientation, and time attitude scores in a sample of young adults in Ethiopia using an Amharic translation of the AATI. As hypothesised, the Ethiopian young adults reported thinking about the future most frequently; however, they also thought about the present more often than they thought about the past. To our knowledge, there are only two other studies of time frequency in the extant literature, one with American adolescents (Mello et al., 2009) and one with Nigerian young adults (Mello et al., 2019). This sample of young adults in Ethiopia as well as the young adults in Nigeria reported thinking about the present and future more frequently than they thought about the past. In contrast, American adolescents (Mello, Worrell et al., 2009) reported thinking about the present more frequently than they thought about the past.

It is not clear if the differences in time frequency reflect a developmental shift from adolescence to young adulthood or a cultural difference. The results from Nigeria and Ethiopia are more similar to each other than to the results from the United States. Furthermore, the Nigerian sample reported the highest percentages of individuals thinking about the present and future. Nigeria and Ethiopia are the first and second most populous countries in Africa, respectively (Worldometer, 2020), although Nigeria has a considerably higher gross domestic product (Statista, 2019), which may explain the more intense focus on the present and future. More research is needed on the

time frequency construct in African nations and across developmental periods and cultural contexts.

The second hypothesis was that present-future would be the modal time relation and time orientation choices. This hypothesis was supported for time orientation. However, the results for time relation were bimodal, with both present-future and linearly related as the most frequent choices. The time relation choices of Ethiopian young adults parallel the findings for young adults in Nigeria (Mello et al., 2019). American adolescents chose the present-future and interrelated options (Mello et al., 2019), showing similarities with and differences from the Ethiopian and Nigerian participants. As with time frequency, it is not clear if these differences are cultural or developmental. American adolescents who chose the interrelated and linearly related options reported more adaptive outcomes than their peers and the correlates of these choices need to be examined in Nigeria and Ethiopia.

The third hypothesis was that time attitude scores would be reliable and yield the theorised six-factor structure in this sample. The first part of the hypothesis was partially supported, with scores on four of the six subscales (past positive, present positive, present negative, and future positive) yielding internal consistency estimates > 0.75 . Past negative and future negative scores had more modest estimates in the 0.60 range. The AATI was administered in Nigeria in English, eliminating the translation issue. However, in the study of Nigerians (Mello et al., 2019), future negative scores had an alpha coefficient in the 0.60 range, and one item was removed from that subscale. In the Turkish translation of the AATI-TA, two items were dropped from the future negative subscale (Şahin-Baltacı

et al., 2017). These findings suggest that negative time attitudes may be more difficult to capture in translation.

Despite the modest internal consistency estimates for scores on two of the subscales, the six-factor time attitude model was supported as hypothesised after removing the two past negative items and one present positive item that did not work well in this sample. Cross-cultural measurement involving translated instruments is always tricky as one must capture the meaning of the original item in a manner that is understandable in a different cultural context. For example, the 5-factor ZTPI model was not supported in South Africa (Keyser, 2017); rather, a 4-factor model was found. Nonetheless, the findings across several cultural contexts suggest that the six-factor AATI time attitudes model may be appropriate, as it is supported in Ethiopia, Nigeria (Mello et al., 2019), and Turkey (Şahin-Baltacı et al., 2017) where items were eliminated. However, the meanings of specific items and idioms may not translate easily and should be revisited. Thus, it will be important to continue to try out alternative translations of items and to look at correlations with other constructs to see if the pattern of associations is similar across contexts. Given the support for the model in both English-speaking contexts such as New Zealand (Alansari et al., 2013), the United Kingdom (McKay et al., 2015), Nigeria (Mello et al., 2019), and the United States (Worrell et al., 2013), and non-English contexts such as Japan (Chishima et al., 2019), Germany (Buhl & Lindner, 2009), Turkey (Şahin-Baltacı et al., 2017), Spain (Konowalczyk et al., 2018), Italy (Donati et al., 2019), and Ethiopia (current study), the prospects are good that the model will be replicated.

Limitations of the study and suggestions for future research

There were several limitations to this study. First, we only examined young adults in this sample, so it is not yet known if the scale's scores will work with other age groups. Second, the participants did not represent all areas of Ethiopia, and studies will need to be conducted with samples that are more representative of the Ethiopian population. Specifically, future studies should examine (i) patterns of time frequency, time relation, and time orientation among representative samples of Ethiopian from different developmental periods ranging from adolescence to older adults; and (ii) the association of these constructs with outcome variables such as risky behaviour, academic achievement, and other educational and psychological constructs. Third, and specific to time attitude scores, although we found some evidence in support of internal consistency and structural validity, convergent and discriminant validity will need to be established. Finally, in several contexts, time attitude profiles have been found to be more predictive of adaptive and maladaptive outcomes than time attitude scores. Researchers should conduct cluster analyses and latent profile analyses to see if the time attitude profiles that have been found in Germany, New Zealand, the United Kingdom, and the United States are also present in Ethiopia.

Conclusion

The goal of this study was to examine four domains of the Mello model of time perspective in Ethiopia. In keeping with hypotheses, Ethiopian young adults reported thinking about the future more than the present and past, and were higher in present-future time orientation than other options. They also reported higher present-future and linearly-related time relation scores. The six-factor time attitude structure was supported, although past negative and future negative scores had lower internal consistency estimates than ideal. The results of this study indicate that AATI scores are potentially useful for research purposes in Ethiopia.

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