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Time Perspective and Risky Behaviors Among Nigerian Young Adults

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Abstract
We examined time perspective and risky behaviors among Nigerian young adults. Time perspective was defined as thoughts and emotions toward the past, the present, and the future. Self-report measures assessed orientations and positive and negative feelings about each time period. Risky behaviors were assessed with a composite instrument that included various experiences including getting into trouble with the police and running away from home. Findings indicated that participants (a) had more positive than negative feelings about time periods, (b) thought more frequently about the present and the future than the past, (c) emphasized the present and the future equally, and (d) perceived either the present and the future to be related to one another and separated from the past or that all time periods were related to one another in a linear pattern. Results also showed that risky behaviors were associated with positive and negative feelings toward the present in theoretically expected directions.

Keywords Nigeria · Time perspective · Risky behavior · Time attitudes · Time frequency · Time relation

Introduction

Nigeria is the most populous country in Africa and the seventh most populous country in the world with a population of over 190,000,000 (The World Fact Book [TWFB] 2017). Over 60% of the Nigerian population are 24 years old or younger and the life expectancy in this country is just 52 years (TWFB 2017). Rates of substance use in adolescent populations are the highest in 10 years, with the majority of cigarette and alcohol users beginning at 13 years old (Famuyiwa et al. 2011). These statistics provide an urgent rationale for research that informs the development of interventions addressing risky behaviors in Nigerian young adults.

Time perspective has been broadly defined as thoughts and feelings towards the past, present, and future, and has been proposed as a useful construct for prevention and intervention related to health (Mello and Worrell 2015; Zimbardo and Boyd 1999). For example, studies have shown that perceiving relationships among the past, present, and future is associated with risky behavior. Specifically, individuals who perceive that the time periods were unrelated to one another were more likely to engage in risky behaviors than those individuals who perceive that time periods are interrelated (Mello et al. 2013). This research was based on a scale that assessed the degree to which people perceive time periods to be related to one another. The scale included several response options with circles labeled past, present, and future that differed from unrelated (i.e., not touching) to interrelated (i.e., a Venn diagram).

In studies focused on other dimensions of time perspective, negative feelings toward the past were positively associated with alcohol use in Northern Irish adolescents (McKay et al. 2014). However, research on time perspective in Nigerians has been largely absent from the literature (Nsamenang and Dawes 1998), even though scholars have challenged psychological researchers to extend research beyond the United States (Arnett 2008). Thus, we sought to make several contributions to the literature by (a) examining time perspective

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in Nigerians and (b) determining how it is related to risky behaviors among young adults in Nigeria.

Time Perspective

Theory and Description

Time perspective has been described as an individually varying, multidimensional construct posited to drive human behavior (Mello and Worrell 2015; Zimbardo and Boyd 1999). The construct has been postulated to comprise several distinct dimensions including time attitudes, time frequency, time orientation, and time relation. The most commonly examined dimension has been time attitudes, defined as positive and negative feelings towards the past, the present, and the future (Mello and Worrell 2015). In most studies, participants reported higher positive than negative time attitudes, and time attitudes have been associated with educational and psychological outcomes including perceived stress and self-esteem (Andretta et al. 2014). Time frequency has been operationalized as how often individuals report thinking about the past, the present, and the future (Mello and Worrell 2015). In a study of American adolescents, Mello, Worrell, and Andretta (2009) reported that only 57% of the participants thought about the past on a daily basis, whereas 85 and 69% of the participants thought about the present and the future on a daily basis, respectively.

Time orientation refers to the relative emphasis individuals place on a particular time period (Cottle 1967; Mello and Worrell 2015). A study with American adolescents revealed that the majority of the participants emphasized the future (65%), whereas only 10 and 7% thought the present and the past were more important than the other time periods (Cottle 1967). In another study of American adolescents (Haldeman 1992), the modal orientation was toward the future (61%), followed by the present (19%), and the past (4%). Yet, a more recent study found that about half (55%) of the sample reported thinking about both the present and the future, followed by a third (29%) who thought about all three time periods (Mello et al. 2013).

Time relation refers to the perceived relationships among the past, present, and future (Cottle 1967; Mello and Worrell 2015). Research has indicated that individuals differ in how much they perceive time periods to be related. For example, an early study with American participants indicated that the majority of participants perceived the three time periods as unrelated (65%), although 26% perceived the past, present, and future were somewhat connected, and 11% who thought that the time periods were interrelated (Cottle 1967). A more recent study of American adolescents indicated that 38% saw the three time periods as interrelated, 33% thought the past was separate from a related present and future, 20% perceived a linear relationship among the three time periods, and only 10% viewed the past, present, and future as unrelated (Mello et al. 2013).

Future time perspective has been defined as the subjective perception of the remaining time left in one's life (Carstensen 2006; Carstensen et al. 1999; Reed and Carstensen 2012) and is a subdomain of time perspective. Individuals are thought to vary in how much life they perceive themselves to have remaining, and, in turn, this perception influences their preferences for emotional goals (Lang and Carstensen 2002). This research has shown that when individuals perceive their futures to be limited, they emphasize goals related to emotional well-being and generativity.

Time Perspective and Risky Behaviors

Time attitudes and time orientation have been associated with engaging in risky behaviors. For example, studies with American adults showed that negative attitudes toward the past were positively associated with novelty seeking and inversely associated with impulse control (Zimbardo and Boyd 1999). Negative attitudes about the past were also associated with alcohol use in a study with Northern Irish adolescents (McKay et al. 2014). Regarding time orientation, an emphasis toward the present was associated with alcohol, substance, and tobacco use in a study of American adults (Keough et al. 1999). However, a singular orientation toward either the present or the future was associated with greater risk-taking behaviors compared to participants who placed equal weight on both the present and future in a study of American adolescents (Mello et al. 2013). This last study also showed that perceiving the three time periods as interrelated was associated with the least amount of risky behaviors compared to participants who perceived time periods as unrelated.

Time perspective has also been associated with psychological variables that may lend themselves to risky behaviors. Positive and negative attitudes towards the past were associated with self-esteem (Zimbardo and Boyd 1999), and positive and negative attitudes toward the past, present, and future were meaningfully associated with hope, perceived life chances, self-esteem, and perceived stress in theoretically expected directions (Worrell and Mello 2009). With regard to time frequency, academic achievement was positively associated with thinking about the past time period (Mello et al. 2009). Results with time orientation indicated that emphasizing more than one time period was associated with higher academic achievement and self-esteem (Mello et al. 2013). Finally, time relation has been associated with self-esteem and academic achievement, with a view of the three time periods as interrelated being reported by those with higher self-esteem (Mello et al. 2013) and academic achievement (Cottle 1969).

International Research on Time Perspective

Time Constructs in Nigeria

Research on time perspective including Nigerian participants is sparse. In a study with male Nigerian undergraduate students, time was associated with anxiety and stress. Specifically, time was perceived in longer intervals for participants with high anxiety than those with low anxiety, whereas participants with high stress perceived time in shorter intervals than those with less stress (Awaritefe et al. 1989). Research with Nigerian late adolescents examined the relationship between satisfaction with one's current (i.e., present) life and purpose in life (i.e., future; Akande and Odewale 1994). Results indicated that participants who expected to pursue graduate studies showed an inverse relationship between present life and purpose, whereas students who did not anticipate attaining more education reported a positive association.

Some research has examined fears among Nigerians, a construct that is conceptually similar to future negative attitudes. For example, Ollendick, Yang, King, Dong, and Akande (1996) investigated the fears of children and adolescents in America, Australia, China, and Nigeria in five areas, including fear of (a) failure and criticism, (b) the unknown, (c) minor injury and small animals, (d) danger and death, and (e) medical concerns. Results showed that Nigerian participants reported a higher level and a greater number of fears than those in America, Australia, and China. Similarly, another study of fears with children and adolescent participants reported a significantly higher level of fear among Nigerian and Kenyan participants than participants in Australia, Britain, China, and the United States (Ingman et al. 1999).

We were able to identify only one study that examined time-related constructs and risky behaviors in Nigeria. Specifically, researchers examined delay of gratification and substance use in a sample of Nigerian college students (Abikoye and Adekoya 2010). Results indicated that participants with higher scores on a measure of delay of gratification also reported lower substance use. These results suggest that the more that college students in Nigeria consider the future, the healthier their behaviors.

Time Constructs in Other Groups

In one study, researchers used the Zimbardo Time Perspective Inventory (ZTPI; Zimbardo and Boyd 1999) and a country-level values framework to examine time perspective differences in 24 nations (Sircova et al. 2015). Cluster analyses showed that participants in Algeria and the United States were clustered into similar groups named moderately fatalistic, future oriented, balanced, and negative, with more Algerians falling into the present oriented group than Americans. However, the ZTPI's present hedonism and future subscales measure behaviors, such as risk-taking and planning, in addition to attitudes toward time, which make it difficult to know which time perspective constructs vary across cultures.

Research on American ethnic groups has yielded several differences across groups. African American adolescents reported higher past negative scores than Latinos, higher present negative scores than European Americans, and higher future negative scores than Asian Americans, European Americans, and Latinos (Andretta et al. 2013). African Americans also reported lower present positive scores than Latinos and European Americans. Asian American adolescents reported lower future positive scores than the other three groups (Andretta et al. 2013). In a more recent study with college students, African American participants with a greater awareness of past adverse experiences to their racial group were more oriented towards the past than their counterparts (Jones and Leitner 2015).

The Present Study

In this research, we sought to make several contributions to the literature on Nigerian young adults and time perspective. Specifically, we aimed to contribute toward the paucity of research on Nigerians by describing the time perspectives of a sample of Nigerian young adults. We examined time attitudes, time orientation, time relation, and time frequency. As time attitudes are treated as latent constructs, we hypothesized that scores on the six time attitude factors would be internally consistent and structurally valid in this context. Second, we hypothesized that, in keeping with research on time attitudes in other contexts, Nigerian participants would report higher positive attitudes and lower negative attitudes toward the three time periods as has been found in Germany, the United Kingdom, and the United States (McKay et al. 2015; Worrell et al. 2013). Although prior research (e.g., Ollendick et al. 1996) reported that Nigerian children and adolescents had greater fears for the future than Americans, Australians, and Chinese, the current study examined both positive and negative attitudes in Nigeria.

Third, we examined variation in time frequency, time orientation, and time relation. As this question was exploratory, we did not make specific hypotheses, but previous research suggests that present–future time orientation and time relation and daily thoughts about the past, present, and future would be modal. Finally, based on past research on the relationship between time perspective and risky behaviors (e.g., Mello et al. 2013), we expected that time attitudes,

time frequency, time orientation, and time relation would be meaningfully associated with risky behaviors.

Method

Participants and Procedures

Participants included 194 Nigerians. The sample was 64% ($n = 124$) female. Participants were aged 16–29 ($M_{age} = 20.38$; $SD_{age} = 2.20$), with the vast majority of the sample (94%, $n = 179$) being over the age of 18. The sample's age range reflects the characteristics of Nigerian college students who agreed to participate in the current study. Other features of the sample include religious variation. Specifically, the following religious affiliations were reported: 68.5% ($n = 133$) Christian, 27.8% ($n = 44$) Islamic or Muslim, and 1 (.005%) Traditionalism.

We ascertained socioeconomic status information about the participants with two open-ended questions that asked participants to report their "father's and mother's occupation." Responses were entered verbatim, coded, and checked for accuracy by trained research assistants. Four categories were generated: 1 (*non-professionals*), 2 (*civil servants*), 3 (*artisans*), and 4 (*professionals*). Categories were created based on past research (e.g., Schneider and Stevenson 1999) and information about Nigeria. Category examples and percentages per maternal and paternal occupation, respectively, were as follows: Non-Professionals ("farmer," 30, 14%), Civil Servants ("military," 25, 22%), Artisans ("designer," 18, 53%), Professionals ("lawyer," 15, 4%). Some participants did not respond (8, 6%) or provided unintelligible responses (3, 1%).

Data were collected from students attending a college in a metropolitan area of Nigeria in the fall of 2010. The questionnaires were distributed to consenting students at the school. The data collection process was completed within two weeks by three trained research assistants. Ethical approval to conduct the study was obtained from the Research Ethics Committee of the University.

Measures

Time Perspective

Time perspective was measured with the Adolescent and Adult Time Inventory (AATI; Mello and Worrell 2007; Mello et al. 2016). The AATI includes time attitudes (TA), time frequency (TF), time relation (TR), and time orientation (TO) sections. The AATI-TA consists of six five-item subscales that assess positive and negative attitudes toward the past, the present, and the future. Sample items and corresponding subscales include the following: "I have very happy memories of my childhood" (past positive, $\alpha = .73$), "I am not satisfied with my past" (past negative, $\alpha = .79$), "I am happy with my current life" (present positive, $\alpha = .75$), "I am not happy with my present life" (present negative, $\alpha = .70$), "I look forward to my future" (future positive, $\alpha = .72$), "Thinking ahead is pointless" (future negative, $\alpha = .61$). Response options range from 1 (*totally disagree*) to 5 (*totally agree*). Psychometric evidence for AATI-TA scores comes from several studies that have shown that it yields structurally valid and reliable scores in samples from New Zealand (Alansari et al. 2013), Germany, and the United States (Worrell et al. 2013). There is also supportive criterion-related validity evidence for AATI-TA scores (Alansari et al. 2013; Worrell and Mello 2009). In the current sample, AATI-TA scores were generally internally consistent (see Table 1), with alpha estimates in the modest to strong range and higher omega estimates (see Table 1).

Time frequency was measured with the AATI-TF that includes three items that asked participants: "How often do you think about…the past…the present…the future?" Response options included 1 (*never*), 2 (*monthly*), 3 (*weekly*), and 4 (*daily*). Prior research has used this scale in studies with adolescents and has shown that it meaningfully predicts academic achievement (Mello et al. 2009).

Time orientation and time relation were each measured with a single item that asks participants to select *one* circle

Table 1 Descriptive statistics for time attiudes scores in a Nigerian young adult sample

Time attitudes	*M*	SD	Skewness	Kurtosis	α	95% CI	ω^a
Past positive	3.70	0.82	−0.511 (.175)	0.270 (.347)	.73	.67, .79	.78
Past negative	2.51	1.02	0.320 (.175)	−0.796 (.347)	.79	.74, .83	.83
Present positive	3.75	0.78	−0.400 (.175)	−0.417 (.347)	.75	.69, .80	.81
Present negative	2.25	0.84	0.627 (.175)	0.033 (.347)	.70	.63, .76	.76
Future positive	4.71	0.44	−2.047 (.175)	5.639 (.347)	.72	.65, .78	.87
Future negative	1.62	0.71	1.472 (.175)	2.257 (.347)	.61	.52, .69	.76

$n = 194$

CI confidence interval

[a]Omega estimates were calculated from factor coefficients found for Model 4 (see Table 3)

configuration from several choices (see Tables 4, 5). Each circle configuration consists of three circles labeled past, present, and future that were presented to participants. For Time Orientation, the following instructions were provided: "Select one figure below that shows how important the past, the present, and the future are to you, with larger circles being more important to you." Seven sets of circle figures were presented that indicated the relative importance of (a) the past, (b) the present, (c) the future, (d) the past and future, (e) the past and present, (f) the present and future, and (g) all three periods, with the final configuration representing a balanced view of the time periods. For time relation, the following instructions were provided: "Select one figure below that shows how you view the relationship among the past, the present, and the future." Four sets of figures were presented that depicted (a) unrelated, (b) present–future related, (c) past–present–future linearly related, and (d) interrelated time periods. Past research has used the time orientation and time relation items to examine associations with risky behaviors in adolescents (Mello et al. 2013).

Risky Behaviors

Risky behaviors were assessed with a 14-item composite measure that included behaviors, such as getting into trouble with the police, smoking in school, shoplifting, and damaging school property ($M = 1.21$, SD = 0.27, $\alpha = 0.72$). This instrument has been used in prior research and has shown meaningful relationships with academic outcomes (Worrell and Hale 2001).

Results

Preliminary Analyses

Unless stated otherwise, analyses were completed using STATA 13.1 StataCorp (2013) statistical software. Descriptive statistics for AATI-TA scores in the sample are presented in Table 1. Using .001, past positive, past negative, and present positive scores were not substantially skewed, and past positive, past negative, present positive, and present negative scores were not substantially kurtotic. Both future subscales had elevated kurtosis, and means for future positive scores were substantially higher than seen in other studies. Table 2 shows the interrelationships among the subscales. As in other studies using the AATI-TA, past scores had stronger relationships with present scores than with future scores, and the direction of the association was typically in keeping with theory. Internal consistency estimates based on Cronbach's alpha (see Table 1) were in the modest to strong range, with future negative having lower estimates than the other subscales. As Cronbach's alpha may be biased with Likert-type scales, omega estimates were also calculated based on factor coefficients and these generally fell at or above the upper end of the 95% confidence intervals for alpha.

To examine the structural validity of AATI-TA scores, we used Mplus Version 8; Muthén and Muthén (1998–2017) statistical software. Weighted least squares robust extraction, which is recommended for ordinal variables were used to estimate several models: a 2-factor *valence* model (i.e., 15 positive and 15 negative items), a 3-factor *temporal* model (i.e., 10 past, present, and future items), and the 6-factor *theoretical* model, corresponding to the six subscales. Model fit was based on a Tucker Lewis index (TLI) and comparative fit index (CFI) > .90 and a root mean square error of approximation (RMSEA) < .05 (Byrne 2006; Marsh et al. 2004). As shown in Table 3, the fit was poor for the valence model and the temporal model. The initial theoretical model had better fit, but all three indices still fell short of acceptable fit.

Modification indices indicated that future negative 4, which had the only coefficient < .40, was loading on four other factors, and four pairs of errors were correlating. A modified model without future negative 4 and with the correlated error with the highest modification value was run. This model had TLI and CFI scores in the acceptable range;

Table 2 Correlations among key study variables

Variables	1	2	3	4	5	6	7
1. Past positive							
2. Past negative	−.38*						
3. Present positive	.43*	−.07					
4. Present negative	−.27*	.35*	−.44*				
5. Future positive	.16	.03	.12	−.12			
6. Future negative	.06	.22	.11	.33*	−.21		
7. Risky behavior	−.26*	.00	−.29*	.27*	−.03	−.14	
8. Age	−.11	−.03	.00	.06	−.18	.05	.00

$n = 194$

*$p < 0.001$

Table 3 Fit indices for AATI-TA scores in Nigeria derived from confirmatory factor analyses (WLSMV)

Model	χ^2	df	χ^2/df	TLI	CFI	RMSEA	(90% CI)
1. 2-Factor (valence)	1202.29*	404	2.98	.648	.673	.101	.094, .108
2. 3-Factor (time periods)	987.25*	402	2.46	.740	.760	.087	.080, .093
3. 6-Factor (subscales)	646.20*	390	1.66	.883	.895	.058	.050, .066
4. 6-Factor modified[a]	567.45*	361	1.57	.904	.914	.054	.046, .063

$n = 194$

AATI-TA Adolescent and Adult Time Inventory Time Attitudes Scale; *WLSMV* weighted least squares robust; *TLI* Tucker Lewis Index; *CFI* Comparative Fit Index; *WRMR* weighted root mean square residual; *RMSEA* root mean square error of approximation; *CI* confidence interval

*$p < 0.001$

[a]With 29 items (one future negative item removed) and one correlated error between two past positive items

the lower end of the RMSEA confidence interval also fell within the acceptable range. We accepted this model based on 29-items. Factor coefficients were generally strong for all subscales: past positive (.55–.76), past negative (.65–.76), present positive (.58–.78), present negative (.51–.68), future positive (.51–.93), and future negative (.57–.75). R^2 values ranged from .26 to .86, with only three of these values below .30.

Correlational analyses indicated that age was not meaningfully associated with time attitude scores (see Table 2). Time frequency (past, present, or future) was not associated with age ($p = 0.23$, 0.50, 0.64, respectively), nor were time orientation ($p = 0.10$) and time relation ($p = 0.54$). A series of *t* tests revealed that the six time attitude scores did not differ by gender (critical alpha = .008), and gender was also not associated with time frequency (i.e., past, $p = 0.12$; present, $p = 0.96$; future, $p = 0.17$), time orientation ($p = 0.05$) or time relation ($p = 0.92$).

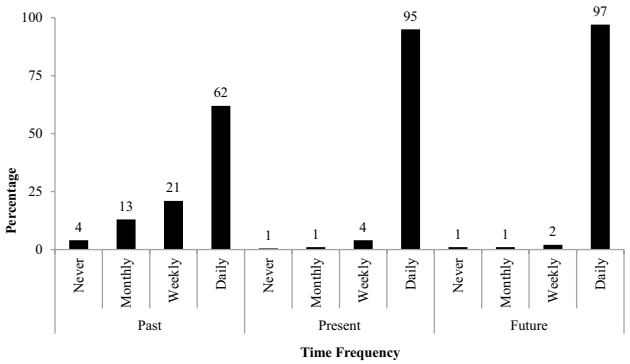


Fig. 1 Time frequency percentages among Nigerian young adults

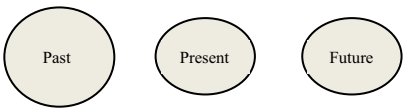
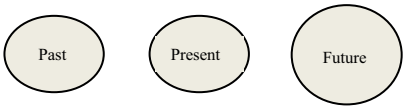
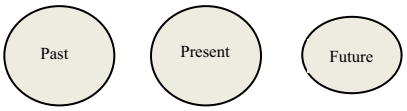
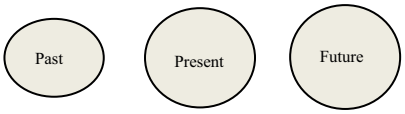
Primary Analyses

Nigerian participants reported time attitudes that were more positive than negative (see Table 1). Scores for past, present, and future positive subscales were all above the mid-point, with future positive the highest (i.e., 4.68). In contrast, past, present, and future negative scores were all below the mid-point, with future negative the lowest (i.e., 1.62). As all of the time attitude scores including future negative and future positive have been normally distributed in other samples (e.g., Alansari et al. 2013; Worrell et al. 2013), interpretations based on Future attitudes in this study should be interpreted with caution. Time frequency scores indicated that the present and the future were thought about more on a "daily" basis (95 and 97%, respectively) compared to the past where 62% thought about the time period on a "daily" basis (see Fig. 1).

Time orientation scores showed that almost half the sample emphasized the present–future (42%), followed by the future only (21%), the balanced perspective (20%), and the past–future (10%), the past and present (3%), and past–present options (2%; see Table 4). With regard to time relation, the linear and present–future relationships were both chosen by about a third of the sample (35 and 34%, respectively); interrelated was chosen by about a quarter of the participants (23%), and unrelated was chosen by the smallest number (9%, see Table 5). Note that the values included in Tables 4 and 5 indicate the number and percentage of participants who selected a particular response option among the available response options.

We investigated the relationship between time perspective and risky behaviors with several analyses. Results indicated that three time attitudes were significantly associated with risky behaviors (see Table 2). Past positive ($r = -0.26$, $p < 0.05$) and present positive ($r = -0.29$, $p < 0.05$) scores were inversely associated with risky behavior, whereas present negative was positively associated ($r = 0.27$, $p < 0.05$), and these associations were medium in effect size (Cohen 1992). Past negative and future negative scores were not associated with risky behaviors. Regarding time frequency, past ($r = 0.15$), present ($r = 0.03$), and future ($r = -0.12$) time frequency scores were not associated with risky behaviors

Table 4 Time orientation among Nigerian young adults

Time Orientation			
#	*Label*	*Circle Configuration*	*n (%)*
1	Past		5 (3%)
2	Present		5 (3%)
3	Future		40 (21%)
4	Past-Future		19 (10%)
5	Past-Present		3 (2%)
6	Present-Future		79 (42%)
7	Balanced		37 (20%)

Circle configuration names are shown for clarity and are not included on actual instrument. Percentages rounded

($p > 0.017$). Given that four of the seven time orientation groups and one of the time relation groups had fewer than 20 participants, there was insufficient power to examine the association between these constructs and risky behaviors.

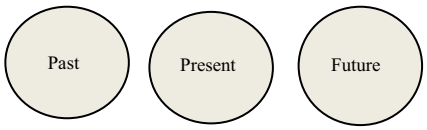
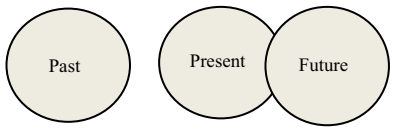
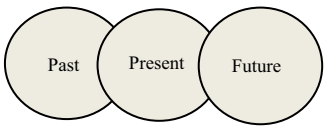
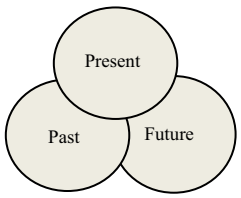
Discussion

In this study, we aimed to broaden our knowledge of time perspective in young people outside the United States (Arnett 2008) and from Nigeria, specifically (Nsamenang and Dawes 1998; Oladipo 2009). We also sought to improve our understanding of time perspective and its relationship to risky behaviors. Before doing so, we examined the structural validity and reliability of scores on the AATI-TA (Mello and Worrell 2007) in this sample.

Time Perspective Measurement Among Nigerian Young Adults

One goal of this research was to report on AATI-TA (Mello and Worrell 2007) scores in a Nigerian sample. Results indicated that the theorized six-factor structure fits the data better than alternate models. Although fit indices and internal consistency estimates were not as high as those reported in American and German samples (Worrell et al. 2013), the majority of indices were acceptable. These findings are consistent with prior research that has included adolescent participants from Germany (Worrell et al. 2013), New Zealand (Alansari et al. 2013), and Northern Island and Scotland (McKay et al. 2015). These results also complement recent research showing that the AATI-TA yields structurally valid and reliable scores in young adult, middle adult, and older adult samples (Mello et al. 2016). Combined, this study and prior research show

Table 5 Time relation among Nigerian young adults

Time Relation			
#	*Label*	*Circle Configuration*	*n (%)*
1	Unrelated		16 (9%)
2	Present-Future		63 (34%)
3	Linear		65 (35%)
4	Interrelated		42 (23%)

Circle configuration names are shown for clarity and are not included on actual instrument. Percentages rounded

that the instrument may be used effectively in several nations and with different age groups.

Time Perspective Among Nigerian Young Adults

Findings indicated that Nigerians thought more positively than negatively about the time periods, and this was especially evident with the future. Almost all of the Nigerian participants reported thinking about the future and the present on a daily basis, whereas about half thought about the past this frequently. The overall pattern of time attitudes was consistent with prior research with adolescents in America and Germany (Worrell et al. 2013) and Northern Ireland and Scotland (McKay et al. 2015). This finding complements other cross-cultural research that has shown mostly similarities between America and Algeria with other measures of time perspective that include attitudes (Sircova et al. 2015). Given the sparse cross-cultural research available on this topic, it will be important to replicate and extend these results. Research that includes various measures of time perspective and conceptualizations of culture will be especially useful in elucidating these relationships.

Nigerians also indicated that they thought about the present and particularly the future quite frequently. Specifically, most Nigerians reported that they thought about the future every day. The frequency of thoughts about the future among Nigerians was higher than reported in past research with American adolescents (Mello et al. 2009), where only about two-thirds of the participants reporting thinking about the future on a daily basis. This finding underscores the notion that individuals may focus *more* on the future when the opportunity structure has constraints, as a means of resilience and coping (Seginer 2008; Wyman et al. 1993). Indeed, other studies have shown that a desire to improve one's way of life, or a positive attitude toward the future, was a major motivator for adolescents who wanted to move from their village to the city in research with rural and urban Nigerian participants (Adesiji et al. 2009).

With regard to time orientation, Nigerians varied in their emphasis toward a particular time period. Almost half of

the participants chose present–future, with the rest choosing among the other six options. These proportions parallel those reported by Mello et al. (2013) with an American adolescent sample. However, past research has shown a higher percentage of participants focusing solely on the future (Cottle 1967; Haldeman 1992). Nonetheless, these findings raise questions about the claim that an equal emphasis on the past, the present, and the future (i.e., "balanced") is the ideal orientation toward time (Sircova et al. 2015; Zimbardo and Boyd 1999), given that a substantial portion of the sample did not choose this *ideal* orientation. Additional research on time orientation and outcomes is needed.

When asked about the relationships among time periods, Nigerians were more likely to view the present and future as related to one another, either separate from the past or in a linear relationship, and less likely to all view time periods as interrelated compared to Americans. This finding also differs from early research using a projective test with American participants that showed a higher percentage of participants perceived time periods to be unrelated (Cottle 1967). This discrepancy may be due to differences in the instruments employed. Collectively, the results of the current study indicate that the majority of Nigerian participants focus more on the present and the future and less on the past. This finding was evident across time frequency, time orientation, and time relation scores.

Time Perspective and Risky Behaviors Among Nigerian Young Adults

Findings indicated that positive and negative attitudes toward the present were meaningfully associated with risky behaviors in theoretically hypothesized directions. This result complements a prior study that included Nigerian college students, in which delay of gratification was inversely related to substance use (Abikoye and Adekoya 2010). Relatedly, prior studies have also shown positive relationships between negative attitudes toward the past and risky behaviors (McKay et al. 2014; Zimbardo and Boyd 1999).

However, contrary to expectations, time frequency was not meaningfully associated with risky behaviors. One explanation for the absence of observed relationships is that relatively few risky behaviors were reported by the Nigerian sample. Specifically, the Nigerian sample reported an average risky behavior of only 1.20 (SD = .27), whereas Mello et al. (2013) indicated that in an American sample the average risky behavior was 1.71 (SD = 0.59), a substantial difference ($d_{corr} = 1.1$). The low mean and variability of risky behaviors sets a ceiling on the size of the relationships with other variables. It may be that these relationships would be observed in studies with groups that engage in more risky behaviors. Cell sizes precluded examining the association of risky behaviors to time orientation or time relation.

Time Perspective Theory

This study contributes to theoretical discussions about the conceptualization of time perspective and its implications for predicting health behaviors (Mello and Worrell 2015; Zimbardo and Boyd 1999). Researchers have conceptualized time perspective in multiple ways. Cottle (1967) focused on the orientation individuals have toward the past, present, and future. In contrast, Zimbardo and Boyd (1999) have argued for an operationalization of time perspective that includes orientations, attitudes, and behaviors toward the time periods. Seginer (2008) has emphasized how the perceived opportunity structure influences future orientation in adolescents. Carstensen et al. (1999) have argued that people differ in the perceptions they have about the time remaining in one's life. More recently, Mello and Worrell (2015) have presented a multidimensional model of time perspective that parses the construct into distinct dimensions, including emotional (i.e., time attitudes) and cognitive aspects of time perspective (orientation, relation, and frequency).

Findings from the current study highlight the value in conceptualizing time perspective as a multidimensional construct that includes cognitive and emotional aspects. Results indicated that different dimensions of time perspective were associated with different outcomes. For example, risky behaviors were associated with feelings about time, but not with cognitive element of time frequency. An important direction of additional research will be to consider how time perspective dimensions *intersect* in predicting health behaviors. Some evidence already suggests that positive and negative feelings about time periods collectively are associated with psychological health (Andretta et al. 2014). Future studies are needed that examine how the multiple dimensions of time perspective including emotional and cognitive components combine to predict health.

Another fruitful area of research will be to consider how time perspective changes across the life-span. Existing research tends to focus on a single age period. For example, this study focused on young adults, whereas past research has examined adolescents (e.g., Mello and Worrell 2015), college students (Zimbardo and Boyd 1999), and older adults (e.g., Carstensen 2006). It would be useful for future studies to investigate age-related changes in time perspective across developmental periods.

Limitations and Conclusion

This study had several limitations that include sample characteristics. The Nigerian participants included in this study were a convenience sample of college students, which indicates a certain amount of privilege in Nigerian society, perhaps reflected in the very high future positive scores.

Additional research is needed that includes a more representative sample of the Nigerian population, including primary school-aged adolescents and Nigerians in the workforce to increase generalizability of these findings. The sample was also relatively small and was not balanced regarding gender; there were 64% female participants. The age range of the sample was also restricted so the associations among age and time perspective dimensions may be attenuated. It will be important for additional research to replicate these findings with more diverse samples in terms of age and socioeconomic status.

In conclusion, we reported how a sample of Nigerian young adults think and feel about the past, the present, and the future. We described how Nigerian young adults are oriented toward and how they feel about each time period. We examined relationships among time perspective and risky behaviors, providing evidence for associations between positive and negative time attitudes. The AATI-TA (Mello and Worrell 2007) was employed for the first time with Nigerians and we demonstrated that it yielded reliable and valid scores in this sample. This research also has implications for school counselors. Nigerian college students have expressed an interest in developing their abilities with time management (Aluede et al. 2006). School counselors could use the AATI as a tool for identifying individuals who are more likely to engage in risky behaviors. Given the pattern observed in this study, counselors could focus on the negative feelings that individuals report having for the present, which may have implications for engaging in risky behavior that adversely influence academic pursuits.

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