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Mello, Zena R.; Worrel, Frank C.; Andretta, James R.

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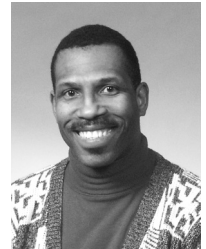
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Variation in How Frequently Adolescents Think about the Past, the Present, and the Future in Relation to Academic Achievement

Zena R. Mello, Frank C. Worrell, James R. Andretta



Zena R. Mello



Frank C. Worrell



James R. Andretta

Abstract

In an effort to contribute information on the relationship between time perspective and academic outcomes, we examined the frequency with which adolescents' reported thinking about the past, the present, and the future in relation to self-reported grade point average. Analyses of questions that assessed how often (i.e., never, monthly, weekly, and daily) adolescents thought about the past, the present, and the future yielded several findings: (a) about half of the adolescents' reported thinking about each time period on a daily basis, (b) patterns of responses indicated that daily and weekly occurrences were the most common rate of thinking between time periods, and (c) the frequency with which adolescents' reported thinking about the past predicted academic achievement, with more frequent thoughts about the past associated with higher academic achievement. Results are discussed in light of additional areas for research on time perspective.

Key words: time frequency, time perspective, adolescents, academic achievement.

Time perspective refers to how individuals think and feel about the past, the present, and the future (Cottle 1967a; Lewin 1935, 1942; Mello 2009) and has been discussed as a potentially important factor in fostering academic outcomes (Phalet/Andriessen/Lens 2004). Research with college students has shown that an orientation towards the future positively predicts hours spent studying (Zimbardo/Boyd 1999), whereas an orientation toward the present has been related to risky behavior (Zimbardo/Keough/Boyd 1997). Research with adolescents has also indicated a positive association with academic outcomes (Nurmi 1991), although the majority of this research has focused on the future time period. Further, the *frequency* with which individuals consider each time period has received little attention, even though scholars have described this dimension in early conceptualizations of time perspective (i.e., Lewin 1942). Thus, in this study, we sought to extend our understanding of time perspective and its association with academic outcomes in adolescents by utilizing a new instrument developed to assess time perspective in adolescence (i.e., Adolescent Time Perspective Inventory [ATPI], Mello/Worrell 2007) and by examining the frequen-

cy with which adolescents' reported thinking about the past, the present, and the future in relation to academic achievement.

Time Perspective

Time perspective is a multidimensional cognitive-motivational construct

Time perspective has been described as a multidimensional cognitive-motivational construct with specific salience in the developmental period of adolescence (Mello 2009). Early on, *Lewin* (cf. 1935, 1942) posited that time perspective could predict human behavior through its influence on motivation and stated that time perspective comprised multiple dimensions including orientation and scope. Orientation refers to an emphasis on the past, the present, and the future, and scope to the distance one thinks into the future, such as days, weeks, or months. *Cottle* (cf. 1967a) developed the Circles Test, a projective instrument that involves drawn circle configurations with relative size indicating orientation, to assess individual variation in orientation toward the past, the present, and the future. In a study of adults, *Cottle* (cf. 1967a) showed that variation in configurations indicated that the past was the least important reported time period, followed by the present and the future. In another study employing the Circles Test (*Cottle* 1967a), with adolescents, *Cottle* (cf. 1967b) showed that younger participants generally drew circle configurations indicating a larger present than their older counterparts, with age groups comprised of those under and over age fifteen and ranging from twelve to eighteen.

Time frequency is conceptually-related to *Lewin's* ideas of scope

Time frequency refers to how often individuals think about the past, the present, and the future, and is conceptually-related to *Lewin's* (cf. 1942) ideas of scope. Limited related extant research provides support for the examination of this topic. In previous studies, researchers have examined scope as the distance, sometimes referred to as the extension, individuals project into the future with an incorporation of days, months, and years (*Nuttin* 1985). Extension is typically measured by asking participants to report future goals and the age at which they will attain these goals (*Greene* 1990; *Nuttin* 1985). Research has shown that extension is associated with developmental tasks in major domains, such as graduating high school, attending college, and getting married (*Nurmi* 1991), with greater extension reported by younger adolescents compared to older adolescents (*Lessing* 1972; *Nurmi* 1991). Research on extension indicates its importance with adolescents, although research has been limited to the future time period.

Adolescence is a particularly relevant developmental period to investigate time perspective. According to some researchers, age-related variation in time perspective dimensions may be observed from childhood into adolescence and beyond. *Lewin* (cf. 1942) posited that a shift in scope occurs between childhood and adolescence that involves an increase in thinking about the future from days and weeks to months and years. Developmental perspectives also provide support for the examination of time perspective in adolescence. *Piaget* (cf. 1955) considered the understanding of time to be indicative of intellectual capacity, and *Erikson's* (cf. 1968) seminal work on identity formation pointed to the inte-

gration of the past, the present, and the future selves in the process of forming an identity during adolescence.

Time Perspective and Academic Achievement

Researchers studying the relationship of academic achievement to time perspective have reported mixed findings with some research showing a relationship with the future (Cottle 1967a) and other research indicating an association with the present (Mello/Worrell 2006). Even still, researchers focusing exclusively on the future time period have consistently shown a positive association with academic outcomes (Nurmi 1991). Discrepancies in such research may be due to variation in the inclusion of the multiple time periods and the instruments employed. Some research has included all three time periods (i.e., past, present, and future; Cottle 1967a), whereas other research has focused on two time periods (Adelabu 2008), and, even still, other research has included a single time period such as the future (Nurmi 1991). Instruments used to assess time perspective have also varied with studies including self-reported surveys with multiple items (Zimbardo/Boyd 1999) or drawn circle configurations (Cottle 1967a).

Research assessing multiple time periods has indicated that variation in the future positively predicts academic achievement. Teahan (cf. 1957) examined the number of past, present, or future references adolescent males gave in describing the past two weeks. Results indicated that academic achievement was positively associated with references to the future. In a study utilizing Cottle's Circles Test (Cottle 1967a), adolescents who drew circle configurations indicating an emphasis on the future had a higher grade point average than their counterparts with circle configurations emphasizing the past or the present (Haldeman 1992). Zimbardo/Boyd (cf. 1999) employed the Zimbardo Time Perspective Inventory (ZTPI; Zimbardo/Boyd 1999), an instrument comprising five subscales (past positive, past negative, present hedonism, present fatalism, and future), in a study of college students. Findings indicated that the future subscale was positively related to self-reported hours studying per week and grade point average.

More recently, Mello/Worrell (cf. 2006) examined the relationship between time orientation and academic achievement in a study that employed the ZTPI with academically talented adolescents. Results indicated that academic achievement was negatively associated with present fatalistic and positively associated with the future subscale. In another study of adolescents, Adelabu (cf. 2008) included only the present and future subscales of the ZTPI. Results indicated that scores on the future subscale were positively associated with academic achievement. Such research provides support for the continued examination of the relationship between time perspective and academic achievement in adolescents.

Researchers focusing exclusively on the future time period have shown positive associations with various academic outcomes such as academic achievement and educational attainment (Nurmi 1991). In a review of research on time

perspective, *Nurmi* concluded that future orientation is generally positively associated with academic outcomes in adolescents. In a study of college students, future orientation was positively associated with grade point average and with the number of hours devoted to studying per week (*Shell/Husman* 2001). Similarly, in a study of adolescents, *Honora* (cf. 2002) reported that academic achievement was positively associated with a longer extension into the future. Thus, adolescents who had higher academic achievement also reported older ages at which future events would occur.

Time Perspective Measurement

Researchers have employed various instruments to assess dimensions of time perspective, including projective tests that involve drawn circle configurations (*Cottle* 1967a), surveys using Likert scales (*Zimbardo/Boyd* 1999), and story completion tasks (*Teahan* 1957). Our knowledge of time perspective in the developmental period of adolescence has been challenged due to the absence of an instrument that assesses multiple dimensions of time perspective and is age-appropriate for adolescents. In this study, we use a new instrument (i.e., ATPI; *Mello/Worrell* 2007), designed to assess multiple dimensions of time perspective such as time frequency in adolescent populations.

A new instrument to
assess multiple
dimensions of time
perspective

The Present Study

In this study, we sought to contribute to the literature on time perspective by addressing the following research questions. First, how often do adolescents report thinking about the past, the present, and the future? Given that the preponderance of research has focused on the future time period, we did not set specific hypotheses. Second, do adolescents report thinking about the past, present, and future time periods with a similar frequency? Drawing from early discussions of time perspective (*Lewin* 1935), we anticipated that adolescents would report similar frequencies across time periods. Third, how does the frequency of adolescents' thoughts toward the past, the present, and the future relate to academic achievement? Based on research focusing on the present and the future time periods in college students (*Zimbardo/Boyd* 1999), we anticipated that frequency of thoughts toward the present and the future would predict academic achievement negatively and positively, respectively.

Method

Procedure

Data were collected from several sources in the United States including public high schools in Western and Mountain States ($n = 161$, 61 percent) and a summer program for academically talented adolescents at a major university in a Western state ($n = 102$, 39 percent). Students were invited to participate in the study and were provided with a description of the study and consent materials. Those who returned the necessary forms and completed the study survey constituted the convenient sample.

Participants

The sample for the current study included 301 adolescents aged 12 to 19 ($M = 16.07$, $SD = 1.25$; 60 percent male) in grades six through twelve. The following racial/ethnic groups were self-reported: African American ($n = 33$, 11 percent), American Indian ($n = 3$, 1 percent), Asian American ($n = 76$, 25 percent), European American ($n = 123$, 48 percent), and Hispanic ($n = 31$, 10 percent), with an additional group indicating membership multiple groups ($n = 34$, 11 percent) and one case with a missing value.

Measures

The frequency with which adolescents think about the past, the present, and the future was assessed with the Time Frequency component of the Adolescent Time Perspective Inventory (ATPI-TF; *Mello/Worrell 2007*). This section includes a single question per time period that asks adolescents to report on the following: "How often do you think about...the past, the present, and the future, respectively." Response options included one (*never*), two (*monthly*), three (*weekly*), and four (*daily*). Academic achievement was ascertained by participants' self-reported grade point average ($M = 3.36$, $SD = 0.65$).

Results

Analytic Strategy

Several statistical techniques were used to address the research questions of the current study. The Spearman's rho statistic (ρ) was used to examine the overall association of frequency of thoughts toward the past, the present, and the future. The chi-square statistic was used to examine the overlap in how frequently (i.e., never, monthly, weekly, or daily) participants reported thinking about each time period. Last, analysis of variance (ANOVA) was used to examine the associati-

on between the frequency with which adolescents reported thinking about the past, the present, and the future and academic achievement.

Preliminary Analyses

Examination of missing data indicated that all participants responded to the three time frequency questions. However, 10 percent ($n = 29$) of the sample did not provide academic achievement information.

Primary Analyses

How often do adolescents' report thinking about the past, the present, and the future? Adolescents varied in how much they reported thinking about the past, the present, and the future. More than half (57 percent) thought about the past on a daily basis and another quarter (28 percent) on a weekly basis. More variation in responses was observed with the past time period compared to the present and the future. In contrast, the overwhelming majority (85 percent) thought about the present on a daily basis, followed by a weekly basis. With regards to the future, a majority (69 percent) thought about it on a daily basis, followed by weekly, monthly, or never. Figure 1 shows the distribution of participants across response options and time periods. As can be seen, over 50 percent of the participants reported thinking about the past, the present, or the future on a daily basis.

Do adolescents report a similar frequency of thinking across time periods? Analyses indicated an association between how much adolescents reported thinking about the past and the future ($p = .21, p < .001$), with 46 percent ($n = 137$) reporting thinking about both time periods on a daily basis and 16 percent ($n = 49$) thinking about the past on a weekly basis and the future on a daily basis ($\chi^2(df = 9, 48.34, p < 0.001)$). An association was not observed between the past and the present. However, almost 50 percent (i.e., 49 percent, $n = 146$) reported thinking about both the past and the present on a daily basis, with another 25 percent ($n = 74$) reporting thoughts about the past on a weekly basis and thoughts about the future on a daily basis ($\chi^2(df = 9, 25.06, p < 0.01)$). Almost two-thirds of the sample (i.e., 59 percent, $n = 178$) reported thinking about both the present and the future on a daily basis, followed by 18 percent ($n = 55$) who reported thinking about the present on a daily basis and the future on a weekly basis ($\chi^2(df = 9, 34.60, p < 0.001)$).

How is time frequency related to academic achievement? We examined the frequency with which adolescents reported thinking about the past, the present, and the future in relation to academic achievement. Analysis of variance indicated the frequency adolescents reported thinking about the past predicted their academic achievement $F(3, 268) = 9.10, p < 0.001$. Figure 2 shows that adolescents' who reported thinking about the past on a daily and weekly basis had a higher grade point average ($M = 3.42, SD = 0.62; M = 3.48, SD = 0.64$, respectively) than their counterparts who reported thinking about the past on a

Adolescents varied in how much they considered each time period

Frequency with which adolescents think about the past can predict academic achievement

monthly or never basis ($M = 3.02$, $SD = 0.66$; $M = 2.76$, $SD = 0.56$, respectively). A calculation of Cohen's f indicates that this result had a medium effect size (i.e., $f = 0.30$). Adolescents' academic achievement did not differ by reports of thinking about the present or the future time periods (values not shown).

Discussion

In this study, we sought to contribute to a growing body of literature on the relationship between time perspective and academic achievement in adolescents (Mello 2009; Phalet u.a. 2004) by examining the frequency with which adolescents consider the past, the present, and the future and the relationship between such frequencies and self-reported grade point average. Several findings were observed. First, adolescents varied in how much they considered each time period, with about half reporting thoughts on a daily basis. Second, a diverse pattern of responses across time periods was observed with the most frequent group including those adolescents who thought about two time periods on a daily basis. Third, the frequency with which adolescents reported thinking about the past predicted academic achievement with more frequent thinking predicting higher achievement.

This study showed that many adolescents reported thinking about the past, the present, and the future on a daily basis, followed by a weekly, monthly, and never occurrence. The daily response option emerged as a very prominent unit of time for adolescents to endorse across the past, the present, and the future time periods. Thus, adolescents reported considering all time periods on a frequent basis. This finding is in some contrast to those reported by Cottle (cf. 1967b) that indicated early to mid-adolescents reported more of a present orientation than their late-adolescent counterparts. In the current study, the majority of adolescents reported thinking about all time periods on a frequent (i.e., daily or weekly) basis. The discrepancy may stem from the different measures employed or in the specific historical period of each study.

Results also indicated that adolescents varied in the overlap with which they reported thinking about the past, the present, and the future. The most frequently occurring pattern observed was participants' thinking about the three time periods on a daily basis, although this accounted for only about half the sample. Another smaller group emerged that reported thinking about the time periods on a daily and weekly basis. Thus, adolescents did not report thinking about the time periods with the same frequency. These data suggest to a nuanced pattern with which how frequently individuals think about such time periods.

Importantly, this study showed that variation in how much adolescents' thought about the past predicted academic achievement with more frequent thinking associated with a higher grade point average. This result is provocative given that the preponderance of research has focused on the future time period (e.g., Nurmi 1991) and suggests that meaningful information may be gained by an examination of the past time period. Support for this particular finding comes from prior research examining variation in time periods and stealing. Brock/Giu-

Many adolescents reported thinking about the past, the present, and the future on a daily basis

Importance of the past time period

dice (cf. 1963) showed that the past time period was connected to the likelihood of stealing, in an experimental study. Participants who stole were three times as likely than non-stealers to select the word “yesterday” among a list of words including future-oriented terms such as “tomorrow.”

Findings from this study are consistent with prior qualitative research. (Mello u.a. in press). In this study, diverse adolescents expressed tremendous variation in how they defined the past time period. The following quotes illustrate such variation in the meaning of the past: “The past to me is when I was younger, and like in elementary school (African American female aged 11), When I think about the past, I just think about what I did the day before (Asian American male aged 16), The past to me is what already happened in our history...in general, like mankind” (Latino male aged 16). Combined, the results of this study and emerging research indicate that individual variation in the time perspective is a potentially useful topic of inquiry for our understanding of adolescents.

Individual variation
in time perspective

Academic achievement was not related to frequency of thinking about either the present or the future time periods. This finding is in contrast to research showing that variation in thinking about the future predicts academic outcomes (Haldeman 1992; Honora 2002; Nurmi 1991; Shell/Husman 2001). However, this discrepancy may have emerged due to the variation in the time periods included with many studies focusing exclusively on the future and excluding the present and the past time periods.

Research on time perspective in adolescent populations has been challenged due to the absence of an instrument that systematically assesses multiple dimensions of time perspective and is age-appropriate for adolescents. Extant research has employed instruments designed for college-age samples (i.e., ZTPI; Zimbardo/Boyd 1999) or has focused on the future time period (Nurmi 1991). In this study, we reported on results from a new instrument developed for adolescents that comprises a time frequency dimension of time perspective (i.e. ATPI; Mello/Worrell 2007). It is important that additional research be employed that replicates these findings.

An additional goal of this study was to encourage a broader conceptualization of time perspective than has been completed thus far. Researchers have posited that time perspective is multidimensional construct including an orientation toward a particular time period (Cottle 1967a; Lewin 1935), although most attention has been given to variation in an orientation toward the future (Nurmi 1991). We argue that time frequency is an additional meaningful dimension of time perspective that refers to the rate with which adolescents report thinking about the past, the present, and the future. Results from this study provide compelling evidence that time frequency is a fruitful topic of investigation and warrants further research.

Time frequency is a
meaningful
dimension of time
perspective

Limitations, Future Directions, & Implications

The limitations of this study center on the preliminary nature of the data and issues related to research design. Results are based on analyses with a new instrument. It is important that additional studies be conducted to replicate these findings. Further, test-retest analyses would be useful to determine how stable adolescents' responses are in the frequency with which they report thinking about the past, the present, and the future.

An important direction of additional research involves longitudinal research designs and corresponding analyses. A more complete understanding of the potential reciprocal nature of time perspective and academic achievement is warranted. It is possible that time perspective is informed by the academics achieved by adolescents. Further, it would be useful to incorporate additional academic indicators such as high school completion and the highest level of education obtained in adulthood. In this study, we gave particular attention to adolescents as an age-group given developmental theoretical perspectives (i.e., *Lewin*, 1935; *Piaget* 1955) and implications for intervention. Examining individual variation across the period of adolescence and adulthood marks an important avenue for additional research in this area.

Research on time perspective has implications for fostering academic outcomes in adolescents. One example comes from *Oyserman/Terry/Bybee* (cf. 2002) who designed an intervention program to engage adolescents in thinking about the future and showed positive results with participants reporting more strategies to attain goals and better school attendance than non-participants. More recently, *Phalet* u.a. (cf. 2004) described how researchers and teachers focused on the educational pursuits of racial/ethnic minority adolescents may benefit from considering temporal concepts such as time perspective. In addition to academics, some scholars have connected time perspective to physical activity. *Mahon/Yarcheski* (cf. 1994) reported that adolescents who thought farther into the future also exercised more and had better nutrition than their counterparts who thought less far into the future.

Time perspective has implications for fostering academic outcomes in adolescents

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Figure Captions

Figure 1. How frequently adolescents report thinking about the past, the present, and the future (N = 301).

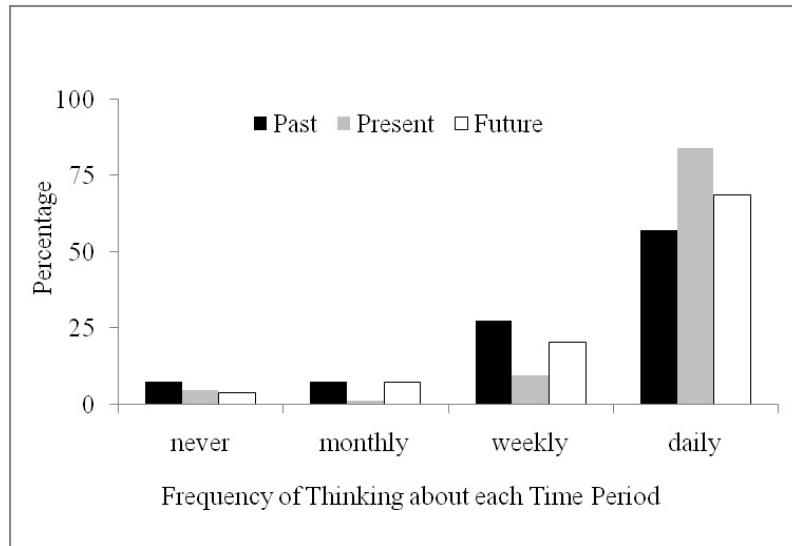


Figure 2. Variation in academic achievement by the frequency of adolescents' thoughts about the past.

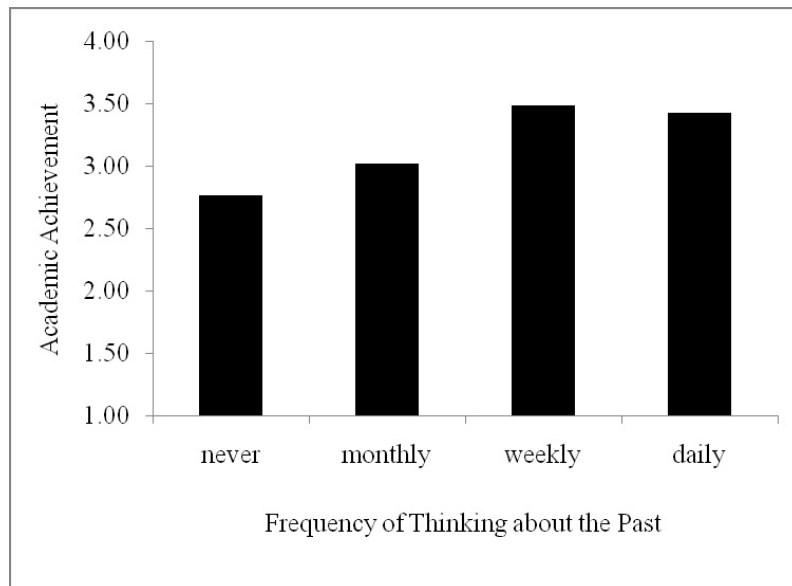


Figure Notes
 Figure 2. ** $p < 0.001$.