DEMOGRAPHIC DIFFERENCES IN ADOLESCENT TIME ATTITUDE PROFILES: A PERSON-ORIENTED ANALYSIS USING MODEL-BASED CLUSTERING

Prow, Worrell, Andretta, and Mello (in press)

Background

- Time perspective is a cognitive and motivational construct that varies across individuals.
  - Optimists, pessimists, living in the present
- Time constructs have been studied in adolescent populations for many years.
- The majority of research to date has focused on time constructs related to the future.

Time Constructs in the Literature

- Future Orientation
- Hope
- Optimism
- Perceived Life Chances
- Possible Selves

Zimbardo Time Perspective Inventory (1999)

- In 1999, Zimbardo and Boyd introduced the ZTPI.
- The ZTPI has five subscales:
  - Past Positive
  - Past Negative
  - Present Hedonistic
  - Present Fatalistic
  - Future
- Important – looking at all three time periods.

ZTPI Concerns

- Not a pure measure of time
  - Past Positive
  - Past Negative
  - Present **Hedonistic**
  - Present **Fatalistic**
  - Future
- Only measures one aspect of time perspective, despite the name.
- Scores do not work well in adolescents.

Worrell & Mello (2007)

Table 4
Fit Indices for the ZPTI Derived From Confirmatory Factor Analyses (Maximum Likelihood Robust)

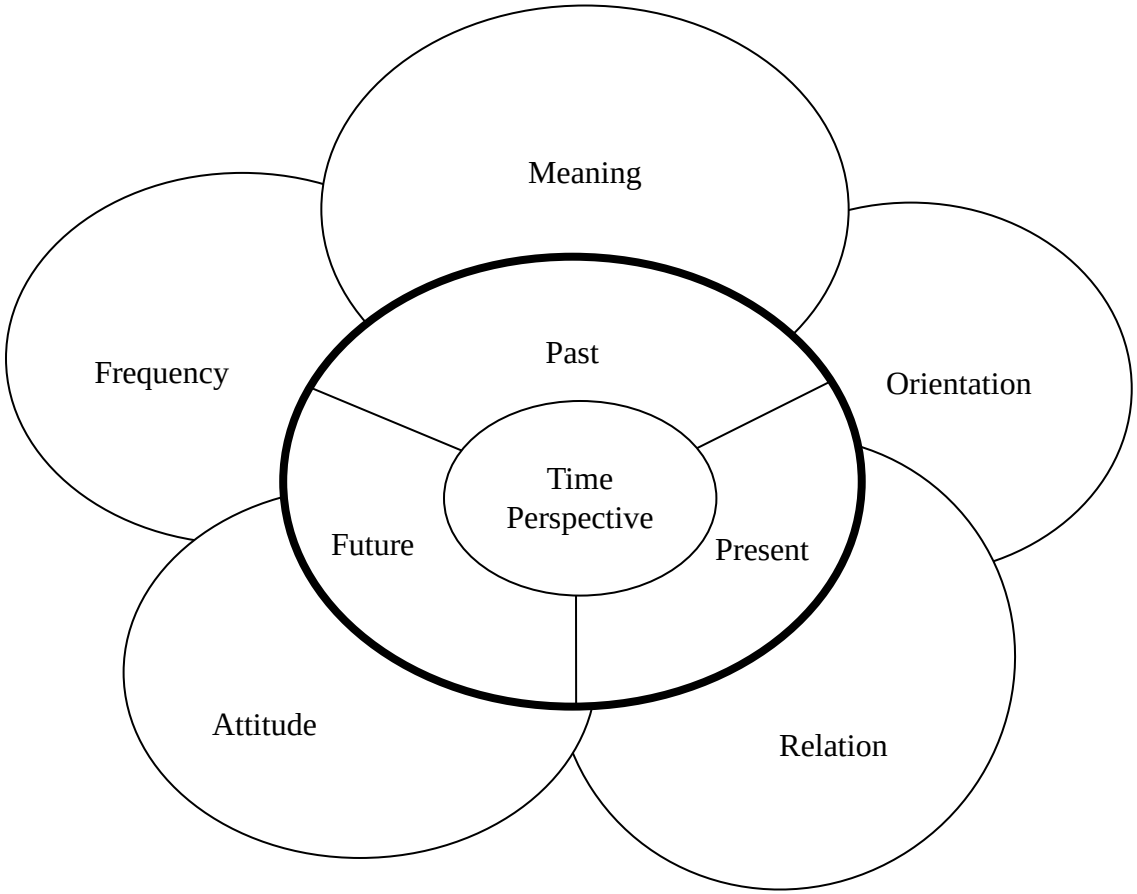
Model	χ^2s-b	*df*	χ^2/df	CFI Robust	SRMR	RMSEA (90% CI)
One-factor	7732.44*	1484	5.21	.319	.078	.076, .079
Three-factor (past, present, future)	5775.55*	1481	3.90	.532	.064	.063, .066
Five-factor (Zimbardo & Boyd)	4819.72*	1474	3.27	.636	.057	.055, .059

Note: $N = 710$. ZPTI = Zimbardo Time Perspective Inventory; s-b = Satorra–Bentler; CFI = comparative fit index; SRMR = standardized root mean square residual; RMSEA = root mean square error of approximation; CI = confidence interval.
*$p < .001$.

MELLO'S MODEL OF TIME PERSPECTIVE

Mello and Worrell (2015)

Mello Model


Meaning
Frequency
Past
Orientation
Time
Perspective
Future
Present
Attitude
Relation

Adolescent Time Inventory (ATI)

1. Time Meaning	**Definition of the past, the present, and the future**
2. Time Orientation	**Emphasis on the past, the present, and the future**
3. Time Relation	**Relationship among the past, the present, and the future**
4. Time Frequency	**Frequency of thoughts about the past, the present, and the future**
5. Time Attitudes	**Positive and negative attitudes toward the past, the present, and the future**

Time Meaning - 3 Questions

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

Time Orientation

Instructions: 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.

Figure 1. O

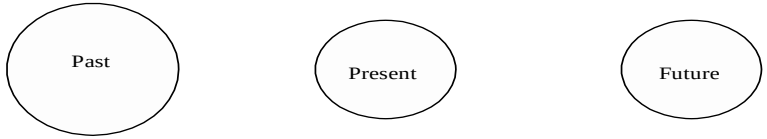


Figure 2. O

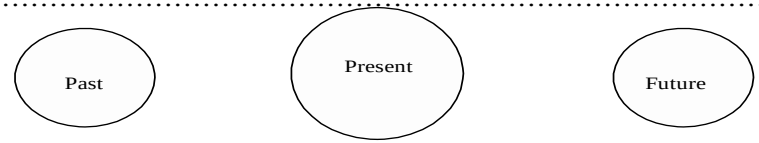


Figure 3. O

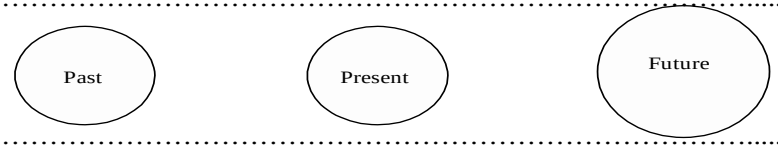


Figure 4. O

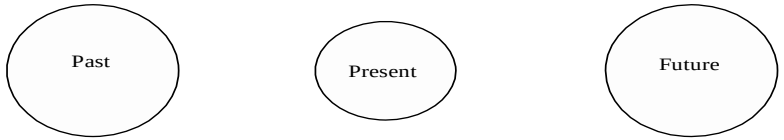


Figure 5. O

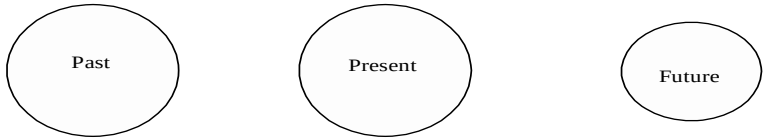


Figure 6. O

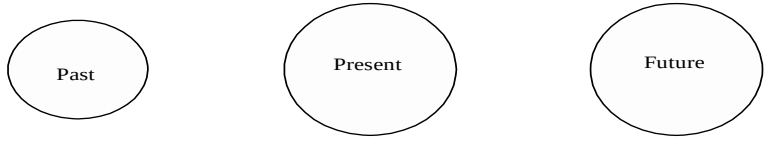
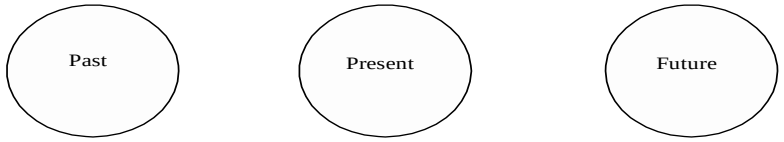


Figure 7. O



Time Relation

Instructions: Select **one** figure below that shows how you view the **relationship** among the past, the present, and the future.

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Figure 1. **O**

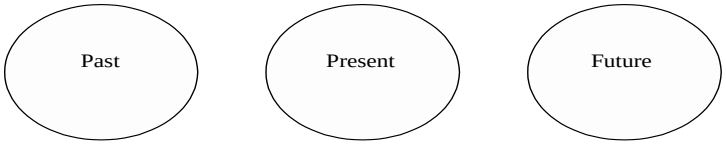

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Figure 2. **O**

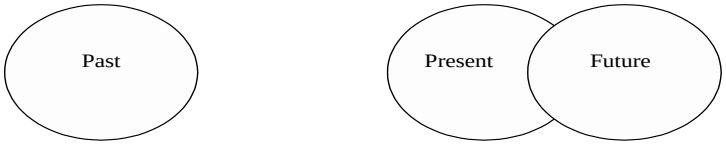

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Figure 3. **O**

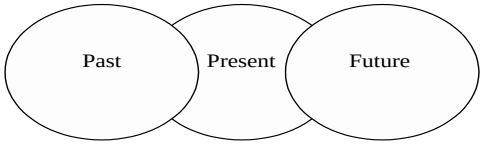

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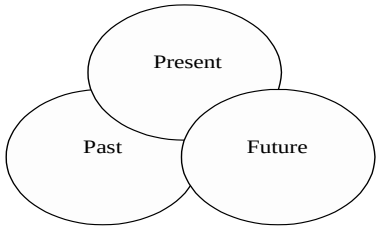
Figure 4. **O**



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Time Frequency – 3 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?
- Responses on a four-point Likert scale
  - Never, monthly, weekly, daily
  - Never, almost never, sometimes, fairly often, often

Time Attitudes

- What are time attitudes?
  - Time attitudes constitute one dimension of time perspective and assess an individual's emotional and evaluative attitudes or feelings towards their past, present, and future.

Time Attitudes on the ATI

- Adolescent Time Inventory-Time Attitudes (ATI-TA)
  - 30-item measure with six 5-item subscales:
  - (a) Past Positive
  - (b) Past Negative
  - (c) Present Positive
  - (d) Present Negative
  - (e) Future Positive
  - (f) Future Negative

Fit Indices for ATI Time Attitudes

Final Model (30 items; 6 subscales)	NNFI > .90	CFI > .90	SRMR < .08	RMSEA < .05	95% C.I.
US 1 (300)	.937	.944	.059	.037	.029, .044
US 2 (749)	.959	.963	.045	.032	.028, .036
Germany (316)	.960	.965	.050	.033	.025, .040
New Zeal (561)	.950	.955	.045	.041	.037, .045
China (267)	.902	.612	.065	.042	.034, .049
Iran (Farsi, 1,200)	.919	.927	.052	.043	.040, .045

Subgroup Reliability Estimates

	African Am *N* = 44	Asian Am *N* = 90	European Am *N* = 280	Latino *N* = 80	Native Am *N* = 125	Other *N* = 55
Past Positive	.87	.85	.89	.83	.86	.84
Past Negative	.84	.80	.82	.81	.79	.80
Present Positive	.72	.81	.83	.82	.75	.85
Present Negative	.85	.87	.82	.82	.82	.85
Future Positive	.88	.92	.90	.88	.91	.89
Future Negative	.73	.79	.80	.79	.80	.61

Adolescence and Time Attitudes

- Why study adolescents' time attitudes?
  - Research conducted on time attitudes and time perspective has included examinations of associations with other variables such as academic success, risk factors, demographic differences, and wellbeing.

Concurrent Validity Correlations

	Hope	Optimism	Perceived Life Chances	Global Self-Esteem	Perceived Stress
Past Positive	.38	.44	.29	.44	-.32
Past Negative	-.39	-.51	-.29	-.51	.45
Present Positive	.59	.58	.34	.58	-.66
Present Negative	-.38	-.62	-.29	-.56	.80
Future Positive	.55	.51	.46	.46	-.39
Future Negative	-.52	-.59	-.51	-.63	.43

What is a time attitude profile?

- Time Attitude Profiles take into account attitudes towards the past, present, and future simultaneously.
  - Researchers use cluster analysis to group participants with similar patterns or profiles of responses on the ATI-TA subscale scores.

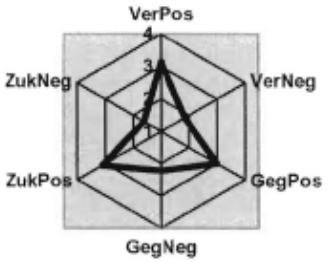
Time Attitude Profiles using the ATI-TA

- Buhl & Linder (2009)
- Andretta, J. R., Worrell, F. C., Mello, Z. R., Dixson, D. D., & Baik, S. H. (2013). *Demographic group differences in adolescents' time attitudes.*
- Andretta, J. R., Worrell, F. C., & Mello, Z. R. (2014). *Predicting educational outcomes and psychological well-being in adolescents using time attitude profiles*
- Alansari, M., Worrell, F. C., Rubie-Davies, C., & Webber, M. (2013). *Adolescent time attitude scale (ATAS) scores and academic outcomes in secondary school females in New Zealand.*

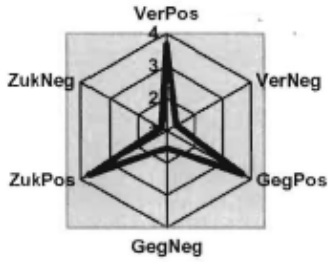
Profiles Gein rmany (Buhl & Lindner (2009)

Abbildung 1: Ausprägungen der 6-Profile-Lösung der Zeitperspektiven

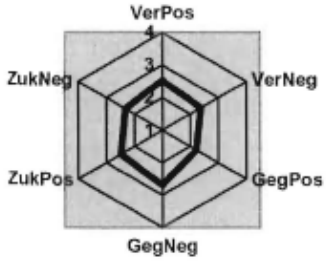
P1 Ausgeglichene 37,3%



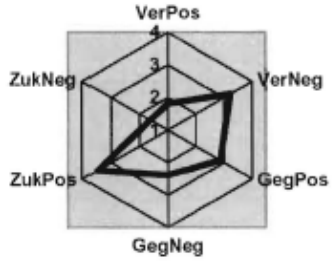
P2 Optimistische 30,4%



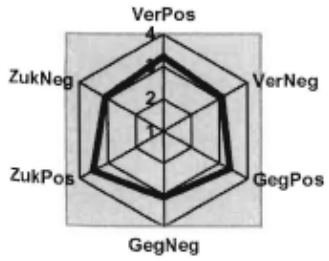
P3 Tendenz. Pessimistische 15,3%



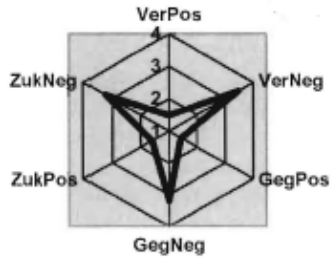
P4 VerPessimist-ZukOptimist 8,6%



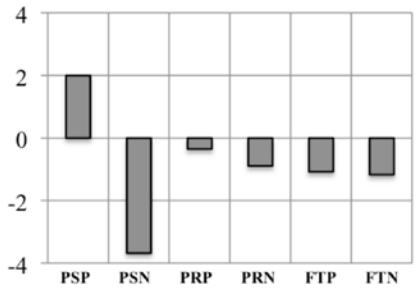
P5 Ambivalente 5,7%



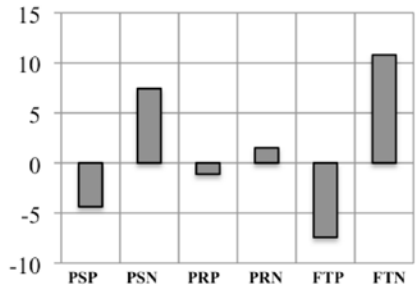
P6 Pessimistische 2,7%



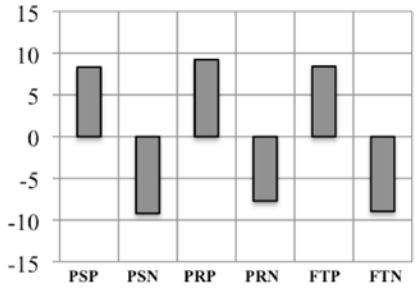
Profiles inUS: Andretta et al. (2013, 2014)



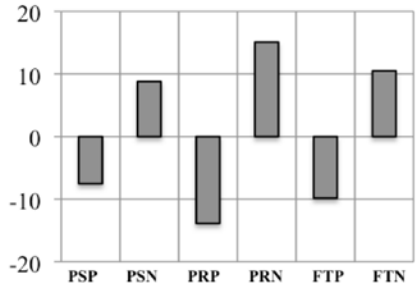
A. Balanced



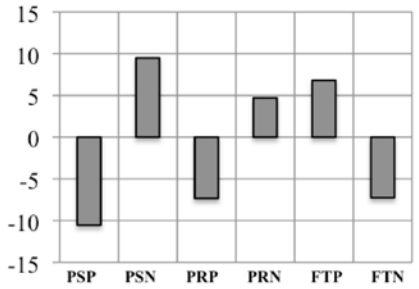
B. Pessimists



C. Positives



D. Negatives



E. Optimists

Buhl & Lindner (2009)

6 Profiles

Balanced, Optimistic, Tangentially Pessimistic, Past Pessimistic/Future Optimistic, Ambivalent, Pessimistic

Andretta et al. (2013, 2014)

5 Profiles

Balanced, Pessimist, Positive, Negative, Optimist

Alansari et al. (2013)

4 Profiles

Negative, Pessimist, Optimist, Balanced

CURRENT STUDY

QUESTION 1:
ARE ATI-TA SCORES INTERNALLY CONSISTENT AND IS THE SIX-FACTOR ATI-TA MODEL SUPPORTED IN THIS SAMPLE ?

QUESTION 2:
DO THE ATI-TA SCORES IN THIS STUDY YIELD ADOLESCENT TIME ATTITUDE PROFILES SIMILAR TO THOSE FOUND IN PREVIOUS STUDIES ?

QUESTION 3:
ARE THERE ANY PRACTICALLY SIGNIFICANT DIFFERENCES IN DEMOGRAPHIC VARIABLES AND GPA AMONG ADOLESCENT TIME ATTITUDE PROFILES?

Method: Participants

- *N* = 1,491 (54% female)
- *Ages 14-19*
- Participants were enrolled here at Berkeley High!
- *Ethnicity:*
  - African American (*n* = 310, 21%)
  - Asian American (*n* = 137, 9%)
  - European American (*n* = 561, 38%)
  - Latin@ (*n* = 287, 20%)
  - Native American (*n* = 9, 0.61%)
  - Multi-Ethnic (*n* = 160, 11%)

Method: Measures

- ATI-TA
- Parental Education Level (SES)
- Ethnicity
- Grade
- Gender
- GPA

Method: Procedure

- Collect all data in survey administered by the teachers at the participants' school
- Identify clusters
  - **Model-based clustering** is " based on probability models in which objects are assumed to follow a finite mixture of probability distributions such that each component distribution represents a cluster" (Oh & Raftery, 2007, p. 560).

Results: Question 1

Does the data collected work with our theoretical model?

- The data was found to fit with the 6-factor theoretical model.

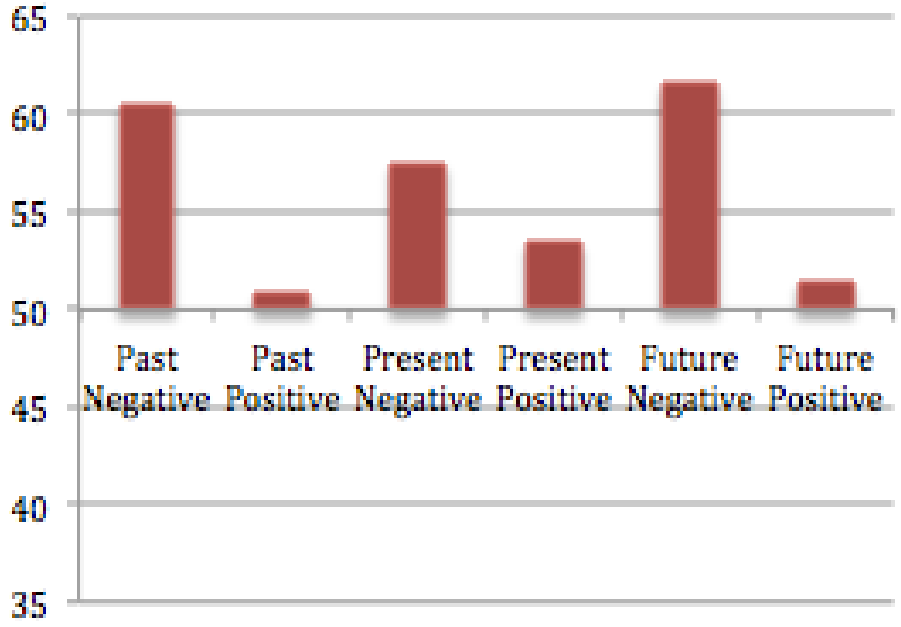
This finding allowed us to proceed with further analyses.

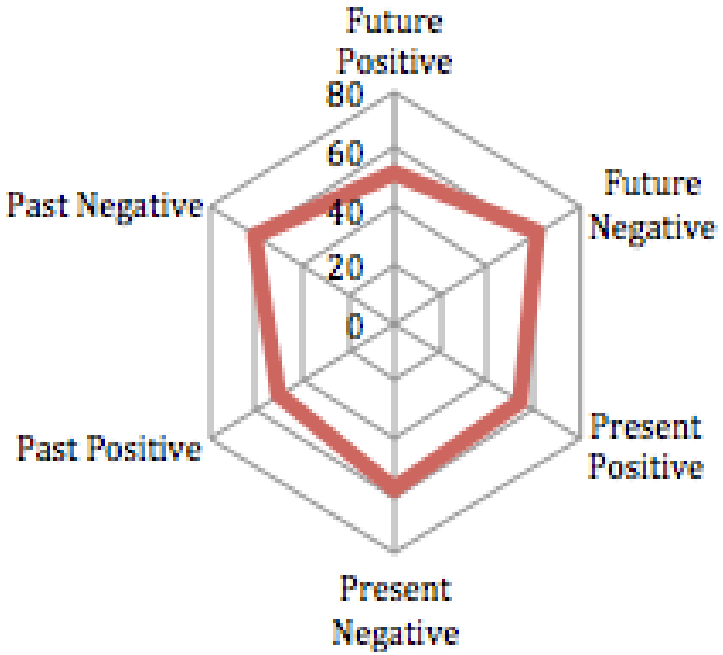
Results: Question 2

Do the ATI-TA scores in this study yield adolescent time attitude profiles similar to those found in previous studies ?

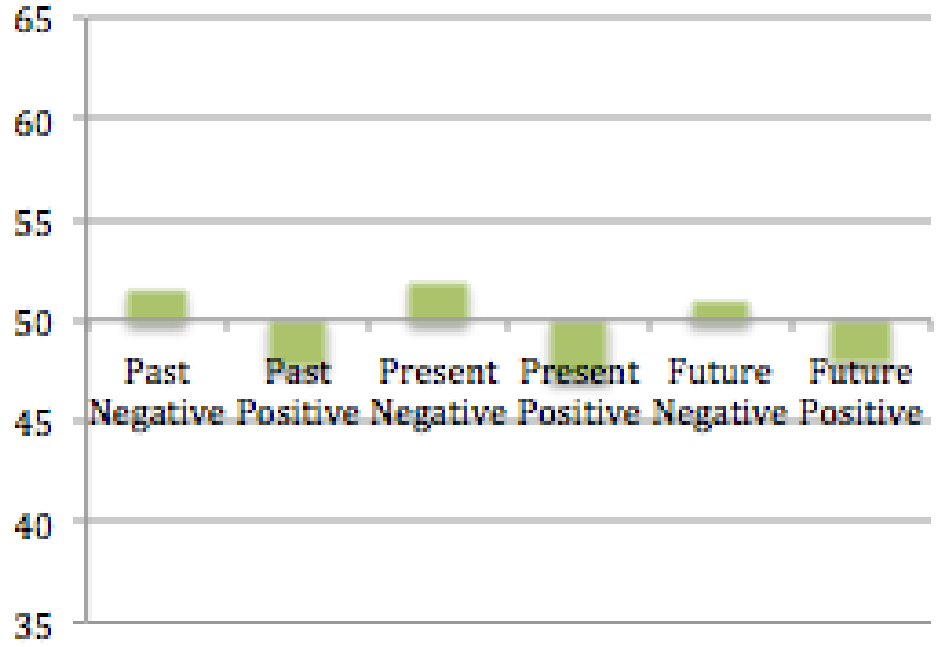
Three Cluster Solution:

1. Cluster 1: Conflicted (*n* = 119; 8%)
2. Cluster 2: Ambivalent (*n* = 1,120; 75%)
3. Cluster 3: Positives (*n* = 252; 17%)

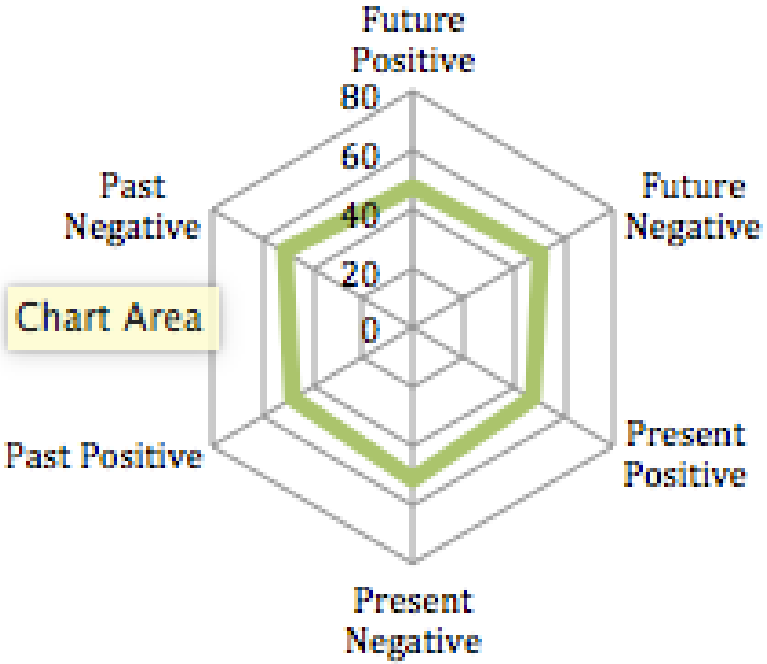


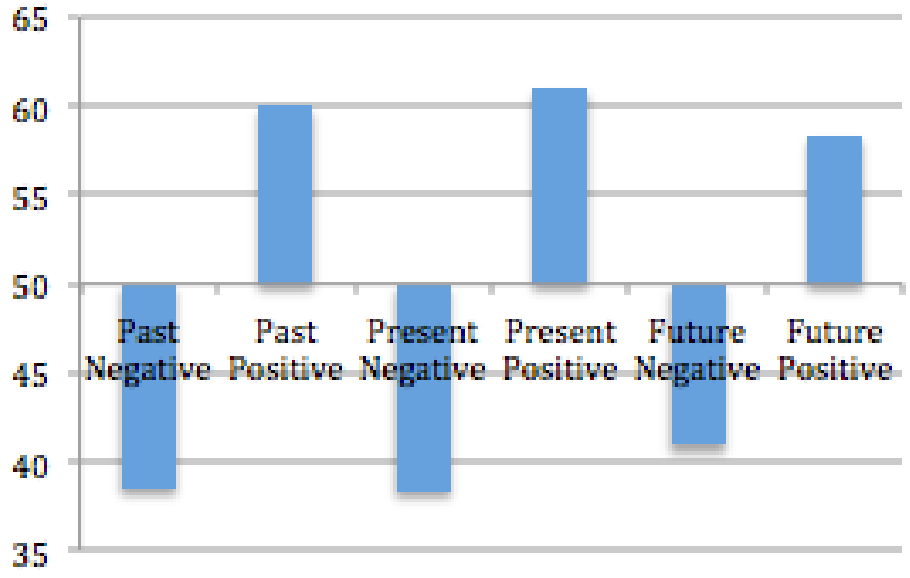


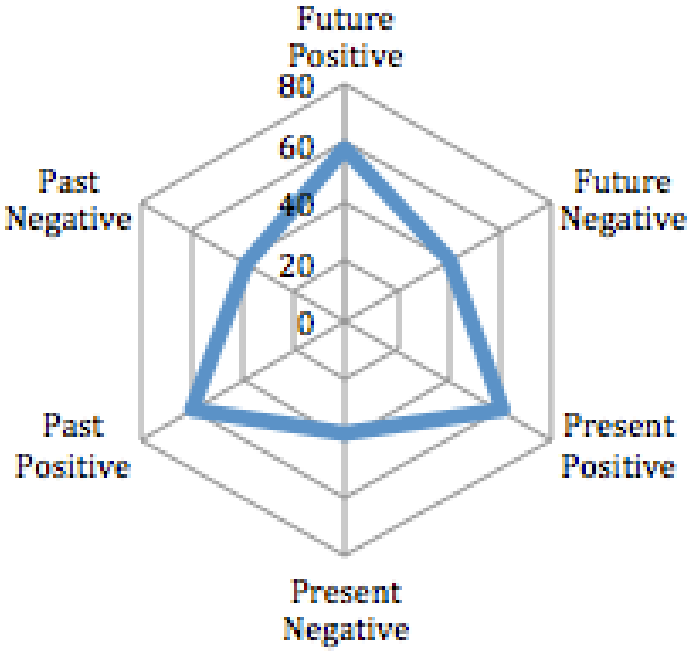
Cluster 1: Conflicted (n = 119, 8%)



Cluster 2: Ambivalent (n = 1,120, 75%)

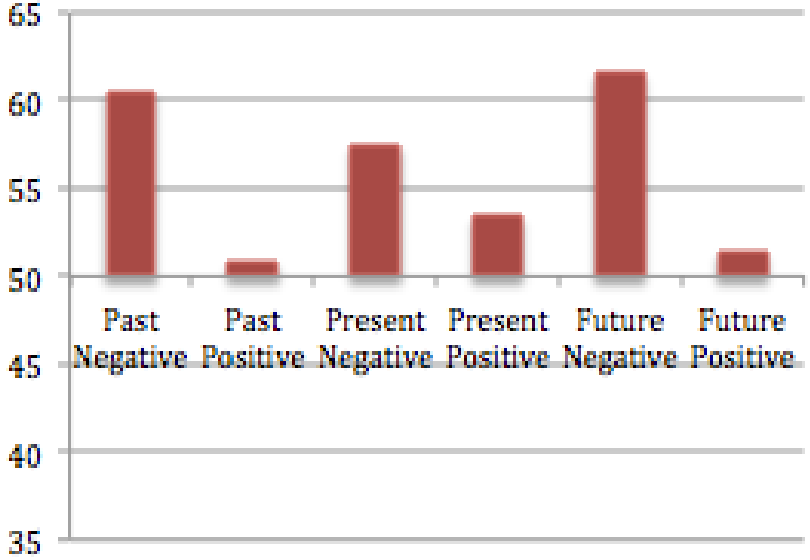




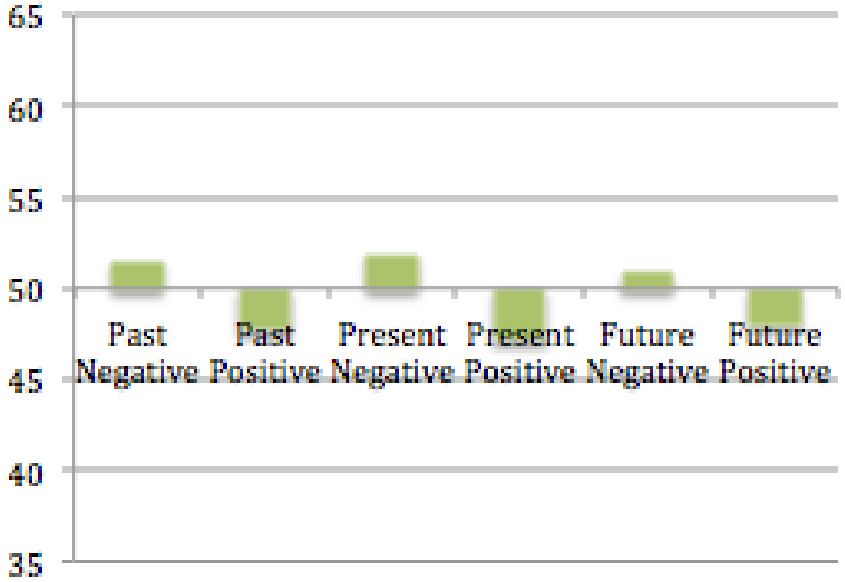


Cluster 3: Positive (n = 252, 17%)

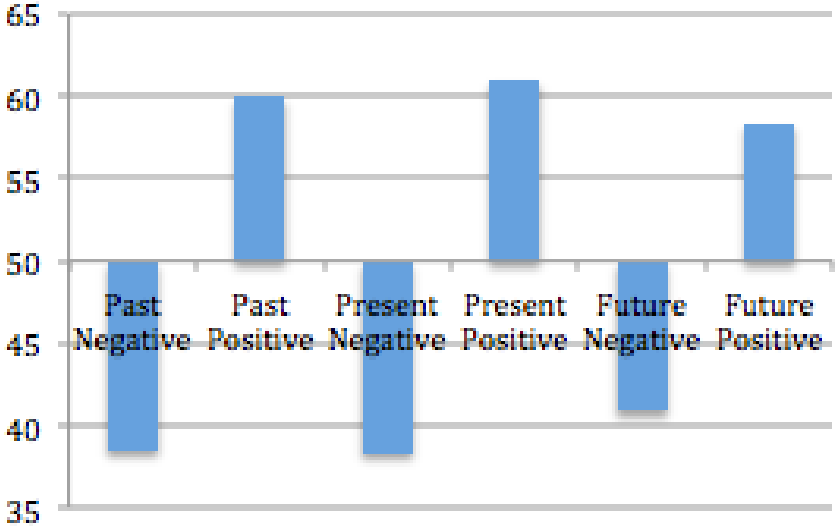
Plot Area



Cluster 1: Conflicted (n = 119, 8%)



Cluster 2: Ambivalent (n = 1,120, 75%)



Cluster 3: Positive (n = 252, 17%)

Plot A

Results: Question 3

Are there any practically significant differences in demographic variables and GPA among adolescent time attitude profiles?

Gender:

- Conflicted: Males > Females
- Ambivalent: Females > Males
- Positive: Males = Females

The relationship between gender and profile membership was statistically significant, but the effect size was small, χ^2 (2, N = 1,491) = 9.31, p < .01, Cramer's V = 0.08.

Results: Question 3 (continued)

Grade:

- There was an approximately equal distribution by grade level across the profiles, with no one grade overrepresented or underrepresented.

The analysis indicated that grade was not significantly related to profile membership, χ^2 (6, N = 1,485) = 8.0, p > .01, Cramer's V = 0.05.

Results: Question 3 (continued)

Socioeconomic Status:

- Students who reported their parents had graduate degrees had a observed frequency 65% greater than expected in the Positives group, whereas students with parents with some college or less had observed frequencies 36% to 45% lower than expected in the Positives.

- Individuals reporting parents having only a high school diploma were also 71% above their expected frequency in the Conflicted cell.

Results: Question 3 (continued)

Ethnicity:

- Observed frequency for African Americans in the Conflicted cell was 102% greater than expected and their observed frequency in the Positives cell was 31% lower than expected.
- Asian Americans were 36% below expected in the Conflicted cell and 40% below in the Positives cell.

Results: Question 3 (continued)

Ethnicity:

- European Americans were 40% below in the Conflicted cell and 37% above expected in the Positives cell.
- Latinos did not differ by more than 15% in any cell.

Results: Question 3 (continued)

GPA:

- Analyses indicated that students with Positive profiles had meaningfully higher GPAs than those with both Ambivalent profiles (Cohen's *d* = 0.75) and Conflicted profiles (Cohen's *d* = 1.27).

- The differences between the Ambivalent and the Conflicted profiles were smaller (Cohen's *d* = 0.36), favoring the Ambivalent group.

Conclusions

- A 3-cluster solution—Conflicted, Positives, and Ambivalent—was found.
- Although gender and grade were not strongly related to time attitude profile membership, stronger relationships were found for SES, ethnicity, and GPA.

QUESTIONS?

THANK YOU!

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