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Identity Development and Empathy Among Pre-Health Students: A Longitudinal Study Employing Latent Class Analysis

Bergen Johnson
Hope College

Gabe DeYoung
Hope College

Matthew Stafford
Hope College

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Bergen Johnson, Gabe DeYoung, Matthew Stafford

Faculty Advisors: Dr. Mark Pearson, Dr. Paul Pearson, and Dr. Aaron Franzen

Hope College, Holland, MI

For more information, contact:
Bergen Johnson
Bergen.johnson@hope.edu
Gabe DeYoung
Gabriel.DeYoung@hope.edu
Matthew Stafford
Matthew.Stafford@hope.edu

Introduction

Medical students often experience increases in burnout and depression, as well as decreases in quality of life and empathy during their time at medical school. These changes are a cause for concern for both the medical students' health and their ability to display the necessary prosocial behaviors for caring for and treating patients. As medical practices continue to place an emphasis on a patient-centered approach, this may place a strain on the patient-physician relationship.

These potentially harmful effects on medical students are not occurring at an even rate among all students. This indicates that there are differences on the individual level that may factor into how medical training changes each student. This study is interested in identifying aspects of students' identity prior to medical training that may indicate a predisposition for empathy and commitment to the healthcare professions. This is an exploratory study of undergraduate students who indicate that they intend to enter a healthcare profession. We employ latent class analysis to examine types of people and not just single-variable relationships.
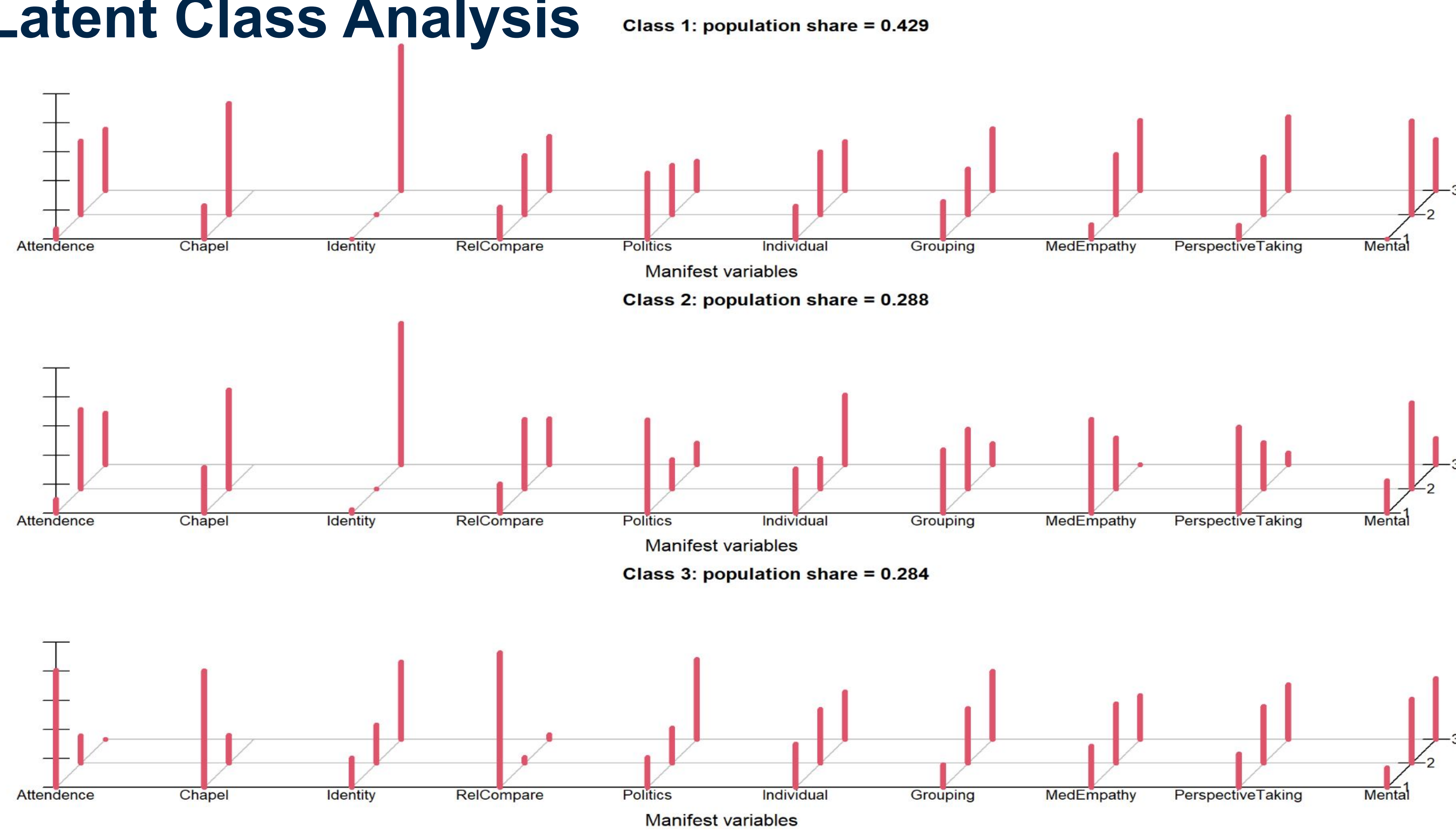
Methods

- Data Collection: The data for this study comes from a longitudinal panel study of three consecutive cohorts of undergraduate students pursuing pre-health or nursing programs at the time of entering college. Both Wave 1 and Wave 2 data have been completed by all three cohorts.
- Distributed questionnaires to pre-health/nursing students at one year intervals
- Cleaned and prepped survey item response data for analysis
  - Removed skewed survey responses
  - Standardized each variable to a 3-point scale

- Employed a probalistsitic categorical data analysis known as Latent Class Analysis (LCA-See LCA Model below) (Vermunt and Magidson 2004)
  - Identified subgroups of alike individuals using item response probabilities
  - Implemented using the poLCA package in R Statistical Software
- Selected the "best" model based on descriptive statistics and theoretical interpretability
- Assigned each participant to a latent class over both waves, then built a contingency table to analyze change over time
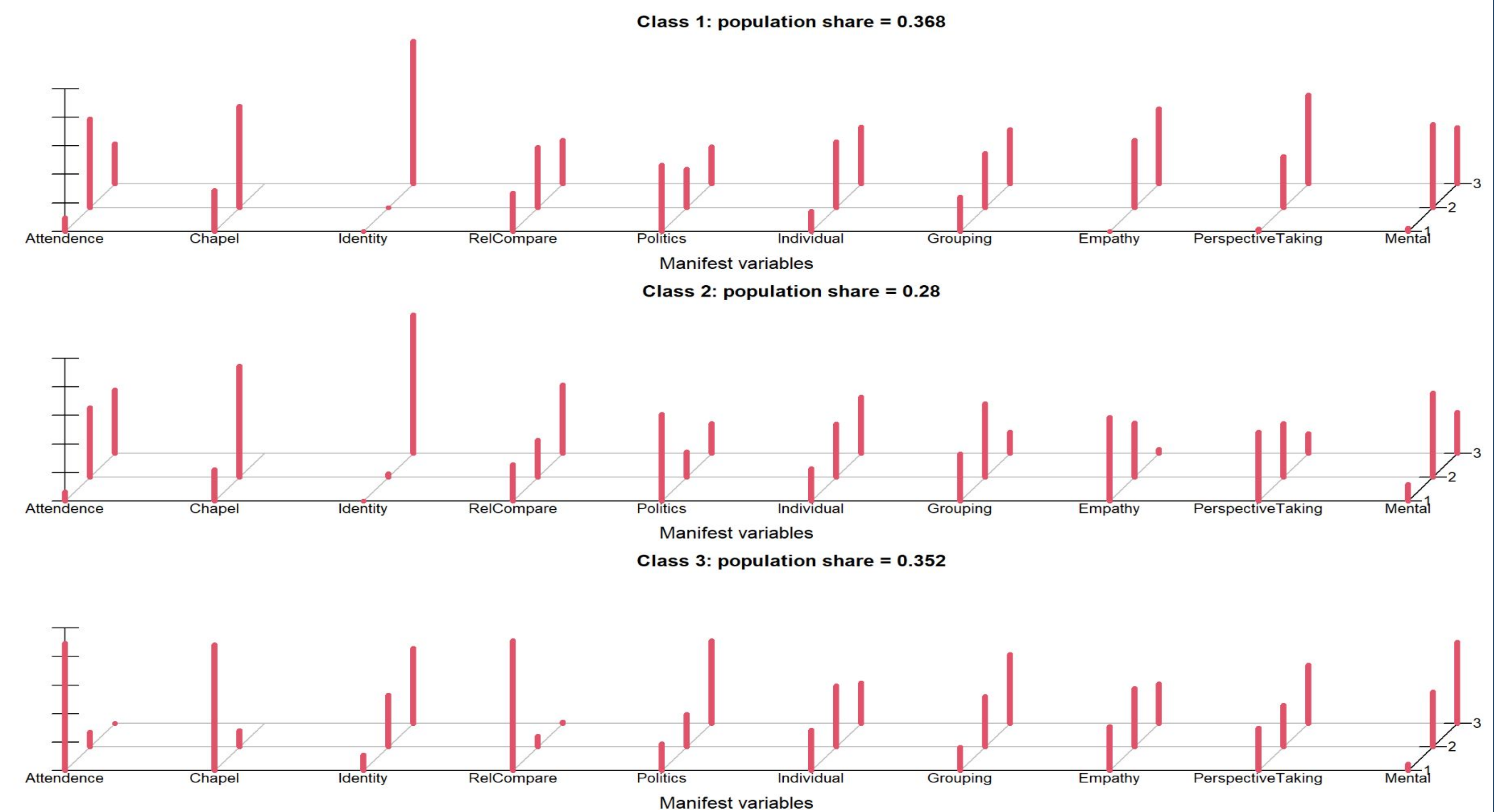
$$P(Y = y) = \sum_{x=1}^{C} P(X = x) \prod_{l=1}^{L} P(Y_l = y_l | X = x)$$

LCA Model

Latent Class Analysis

Wave 1: Class 1: population share = 0.429; Class 2: population share = 0.288; Class 3: population share = 0.284

Wave 2: Class 1: population share = 0.368; Class 2: population share = 0.28; Class 3: population share = 0.352

Wave 1: Class Distributions

Wave 2:Class Distributions

Results

- Three latent classes:
  - Typology 1: High chance of being religious, moderate-conservative, and empathetic
  - Typology 2: High chance of being religious, conservative, and lack empathy
  - Typology 3: High chance of being non religious, liberal
- Religion and Politics work together to form a strong basis of one's identity
- Evidence of identity development/personal growth from freshman to sophomore year:
  - 35.5% of respondents switched to a new typology in Wave 2
  - No clear indication of dramatic changes in empathy from Wave 1 to Wave 2
  - Shift towards lesser religious involvement/religiosity in Wave 2

		Wave 2			
		Typology 1	Typology 2	Typology 3	Total
Wave 1	Typology 1	86	29	19	134
	Typology 2	19	46	25	90
	Typology 3	12	6	68	86
	Total	117	81	112	310

Typology Shifts Over Time

Limitations

- Relatively small sample size, as LCA models generally improve with additional data and high quality indicators. (Wurpts and Geiser 2014)
- We were limited in variable selection since not all questions were asked in both waves.

References

Vermunt, Jeroen, and Jay Magidson. 2004. "Latent Class Analysis" in The Sage Encyclopedia of Social Science Research Methods.

Wurpts, Ingrid C., and Christian Geiser. 2014. "Is Adding More Indicators to a Latent Class Analysis Beneficial or Detrimental? Results of a Monte-Carlo Study." Frontiers in Psychology 5.