

Exploring Profiles of Responses for the Sources of Science Self-Efficacy

Jason A. Chen

Harvard Graduate School of Education

Ellen L. Usher

University of Kentucky

Jennifer Randall

University of Massachusetts, Amherst

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Bandura's Social Cognitive Theory

Rooted in a view of human agency in which students are “partial architects of their own destinies.”



Self-Efficacy and Science

Science self-efficacy refers to the beliefs that students hold about their own science-related capabilities.



Science self-efficacy is related to ...

- MS, HS, and college students' motivation and achievement.
- College students' persistence in science-related majors and career choices.

Self-Efficacy and its Sources



Mastery
Experience



Vicarious
Experience

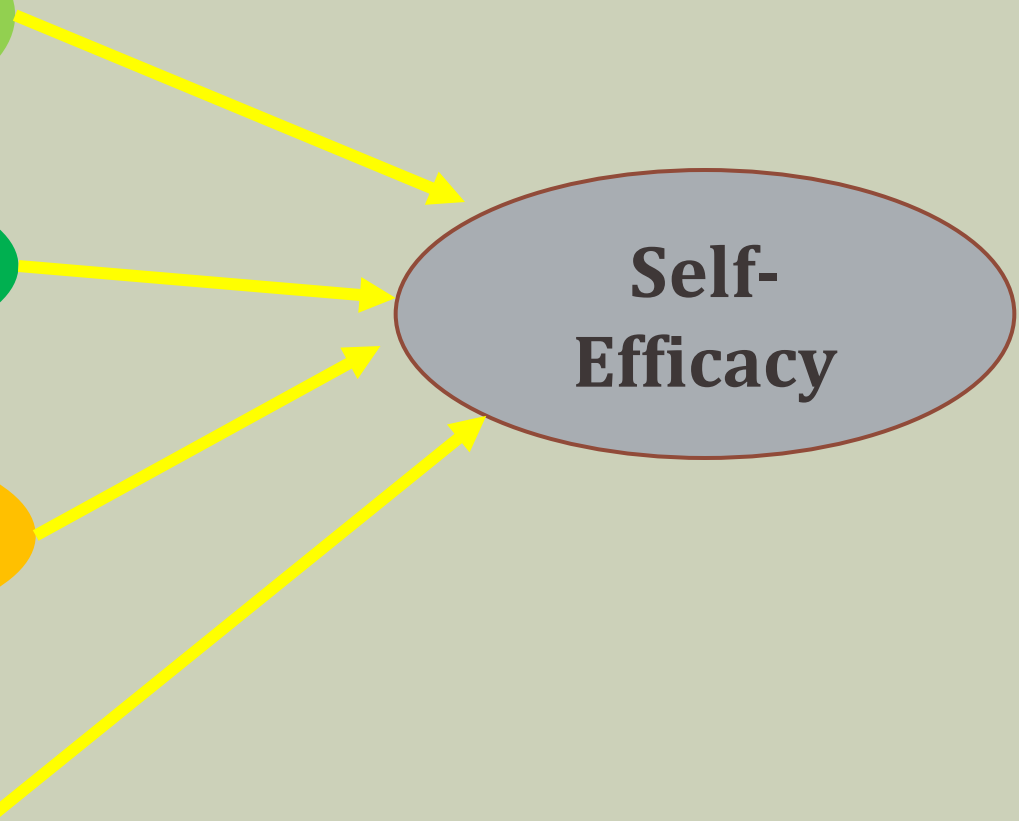


Social
Persuasion



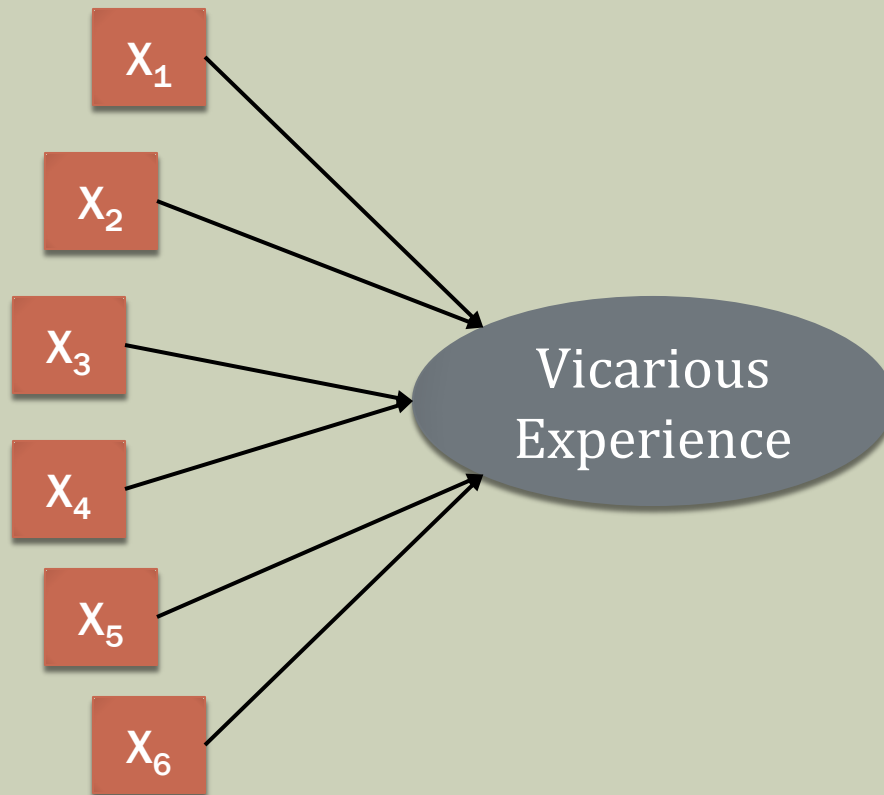
Affective
States

Self-
Efficacy



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- Most quantitative studies have not shed light on how people use the many combinatorial rules when weighting and integrating all of the efficacy-relevant information that is presented.



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- Most studies examining group differences assume that groups can be created using manifest variables. But this may or may not be appropriate.

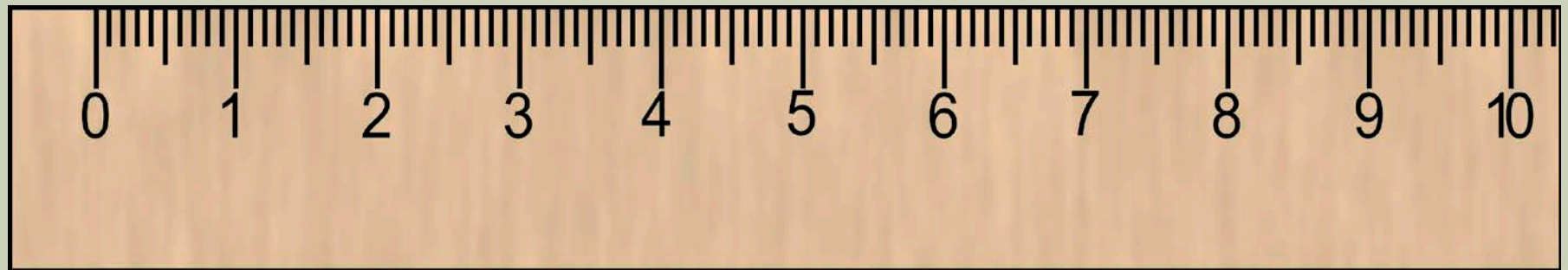
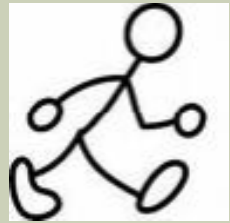
Goals

- Explore the latent groups for how students respond to items on the sources of self-efficacy measure.
- To explore whether each of the latent groups differed as a function of race/ethnicity, gender, and grade level.

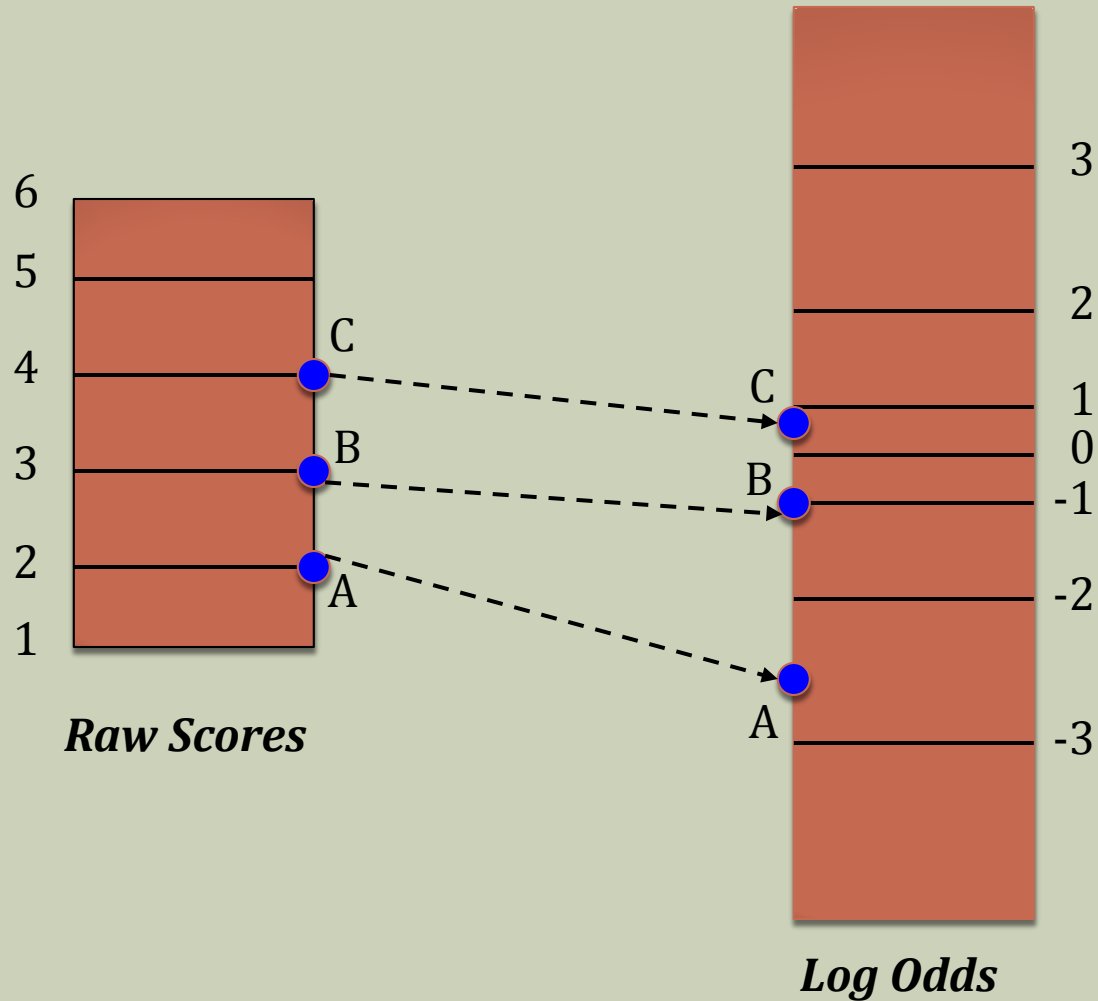
Methodology

- N = 1225 students from Grades 6, 9, and 10 (two high schools and one middle school in the same suburban school district).
- Variables for the Study:
 - ✓ Sources of self-efficacy (Usher & Pajares, 2009);
 - ✓ Science grade

Analysis: Rasch Component



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Analysis: Mixture Models

“By attempting to describe only the average, one runs the risk of describing nobody in particular.”

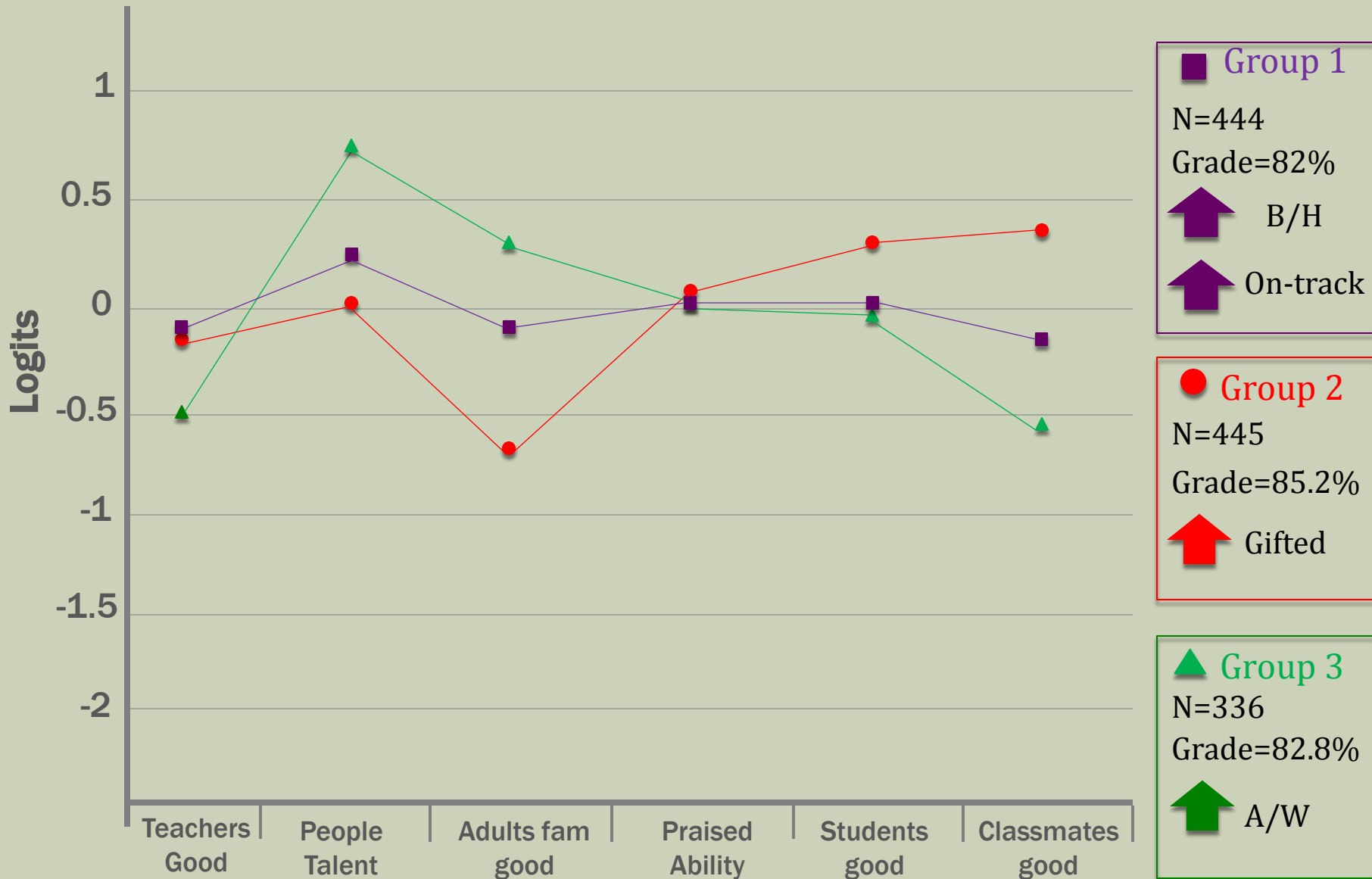
Molden & Dweck (2005)

Identifying subpopulations of individuals in which the Rasch model holds true, but with different sets of model parameters among these subpopulations.

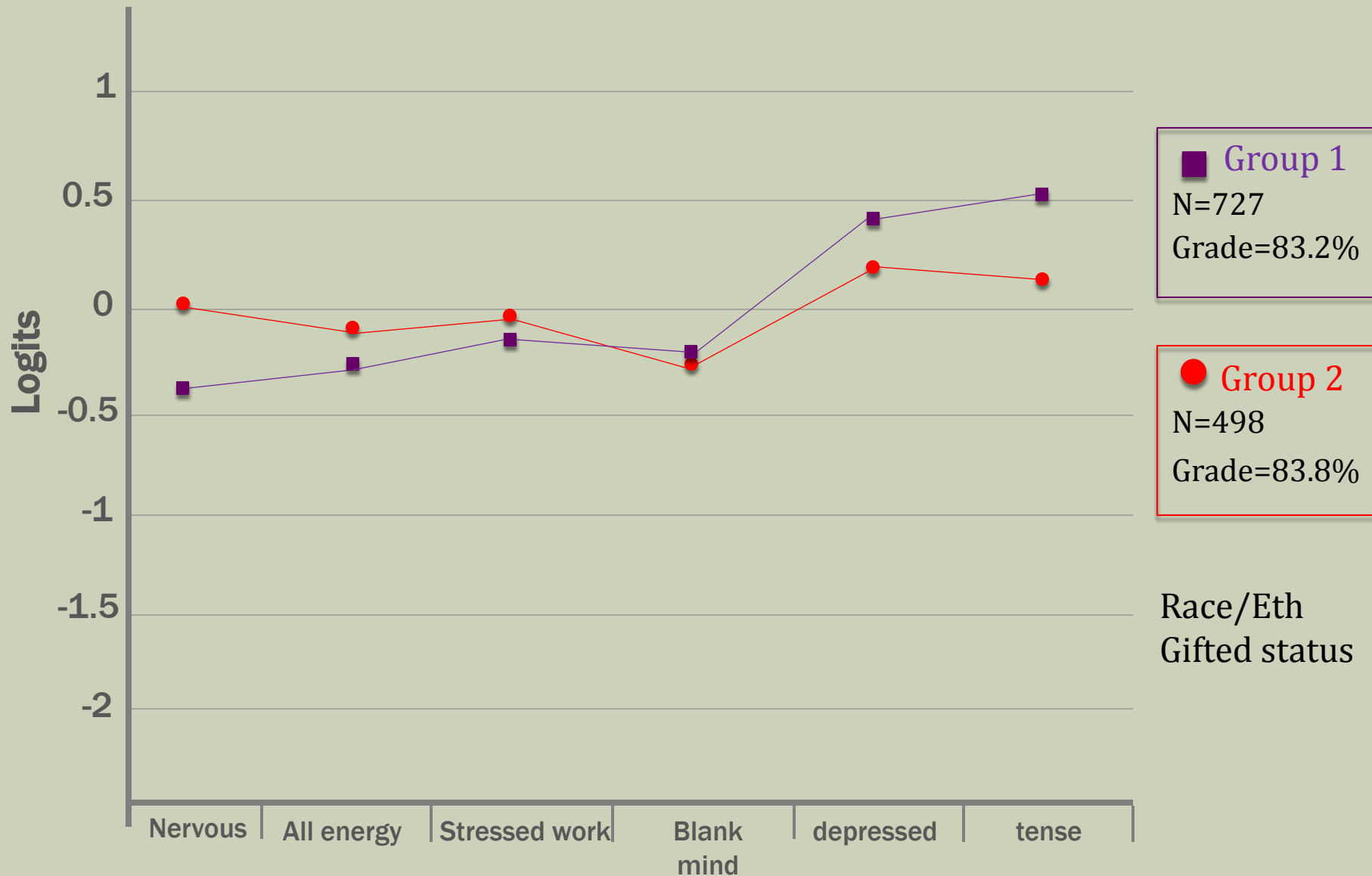
What Profiles Emerged: Mastery Experience



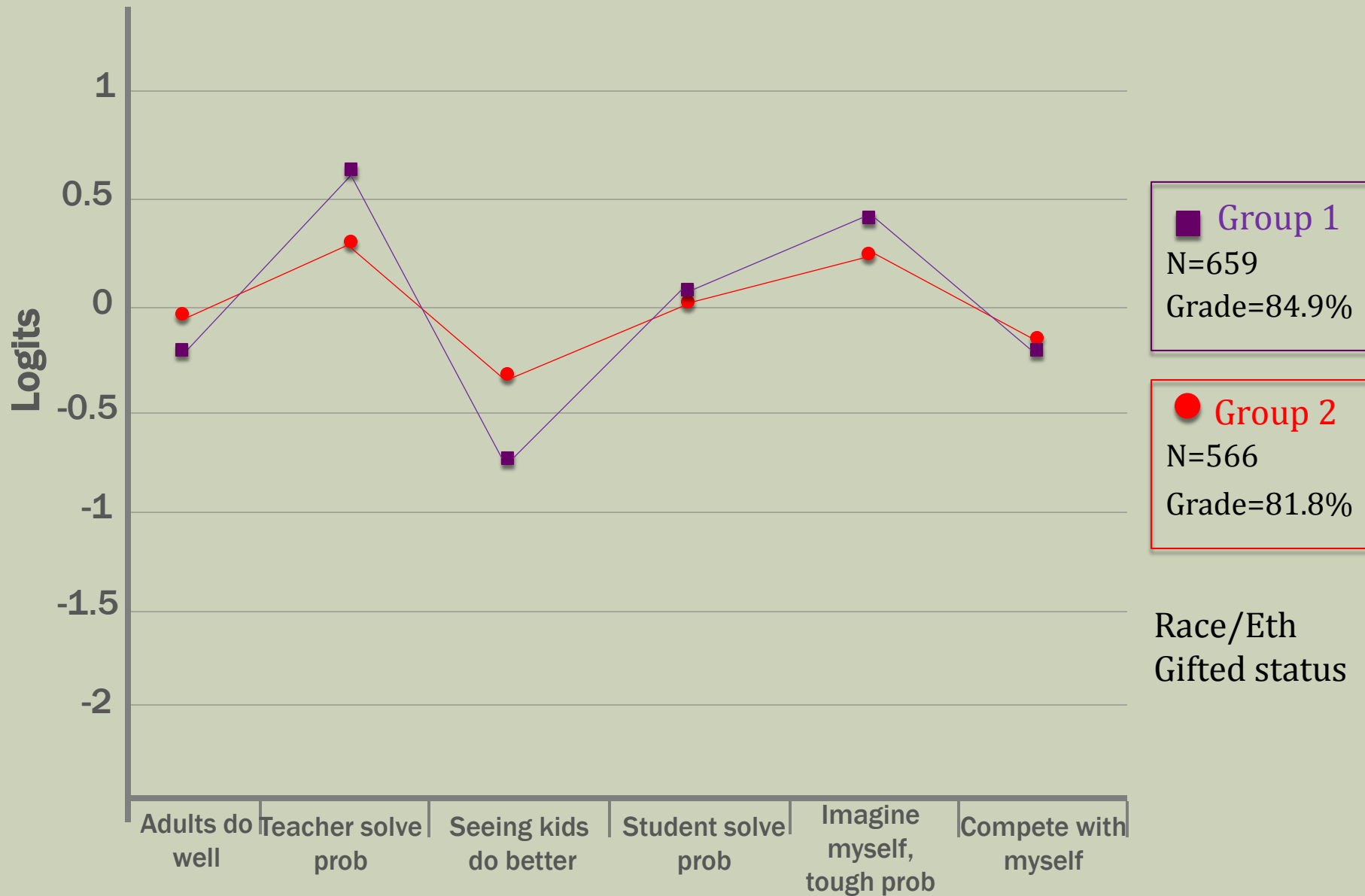
What Profiles Emerged: Social Persuasions



What Profiles Emerged: Physiological States



What Profiles Emerged: Vicarious Experiences



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- At the person-level (LPA) we got interesting results. But at the item-level, we do not see any patterns.
- Lesson for future research: Ed psych community does not typically look at items in this way. May be useful to do so, but need strong theoretical arguments to justify.