Exploratory Factor Analysis of the Computer Programming Attitudes Scale: Evidence of Proximal and Distal Outcome Expectations

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Introduction

• Curated Pathways to Innovation (CPI) is a web-based app that steers female and underrepresented minority (URM) students towards STEM+C careers
• Students complete surveys to measure their attitudes towards computer programming (CP) as they complete badges in the app
• Research Question: What is the best fitting factor solution for the full 20-item “computer programming” attitudes scale when fitted to 2019-2020 data?

Method

• Exploratory factor analysis (EFA) with varimax rotation
• 472 observations from 2019-2020 baseline and pulse survey data
• 20 items measuring CP attitudes EFA conducted for 2-6 factor models
• Model fit evaluated based on content and minimum number of complex loadings

Results

• 2-factor solution identified as best fit, with one factor measuring proximal CP attitudes and another measuring distal
• 5 items removed from scale, based on loadings less than 0.5 on all factors

Discussion

• Scale measures proximal and long-term, distal CP attitudes
• Student expectations for success in CP related to career outcomes (Perez et al., 2019)
• Accuracy of the scale important for measuring CPI’s effects
• Next step is confirmatory factor analysis on 2020-2021 data

References

1. Curated Pathways to Innovation (CPI), https://yourywca.org/curated-pathways/

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