

A NETWORK PSYCHOMETRICS APPROACH TO EVALUATE THE VALIDITY OF THE SPOT SURVEY

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INTRODUCTION

- Student evaluation of teaching (SET) survey have been widely used by higher education institutions.
- Some SET surveys overlook the multifaceted nature of effective teaching.
- There is a lack of research investigating the validity of SET surveys and their multidimensional nature.
- In validity research, researchers typically employ factor analytic methods.
- An emerging alternative known as the network psychometrics approach offers a distinct perspective by examining a psychological construct as a connected system.
- This approach generates a novel line of evidence to the literature.

OBJECTIVE

- We employed network psychometrics techniques on Students' Perception of Teaching (SPOT) survey to examine its validity.

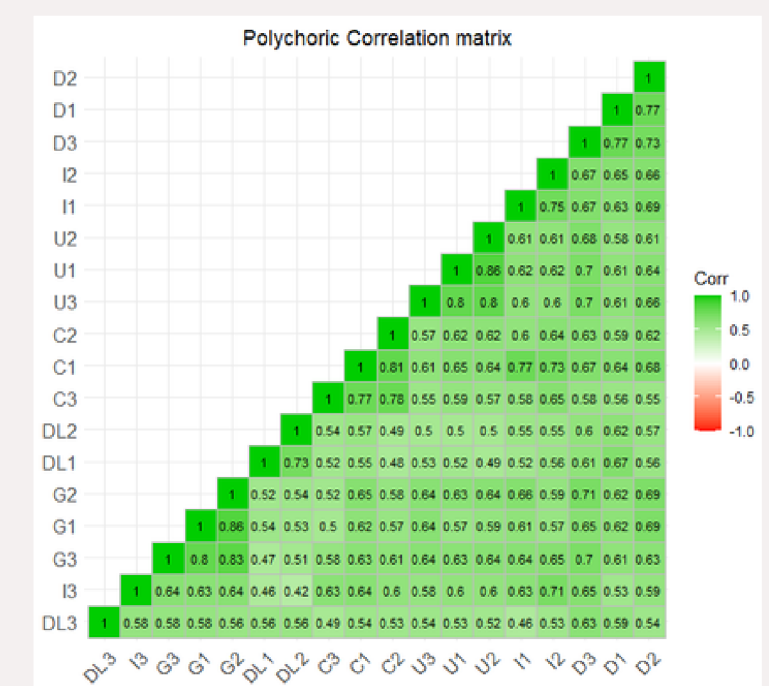
"HOW IS THE ROBUSTNESS OF THE SPOT SURVEY IN EVALUATING MULTIPLE FACETS OF SET AT THE UNIVERSITY OF ALBERTA?"

METHODOLOGY

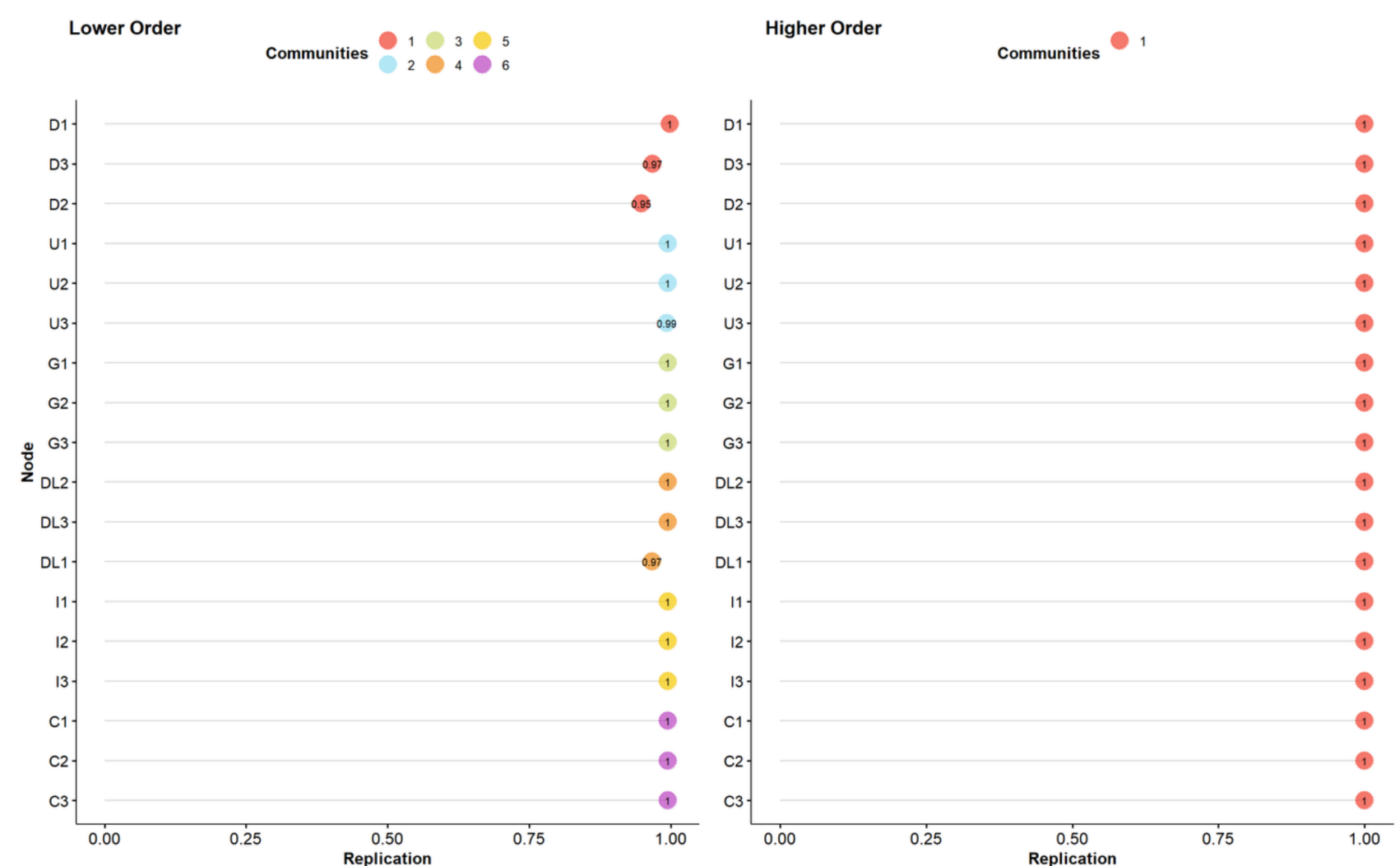
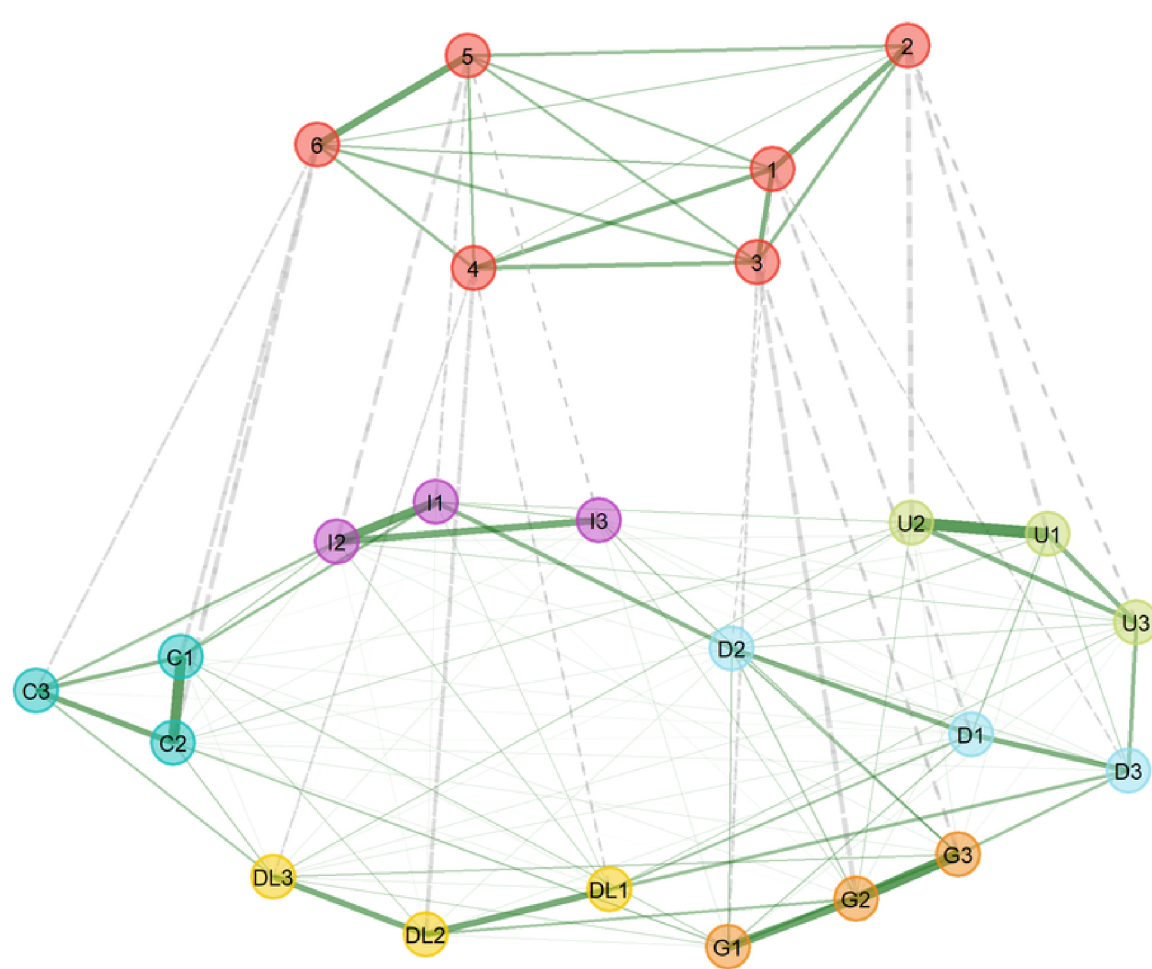
- Dataset: Student response data to the SPOT survey from the Fall 2022
 - N = 649
 - Five-point Likert scale items (i.e., strongly disagree, disagree, neither agree nor disagree, agree, and strongly agree).
- Analysis
 - Polychoric correlation.
 - Internal consistency.
 - Network estimation.
 - Exploratory graph analysis with bootstrap resampling (600 iterations).

RESULTS

- Internal consistency reliability
 - Entirety of the test ($\alpha=0.95$),
 - design subscale ($\alpha=0.86$),
 - utility of the course subscale ($\alpha=0.90$),
 - graded work subscale ($\alpha=0.90$),
 - course delivery ($\alpha=0.75$),
 - instructional approach ($\alpha=0.82$),
 - class climate ($\alpha=0.86$).
- RMSEA = 0.021, degree of freedom = 95, comparative fit index (CFI) = 1,
- Tucker-Lewis index = 1.00



NETWORK VISUALIZATION



CONCLUSION

- Results showed robust lines of evidence to the validity of the six-dimensional SPOT survey.
 - High quality of the SPOT data.
 - Responses of all items are adequately correlated.
 - High coefficient alpha of both the overall survey and all six subscales.
 - Items of the same dimension are grouped together in the network system.
 - Stable structure across 600 iterations.

CONTRIBUTIONS

- This study supports the use of a multidimensional SET survey, which was argued to offer a more thorough measurement of students' perceived quality of teaching.
- Methodologically, this study supports that psychometric network analysis is a viable approach to survey validation in addition to the traditional factor analytic approach.

RELATED LITERATURE

- Borsboom, D., Deserno, M. K., Rhemtulla, M., Epskamp, S., Fried, E. I., McNally, R. J., Robinaugh, D. J., Perugini, M., Dalege, J., Costantini, G., Isvoranu, A.-M., Wysocki, A. C., van Borkulo, C. D., van Bork, R., & Waldorp, L. J. (2021). Network analysis of multivariate data in psychological science. *Nature Reviews Methods Primers*, 1(1), 58. <https://doi.org/10.1038/s43586-021-00055-w>
- Christensen, A. P., & Golino, H. F. (2021b). Estimating the stability of psychological dimensions via bootstrap exploratory graph analysis: A monte carlo simulation and tutorial. *Psych*, 3(3), 479-500. <https://doi.org/10.3390/psych3030032>
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