



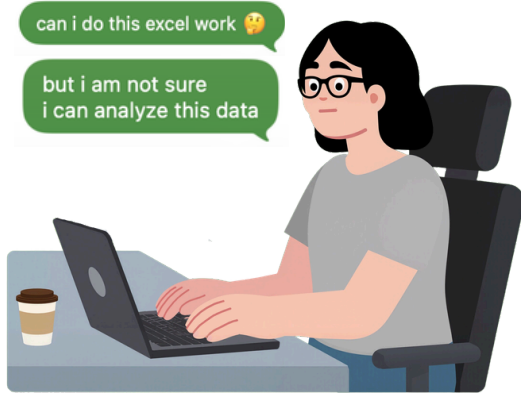
# Is Self-Perceived Data Literacy Psychometrically Defensible?

Evidence from Data Literacy Self-Perception Questionnaire Validation

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Data literacy is an essential competency for students in today's data-driven educational and digital society. However, assessing data literacy through self-perception questionnaires remains challenging because students may overestimate or underestimate their actual abilities. This issue is especially important among adolescents, whose metacognitive accuracy is still developing.



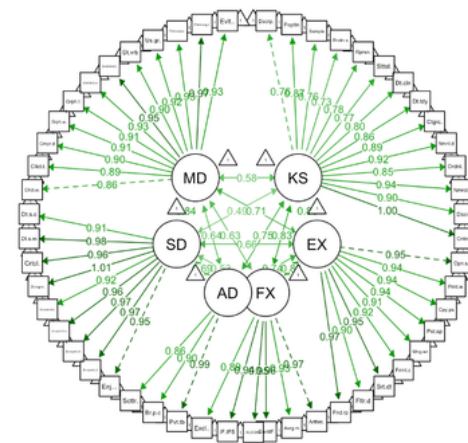
## Aims of the Research

- 1 To **validate** the **Data Literacy Self-Perception Questionnaire (DLSPQ)** for upper-secondary students.
- 2 To **examine** the psychometric defensibility of self-perceived data literacy.
- 3 To **identify** students' perceived data literacy across cognitive, technical, and attitudinal domains.

## Results & Discussion

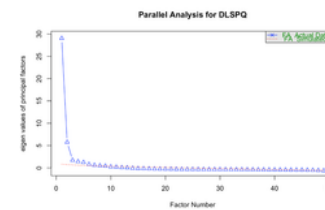


n= 354 upper-secondary students in Indonesia



Self-perceived data literacy is a multidimensional construct

Reliability was **excellent** across dimensions, with Cronbach's alpha ranging from .88 to .95 and McDonald's omega ranging from .90 to .97.



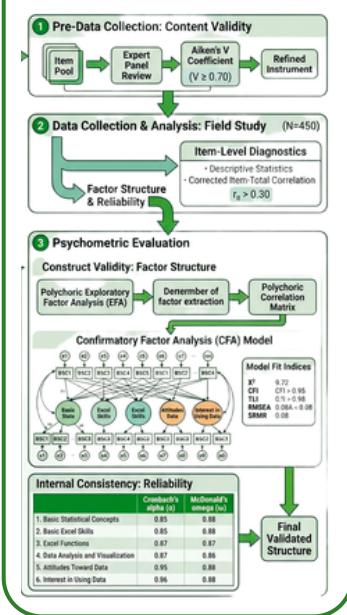
EFA supported a **six-factor** structure, so that Self-perceived data literacy is a multidimensional construct

## Method

### Proposed DLSPQ Dimensions

1. Basic Statistical Concepts
2. Basic Excel Skills
3. Excel Functions
4. Data Analysis and Visualization
5. Attitudes Toward Data
6. Interest in Using Data

### Validation Stage



The six latent dimensions showed strong standardized factor loadings ( $\lambda = .70-.98$ ), indicating that all items contributed well to their constructs. High correlations between Excel Skills and Excel Functions (.83), as well as between Data Perception and Data Motivation (.91), suggest that data literacy is an integrated system of technical, cognitive, and motivational competencies. These findings support the structural validity of the DLSPQ and align with recent views of data literacy as a multidimensional construct (Wolff et al., 2024; Ridsdale et al., 2023).

## References

Wolff, A., et al. (2024). A multidimensional framework of data literacy in education. *Computers & Education*.  
Ridsdale, C., et al. (2023). Data literacy: From definition to action. *Data Science Journal*.

## Conclusion

The DLSPQ is a reliable, valid six-factor instrument for assessing students' self-perceived data literacy and supporting diagnostic assessment and instructional planning.

## Future Works

Future research should combine self-perception instruments with performance-based assessments and longitudinal designs to better understand.