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Empirical study of a competence structure model regarding conversions of representations – the case of fractions.

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Summary: Given the key role of conversions of representations for mathematical understanding, it is highly relevant to investigate in detail competencies regarding conversions of representations. In particular, a corresponding competence model should not only be developed theoretically, but also examined empirically. However, such empirical studies are rather scarce, especially concerning content domains other than functions. Consequently, this study focuses on the design and empirical validation of a competence structure model regarding conversions of representations in the domain of fractions using multidimensional item response modelling. The results suggest that the data support the theoretically developed structure of the model and moreover, they indicate a hierarchical relationship which may give rise to a competence level model.

Classification: C30 F40 D20
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