

Psychometric evaluation of the Norwegian versions of the KoMus and KOPRA-M competency tests.

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Background

Jordan et al. (2012) developed the competency model and associated test for the competency area of “Perceiving and contextualizing music” (KoMus). The model consists of one main dimension of perception and three sub-dimensions. The sub-dimensions include the perception-based use of music terminology, music notation and historical/cultural context knowledge.

The three-dimensional structural model of music performance competence (KOPRA-M) was developed by Hasselhorn (2015). The accompanying test is designed so that it can be performed individually in a group setting. The dimensions of singing, playing instrument and playing rhythms is carried out practically by the participants singing and using an app to perform rhythms and melodies.

Both tests have been used in several studies in Germany and showed consistently high psychometrical quality (e.g., Harnischmacher & Knigge, 2017; Lill et al., 2019).

Aim

The first aim of this study is to translate and adapt two existing competency assessments to develop a technology-based test instrument applicable to the Norwegian context (primary school, grade 5). The second aim is to ensure the psychometric quality of the adapted test versions. Since the adapted versions are developed for a different language and for younger participants a special focus will be on the comparison with the original tests. Therefore, various analyzes will be carried out to check the validity and reliability of the Norwegian versions.

Method

The Norwegian version of “KoMus” (short version) was achieved by translation and adaption (e.g., update of sound files). First a pre-test was carried out at two primary schools. The final test was completed by 378 5th graders at seven primary schools in three municipalities in Norway. The Norwegian version of “KOPRA-M” was translated and adapted as an interactive app for iPads. The final test was completed by 200 5th graders at the same schools.

Confirmatory Factor Analysis (CFA) was performed as described by Mair (2018) and the recommendations of Hooper et al. (2008) were followed in the interpretation of fit indices.

To obtain item and person parameters as well as to evaluate the competency level of the participants an Item Response Theory based analysis was performed (multi-dimensional partial credit Rasch model; Wu et al., 2016).

Results/Conclusions

Pre-liminary results based on CFA and IRT analyses confirm four factors (dimensions) of the Norwegian version of the KoMus test with a moderate fit (CFI = 0.87; SRMS = 0.52), and with an

acceptable overall reliability (EAP/PV reliability: 0.818). The correlation between the factors were interrelated, ranging from moderately positive to highly positive (0.30–1.0) This confirms the original model which consists of related dimensions.

The same procedure will be conducted and presented for the KOPRA-M test. Finally, analyses exploring competency levels of the participants will be presented at the conference.

References

- Harnischmacher, C. & Knigge, J. (2017). Motivation, musical practice, and the family's interest in music predict musical competence (perceiving and contextualizing music) and competence beliefs in music. In: *bulletin of empirical music education research (b:em)*, 8, pp. 1-21, <https://www.b-em.info/index.php/ojs/article/view/136>
- Hasselhorn, J. (2015). *Messbarkeit musikpraktischer Kompetenzen von Schülerinnen und Schülern*. Waxmann.
- Hooper, D., Coughlan, J., & Mullen, M. R. (2008). Structural Equation Modelling: Guidelines for Determining Model Fit. *The Electronic Journal of Business Research Methods*, 6, 53-60.
- Jordan, A.-K., Knigge, J., Lehmann, A. C., Niessen, A. & Lehmann-Wermser, A. (2012). Entwicklung und Validierung eines Kompetenzmodells im Fach Musik – Wahrnehmen und Kontextualisieren von Musik. *Zeitschrift für Pädagogik*, 4, 500–521. <http://nbn-resolving.de/urn:nbn:de:0111-pedocs-103923>
- Lill, F., Hasselhorn, J. & Lehmann, A. C. (2019) The relationship between musical self-concept and practical music competencies in secondary schools. In: Weidner, V. & Rolle, C. (eds.), *Praxen und Diskurse aus Sicht musikpädagogischer Forschung* (171–187). Waxmann. <https://doi.org/10.25656/01:20711>
- Mair, P. (2018). *Modern Psychometrics with R*. Cham: Springer International Publishing. DOI: 10.1007/978-3-319-93177-7
- Wu, M., Tam, H. P. & Jen, T.-H. (2016). *Educational Measurement for Applied Researchers*. Springer.