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Construct validity of self-concept in TIMSS's student background questionnaire: a test of separation and conflation of cognitive and affective dimensions of self-concept among Saudi eighth graders

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Abstract The aims of this study are to: (a) assess if cognitive self-concept (competence) and affective self-concept in mathematics and science are different constructs, (b) evaluate the construct validity of self-concept in the context of conflation and separation, and (c) test if the relationships among cognitive and affective variables are invariant across gender. The data for this study were obtained from the Trends in International Mathematics and Science Study 2007 database. Data about 2,687 out of 4,099 eighth grade Saudi students were subject to various analyses. The variables used in this study were mathematics and science self-concepts, and mathematics and science subject value as part of the Students Background Questionnaire. The relationships among constructs were examined with the use of SPSS16 and the structural equation modeling software, AMOS16. The results demonstrated that subject value and self-concept were different constructs. Also, the results demonstrated that cognitive and affective self-concepts were independent, but strongly related constructs, and the structure of the construct was clearer when self-concept was separated into cognitive and affective components than when it was conflated. The relationships among cognitive, affective, and subject value in mathematics and science were invariant across gender. However, their relationships with achievement were not invariant across gender.

Keywords Self-concept · TIMSS · Math and science achievements · Construct validity · SBQ

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