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## *The Adaptation of Metacognitive Orientation of Learning Environment Scale-Science (MOLES-S) into Turkish: The Study of Validity and Reliability*

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### **Abstract**

*Problem statement:* When reviewing the literature, there isn't any instrument for investigating metacognitive orientation of classroom learning environments in science education in Turkey. Therefore it is necessary to reveal how students experience and perceive their metacognitive orientation of classroom learning environments in science education.

*Purpose of study:* The purpose of this study is to adapt The Metacognitive Orientation Learning Environment Scale-Science (MOLES-S) to Turkish developed by Thomas (2003) as a tool for assessing how students experience and perceive their science classroom in relation to its metacognitive orientation, by conducting with primary students and establish the validity and reliability of it.

*Methods:* The participants of the study are 372 seventh grade students in Buca district within İzmir. In order to examine construct validity of MOLES-S, exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were performed. For the validity of MOLES-S, corrected item-total correlations and t-tests between items' means of upper 27% and lower 27% points, and Croanbach alpha correlation coefficients were used. Besides, the means and standard deviations for the factors were examined; Pearson Product Moment Correlation Coefficients were calculated among factors.

*Findings:* The EFA and DFA results showed that the factorial model of the scales consisted of five factors. The internal consistency of the scale is 0.87. Croanbach alpha values calculated for the five factors are followed: Emotional Support is 0.78; Distributed Control is 0.87; Student-Student Discourse is 0.81; Student Voice is 0.72; Metacognitive Demands is 0.57. Thus, it has been concluded that, five factors of this study compatible with five of the seven factors of the original scale. Although in the original form of MOLES-S, Metacognitive Demands scale has been consists of five items, in this study, it has two items. Besides, in this study Teachers Encouragement and Support and Student-teacher Discourse factors of the original scale did not take place.

*Recommendations:* MOLES-S can be utilized by teachers and researchers for examining the metacognitive orientation of science classrooms, experimental research based on metacognition and correlation studies related to metacognition and other factors.

*Keywords:* Metacognition, learning environment, primary students' attitudes