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## 「國小數學問題解決態度量表」心理計量特性之研究

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### 摘 要

雖然問題解決能力的培養是當前數學教育的主要目標之一，但國內仍欠缺與數學課程中問題解決相關重要能力連結的問題解決態度量表。本研究以參與數學實作評量計畫之275位至323位國小三、五年級學童為對象，檢驗自編「國小數學問題解決態度量表」之心理計量特性。結果顯示：驗證性因素分析支持五因素（數學解題意願、數學解題歷程、數學連結、數學溝通、數學合作——尊重他人）相關模式及五因素二階模式；因素結構在問題解決取向之評量計畫前、後一致；聚斂與區辨相關及實驗研究的憑證支持量表具構念效度；量表具理想的內部一致性及長時間的穩定性。本文對量表的後續修訂、計量特質之探討及量表的應用皆提出討論與建議。

**關鍵詞：**數學問題解決態度量表、驗證性因素分析

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## **Psychometric Properties of Mathematics Problem-Solving Attitude Scale for Primary Students**

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### **Abstract**

Although promoting students' problem-solving ability is one of the major objectives in the mathematics curriculum, few attitude scales designed directly to measure the related aspects of problem-solving as specified in the curriculum are available to practitioners and researchers. The major purpose of this study was to explore the psychometric properties of the "Mathematics Problem-Solving Attitude Scale for Primary Students" based on 275 to 323 primary students who participated in a three-semester Mathematics Performance- and Portfolio-Assessment Project. With respect to the internal factor structure, the results of confirmatory factor analysis supported a correlated five-factor model (the five factors are: willingness to solve mathematical problems, mathematical problem solving process, mathematics connection, mathematics communication, and mathematics cooperation) and a five-factor model with a single second-order general problem-solving factor. In addition, the factor structures were consistent before and after the assessment project. In regard to the relations to external

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variables, both convergent-discriminant correlations and the results of an experimental study supported the construct validity of the scale. Both internal consistency and long-term test-retest reliabilities were satisfactory. Suggestions for future scale revision, validation, and application are provided.

**Keywords:** mathematics problem-solving attitude scale, confirmatory factor analysis

