



The reliability and validity of children's learning-to-learn inventory



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Abstract

The aim of this study is to develop a learning-to-learn scale for 12-year-old children as a large-scale research instrument. A literature review and pilot study identified four dimensions, which were used to construct a 22-item, 4-point scale inventory. The four dimensions are curiosity, meaning-making, interpersonal learning, and self-regulated learning. The inventory was administered to the 1560 children in the pilot study of Taiwan Birth Cohort Study. The results from confirmatory factor analysis showed the data fit four-factor model well. The Cronbach's alpha for the four subscales are .64, .83, .81, .82. Teachers' ratings of students' learning to learn dispositions are significantly correlated with students' academic performance. The results pointed out some variables influencing the development of learning to learn dispositions. The results provide evidence for a valid and reliable 4-factor learning-to-learn inventory.

Introduction

The development of learning to learn (L2L) is seen as crucial for success in the global knowledge economy. The measurement of L2L is a necessary tool for cultivating individual's L2L. It can assess the current state of the learner and enable the learner to revise his or her learning objectives and strategies. The school can provide the necessary courses and materials for students to develop their L2L according to the assessment results. It also can be used to evaluate the effectiveness of education as well as undertake educational research on learning. The three-wave Taiwan Birth Cohort Study (TBCS) data of 5-, 8-, and 12-year are merged to investigate the reliability and validity of learning-to-learn scale and explore the factors affecting L2L including children's characteristics, family variables, and school contextual variables.

Methods and Materials

Participants:
Subjects are from TBCS pilot study. Data were collected when the subjects are 5, 8 and 12 years old. The sample size is 1560 for students (12 years old) and 1227 for teachers who rating their students' learning to learn disposition.

Measures:
The children's learning-to-learn inventory: a 22-item, 4-point scale, four-dimension inventory.
Academic performance: 4 items from students and teachers
Children's temperament inventory: filled in by parents.

Results and Discussion

The results from confirmatory factor analysis showed the data fit the four-factor model well with RMSEA 0.051, CFI=0.978, TLI=0.974. The Cronbach's alpha for the four subscales are .64, .83, .81, .82. The results indicated that the inventory has a good internal structure.

Table 1 shows the correlation between self academic performance (8 yrs and 12 yrs), teachers' rating of L2L and four subscales of L2L inventory. The correlations between current, 8yr- academic performance and four subscale scores of the scale are significantly but low. The low correlation may be due to the fact that the academic performance is self-assessed by the students, or that the academic performance of 12 years old is not affected by the learning to learn dispositions.

The correlations between student self-reported L2L and teachers' rating are around .23. The results indicated that teachers may not be able to accurately observe students'

Table 1. Criterion related validity of L2L inventory

| | 12yr academic performance | Teachers' ratings | 8yr academic performance |
|-------------------------|---------------------------|-------------------|--------------------------|
| curiosity | .18 | .25 | .16 |
| meaning-making | .23 | .21 | .21 |
| interpersonal learning | .16 | .23 | .17 |
| self-regulated learning | .25 | .25 | .20 |

L2L dispositions. The higher correlations between academic performance and four learning-to-learn dimensions rated by the teachers (.54, .72, .47, and .72. respectively) illustrated that teachers' rating of L2L dispositions may be contaminated by students' academic scores. Liking to go to school and satisfaction with academic performance are the influencing factors for the development of learning to learn.

Five temperaments rated at 5 years old has low but significant correlations with learning-to-learn scale scores. There are regularity, adaptability, persistence, distractibility, and sensitivity.

Conclusions

The results provide evidence for a valid and reliable 4-factor learning-to-learn inventory. Creating a positive learning environment and improving students' self-efficacy contribute to the development of learning to learn dispositions.

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