

Introduction

Aurora Battery

Role-Taking

Purpose & Hypotheses

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- Sternberg's Triarchic Theory of Intelligence conceptualizes intelligence as 3 inter-related sets of cognitive skills: analytical, creative, and practical¹.
- In his theory, Sternberg emphasizes the importance of recognizing not only analytical skills that traditional IQ tests measure, but also more real-world skills, such as creative and practical skills¹.
- The Aurora Battery is a set of assessments developed in accord with Sternberg's theory by researchers at Yale University².
- Aurora was designed to assess all 3 skills in children ages 9-12².
- Aurora is comprised of 16 sub-tests (5 analytical, 5 creative, 6 practical). There are multiple choice, short answer, and open ended items. These sub-tests assess skills across 3 domains (figural, verbal, and numerical)².
- The present study analyzed students' responses to a verbal creativity subtest, 'Conversations,' which requires students to create a dialogue between 10 pairs of inanimate objects³.

- Role-taking, or social perspective-taking, is the ability to recognize, understand, and rationalize other individuals' cognitive and emotional points of view⁴.
- Robert Selman, a pioneer in role-taking theory, conceptualizes role-taking as a crucial developmental process that children develop over time⁴.
- Empirical research suggests that children who exhibit higher levels of role-taking abilities also exhibit higher creative abilities relative to their peers⁵.
- These findings support the reason for analyzing role-taking abilities within an intellectual assessment that evaluates creative abilities.

- The purpose of this study was to develop a rubric that would assess cognitive and affective role-taking abilities in children.
- Since the creativity subtest 'Conversations' requires students to create a dialogue through the viewpoints of others, they must utilize their ability to role-take.
- We developed a rubric, the Role-taking Abilities Measure (RAM), to evaluate students' abilities to demonstrate role-taking within the 'Conversations' subtest. The original rubric evaluated creativity.
- The goal of our work was to establish high levels of internal consistency and inter-rater reliability for the RAM.
- We hypothesized that the RAM would be a reliable rubric for assessing role-taking abilities.
- Subsequently, the relationship between students' role-taking scores and their creative scores yielded as per Aurora's rubric, were analyzed to understand the relationship between role-taking and creativity.
- We hypothesized that students' role-taking scores would be moderately to highly correlated with their creativity scores.

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Method

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Results

Theoretical Background and the RAM

- The RAM was adapted from Diazgranados et al.'s, Social Perspective Taking Acts Measure (SPTAM)⁶.
- SPTAM assesses students ability to address social problems from perspectives of different students⁶.
- SPTAM contains 3 measures that assess cognitive aspects of role-taking, adopted and modified for the RAM⁶.
- The RAM assesses 2 types of role-taking constructs: cognitive and affective role-taking. There are a total of 4 measures, each intended to assess different aspects of role-taking abilities.
- Thus, each subtest item receives a total of 4 scores.
- Minimum score is 0 and no maximum score in order to prevent ceiling effects.
- A sample of 36 subtests ($n=36$) were randomly drawn from a set of 315 subtests and scored independently by 2 raters.

Constructs

Cognitive Role-Taking

The ability to imagine position of another person and make inferences regarding their cognitive abilities.

Affective Role-Taking

The ability to imagine position of another person and make inferences regarding their emotions.

Measures

Identification

Ability to explicitly identify different characters within dialogue, through use of nouns or pronouns.

Articulation

Ability to express objects' thoughts, feelings, opinions, preferences, and physical characteristics.

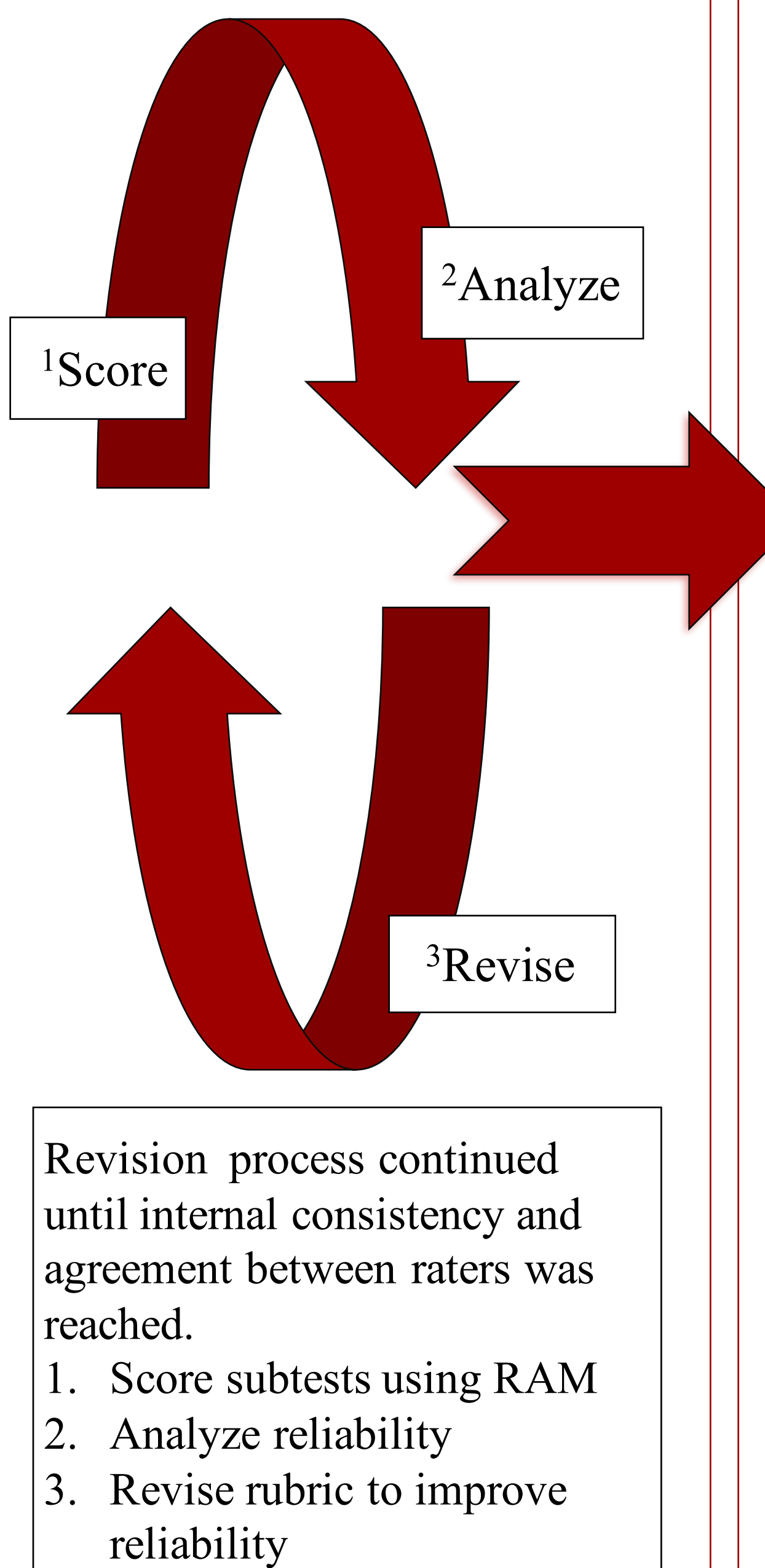
Positioning

Ability to position roles and actions of objects within social setting.

Affective R/T

Ability to express object's moods, feelings, and attitudes within dialogue.

Revision Process



Measure

Internal Consistency (Cronbach's alpha)

Identification	0.871
Articulation	0.690
Positioning	0.730
Affective R/T	0.609

Correlations

Pearson

P-value

Identification scores and original conversations scores	0.357	.045
Positioning scores and original conversations scores	0.306	.089
Articulation scores and original conversations scores	0.227	.212
Total cognitive role-taking scores and original conversations scores	0.408	.021
Total cognitive role-taking scores and total Aurora creativity scores	0.331	.064

- Cronbach's alpha showed overall high internal consistency for all 4 measures, suggesting that the RAM is a promising tool for assessing role-taking abilities.
- Inter-rater reliability scores ranged from 0.688 to 1.0, using Spearman's R and Cohen's Kappa.
- Low to moderate correlations were found between students' role-taking scores and their Aurora creativity scores, which was lower than anticipated.
- Two tailed significance was set at the .05 value
- Repeated trial of grading, with larger sample size and stricter grading procedure, may improve the above results.

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Conclusion

- Current findings suggest that the RAM is a promising tool for assessing role-taking abilities in children, as indicated by the overall high inter-rater reliability scores and high internal consistency of the 4 role-taking measures.
- Future research will be carried out to confirm all the above findings, but with a larger sample size and with a strictly blind grading procedure.
- Future research will also examine the relationships between students' role-taking scores and their future academic scores, in order to better understand the impact role-taking abilities have on differential academic abilities.

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References

1. Sternberg, Robert J. (1999). The Theory of Successful Intelligence. *Review of general psychology*, 3(4), 292-316.
2. Chart, H. E., Grigorenko, E. L., & Sternberg, R. J. (2008). Identification: The Aurora Battery. In J. A. Plucker & C. M. Callahan (Eds.), *Critical issues and practices in gifted education* (pp. 345-365). Waco, TX: Prufrock Press.
3. Mourgues, C. V., Tan, M., Hein, S., Elliott, J. G., & Grigorenko, E. L. (2016). Using creativity to predict future academic performance: An Application of Aurora's Five Subtest for Creativity. *Learning and individual differences*, 51, 378-386.
4. Selman, R., & Byrne, D. (1974). A Structural-Developmental Analysis of Levels of Role Taking in Middle Childhood. *Child development*, 45(3), 803-806.
5. Doron, E. (2017). Fostering Creativity in School Aged Children Through Perspective-Taking and Visual Media Based on Short Term Intervention Program. *Thinking skills and creativity*, 23, 150-160.
6. Diazgranados, S., Selman, R. L., & Dionne, M. (2015). Acts of Social Perspective Taking: A Functional Construct and the Validation of a Performance Measure for Early Adolescents. *Social development*, 25(3), 572-601.
7. Enright, R. D., & Lapsley, D. K. (1980). Social Role-Taking: A Review of the Constructs, Measures, and Measurement Properties. *Review of educational research*, 50(4), 647-674.
8. Anastassiou-Hadjicharalambous, X., & Warden, D. (2008). Cognitive and Affective Perspective-Taking in Conduct-Disordered Children High and Low on Callous-Unemotional Traits. *Child and adolescent psychiatry and mental health*, 2(1), 11-16.