Actively Open-Minded Thinking in Adolescents: A Predictor of Rational Thinking

Emillie Thuy-Linh Vu, Ying Kalin Mo, Joshua T. Rubenstein, Christiane Marie Canillo, & Maggie E. Toplak

Department of Psychology, Faculty of Health, York University, Toronto, ON M3J 1P3 Canada

Background

Rational thinking is the ability to track truth and seek goals. Extensive research in *adults* has found "actively open-mind thinking" (AOT) to be a significant predictor of performance on rational thinking tasks, such as "scientific reasoning" and "probabilistic and statistical reasoning", even after statistically controlling cognitive ability (Stanovich et al., 2016a, 2016b; Stanovich et al., 2019; Toplak et al., 2017).

AOT is a thinking disposition that assesses one's tendency to consider alternative perspectives, including perspectives that may not be consistent with one's prior beliefs (Stanovich, 2016; Stanovich & West, 1997; Toplak, 2021; Toplak et al., 2014).

Less research has been done on AOT and rational thinking in adolescents. Therefore, we aim to address this gap in the literature.

Hypotheses

H1: The adolescent sample will present similar data patterns for the AOT scale as in adult samples.
H2: Our AOT scale will be a reliable measure for youths.
H3: AOT will be a significant predictor of rational thinking tasks when cognitive ability is statistically controlled.

Methods

Participants
***N* = 146**, from an independent school → Grade 9(28.4%), Grade 10(36.4%), Grade 11(29.7%), Grade 12(15.5%)

Measures
AOT: Actively Open-Minded Thinking scale (AOT) adapted for youths; 12 items, 4-point Likert scale
Cognitive ability: Shipley-2 (Shipley, 2009) (Block subset and Vocabulary subset)
Rational thinking: Scientific Reasoning, Probabilistic and Statistical Reasoning

Results

AOT Scale Reliability
Cronbach's alpha = .62

AOT Scores
M = 53.54, *SD* = 5.87

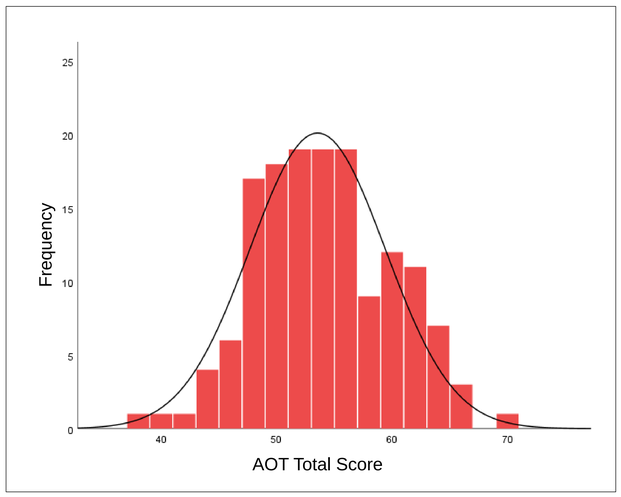

Figure 1. Frequency of AOT scores.

Hierarchical regression for *Probabilistic and Statistical Reasoning*:
AOT total score: t = 3.49, p<.005
Shipley-2 raw score: t = 3.22, p<.005

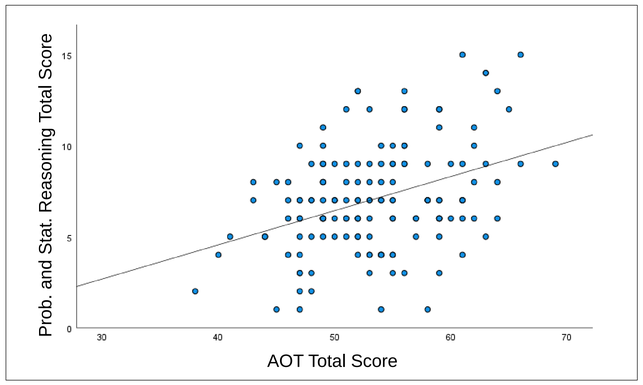

Figure 2. Regression between AOT and Probabilistic and Statistical Reasoning.

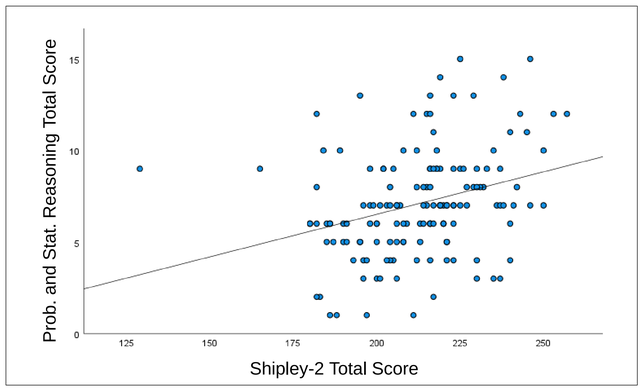

Figure 3. Regression between Shipley-2 and Probabilistic and Statistical Reasoning.

Hierarchical regression for *Scientific Reasoning*:
AOT total score: t = .74, p>.05
Shipley-2 raw score: t = 3.81, p<.001

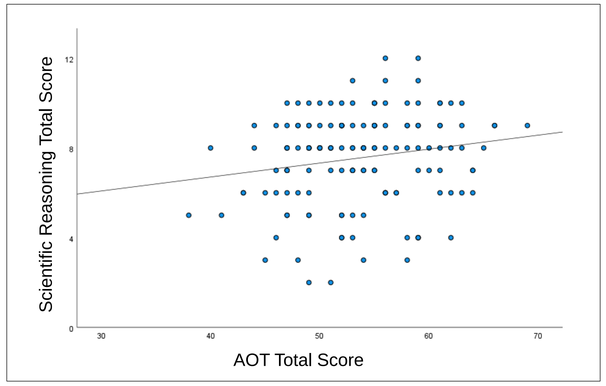

Figure 4. Regression between AOT and Scientific Reasoning.

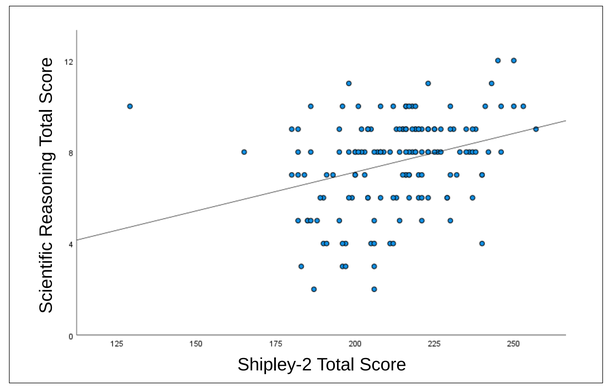

Figure 5. Regression between Shipley-2 and Scientific Reasoning.

Discussion

Hypothesis 1
The frequency of AOT scores is similar to that of adults.

Hypothesis 2
The AOT scale adapted for youths is moderately reliable.

Hypothesis 3
AOT was a significant predictor for Probabilistic and Statistical Reasoning when cognitive ability was statistically controlled but not for Scientific Reasoning.

These findings suggest that AOT is measurable in adolescent samples. AOT was also able to predict at least one form of rational thinking, which suggests a relationship between AOT and rational thinking in adolescents. Further research should be conducted to examine whether these results are consistent.

References

Please scan QR code or email me at linhvu@my.yorku.ca.

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