

# How Growth Mindsets Relate to Cultural Differences in Insight Problem-Solving

## Authors

Principal Investigator: Sindhu Sivasankar  
Research Supervisor: Dr. Amanda Sharples

## Acknowledgements

I would like to express my appreciation to my supervisor, Dr. Amanda Sharples from the University of Toronto Psychology Department, for providing advice, aid, and educational resources for this research project. I would also like to thank the Laidlaw Scholars Foundation for providing funding and the UofT Laidlaw Scholars Programme promoting my personal growth.



## 01 Introduction

- Insight problems are ill-defined, like riddles (Vervaeke, 1997).
- People with growth mindsets believe problem-solving abilities are malleable (Dweck & Leggett, 1988)
- Growth mindsets may increase insight problem-solving accuracy because of the mindset may further problem restructuring
- East Asian cultural norms may increase students' willingness to have growth mindsets (Guglielmi & Brekke, 2017; Heine et al., 2001)

## 02 Research Objective

- Research question: "How do growth mindset and cultural identity differences relate to insight problem-solving in Chinese and Canadian university students?"
- Hypothesis: Chinese university students/students with high collectivism will perform better on the insight problem-solving task, have more insight experience, and have a higher growth mindset score

## 03 Methodology

- 108 participants, Chinese and Canadian university students from Ontario
- Online Qualtrics questionnaire
- Quasi-independent variables:
  - Cultural identity (self-reported and cultural orientation)
  - Growth mindset score
- Dependent measures:
  - Insight problem-solving accuracy (compound remote associates CRAs)
  - Self-reported insight experience
- Data analysis: linear regression and mediation models

## 04 Results

- Hypothesis: Collectivism scores and growth mindset scores would predict greater accuracy on the CRA measure
  - No significant relationship between collectivism scores, growth mindset scores, and CRA scores
  - Higher individualism significantly predicted lower accuracy in the CRA test,  $\beta = -0.03$ ,  $z = -4.04$ ,  $p = <.001$
  - Higher growth mindset was found to significantly predict higher accuracy in the CRA test,  $\beta = 0.12$ ,  $z = 3.43$ ,  $p = <.001$
- Hypothesis: Collectivism scores would predict greater insight experience and higher growth mindset
  - Higher collectivism was found to significantly predict more insight experience,  $\beta = 0.02$ ,  $z = 2.14$ ,  $p = 0.03$
  - Higher collectivism was found to significantly predict lower growth mindset,  $\beta = -0.03$ ,  $z = -4.69$ ,  $p = <.001$
  - Higher individualism was found to significantly predict more insight experience,  $\beta = 0.03$ ,  $z = 3.22$ ,  $p = 0.001$
  - Higher individualism was found to significantly predict lower growth mindset,  $\beta = -0.07$ ,  $z = -13.00$ ,  $p = <.001$
- Hypothesis: Chinese cultural identity would predict more insight experience and higher growth mindset scores
  - No significant relationship between Chinese cultural identity and insight experience
  - Chinese cultural identity was found to significantly predict lower growth mindset scores,  $\beta = -0.01$ ,  $z = -15.52$ ,  $p = <.001$
  - Canadian cultural identity was found to significantly predict more insight experience,  $\beta = 0.01$ ,  $z = 3.37$ ,  $p = 0.001$
  - Canadian cultural identity was also found to significantly predict higher growth mindset score,  $\beta = 0.004$ ,  $z = 2.86$ ,  $p = 0.004$

## 05 Discussion

- The results did not support the hypothesis that students with Chinese cultural identities have growth mindsets and perform better on insight problem-solving tasks compared to Canadian students
- Results did not make a clear comparison between collectivism and individualism in regards to growth mindset
- Results supported that growth mindsets can predict higher accuracy in solving insight problems
- Limitations:
  - Study was conducted in an individualistic country
  - Trend in data set did not follow past literature trend in regards to cultural orientation
  - CRAs are weakly correlated with insight experience
  - No causal claims can be concluded

## 06 Conclusion

- Growth mindsets are correlated with better performance in insight problem-solving
- Study cannot fully elucidate the cultural differences in insight problem-solving and how they relate to growth mindsets
- Lack of clarity could be due to limitations in the data collection and methodology
- Further research could use experimental design and sample from a collectivistic country
- Study still supports the benefit of growth mindset interventions at universities

## References

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