

THE EFFECT OF MULTIPLE CULTURAL ENVIRONMENTS ON DIVERGENT THINKING: DOES YOUR CULTURE IMPACT YOUR COGNITIVE FLEXIBILITY AND PROBLEM-SOLVING ABILITIES?

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Background: Cross-cultural research has shown that being raised in multiple cultural environments can affect cognitive processing (e.g., bilingualism has been found to enhance the ability to mentally shift between multiple tasks).

Objectives: To demonstrate that multicultural upbringings are positively associated with higher performance on cognitive flexibility and problem-solving tasks.

Methods: We operationalise multiculturalism as having lived in at least three countries before age 18 and being bilingual, and monoculturalism as living in one country before age 18 and being monolingual. Data was collected during a one-time laboratory visit: We used the Task Switching Paradigm Test (TSPT) to measure cognitive flexibility and the Alternative Uses Task (AUT) to measure problem solving, the latter with sub-scores: fluency, flexibility, and originality. Independent samples t-test was used to identify differences between groups.

Results: The study included 10 multicultural and 10 monocultural university students. Mean participant age was $\mu = 21.79$ ($\sigma = 2.32$) and 63.16% were female; the groups were comparable on these characteristics. Although there were no statistically significant findings on associations and comparisons, there were consistent trends towards higher performance of the multicultural group on the overall problem solving task score (AUT) ($t(16) = 1.196$, Cohen's $d = 0.564$, $p = 0.249$) as well as the sub-scores. In contrast, the multicultural group had slower TSPT performance, indicating a delay to alternate between two different rule sets ($t(16) = 1.541$, Cohen's $d = 0.726$, $p = 0.143$). A power analysis indicates a minimum requirement of $n = 140$ for significant findings.

Implications: We found multicultural individuals to have lower cognitive flexibility yet greater problem-solving capacity which may be due to their access to more cultural cognitive models, while lower cognitive flexibility may be due to multiple cognitive models increasing cognitive load. This pilot will inform a larger scaled study to clarify these effects.

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Learning Objectives:

1)At the conclusion of this presentation learners will be able to discriminate between cognitive flexibility and problem solving and understand the differences and similarities between these two skill sets.

2)At the conclusion of this presentation learners will be able to assess which types of cultural upbringing environments could lead to greater cognitive flexibility and problem solving.

References:

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Buttelmann, F., & Karbach, J. (2017). Development and plasticity of cognitive flexibility in early and middle childhood. *Frontiers in psychology*, 8, 1040.