EXPLORING CROSS-CULTURAL VARIATIONS IN THE DEVELOPMENT OF EXECUTIVE FUNCTION FOR PRESCHOOLERS FROM LOW AND HIGH SOCIOECONOMIC FAMILIES

Sara A. Schmitt, a Irem Korucu, a David J. Purpura, a Shawn Whiteman, b Chenyi Zhang, c & Fuyi Yang d

aPurdue University
bUtah State University
cGeorgia State University
dEast China Normal University
CONSIDERATION OF CULTURAL VARIATION FOR DEVELOPMENT

- Differences in social systems and value have led many scholars to investigate cross-cultural variation in cognitive development between Western and non-Western children.
EXECUTIVE FUNCTION (EF)

• Adaptive, goal-directed intentional control of thoughts, behaviors, and emotions (Best & Miller, 2010)
  • Working memory
  • Inhibitory control
  • Cognitive flexibility
IMPORTANCE OF EXECUTIVE FUNCTION IN PRESCHOOL

• Social-emotional functioning (Denham et al., 2010, 2014)
• Physical health (Schmitt et al., 2017)
• Short- and long-term academic success (Chung & McBride, 2011; McClelland et al., 2007; Schmitt et al., 2014)
SOCIOECONOMIC STATUS AND EXECUTIVE FUNCTION

• Persistent exposure to adversity is related to lower levels of EF (McClelland et al., 2016; Raver et al., 2013)

• EF has been identified as a potential protective factor for children experiencing risk (Obradović, 2010; Sektnan et al., 2010)
EXECUTIVE FUNCTION IN THE U.S. AND CHINA

• Chinese children typically outperform U.S. children on a variety of EF tasks (Grabell et al., 2015; Lan et al., 2011; Sabbagh et al., 2006)

• Development of strong EF in Chinese children seems to occur faster than for U.S. children (Sabbagh et al., 2006)
POTENTIAL MECHANISMS FOR CHINESE ADVANTAGE IN EF

• Sociocultural differences in both school and home contexts
  • Self-control is highly valued in Chinese preschool settings compared to U.S. preschool settings (Tobin et al., 1989)
  • Chinese parents expect mastery in impulse control as young as 2 years of age, while parents from Western cultures do not have similar expectations until the preschool years (Chen et al., 1998)
LIMITATIONS OF PREVIOUS RESEARCH

• Cross-sectional
• No consideration of differences in growth in EF across SES in China and U.S.
PRESENT STUDY AIMS

• Examine cross-cultural variations in the development of EF across the preschool period for U.S. and Chinese children from low and high socioeconomic families
  1. Comparison of growth in inhibitory control, cognitive flexibility, and global EF during preschool for children in the U.S. and China
  2. Comparison of gains in the domains across both countries for children from high and low SES families
PARTICIPANTS

• N = 216
  • n = 125 from the U.S.
    • $M$ age = 4.17 years, $SD = .58$ years
    • 26% low SES (i.e., parent education was some college or less)
  • n = 91 from Shanghai and Jiangxi, China
    • $M = 4.20$ years, $SD = .71$ years
    • 64% low SES
PROCEDURES

• Two data points
  • Time 1: beginning of preschool
  • Time 2: end of preschool
MEASURES

• Inhibitory control:
  • Sun/Moon task (Archibald & Kerns, 1999)

• Cognitive flexibility:
  • Card Sorting task (Frye, Zelazo, & Palfai, 1995)

• Global EF:
  • Head-Toes-Knees-Shoulders (HTKS; McClelland et al., 2007)
ANALYTIC PROCEDURE

• 2 (Country: U.S. vs. China) X 2 (SES: Low vs. High) X 2 (time: beginning vs. end of preschool) mixed model ANOVAs

• Covariates: child age and gender
RESULTS: INHIBITORY CONTROL
RESULTS: COGNITIVE FLEXIBILITY

The diagram shows a comparison of cognitive flexibility between China and the U.S. at two different time points. The y-axis represents cognitive flexibility, ranging from 0 to 18. The black bars indicate Time 1, and the brown bars indicate Time 2. The data suggests a higher level of cognitive flexibility in both countries at Time 2 compared to Time 1, with China showing a slight advantage over the U.S. in terms of cognitive flexibility.
RESULTS: GLOBAL EF

![Bar chart comparing Global Executive Functioning (Time 1 vs. Time 2) across Low SES and High SES in China and the U.S.](chart.png)
DISCUSSION

• Results differed slightly with regard to the specific aspects of EF, but generally indicated that Chinese children experienced greater gains in EF during the preschool period compared to U.S. children
  • Sociocultural variation in parenting practices and classroom expectations
DISCUSSION

• Children from low SES families in China showed the largest gains
  • Classroom practices: more emphasis on compliance and behavioral control (Liu, Yang, Pan & Tu, 2012)
LIMITATIONS AND FUTURE DIRECTIONS

• Small samples
• Distribution of low versus high SES children was uneven across countries
• No measures reflecting potential mechanisms that may help explain differences in EF across countries
• No direct measure of working memory
CONCLUSIONS

- Results highlight cultural variability in the development of EF and provide additional evidence that Chinese children have an EF advantage over U.S. children, laying the foundation for future research.

- Understanding the mechanisms that may be at play in helping to explain cultural variation in EF could inform instruction and intervention efforts.
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