



The Effects of Lyrics and Tempo of Music on Cognitive and Motor Task Performance in 4-year-old Children

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INTRODUCTION

- Previous research showed that there is an optimal level of arousal from music that can lead to better cognitive performance (Furnham & Bradley, 1997)
- A study showed that familiar songs lead to more creativity in children's drawings (Schellenberg, Nakata, Hunter and Tamoto, 2007)
- There has been little research on the numerous variables associated with music such as tempo and the presence of lyrics

Experiment Goal: To identify the effects of music tempo and lyrics on cognitive and motor ability in 4-year-old children.

METHODS

Participants

21 children recruited from the 4-year-old classroom at The Children's School

Materials

Fast Song: Bananaphone (Creber, Raffi)

Slow Song: Hello Hello (Dan Zane)

Motor Task: 100 Pegs

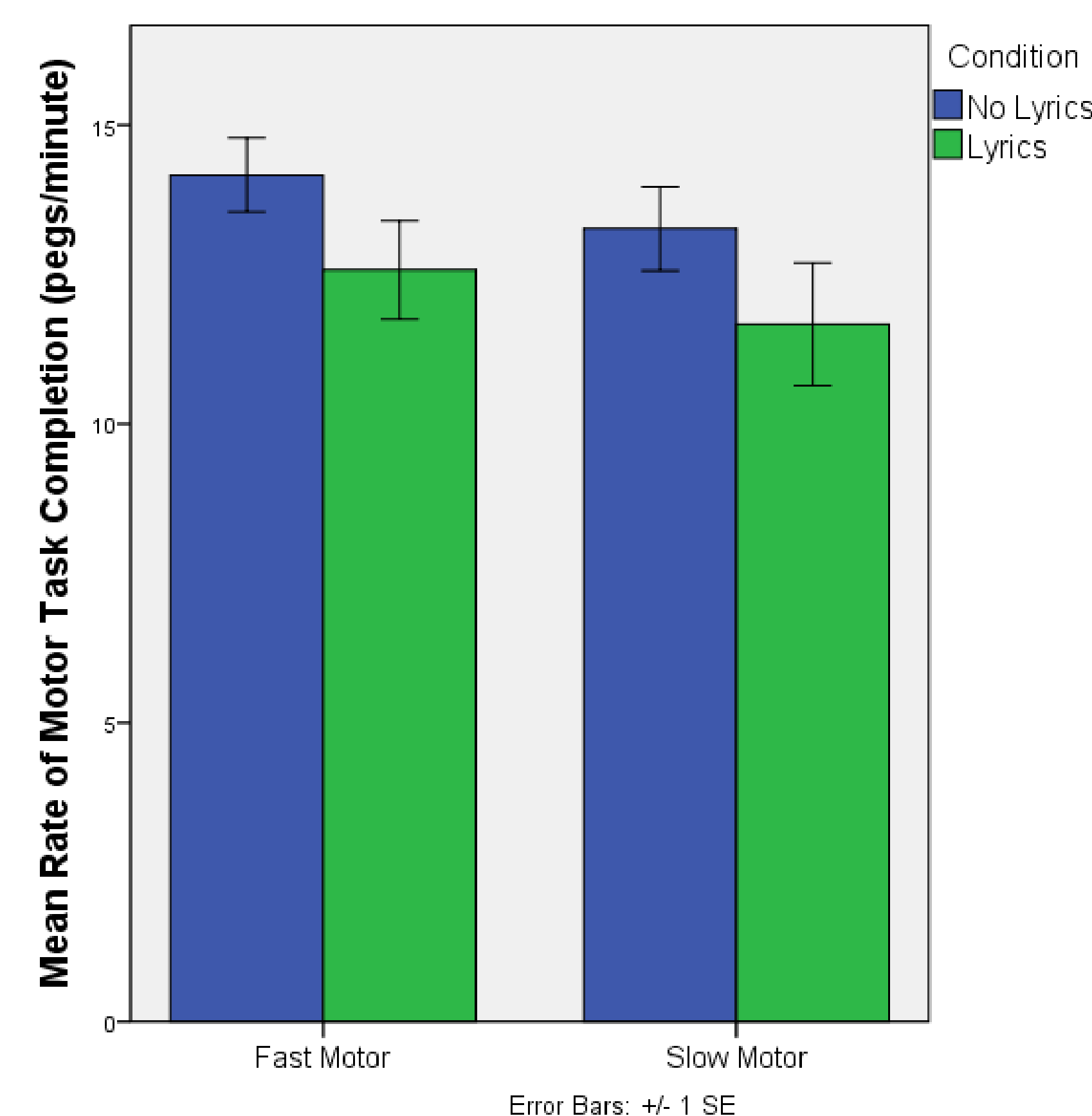
Cognitive Task: 12-Piece Jigsaw Puzzle

Procedure

1. Random assignment to the Lyrics group or No Lyrics group
2. Random assignment to one of four task orders: (1) slow cognitive, slow motor, fast cognitive, fast motor; (2) slow motor, slow cognitive, fast motor, fast cognitive; (3) fast cognitive, fast motor, slow cognitive, slow motor; (4) fast motor, fast cognitive, slow motor, slow cognitive
3. Both tasks were demonstrated once
4. Rates of completion were calculated

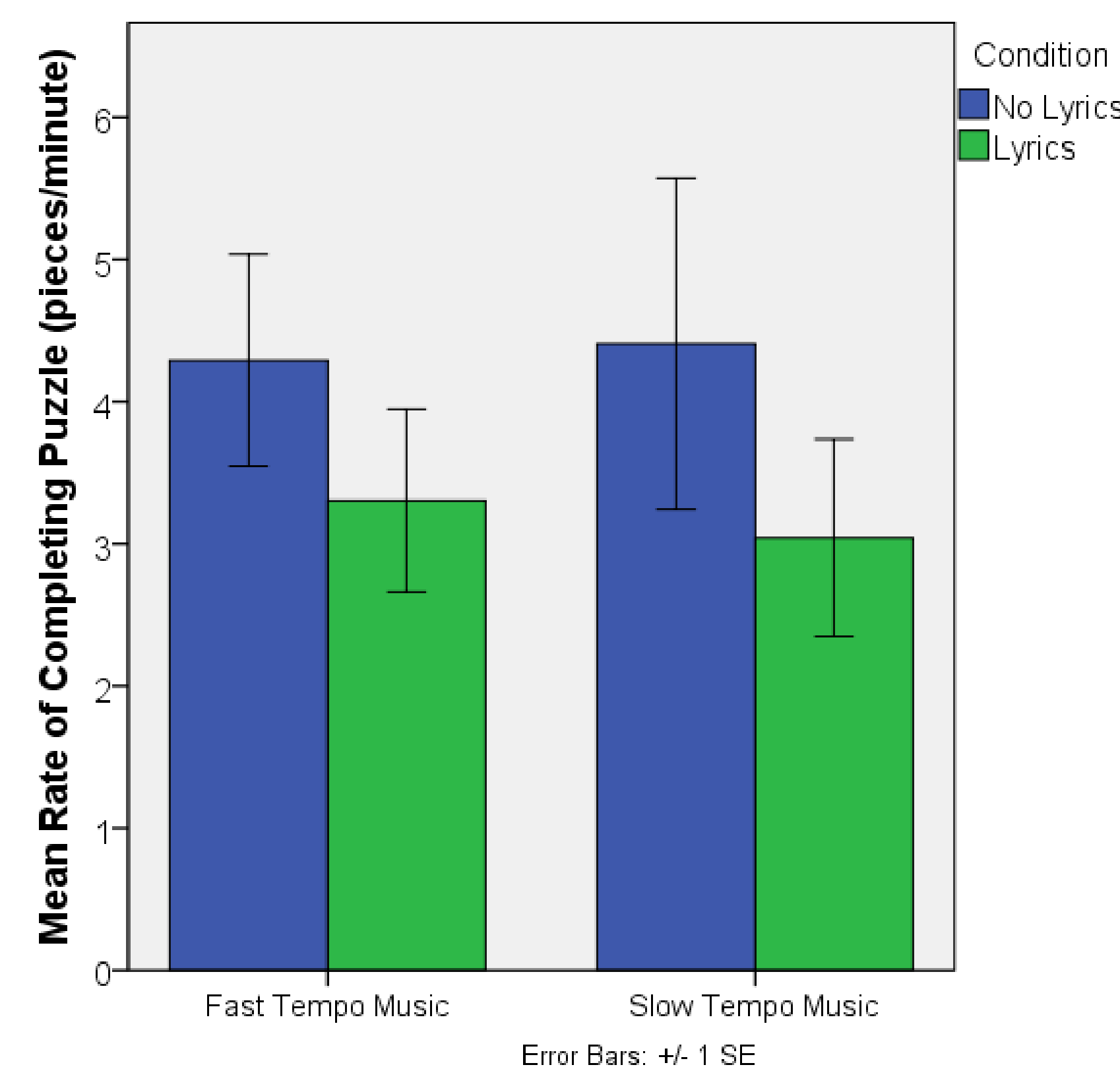
RESULTS

Motor Task Performance



- Significant main effect of Tempo, $F(1,13)=3.40$, $p=0.04$: Completion rates were higher with fast tempo music
- Marginal significant effects of Lyrics, $F(1,13)=4.17$, $p=0.06$: Completion rates were marginally higher without lyrics than with lyrics

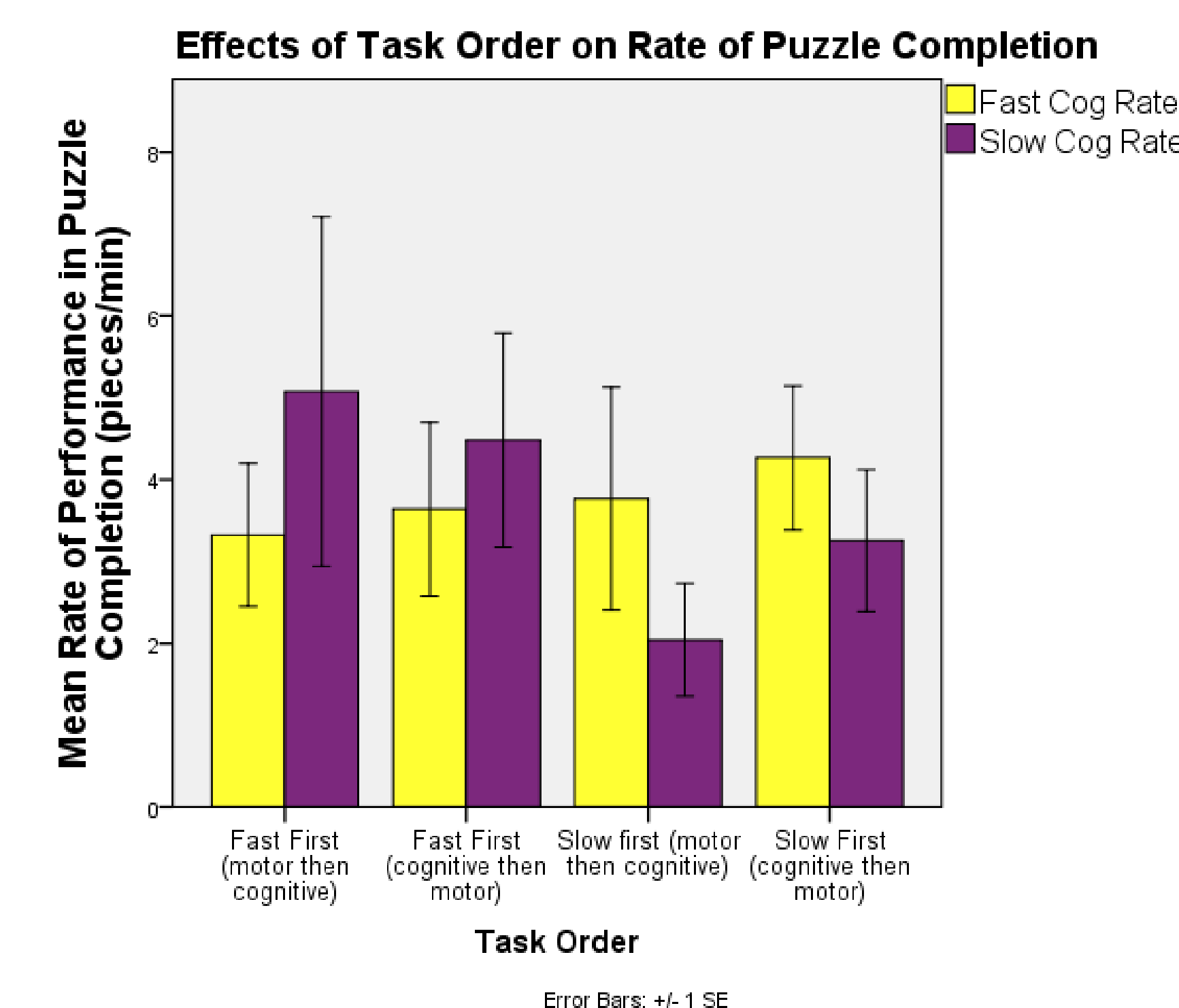
Cognitive Task Performance



- Marginally significant effects of Lyrics, $F(1,13)=3.404$, $p=0.088$: Completion rates were marginally higher without lyrics than with lyrics

RESULTS, contd

Task Order: Cognitive Task



Tempo x Order Interaction, $F(3,13)=4.35$, $p=0.03$

DISCUSSION

- Listening to music without lyrics resulted in better performance than with lyrics on both cognitive and motor tasks
- This may be due to how lyrics can be distracting
- Listening to fast tempo music resulted in better performance than slow tempo in the motor task
- This may be due to children completing the motor task to the beat of the music
- Children performed better on the second time in cognitive task because practice is more useful for solving a puzzle than the 100 pegs task

FUTURE RESEARCH

- Do lyrics in a different language have the same impact on cognitive performance?
- Do different genres affect performance?

REFERENCES

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