The Role of Executive Function in the Development of Social Competence

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Introduction

- A critical aspect of social competence is the ability to coordinate multiple processes to meet social demands and achieve social goals (Iarocci, Yager, & Elfers, 2007).
  - Peer provocation and peer rejection are the most common social interactions that rely on social competence in preschool.
- Executive function (EF; the ability to plan and direct goal-oriented behavior, Anderson, 1998) can potentially assist with the coordination of processes needed in difficult peer situations (Boseovski & Marcovitch, 2012).
  - EF can be divided into three related but separate components- working memory, inhibitory control, and cognitive flexibility (Miyake et al., 2000).
- Each component of EF can assist with different aspects of social competence.
  - Working memory can help with keeping social goals and rules in mind.
  - Inhibitory control can facilitate the inhibition of an anti-social response.
  - Cognitive flexibility could allow shifting between an inhibited anti-social response to a new competent response and evaluation of multiple response options at a time.
- The goal of the current study was to examine the differential relations between all three EF component and children's responses to difficult peer situations.

Methods

Participants
- Forty-eight 4- and 5-year-olds (M age = 57 months, s = 6.5), 22 female

Materials and Procedure (see Figures 1 and 2)
Challenging Situations Task (Denham et al., 2013)
- Presented with 3 emotional provocation and 3 physical provocation situations and asked how they would respond to each situation if it happened to them.
- Chose from 2 competent responses (prosocial or avoidance) and 2 incompetent responses (aggressive or crying)

Dimensional Change Card Sort- Borders (Zelazo, 2006)
- Sort 6 cards by one dimension (i.e., color or shape), and then the other dimension.
- If successful, participants moved on to the borders level in which they were told to sort cards with a border by one dimension and cards without the border by the other dimension

Visual Counting Span (Case, Kurland, & Goldberg, 1982)
- Participants were told to count the green frogs, while ignoring the red ladybugs. They were then asked to recall the amount of frogs on each card. The number of cards ranged from 2 to 4.

Happy/Sad Stroop (Lagattuta, Sayfan, & Monsour, 2011)
- Participants were presented with 20 cards with either a happy or sad face on each and were told to say "happy" when they saw a sad face, and "sad" when they saw a happy face.

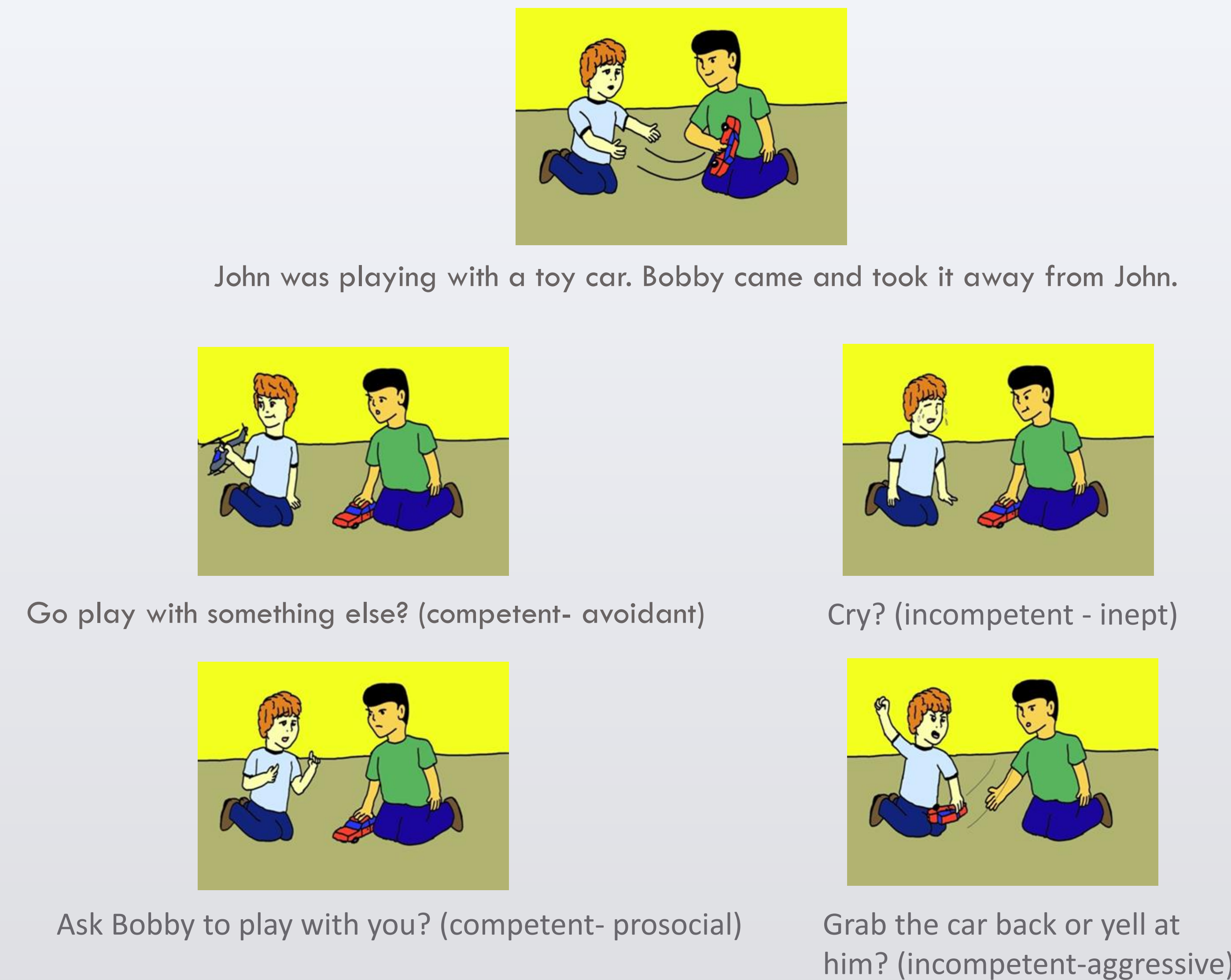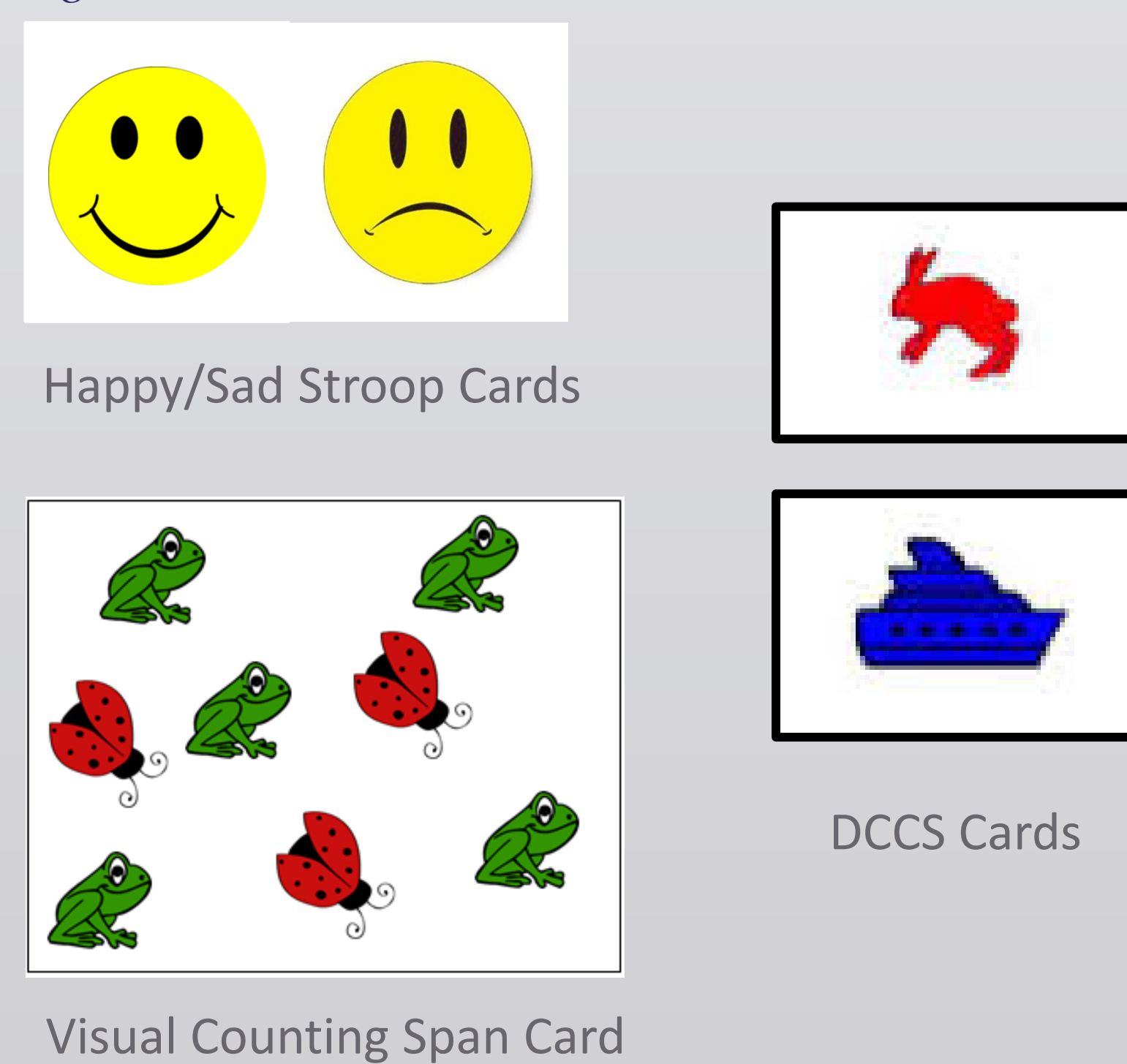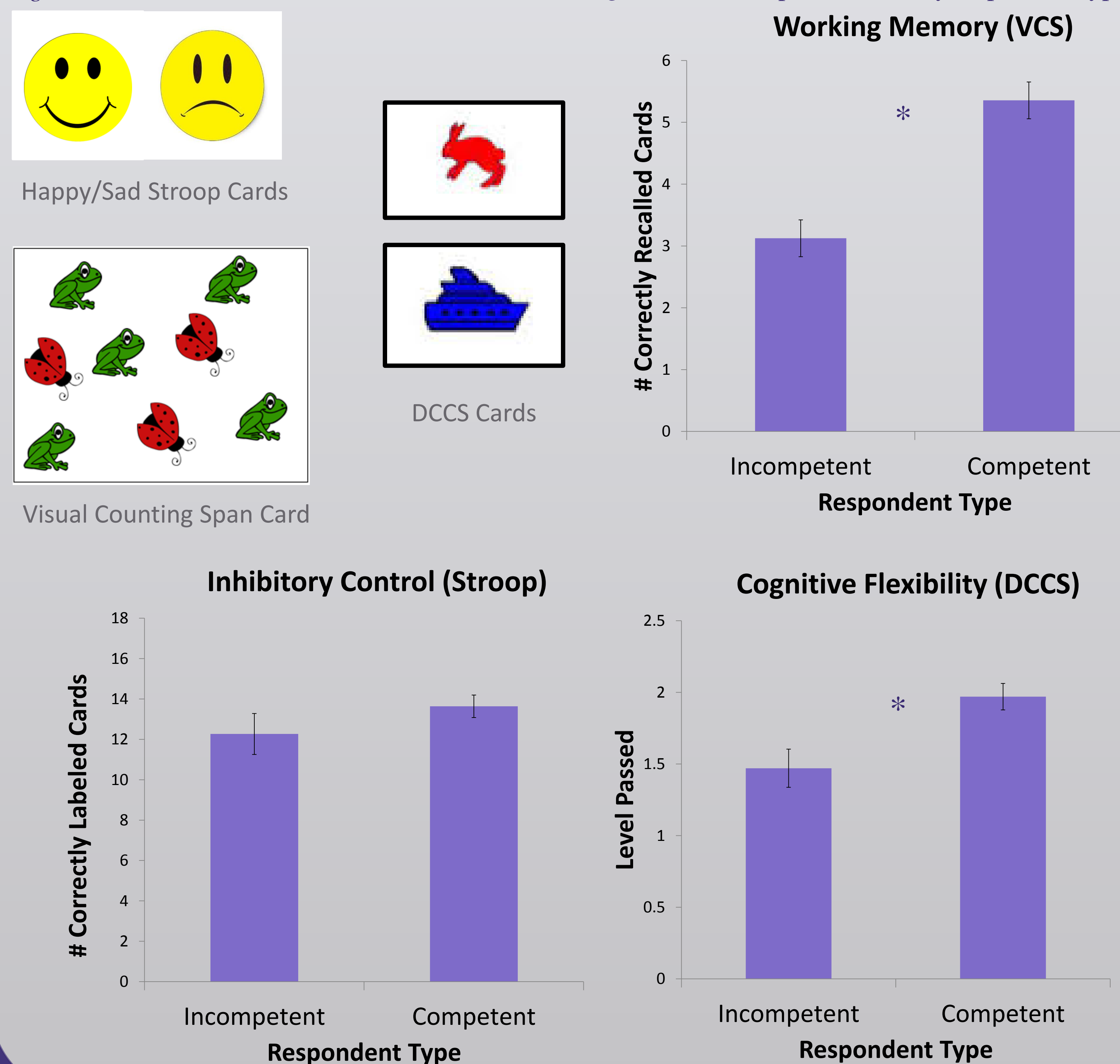*Figure 1:* Example of a situation in the Challenging Situations Task

John was playing with a toy car. Bobby came and took it away from John.

Go play with something else? (competent- avoidant)   Cry? (incompetent - inept)

Ask Bobby to play with you? (competent- prosocial)   Grab the car back or yell at him? (incompetent-aggressive)

Figure 2. EF measure stimuli

Happy/Sad Stroop Cards

DCCS Cards

Visual Counting Span Card

Figure 3. EF task performance by respondent type

Working Memory (VCS)

Inhibitory Control (Stroop)

Cognitive Flexibility (DCCS)

Results

- Competent responding on the Challenging Situations Task was positively correlated with the DCCS (r = .357, p <.01) and the Visual Counting Span (r = .604, p < .001).
- Aggressive responding on the Challenging Situations Task was negatively correlated with the DCCS (r = -.328, p < .02), the Visual Counting Span (r = -.507, p < .001) , and the Happy/Sad Stroop (r = -.285, p < .05).
- Children were considered incompetent responders (n = 15) when they endorsed an aggressive or inept response 3 or more times on the CST (see Figure 3).
  - Incompetent responders (M = 3.12, s = .88) recalled significantly fewer cards than competent responders (M = 5.35, s = 1.71) on the Visual Counting Span, t = -4.76, p < .001.
  - Incompetent responders (M = 1.47, s = .52) passed significantly fewer levels than the competent responders (M = 1.97, s = .53) on the DCCS-Borders, t = -3.07, p < .004.
  - There was no performance difference on the Happy/Sad Stroop task between the incompetent (M = 12.27, s = 3.94) and competent (M = 13.64, s = 3.19) responders, t = -1.28, p < .21.

Discussion

- Working memory and cognitive flexibility are related to competent responding, but response inhibition is not.
  - This could indicate the importance of dual processing in responding to provocation. Both the working memory and cognitive flexibility tasks require children to do two things at once (for example, count the frogs while remembering the amount of frogs on previous cards), while the response inhibition task only require children to do one thing (preventing a habitual response).
- Working memory, cognitive flexibility, and response inhibition are related to aggressive responding.
  - Response inhibition is related to aggressive responding, but not competent responding. This may indicate that response inhibition is only important in social responding when an aggressive response is prepotent.
- The results point to a potential common mechanism between EF and social competence. This common mechanism could be conscious reflection, which leads to success in EF tasks (Zelazo, 2004), and could be related to response evaluation, an important component of competent responding in social cognition models (Crick & Dodge, 1994).

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