Inhibitory Control in Post-Institutionalized Youth: Evidence from an Emotional Go-NoGo Paradigm

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Introduction

Early deprivation in the form of institutional or orphanage rearing has been associated with early cognitive delays and persistent risk for attention problems (Gunnar, Bruce & Gristvan, 2000; Stevens et al., 2008). In addition, early institutional care is associated with disrupted socioemotional development, including indiscriminate friendliness, anxiety, and insecure or atypical attachments (Bruce, Tarullo & Gunnar, 2009; Ellis, Fisher, & Zarahie, 2004; Zeanah et al., 2005). However, less is known about the interactions among cognitive and socioemotional functions within this population. A number of researchers have begun to examine the impact of social or emotional context on inhibitory control in typical development using emotional go-no-go paradigms (e.g., Hare et al., 2008; Cohen, 2010). A recent study suggests that post-institutionalized 5-11 year olds are faster to respond to happy faces than neutral or negative faces, and make more errors for negative faces than non-institutionalized peers (Tottenham et al., 2010).

Questions:
- Do sustained attention and inhibitory control vary as a function of emotional context?
  - Hypothesis: Fearful faces will cause greater disruption in both sustained attention and inhibitory control than happy or neutral faces.
- Do sustained attention and inhibitory control vary as a function of duration of deprivation?
  - Hypothesis: Shorter periods of deprivation will be associated with better cognitive performance, particularly during inhibitory trials.

Participants

- 12- to 14-year-old post-institutionalized (PI) adolescents
- Adopted internationally from Africa (38.6%), Asia (42.9%), Eastern Europe (46.4%), and Latin America (7.1%)
- Screened for FAS, IQ >80, and pervasive developmental disorders

N | Gender | Age at adoption (months)
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28 | 14/14m | M= 18.77 (2.37), Range=5-48

Methods: Emotional Go-NoGo

The task consisted of six blocks. Each block displayed two facial expressions including all possible combinations of happy, fearful, and neutral expressions as target or non-target stimuli.

Following the task, participants completed a forced-choice labeling task.

Results: Task Effects

- Overall PI adolescents performed well on Go trials (M=94, p<.03).
- Go accuracy was highest for happy stimuli and lowest for fear stimuli (p<.01).
- Go reaction times were slower for fear stimuli compared to happy or neutral (p<.01).

Discussion

Sustained attention was high in this PI sample, but was impaired under negative emotional contexts. In contrast to previous work, inhibitory control was poor overall, but less affected by negative emotional content.

Importantly, the duration of early institutional care was a significant predictor of inhibitory control. Later adopted youth showed more false alarms than earlier adopted youth, but only in the context of happy non-targets.

These results suggest that later adopted youth may have even more difficulty inhibiting approach to rewarding stimuli.

Future studies of the development of reward processing systems in PI youth will be critical in determining the generalizability of these findings to emotional faces to other reward contexts.

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References