

BACKGROUND INFORMATION

Delay of Gratification Paradigm:

- Delay of gratification (Mischel, 1966) is used to measure a child's ability to delay rewards. Previous studies have examined the ability to delay rewards for a period of time in order to attain a better reward (e.g., Mischel, 1966; Mischel & Ebbsen, 1970)
- Delay of gratification is indicative of self-regulation and future-oriented behavior that allows for the growth of social-emotional skills
- Behavior problems, such as externalizing and internalizing problems, are consequences of dysregulation (Acra, Bono, Mundy & Scott, in press)

Gender and Delay of Gratification:

- A meta-analysis of gender differences in delay of gratification found
 - Females are better at delaying rewards than males
 - Especially when continuous measures were used (Silverman, 2003).
 - The meta-analysis was restricted to studies of normal samples
- Gender differences were constant across age

Educational Outcomes and Delay of Gratification:

- The inability to delay gratification is associated with
 - Lack of resilience
 - Addictive disorders
 - Antisocial behavior (Mischel, Shoda & Rodriguez, 1989).
- Seconds waited in a delay paradigm in preschool predict social competence and cognitive ability ten years later (Mischel, Shode & Peake, 1988).
- Social competence in school-age children is defined as the presence of socially appropriate behaviors and a lack of behavior problems.

At Risk Populations:

- Prenatal exposure to cocaine is linked with negative social-emotional outcomes in early childhood, such as
 - Poor self-regulation
 - Low frustration tolerance
 - More disruptive behavior than non-exposed peers (Dennis, Bendersky, Ramsay, & Lewis, 2006).

Current Study:

- There is a lack of published articles studying delay of gratification in at risk or special needs populations. The current study measures delay of gratification in a high risk population of children prenatally exposed to cocaine.

METHOD

Participants:

- Participants were 19, 6 to 8 year-old children ($M_{age} = 6.95$, $SD = .455$), prenatally exposed to cocaine. The sample was 84% African American, low SES, with 48% girls.
- All delay of gratification data was collected at Linda Ray Intervention Center during a follow up study

Delay of Gratification Food Task:

- Children were seated at a table with a small pile of food, a larger pile of food, and a bell in front of them.
- Children were instructed that the experimenter would leave the room.
- Children were then informed that if they could wait until the experimenter returned, they could have the larger pile of food, but if they could not wait they they could have the smaller pile of food.
- If children could not wait, they were instructed to ring a bell to bring the experimenter back in the room.
- Children were then told to remain seated in the chair and not eat any of the food until the experimenter returns.

Session termination scenarios:

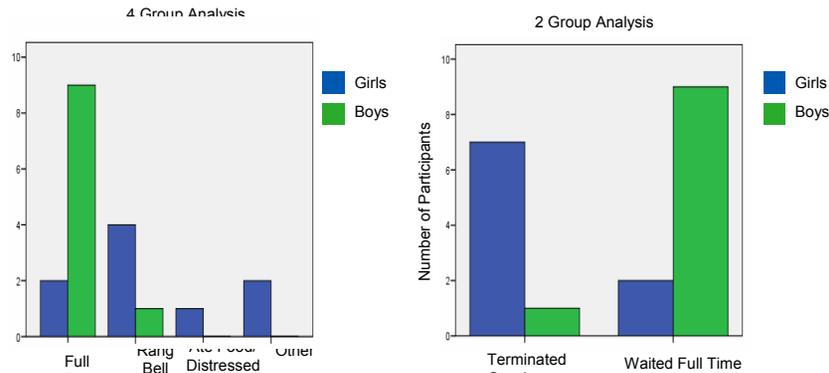
- Child waits entire 7 minutes and is presented with larger pile.
- Child rings bell to bring experimenter back and is presented with the smaller pile.
- Child eats food and latency is recorded, child is presented with the smaller pile.
- Other

RESULTS

CATEGORICAL OUTCOMES

- In a Chi-Square analysis of categorical outcomes boys waited the entire session more frequently than girls when examining all four possibilities of terminated the waiting session (waited the entire time, rang bell, ate food/became distressed, other) ($\chi^2 = 9.227$, $p < .05$, 3 *df*).
- Boys also waited the entire session more frequently than girls in dichotomous analyses (whether the child waited the entire 7 minute session, or terminated the session for another reason) ($\chi^2 = 8.93$, $p < .01$, 1 *df*)

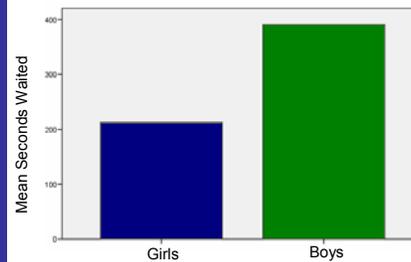
Gender Differences in Session Termination



CONTINUOUS OUTCOMES

- There was also a gender effect favoring boys when analyzing seconds spent waiting, such that boys waited significantly longer than girls ($F = 10.571$, $df = 1, 17$, $p < .01$) (see Figure 3).
- A multivariate linear regression revealed gender as a significant predictor of time spent waiting, above and beyond many control variables such as 3 year old problem behavior, 3 year language ability, and 3 year cognitive ability. ($F = 4.87$, $df = 6, 12$, $\beta_{gender} = 248.2$, $p < .01$) (See Figure 2).

Gender Differences in Waiting Time



POWER AND EFFECT SIZE

- Because of the small sample size, effect size and power analyses were conducted revealing a
 - large effect size (Cohen's $d = 1.49$)
 - strong power (power = .8).

DISCUSSION

Reverse Gender Effect

- Overall, there was a gender effect with boys waiting longer than girls.
 - Girls typically perform better on Delay of Gratification task
 - HOWEVER in this sample: Boys waited longer and were also more likely to wait the entire 7 minutes than girls
- Gender also significantly predicted time spent waiting, HOWEVER rather than favoring girls, boys were favored in this Delay of Gratification study.

- This study found that both categorical and continuous measures of delay of gratification favored boys, contrary to previous findings in the delay of gratification literature, which repeatedly favored girls ability to delay gratification.

At Risk Samples

- The data raises doubt about the generalizability of the gender effect to special needs populations.
 - The gender effect in this high risk population of children is contrary to reported gender effects in typically developing populations.
- Previous studies, including a 33 study meta-analysis, excluded any "special samples"
 - The sample used in this study examined at-risk children
 - The children in this sample are qualitatively different from their typically developing peers due to
 - Prenatal exposure to cocaine
 - High poverty
 - Violent communities
 - High number of custody changes
 - Cognitive delays
 - Language delays
 - Social-emotional difficulties
- Delay of gratification has not been well studied in children with developmental delays, and it is not yet understood how these risks may make these children differ qualitatively from typically developing samples.

Limitations

- Although this study does has a relatively small sample, the power and effect size suggest that this findings is robust.
- Subsequent studies should attempt to replicate the findings with larger samples.
- Studies should also look at diverse and special needs populations, and try to understand which risk factors specifically impact gender and its relation to delay of gratification.

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