Early Impulsivity in Youth at Familial Risk of Bipolar Disorder

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BACKGROUND

- Impulsivity is a core feature of Bipolar Disorder (BD)[1].
- Impulsivity has been suggested as a possible cognitive endophenotype for BD[2].
- Impulsivity can be measured by response inhibition in the context of emotionally salient information.
- We use the Cambridge Neuropsychological Test Automated Battery (CANTAB), Affective Go/No-Go Task (AGN) to measure response inhibition in the context of emotionally salient information.
- Adults with BD exhibit altered response inhibition in context of emotionally salient information; however, more studies are needed to determine to what extent youth at risk for BD exhibit altered response inhibition in emotionally salient context.
- **Hypothesis:** In comparison to controls, at-risk BD youth will show altered response inhibition on AGN task.

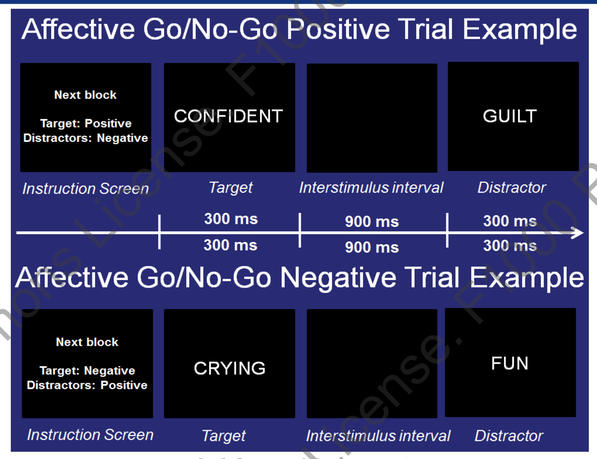
METHODS

- **50 youths from Bipolar Offspring Study**
  - -26 BIOS: offspring of parents with BD
  - -24 CONT: offspring of non BD parents

Demographic Measures	BIOS	CONT
Age (years)	13.7 ± 2.4	13.3 ± 2.4
IQ	104.3 ± 12.8	101.3 ± 13.2
Sex, male/female	13/13	15/9
Clinical Measures		
ADHD- Inattentive Type	1/26	1/24
ADHD- Combined Type	3/26	1/24
ADHD- NOS	0/26	2/24
Current Any DSM-IV Dx	11/26	10/24
Affect Rating		
Positive Affect Rating	19.3 ± 8.6	18.3 ± 12.4
Negative Affect Rating	18.7 ± 10.3	19 ± 13

Mean ± SD (Range) or Proportion No significant differences between groups

METHODS



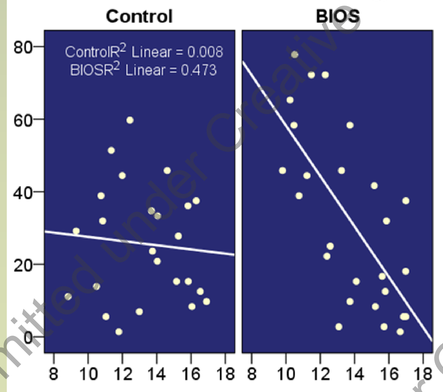
Variables of interest

- Omission errors (no press for target word)
- Commission errors (press for distractor word)
- Reaction time of correct responses

RESULTS

Block Means	Control	BIOS
Reaction Time	492.8 ± 127.7	474.3± 84.1
Commissions	2.3 ± 1.4	2.9 ± 2.2
Ommissions	2.4 ± 1.3	1.8 ± 1.5

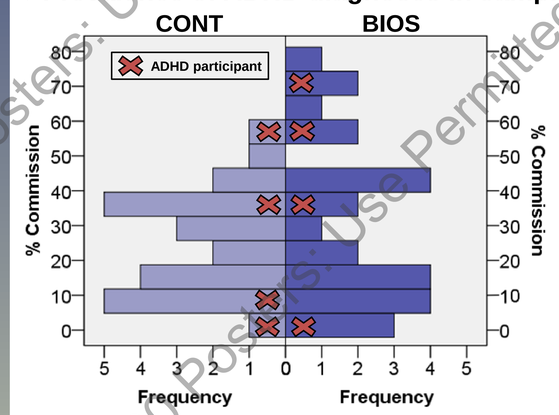
- **Commission Errors**: significant group by age interaction ($F(1,46)=9.52$, $p=.0003$).

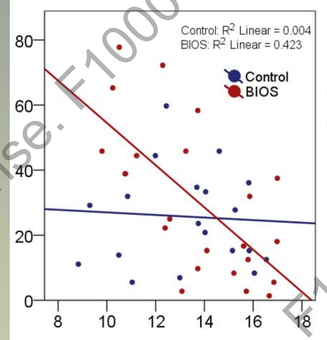


Negative association between age and errors of commission for BIOS participants ($r=-0.69$), but **not** in CONT Fisher's test $P=.01$

RESULTS

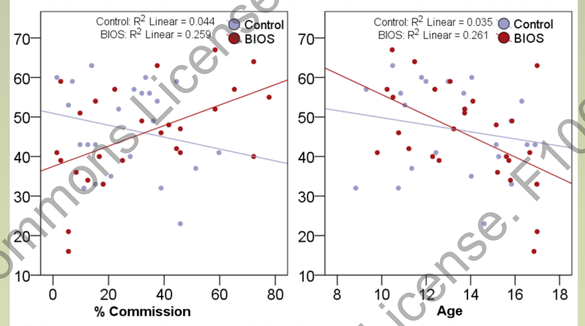
❖ **Prevalence of ADHD diagnoses in sample**





ADHD removed: sig. group x age interaction remains ($F(1,38)=7.14$, $p=.01$) Age **still** negatively associated with commission errors in BIOS ($r=-0.65$), but not in CONT Fisher's test, $p=.03$

❖ **Correlation with Positive Affective Score**



% commission *positively associated* with positive affect scores in BIOS ($r=.51$), but not in CONT (Fisher's test, $p=.01$). However, age likely driving effect. Age and positive affect negatively correlated in BIOS

CONCLUSION

- Results indicate younger BD offspring exhibit more commission errors than controls.
- Results were not influenced by ADHD diagnoses.
- Finding supports response inhibition as a marker of risk for BD or future psychopathology; however, *current findings suggest this effect occurring in younger at-risk BD youth.*
- Previous studies using ANG with at-risk BD youth found neural but no behavioral differences[3].
- Younger participants (≤12) in current study might explain behavioral differences not observed in previous studies.
- Current findings in line with previous work observing earlier onsets and atypical clinical presentations in younger at-risk BD youth[4].
- A limitation our study had was lack of neutral word blocks.
- Future studies should aim to replicate findings using other emotional response inhibition paradigms during fMRI with younger at-risk BD children.

REFERENCES

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3. Roberts G, Green MJ, Breakspear M et al. Reduced inferior frontal gyrus activation during response inhibition to emotional stimuli in youth at high risk of bipolar disorder. Biol. Psychiatry 74(1), 55–61 (2013)
4. Birmaher B, Axelson D, Goldstein B, Monk K, Kalas C, Obreja M, et al. Psychiatric disorders in preschool offspring of parents with bipolar disorder: the Pittsburgh Bipolar Offspring Study (BIOS). Am J Psychiatry 2010; 167: 321 –30.