Reduced Anticipatory and Reactive Skin Conductance: Evidence for an Adolescent Analogue of Psychopathy

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Introduction

Reduced anticipatory skin conductance to punishment is a well replicated finding among adult psychopaths, but it is unknown whether this deficit also characterizes children and adolescents with psychopathic tendencies. Research in psychophysicsology has only recently begun to examine younger psychopaths (e.g., Blair, 1999).

This study, part of an ongoing longitudinal project, sought to determine whether psychopathic adolescents show similar patterns of hypersensitivity in anticipation of and in response to aversive stimuli as psychopathic adults.

Method

Sample:
- 335 16-year-old boys
- Psychopathic (n = 86) and Nonpsychopathic (n = 86) groups formed using extreme scores on the Child Psychopathy Scale (Lynam, 1996)

Procedure:
- Participants seated in 72°F room, wearing headphones, monitor 1 m away
- Rest: 3 minutes of recording without stimuli
- Countdow Stressor:
  - Stimuli:
    - Countdow numbers from 12 to 0, displayed in center of monitor, 1 per second
    - White noise – one second duration, 105-dB, 500ms rise and fall time
    - Intertrial Interval – range of 30-50 s
- Siginal trials: 12-second countdown, then blast of white noise at 0
- Nonsignal trials: no countdown, random blast of white noise

Skin Conduction Assessment:
- Equipment: Cellebrite SC. amplifier, Optimum Pro 40 headphones

Possible Confounds

- Groups were compared on several demographic variables:

<table>
<thead>
<tr>
<th>Psychopaths</th>
<th>Nonpsychopaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>M (SD)</td>
<td>M (SD)</td>
</tr>
<tr>
<td>Age</td>
<td>16.04 (1.53)</td>
</tr>
<tr>
<td>AD/AD-H</td>
<td>46%</td>
</tr>
<tr>
<td>IQ</td>
<td>115.35 (15.17)</td>
</tr>
<tr>
<td>SES</td>
<td>89.03 (18.17)</td>
</tr>
</tbody>
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Results

- Rest:
  - SCL: nonsignificant (p = 0.387)
  - NSFs: nonsignificant (p = 0.151)

- Analysis of Countdow Stressor:
  - skew in responding distributions led to use of nonparametric tests
  - SCRs: total in each of the four conditions
    - For each condition, subjects were dichotomized as:
      - Responders (90 SCRs) or
      - Nonresponders (7 SCRs)

- Chi-Squares:
  - Groups did not differ in the Nonresponding Anticipatory condition (Fig. 3)
  - Psychopaths showed greater rates of nonresponding than nonpsychopaths in the Signal Anticipatory condition (Fig. 3), Nonresponding Reactivity (Fig. 4) and Signal Reactivity (Fig. 7) conditions

Confounds Analyses

- Possible confounds crossed with SCR responding in each condition were all nonsignificant:

  - AD/AD: χ² (1, 328) = 0.17 to 2.419, p = 0.08 to 0.504
  - IQ: t (1, 328) = 0.02 to 0.56, ps = 0.00 to 0.06
  - SES: t (1, 328) = 3.20 to 3.64, ps = 0.00 to 0.08

Conclusion

- hypersensitivity findings in adult literature extend downwards to adolescents with psychopathic tendencies
- deficit occurs both in anticipation of and in response to aversive stimuli
- psychopaths and nonpsychopaths did not differ on tonic arousal measures, including the Nonresponding Anticipatory condition, which most closely resembled rest
- deficit cannot be accounted for by group differences in ADHD diagnosis, IQ or SES

Implications and Directions

- support for adolescent form of psychopathy
- lack of anticipatory fear and reactivity to punishment may facilitate reckless, antisocial behavior
- replication should be attempted in younger child samples to further explore origins of psychopathy

References

Blair, R. J. (1999). Anticipatory skin conductance to threat is related to psychopathic tendencies. Psychological Medicine, 30, 893-901.