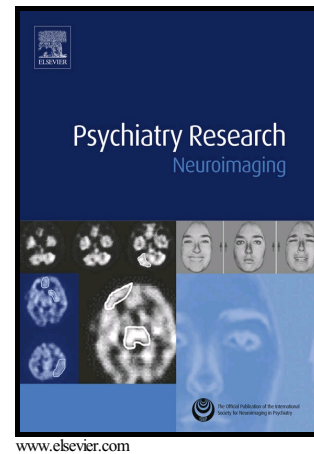


## Author's Accepted Manuscript

Imaging Decision about Whether to, or Not to, Benefit Self by Harming Others: Adolescents with Conduct and Substance Problems, with or without Callous-Unemotionality, or Developing Typically

Joseph T. Sakai, Manish S. Dalwani, Susan K. Mikulich-Gilbertson, Kristen Raymond, Shannon McWilliams, Jody Tanabe, Don Rojas, Michael Regner, Marie T. Banich, Thomas J. Crowley



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Imaging Decision about Whether to, or Not to, Benefit Self by Harming Others: Adolescents with Conduct and Substance Problems, with or without Callous-Unemotionality, or Developing Typically

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Portions of this work were presented at the 2016 meeting of the College on Problems of Drug Dependence.

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Tables and figures total: 2 tables, 2 figures

Supplemental tables and figures: 4 tables, 7 figures

#### **Abstract**

We sought to identify brain activation differences in conduct-problem youth with limited prosocial emotions (LPE) compared to conduct-problem youth without LPE and community adolescents, and to test associations between brain activation and severity of callous-unemotional traits. We utilized a novel task, which asks subjects to repeatedly decide whether to accept offers where they will benefit but a beneficent other will be harmed. Behavior on this task has been previously associated with levels of prosocial emotions and severity of callous-unemotional traits, and is related to empathic concern. During fMRI acquisition, 66 male adolescents (21 conduct-problem patients with LPE, 21 without, and 24 typically-developing controls) played this novel game. Within typically-developing controls, we identified a network engaged during decision involving bilateral insula, and inferior parietal and medial frontal cortexes, among other regions. Group comparisons using non-parametric (distribution-free) permutation tests demonstrated LPE patients had lower activation estimates than typically-developing adolescents in right anterior insula. Additional significant group differences emerged with our *a priori* parametric cluster-wise inference threshold. These results suggest measurable functional brain activation differences in conduct-problem adolescents with LPE compared to typically-developing adolescents. Such differences may underscore differential treatment needs for conduct-problem males with and without LPE.

**Key words:** callous; antisocial; drug abuse; prosocial; imaging

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