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Young Marijuana Users Respond Differently to Social Exclusion

Philadelphia, PA, March 2, 2016 – A new study published in the current issue of *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging* reports that young adults who regularly use marijuana display altered brain activation patterns during social exclusion.

"Peer groups are one of the most important predictors of young adult marijuana use, and yet we know very little about the neural correlates of social rejection in those who use marijuana," explained Dr. Jodi Gilman, first author and Assistant Professor at Harvard Medical School.

This led Gilman and her colleagues to conduct a neuroimaging study using a Cyberball task, where participants played a computerized game of catch while undergoing a non-invasive brain scan. They recruited 42 young adults (ages 18-25), about half of whom regularly used marijuana. Unknown to the study participants, the other 'players' in the game were computers and were programmed to exclude them for a portion of the game.

The non-using subjects demonstrated activation in the right anterior insula, a region associated with negative emotion and social rejection, when being excluded from the game, but the marijuana-using subjects did not. All subjects showed activation of ventral anterior cingulate cortex, a region associated with emotional monitoring, during peer exclusion, which correlated with measures of peer conformity and suggestibility.

"In this study, during peer rejection, young adult marijuana users had reduced activation in the insula, a brain region usually active during social rejection," said Gilman. "This may reflect impaired processing of social information in marijuana users. Reduced activity in the insula to peer rejection could indicate that marijuana users are less conscious of social norms, or have reduced capacity to reflect on or react to negative social situations."

"The results suggest that the cannabis users are less sensitive to exclusion than non-drug using individuals," added Dr. Cameron Carter, Editor of *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging*. "The study does not address whether this impaired processing is a core trait of cannabis users or a byproduct of the drug use itself."

Therefore, more research is still necessary, including longitudinal designs to assess the developmental trajectory of this altered social processing and determine whether impaired processing of social exclusion is caused by, is a result of, or develops along with marijuana use.

The article is "Altered Neural Processing to Social Exclusion in Young Adult Marijuana Users" by Jodi M. Gilman, Max T. Curran, Vanessa Calderon, Randi M. Schuster, and A. Eden Evins (doi: 10.1016/j.bpsc.2015.11.002). The article appears in *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging*, Volume 1, Issue 2 (March 2016), published by Elsevier.

Notes for editors
Full text of the article is available to credentialed journalists upon request; contact Rhiannon Bugno at +1 214 648 0880 or BPCNNI@utsouthwestern.edu. Journalists wishing to interview the authors may contact Dr. Jodi Gilman at +1 617 643 7293 or jgilman1@partners.org.

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