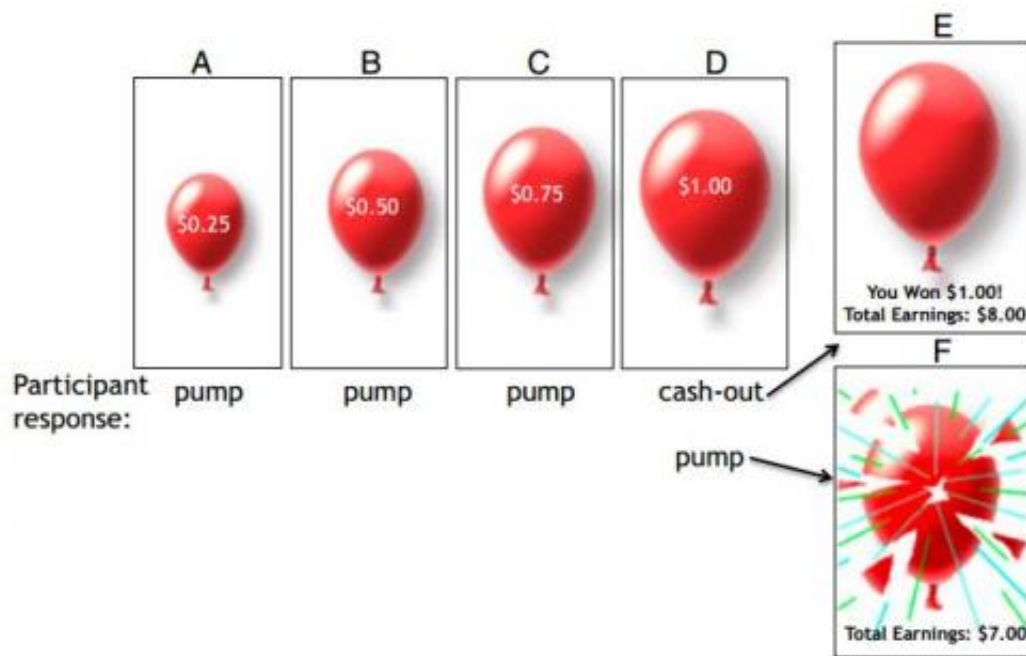


# Teens who gain pleasure from helping others could be less prone to depression, research shows

April 22 2014, by Marcia Malory



Balloon Analog Risk Task. On each trial of the task, participants are shown a virtual balloon. Participants can make one of two button responses: pump or cash-out. For every decision to pump the balloon, participants earn a monetary reward (A–D). At any point the participant can choose to cashout and keep the accumulated earnings (E). If the participant pumps the balloon too large, the balloon may explode, and the participant will earn no money for that trial (F). Credit: (c) *PNAS*, 2014. doi: 10.1073/pnas.1323014111

(Medical Xpress)—Happiness derived from tasks that help others, like raising money for a charity, could be better for teen mental health than happiness derived from selfish activities, like eating chocolate or listening to music, according to research by Adriana Galvan of the University of California and her colleagues. Galvan and her team studied how teens' brains respond to these two different ways of finding happiness. They found that teens who are more likely to gain pleasure from helpful tasks are less likely to develop depressive symptoms than teens who are more likely to gain pleasure from selfish ones. The study appears in the *Proceedings of the National Academy of Sciences*.

As far back as the fourth century BC, Aristotle argued that [pleasure](#) gained from a meaningful life, which he called "eudaimonia," promoted human growth, while selfish pleasure, which he called "hedonia," was detrimental to it. More recently, empirical psychological studies have indicated that, over time, eudaimonic activities tend to be beneficial to mental health while hedonic activities can be harmful to it.

Galvan and her team wanted to test this theory in teenagers. In teens, the reward processing parts of the brain are very active. Teens often seek hedonic rewards and gain pleasure from risky behaviors. At the same time, teens have a high risk of becoming depressed. Symptoms of depression increase dramatically through the course of the teenage years, peaking at around 17 or 18. Understanding how psychological responses to rewards affect the risk of depression could make it easier for mental healthcare professionals to provide the right services to vulnerable teens.

The researchers asked 39 teens to complete a questionnaire that measured [depressive symptoms](#). The teens then performed two tasks. In the first task, they played a game in which they had to choose between earning money for themselves or for their families. In the second task, which assessed attitudes toward risk taking, they received rewards based on how they inflated a virtual balloon. As the teens performed these

tasks, they underwent fMRI scans so the researchers could examine activity in the ventral striatum, a part of the brain associated with feelings of pleasure.

A year later, the teens retook the questionnaire. Teens whose ventral striatum activity had been high when they decided to help their families tended to experience a decrease in depressive symptoms. However, [teens](#) whose ventral striatum activity had been high when they decided to help themselves or take a large risk tended to become more depressed over the year.

Galvan's team thinks people who gain pleasure from eudaimonic rewards could be more likely to engage in activities that make them feel valuable, and this could improve their [mental health](#).

**More information:** Neural sensitivity to eudaimonic and hedonic rewards differentially predict adolescent depressive symptoms over time, Eva H. Telzer, *PNAS*, [DOI: 10.1073/pnas.1323014111](https://doi.org/10.1073/pnas.1323014111)

## Abstract

The pursuit of happiness and reward is an impetus for everyday human behavior and the basis of well-being. Although optimal well-being may be achieved through eudaimonic activities (e.g., meaning and purpose), individuals tend to orient toward hedonic activities (e.g., pleasure seeking), potentially placing them at risk for ill-being. We implemented a longitudinal study and followed adolescents over 1 y to examine whether neural sensitivity to eudaimonic (e.g., prosocial decisions) and hedonic (e.g., selfish rewards and risky decisions) rewards differentially predicts longitudinal changes in depressive symptoms. Ventral striatum activation during eudaimonic decisions predicted longitudinal declines in depressive symptoms, whereas ventral striatum activation to hedonic decisions related to longitudinal increases in depressive symptoms. These findings underscore how the motivational context underlying neural

sensitivity to rewards can differentially predict changes in well-being over time. Importantly, to our knowledge, this is the first study to show that striatal activation within an individual can be both a source of risk and protection.

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