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Can peer pressure help teens make safer decisions?

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Abstract

Most people act differently with their friends than they do when they are alone. Teens who see their friends make risky choices are more likely to make risky decisions themselves. We wanted to learn how the brain processes information about other peoples' actions. In our experiment, teens played a game where they chose between a safe gamble and a risky gamble. We separated teens into two groups based on whether they had ever used alcohol, tobacco or other drugs. We used functional magnetic resonance imaging (fMRI) to measure brain activity in some participants. We found that teens who had never used drugs had a stronger response to seeing their peers choose safe gambles. This result shows that positive peer influence can make a difference!

Introduction

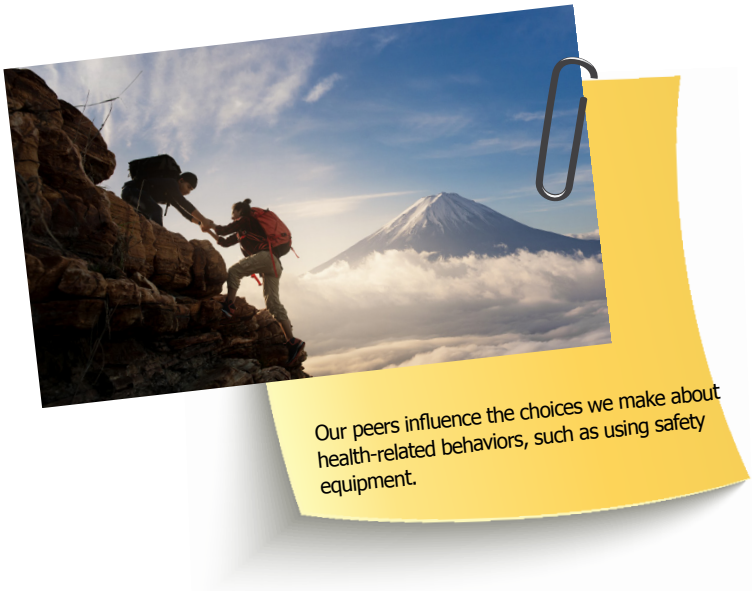
Do you ever find yourself doing the same thing that your friends are doing? When you make a decision, your brain has to filter through lots of information and decide what pieces to use. For example, imagine you are considering watching a new show. What information might you use to make that decision? Is there a trailer for the show? Are people talking about it at school? Is it getting good reviews?

The way your brain places value on information depends on your personality and what you prefer. If the show got a great review from a critic, that might encourage you to watch it… unless you think that critic has terrible taste in television! The choice of what show to watch is unlikely to have life-altering consequences. But other choices can have effects that last the rest of your life!

Risky behavior isn't necessarily bad. Trying out for a team is risky because you might not get in, but you may still learn a lot from trying. Making new friends carries a risk of rejection, but you may actually succeed! But some choices have a risk of more serious consequences, such as experimenting with alcohol, tobacco, or other drugs.

We don't know much about how the brain processes information we get from social peers or how this information influences the choices we make for ourselves. We wanted to know:

1. Do teenagers make different decisions when they see their peers make safe choices versus risky choices?
2. What part of the brain is being used to make those decisions?
3. Are the answers to these questions different for teenagers who have never used drugs than for those who have?



Our peers influence the choices we make about health-related behaviors, such as using safety equipment.

Methods

We met with 91 teenagers aged between 15 and 17. We wanted to know how the brain functions normally, so we excluded participants who had **neurological** disorders. We also didn't include those taking **psychiatric** medication. Lastly, we ruled out those who had ever had serious head injuries or were otherwise not suitable for the brain imaging procedure. 78 participants (37 male and 41 female) qualified.

Each teenager completed surveys that measured their **impulsiveness**, risky behaviors, and mental health. From the results, we sorted the participants into two groups. The **substance-exposed** group included teenagers who had used tobacco, alcohol, or other drugs at least once. The **substance-naive** group included everyone else.

Each participant then took part in a simple game. They were shown pie charts that displayed the chance of winning one of two cash prizes. Participants had to choose between a riskier and a safer bet. A riskier bet offered a low chance of a high reward and a high chance of a low reward (for example, a 1-in-5 chance of getting $50 and a 4-in-5 chance of getting $1). In the safer bets, participants had a 1-in-5 chance of getting $25 and a 4-in-5 chance of getting $23 (Fig. 1).

In the **Solo scenario**, the participant made their choice with no extra information. In the **Peer scenarios**, we showed the participant the choices made by two other participants (Table 1). We also varied the likelihood and the specific dollar amounts used for the high and low chances, so in total each participant made 96 choices between riskier and safer bets.

Scenario Name	Peer 1's Choice	Peer 2's Choice
Solo	None shown	None shown
Safe Peers	Safer bet	Safer bet
Risky Peers	Riskier bet	Riskier bet
Mixed Peers	Riskier bet	Safer bet

Table 1: We measured the effect of seeing other people's choices by comparing participants' Solo scenario results with their Peer scenario results. For example, if a participant chose the safe gamble more often in the Safe Peers scenario than in the Solo scenario, then they probably were influenced by seeing others' safer choices.

We used functional magnetic resonance imaging (fMRI) to do brain scans on 31 of the participants. (Fig. 2)

fMRI works by using powerful magnets to detect oxygen levels in the blood. When we see higher than normal blood flow in part of the brain, that is probably where brain activity is happening.

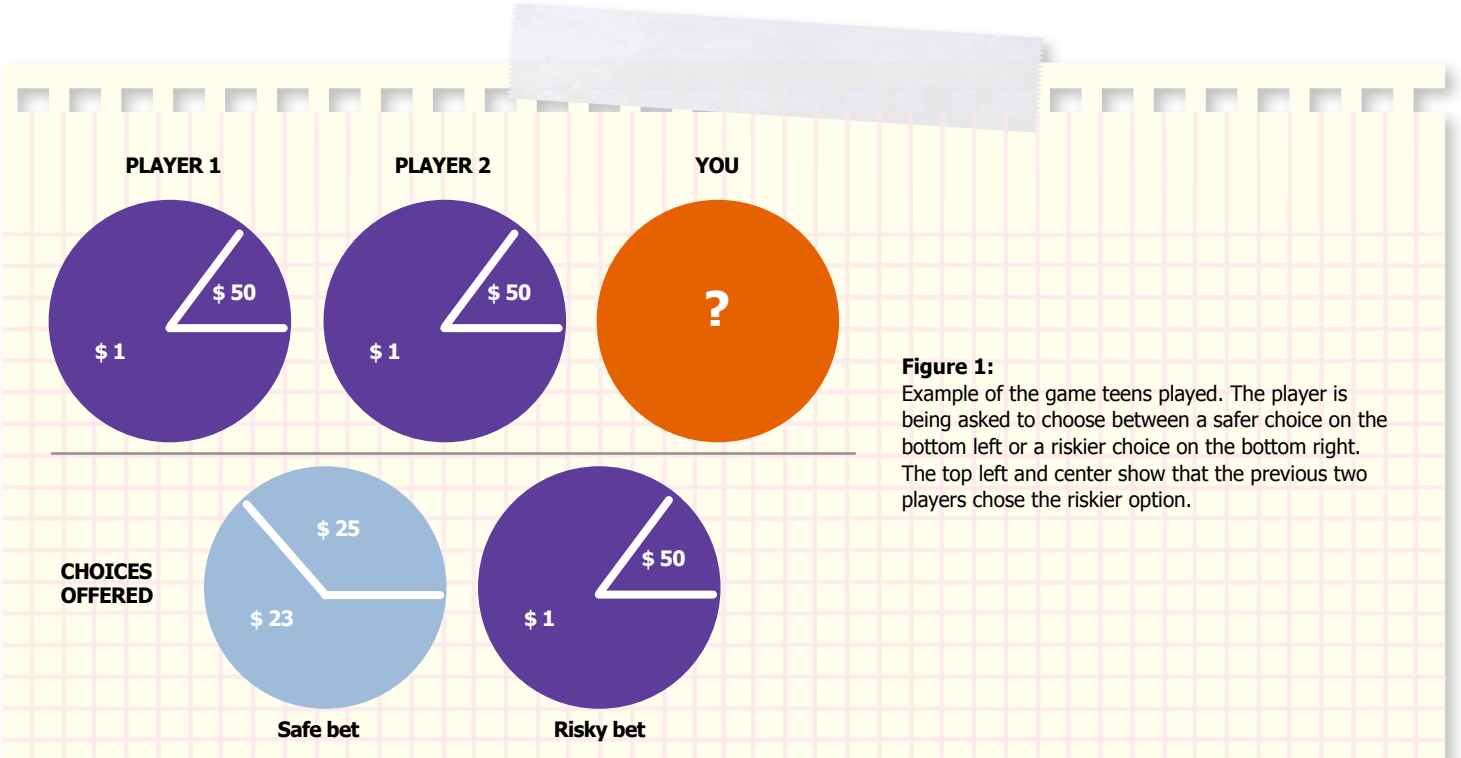


Figure 1:
Example of the game teens played. The player is being asked to choose between a safer choice on the bottom left or a riskier choice on the bottom right. The top left and center show that the previous two players chose the riskier option.

Results

Teens from both groups tended to choose the safer option more often in the Safe peers scenario and the riskier option more often in the Risky peers scenario. In other words, both groups were equally influenced by seeing their peers' risky choices.

The biggest difference between the groups was in the Safe peers scenario. The substance-naive teens were more strongly influenced to make safe bets after seeing their peers' safe choices.

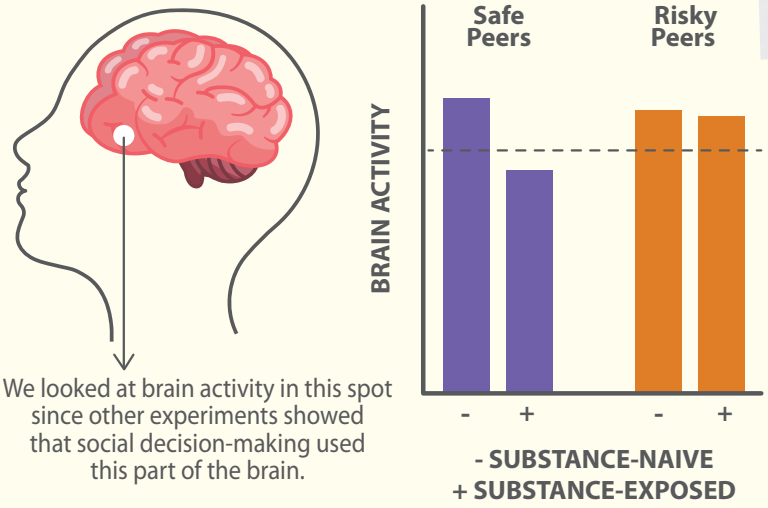
We saw different reactions between groups in the part of the brain responsible for making social value judgments.

People make value judgments based on their own opinions. Social value judgments are influenced by peers and society.

For substance-naive teens, the brain's reward-related areas had higher activity when they saw their peers choose the safe option (Fig. 2).

Figure 2:
Average brain activity in response to seeing peers making safe choices and risky choices.

What differences do you see in the brain activity from teens in the substance-naive group (minus sign) compared to the substance-exposed group (plus sign)?



Discussion

Our results show that safe choices by peers can influence teens to make safer choices. Previous studies focused mainly on the effects of risky choices – the negative side of peer pressure. We expected our study to help us understand how negative peer pressure works in the brain. So it was a surprise to find that positive peer influence made a bigger difference!

People like to be around other people who have similar attitudes about risk. We set up our experiment to avoid the effects of existing relationships. Still, it's possible that participants felt a connection with people who made similar choices in the game, even though they didn't know each other. It's also possible that something we didn't measure influenced the participants' choices.

Conclusion

A lot of people want to help teens make safer choices about tobacco, alcohol, and other drugs. This is because teens who choose to use these substances often have a harder time later in life. Our results show that when some teens see peers make safe choices, they are more likely to make safe choices. So when you choose wisely, you may be helping the people around you!

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Glossary of Key Terms

Impulsiveness – tendency to act without planning it out.

Neurological – dealing with the body's nervous system, including nerves, spine, and brain.

Psychiatric – relating to mental illness.

Substance-exposed group – the participants who had tried alcohol, tobacco, or other drugs at least once before.

Substance-naive group – the participants who had never tried any form of drugs before.

Check your understanding

1. How did we determine whether participants had used substances like alcohol, tobacco, or other drugs?

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2. What result surprised us?

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3. Name some choices that you feel are risky. Would you take part in those activities without encouragement from your peers? Do you consider the choices to be beneficial or harmful?

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4. How could peer influence be used by a government health agency to help teenagers lead healthier lives?

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