

Sweet future: Fluctuating blood glucose levels may affect decision making

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Would you choose to receive a small amount of money today or a larger sum next month? We know that it is worth it to wait longer for a larger reward, but sometimes the temptation for the smaller, immediate reward becomes too great and we simply cannot resist it. Selecting the immediate reward is known as "future discounting" and often suggests a lack of self-control.

Studies have indicated that there may be a link between blood glucose levels (our body's energy) and thinking. For example, making difficult choices uses up cognitive resources (or [brain power](#)) and these resources can be restored by increasing blood glucose.

Psychological scientists X.T. Wang and Robert D. Dvorak from the University of South Dakota investigated how blood glucose levels impact the way we think about present and future rewards. Volunteers answered a series of questions asking if they would prefer to receive a certain amount of money tomorrow or a larger amount of money at a later date. They responded to seven of these questions before and after drinking either a regular soda (containing sugar) or a diet soda (containing the artificial sweetener aspartame). Blood glucose levels were measured at the start of the experiment and after the volunteers drank the soda.

The results, reported in *Psychological Science*, a journal of the Association for [Psychological Science](#), reveal that people's preferences for current versus later rewards may be influenced by blood glucose levels. The volunteers who drank the regular sodas (and therefore had

higher blood glucose levels) were more likely to select receiving more money at a later date while the volunteers who drank the diet sodas (and who had lower blood glucose levels) were likelier to opt for receiving smaller sums of money immediately. These findings are suggestive of an adaptive mechanism linking decision making to metabolic cues, such as blood sugar levels.

The results indicate that when we have more energy available (that is, higher levels of blood glucose), we tend to be more future-oriented. The authors note that "the future is more abstract than the present and thus may require more energy to process. Blood glucose as brain fuel would strengthen effortful cognitive processing for future events." Conversely, having low energy (or low blood glucose levels) may make an individual focus more on the present. The finding that a diet soda drink increased the degree of future discounting suggests that artificial sweeteners may alarm the body of imminent caloric crisis, leading to increased impulsivity.

The authors conclude that if controlling blood glucose levels may affect our decisions for later versus current rewards, then "reducing the degree of fluctuation in blood glucose may offer a possible means for the treatment and intervention of some impulsive disorders, anorexia, drug addiction, and gambling addiction."

Provided by Association for Psychological Science

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