

The Effects of Increasing Water Consumption Using Contingency Management

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Staying hydrated is said by researchers to be the key to staying healthy. There are many theories on the effects of drinking specific amounts of water; for example, there is continued research that says it helps with clearing the skin, losing weight, increasing energy levels, helping muscle cramps, etc. With these assumptions, this study aims to address the effectiveness of increasing water consumption. Specifically, this study looks at increasing water consumption during the day using a contingency management intervention.

Research has concluded that the total number of hours and the overall intensity of headaches was reduced when there was an increase in water intake which in turn improved health (Spigt, Kuijper, Schayck, Troost, Knipschild, Linssen, & Knottnerus, 2005). They also discussed that dehydration may harm the brain as well. If a person is fully hydrated, then they will have better overall cognitive and neurological performance (Spigt et al., 2005). Further research also suggested that in addition to decreasing headaches, hydration is said to improve body composition by helping manage weight (Garcia, Moreno, Vaesken, Puga, Partearroyo, Moreiras, 2019).

Although staying hydrated plays a role in having a healthier life, people seem to struggle to stay hydrated because of the perceptions of the cleanliness of the water. Often, people will trade in water for sugar-sweetened beverages (SSB) because of the uncertainty of the cleanliness of tap water (Onufrak, Park, Sharkey, Merlo, Dean, & Sherry, 2013). Research has confirmed this idea when a study looking specifically at schools and youth found that the high perceived risk of local tap water was a common theme among the children surveyed which resulted in them not drinking from their school water fountain (Onufrak et al., 2013). Improving the preconception about tap water and plain water, in general, could lead to overall healthier choices.

Staying hydrated has positive impacts when it comes to a person's health but due to things such as misconceptions and availability of other drinking options, drinking enough water can be difficult for some people. Using a contingency management intervention could allow people to stay on top of their water intake and hydration status.

Contingency management (CM) is an intervention that uses reinforcement or reward to help with a behavioral change. CM has two key variables (Kirby, Benishek, & Tabit, 2016). The first variable is a predictable or fixed schedule that allows for reinforcement to be provided each time. The second key variable relates to rewards and that is most people prefer a distal distribution of their earned incentives. This means they would prefer to save up their rewards rather than cash them out immediately (Kirby et al., 2016). Furthermore, other research has looked at contingency management but with online tactics to help reinforce the behavior. One study used an internet-based program that gave financial incentives to promote smoking cessation (Dallery, Raiff, Kim, Sunny, Marsch, Stitzer, & Grabinski, 2016). Dallery et al., found that the program worked better with incentives compared to an internet-based program without incentives. Using an internet-based program with incentives is effective and when paired with a behavior change like increasing water intake could be successful. This suggestion fits with research on a specific intervention that was used in schools to promote the behavior of drinking more water. The program was called "Grab a cup, fill it Up!" and it was used in ten Boston Public Schools (Kenney, Gortmaker, Carter, Howe, Reiner, & Cradock, 2015). The two main components of this intervention included promoting water appeal to students and making consuming water easier. They did this by having posters all over the school's walls and installing cup dispensers. After implementing this intervention, they saw that students were drinking more

than double the amount of water than before. There was also a decrease in the consumption of SSBs because of the increase in water intake (Kenney et al., 2015).

Previous research has suggested that adequate water consumption increases one's health in multiple ways and that improvements in water consumption can be seen through intervention and reinforcement. However, there is limited research on using a contingency management intervention over a short period to see its effect on water consumption for one person. Due to this, I plan on using a contract as a reinforcer to try and increase water consumption throughout the day. I hypothesize that if I use a contingency management intervention then my water consumption will increase throughout the day and overall improve my health.

## **Method**

### **Participant**

The participant included in this study was one female, age 19 from Longwood University.

### **Design**

This is a single-subject design. There are no control groups, so the only behavior being monitored is from one subject. The target behavior is drinking more water to become more hydrated. An operational definition for this variable is the total amount of water consumed during the days being recorded. There is a baseline level of response recorded before the behavior treatment is initiated.

### **Assessment**

The amount of water being consumed will be monitored by having the participant write down the amount of water she drinks throughout the day in a journal. Once, the intervention begins she will have a goal of drinking more than 60oz. a day.

### **Intervention**

This study will include the intervention of contingency management which involves reinforcement and a reward. There will be a signed contract on the participant's refrigerator signed by herself and her family that says she will drink at least 60oz of water a day. This will ensure the reinforcement of the target behavior. A reward of her mom buying her Starbucks at the end of the five days will serve as the reward for this intervention. The reward will also be mentioned in the contract.

### **Procedure**

Over a period of five days, the participant will have a goal of drinking 60oz. of water or more throughout the day. First, she will draft a contract that says she will drink at least 60oz. of water throughout the day for five days. A reward of her mother buying Starbucks at the end of the six days will be included in the contract. Once the contract is made, she will sign the contract with her two parents and brother. The contract will be put on the refrigerator in their kitchen which will serve as a reminder to drink the water. She will start drinking water right when she wakes up each day. During the day, she will monitor the amount of water she drinks in a journal. She will record her results in a journal each day and her data will be collected and analyzed at the end of the week.

### **Results**

A graph depicting daily water consumption in ounces is displayed in *Figure 1*. The water consumption during the baseline had ( $M = 39.8$ ,  $SD = 1.07$ ). The water consumption during the

intervention phase had ( $M = 90.2$ ,  $SD = 1.08$ ). This provides some evidence that the contingency management intervention did affect increasing water consumption.

### **Discussion**

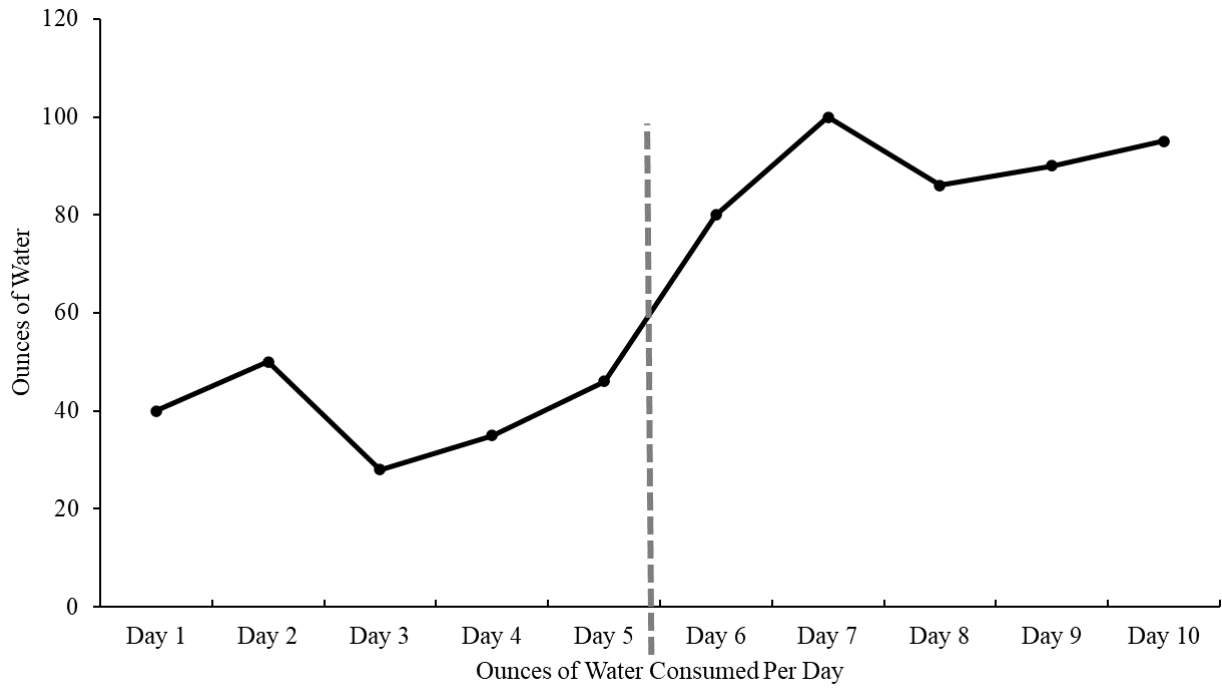
The primary purpose of this study was to test if a contingency management intervention would affect water consumption. It was hypothesized that if there was a contingency management intervention in place then water consumption would increase.

The results demonstrated in *Figure 1* support the hypothesis because water consumption did increase after day five when the intervention was put in place. The data continued to show water consumption above the 60oz. minimum each day after the intervention began as well.

This result is consistent with prior research that indicated that by having a form of reinforcers then water consumption would increase (Kenney et al., 2015). By having a contract kept on the fridge, the participant was constantly reminded to drink water which increased daily water consumption. There were no other variables that could explain these results which means there are no threats to internal validity. Future research should look at the effect of this intervention over a longer period. Continuing this research over a period of weeks or even months would show more significant results. Also, continuing this research with multiple participants in their homes would increase the external validity of the study. Although further research is required, my findings indicate that using a contingency management intervention of a contract guaranteeing a reward does increase water consumption.

## References

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*Figure 1:* Ounces of water consumed over ten days. Day five a contingency management intervention was put in place. Water consumption increased with a contingency management intervention.

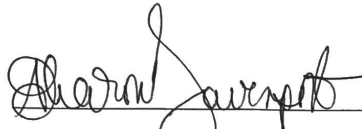


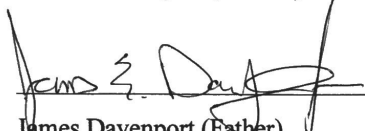
**Appendix**

**Behavior Change Contract**

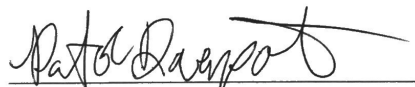
Payton's Behavior Change Project Contract

Payton Davenport will consume at least 60 oz. of water each day for five days starting April 13, 2020 to April 17, 2020. By the end of the five days, if Payton has completed the task of drinking 60oz. each day, then she will be rewarded with Starbucks from her parents.

  
\_\_\_\_\_  
Sharon Davenport (Mother)

  
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James Davenport (Father)

  
\_\_\_\_\_  
Dakota Davenport (Brother)

  
\_\_\_\_\_  
Payton Davenport