Increasing Daily Water Intake Utilizing SMART Goals

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Daily water intake is crucial to the human body functioning. The amount of water a person should drink daily depends on height, weight, and daily exercise/calories burned. The National Academies for Science estimates that "that women consume a total of approximately 2.7 liters (91 ounces) of water from all beverages and foods each day and that men get approximately 3.7 liters (125 ounces) daily". These numbers are only suggested by average height and weight of each gender, and are not taken from scientific studies. The aim of this study was to evaluate an intervention designed to assess the impact of a goal setting intervention on daily water intake

Stachenfeld, Leone, Mitchell, Freese, & Harkness (2018) performed a study in which 18 non-smoking women participated to test if decreased daily water intake impairs executive functioning in young women. The study was conducted over the course of three months, where the participants had three days in which their water consumption was measured. The first day measured their average baseline water intake. The two groups of participants were either dehydrated on the second day and euhydrated on the third day, or vice versa. The euhydration day was the day in which "water was provided to replenish any negative water imbalance" (Stachenfeld et al, 2018). Each participant went to the research lab four times during the intervention for urine and blood samples, and cognitive and emotional testing. It was found that dehydration can affect young women's vision, everyday functioning, and memory. The results of this study indicate that dehydration can affect one's daily life in multiple ways that are crucial to everyday functioning.

Decrease in daily water intake is commonly associated with headaches. Due to waters influence on daily functioning, water may also have the side effect of recurrent headaches. Spigta, et al (2011) performed a study where they wanted to know if severity of headaches can be influenced by water intake. They studied 102 patients who had two intense or five mild headaches per month, and who consumed less than 2.5 liters of water per day. The intervention group received instructions about stress reduction, sleep improvement, and instructions to add 1.5 liters to their daily water intake during their visit to their practitioner. The control group only received the instructions on stress reduction and sleep improvement. The patients water intake and characteristics were measured before, during and after the intervention. Then the patients completed a questionnaire about their headaches. Finally, the patients received a follow up phone call to evaluate possible improvement. The researchers found that the patients who drank more water had a statistically significant improvement of headache symptoms. This study provides more evidence that water can improve the body's function and cognitive processes.

To increase daily intake of water interventions must be established. Carfora, Caso, Palumba, & Conner, (2018) conducted a study on interventions to get college aged students to drink more water. In the study there were 260 Italian university students with a smart phone with internet, who were between the ages of 18-25. The participants to filled out a questionnaire before, during, and after the intervention. Intervention 1 was a self-monitoring strategy where the participant would track their daily water intake on an app and receive reminder messages to keep track. Intervention 2 was receiving text messages that had a negative consequence approach. The messages would say the negative things that would happen if the participant did not drink their daily water intake. Intervention 3 combined both strategies. The researchers found that having

messages with the negative consequences if the participant did not drink the daily recommended water intake was the most statistically significant intervention. By utilizing a daily intervention, the researchers were able to conclude the best way to increase daily water intake among college aged students.

There are different ways to increase daily water intake. Gavrilova, Donohue, Galante, & Gavrilova (2018) studied interventions for unmotivated people to change health behaviors. The participants were 93 undergraduates. In the study participants were randomly assigned to 1 of 3 conditions, Positive Consequences Review (PCR), Negative Consequences Review (NCR), or Relaxation Control (RC). Participants were interviewed one on one with a licensed therapist who was certified on PCR, NCR, or RC. The participants motivation was measured at baseline and seven days after using a variety of scales. The researchers found that motivation, goal achievement and seeking professional help had an increase in the PCR and NCR conditions. Both conditions had a larger effect than the RC control condition; however, there was not a significant difference between negative and positive consequences. This study found that there was not a difference if the participants received negative or positive consequences. This result differs from the results found in the study by Carfora, Caso, Palumba, & Conner, (2018), who found that negative consequences were the best intervention form; however, this study used a face to face technique, rather than a self-monitoring intervention.

Another technique is using different strategies to facilitate an intervention and increase a health promoting behavior. David, & Haws (2016) questioned the effectiveness of approach and avoidance strategies when dealing with health goals and self-control. They used 176 undergraduate students who were then asked to make a list of foods they thought they should

consume while their were dieting. The avoidance condition was asked to make a list of foods they should not consume while on a diet. After each participant was shown each item they listed, they had to rate how much they liked that food on a Likert scale. Then they completed a task on rating artwork as a diversion from what the researchers were studying. After, the participants filled out the Tangney 13-item measure of general self control. From the results of the Likert scale surveys from each group, the researchers concluded that using an approach strategy is more effective than a avoidance strategy because they typically listed the foods they like the most first, so they were already on track to starting a health behavior change. This study provided research on approaches to health changing behaviors and how to start them. These strategies can be applied when a person is trying to increase a health behavior such as daily water intake. The approach strategy is a way for the person changing a behavior to have a positive outlook and to continue the behavior longer than someone who uses the avoidance approach.

Forming a intervention for water consumption needs to be goal oriented and adequately measured. An intervention such as a SMART goal (a specific, measurable, attainable, relevant, and time bound goal), would be best suited to increase daily water intake. Each step of writing a SMART goal requires consideration. Marsland and Bowman (2010), conducted an experiment that was about if reminders and support programs improve the writing of SMART goals in a clinical setting. The participants were 120 clinicians that were randomly allocated into two groups. Either an educational program on SMART goals who also received 3 months of follow support, or a program that taught evidence based practice (control group). The SMART goal group had a 3-month and 6-month check up and review. The researchers found statistically significant evidence that an educational program on SMART goals improves clinicians SMART

goal writing skills. In conclusion, well written and assessed SMART goals can improve health behaviors of the patients who are being treated by the clinicians.

The targeted health behavior of this study is the increase of daily water intake. This behavior will be assessed by how many ounces of water I consume every day. I will measure the intensity of my consumption of water by keeping a detailed written account of how many ounces of water I drink throughout the day. I will be utilizing a SMART goal intervention to increase my daily water intake. The cognitive and behavioral intervention of SMART goal setting is appropriate for this behavior because my goal needs to be measurable, time bound and specific. Since the amount of water that I need to consume has to be measured I think the best way to be setting a goal, rather than a fear appeal or an educational approach. My SMART goal is by the end of May 2019 I will drink 85 ounces of water per day as measured by a reusable bottle with indicated ounces, which I will refill four times within 24 hours. I will keep track of the ounces of water I drink in a notebook. I hypothesize that using a SMART goal intervention to increase my water intake will increase my water consumption and decrease my intake of caffeinated beverages.

Method

Participants

A 20 year old female was recruited to participate in the behavioral change project in a Health Psychology course. The participant was treated ethically under APA standards during the entire duration of the experiment.

Design

I am performing a single case design study, that incorporates the ABA design. The behavior will be measured at Baseline (A) and then the treatment is applied (B).

Assessment

Water intake will be assessed by recording in a notebook ounces consumed per day.

Intervention

To increase my daily intake of water I used a SMART goal intervention. My SMART goal was written to set an objective of how much water I want to be consuming on a daily basis. My SMART goal is by the end of May 2019 I will drink 85 ounces of water per day as measured by a reusable bottle with indicated ounces, which I will refill four times within 24 hours. I will keep track of the ounces of water I drink in a notebook.

Materials and Procedure

The materials needed to conduct the study are a notebook, water, a refillable bottle of water with labeled ounces, and a pen/pencil. This study was implemented over the course of 15 days. The baseline if my normal daily water intake was measured using a refillable bottle of water with labeled ounces for 5 days and was recorded every day in my notebook. Then the SMART goal intervention was applied at the beginning of day 6. The intervention was in place

for 10 days and was measured everyday using a refillable bottle of water with labeled ounces and was recorded in my notebook.

Results

The data were put into a line graph to represent the baseline phase and the intervention phase in Figure 1. The graph indicates that there was a change in behavior after the SMART goal intervention was put into place on day 6. During baseline measurement the amount of water intake did not surpass 50 ounces.

Discussion

I hypothesized that using a SMART goal intervention to increase my water intake would increase my water consumption and decrease my intake of caffeinated beverages. The results of this single case design were that the SMART goal intervention had an positive impact on daily water intake. Once the intervention was put in place, there was a slow increase of daily water intake throughout the intervention phase. The graph indicates that the SMART goal intervention has a notable increase in daily water intake. Although the goal of reaching 85 ounces a day was not reached everyday of the intervention, there was still a significant increase from baseline. Therefore, I support my hypothesis because by the end of the intervention phase I was consuming 85 ounces of water a day.

Some implications of this conclusion are that the SMART goal did not immediately increase my daily water intake to 85 ounces. Instead, my daily water intake steady increased to 85 ounces by the last three days of the intervention. For future replications of this study, I would use an ABA design to acquire longitudinal data. I think by doing this it will give more insight to if the SMART goal intervention actually increased daily water intake.

In this study there was no threat to internal validity; however, there was a limitation to external validity because there was only one person in the study. When there is only one person, it causes there to be low generalizability to larger populations.

The complications in this study were forgetting to measure and not always having a source of water nearby. Remembering to measure the ounces of water I drank was difficult because I would either forget to write it down or would refill my bottle before it was empty. Also, not always having a source of water or bottle was a big limitation because I would be in class and not able to either refill a bottle or have a bottle to refill. This limitation was difficult because I would come home and drink as much as I could. It would be easier to do an intervention like this during summer because there are more resources available and more free time throughout the day to find a bottle of water or water source.

Figure 1.

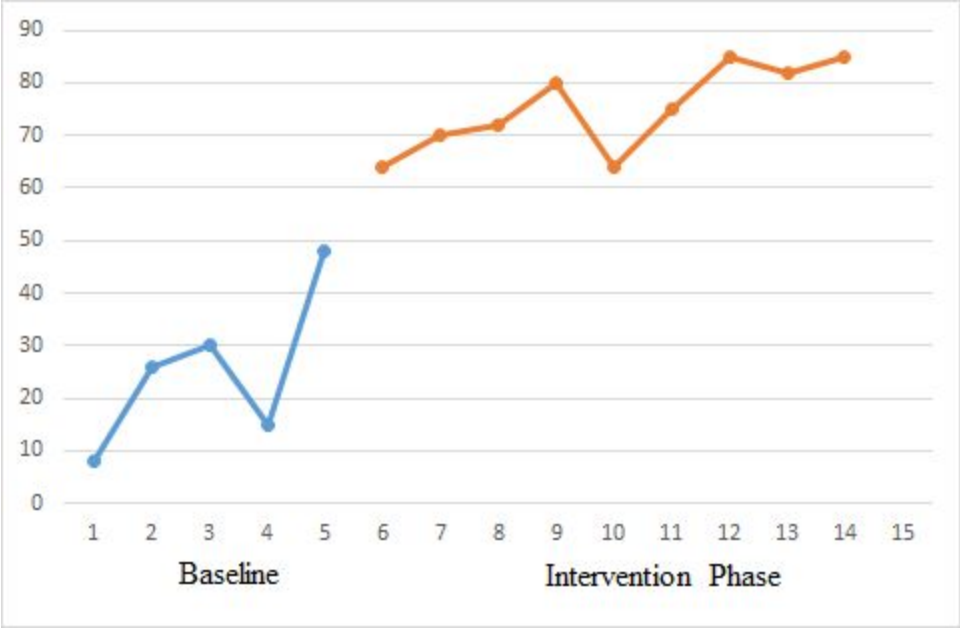

Figure 1. Daily water intake measured for 5 days at baseline, and then measured for 10 days during the intervention phase.

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