

Changes in behaviour using operant conditioning



**ASSIGN
BUSTER**

The present study operationalised the basics of operant conditioning as developed by Burrhus skinner. A key fundamental component of operant conditioning is the use of reinforcements and punishments to respectively either increase or decrease a performed behaviour. The study implemented a reward system of reinforcement on a 30 year old subject who was considered to be displaying a deficit in his water consumption behaviour. It was hypothesised that a continuous reward of \$2. 00 each time he drunk a complete 250ml glass of water would reinforce his behaviour change; thus leading to an increased level considered appropriate for good health. Using a continuous positive reinforcement schedule, favourable results were apparent; indicating that the subject had double his daily consumption of water over a 14 day period. This outcome was further quantified using a Blooms single case design structure, which revealed that the results were statistically significant at $p = . 05$. The report made comparisons to past research studies that utilised a reward style of reinforcement; making reference to possible limitations and future direction that may need to be considered for further analysis.

Behaviour Modification of Drinking More Water Using a Positive Reinforcement Schedule

Within the scope of psychotherapy, therapists employ many different approaches to handling the client's issues. A popular approach used in trying to handle problematic behaviours that may be presented is through the use of behaviour therapy. According to Archer and McCarthy (2007), behaviour therapy (behaviourism) gathered momentum in the 1960's and has since become one of the many influential perspectives used to combat

problematic issues. According to Albert Bandura, this approach recognises that the behaviour of individuals is determined by their social learning; therefore stimuli that are presented to us on a daily basis, affect what we learn and consequently manipulate our behaviours (Westen, Burton & Kowalski, 2006).

One of the major contributions to this approach is the use of operant conditioning, envisaged by Burrhus Skinner in 1937 who referred to this process as behaviours which are “ controlled” by their outcomes (Archer & McCarthy, 2007; Staddon & Cerutti, 2002). Staddon and Cerutti (2002) further comment that under operant conditioning, the rate at which a particular behaviour is repeated is dependent upon whether the behaviour is reinforced (behaviour increased) or punished (behaviour decreased).

Archer and McCarthy (2007) further state that reinforcements and punishments are divided as being either positives or negatives. In each subclass, “ positive” is interpreted as being something that is introduced into the situation, while “ negative” means something is taken from the situation. Therefore in each subclass something can either be introduced or taken away to increase the behaviour (positive/negative reinforcement) or something can either be introduced or taken away to decrease the behaviour (positive/negative punishment).

A common form of positive reinforcement is the implementation of a reward system; given in aims of applauding and reinforcing a desired behaviour. According to Fulton (2010) rewards are the receiving of a valued incentive by a person that promote repeating a pre-performed action. Such was a case

studied by Azerrad and Stafford (1969) who tested the use of a positive reward system (tokens) to initiate a desired behaviour change in a patient diagnosed with anorexia nervosa. The patient regularly didn't eat properly and hoarded food in her room hidden from the dinner table. In the study the patient was hospitalised for a period of time in order to help increase the patients' weight and change her behaviour towards eating.

Different stages of reward system were implemented to help coax the patient towards the desired behaviour. The patient was given tokens for 3 different types of achievements over the span of her hospitalised time. For a period of one week she received immediate tokens for any increased weight gain from the prior day. The second phase; carried out over a four week period was the use of a delayed rewarding system that was dependent upon the amount of food she ate. The last phase implemented used an immediate reward system whereby a reward was offered for the type of food chosen to eat.

Results favourably indicated that the patients' weight had significantly increased over the hospitalised time frame. The study found that the patient was physically eating more food and no longer trying to hide food in her room. Researchers further stated that an immediate reward system had a more beneficial reinforcement than a delayed system. However, a problem they did highlight was that the patients' eating rate did in fact drop once she was discharged and no longer receiving the rewards.

Similarly a study by Sorensen et al. (2007) found similar reinforcement results when they tested a reward system for HIV- drug abuse subjects.

Initially when given the option for positive medical treatment for their symptoms, many subject rejected following medical advice. As a result, the study implemented a continuous reinforcement schedule of using money to coax the correct behaviour of taking appropriate medication. Results indicated that when compared to a control group, subjects were more cooperative in following medical direction given when reinforced with a monetary reinforcer. However, just like the study by Azerrad and Stafford; results found that once reinforcement was ceased, adherence to the behaviour also decreased. They further concluded that the reinforcement did not show any evidence of long lasting effects once the reward system was stopped.

An important behavioural area that this report will follow on is the adequate drinking of water to maintain healthy living. Second to oxygen, water is categorised as being the most important necessity for all humans (McPhee, Johnson, & Dietrich, 2004). According to Juan and Basiotis (2004) having a routine in place in terms of regularly drinking water is very important. Medical professional recommend that in daily life, on average we should drink at least 8 glasses of water a day due to our bodies natural tendency to lose approximately 1 - 3 litres of water a day through daily functioning. The water stored in the body help us function daily in terms to support blood vessels in the body from drying out, helping kidneys eliminate waste, regulate body temperature and maintain cognitive abilities (McPhee, Johnson, & Dietrich, 2004). Considering that the body is made up of 50 - 70% water, keeping rehydrated would be an advisable behaviour to maintain

throughout life. (Barnard, 2009; Juan & Basiotis, 2004; McPhee, Johnson, & Dietrich, 2004).

A study that investigated water consumption was carried out by Loughridge and Barratt (2005) across three different schools. Initial investigation found that students reported the palatable taste of drinking warm water hindered them from drinking the water unless absolutely necessary. As a result students therefore elected to bypass water fountains and buy soft drinks from the canteens which were stored in fridges.

The researchers investigated the scenario further by analysing the effects caused from the installation of chilled water fountains. They hypothesised that due to the chilled water being available, the palatable taste of the water would increase; and therefore the drinking behaviour of the students would follow. The amount of water drunk was recorded quantifiably by a meter which was installed to the fountains in both the pre and post intervention periods. Results indicated that post-intervention, a higher level of water was consumed; whilst student consultations revealed that the chilled taste of the water was a highly motivating factor in the behaviour reoccurrence.

Based on the research by Azerrad and Stafford (1969) of using rewards to implement behaviour change; along with McPhee, Johnson and Dietrich (2004) study regarding importance of water consumption; this study will evaluate the use of operant conditioning in order to initiate a positive behaviour change in a single subject study design. In order to increase the behaviour and promote good health, a continuous positive reinforcement schedule has been developed. By incorporating a positive reward system, it

is hypothesised that the behaviour of drinking water will increase due to the intervention implemented.

Method

Participant

The subject monitored in this case study was a 30 year old male student. The subject is considered to be outside of normal health with medical staff diagnosing him with diabetes. For this reason he was recommended to decrease his level of sugary drinks and increase his level of water consumption. The subject had also decided that a \$1. 00 coin would not make an impact for reinforcement purposes, however a \$2. 00 coin may

Materials and Design

The study followed a single case design structure over a period of 14 days monitoring water consumption. The study is operationalised by filling and drinking a 250ml glass with water. Each complete glass consumed will equate to a score on the narrative sheet of one score or 1 completed event. Materials incorporated in the experiment included a 250ml marked drinking glass, normal tap or unflavoured bottled water, stationery and a narrative sheet (as shown in appendix A) for tallying all episodes of the desired behaviour. The narrative sheet also recorded any thoughts or feelings that the subject experienced while performing the monitored behaviour. For purposes of the reinforcement schedule, \$2. 00 coins were also utilised.

Procedure

Self-monitoring method. The experiment was segmented into two monitored periods and used an event recording procedure whereby each occurrence of

the behaviour is scored. Total time frame incorporated a baseline period and an intervention period; with each period consisting of seven days of monitoring. In each phase the subject will also have to use the narrative sheet to write any thoughts or emotions he had just prior to drinking a glass of water.

Baseline phase. During the baseline period, a tally was kept for the number of glasses of water consumed in a day under normal circumstances. Each time the subject drank a complete 250ml glass of water, the behaviour was scored on the narrative sheet. After seven days of monitoring, the scores were accumulated and averaged out; resulting in the “ baseline rate”.

Intervention phase. During the intervention period, after each complete glass of water was drunk and scored on the narrative sheet, the subject was rewarded with a \$2. 00 coin that was deposited into a collection tin. The use of the \$2. 00 coin is aimed at being a continued reinforcer for the desired behaviour. It was not necessary for each glass of water to be consumed at once; however the complete 250ml in the glass had to be consumed before the reward was given. After seven days of monitoring, the scores of the intervention period were tallied and averaged, resulting in the “ actual intervention behaviour rate”.

Functional analysis of behaviour. As show in appendix B, the pre-intervention behaviour is best analysed using a SORCK analysis. The analysis reveals that the current behaviour historically started due to the subjects’ preference of always drinking soft drink through previous years. A direct link has been established that the subjects’ preference to drink soft drink rather than water

has carried over through the years and well into present times. Another influential factor for the behaviour could also be explained by the subjects' disclosure that the water lacks any taste to his liking.

Contextually the presence of a corner shop near the subjects' residence has indirectly reinforced his behaviour of drinking soft drink rather than water. The subject has stated that automatically buying a soft drink from the shop was an unconscious act that he performed whenever he got thirsty. When the subject had notions of drinking something, he attributed physical characteristics of a dry mouth and throat; however, an immediate cognition of there being a bland taste to water always hindered the decision to drink water. Therefore based on this information an organismic analysis reveals that this cognition has also maintained the minimal water consumption behaviour.

The subject revealed that the immediate consequences of drinking water allowed an initial outcome of quenching the thirst, while a delayed consequence was the benefit of being rehydrated. However even with these benefits, based on the estimated daily consumption stated by the subject (average = 3.14 glasses); the study analysis has labelled the initial behaviour as being a deficit in water consumption. Contingencies which seem to maintain the behaviour presently can be identified as being negative punishment. This is because the removal of any taste from the water consumed, is punishing (decreasing) the water consuming behaviour.

Intervention. The intervention contingency employed was a positive reinforcement schedule; specifically the subject will be rewarded using a

positive reward system. During the intervention phase the subject will receive a \$2.00 coin each time the subject drinks a 250ml glass of water. The use of the \$2.00 coin as a reinforcer is appropriate because it's something that is valued by the subject. The reinforcement will follow a continuous reinforcement schedule whereby each time the behaviour is completed, the reward will be delivered. This form of reinforcement has been considered appropriate because it offers an immediate reinforcement for each occurrence of the desired behaviour. Another benefit of the continuous reinforcement approach is that it does not allow for a relapse towards old behaviours during intervention phase; which may be a problem if not continuously reinforced.

Results

As shown in figure 1, the number of glasses consumed significantly increased from pre - intervention to post-intervention due to the positive reinforcement schedule implemented. Pre - intervention results indicated that the number of glasses consumed during the baseline period ranged from 1 to 6 glasses with a mean of 3.14 glasses, whilst post-intervention results indicated that the number of glasses consumed ranged from 6 to 9 glasses with a mean of 7.57 glasses. According to Bloom's single case design, the number of occurrences that happened in the intervention phase was statistically significant at $p = .05$ ($n = 7$, $p = 0.15$). In order for the intervention to be considered significant, the intervention phase has met the minimum 4 out of 7 events needed in the intervention desired behaviour zone.

Figure 1. Glasses of water consumed pre and post intervention phase

<https://assignbuster.com/changes-in-behaviour-using-operant-conditioning/>

Discussion

The results of the study indicated that using positive reward reinforcement did in fact produce a behaviour change; in terms of drinking more water through each day. The study found that the subject; over a period of 14 days, did in fact double his intake of water consumption. This result concurred with the study by Loughridge and Barratt (2005) who found that students increased water consumption once they started having a pleasant taste to drinking chilled water. Following in the methodology of the study conducted by Azerrad and Stafford (1969) and Sorensen et al. (2007), the implementation of a reward system appeared to have played the most beneficial aspect of drinking more water. As shown in appendix A, the subject regularly made comments regarding the receiving of money for drinking water. Comments such as “ making lots of money today” and “ more appealing with \$2” indicated that the main motivation for drinking more water was due to the receiving of the reward. However for the purposes of this study it is concluded that the positive reinforcement intervention period has been successful.

A major limitation of the study that eventuated was that upon the intervention phase finishing, it is not clear if the behaviour continued or ceased. As noted in the studies by Azerrad and Stafford (1969) and Sorensen et al. (2007); upon their reward system ceasing, the behaviours also showed a regression to pre-intervention levels. Similarly this study would also have benefited from an additional post-intervention phase without a reward system because it would allow comparisons to see if the behaviour of drinking water showed a decrease or stayed consistent. This limitation could

also possibly lead to future studies that may focus on resolutions to address such issues. Future studies could look at ways to help maintain the continuation of behaviours without the reliance on a reward system.

In summary, this report analysed the ideology behind operant conditioning as developed by Burrhus Skinner. The study analysed a single case design using a reward system incorporated under positive reinforcement. The post intervention results; regarding consumption of water, did support the hypothesis in showing that a continuous reinforcement schedule had altered the behaviour of the subject to a level which is considered healthy by medical professions.