

Willingness to use Cognitive Priming to support an app-based weight loss program

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ABSTRACT

There is general concern by the public to use or to be exposed to Cognitive Priming for fear of it manipulating their thoughts, decisions, or actions. We wanted to assess the willingness of a motivated group to use Cognitive Priming as part of an overall effort to achieve a health goal. We engaged with a group of subscribers to the Obesity Action Coalition, a 58,000 member non-profit organization giving advice, awareness, public education, advocacy, and support to individuals affected by the disease of obesity. In July of 2018, we conducted a simple survey to assess attitudes toward using Cognitive Priming. While most responders did not know what Cognitive Priming was, once it was defined, the interest to use was positive. Of the 138 responses collected, 90% were intent on using or are using an app to help them with obesity. Of those using or intending to use an app, 89% said that they would be interested in using Cognitive Priming if it would instill positive feelings or feelings of competence and self-worth.

INTRODUCTION

Cognitive Priming is a technique for influencing humans whereby exposure to one stimulus influences a response to a subsequent stimulus, without conscious guidance or intention. Cognitive Priming may be presented in a supraliminal or subliminal form. Supraliminal stimuli are above the threshold of sensory detection and, while not always detected, it can be given the intent to sense it. Subliminal are stimuli below the threshold of human sensory perception and cannot be heard, if auditory, or seen if visually presented. Significant research has been conducted for both types of priming. However, the public has various reactions to the use of Cognitive Priming, many of which are negative due to its nefarious use in marketing and advertising. Our interest though was to determine if Cognitive Priming would be accepted if part of a therapeutic regiment to achieve a health goal. More specifically, we wanted to assess the willingness of subjects with a challenging health goal who intend or are already using a Smartphone app to support their effort. The use of a Smartphone for delivery of Cognitive Primes is a novel approach to supporting decision- making to achieve important goals.

One concern of ours is that an immediate association may be made between Cognitive Primes and the negatively held attitudes against subliminal messaging. An association developed in the late 1950s when James Vicary announced that he was able to cause people in a movie theater to buy Coke and popcorn by inserting subliminal text messaging in the film. More commonly today, in the academic field, the technique is referred to as Subliminal Cognitive Priming – but the methodology is little different. More importantly, over the last decade, considerable research has been undertaken to understand the potential and limitations of this methodology. While beyond the scope of this paper, the research has shown promise for Cognitive Priming to have a positive influence over decision-making. Would, therefore, a

person faced with a challenging health goal be willing to put aside negative constructs if their health goals were of high importance?

Perhaps there is no more challenging goal than to lose weight. There are over 20,000 apps available for losing weight and, while many may be useful, few are used long enough for the objectives to be met (Eysenbach, *JMIR Mhealth Uhealth*, 2016). Would it then be possible to consider the use of Cognitive Priming to maintain motivation? Will the public be interested in the use of this technology? Do they even have a sense of what it is? And, once they understand what it is, are they still interested in trying? These are the queries that we posed to our target audience.

To target a highly-motivated group interested in weight loss, we solicited members of the Obesity Action Coalition in July of 2018 (<https://www.obesityaction.org/>). The OAC provides members with a newsletter that was used to alert members to the survey. A brief notice and explanation of a survey involving technology for weight loss was announced. Then, a follow-up link was provided in the newsletter for members who elected to participate in the survey. 138 people responded.

FLOW OF QUESTIONS

Our questions covered two topics: 1) the subject's interest, use and experience with weight loss apps, and 2) their reaction to Cognitive Priming and willingness to try. We first wanted to identify the percentages of people who would use an app as part of a weight loss regiment and aspects of their assessment toward apps. In the second part, we wanted to assess people's awareness of Cognitive Priming and their interest in using it as an adjunct to their intended app.

In total, there were twelve questions. Each question had three or four possible check-the-box choices. There were no write-in answers to keep the process simple. The survey was hosted by and deployed through [surveymonkey.com](https://www.surveymonkey.com). The questions are in the appendix. No compensation was offered to participants.

Below are the questions asked – the full questionnaire with possible elected responses is in the appendix.

The first series of questions asked:

1. Do you have intentions of starting a weight reduction program or are you already on one?
2. Are you currently using, or intend to use, an app for support?
3. If using an app, do you like the app you are using?
4. If you are using a weight loss app, how long have you been using it consistently?
5. If you use a weight loss app long-term, do you believe it will help you reach your desired goals?
6. Are you interested in a technology that would help you stay engaged using your weight loss app long-term?

The second series asked were the following:

7. Have you heard of Cognitive Priming?
8. If yes, do you know what Cognitive Priming means?
9. Does the term Cognitive Priming suggest something to you that is?
10. Cognitive Priming is a means of exposing your mind to images that evoke positivity and are delivered on your Smartphone that flash by faster than you can actually see them. Would you be comfortable with using this technology?

11. Cognitive Priming cannot cause you to do anything you don't want to do but it can nudge you to achieve and instill positive feelings - would this be of interest to you?
12. Cognitive Priming images don't require any effort on your part but will give you a feeling of competence and self-worth multiple times during the day simply by using your Smartphone - would you be interested in trying this?

DISCUSSION OF RESULTS

We found in the first series of questions that 124 of 138 responders (90%) said that they have intentions of starting, or are already on, a weight loss reduction program. We use 124 as our basis. Of those with this intention, 93 (78%) said that they would use an app as part of their weight loss regiment. Of those using an app, 73% said that they liked the app that they were using. For those using an app, results were the following: 27% had been using it for 30 days, 7% said 60 days and 10% said ninety days. The remainder either had not started or had been using the app for more than 90 days. 77 responders felt that the app would help them to reach their goals while 35 were unsure. 101 responders were interested in technology that would help them stay engaged with their program.

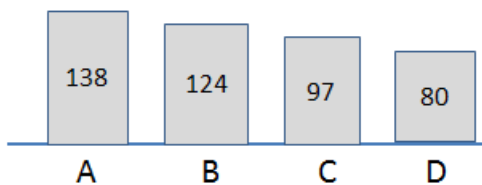


Figure 1, shows number of respondents: A= Total, B= with intent to lose weight, C= intending to also use an app, D= believing an app will help achieve goal

We found in the second series of questions that the majority, 103 responders, had not heard of Cognitive Priming and 106 did not know, or were unsure of, what it is. Interestingly, when asked if Cognitive Priming suggested something positive or negative, 66% said it was positive and 45% were unsure. Similarly, when Cognitive Priming was defined as a means of exposing the mind to images that evoked positivity and was delivered on a Smartphone, 65% of responders were comfortable with this and 42% were unsure. Only 16% expressed being uncomfortable. With the next question, we made clear that Cognitive Priming cannot cause you to do anything you do not want to do but it can nudge you to achieve and instill positive feelings. Responder interest jumped to 89%. Similarly, when asked if having feelings of competence and self-worth multiple times a day was of interest, 89% said yes.

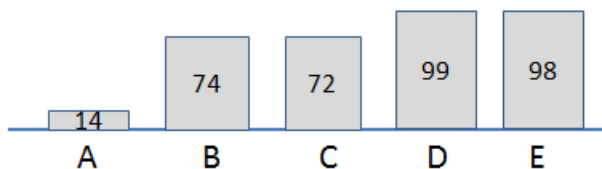


Figure 2, shows number of respondents: A = who have heard of Cognitive Priming, B= who believe Cognitive Priming is a positive thing, C = would be comfortable using this technology, D= interested if it instilled positive feelings, E= interested if it instilled competence and self-worth

SUMMARY

Our objective was to understand if motivated users of apps would welcome a Cognitive Priming technology to help in achieving their health goals or if they would they have concerns. The group of responders we choose were motivated as they were members of the Obesity Action Coalition – a highly-motivated and aware group. We purposefully used the term Cognitive Priming rather than the more common term of subliminal messaging as the later does have negative connotations in the public. However, we defined Cognitive Priming as a method of flashing images on a video screen used by the user at a rate below their threshold of detection. That definition still had 65% of responders being interested in its use. When Cognitive Priming was further defined as not being able to cause anyone to do what they do not want to do, the comfort level and intent to try rose to 89%.

We did not collect data on individuals to assess their health or weight; but, in future surveys we will determine if severity of an overweight condition is correlated to willingness to use an app or to use Cognitive Priming. We also understand that there is a difference in asking intent questions and asking to try and use. A next step will be to have goal-seekers trial the technology.

Our response rate may have been low due to not offering compensation.

APPENDIX

Survey

1. Do you have intentions of starting a weight reduction program or are you already on one?

- Yes
- No
- Not sure

2. Are you currently using, or intend to use, an app for support?

- Yes
- No
- Not sure

3. If using an App, do you like the app you are using?

- Yes
- No
- Not sure

4. If you are using a weight loss app, how long have you been using it consistently?

- 30 days
- 60 days
- 90 days
- Longer / Shorter _____

5. If you use a weight loss app long term do you believe it will help you reach your desired goals?

- Yes
- No
- Not sure

6. Are you interested in a technology that would help you stay engaged using your weight loss app long term?

- Yes
- No
- Not sure

7. Have you heard of Cognitive Priming?

- Yes
- No
- Not sure

8. If yes, do you know what Cognitive Priming means?

- Yes
- No
- Not sure

9. Does the term Cognitive Priming suggest something to you that is?

- Positive
- Negative
- Neutral

10. Cognitive Priming is a means of exposing your mind to images that evoke positivity and are delivered on your Smartphone that flash by faster than you can actually see them. Would you be comfortable with using this technology?

- Yes
- No
- Not sure

11. Cognitive Priming cannot cause you to do anything you don't want to do but it can nudge you to achieve and instill positive feelings - would this be of interest to you?

- Yes
- No
- Not sure

12. Cognitive Priming images don't require any effort on your part but will give you a feeling of competence and self-worth multiple times during the day simply by using your Smartphone - would you be interested in trying this?

- Yes
- No
- Not sure