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Positive visual stimuli may not affect student's happiness

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Abstract: While past research has proved the effects of visual stimuli on several aspects of a person, such as mood, memory and depression, few studies have been conducted on positive visual stimuli due to the limited research available on positive psychology, so this experiment was designed to investigate whether positive visual stimuli can have an effect on one's happiness level. Participants were asked to watch a video of positive or neutral visual stimuli and fill out a subjective happiness scale before and after the viewing respectively, through which we could know the average happiness scores of participants in different states. The research made a hypothesis that students' happiness levels would be increased if they were exposed to positive visual stimuli in our experiment, but our results did not support the hypothesis, implying that positive visual stimuli may not affect one's happiness level. However, the research does have limitations that may lead to our lack of significant results.

Key words: positive visual stimuli; student's happiness; subjective happiness scale; positive psychology

1 Introduction

Positive psychology is a relatively new field in psychology, with its focus on the study of positive human development, which can enhance our application and understanding in other areas. Previous studies have shown that people with severe visual impairment or complete blindness are more likely to exhibit symptoms of mild to clinical depression [1]. It directly connects to the fact that positive mood is associated with activity found in the occipital regions of the brain [2]. In other words, if one is unable to take in a positive visual stimulus, they will display no improvement in mood, and may even display a decline over time. Furthermore, vision-specific distress has been found to be the strongest unique predictor of depressive symptoms when observing the depressive patterns of the visually impaired. Therefore, our group thought we could conduct research targeting how the effects of positive visual stimuli on people can be used to improve students' happiness levels, which are relatively low among college students [3].

The capacity to receive visual stimuli is clearly a significant part of determining one's emotions, to the extent that emotional stimuli can even be processed without obvious attention [4]. Considering this, most of the studies that have been done so far focus on the relationship between stimuli and emotions, such as the attentional aspects involving emotional stimuli [5], people's emotional responses to others' facial expressions when paired with colors [6], and even the effects of contextual emotional stimuli on memory [7]. However, relatively few positive emotional states of individuals, that is, their well-being, have been considered in this particular domain. One of the main reasons for this is that positive psychology - the psychological study of behavior, thoughts, and emotions in the context of humanistic improvement is considered to be

based on weak, fallacious principles that define optimal living [8].

That being said, there have been a few applications of positive psychology all the same, from the stress-reducing benefits of petting dogs to the feeling of reward that students get from receiving positive visual stimuli [9][10]. In this study, we seek to expand on this notion, conjoining the concept of positive psychology (namely happiness) and the effects of positive visual intake on emotional status as an effort to address the gap between stress/negative emotion studies and positive psychological studies.

Most research has been conducted focusing on the negative effects of visual stimuli on people. For example, visual impairment may cause and further enhance depression, and negative visual stimuli cause shorter memories in people, or more neutral studies such as how color as a visual stimulus affects people's judgment of expressions. Only a smaller number of studies focus on how visual stimuli positively affect people, such as a sense of reward from positive visual stimuli. In our study, we aim to extend this concept by linking the concept of positive psychology (i.e., happiness) and the effect of positive visual intake on emotional states to address the gap between stress/negative emotion research and positive psychology research and to explore how positive visual stimuli affect mood. We hypothesized that our experiment would increase students' happiness level if they were exposed to positive visual stimuli.

2 Research methods

2.1 Research participants

Participants consisted of 38 college students (30 Female, 5 Male, 3 Non-Binary; Average age=21.13), currently enrolled in an experimental psychology course at the University of Nevada, Reno.

2.2 Research design

This experiment was conducted using a between-subjects design, where each participant was randomly assigned a condition with a link to a survey and a short video containing images that spark no emotional responses (neutral) or emotionally inducing responses (emotional). One group viewed a short video with neutral images, while the other group viewed a short video with emotional images. The independent variable in this study was the positive visual stimuli. The dependent variable was the participant's happiness score. This experiment was conducted completely online using google slides (to present the surveys and video), google forms (to create the surveys), and iMovie (to create the 30-second video with 10 different images). The surveys were created using the subjective happiness scale [11]. The neutral stimuli video consisted of stock images with common everyday items that elicit no emotional response on average (a backpack, buildings, a cup, a computer, a chair, a table, a clock, a shoe, a toothbrush, and a house). The positive stimuli video consisted of common everyday items that elicit an emotional response on average (a puppy, a kitten, a rainbow, a birthday cake, a baby, money, a chocolate chip cookie, a smiley face, flowers (bright colors), and a smiling dog).

2.3 Research procedures

Participants were given a link to their condition based on their random assignment. First, before participants were presented with any stimuli, they were asked to read and fill out an informed consent form as well as their basic demographic information (gender and age). Participants then filled out the subjective well-being scale, and after obtaining a baseline of their initial well-being, participants were asked to watch the video according to the condition to which they were assigned, including control group (N=17, 13 females, 3 males, 1 non-binary; mean age=22.18) and the experimental group (N=21, 17 females, 2 males, 2 non-binaries; mean age=21.33). Finally, participants were asked to fill out the subjective well-being scale one last time [12]. After completing the above process, participants were asked to read our debriefing page and were given our contact information for further inquiries.

2.4 Research results

To assess the effects of positive visual stimuli on students' happiness, the research conducted an independent *t*-test with an alpha level of 0.05. The hypothesis was not supported, and positive visual stimuli (*M*=-0.3, *SD*=0.47) did not significantly increase a student's happiness (*M*=-0.04, *SD*=0.34), *t* (37)=-1.86, *p*=0.070, *d*=-0.60.

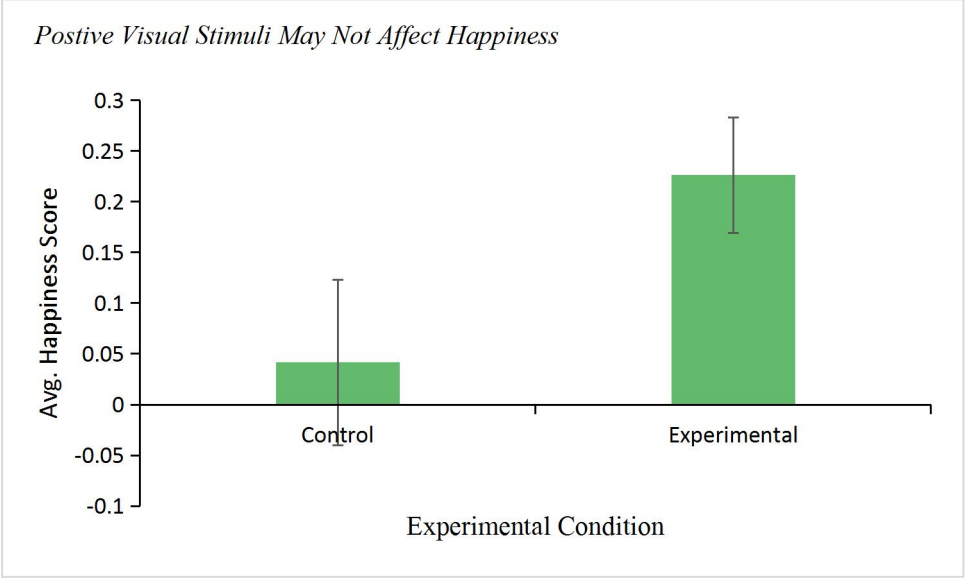

Fig. 1. The happiness score between the two groups

Note: This figure represents the difference scores between the two conditions. Error bars indicate standard error

3 Discussion

The research hypothesized that positive visual stimuli would increase students' well-being. Although it roughly appears that the positive stimulation group had a mean score of approximately 0.2 points higher in well-being than the neutral group after viewing the visual stimulation video (Fig. 1). After data analysis, we did not obtain a significant result, but for an alpha value of 0.05, a p value of 0.07 brought us very close to significance. Because positive visual stimuli did not lead to a significant increase in students' well-being compared to neutral visual stimuli, our findings suggest that students' emotions were not affected by positive or neutral visual stimuli. Our discovery led to the conclusion that positive visual stimuli may not be used to increase a person's perception of happiness.

Although our study considered the meaning of the pictures we selected for the visual stimulus videos for the majority, we did not go into great detail to distinguish between different participants' preferences for them, so there is no guarantee that every participant in the experimental group received positive stimuli while the neutral group received neutral stimuli, for example if a person had been hurt by a dog or a cat, then they may not find our positive visual stimuli positive, therefore, our study might be affected. The reason for the non-significant results could be due to the students' inability to receive positive visual stimuli. If a person is unable to receive positive visual stimuli, their mood will not improve or even decline over time, meaning that the stimuli in the experimental group did not result in a significant improvement in students' well-being compared to the control group, which could be a consequence of our experimental material.

Due to our relatively small sample size (N=38) consisting of only college students currently enrolled in an experimental psychology course at the University of Nevada, Reno, this may also have reduced our chances of obtaining significant results and reduced the generalizability of our experimental results. Therefore, the results we obtained can only reasonably be applied to college students in the field of psychology. And because the majority of our sample composition was female (n=30), it is difficult to claim that these results are equally applicable to male. Another limitation of our

experiment was that because the experiment was conducted entirely online, we were unable to capture the state of the participants at the time of participation, such as mood, location of participation, and equipment used, all of which may have affected the results of our experiment and caused bias. Therefore, we believe that more research is needed to discuss whether positive visual stimuli can improve overall human happiness levels. In future studies, if a larger and more diverse samples and more time allow us to test participants multiple times and collect data, such as a month-long trial on multiple college campuses to collect data, perhaps more precise analyses can be conducted, and the data obtained will reflect a more realistic change in happiness.

Despite the fact that our experiment did not yield significant results and our hypothesis was not supported, our experiment still provides potential applications for future research directions. Today, research on visual stimuli is being used to improve mental health because college students are more likely than other populations to suffer from depression and most of them do not seek help. And studies suggest that depression messages using recovery-related visual frames may be more effective in motivating help-seeking behavior in college students with depressive symptoms than suffering visual frames [13]. It's hoped that our experiment can be extended in the future to use more common positive visual stimuli to improve the mental health of college students. Further research could also be extended to populations other than college students, such as younger students, adults starting to work, or people who have retired, which are all worthy subjects for study. Since college students do not have as high an average level of well-being as other populations, it is possible that this experiment could also yield significant results in other populations and eventually be replicated in society to improve people's overall mental health in a more effective way. More research can also be utilized in online teaching, since more and more courses are being moved online. If the impact of visual stimuli can be used wisely, then it can be effective in improving students' learning. The research results show that showing interesting images as a stimulus in online learning activities can enhance students' emotional state in teacher-student interaction, and reduce the adverse psychological effects.

Conflicts of interest

The author declares no conflicts of interest regarding the publication of this paper.

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