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THE EFFECT OF PERCEPTION BIASES ON ASSOCIATED VALUE OF STIMULI

By

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ABSTRACT

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Truth in the Negativity Bias

Faculty Mentor: Yoonhee Jang

Negative and positive stimuli appear to have their own unique effects on mood, behavior, and even underlying perceptions. Previous experiments have shown that people have the tendency to focus more on negative stimuli than positive; this is referred to as the “negativity effect”. The present study examined this bias, as well as the level of truth that people associate with positive or negative stimuli. In this experiment, students were split into groups and given either a “positive” or “negative” news article to read. Then, they were presented with two scenarios consisting of professors providing either “negative” or “positive” feedback to their students, and were asked to choose which option they believed to be the most truthful. It was predicted that, since people appear to hold a “negativity bias”, a greater percentage of the participants primed with the “negative” news story (versus those exposed to the “positive” news story) would choose the “negative” feedback as being more truthful. Unfortunately, the data did not reveal results significant enough to support the hypothesis, but there did appear to be an interesting trend. Very few from the negative condition chose the negative option, while almost a third of those in the positive condition chose the negative option. Thus, it appears that positive and negative stimuli do have their own unique effects, even if it isn’t in the way that is expected.

The Effect of Perception Biases on Associated Value of Stimuli

According to Martin Seligman, a researcher in the field of positive psychology, “humans are bad weather animals; ready to see the most catastrophic” (2013). Essentially, he was referring to the tendency to focus more on negative stimuli in the environment than positive. This concept was developed through a lens of evolutionary psychology, as it seems it was once more beneficial for survival to focus on negative stimuli, such as a thunder storm, versus positive stimuli, such as close food sources. This tendency to emphasize the negative kept ancient people safe and enabled them to avoid deadly situations. This study will expand on this concept by examining if people also have the tendency to perceive negative stimuli as being more truthful than positive. It is important to study the interaction between humans and their environment, thus it is highly relevant to examine the effect that positive and negative information have on perception and cognition; they exist everywhere in daily life.

In the past, experiments have supported the notion that people have a habit to focus more on negative stimuli than positive stimuli; this phenomenon is referred to as the “negativity bias” or the “negativity effect”. In one study, performed by Richey M., Koenings, Richey H., and Fortin (1975), the research team was able to show the strength of this bias. When exposing participants to traits about a fictional character, they found that “a single negative behavior neutralized 5 positive behaviors”. Essentially, this means that one negative trait about the character had enough influence to trump the significance of five positive behaviors. This was significant as it showed how influential a part the negativity bias can play on people’s perceptions of others, even when there are significantly more good factors about someone than bad. Another study performed by Hagoood & Gruenewald (2018) was able to show that subjects had a stronger emotional reaction when exposed to negative stimuli rather than positive stimuli, and the short-term memory of those exposed to the negative stimuli was also adversely affected. Thus, not only does it appear that there is an emphasis on what is “bad”, but it also appears that this emphasis can cause adverse psychological or neurological effects. This is a concerning fact considering that, even at a young age, people seem to perceive positive and negative stimuli differently. In a study conducted by Fuvish, Hazzard, Sales, Safati and Brown (2003), they found that children used different ways to describe memories depending on how good or bad the memory itself was. When talking about a positive memory, the stories were physically

descriptive, but when talking about negative memories, the children put more emphasis on their emotions and feelings during the situation. Thus, it appears that positive and negative stimuli have their own unique effects on the perception, cognition, and emotions of those that are exposed to them.

The goal of this study was to examine the negativity bias, but also to expand on it by studying truth as well. Truth is an important characteristic to examine because it can determine the type of information that people hold most valuable. Historically, the concept of discovering what is “true” has always been popular yet problematic as there is almost always a shortage of information in order for something to be classified as absolutely true. Thus, when people are making a decision and do not have enough information available to examine, the decision of what is “true” often falls in the hands of the underlying processes and biases that the person holds. A great example of this is the phenomenon of first impressions; most people have experienced meeting a person for the first time and automatically creating a judgement about them based on their physical appearance or attitude in that moment. Unfortunately, first impressions are not usually accurate, as they are not based on knowledge that could only be acquired by getting to know the person. They are normally based on underlying biases about people who look or act a certain way, and yet, people still trust those automatic initial evaluations (Zebrowitz, 2017). Thus, it is very important to examine what people perceive as being “true”, because that can drastically affect who and what people surround themselves with. In the following experiment, it was predicted that participants who are put in the “negative” condition would be much more likely than those put in a “positive” condition to choose negative feedback as being more truthful than positive feedback.

In this study, 43 University of Montana students from the psychology department participated. The group was divided in half and separated into two groups, those being the “positive” condition and the “negative” condition. This was a between subjects design, so the data between the two groups was compared. The independent variable (IV), or the factor that manipulated the experiment, served as positive and negative priming stimuli in the form of news stories. The dependent variable (DV), or the factor that was manipulated by the IV, was the “positive” or “negative” answer that the subject believed to be the most truthful. The study was administered using pencil and paper. A positive news story (i.e. “UM Professor brings bags of

food and donations to TSA Agents) and a negative news story (i.e. “McGill closed indefinitely to asbestos testing”), both of which were relevant to news on campus, were used, as well as a third paper that held the question for the evaluation of truth in positive or negative feedback. The question asked the participants to choose, out of the positive or negative feedback that was provided to them, which they believed to be the most truthful.

Upon arriving, the participants were given either the positive or negative news story and were instructed to write a short summary after they were done reading. Afterwards, they were given the question for the evaluation of truth which provided two different scenarios. The first scenario consisted of a professor giving them negative feedback about their performance (i.e. “You are a terrible student”), and the second consisted of a professor giving them positive feedback about their performance (i.e. “You are an amazing student”). After answering which they believed to be the most truthful, then the researcher collected the data.

A chi-square analysis was performed to examine the data, and the results were as follows: Chi-square (1): 3.23, $p = .132$. Out of 21 participants in the negative condition, only two chose the negative feedback as being more truthful. Out of 22 participants in the positive condition, seven chose the negative feedback as being more truthful. Thus, the hypothesis was not supported.

Even though the data did not turn out as expected, it still appears that positive and negative stimuli have varying effects. For example, only as little as ten percent of the negative condition chose the negative option as being the most truthful. Past studies have shown that there is a tendency for people to overestimate their performance, so this might be what happened to those in the negative condition; perhaps they were feeling overly confident about their work, so they decided to choose the “Amazing Student” option (Hoyt, C. L., Price, T. L., & Emrick, A. E., 2010) One participant in this condition, after reading the scenarios provided in the question, stated: “Of course I’m going to choose the good option, I would hope everyone would”. As for the positive condition, around thirty percent of them chose the negative feedback as being the most truthful. It was not expected that the positive condition would end up choosing the “Terrible Student” answer more often than the negative condition, but it might have been due to the priming stimuli that was used. In other words, perhaps the participants did not think well about their performance after reading an article about such generous volunteers, which would

cause them to rate their performance as lower than they normally would. This comparison to the immediate surrounding is referred to as the Ebbinghaus Effect, which states that people's perceptions of an object or situation is affected by the surrounding environment (Knol, H., Huys, R., Sarrazin, J., & Jirsa, V. K., 2015). Thus, perhaps this is why the study resulted in such data.

In terms of future research, there are many things that can be done to improve the study overall. For instance, it would be helpful to change the evaluation of truth question so that it is less personal and more general. Due to the many aspects that can affect someone's perception of their own performance (e.g. mental illness, mood, recent events), it might be better to have a more generalized question that evaluates truthfulness in feedback. In addition, it is also recommended that a better evaluation for truthfulness be developed so that the data that results is more accurate. For example, instead of answering just one question, perhaps the measure could include several questions about various situations in which people are given positive and negative feedback. Finally, in the end, the news articles did appear to be too abstract to use as priming stimuli. Although they held interesting stories that were relevant to students on campus, there is still the possibility that they were interpreted differently from their positive or negative status. Thus, it would probably be more beneficial to incorporate more concrete positive and negative priming stimuli.

In the end, the data did not yield significant results, but it still showed a small difference. Considering how complex the interactions are between the mind, the body, and the environment, it can be difficult to determine exactly how positive and negative stimuli affect humans. But, it does appear that there is some sort of difference, so with future research, hopefully a better idea of what causes these differences will develop.

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