

Environmental influence on decision-making

U-Camp

Zhenyan Yuan

Xilei Yang

Yirong Xuan

Cecilia Cui

Introduction

Priming is a type of implicit memory. It occurs when stimulus being exposed to previously affect people's reaction to the subsequent stimulus. When the theory first came out, psychologists in the cognitive field launched various experiments to study the effect, one of which was Word-Fragment Completion done by Endel Tulving, Daniel L. Schacter and Heather A. Stark from University of Toronto.

Subjects were shown a list of 96 unfamiliar words. After either an interval of one hour or one week, researchers asked them to complete word-fragment test relate to words on the previous list. Although their recognition accuracy was greatly diminished after 7days, as they couldn't remember the word on the list, they were still more likely to complete the word as they saw from the list. This famous experiment manifested the independence between memory and the effect of priming. Another experiment from John Bargh demonstrated the occurrence of priming. He gave subjects seemingly random words containing a subtle tend to express the stereotypical elder people: Florida, gray, wrinkle, lonely, bingo, although subjects didn't realize this tendency. After being exposed to these words, subjects walked more slowly compared to participants who weren't exposed to these stereotypical words. After numerous and different experiments, social priming seemed like a truth in psychological history until 2012.

Accidentally, some psychologists found that their results were not ideal, or even contradictory to the theory. In 2013, Stéphane Doyen mail, Olivier Klein, Cora-Lise Pichon, and Axel Cleeremans set an experiment called Behavioral Priming to shine

some skeptical light on Bargh's conclusion. They pointed out that two factors, heredity and priming produced the large patterns of neural activation in higher association cortices. They believed Bargh and earlier psychologists emphasized overly the importance of priming and ignored the other factor. Surprisingly, they replicated Bargh's experiment and got an opposite conclusion. They even added a delay process, which would reduce the influence of heredity but it did not work.

This event initiated a debate on whether social priming really exists. As time goes on, more psychologists realized that incidental exposure to certain information could generally prime subsequent responses in ways that are not fully intended. Many of them focused their research on the process of priming, since it was related closely to daily life and other concepts.

Priming is the enemy of free will. Environment's effect on individual's response is the crux of priming theory, which is the opposite to free will. Free will explains people have freedom to act without the influence of their outer environment. Many philosophers in western societies reckoned that all the bad behaviors were resulted from it. They supposed the concept of free will is very closely connected to the concept of moral responsibility, which is to satisfy the metaphysical requirement on being responsible for one's action.

Priming occurs everywhere around the world and influences people's thought and action. A small example can demonstrate this. While one was scanning through their wechat moment, he was bombarded with information heedlessly. This information will influence his subsequent usage of word on his own write- up.

Another application of priming in daily life is relate to decision-making. Researchers found in a wine store, people were more inclined to buy German brand wine when German music was playing, and they chose to buy French brand when French music was playing. This experiment promotes good marketing strategy.

Priming is also related to the cognitive process of stereotype, which is another important concept in the field of social psychology. In-group and out-group bias explains that people will focus on the homogeneity within their own group, and how the outer group is different from them. Gradually they will become depersonalized and abandon their individual differences and embrace the stereotypes associated with their relevant group membership. In various aspects, stereotype is based on priming since the fundamental step of the formation of stereotype is priming people with their own character.

Therefore, priming is fundamental to our daily life, and this is the reason that our group chose this topic for our experiment to further study social priming.

Methods

Participants

Forty-four students and teachers from age 16 to 31 from Guanghua Qidi school were chosen to participate in the study. They were divided into two groups named A and B in random.

Material

Plate (Human Resource Department), telephone, occupational questionnaire, company management regulations, paper file, and plants were used in decorating business-themed room. Bolsters, balloons, palm tree leaves, beach wallpaper, volleyball, spade, and surfboard and safe buoy were used in decorating beach-themed room.

Procedure

Each group had to wait in one of two different waiting rooms. The room for A group was decorated with a beach theme, and the other room for B group was decorated as a business office. Two scenes were created. Participants in group A (business room) were first asked to read the corporation regulation. Then they needed to complete an occupational questionnaire. Throughout this process, they grew used to the intense atmosphere. On the hand, participants of group B (beach room) were led to transfer into a relaxing state by imagining sitting on a beach, and feeling the breeze whisking their face. They could play cards or chat with each other, and feel comfortable. . After 20 minutes waiting time, they were invited to the third room one by one. In the third room participants were asked reach in a bag to take one of two pieces of paper with offer and decide on it (though only offer was written on the paper), the participants then had to divide 100 yuan in anyway they want between the two, the researcher decides either accept or refuse the offer.

Analysis

A one-tailed independent-measures t test was used as the hypothesis-testing

procedure since the hypothesis is directional and the three assumptions were met. First of all, the two sets of data came from two independent samples. Secondly, the two populations from which the samples were selected were normal. Thirdly, using Hartley's F-max test, value 1.15 was obtained, and it is smaller than the critical value 2.07, thus the sample variances are similar and that the homogeneity assumption is not violated.

Result

In this experiment, almost half of the participants chose to divide the money evenly, participants in beach group had a higher rate of doing so, and they were more inclined to offer more than 50 to the other person than the business group. More number of people in business group offered less than 50 yuan than beach group. There are two extreme data: a member in beach group chose to keep 99 yuan and offer 1 yuan; a member in business group chose to offer all of the money to the other person. No data is in the range of 90, 80, 20 yuan. In business group, 70 and 50 range has similar number of people. In beach group, other ranges have much fewer number than the 50 range.

Discussion

In this study, we compared participants waiting in beach room and a group of participants waiting in business room for their performance on decision making—how to divide 100 yuan between them and confederate. We found that participants in business room made more aggressive decision than the beach group.

Priming occurs everywhere around world. For instance, when driving on the high way, one may see many advertising boards occasionally along the way. One had a leopard printed on it. When he was asked to say what kind of animal he had in mind, he said leopard without thinking, even though he was not aware of the leopard advertising board. Although encoding all the stimulating information we sense in everyday life can prove helpful when attention to details is required, it can inevitably hinder normal cognitive function. The study shows reduction of distraction can improve participants' performance on daily cognitive tasks. This is useful in guiding the design of an environment that will maximize people's performance. It also provides an incentive for future research to establish a better theoretical link between cognitive inhibition and cognitive process since this brief report is only one step in determining this relationship, and it undermines many other contributing factors.

Several significant factors that influence decision-making include past experience, a variety of cognitive biases, an escalation of commitment, individual differences (age, socioeconomic status) and a belief in personal relevance. These things all have a big impact on decision-making process and the final decision

reached.

Past experience can serve as a reference for future decision-making. Juliusson, Karlsson, and Garling (2005) indicate that past decisions can impact people's reaction to choices in the future. . It stands to reason that when something positive results from a decision, people are more likely to decide in a similar way, given a similar situation. On the other hand, people tend to avoid repeating past mistakes. This is significant to the extent that future decisions made based on past experiences are not necessarily the best decisions.

In addition to past experience, individual differences may also play a significant role. Age is among one of the most important individual differences. As cognitive functions decline as a result of age, decision-making performance may decline as well. Although older people may become more confident when comes to making decisions since they regard themselves as more experienced. There is evidence to support the notion that older adults prefer fewer choices than younger adults .

The discrepancies identified may also result from some limitations found in the research. The study was focused on students and teachers in Guang Hua Qi Di school, and it creates a demographic limitation. Also personality plays a big role in decision-making. Some people are selfless in nature, so they are more inclined to offer larger sum of money to the confederate regardless which group they belong to. Some participants in beach group might have an aggressive personality, and they chose to hold on more money to themselves. On the other hand, everybody has different abilities to deal with the environment influence.

Future studies including children with intact sensory system but having deficits in cognitive inhibition will be important for further understanding on the relationship between ability to ignore distraction and mental performance. A stronger connection may be found.

More works are required to resolve this complicate issue, but the basic finding is clear. Environment has an effect on people's thought and action .

Confounding Variable

First of all, sample of participants is from Guang Hua Qi Di school only, they are not representative of the entire population. Only teenager and young adult is present. There is lack of young kid, middle age and elder people. Also, researcher has known the participants before the experiment, so the Q&A session might not be carried out objectively. Some of the participants asked unrelated questions to the researcher, this may impede their later performance. Researcher's answer might also interfere with the result. Additionally, the air conditioner in business room broke down. The hot and dry surrounding might influence participants' emotion state and their subsequent answer to the money division question. Unavoidably, personalities play a big role in decision making as well. During the experiment, researcher invited more participants who were not initially on the participant list. These additional participants were not assigned to the room randomly. Researcher may on a subconscious level assigned room according to the impression they first given to researcher. Also, some participants may have known the procedure from others who

have done the experiment.

Conclusion

Through this priming experiment, participants were separated into two groups in random, and they waited in one of the two waiting rooms with different themes. Their answer to the question on money division is analyzed. Priming is an implicit form of human memory, and it influences people's action and cognitive ability of identification. Although the result was not greatly significant, the small differences between the answer of two groups can still be used to study the effect of priming, how it influences behavior, emotion and decision-making. Other researchers in the field have done similar experiment. One of them was the study of color and social relationship, and how they interact. Thirty students were chosen from a university in random, half of them were man, and the other half were woman. Three types of paper with different color were present, orange, blue and white respectively. They were first asked to choose a paper in random then read the description written on the paper. And they were asked to give score for how friendly he/she is. As a result, the group got the orange paper gave higher score than the other two groups. It shows that different colors are associated to different things, cool color make people more indifferent, inversely warm color make people seems more friendly. Priming is a promising field in psychology; the understanding of this concept can shine some light over the mechanism of human cognitive process.

Appendix A.

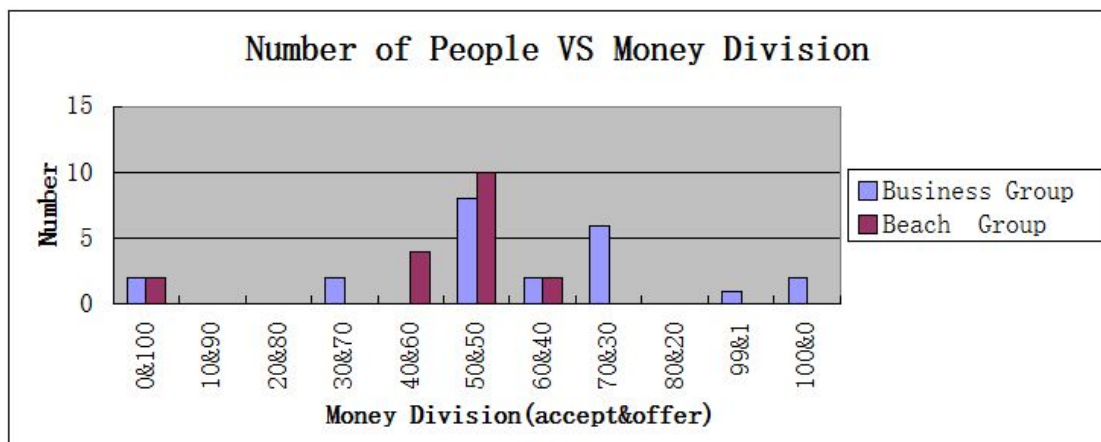


Figure 1.0. Data distribution on money division task for business group and beach groups

References

Two Failures to Replicate High-Performance-Goal Priming Effects. (n.d.). Retrieved July 31, 2015.

Barry, S., Terrence S., & Benjamin R. (2014). Development of multisensory integration from the perspective of the individual neuron. *Nature Reviews Neuroscience* 15, 520–535.

Nisbett, R. E. (2003). *The geography of thought: How Asians and Westerners think differently-- and why*. New York: Free Press.