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Implicit self-esteem and behavioral Activation system and Behavioral Inhibition system

Shuoyao Dong

Department of psychology, Jinan foreign language school International center, Shandong,250031, China
surinadong@163.com

Abstract: This article will explore the correlation between implicit self-esteem and Behavioral Activation System and the correlation between implicit self-esteem and Behavioral Inhibition System. The participants' implicit self-esteem will be measured by Implicit Association Test. The participants' BAS will be measured by BAS scale and their BIS will be measured by BIS scale. Self-questionnaire measures from the participants (N=109) will reveal an expected result that there is a positive correlation between implicit self-esteem and Behavioral Activation system, and the expected results will reveal a negative correlation between implicit self-esteem and Behavioral Inhibition system.

Keywords: implicit self-esteem, behavioral activation system, behavioral inhibition system, implicit association test, behavioral activation system scale, behavioral inhibition system scale

1. Introduction

In recent years, scientists have increasingly focused on the influence of low self-esteem, such as substance abuse, hostility and relationship disorder. According to the previous study, self-esteem refers to the evaluation about people oneself which related to self-concept and self-worth in their individual life. The self-esteem divided into two parts: Implicit self-esteem and Explicit self-esteem. Implicit self-esteem (ISE) refers to people's tendency to evaluate themselves unconsciously, which will in turn, influence their objective perception about oneself. The scientists found that measures of implicit self-esteem were better indicators of how people responded to failing nonverbal anxiety, negative emotions and socially undesirable behaviors than measures of explicit self-esteem [1], so scientists decided to measure the people's implicit self-esteem by Implicit Association Test (IAT) which measuring the correlation between the words with "self" and "good" [1]. In the previous study, scientists proved that GFP has positive correlation with BAS, reward and ISE. This is because the GFP relates to social desirability and the motivation of BAS is to move things desired. Also, GFP has negative correlation with BIS, punishment and ISE, Also, Musek proposed that the people with high GFP would have high self-esteem and have more positive effect and the people with low GFP would have low self-esteem and have more negative effect. However, the scientists never talked about the correlation between the motivational system and ISE. And based on the Carver and White (1994) BAS/BIS scale, this experiment needs to measure the people's BAS and BIS. This study will talk about the correlation between BAS and ISE and the correlation between BIS and ISE [2-4].

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2. Present Work

This study hypothesis that the people with high self-reported BAS will have higher implicit self-esteem than people with low self-reported BAS and people with low self-reported BIS will have higher implicit self-esteem than people with high self-reported BIS. In order to stand these hypothesis, this experiment will use Implicit Association Test (IAT) to measure people's implicit self-esteem and will use BAS & BIS scale to measure the sensitivity of people's BAS & BIS. Finally, the passage will give an exact result about this experiment by independent t-test and the passage will reasonably analyze the possibility of such experimental results.

3. Experiment 1

3.1 Method

We will report all measures, manipulations, and exclusions. The study will be approved by and carried out in accordance with the recommendations of the Institutional Review Board for human participants with written informed consent obtained from all participants.

3.2 Participants

109 individuals will be invited to participate in exchange for a gift card. Participants will be excluded if they don't finish the test. We expect the demographics of participants to be as follows (SD=1.41).

Our primary hypothesis involved assessing the number of the sample size in our experiment. A power analysis using the software package G*Power indicates that with N=109, our experiment could detect an effect size of Cohen's d of 2, using an independent t-test at a 0.05 alpha level (two-tailed) threshold with 90% statistical power.

3.3 Experimental Design

The participants in this experiment need to complete the Implicit Association Test and BAS/BIS scale.

3.4 Procedures

Measure 1. The participants need to complete the Implicit Association Test in order to measure their implicit self-esteem. In the Implicit Association Test, there were eight questions in total. Four of the eight questions were multiple-choice questions, asking participants to quickly choose one of the four options. Two positive words such as sunshine and happiness would be included in the four choices of each question, and two negative words such as cancer and pain would be included in the remaining two choices of each question. 4 points would be added to the test if the participants choose positive words, but 0 points will be added to the test if the participants choose negative words. Among the other 4 questions in the questionnaire measuring Implicit Self-esteem, two of them were 1-4 Likert scale, which were respectively "The importance of your role in the society? " and " Please rate your name." The remaining two questions were fill-in-blank questions, which asked participants' Chinese initials and English initials respectively, but these two questions were not included in the participants' implicit self-esteem score. These two blank filling questions and two scoring questions were interlaced with four multiple choice questions. The purpose was to measure the participants' unconscious evaluation of themselves by letting them repeat their names and quickly choose the given positive or negative words. This measured the participants' implicit self-esteem. Finally, the participants' implicit self-esteem score would consist of 4 multiple-choice questions and 2 scoring

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questions and this part was scored out of 24 points. This study held that the higher the scores of participants on this Implicit association test, the higher their Implicit self-esteem is.

Measure 2. The participants need to complete the BAS/ BIS scale in order to measure their sensitivity of BAS and BIS. The BAS/ BIS scale contained 14items in total and the number of the questions which measure participants' BAS is 8 and the number of the questions which measure participants' BIS is 6. The questions for BAS were "I go out of my way to get things I want.", "When I'm doing well at something I love to keep at it.", "I'm always willing to try something new if I think it will be fun." and so on. The question for BIS were "I had few fears compared to my friends ", " I'm worried about making mistakes", " I usually become very sensitive if I think something unpleasant is going to happen " and so on. It was a 1-4 likert scale and number 9 and number 13 questions were reverse-scored. In this test, 1 point means "very true for me", 2 points means "somewhat true for me", 3 points means "somewhat false for me" and 4 points means "very false for me". This study would score the BAS scale and BIS scale respectively completed by the participants, and conducted a correlation study between the BIS and BAS scores of the participants and their ISE scores.

3.5 Data Analytic Approach

This experiment needs to support the hypothesizes by using the Independent-Samples T Test in excel because of the following reasons. Firstly, there are two variables in relation between implicit self-esteem and Behavioral System. The two variables in first group are implicit self-esteem and Behavioral Activation System, the two variables in second group are implicit self-esteem and Behavioral Inhibition System. The two variables (BAS and BIS) in the two groups did not affect each other. The people with high BAS won't affect the people with high BIS. asking them to finish BAS scale, they can also measure the people's BIS by asking them to finish BIS scale and measure the people's Implicit self-esteem by asking them to finish Implicit Association Test. Thirdly, participants' level of self-esteem will be evaluated according to the scoring guideline of IAT. And then they will be divided into three different group (low, medium, and high) to further evaluation the relation between implicit self-esteem and BAS. Fourthly， T test is chosen because it judges the relationships in the population from the relationships in the sample. So Independent-Samples T Test in excel would be an optimal in calculating the correlation between the implicit self-esteem and BAS/ BIS.

This experiment needs to use the two Independent-Samples T Test with two tails in excel to support two hypothesizes. In this experiment, 141 participants participated in the investigation, 32 participants quit in the middle of the experiment, and 109 participants finally completed the experiment. By investigating and sorting out the ISE scores of the 109 participants, the median ISE score of the participants in this survey was 19, so ISE=19 will be set as the standard of intermediate ISE in this study. In other words, people with an ISE score greater than 19 were considered to have high ISE, while those with an ISE score less than 19 were considered to have low ISE. This survey found that 54 people had high ISE (ISE>19), 5 people had medium ISE (ISE=19), and 50 people had low ISE (ISE<19).

There will be two variables in the first experiment group: participants' levels of BAS and their score of implicit self-esteem.

BAS scores of 109 participants were investigated and sorted out. The median of BAS of the participants in this survey was 26, so BAS=26 will be set as the standard of intermediate level BAS in this test. That is, those with a BAS score greater than 26 were classified as having high BAS, while those with a BAS score less than 26 were classified as having low BAS. This survey found that 51 people had high BAS (i.e., BAS>26), 13 people had medium BAS (i.e., BAS=26), and 45 people had low BAS (i.e., BAS<26). In this experiment, the participants in the first group were again divided into groups according to their BAS scores. A total of 109 participants were divided into three groups according to their BAS scores (i.e., high BAS group, medium BAS group and low BAS group). The

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median ISE score of participants with the same BAS score in each group was calculated. According to the calculation, the ISE score of the participants in the high BAS group (BAS> 26) was 21, and that of the participants in the low BAS group (BAS< 26) was 18.

Also, there will be two variables in the second experiment group: participants' levels of BIS and their score of implicit self-esteem.

The BIS scores of the same participants will be tested in this experiment，

In this experiment, the participants in the first group were again divided into groups according to their BIS scores. After investigating and sorting out the BIS scores of the 109 participants, the median of the BIS of the participants in this survey was 17, so BIS=17 will be set as the medium level of BIS in this experiment. In other words, people with BIS score greater than 17 were considered as having high BIS, while those with BIS score less than 17 were considered as having low BIS. This survey found that 53 people had high BIS (i.e., BIS>17), 11 people had medium BIS (i.e., BIS=17), and 44 people had low BIS (ISE<17). The total of 109 participants were divided into three groups according to their BIS scores (high BIS group, medium BIS group and low BIS group). The median ISE score of participants with the same BIS score in each group was calculated to be 17. According to the calculation, the ISE score corresponding to the participants of the high BIS group (BIS> 17) is 24, and the ISE score corresponding to the participants of the low BIS group (BIS< 17) is 19.

4. Results

The expected results of this experiment reveal that people with high self-reported BAS will have higher implicit self-esteem than people with low self-reported BAS. People with low self-reported BIS will have higher implicit self-esteem than people with high self-reported BIS.

The 51 participants who had high BAS (M=30，SD=2.096）compared to the 45 participants who had low BAS (M=24, SD=2.655) demonstrated the higher BAS, the higher Implicit self-esteem. The result was not statistically significant, p=.237108204.

The 53 participants who had high BIS (M=20，SD=1.835）compared to the 44 participants who had low BIS (M=15, SD=2.024) demonstrated the higher BIS, the higher Implicit self-esteem. The result was not statistically significant, p=.6819.

5. Descriptive Statistics

Aim 1. We expect that the median of people with high self-reported BAS is higher than the median of people with low self-reported BAS in the graph of the implicit self- esteem. This experiment supports this hypothesis. In this study, the median of people with high BAS is 30 and they're median of implicit self-esteem is 21. Also,the median of people with low BAS is 24 and they're median of implicit self-esteem is 18. Thus, this experiment supports that the median of people with high self-reported BAS is higher than the median of people with low self-reported BAS in the graph of the implicit self- esteem, so the people with high self-reported BAS will have higher implicit self-esteem than people with low self-reported BAS.

Aim 2. We expect that the median of people with low self-reported BIS is higher than the median of people with high self-reported BIS in the graph of the implicit self- esteem. however, the correlation that comfirmed by this experiment is not consistent with the initial hypothesis. In this experiment, the median of people with high BIS is 20 and they're median of implicit self-esteem is 24. Also,the median of people with low BIS is 15 and they're median of implicit self-esteem is 19. Therefore, this experiment supports that the median of people with high self-reported BIS is higher than the median of people with low self-reported BIS in the graph of the implicit self- esteem, so the correlation that comfirmed by this experiment is that the higher the BIS, the higher the participants' implicit self-esteem.

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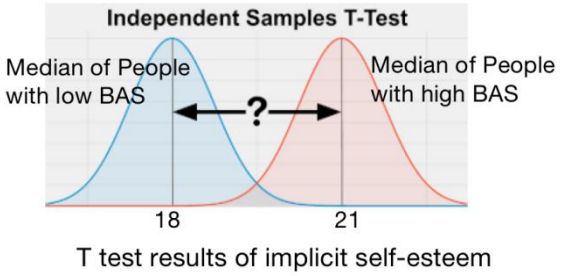

Figure 1: T test results of implicit self-esteem (BIS).

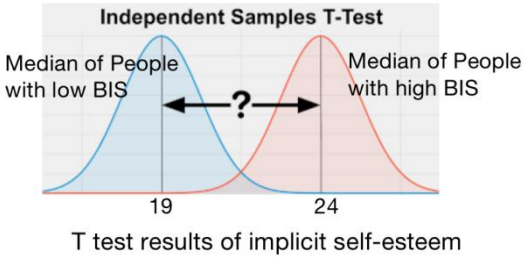

Figure 2: T test results of implicit self-esteem (BAS).

6. Conclusion

The aim of the study is to illustrate the positive correlation between implicit self-esteem and the Behavioral Activation System and negative correlation between implicit self-esteem and the Behavioral Inhibition System. Moreover, this experiment expected to illustrate the People with high self-reported BAS will have higher implicit self-esteem than people with low self-reported BAS. People with low self-reported BIS will have higher implicit self-esteem than people with high self-reported BIS. However, the experiments are different from the second hypothesis. The results that illustrated by the experiments was that the poeple with high self-reported BAS will have higher implicit self-esteem than people with low self-reported BAS. Also, the higher the BIS, the higher the participants' implicit self-esteem.

In the experiment, participants need to finish IAT quickly and finish the BAS/BIS scale respectively. And researchers need to analysis the relationship between implicit self-esteem and BAS/BIS to explore the actual relationship between inplicit self-esteem and Behavioral Activation System and Behavioral Inhibition System.

The strength of the work is the more representativeness sample because this experiment asks participants to finish the IAT and BAS/ BIS and they can finish these tests online, which means the people all over the world can participate in this experiment and decrease the cultural differences, so the people all over the world have same opportunity to enroll in this experiment and the participants will be more representativeness. However, this study also has some limitations. The first limitation of this study is that the experiment based on the self-questionnaire like IAT and BAS/ BIS scale, it means there will exists some bias during the processing which the participants are answering the questions. And the results of the experiment may be not very accurate. The second limitation is that there is no standardized quetionnaire when investigating the ISE of the participants in this experiment, so we have to write the questions by ourselves. There are some individualization problems. For example, in this experiment we identified "sunshine" as a positive word and associated "sunshine" with high ISE. However, it is inevitable that there are some cases in which the ISE is very high but the participants have some bad memories of the word "sunshine", which makes the results of this test not so accurate. Thirdly, IAT was used to measure the PARTICIPANTS 'ISE in this experiment, and

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the participants' ISE level could not be divided in a standard way, because there is no standardized definition for classifying people's ISE. Therefore, in this experiment, we can only take the method of median after data statistics to classify the PARTICIPANTS 'ISE. This makes the results potentially imprecise.

In the future, this experiment needs to reduce the possibility of bias, which can be reduced by reducing the use of self-questionnaire and increasing the possibility of processing including subjects' observations. At the same time, we hope to pay attention to ISE questionnaire test in the future and publish an ISE questionnaire that can reduce individual differences. This can make the measurement results more accurate and can be widely extended.

Acknowledgement

The data and the materials will be made available athttps://www.sciencedirect.com/science/article/abs/pii/S0191886910000437#:~:text=In%20two%20studies%2C%20we%20explore%20the%20neurobiological%20basis,and%20punishment%2C%20self-esteem%2C%20and%20positive%20and%20negative%20affect.

https://pubmed.ncbi.nlm.nih.gov/15200636/#:~:text=Increasing%20implicit%20self-esteem%20through%20classical%20conditioning%20Implicit%20self-esteem,that%20repeatedly%20pairs%20self-relevant%20information%20with%20smiling%20faces.

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