Selective Attention Ability's Relationship with Socioeconomic Status

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ABSTRACT

This paper indicates the relationship between socioeconomic status and selective attention. Reasonably, people tend to lose some details, and some previous researches indicated that how people act to the ignored detail is mainly depended on their selective attention ability. The hypothesis is there will be a positive correlation between socioeconomic status and selective attention ability, and there will be a negative correlation between age and selective attention ability. These factors (socioeconomic and selective attention ability) have a wide range of variables and influences. Then we did an experimental survey to test the selective attention ability for people with different socioeconomic status. My research may provide evidences and references for teenagers' and adults' selective attention skills development and brain development for selective attention part, and this passage mainly focuses on the selective attention ability and socioeconomic status survey. It can also provide implication and evidence for similar topic and related fields.

Keywords: selective attention, socioeconomic status, education, survey.

1. ELEMENTS' INTRODUCTION

1.1 Socioeconomic status for this research

First, in order to define socioeconomic status in my research, I quoted similar terms to explain it. The standards of traditional American upper class are being white, male, rich, Christian and right hander. Similar terms describing socioeconomic status have similar variables, and criterions of social class function in the same way [1]. Robert's research shows that socioeconomic status is associated with a wide array of health, cognitive, and socioeconomical outcomes in children, with effects beginning prior to birth and continuing into adulthood [2]. Typically, high socioeconomic status often refers to highly paid and paramount people, and educated level and ages are eminent factors. The following variables are selected for our research. First, age that shows people's experiences indirectly. Second, occupations, we can easily find data about average salary of each occupation, and there do exist big difference between occupations. Third, education level, education level has direct influence to salary level and economic standard, higher education means better psychological circumstance which leads to more income, better social supports and relationship with

people. Besides that, higher education level corresponds to occupations that need more skills and technique and higher income, and the occupations with higher socioeconomic status like entrepreneurs, scientists, management workers, or government leaders often have higher education level than ordinary occupations. These three important factors mentioned above are then put into the survey for figuring out our hypothesis.

1.2 Introduction of selective attention

There are many phenomena include selective attention in our daily life, here is an example, there is an expressway goes through the developing area in the city, it is such a busy expressway that drivers have to be careful to the road condition while driving. The area changes day by day, and a lot of big structures and buildings built up within 3 years. My mom often goes this way, and she always be the driver. I am always surprised with these big buildings besides the road, and I thought she could notice them although she is driving. However, recently, when she became the passenger taking my father's car, she can pay her attention to the view beside the road. Surprisingly, she was so surprised that there are massive buildings, and we are surprised that it is so obvious that we could see them easily every time we take this route. From this example we can figure out, selective

attention is a very common phenomena, it occurs consciously or unconsciously. Selective attention is the action that people only pay attention to selective items which usually important and necessary to pay attention to. Although observers have observed some item, events or phenomenon, they still tend to ignore them or just don't pay attention to them then pass by without noticing them.

2. MOTIVATION

Figuring out the mechanism and factors of it is what really inspired us to do this study. "Development of selective attention in preschool-age children from lower socioeconomic status backgrounds 2017", searching for early children's socioeconomic status and selective attention ability development, exploiting young children's selective attention ability related neurodevelopment. This study, lead our research group to the relevant topic.

3. MATERIAL -ABOUT THE VIDEO

There is one period of the video being used for the research, which is a 40s piece (approximately).6 groups of actors/actress with different color and dresses (group black, purple, yellow, green, red and chicken) join the performance. At the start of the video, invited testers are asked to count jumps of green jumpers in the following performance. After the research has begun, black team start being the rope turners, and group green start jumping. While one of the green members was jumping, a yellow dressed actor joined jumping with tawdry and grotesque movement- in order to distract testers, increase the difficulty of the test and let testers to pay more attention to the main mission- then one red actor and another yellow actor come and joined, but this time, all the actors went away and danced in front of the background. (This time, testers disrupt their counting because none of the green team members is jumping. For the same purpose, of the movement just happened.) More complicated scene happened in the following, the chicken entered the stage and two actors (one green actor and a red actor) started jumping at the same time. (If testers can notice the chicken, they have to count the number and observe and scan the stage carefully simultaneously.) Then the jumpers keep jumping (and doing some distracting movements), the chicken went through the actors dancing

behind the jumping, stopped right in the middle of the stage for 2.5s behind the jumpers and did some weird and obvious movements. Then it left the stage during the period between one group of people left jumping and another group joined to replace them. After the chicken left, several other groups of actors with mixed color join the performance, and the background color changed gradually from purple to red.

The end. Here is the website for the video we quoted in the research, (https://www.youtube.com/watch?v=iiEzf3J4iFk).

4. ABOUT RELEVANT RESEARCHES

Simon [3] suggests the likelihood of noticing an unexpected object depends on the similarity of that object to other objects in the display and on how difficult the priming monitoring task is. (Development of selective attention in preschool-age children from lower socioeconomic status background), the same text according to the topic. Researches [4,5] suggest that the neurodevelopment and brain development are factors and can influence socioeconomic status. (Childhood attention problems and socioeconomic status in adulthood: 18-year follow up) Cedric [6] suggests socioeconomic status indicator for transition groups like people turning to be an adult. These topics have limitations and we are trying to find these relationship and possible correlation for older ages people and higher socioeconomic status (compare to the previous research for preschool-age children and lower socioeconomic status background).

Similar researches mostly focus on the behavior of selective attention and what is selective attention ability, our research is mainly focus on how variables of people act in selective attention, and the tendency of selective attention ability development and status.

5. ABOUT THE SURVEY

More than 90% of the testers are Chinese, and rest of them are from other countries, mainly from North America.

The following table shows the type of the survey.

5.1 Question type

Table 1 Question Type

Table 1 Question Type

Question number		
1	What is your gender?	MULTIPLE CHOICE
2	How old are you?	MULTIPLE CHOICE
3	What is your current occupation?	MULTIPLE CHOICE
4	What is your educational level?	MULTIPLE CHOICE

5	the video file	NOT A QUESTION
6	How many times did the girls in green jump?	FILL IN THE BLANK
7	Did you notice anything strange or changing in the video?	YES/NO
8	Did you notice a monkey walking through the scene?	YES/NO
9	Did you notice a chicken walking through the scene?	YES/NO
10	Do you think the background colour changed?	YES/NO
11	Did you notice a change in the rope jumpers?	YES/NO
12	Did you notice a change in the rope turners?	YES/NO

5.2 purposes of each of our questions set up

QUESTION 1

  What is your gender?   MULTIPLE CHOICE

This question is to investigate basic information of test taker, the factor of socioeconomic status and probable relationship with following study.

QUESTION 2

  How old are you?   MULTIPLE CHOICE

To investigate the basis of our hypothesis, the relationship between age and selective attention ability. Using this data (standard) to measure approximate physical development and condition, which is a potential factor of selective attention ability.

QUESTION 3

  What is your current occupation?   MULTIPLE CHOICE

The main factor of socioeconomic status, so it's necessary to investigate.

QUESTION 4

  What is your educational level?   MULTIPLE CHOICE

Important factor of socioeconomic status too.

QUESTION 5 Here is the video (https://www.youtube.com/watch?v=iiEzf3J4iFk）

QUESTION 6

  How many times did the girls in green jump? FILL IN THE BLANK

To test whether viewers take it seriously, or paying attention carefully. And to test their ability of what main attention paying to.

QUESTION 7

  Did you notice anything strange or changing in the video? YES/NO

To let tester report information whether they have seen or feel something strange. And to distinguish probable valid/invalid or useful/useless test results.

QUESTION 8

  Did you notice a monkey walking through the scene? YES/NO

To test the difficulty of reporting the right answer, and how testers react to this question. Besides that, to let tester answer the following question with more exact answer.

QUESTION 9

  Did you notice a chicken walking through the scene? YES/NO

Significant question to test the testers' selective attention ability.

QUESTION 10,11,12

  Do you think the background colour changed? YES/NO

  Did you notice a change in the rope jumpers? YES/NO

  Did you notice a change in the rope turners? YES/NO

The same purpose with question 9.

REFERENCE THE ORIGINAL VERSION OF THE SURVEY FOR TESTERS is in the end of this passage.

Our data result

Table 2 survey answer

Table 1 survey answer		
strange	yes	no
middle school	4	1
high school	16	28
college	0	3
master or higher	0	4
monkey	yes	no
middle school	1	3
high school	3	13
chicken	yes	no
middle school	1	3
high school	5	11
background	yes	no
middle school	3	1
high school	9	7
rope jumper	yes	no
middle school	4	0
high school	11	5
rope turner	yes	no
middle school	2	2
high school	7	9

Evaluation of this data result, we attain 56 valid testers' result, and it is very interesting that none of the testers with education level higher than college ever notice strange or independent issues from this video. About 75% (precisely 80%) middle school education level people noticed something strange, high school level people have 60% (precisely 57%) reported strange, and none of the testers reported strange with education level above college. And there is another group of data indicate that 95.9% testers report high school or middle school education level are students under graduation, so most of the tester among high school and middle school level cannot respond their study status and final degree, which is closely related to socioeconomic status. There is 6 testers reported correct variations of chickens, 12 testers for background variations, 15 for rope jumper changes and 9 for rope turner changes.

6. OUR RESULT REPRESENTING METHOD

Using fisher exact test

For calculating the p value and find the possible correlation between these variables.

Formula:

$$p = \frac{\binom{a+b}{a}\binom{c+d}{c}}{\binom{n}{a+c}} = \frac{(a+b)!\,(c+d)!\,(a+c)!\,(b+d)!}{a!\,b!\,c!\,d!\,n!}$$

Since people with bachelor or more than bachelor degree didn't discover any strange scene, "middle" and "high" represent middle school and high school student/ degree.
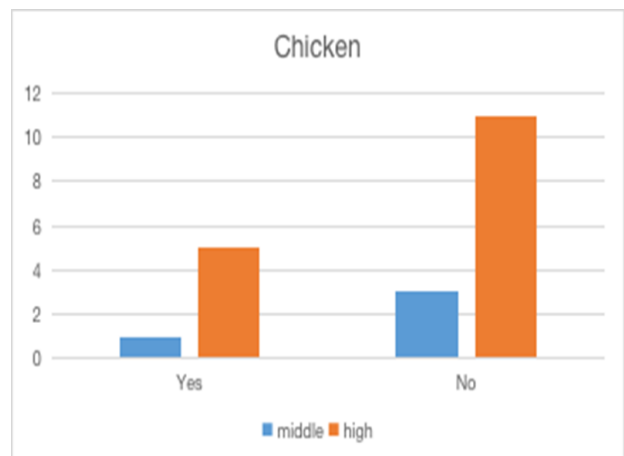
Result figure:
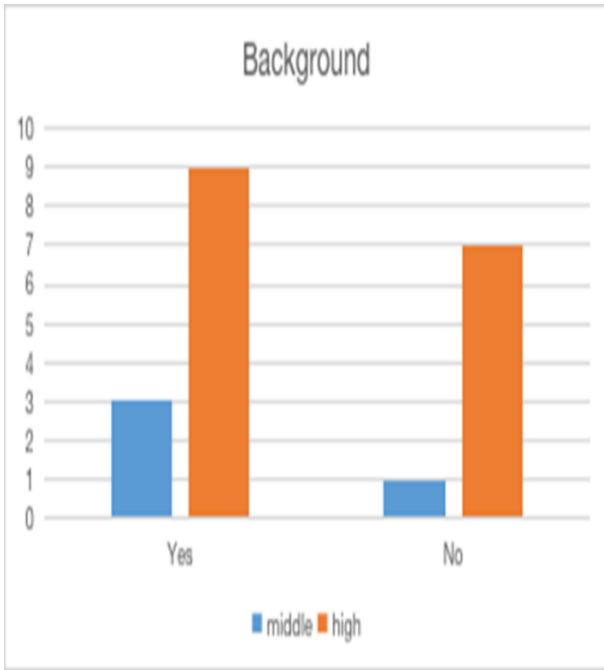

Figure 1 represents the discovery of exchanging chicken

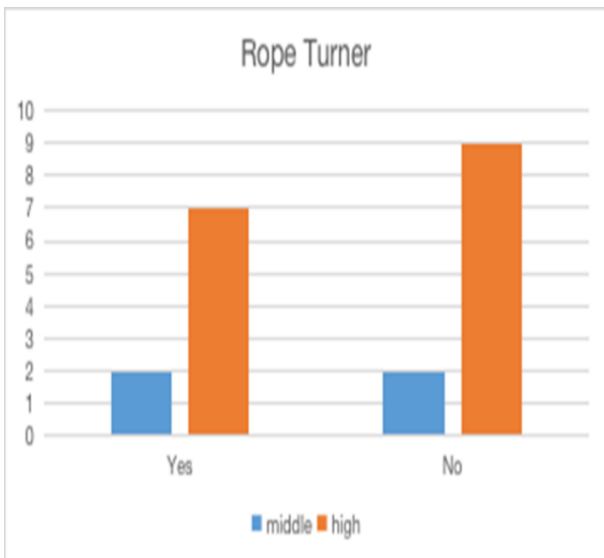**Figure 2** represents the discovery of exchanging background

Figure 3 represent the discovery of exchanging rope turner

All p values > 0.05

P value: 1.000 for Chicken

0.61857585 for background

1.000 for rope turner

No certain relationship between Selective attention and Education level in our study

7. CONCLUSION

This result might not reflect the real circumstances, there are limitations of our survey. First, the sample size is relatively small to be representative. There are several researches in the related field got more than 1000 testers and test for more than one decade. Second, the distribution of education levels of the testers isn't hypo dispersion that it might lead to biased result or defective research findings. For improvement, recommend to wait for a larger scale of testers group to join the test.

Though there is no scientific result to verify the hypothesis, there are several possible theories that can be generated from this result. Cause there is no much difference between the results from education level higher than bachelor and that lower than bachelor, we can imply that the brain has no development for part for function attention since teenager. Or, on the other hand, selective attention ability might not affect socioeconomic status, so, their determining part of brain may be different.

This survey was completed by a temporary searching group with Danica, Victor Cheng, Dwayne Hu and Zhihao Xie—the author, and this searching group was examined by professor Nanthia Suthana PhD, UCLA. This paper didn't gain any assistance from others which means this paper only represents the author Zhihao Xie. All the references are the survey and listed reference papers, and these are the only reference materials. Thanks for the searching group (program), professor Nanthia and reference papers.

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