An observational study association among gender, extroversion, and color preference

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Proposal

Research Question

Our team has observed that many high school students are distinct individuals with different characteristics due to their upbringing in various environments, which may impact some personal preferences, such as color. Additionally, some predetermined characteristics, such as gender, are usually suggested by the culture to influence the outcomes. Therefore, our group is interested in the association between Beijing high school students' preferred colors and extraversion, one dimension of personality traits, and gender. The group will examine whether people's choice of favorite color is influenced by their extraversion or gender.

Background Research

Color is one of people's important visual cues, while most people have their own preferences for colors - the color that is more preferable or attractive to them. Some of the prevalent psychological books usually mention how colors are associated with specific types of emotions, introducing the field of color psychology. As personality is the unique pattern of a person's emotions, thoughts, and behaviors, people suggest that color preferences are associated with personality types. Namely, a person's color preference may indicate his or her personality to an extent.

In the long history of the studies on color preferences, the results are described as "bewildering, confused and contradictory" [1]. However, several competent studies have demonstrated the association between colors and personalities. In Color Reference As A Clue To Personality, general conclusions integrated by the author are that "bright light and warm colors" symbolize "an attraction to stimulus" and the outward expression and action while "softer illumination and cool colors" symbolize "a withdrawal from the outer world" and inner reflection and introspection [2]. According to one Chinese study about the relationship between clothes color preference and personality traits in the Big Five Theory, people's preference to light yellow is positively correlated to contentiousness, and preferences to saturated orange, heavy yellow, and black are negatively correlated to neuroticism [3].

On the other hand, the stereotype that blue is the preferred color for men and pink for women piques our interest about the real relationship between gender and color preference.

According to St. George and Eysenck, blue stands out for men much more than it does for women [4]. The most notable gender difference in color preference is yellow being preferred to orange by women and orange being preferred to yellow by men. This finding was reinforced later by Birren in 1952 who found men preferred orange to yellow; while women placed orange at the bottom" [5]. These two published findings agree with the survey data gathered for this study.

Sampling and Experimental Design

Variable: color preference, gender, and extroversion
Type of study: The study is an observational study because there are no controlled variable for experimentation. The group has only created and published a questionnaire to gather data.
Data collection: An online questionnaire, including three questions that ask participants to fill in their gender, judgment of their extroversion, and color preference, is designed and spread through WeChat movements. Gender has simply two categories of "female" and "male". Extroversion is measured by "high" and "low". For color preferences, we offer choices of "red", "orange", "yellow", "green", "blue", "purple", and "pink".
Scope of Inference: These data can be generalized to the population of high school students in Beijing.

Exploratory Data Analysis

We collected 129 pieces of responses within 5 hours after the release of the survey. We found 122 pieces of them valid, less than 10% of the population of all high school students in Beijing to which we wish to generalize our conclusion.

Table1. Analyzed data collected from the online survey.

	Introverted	Extroverted	Female	Male
Purple	10	7	11	5
Green	13	6	14	5
Blue	33	22	35	21
Yellow	5	4	6	3
Red	2	7	7	2
Pink	2	4	3	3
Orange	2	3	2	3

We will then perform a Chi-square test of independence that explores whether there is a relationship between color preference and extroversion and between color preference and

gender. The conditions being checked should be random, independent (the responses of a participant is independent of all the others), and have a large sample size (expected value>=5).
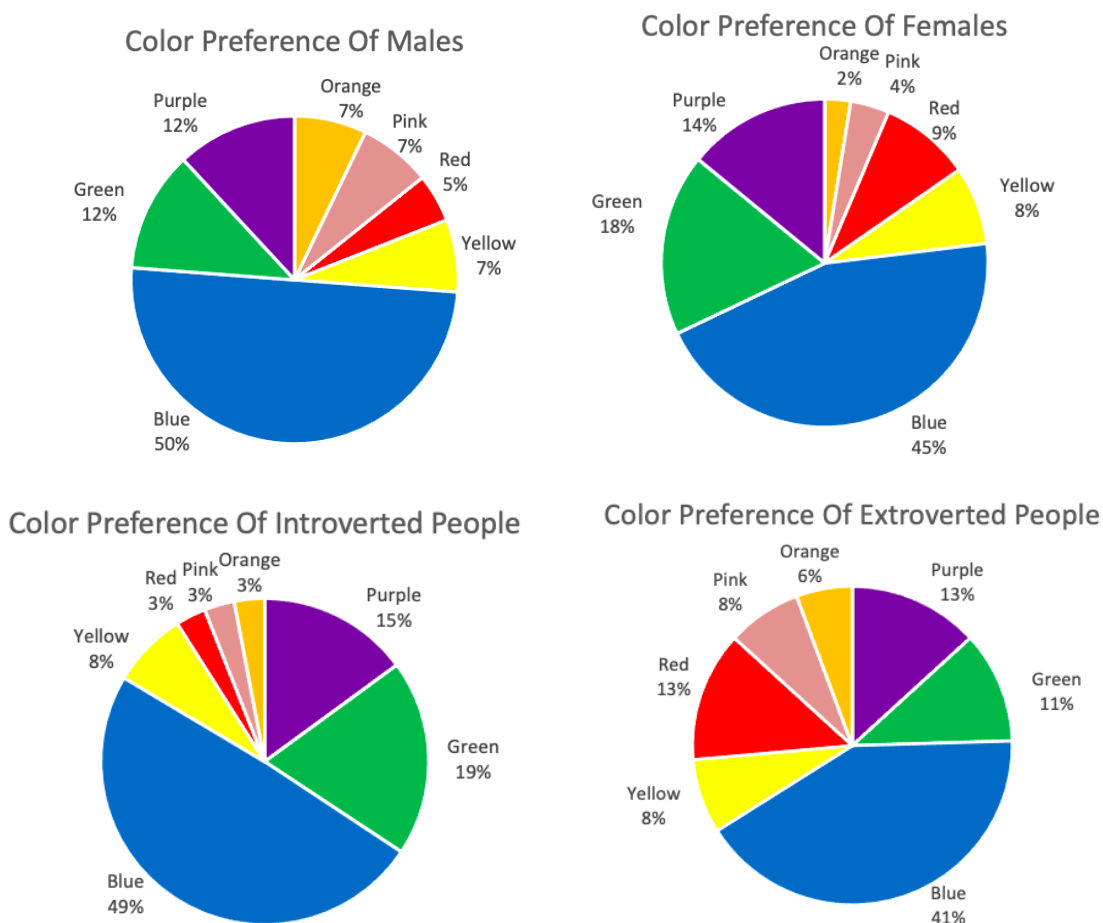

Figure1. The proportions of color preferences in different groups of people: males (upper left), females (upper right), introverted people (lower left), and extroverted people (lower right).

Group Task Assignments and Timeline

Allen is in charge of the background research and discussion for this project, Clare is in charge of the background research and data analysis, and Thomas is in charge of the introduction and data analysis. The primary research, data gathering, method, conclusion and discussion would be carried out as a team. By May 17th, the proposal and data collection will be completed. By May 19th, preparation, including an introduction and methods, would be complete. By May 23rd, the central research portion will be completed. Before May 25th, the project would be completed and thoroughly examined. There will be a presentation in class.

Reference

[1] I.C. McManus, A.L. Jones, J. Cottrell. The aesthetics of color Perception, 10 (1981), pp. 651-666.

[2] Birren, F. (1973). Color preference as a clue to personality. Art Psychotherapy, 1(1), 13–16.

[3] 郭玉丽,and 赵素煜."浅谈人格特征与服装色彩偏好". 流行色 .03(2019):55-56.

[4] "color." Encyclopedia Britannica 2003 Encyclopedia Britannica Online. 07 Mar, 2003.

[5] Khouw, Natalia. The Meaning of Color for Gender. Unknown Published Location: J. L. Morton Graphics and Text | Color Matters web site, unknown publish date. MAY-17-2023 (Date of Access).

Data

Table2. Raw data collected from the online survey.

Num	Gender	Extroversion	Color Preference						
			Purple	Green	Blue	Yellow	Red	Pink	Orange
1	F	E							1
2	F	I				1			
3	F	E				1			
4	F	E						1	
5	M	E						1	
6	M	I		1					
7	M	E					1		
8	F	E							1
9	M	I				1			
10	F	I	1						

Three questions make up the questionnaire: the first asks whether the participant is extraverted or introverted in general; the second asks them to choose their favorite color; and the third inquires as to the participant's gender. To prevent response bias as much as possible, the gender question is asked last.