

Characteristic Changes Defined via Comparison of the Big-Five Personalities in Japanese University Freshmen from Years 2000 to 2016

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Abstract

Introduction: With the arrival of the 21st century, drastic worldwide changes to natural, economic and social events have occurred. These include the Great East Japan Earthquake, and the global financial crisis. Furthermore, Japan experienced the introduction of a specific education system. In this study, we traced and compared the psychological characters of university freshmen for 16 years (years 2000-2016) using Big-Five personalities inventory (Japanese version). **Methods:** A total of 1189 physically and mentally healthy university freshmen participated in this study. They were divided into four groups according to the year they entered university. They completed a self-filled questionnaire, Big-Five personalities inventory, which consists of Extraversion, Agreeableness, Neuroticism, Conscientiousness and Openness. **Result and Discussion:** Compared with the year 2008, Extraversion nominally increased in 2012, however, it statistically significantly decreased in 2016. Agreeableness notably decreased from 2000 to 2008, then showed an increase in 2012. Compared to 2000, Neuroticism was statistically significantly lower in 2008 and 2016. Such statistically significant differences were not observed in the other two personalities. The personalities of university freshmen have changed in the last 16 years, which may be caused by drastic changes. However, further research (e.g., larger-scale studies or studies including other university students) is required to support the current findings.

Keywords

Characteristic Changes, Big-Five Personalities, University Freshmen,

1. Introduction

Social or economic circumstances can affect the physical development of university students. In particular, university students' psychological profile has been affected by the "lost two decades", which introduced drastic worldwide changes due to social and economic events. In recent years, faculty staff have sometimes expressed fear that psychological criteria of university freshmen have changed in the last 16 years from the year 2000. However, some philosophers have proposed the following hypothesis: a material developed society leads to people who are psychologically undeveloped [1] [2] [3].

To examine this hypothesis in detail, we assayed and traced the psychological character profiles of university freshmen for 16 years using the Japanese version of the Big-Five personalities scale.

Goldberg and colleagues established the idea of a five-factor model of personalities, which led to the invention of a self-filling questionnaire called the Big-Five personalities inventory [4] [5] [6]. This inventory consists of the following categories: Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness. Goldberg's team investigated, defined and encoded these personalities as single words, emphasizing them as being the most important to peoples' lives. Furthermore a lexical hypothesis was established.

Murakami Y and Murakami C developed the Japanese version of the Big-Five personalities inventory to make it more suitable to assay the specific personalities of Japanese people. Now widely used in Japan [7] [8], "Big-Five" personality scale assays/describes aspects of Japanese personalities [10] [11] [12]. In this study, we traced results from the Japanese version of the Big-Five for 16 years.

2. Methods

2.1. Participants

Participants (n = 1189; male 810, female 379) were physically and mentally healthy university freshmen. All participants were informed of the purpose and nature of the experiments; then written consent was obtained from each participant, in compliance with the World Medical Association Declaration of Helsinki. The study was also approved by the institutional review board of Niigata University (Niigata, Japan). They were voluntary students. They responded to our invitation of this study, through mental screening test: MINI-27 [9], excluded severe depressive, nervous tendency and stress symptoms.

2.2. Maintaining Specification Integrity

All participants were either 18 or 19 years of age. This investigation continued for 16 years from 2000 to 2016 and participants were divided into four groups

according to the year they entered Niigata University. As concerns their sociodemographic background, all of them were unmarried and their parents belonged to middle or upper classes. Their detailed profiles are shown in **Table 1**.

2.3. Profile of the Big-Five Inventory (Japanese Version)

To investigate participants' character, participants answered 70 items from the Big-Five personality inventory (Japanese Version), including Extraversion, Agreeableness, Neuroticism, Conscientiousness and Openness [7]. The Big-Five inventory is an often-used and reliable measure of personality [10] [11] [12] [13]. Its Japanese version is considered to be more reliable than the original English version for Japanese participants [13]. Samples were randomly selected country-wide and appropriate age-group-stratified standardization was performed [8]. The inventory provides a standardized score (mean, 50; standard deviation), for each factor [12].

2.4. Characteristics of the Big-Five Personalities

The characteristics of the Big-Five personalities are defined below [7].

1) Extraversion: a person with Extraversion personality generally experiences positive emotions, is assertive, sociable and tends to seek stimulation in the company of others.

2) Agreeableness: a person who is categorized with Agreeableness tends to be compassionate and cooperative rather than suspicious and antagonistic towards others. This tendency is also a measure of one's trusting and helpful nature, and whether a person is generally well-tempered or not.

3) Neuroticism: a person who is considered to have Neuroticism tends to experience unpleasant emotions easily, such as anger, anxiety, depression and vulnerability. In this personality type, emotional stability and impulse control are often observed. (On Japanese version, high scores of this personality type describe emotional stability.)

4) Conscientiousness: a person who is categorized with Conscientiousness shows a tendency toward being organized and dependable, with self-discipline and acts dutifully. In other words, such a person prefers plan rather than spontaneous behavior.

5) Openness: a person with Openness shows unusual ideas, emotion, adventure, curiosity, and variety of experience. This personality shows intellectual curiosity, creativity, preference for novelty, being imaginative or independent.

Table 1. Participants' profiles.

year	average age (years old)	male (810)	female (379)	total (1189)
2000	18.4 ± 0.5	339	51	390
2008	18.2 ± 0.4	306	90	396
2012	18.3 ± 0.5	81	124	205
2016	18.6 ± 0.6	84	114	198

2.5. Statistical Analysis

ANOVA test was conducted and the level of significance was set at $p < 0.05$. The values presented were expressed as a range with mean \pm SD. All statistical analyses were performed using SPSS Statistics for Windows version 22.0 (IBM Corp, Armonk, NY).

3. Results

Figure 1 presents the results of the Big-Five inventory.

Extraversion nominally increased from the year 2008 to 2012 ($44.7 \pm 8.6 \rightarrow 47.5 \pm 10.3$, $p < 0.01$), however, Extraversion statistically significantly decreased from 2012 to 2016 ($47.5 \pm 10.3 \rightarrow 44.2 \pm 9.9$, $p < 0.01$).

Agreeableness notably decreased from 2000 to 2008 ($50.8 \pm 8.9 \rightarrow 49.2 \pm 9.0$, $p < 0.05$), then increased from 2008 to 2012 ($49.2 \pm 9.0 \rightarrow 52.6 \pm 9.3$, $p < 0.01$). A statistically significant increase was observed from 2008 to 2016 ($49.2 \pm 9.0 \rightarrow 51.4 \pm 9.0$, $p < 0.05$).

Neuroticism nominally decreased from 2000 to 2008 ($50.6 \pm 9.9 \rightarrow 47.5 \pm 8.6$, $p < 0.01$) and statistically significantly decreased from 2000 to 2016 ($50.6 \pm 9.9 \rightarrow 47.9 \pm 9.5$, $p < 0.05$).

Statistically significant differences were not observed in the two other personalities. Conscientiousness decreased from 53.4 ± 10.1 in 2000 to 53.3 ± 8.7 in 2008, and from 52.7 ± 9.6 in 2012 to 51.9 ± 9.2 in 2016. Openness increased

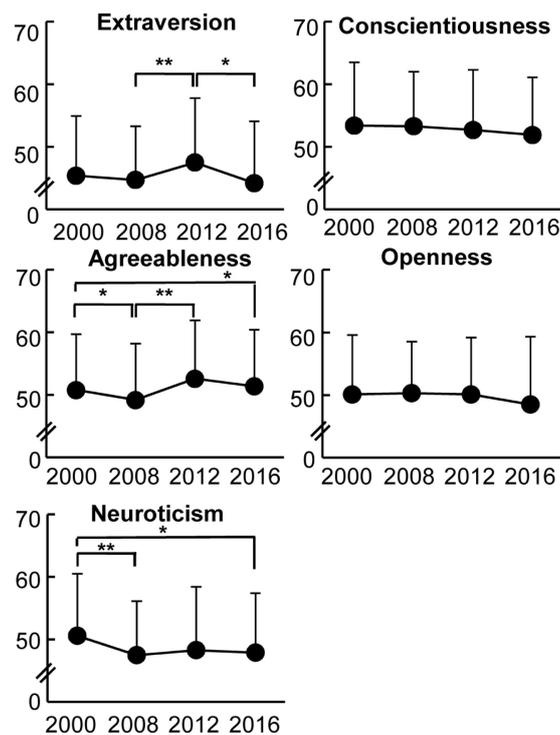


Figure 1. Comparison the big-five of personalities of university freshmen for the last 16 years from the year 2000: * $p < 0.05$, ** $p < 0.01$.

from 50.1 ± 9.5 in 2000 to 50.3 ± 8.2 in 2008, and decreased from 50.1 ± 9.1 in 2012 to 48.5 ± 10.8 in 2016.

The average scores of all Big-Five personalities remained within the range of 45 - 55.

There were not any differences between the average scores of all Big-Five personalities for gender.

4. Discussion

Our results demonstrated that the personalities of university freshmen changed over time. In short, Extraversion, Agreeableness and Neuroticism changed within the last 16 years despite the age of the participants remaining unchanged at the university also remaining unchanged. In other words, those who have either of these three personalities may cope quickly with changes over times.

4.1. Extraversion and Agreeableness during a Specific Catastrophic Event

Scores for Extraversion and Agreeableness were the highest in 2012. On 11 March 2011, the Great East Japan Earthquake struck the Northern/Eastern region of Japan. The earthquake was caused by several quake focal areas that moved simultaneously, producing an intensity that occurs only once every 1000 years. More than 20,000 people died as a result. The students in our study experienced this devastating event just 1 year prior to entering university and surely remembered it. Empirically, they realized that the “bond”, that linked them to one another was not of blood, but of respect for each other’s lives. This specific experience may have caused the change observed in Extraversion and Agreeableness.

4.2. Neuroticism Might Be Affected by Economic/Social Circumstances

Neuroticism was observed to decrease since 2000. The reason for this downward trend could be explained by the 2008 financial crisis of the Lehman Brothers crash. According to the Ministry of Health, Labour and Welfare (Japan), 10% of female graduates give up their careers in their 30s and less than 60% of them retain full-time employment in their 40s due to responsibilities such as raising children or caring for elderly parents [14] [15]. Thus, university freshmen face unemployment unrest, a dwindling birth rate and an aging population. Such economic/social circumstances may have affected the results of Neuroticism.

4.3. Conscientiousness and Openness Showed No Nominal Differences

Statistically significant differences were not observed in the two personalities of Conscientiousness and Openness. Additionally, all average scores of all Big-Five personalities stayed within the normal range (45 - 55) [7].

The participants of the current study belong to Niigata University, which is a Japanese national university located in Eastern Japan. Students must pass a highly competitive entrance exam for acceptance into the university. In short, all of our participants may be considered to be successful individuals with adequate level of Conscientiousness/Openness, as well as a normal range of health.

Another possible explanation for the difference observed between the year 2000 group and the other three groups could be found in the specific education system called *yutori*. This *yutori* system was designed to relieve the pressure experienced by students and to broaden their perspective and creative abilities. Participants who belonged to years 2008, 2012 and 2016 received this type of education before entering university.

Our study has several limitations. First, the number of participants was limited; therefore, further research (e.g., larger-scale studies or studies including other university students) is required to support these findings. Second, to avoid the specific influence of the 2008 financial crisis or 2011 catastrophic event, continued investigation is needed to compare current data with that of future students (e.g., until-2020 or 2024). Further data could confirm the null hypothesis: the psychological character of university freshmen has declined in the last 16 years.

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