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Linkage between ABO Blood Type and Occupation: Evidence from Japanese Politicians and Athletes

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Abstract

In Asian countries, e.g., Japan, South Korea, China and Taiwan, many studies on the relationship between ABO blood type and personality have been conducted. Recently, it has been estimated that more than half of Japanese, Korean and Taiwanese people feel that this relationship is legitimate. Therefore, when data from these countries are used in personality tests, it is theoretically difficult to eliminate the effects of the "contamination of knowledge," even if differences are found. To avoid this issue, this study examined the linkage between ABO blood type and occupations in Japan. The results showed that personality traits corresponding to blood type appeared in the data of each of the three groups of politicians and athletes, and all differences were statistically significant. We observed a clear and significant relationship between blood type and personality. Additionally, it is also necessary to consider the influence of social background.

Keywords: ABO blood type, personality, occupation, politician, athlete

1. Introduction

1.1 Background

Currently, the effect of genetic factors on personality is estimated to be approximately 50% (Ando et al., 2004; Gerra et al., 2000; Keller et al., 2005). The ABO blood type, discovered by Landsteiner in 1901, is a genetically determined and easily measured biological marker. Hence, much research has been conducted not only on health risks, but also on its impact on personality. In Japan, South Korea, and Taiwan, roughly half of the populations feel the relationship between blood type and personality is legitimate (Cho et al., 2005; Kamise & Matsui, 1994; Sato & Watanabe, 1992; Wu, et al., 2005; Yamaoka, 2009).

Presently, more than half of the Japanese population believes in the relationship between blood type and personality. For example, in an online questionnaire conducted in 2015 by Fuji Television Networks, one of the major television networks in Japan, 68.7% of the 201,119 respondents believed in the relationship (Fuji Television Networks, 2015). Prior surveys have returned similar results. In a 1986 survey conducted by NHK, the Japanese public broadcaster, 75% of the 1,102 respondents believed in the relationship (NHK Broadcasting Culture Research Institute, 1986).

1.2 Blood Type Personality Theory

The relationship between blood type and personality is studied at an international scale, and the first academic examination using statistics as a base was conducted in 1927, by Furukawa, a Japanese educational psychologist (Furukawa, 1927 & 1930; Nawata, 2014; Rogers & Glendon, 2003; Sato & Watanabe, 1992; Wang, 2014; Wu et al., 2005). However, the paradigm that most influences present-day research is from a Japanese book (Nomi, 1971) published in 1971 by Nomi, an independent Japanese researcher (Nawata, 2014; Rogers & Glendon, 2003; Sato & Watanabe, 1992 Wang, 2014).

Nomi's research (Table 1) further developed Furukawa's theory. He adopted the multiple method approach, which consisted of questionnaires on the traits of people's behavior and mindset, surveys of blood type distribution for various occupations and groups, and observations and statistical analyses of human behavior. The sample sizes of these studies were claimed to be tens of thousands in total. He also suggested an association with disease and physical constitution (Nomi, 1978).

Table 1. Blood Type, Personality, and Occupations with High Distribution Rates

Blood Type	Personality	High Distribution Rate
A	Have a sense of duty for "someone." Suppress emotions and desires. Compassionate. Value perceptions of others. Observe rules, customs, and order; avoid extremes. On the other hand, a bit conventional. Very consistent. More stubborn and short-tempered than other groups.	Education minister High-ranking sumo wrestler
B	Self-paced. Reluctant to be argued with or restrained. Cognitively flexible, highly innovative and accepting of new people. Least influenced by their surroundings, unconcerned; most careless. In general, not particular about things.	Baseball hitter
O	Strong desire to live, full of vitality. Strongly goal oriented. Naked openness with and parental love for best friends and family. On the other hand, very wary of outsiders and the unknown.	Prime minister Foreign minister Baseball hitter
AB	Rational, businesslike. Have both a calm, cool, stable side and an easily disturbed side with sentimental fragility. Very friendly and tidy; treat with kindness when asked; smiling. Somewhat aloof.	Foreign minister Education minister

Source: Nomi (1978)

1.3 Results of Academic Studies

Although there are many academic studies using multiple-item personality tests, the inconsistency among results (Alsadi, 2020; Cattell et al., 1964; Cho et al., 2005; Cramer & Imaike, 2002; Flegr et al., 2013; Furukawa, 1927 & 1930; Gupta, 1990; Jogawar, 1983; Kim et al., 2007; Lester & Gatto, 1987; Mao et al., 1991; Nawata, 2014; Rogers & Glendon, 2003; Sharifi et al., 2015; Sato & Watanabe, 1992; Shimizu & Ishikawa, 2011; Wu et al., 2005) has led to the endless academic controversy about whether or not the relationship is scientifically confirmed. Many studies examined the association between blood type and personality using the “Big Five” personality test (Costa & McCrae, 1992; Goldberg, 1990 & 1992), which has been used extensively in contemporary psychology (Appendix); none of these results have been verified as consistent (Alsadi, 2020; Cho et al., 2005; Cramer & Imaike, 2002; Flegr et al., 2013; Rogers & Glendon, 2003; Sharifi et al., 2015; Shimizu & Ishikawa, 2011; Wu et al. 2005).

On the contrary, several studies have reported differences, mainly in Japan, South Korea, China, and Taiwan. One of the reasons for this is that is that previous studies used multi-item scales such as the Big Five test, whereas these studies usually used a single-item scales based on Mr. Nomi's blood type personality theory (Table 1). Archetypical sample sizes of these were 6,660 (Yamaoka, 2009), 11,766 (Matsui, 1991), 32,347 (Sakamoto & Yamazaki, 2004; Yamazaki & Sakamoto, 1991 – these two used the same sample) and over 200,000 (Muto et al., 2012; our estimation; the exact number was not specified in this report, although it was alluded that the size was much larger than the preceding ones). Nevertheless, no consistent statistical difference in respondents without knowledge of the blood type personality theory have been confirmed to date. The current scientific consensus is that the differences that have been found are self-fulfilling phenomena induced by the “contamination by knowledge” (Cramer & Imaike, 2002; Eysenck & Nias, 1982; Kim et al., 2007; Matsui, 1991; Ryu & Sohn, 2007; Sakamoto & Yamazaki, 2004; Sato & Watanabe, 1992; Yamaoka, 2009; Yamazaki & Sakamoto, 1991).

Several studies have also examined medical factors, such as the linkage of the disequilibrium between the DBH and ABO genes, to determine whether physical constitution affects personality (Hobgood, 2011 & 2021). In 2015, a genotype of blood type and the TCI personality test (Appendix) were determined to be related, as predicted by blood type personality theory (Tsuchimine et al., 2015). It is understood that personality involves complex interactions of genetic factors such as gender and age, and such interactions between these factors are typically non-linear (Kawamoto et al., 2012; Lehmann et al., 2013; Soto et al., 2011).

Since 2020, several studies have stated that statistical relationships have been observed using artificial intelligence (AI) (Akbur et al., 2020; Kanazawa, 2021). Current AI technology often uses a technique called machine learning (LeCun et al., 2015). The technology is based on a neural network that consists of perceptrons, which simulate the mechanisms of human neurons in a multilayered network. This makes it feasible to learn various characteristics contained in the data with dramatically high accuracy, in comparison with the conventional techniques, especially when handling non-linear data.

1.4 Blood Type and Occupations

Eysenck and Nias (1982), personality psychologists, suggest that to avoid "contamination by knowledge" such as astrology, researchers should focus on the occupations people choose rather than on subjective self-assessment. They cited several examples in their book. However, the results in their case were generally negative.

Following their suggestions, several academic studies have examined the relationship between blood type and occupation; significant differences were reported, especially among politicians and athletes. For example, Ohmura, Ukitani and Fujita (2013), a group of Japanese psychologists, said "many Japanese prime ministers were type O (statistically significant at $p < 0.05$)." Nomi (1978) previously explained that type O was the most "political" of the four types, and athletes tend to be type O in general. A 2017 Italian study said that type O individuals were good athletes, particularly in long-distance running (Lippi et al., 2017). A 2009 Serbian study observed that the frequency of the blood type O was higher in elite water polo players than other blood types (Cvjeticanin & Marinkovic, 2009). The result of another 2018 Serbian study on soccer players similarly supported the existence of a relationship between blood type and athletic ability (Ichikawa & Slobodan, 2018).

2. Methods

As previously mentioned, in Japan, more than half of the population is interested in blood type personality theory. For this reason, the blood types of politicians and athletes are introduced in many biographies (e.g., Kokusei Joho Center, 2021), and in some cases they are published on official websites. Rosters are listed in the Supplementary File.

We set the alpha level to 0.05. A $\chi 2$-test was used to analyze blood type distributions. According to the Japan Red Cross Blood Center, the average distributions of Japanese blood types were A = 0.391, B = 0.215, O = 0.299, AB = 0.100 (Okubo, 1997).

3. Results

3.1 Analysis 1: Blood Type and Japanese Politicians

As shown in Table 2, type O was the most common blood type among Japanese prime ministers and foreign ministers at $p = 0.026$ and $p = 0.010$ respectively, while type A was the most common type among education ministers at $p = 0.016$. These results were in agreement with Nomi's study (Table 1).

Table 2. Blood Type Distributions of Japanese Politicians after WWII (as of May, 2021)

Politicians	Numbers of Ministers					χ^2	*p*
	A	B	O	AB	N/A		
Prime Minister	0.294 (10)	0.118 (4)	**0.529 (18)**	0.059 (2)	- (0)	9.300	**0.026**
Foreign Minister	0.324 (12)	0.054 (2)	**0.405 (15)**	0.216 (8)	- (4)	11.438	**0.010**
Education Minister	**0.365 (19)**	0.192 (10)	0.212 (11)	0.231 (12)	- (22)	8.574	**0.016**
Average in Japan	0.391	0.215	0.299	0.100	-	-	-

Note. The numbers of people in each subcategory are in parentheses. Most common blood type for each occupation is highlighted in bold; $p < 0.05$ are also highlighted in bold.

3.2 Analysis 2: Blood Type and Japanese Athletes

As shown in Table 3, type O was the most common type for Japanese baseball hitters at $p = 0.040$ for the top 20 home run hitters in Nippon Professional Baseball (NPB) history. This result was consistent with Nomi's study (Table 1). Also, O was the most common type for Japanese soccer players, at $p = 0.064$ for the top 20 goal-scorers in J League history, and at $p = 0.002$ for the members of Japan's FIFA World Cup teams (1998-2018). The former was statistically significant at $p = 0.008$ when calculated using the binomial distribution, since no one in the group had type B.

Table 3. Blood Type Distributions of Japanese Athletes (2020)

Athletes	Number of Athletes					χ^2	*p*
	A	B	O	AB	N/A		
Baseball (NPB)	0.158 (3)	0.211 (4)	**0.579 (11)**	0.053 (1)	- (1)	8.316	**0.040**
Soccer (J League)	0.381 (8)	0.000 (0)	**0.476 (10)**	0.143 (3)	- (0)	7.277	0.064
Soccer (World Cup)	0.293 (39)	0.150 (20)	**0.406 (54)**	0.150 (20)	- (0)	14.886	**0.002**
Average in Japan	0.391	0.215	0.299	0.100	-	-	-

Note. The numbers of people in each subcategory are in parentheses. Most common blood type for each occupation is highlighted in bold; $p < 0.05$ are also highlighted in bold.

4. Discussions

The physiological function of ABO blood type remains a mystery. However, it is now clear that having one specific blood type may play an important role in health (Ewald & Sumner, 2016). For example, several studies found that individuals with type A were more susceptible to COVID-19, whereas individuals with type O were less susceptible (Barnkob et al., 2020; Hoiland et al., 2020; Severe Covid-19 GWAS Group, 2020).

Nomi stated that type O was the most "political" of the four types, and that O would be most common for prime ministers and defense ministers due to their interest in power. On the contrary, type A, with its strong sense of ethics and order, would be more prevalent among education ministers (Table 1).

Nomi (1978) also stated that athletes tend to be type O in general. An Italian study said that type O individuals are good athletes, particularly in long-distance running (Lippi et al., 2017). In Japan, type O persons tend to be the best hitters in professional baseball. Moreover, of the 10 Japanese table tennis players in the top five of the June 2021 world rankings for men and women, seven were type O (Supplementary File). The blood type personality theory also explains that type B individuals "look for a life with much freedom." Consistent with this theory, athletes in team sports such as soccer had fewer type B athletes than baseball hitters (Table 3) or table tennis players who play individually. In Japanese women's synchronized (artistic) swimming, of the 20 swimmers whose blood types were known, only two were type B; this is only half of what would be expected given the frequency of type B among the general population of Japan, although it should also be pointed out that there were a quite number of swimmers whose blood types were unknown (Supplementary File). Thus, in politicians and athletes, there appear to be distinct, statistically significant differences predicted by blood type. These can be recognized as evidence that blood type is related to health, sports, and personality.

5. Conclusions

The results showed that personality traits corresponding to blood type appeared in the data of each of the three groups of politicians and athletes, and all differences were statistically significant. We observed a clear and significant relationship between blood type and personality.

Our findings provide a hypothetical but new framework of how genes affect human personality. On the other hand, the subjects in this study were limited to Japanese populations. Further research with a larger, more global dataset is needed to address the true implications of blood type and personality.

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Appendix

1. Big Five Personality Test

There are many types of personality tests used in psychology, depending on the purpose. The “Big Five” test is generally used for blood type and personality studies. The Big Five personality test, as the name implies, comprehensively describes personality by five factors called the Big Five (Costa & McCrae, 1992; Goldberg, 1990 & 1992). These five factors are usually called Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness. The model collects corpora from dictionaries and traditional personality tests, as well as re-analyses of personality scales, and the five factors are extracted through factor analysis. Thus, the Big Five does not assume any background theory. In other words, it can be said that the Big Five model was constructed as the result of an attempt to broadly describe personalities with as few factors as possible, without assuming any background theory. Thus, the Big Five models are characterized by the bottom-up process, and personality is comprehensively captured by five factors. The NEO-PI-R, commonly used as a Big Five personality test, consists of 60 to 240 question items, each of which is rated using a five-point scale (Costa & McCrae, 1992; Kunisato et al., 2008; Shiinokaka et al., 1998; Wada, 1996).

As mentioned above, the Big Five is a questionnaire-based personality assessment, which consists of answering a series of questions regarding multiple self-reported personality traits. These traits integrate into five personality factors by statistical processing. In theory, this means that the self-reported trait will either directly or indirectly appear in the result.

2. TCI Personality Test

The Tridimensional Character Inventory (TCI), a top-down personality model, is often used to examine genetic dispositions (Cloninger, 1987; Kijima et al., 1996). This personality test built a model for temperament with a physiological basis in the background. The test consists of 240 items using a yes-no scale rating.

Cloninger hypothesized that personality consists of traits that are hereditary and stable throughout life, and traits mature throughout life under the influence of socio-cultural environments. The TCI consists of seven dimensions, including four temperament dimensions (Novelty Seeking, Harm Avoidance, Reward Dependence, and Persistence) and three character dimensions (Self-directedness, Cooperativeness and Self-transcendence). Three of the temperament dimensions have been hypothesized to be associated with monoamine neurotransmitters: Novelty Seeking has been hypothesized to be associated with dopaminergic, Harm Avoidance with serotonergic, and Reward Dependence with noradrenergic.