What Anime to Watch Next? The Effect of Personality on Anime Genre Selection

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ABSTRACT

Personality can affect people's entertainment preferences. This has been shown with TV shows, movies, books, and music. This study tries to see if there is also a connection between personality and anime watching patterns and preferences. The analysis was done on the reviews posted on the MyAnimeList website. The study shows, that personality has a small connection with what people watch and a somehow bigger connection with what they like to watch as shown by higher ratings.

KEYWORDS

personality, genre, anime, LIWC

1 INTRODUCTION

People use different media, to satisfy different psychological and social needs [7]. But since different people can have different needs, these can also mean, that they choose different media to satisfy their needs. One of the ways to conceptualizes differences in people is through personality.

1.1 Personality

Personality can be defined as differences in how people think, feel, and behave in general [3]. The most popular personality model in science is currently the Big Five model. The model includes five traits [11]:

- Extraversion is defined by the frequency and intensity of positive feelings. These people are positively oriented, social, and assertive, as opposed to quiet.
- Neuroticism is defined by the frequency and intensity of negative feelings. These people are less resilient and more sensitive and nervous.
- Agreeableness is defined by the relative importance people place on other people when compared to themselves. These people are more cooperative, empathic, and likable, instead of competitive.
- Conscientiousness is defined by the need to follow a system and defined rules. These people are more efficient and organized, as opposed to spontaneous.
- Openness is defined by the number of associations with different ideas and concepts. These people are more curious and creative, as not as consistent as people on the other end of the trait.

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1.2 Entertainment preferences

Personality can affect interests. Even an indirect indication of interest, for example, Facebook likes, can predict personality [9]. There are some studies, showing the connection between personality and entertainment that people choose.

The entertainment preferences were found to correlate with personality. When measured by questionnaires, Communal genre preference was positively correlated with agreeableness factors. Aesthetic genre preference was positively correlated with openness and agreeableness factors. Dark genre preference was negatively correlated with agreeableness and conscientiousness factors. And cerebral genre preference was positively correlated with openness factors [13].

The specific genres were also connected to personality when the later was measured with Facebook likes. For example, in books, openness predicted liking poetry and science fiction, while disliking drama, scary, and crime books. Conscientiousness predicted liking education books and disliking comics, fantasy, and poetry. Extraversion predicted liking scary and humor books and disliking fantasy, science fiction, and war books. Agreeableness predicted liking drama and education books and disliking war and crime books. And on the end, neuroticism predicted liking crime and poetry books, while disliking non-fiction, thriller, and mystery books [4].

Because of the size of the market, focus on mass media, and different levels of tolerance for foreign media, most of the media exports in the world comes from the USA [6]. But Japan held the primary role in the cartoon segment for decades. With animes popularity increasing outside Japan [10], this allows for study the mass media from a country that differs from the USA [2]. Since there is a lack of studies connecting personality and anime, I would like to see, if there is a connection there. For this purpose, I am going to try to answer two research questions.

Research question 1 Is personality connected with the anime genres people choose to watch?

Research question 2 Is personality connected with how much people like the anime genres they watch?

2 METHODOLOGY

Data were collected by scraping the reviews and anime metadata from the myanimelist.net website in August 2020. There were 138335 reviews for 7570 anime series written by 52235 users. Users were differentiated by their user name, there was no attempt made to figure out if one user is using multiple accounts. More than half of the users wrote only one review, while the user with the most reviews wrote 554 reviews.

By scraping the genre metadata for each anime, there were 43 different genres. Each anime can be in multiple

different genres. The genres are comedy, school, shounen, supernatural, hentai, romance, seinen, dementia, a slice of life, kids, adventure, space, mecha, military, sci-fi, action, fantasy, magic, music, game, drama, shounen-ai, harem, horror, historical, sports, mystery, cars, parody, shoujo, demons, martial arts, yaoi, superpower, ecchi, thriller, vampire, samurai, psychological, police, yuri, josei, shoujo-ai.

To get the personality scores of the people, I analyzed the content of the reviews with the LIWC [14, 12]. This is a program intended to study texts with the help of the word counts in different categories. The categories include function categories, like the number of pronouns, and the content categories, like social processes.

I concatenated all the reviews for each person in a separate file. I analyzed these files with the LIWC program. The commercial version also includes the Big Five scores, which is the most frequent way of how to use LIWC to get personality. But in the academic version, these are not available. So the personality was computed based on the correlations between LIWC categories and personality found in previous studies. Some studies used this method before [1].

I used the correlations from the Yarkoni study [15], where over 600 people's blogs were analyzed with LIWC and correlated with the Big Five traits from the questionnaire. I used only the categories, that were significant at the p=.001. Since the blogs were analyzed with the earlier version of the LIWC (version 2001) program, the equivalent groups from LIWC 2015 were used. If the category no longer existed, then it was dropped. The values were summed together to get the composite value.

Based on this method, the traits were calculated in the following way: Conscientiousness was calculated by summing achievement, anger (negative), negative emotions (negative), and negations (negative). Agreeableness was calculated by summing the words connected with home, leisure, motions, space, positive emotions, anger (negative), negative emotions (negative), and swear words (negative). Openness was calculated by summing the propositions, articles, words connected to death, home (negative), leisure (negative), motion (negative), time (negative), family (negative), social processes (negative), positive emotions (negative), first-person singular pronouns and all pronouns. Extroversion was calculated by summing words connected to sexualization, friends, social processes, and second-person pronouns. Neuroticism was calculated by summing anxiety, negative emotions, and second-person pronouns (negative).

The problem with this method is, that the result does not represent the real values, but only the rankings of the people. This is why the analysis will be done by comparing the highest 1/3 of the review authors with the lowest 1/3 of the review authors on each dimension.

3 RESULTS

3.1 Analysis of Review Presence

The first analysis is for the percentage of the reviews that each group wrote for each genre. If there are differences in the watching patterns of people with different personalities, then this would be reflected in the number of reviews that people write. The people usually only write reviews for the shows that they watched. So if there is a difference in ratios of reviews for different genres, this can be indicative of different watching patterns. The ratio of the reviews was analyzed with chi-square, while the effect size was calculated with ϕ.

Below are presented the results, where the p-value was lower than the threshold corrected with Bonferroni correction (1.136^{-56}). The results are also presented in a table, where for each trait, the average power for statistically significant results is presented, as well as the genre with the highest power among statistical results for both low and high levels of the trait. If there are more than three results, only the three strongest are presented.

Table 1: The summary of power results for review presence

trait	N	average	highest	high trait	low trait
A	11	0.00272	.02019	Slice of Life	Action
E	8	0.00170	.00864	Hentai	Action
N	6	0.00157	.01036	Action	Comedy
C	5	0.00143	.01108	Slice of Life	Action
O	10	0.00239	.01668	Sci-Fi	Shoujo

3.1.1 Agreeableness. People with higher agreeableness wrote more reviews for slice of life ($\chi^2 = 1087, p = .000, \phi = .014$), comedy ($\chi^2 = 931, p = .000, \phi = .012$) and music ($\chi^2 = 432, p = .000, \phi = .005$). On the other hand, people with lower agreeableness wrote more reviews for action ($\chi^2 = 1524, p = .000, \phi = .020$), horror ($\chi^2 = 623, p = .000, \phi = .008$) and psychological ($\chi^2 = 473, p = .000, \phi = .006$).

3.1.2 Extraversion. People with higher extroversion wrote more reviews for hentai ($\chi^2 = 673, p = .000, \phi = .008$), romance ($\chi^2 = 605, p = .000, \phi = .007$) and harem ($\chi^2 = 467, p = .000, \phi = .005$). On the other hand, people with lower extroversion wrote more reviews for action ($\chi^2 = 576, p = .000, \phi = .007$) and sci-fi ($\chi^2 = 455, p = .000, \phi = .005$).

3.1.3 Neuroticism. People with higher neuroticism wrote more reviews for action ($\chi^2 = 818, p = .000, \phi = .010$) and horror ($\chi^2 = 420, p = .000, \phi = .005$). People with lower levels of neuroticism wrote more reviews for comedy ($\chi^2 = 679, p = .000, \phi = .008$), slice of life ($\chi^2 = 572, p = .000, \phi = .007$) and romance ($\chi^2 = 438, p = .000, \phi = .005$).

3.1.4 Conscientiousness. People with higher level of conscientiousness write more reviews for slice of life ($\chi^2 = 817, p = .000, \phi = .010$), comedy ($\chi^2 = 348, p = .000, \phi = .004$) and sports ($\chi^2 = 341, p = .000, \phi = .004$). While people with lower conscientiousness wrote more reviews for action ($\chi^2 = 837, p = .000, \phi = .011$) and horror ($\chi^2 = 460, p = .000, \phi = .006$).

3.1.5 Openness. People with higher level of openness write more reviews for sci-fi ($\chi^2 = 1008, p = .000, \phi = .011$), action ($\chi^2 = 662, p = .000, \phi = .007$) and mecha ($\chi^2 = 369, p = .000, \phi = .004$). People with lower level of openness write more reviews for shoujo ($\chi^2 = 1450, p = .000, \phi = .016$), romance ($\chi^2 = 1302, p = .000, \phi = .014$) and school ($\chi^2 = 752, p = .000, \phi = .008$).

3.2 Analysis of Review Scores

In the next section, the scores of the reviews will be analyzed. For this analysis, only the main score will be used. The analysis will be done with a t-test, and the effect size will be calculated with Cohen d statistics. The results for five genres with the highest effect size are presented below. The results were presented, only if the p was higher than the corrected value mentioned in the previous section. If there were more than 3 results with p-value like that, only the 3 with the highest power were shown.

Table 2: The summary of power results for review scores

trait	N	average	highest	high trait	low trait
A	23	.61509	.86056	Harem	/
E	/	.14158	.34974	/	/
N	28	.71882	.83250	/	Game
C	28	.68101	.88185	Shoujo	/
O	17	.39967	.52882	/	Thriller

3.2.1 Agreeableness. People with higher level of agreeableness rate higher the genres of harem ($t = 31.1, df = 5424, p = .000, d = .860$), shoujo ($t = 29.0, df = 4467, p = .000, d = .851$) and school ($t = 53.1, df = 19349, p = .000, d = .753$). There were no genres, where people with a lower level of agreeableness would rate higher than people with a higher level of agreeableness.

3.2.2 Extroversion. There were no genres, that trait extraversion would be connected with at the corrected p level.

3.2.3 Neuroticism. There were no genres, that people with a higher level of neuroticism would rate higher than people with a lower level of neuroticism. People with lower level of neuroticism rate higher the genres of game ($t = -20.2, df = 2523, p = .000, d = .832$), harem ($t = -29.1, df = 5427, p = .000, d = .798$) and vampire ($t = -16.5, df = 2069, p = .000, d = .778$).

3.2.4 Conscientiousness. People with higher level of conscientiousness rate higher shoujo ($t = 29.1, df = 4345, p = .000, d = .881$), vampire ($t = 17.3, df = 2033, p = .000, d = .814$) and harem ($t = 26.1, df = 5303, p = .000, d = .740$). There were no genres, that people with a lower level of conscientiousness would rate higher than people with a higher level of conscientiousness.

3.2.5 Openness. There are no anime genres, that people with a higher level of openness would rate higher. But there are genres, that people with a lower level of openness would rate higher. Among these are thriller ($t = -16.5, df = 4565, p = .000, d = .528$) superpower ($t = -22.8, df = 8270, p = .000, d = .519$) and shounen ($t = -32.5, df = 19118, p = .000, d = .480$).

4 DISCUSSION

One can see in the results above, that personality is connected with both what the people are watching and how much do they like what they watch. But the statistical power with the former is much smaller than with the later. So this would mean that that personality does show some connections with the people's watching selection and a bit more connection to how much they like the genre.

When it comes to the anime series that people watch, the effect sizes are small. The averages are only approaching the cut-off for the small effect, while the strongest are all, sans extroversion, in the small effect size territory. There seems to be a bit higher for openness and agreeableness. But overall, none of them are big. So there seem to be other explanations for the selection of which show to watch, that would need to be discovered.

On the other hand, the effect sizes for liking the genres based on their personality are bigger. While the extraversion average effect size is approaching the small effect size, the rest are all above it. With agreeableness, neuroticism, and conscientiousness being in the middle effect size territory. The genres with the highest effect sizes for these traits reach the high effect size territory.

Interestingly, that openness and extroversion have less connection to which genres the person likes compared to the other three traits. I don't know the reason, why this would be so.

Taking the more general picture of the results, there seems to be some possible connection between the groups of genres and personality. The agreeableness seems to be connected to positive social relationships, and negatively connected to conflict and negative emotions. The extraversion seems to be connected with more thrilling and positive genres along with relationship-based genres, while negatively connected to plot-driven genres. Neuroticism is connected to negative themes and conflicts and less connected with positive genres. The conscientiousness was connected to more positive, relationship-based, and supernatural genres. The interesting finding here was that some of the genres they enjoyed, they watched less of. This is unlike the finding for the former three traits. The openness also has this gap. They prefer to watch more ideas and plot-driven genres and less positive genres. But the people with a lower level of this trait seems to enjoy the genres with conflict and competition more.

The general results are more or less in line with what would be expected based on personality theory. Agreeableness' connection to empathy, extraversion's connection to positive emotions and sensation seeking, neuroticism's connection to negative emotions, and openness' connection to the creativity can explain a lot of the group genre preferences described above. Just conscientiousness does not have a very easy explanation for it.

There are a couple of things that I could do to improve the study. One of them is shown in the one-sidedness of the results for linking the different genres of the anime. While looking at all results, there are some results for low and high levels of traits, the results are still very biased in one direction. So agreeableness and conscientiousness are positively connected to liking most genres, just as openness and neuroticism are negatively connected to liking most genres. One interpretation of the results would be, that people that are higher on agreeableness and conscientiousness and lower on openness and neuroticism prefer anime. The other possible explanation, that I did not test, would be that

different personalities are connected to different actions on the internet. In one study, the agreeableness and extroversion were connected with more frequent positive writing, conscientiousness with less frequent negative writing, and neuroticism and extroversion with more frequent negative writing [5]. And additional studies should try to separate the effect of personality on writing from the results.

This also leads to the second improvement. The results should be triangulated with data from different sources or, even better, with a different method. The users of one internet site are not always representative of even the whole sub-community on the internet. For example, some studies show, that websites people visit are correlated with personality [8]. So the caution should be exercised in trying to generalize the results.

The third way to improve this study would be to use multiple ways to measure personality. In this study, the correlation between LIWC categories and personality traits found in an unrelated study was used. But the correlations might not be the same if the study would be done on this dataset, so the results could be biased because of this. Confirming the personality of a subset with questionnaires or using multiple methods would allow for a greater show of confidence in the results.

In conclusion, the personality seems to have a mostly predictable connection what people watch and how much they like it. With a stronger connection to the linking than general watching patterns.

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A ONLINE RESOURCES

The files with all statistical results and the code that I used can be found on https://sarajaksa.eu/IS2020.