

Abstract of PsyOps: Personality Assessment Through Gaming Behavior

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Traditional personality assessment methods fall into the categories of behavioral, observational, and self-report measures. In our research we explore the potential of adding another approach to this arsenal: personality assessment through video games. Video games combine the strengths of behavioral and observational measures, while side-stepping the reliability issues inherent in self-report. Additionally, video games offer a higher ecological validity than the traditional personality assessment methods. To determine if video games may contribute to personality assessment, we set out to answer the question: *Does the statistically trackable play style of a player significantly correlate to his personality?* Through the effective use of promotional material, 13,376 participants were recruited for our experiment. Each one filled out an IPIP Big Five personality test and provided access to their game statistics for the online multiplayer shooter Battlefield 3. In order to answer the research question, correlations between play style and personality were calculated. The results are also relevant to game developers who wish to personalize a game experience to an individual player.

1 Experimental Setup

Data collection took place through a promotional website (PsyOps). Six types of data were collected: player name, 100-item IPIP questionnaire, age, country of residence, gaming platform, and credits. Each participant was asked to give permission for anonymous use of his game statistics, which were then automatically retrieved from a public database. Player name was used as the key for game statistics retrieval. It is a unique identifier of a player account in Battlefield 3. Therefore, it was used to ensure all participants were unique individuals. In this manner 826 game statistics were extracted. Domain knowledge was employed to combine and process the game statistics to reflect gaming behavior more accurately. The result was that 173 play style variables were defined over nine categories: Ribbon (7), Global (42), Equipment (8), Rank (1), Class (4), Score (19), Game Mode (10), Vehicle Category (7), Weapon (75)¹. The credits field was a tick box where participants indicated if they wished to have their player name listed on the credits page of the final research report.

2 Results

The final sample contained 6373 participants (see original paper for filtering criteria [1]). Correlations were considered significant at $\alpha = 0.05$. Between the 173 play style variables and the five personality

¹An overview of all the variables and their definitions are presented on the research website: <http://www.psyopsresearch.com>

dimensions, 311 correlations were significant. Between the 173 play style variables and the 100 IPIP items, 4442 correlations were significant. Most of the correlations showed an effect size (r) below 0.1. For the Big Five dimensions, 4 correlations had $r > 0.1$. For the individual IPIP items, 17 correlations had $r > 0.1$. In order to provide the reader with a succinct overview of the correlations, we highlight three overall themes across the correlations between play style and personality. (1) The Big Five dimension Conscientiousness is negatively correlated with speed of action. (2) The game variable Unlock Score per Second correlates most often and most strongly with personality, especially with the Big Five dimensions Conscientiousness and Extraversion. Unlock Score per Second is a measure of how much a player varies his play style. (3) IPIP statements related to work ethic correlate negatively with performance in the game.

A post-hoc analysis uncovered an additional finding. Age correlates with both play style and personality as well, showing high effect sizes. Age correlations are not related to our research question, but will be briefly discussed due to the strength of our findings. Age correlates significantly with all Big Five dimensions with a strength of 0.11, 0.20, 0.13, 0.08, and 0.07, respectively. Correlations between age and the IPIP statements are also significant. The greatest effect size here is $0.20 < r < 0.25$ for two statements: "I know how to captivate people" and "I find it difficult to get down to work." Additionally, age correlates significantly with 151 of the 173 play style variables. Skimming off the strongest of the correlations ($r > 0.30$), age is found to correlate negatively with speed of play, correlate positively with length of play, and correlate negatively with game performance.

3 Conclusion

Our aim was to answer the question: *Does the statistically trackable play style of a player significantly correlate to his personality?* The answer we found is *yes*. Our findings have a high statistical power due to the large sample size we acquired through an elaborate promotional campaign (PsyOps). Effect sizes are small, but significant and numerous. Additionally, we found in our post-hoc analysis that older players are more conscientious, less experimental and slower than younger players.

For future work we want to expand on the current approach in four ways. First, the play style statistics of the players in our sample can be reextracted to reflect changes in performance *over time*. Such changes may relate to the personality of the player. Secondly, the relationship between age and play style can be further explored with the current sample, as well as samples from other games. Thirdly, the current work on the relationship between play style and personality can be expanded by including games of other genres. A main point of interest here is to find out what overarching themes define the relationship between play style and personality across different video game genres. Fourthly, video games hold the potential to train players in transferable skills such as situational awareness (useful for driving) or spatial cognition (useful for reading maps). The potential can be uncovered by researching the relationship between a player's gaming prowess and his performance on skill challenges unrelated to gaming.

See original paper for more details and references. [1]

References

- [1] Shoshannah Tekofsky, Pieter Spronck, Aske Plaat, Jaap Van den Herik, and Jan Broersen. Psyops: Personality assessment through gaming behavior. In *Proceedings of the International Conference on the Foundations of Digital Games*. SASDG, 2013.