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Title

Personality Traits and Wine Consumption: Do Wine and Beer Drinkers Have Different Personalities?

I want to submit an abstract for:

Conference Presentation

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Keywords

Big Five, Consumption, Norway, Personality Traits, Wine

Research Question

To investigate the effects of personality traits on wine consumption. To investigate differences in traits between wine and beer drinkers.

Methods

Item response theory was used to construct the personality traits. A double censored beta regression model was used to estimate the relationships traits and consumption of wine and beer.

Results

Several socioeconomic variables and personality traits affected the frequencies of wine and beer consumption. The effects were different among wine and beer drinkers.

Abstract

Personality Traits and Wine Consumption:
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1. Introduction

Wine consumption is affected by a variety of economic, social, cultural, psychological, demographic, and attitudinal factors. Gustavsen and Rickertsen (2018) investigated some of these factors and found substantial effects of age, period and cohort (APC) variables on the probability of drinking wine using Norwegian data for the period 1991 – 2015. Moreover, they found that marriage, increased education, high income, and living in a big city increased the probability of drinking wine. Attitudes such as hedonism and religion were also important for the probability of drinking wine.

Personality traits have been found to affect an individual's liking of food (Shipman and Durmus, 2016), food choices (e.g., Keller and Siegrist, 2015), sweet taste preference in wine (Saliba et al. 2009) and alcohol consumption (e.g.,

Malouff et al., 2007). Personality traits are frequently measured by the Big Five personality traits also known as the Five-Factor Model (e.g., McCrae and Costa, 2003). This model consists of the following traits: Openness to experiences, Conscientiousness, Extraversion, Agreeableness and Neuroticism (OCEAN). These traits are not directly observable but may be created on the basis of answers to survey questions. Twin studies and other research have shown that about half of the variation in traits between individuals is the result of genetics and half is the result of the environment. Researchers have found that the OCEAN traits are relatively stable from childhood through adulthood (Wikipedia, 2018).

2. Research Objectives

Our primary objective is to investigate the effects of the OCEAN traits on wine consumption after controlling for key socioeconomic and demographic variables. A secondary objective is to investigate to what extent these traits differ between wine and beer drinkers. Does the average wine drinker possess any specific personality traits as compared with the average beer drinker? There are three main differences in our study as compared with Gustavsen and Rickertsen (2018). First, they did not consider the effects of personality traits. Second, they studied changes over the period 1991 - 2015 while we focus on 2015 due to data availability. Third, they did not compare wine and beer drinkers.

3. Data

We use of the Norwegian Monitor Survey (NMS), which is a nationally representative survey of adults aged 15-95 years. The NMS is Norway's most comprehensive consumer and opinion survey, and it covers a broad range of topics including demographics and socioeconomic information, political preferences, viewpoints on moral and ethical issues, and self-perceived happiness, health, and drinking habits including the frequencies of wine and beer consumption (Ipsos-MMI, 2016). Questions that can be used to construct the OCEAN traits were first included in the 2015 version and we use this survey. In our model we use 3482 respondents from 18 to 80 years of age.

4. Methods

The latent personality traits may be retrieved with factor analysis, principal component analysis, item response theory (IRT) or any other method of constructing latent variables. We used IRT to construct the latent variables to represent the OCEAN traits (e.g., Reise and Revicky, 2015). IRT can be compared to non-linear factor analysis with one factor, and it is constructed to use discrete items as input variables. Since the questions, or items, that constitute the personality traits are discrete, IRT is well suited to construct latent personality traits. IRT is a class of stochastic models well suited to reduce the dimension of a set of discrete variables. These models consist of both dichotomous and polytomous models, nominal and ordered, with one or more parameters to be estimated. In our case, we have ordered responses, and we used the graded response model (grm). This model was suggested by Samejima (1969), and it is included in the ltm package (Rizopoulos, 2006) in the statistical software R.

For each of the personality factors, we estimated two different versions of grm. One version in which the parameters discriminating between the items vary freely and one version where they are constrained to be equal. In addition, for both models one latent trait variable and location parameters between the items were estimated. We used Akaike's information criterion (AIC) and Bayesian information criterion (BIC) to choose between the two models. The freely estimated grm had the best fit for all models. Hence, we included the freely estimated latent variable in the beta regression models.

The five variables representing the OCEAN traits were included in a double censored beta regression models to estimate the relationships between the traits and consumption of wine and beer. The beta regression model was chosen because our data consist of frequencies within a time interval (one year). Dividing each observation by 365, we get the beta distribution. The advantage of using this model is that we avoid predictions outside the frequency interval. In addition, since our model is censored in both ends, using a model based on other distribution than the beta, will give biased results. We also controlled for the effects of variables found to be important for wine consumption in Norway (Gustavsen and Rickertsen, 2018). The control variables were: age, income, education, gender, social status, indicators of health consciousness, place of residency, religious status, and hedonism. The outcome variables are the frequencies of wine and beer consumption.

The doubled censored beta regression model was estimated by the R package GAMLSS (Stasinopoulos et al., 2015). We estimated the expected average yearly frequencies of wine and beer consumption. We used the model to predict differences in expected consumption frequencies by respondents with different personality traits. In these predictions, we fixed the other predictor at their mean values.

5. Results

Several socioeconomic variables affected the frequency of wine consumption. The expected frequency of wine consumption is higher, *ceteris paribus*, among respondents with a university education, married respondents, respondents living in one of Norway's four biggest cities, non-religious respondents, and hedonistic respondents. Income and age were included as second degree polynomials, and they are significant predictors of the frequency of wine consumption.

The personality traits influence the frequency of wine consumption. High scores on "Extraversion" and "Openness to experiences" increase the expected frequency of wine consumption, a high score on "Agreeableness" reduces the frequency of wine consumption, while the scores on "Conscientiousness" and "Neuroticism" have no effects on the frequencies.

Respondents in the 90th percentile of the scores for "Extraversion" are expected to drink wine 40 times per year, while respondents in the 10th percentile are expected to drink wine 35 times per year. Wine is often a part of sociability among adults, and sociability and cheerfulness are two dimensions that are included in the trait "Extraversion".

Respondents in the 90th percentile of the scores for "Open to experience" are expected to drink wine 40 times per year, while respondents in the 10th percentile are expected to drink wine 35 times per year. The "Open to experience" trait is among other dimensions connected to preferences for variety and intellectual curiosity, and it is not surprising that people who have preferences for variety and intellectual curiosity also drink wine more frequently than other people.

Respondents in the 90th percentile of the scores for "Agreeable" are expected to drink wine 36 times per year, while respondents in the 10th percentile are expected to drink wine 40 times per year, *ceteris paribus*. McCrae and Costa (2003) describe individuals at the lower percentiles of the "Agreeable" trait as hardheaded, skeptical, proud and competitive, which rather surprisingly seem to result in increased frequency of wine consumption.

Some of the traits that are associated with frequent wine consumption are also associated with frequent beer consumption. University education or living in a big city increases the frequency of beer consumption. Religious respondents drink beer less frequent while hedonistic respondents drink beer more frequent. But contrary to wine, female respondents drink beer less frequent than male respondents. Two personality traits have effects on the frequency of beer consumption. High scores on "Extraversion" and "Open to experience" contribute positively to beer consumption.

We are still working on developing this study to a full paper and a more complete analysis will emerge.

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¹ The beta distribution is a two-parameter continuous probability distribution with range between 0 and 1 but excluding 0 and 1. To make a regression model out of it, predictors are introduced through a reparameterisation as in Ferraro and Cribaro-Neto (2004). But in our case we also have to take care of individuals who never drink wine (i.e., 0) and individuals who drink wine every day (i.e., 1). This is done through logistic terms in the likelihood function and the result is the double bounded beta regression approach.

of variables found to be important for wine consumption in Norway (Gustavsen and Rickertsen, 2018). The control variables were: age, income, education, gender, social status, indicators of health consciousness, place of residency, religious status, and hedonism. The outcome variables are the frequencies of wine and beer consumption.

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