

Title: Personality Predictors of COVID-19 Preventative Health Behaviors

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Research Question and Hypotheses:

1. Are Big Five personality traits related to engagement in COVID-19 preventative health behaviors (i.e., mask wearing, hand washing, surface sanitizing, social distancing, and self-isolating)?

Hypothesis 1. Higher conscientiousness will be associated with greater engagement in COVID-19 preventative health behaviors.

Inference Criteria: If the effect of conscientiousness on health behaviors adjusting for covariates is positive and the 95% confidence interval does not contain 0, we will conclude that Hypothesis 1 was supported.

Hypothesis 2. Higher agreeableness will be associated with greater engagement in COVID-19 preventative health behaviors.

Inference Criteria: If the effect of agreeableness on health behaviors adjusting for covariates is positive and the 95% confidence interval does not contain 0, we will conclude that Hypothesis 2 was supported.

Hypothesis 3. Higher neuroticism will be associated with greater engagement in COVID-19 preventative health behaviors.

Inference Criteria: If the effect of neuroticism on health behaviors adjusting for covariates is positive and the 95% confidence interval does not contain 0, we will conclude that Hypothesis 3 was supported.

Hypothesis 4. The interaction between neuroticism and conscientiousness will predict engagement in COVID-19 preventative health behaviors. Specifically, neuroticism will have a stronger association with COVID-19 preventative health behaviors at higher levels of conscientiousness.

Inference Criteria: If the interaction between neuroticism and conscientiousness on health behaviors adjusting for covariates is positive and the 95% confidence interval does not contain 0, we will conclude that Hypothesis 4 was supported.

Other traits. We do not have specific hypotheses concerning associations between openness and extraversion on the one hand and COVID-19 preventative health behaviors on the other hand.

Name or brief description of data set(s): Dataset #1 is comprised of 740 participants recruited from Amazon's Mechanical Turk. Multiple waves of data were collected from the same participants beginning in February 2020. Dataset #2 is comprised of 550 participants recruited

from Amazon's Mechanical Turk. Multiple waves of data were collected from the same participants beginning in February 2020.

Is this data open or publicly available? No.

Data Source: Own lab collection – Data were collected by one of the analysts' lab

Prior work based on the dataset:

There are currently no published papers or conference presentations from these datasets. Ongoing analyses and working papers which use overlapping data are described in the next section.

Prior knowledge of the current dataset and overlap with previous studies:

Descriptive statistics of each variable are known. In a different project, we are examining associations among emotion regulation, emotions, health behaviors, and mental health. These analyses showed associations between COVID-related fear/worry and health behaviors, which informed our current hypothesis concerning the direction of the neuroticism and health behaviors link. No inferential statistics have been conducted using Big Five personality traits and their associations with health behaviors are not known.

Moment of preregistration: Data collection for the analyses described in this pre-registration is complete for all but the last measurement occasion in Sample #1. The data described in this pre-registration for Sample #2 has not yet been collected. Data from Sample #1 have been handled for other analyses, but the analyses described in this pre-registration have not yet been conducted.

Manipulated variables

Not Applicable.

Measured variables

1. Big Five Personality: In Sample #1, openness, conscientiousness, extraversion, agreeableness, and neuroticism were assessed once in late March using the BFI-II-XS (Soto & John, 2017). In Sample #2, openness, conscientiousness, extraversion, agreeableness, and neuroticism will be assessed once in late July using the BFI-II-XS (Soto & John, 2017).
2. Health Behaviors: In Sample #1, the following CDC-recommended health behaviors were assessed at five timepoints subsequent to the personality assessment (monthly from late March through late July). In Sample #2, the same CDC-recommend health behaviors will be assessed concurrently with personality on July 31. In primary analyses, participants reported “how often you engaged in the following actions over the past four weeks” using a response scale that ranged from 0 (I did not do this) to 4 (I very often or always did this). In sensitivity analyses, participants reported “the likelihood that you will engage in the following actions over the next four weeks” using a scale that ranged from 0 (I will definitely not do this) to 4 (I will definitely do this).
 - a. “Wore a face mask”

- b. “Sanitized surfaces in your house after touching”
 - c. “Took preventative measures for myself (e.g., increased hand washing, used hand sanitizer)”
 - d. “Stayed at least 2 arms lengths (approximately 6 feet) away from other people, except for the people I live with”
 - e. “Engaged in self-isolation (e.g., avoided leaving your home for any reason)”
3. Covariates
- a. Age in years
 - b. Gender (0 = male; 1 = female)
 - c. Race (European American/White/Caucasian, African or African American, East Asian or East Asian American, Other Race): Which ethnicity do you identify with MOST?
 - a. African or African American
 - b. European American/White/Caucasian
 - c. Middle Eastern American (e.g., Arab, Persian)
 - d. Latino/Hispanic/Mexican American
 - e. East Asian or East Asian American
 - f. South Asian or South Asian American
 - g. Native American
 - h. Other
 - d. Education: Please select the level of school you have completed.
 - a. Less than 7th grade
 - b. Middle school & 9th grade
 - c. Partial high school (10th/11th grade)
 - d. High school graduate
 - e. Partial college (at least one year)
 - f. College graduate degree
 - g. Postgraduate degree (e.g., Masters, PhD)

Transformations

For primary analyses, a health behavior composite will be created by computing the mean of the five health behaviors at each timepoint. Personality trait scores will be computed as the mean of the items for each trait. Mean imputation will be used for missing item responses.

Data Inclusion/exclusion

Two attention checks were included at each measurement occasion. Data from measurement occasions on which one or both attention checks were not passed will be excluded. Participants with valid Big Five Inventory data and at least one valid measurement occasion of health behaviors will be included in analyses.

Outliers

We will include all available cases that meet the inclusion criteria described above.

Weights

Sampling weights are not available with this dataset.

Sample size

621 participants provided valid personality data in Sample #1. The Big Five Inventory will be administered to 550 participants in Sample #2, but these data have not yet been collected so we do not know the final sample size.

Missing data

In Sample #1, will use multilevel models which are robust to missing data. Because analyses for Sample #2 are cross-sectional, we will only use complete cases with no missing data.

Analyses

Statistical Models

Sample #1

Sample #1 includes multiple measurement occasions of health behaviors following personality assessment. We will use random-intercept multilevel models to predict health behaviors from grand-mean centered Big Five personality traits. To test Hypotheses 1-3, each Big Five personality trait will be entered as a Level 2 predictor in a separate model. Although we don't have specific predictions for extraversion and openness, we will test models in which they are the key predictor. To test Hypothesis 4, neuroticism, conscientiousness, and their interaction will be entered as Level 2 predictors. We will adjust for demographic covariates (i.e., age, gender, race, education) in all models.

Sample #2

Because personality was assessed near the end of the longitudinal study in Sample #2, only the cross-sectional association of personality and concurrent health behaviors will be examined. We will use multiple regression to predict health behaviors from Big Five personality traits. Each Big Five personality trait will be entered as a predictor in a separate multiple regression. Although we don't have specific predictions for extraversion and openness, we will test models in which they are the key predictor. In addition, to test Hypothesis 4, neuroticism, conscientiousness, and their interaction will be entered as predictors in a multiple regression. We will adjust for demographic covariates (i.e., age, gender, race, education) in all models.

Follow-up Analyses

1. If there is a significant interaction between neuroticism and conscientiousness, we will conduct simple slope analyses. We will test the effects of neuroticism at four different levels of conscientiousness (+/- 1 SD and +/- 2 SDs).
2. In analyses for a separate paper, we examined associations between COVID-19-related fear/worry and health behaviors. To identify and report any potential overlap between these analyses, we will report the association between neuroticism and COVID-19-related fear/worry. We will also test the unique associations between neuroticism and COVID-19-related fear/worry with health behaviors. We expect that COVID-19-related fear/worry may be a potential mechanism linking neuroticism with health behaviors.

Inference Criteria

We will report standardized effect sizes and 95% confidence intervals (CIs) around effect sizes. 95% CIs that do not contain 0 will be interpreted as evidence for an effect. For the multilevel models, standardized coefficients and confidence intervals will be estimated from unstandardized values using the formula $\text{standardized coefficient} = b * SDx / SDy$, where “b” is the unstandardized coefficients and “SDx” and “SDy” are the standard deviations of the independent and dependent variables respectively. Standardized coefficients of .10 will be considered small, standardized coefficients of .20 will be considered medium, and standardized coefficients of .30 and larger will be considered large (Funder & Ozer, 2019).

Sensitivity Analyses

1. Primary analyses will be conducted on self-reported past-month health behaviors. We will test whether the same pattern of results is observed for planned future health behaviors.
2. We will include all Big Five traits in the same multiple regression model predicting health behaviors to account for overlap among traits.
3. We will report results without covariate adjustment and discuss any discrepancies with the covariate adjusted results.

Statistical Analysis Backup Plan

We do not expect any convergence issues. However, if models do not converge we will transform independent and dependent variables to be on a similar scale and adjust optimization parameters to achieve convergence.

Exploratory Analysis

1. In primary analyses, the dependent variable will be a composite of five types of health behaviors. In exploratory analyses, we will examine associations between each trait and each health behavior individually. For example, extraversion and/or openness may be associated with (less) social distancing but not with other health behaviors. We will use a stricter 99% confidence interval to interpret these results due to the larger number of tests.
2. In exploratory analyses, we will test whether political affiliation and ideology interact with Big Five personality traits to predict engagement in COVID-19 preventative health behaviors using the same analytic strategy described for primary analyses.
 - a. Political Affiliation
 - i. With which political party do you identify?
 1. Republican
 2. Democrat
 3. Independent
 4. Other; please specify below:
 - b. Political Ideology
 - i. In general, to what extent do you consider yourself to be liberal or conservative?

1. 1-7 response scale
 - a. 1 = Very liberal
 - b. 4 = Moderate
 - c. 7 = Very conservative