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Technical comment on Rolón, V., Geher, G., Link, J., and Mackiel, C. (2021). Personality correlates of COVID-19 infection proclivity: Extraversion kills. Personality and Individual Differences, 180, 110994

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ABSTRACT

Extraversion is one of the “classics” in personality psychology and Rolón and colleagues (2021) add to the literature by proposing that extraversion kills. While we understand that this should not be taken literally, we have two main concerns that motivate this comment: One, we experience discomfort with using titles that feel overly sensational and “catchy,” for lack of a better term. Nobody thinks that extraversion actually kills, but why tailor scientific articles to the style of newspaper headlines—which may warrant clarifications later because they do not properly reflect the actual findings? We feel that personality research has benefited from not being afraid to be boring (Funder, 2016) and are aware that our concern opposes what is taught in many scientific writing courses (variations of: find a catchy title). One learning experience from the pandemic is that we as scientists need to learn to communicate in a clear and precise manner to prevent misinterpretations when journalists translate research for larger audiences—especially in a climate of increased mistrust toward science.

Second, a strong statement (“extraversion kills”) needs to be based on robust data. Rolón et al.’s hypothesis is convincing: Because SARS-CoV-2 is transmitted via aerosols in social interactions, extraverts would be at increased risk of contracting SARS-CoV-2 due to their sociability and gregariousness. Analyses are based on self-reports of extraversion and its facets sociability, assertiveness, and energy level of 53 self-identified previously COVID-19 infected and 164 noninfected participants from the UK and US aged ≥ 40 years (160 women, 56 men, and one nonbinary). Using self-reports allows for asymptomatic cases among those who identified as noninfected; without testing for antibodies their number will remain unknown. Of 217 participants, 184 were from the US; a further breakdown (e.g., non-English native speakers) is missing. The question arises as to whether a sample with only ~15% non-US participants justifies using country as a covariate and whether analyses should include only US participants.

Infected and noninfected participants did not differ considerably in extraversion (0.04 ≤ d ≤ 0.20), except for “marginally greater” sociability among those infected (d = 0.35), and sociability was weakly correlated with COVID-19 status (r = 0.15, p = .03; remaining rs with extraversion were not reported). Moreover, a linear regression analysis predicting sociability by country, energy level, assertiveness, and COVID-19 status revealed a small effect for the latter (β = 0.14; 2% explained variance, p = .02). Considering these findings, the notion that extraversion kills seems out of proportion. Further, we have several methodological concerns.

First, it is questionable whether 53 participants can represent the

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variability in extraversion for the population of COVID-19 infected. Next, it is unclear whether the demographics (e.g., gender and age) were comparable among subgroups because no subsample descriptions were provided. In terms of generalizability, these initial findings hold for 53-year-olds, mainly American, collected by snowball sampling among respondents to a Psychology Today blog post. The authors did not aim for representativeness, but this hardly represents the US population and to an even lesser degree non-US citizen.

Second, we are concerned with the assessment of extraversion. The 6-item BFI-2-S (three facets with 2 items each; Soto and John, 2017a) was developed for large-scale studies and is limited in assessing the full spectrum of extraversion. Soto and John (2017a) warned that “the BFI-2-S may be useful for examining facet traits in reasonably large samples (approximately 400 or more observations)” (p. 77). Rolón et al. acknowledged “While Soto and John (2017a, 2017b) caution against the use of the shortened BFI-2 versions on smaller samples, Rammstedt et al. (2021) found that these perform sufficiently well in terms of their psychometric properties and their representation of the Big Five nomological network” (p. 3). However, Rammstedt et al. did not examine the facets’ performance. Moreover, exclusively using self-report data limits the validity of estimates.

Third, we applaud authors for reporting standardized effect sizes (Cohen’s $d$). However, $d$ assumes equal subgroup sizes, and ignoring inequality leads to misestimations (Lakens, 2013). When computing sample-weighted estimates (Hedges’ $g$) the difference between infected and noninfected participants in global extraversion is negligible ($g = 0.189$). Hence, extraversion does not robustly discriminate infected from noninfected participants.

Fourth, the authors provided post-hoc power estimates for their $t$-tests (between 0.08 and 0.72). Taking aside that post-hoc power estimates are mostly unreliable (Yuan & Maxwell, 2005), we are missing information regarding the sensitivity (minimal effect size to detect under nominal type-I and II error rates). According to our analyses, effects of $d \geq 0.39/0.46$ can be detected with 80/90% power ($\alpha = 0.05$; one-tailed). Thus, the sample is underpowered for reliably detecting the reported effects of small size.

Finally, contrary to statistical and theoretical reasoning, the authors computed a linear regression analysis predicting the sociability facet by country, assertiveness, energy level, and COVID-19 status. Thus, the outcome becomes a predictor. Following the hypothesis, one would expect a binary logistic regression, modelling the likelihood to have contracted COVID-19 as a function of extraversion.

In conclusion, to suggest that these findings “can help inform policy” (p. 4) stretches what could be derived from this study. A replication in a well-powered sample using comprehensive multimethod assessments of extraversion and COVID-19 is needed to increase trust in the findings. We focused our comment only on the findings for extraversion, while similar criticism seems appropriate for the findings on conservatism.

Open data

Protocols of the power analyses are openly available in the Open Science Framework under https://osf.io/em8vs/.

Declaration of competing interest

The authors do not declare any conflict of interest.

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