



ESTIMATING THE RELIABILITY & ROBUSTNESS OF RESEARCH

AUTHOR RESPONSE

Lades, L. K., Laffan, K., Daly, M., & Delaney, L. (2020). Daily emotional well-being during the COVID-19 pandemic. *British Journal of Health Psychology*, 25(4), 902-911. <https://doi.org/10.1111/bjhp.12450>

response by

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We would like to thank Joop Adema for reviewing our paper very thoroughly. We would also like to thank the ERROR Team and their funders for this very valuable initiative. Thank you!

Here is our very short summary of Joop's three critical comments:

1. There might be three duplicates in the sense that six observations might come from three participants.
2. We should have clustered the standard errors in our regressions on the respondent level (by using the Stata command `"vce(cluster i.id)"`).
3. We did not properly communicate in the paper how we used the Benjamini–Hochberg (1995) adjustments and we made an error as well.

We respond to these three comments below. However, we would like to highlight that Joop had additional excellent comments that he did not label “error” but that will influence the way we conduct future analyses.

The first instance where Joop did not select “No errors found” relates to three potentially duplicate participants (leading to six observations). These three participants had the same original participant ID and the same basic demographics (gender, age, social class [ABC1F50+,C2DEF50-], and county of residence). We did not elicit these basic demographics ourselves but relied on the survey provider's database which had records of these variables. We did elicit other stable variables (e.g. education or occupation) and the participants with the same original participant IDs do differ in these self-reported variables. Hence, we believe it was the correct decision to assume that these are 6 different survey participants and that the same Participant ID was assigned to some of them by mistake as Joop conjectured. In the end, as Joop clarifies, this has limited influence on the results of the paper.

The second critical comment suggests that the standard errors in our estimates are too small because we did not correct for heteroskedasticity and the fact that we have multiple observations coming from the same person. Joop suggests that we should have used standard errors clustered on the respondent level (using the Stata command `"vce(cluster i.id)"`). We agree. We appreciate Joop carrying out and presenting the analysis with the clustered standard errors and are glad to see that the existing results hold in all but one case (further discussed below).

Joop's third critical comment refers to the Benjamini–Hochberg (1995) adjustments and that it is not obvious that we made these adjustments. We have two responses. First, we included Benjamini–Hochberg adjustments and included this in the supplementary

tables to the original paper. The Supplementary Information published on the journal website does include Table S2 in which we indicate which coefficients stay significant at $p < 0.05$ after Benjamini-Hochberg adjustment. The Supplementary Information also includes a short paragraph describing the Benjamini-Hochberg (1995) method. However, our second response is that we made a mistake and Joop found it (which we are grateful for). Indeed, the coefficient for the association between positive affect and schooling children should not include the †-sign indicating that it is still significant after the adjustments at the 0.05 level. Below we added a table which highlights in red background the coefficient indicating the association between schooling children and positive affect.

Joop's second and third critical comments show that in our data, the positive affect when "schooling_children" is not significantly lower compared to the average positive affect. However, the very strong positive association between "schooling_children" and negative effect is still one of the most noteworthy findings of the paper. Re-reading the paper, we do not think that any of the conclusions we draw throughout the paper regarding schooling children are thus invalidated and are happy to see our other findings hold.

Thanks again to everybody involved and especially Joop Adema.

Leonhard, Kate, Michael, and Liam

[Explanatory note by Recommender] This table shows in **red highlight** the coefficient that was reported as significant in the original article but is no longer significant when clustered standard errors are used in the model (which the original authors now agree they should have employed) or when Benjamini-Hochberg adjustments are applied (which the authors reported employing in the original article; i.e., the † was included in error). It also shows in **red color** the coefficients that were reported as significant in the original article but which lose significance when Benjamini-Hochberg adjustments are applied. Note that this information was present in the original article's supplementary materials (i.e., these effects correctly do not have a †); the coloring of the text serves to more clearly highlight the number of affected results. A still unknown number of the Standard Errors reported in the below table may be erroneous (highlighted in **yellow**), as the appropriate use of clustered standard errors will increase their width. This table, without highlighted and colored text, was presented in the original article's supplementary materials ([link](#)).

Table S2: Separate within-person estimates of the relationship between: (A) activities, (B) locations, (C) personal interactions and (D) remote interactions and affect levels.

	Positive affect ^a	Negative affect ^b		Positive affect ^a	Negative affect ^b
	b (SE)	b (SE)		b (SE)	b (SE)
Activities			Locations (Base = At home)		
Exercising	0.46***† (0.07)	-0.27***† (0.06)	Outdoors / nature	0.59***† (0.05)	-0.25***† (0.05)
Going for a walk	0.33***† (0.06)	-0.07 (0.05)	Other	0.05 (0.08)	0.04 (0.07)
Gardening	0.29***† (0.09)	-0.09 (0.07)	At other people's home	0.03 (0.15)	0.01 (0.12)
Pursuing a hobby	0.23***† (0.09)	-0.22***† (0.08)	At work	-0.16** (0.07)	0.24***† (0.06)
Taking care of children	0.21***† (0.06)	-0.19***† (0.05)	At a shop	-0.2**† (0.08)	0.09 (0.07)
Socialising	0.15***† (0.06)	-0.06 (0.05)	In-person interactions		
Eating	0.13***† (0.04)	-0.05 (0.03)	Friends	0.34***† (0.1)	-0.14* (0.08)
Drinking alcoholic beverages	0.11 (0.1)	0.14 (0.08)	Pets	0.22***† (0.08)	-0.06 (0.07)
Pray/worship/meditate	0.11 (0.13)	-0.18* (0.11)	My children	0.13** (0.05)	-0.04 (0.05)
Internet	0.07 (0.05)	-0.06 (0.05)	Parents/relatives	-0.03 (0.08)	0 (0.07)
Commuting to work	0.06 (0.09)	0.17** (0.08)	Nobody	-0.14** (0.06)	0.11** (0.05)
Other	0.05 (0.05)	0.02 (0.05)	Other	-0.16** (0.07)	0.05 (0.06)
Resting/relaxing	0.03 (0.05)	-0.05 (0.04)	Spouse / significant other	-0.17***† (0.05)	0.09** (0.04)
Doing housework	0.01 (0.04)	0.09** (0.04)	Work interactions	-0.41***† (0.08)	0.3***† (0.07)
Preparing food	0 (0.04)	-0.09** (0.04)	Over-distance interactions		
Drinking	-0.03 (0.05)	0.01 (0.04)	Pets	0.2 (0.16)	-0.1 (0.13)
Watching TV, Netflix or similar	-0.05 (0.04)	0.06 (0.04)	Other	0.08 (0.08)	-0.13* (0.07)
Listening to the radio	-0.08 (0.06)	0.1** (0.05)	My children	0.06 (0.07)	0.08 (0.05)
Doing nothing	-0.12 (0.13)	0.14 (0.11)	Nobody	0.04 (0.06)	-0.1** (0.05)
Using social media	-0.15***† (0.05)	0.11***† (0.04)			
Schooling children	-0.17***† (0.08)	0.3***† (0.07)			

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Shopping	-0.23***† (0.07)	0.09 (0.06)	Parents/relatives	0.03 (0.06)	0.06 (0.05)
Working/studying	-0.26***† (0.05)	0.17***† (0.04)	Friends	0 (0.06)	-0.01 (0.05)
Informing myself abt. Covid-19	-0.29***† (0.05)	0.27***† (0.04)	Spouse / significant other	-0.08 (0.06)	-0.01 (0.05)
Sleeping	-0.34***† (0.07)	-0.03 (0.06)	Work interactions	-0.27***† (0.06)	0.26***† (0.05)

Standardized relationships are presented. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$, † $p < 0.05$ after Benjamini-Hochberg adjustment. All models are based on 2795 observations from 604 individuals.

^a Positive affect is estimated as the average of the calm and happy affect items.

^b Negative affect is estimated as the average of overwhelmed, sad, bored, frustrated, lonely, and worried affect items.
