Replication of a Research Claim from Kachanoff et al. (2020),
from PsyArXiv

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(add name below when you initiate review, comment "DONE" on your name when you finish):

Reviewer #1: [Dino Krupić]

Reviewer #2: Cristina Zogmaister DONE

Reviewer #3: [NAME]

Review Period: August 19 - August 24

View-only links to: Original Paper, Original Materials, Replication Materials, Replication Analysis

Replication of a Research Claim from Kachanoff et al. (2020)

SCORE report Kachanoff_covid_xLmP_8g1

Sourcing notes for this preregistration are here.

Welcome to the replication/reproduction team! You can get started with your preregistration by clicking here.

Privacy Statement: Other teams are making predictions about the outcomes of many different studies, not knowing which studies have been selected for replication. As a consequence, the success of this project requires full confidentiality of the research process, including peer review. This includes privacy about which studies have been selected for replication and all aspects of the discussion about these replication designs.

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Sourcing Notes

The research scientists write a short set of constraints or notes about each study that are designed to help match the replication/reproduction to a team that will perform it. They are maintained as part of the project record.

- SCORE Research Scientists insert sourcing notes for Chris here.

Instructions for Preregistration Reviewers

Your role is to review preregistered research designs for clarity, completeness, and quality. For the purposes of a SCORE replication, a preregistration is high quality if it generates a protocol that is a good faith attempt to replicate the original finding. In sum, focus on whether differences in original versus replication protocols are substantively anticipated to matter for claims in the original paper (and the broader field), and be biased against spending time on speculative concerns that do not have an evidence base.

Please start by reading the Reviewer Criteria checklist. For each section, you should evaluate whether the description is complete, whether deviations from the original study (or additions, if the information was not available) are documented, and whether, all told, the decisions are consistent with a good faith replication. You don't need to fill out a copy of the checklist, but should use it as a guide to the types of information that should be present in a finished preregistration - remember that not all items will apply to all projects. At the very end of the pregistration is a final reviewer checklist where you can give your evaluation of the preregistration as a whole. When you are completely finished reviewing, please comment 'DONE' on your name on the first page of this document.

These replications are intended to be robust, high quality studies, and in some cases, this will involve deviation from the original study. For instance, all SCORE projects are preregistered, and all use sample sizes that are based on a formal power analysis, whether or not these were the case in the original study. Labs may choose to include additional 'best practices' that may not have been present in the original study, in addition to other necessary differences between the original and replication study. These are allowable, so long as they remain a good faith replication of the original finding. We are collecting a list of best practices which are the kinds of steps that labs are encouraged to take (and that you can recommend!) to increase the robustness and replicability/reproducibility of their work. Keep in mind that not all projects need to (or can) include all of these practices.

The preregistration for this paper begins here. You can also reference this list of Frequently Asked Questions for preregistration reviewers.

Privacy Statement: Other teams are making predictions about the outcomes of many different studies, not knowing which studies have been selected for replication. As a consequence, the success of this project requires full confidentiality of the research process, including peer review. This includes privacy about which studies have been selected for replication and all aspects of the discussion about these replication designs.

Instructions for Replication/Reproduction Team

General information about preregistration is available at https://cos.io/prereg. Every section should have a response from you; in the case that a section truly does not apply (e.g., “Manipulated Variables” do not exist in an observational study), you can respond with “N/A”. Some sections are indicated as multiple choice, and we ask that you bold your response(s) if one has not already been selected. All other sections are open-ended.

A Research Scientist from the Center for Open Science has provided foundational information for your SCORE project from the original paper and, where possible, additional feedback and materials from the original author(s). **This information should not be considered a complete response to a section unless otherwise noted.**

The preregistration for your replication or reproduction should provide as detailed a plan as possible of what **you** will be doing, not just describe what was done in the original paper. That plan should be written in the future tense, and reference the original paper and any original materials or correspondence with the original author as necessary to provide context or justification of any decisions made for your protocol.

You are encouraged to look over the Reviewer Criteria that will be used to evaluate your preregistration. For each question, your response should include a complete **description** (state what you will do, in enough detail that others could implement your plan), list of **deviations** (clearly state anything you added, omitted, or changed from the original study), and **rationale** (justify why your decisions are consistent with a good-faith replication of the original claim).

Materials developed for a replication do not need to be included directly within the preregistration document. Instead, please upload any materials (such as surveys, audio/visual stimuli, instructions for coders/confederates, etc.) to the “Methods and Materials” component of the OSF project for your SCORE protocol. If you create a codebook/data dictionary or dummy dataset for review, please upload these to the “Data” component. You should also upload your data cleaning and data analysis scripts to the “Analysis” component. Although we encourage you to prepare these scripts in time for the external review of your preregistration, you are not required to do so. However, you will have to provide such a script before beginning data collection for SCORE, so we strongly encourage developing it as early as possible. Any files you upload for your project should be directly referenced within the document by filename so it is clear what is being used for your replication and where reviewers can find it. (For instance: *“Each participant will see 16 of the 64 cat pictures. All stimuli are uploaded to the Methods & Materials component, as cat1.jpg, cat2.jpg...cat64.jpg.”*)

You can reach out to the SCORE Project Coordinators for additional guidance at scorecoordinator@cos.io, and you can also reference this list of Frequently Asked Questions.

Preregistration for SCORE

Study Information

1. Title (provided by SCORE)

RR TEAM INSTRUCTIONS: *This has been determined by SCORE.*

Replication of a research claim from Kachanoff et al, 2020

2. Authors and affiliations

RR TEAM INSTRUCTIONS: *Fill in the names and affiliations of your team below.*

Erin M. Buchanan, PhD[1]
Alexa R. Schlyfestone[1]
Raquel Huggins[1]

1 Harrisburg University of Science and Technology

3. Description of study (provided by SCORE).

RR TEAM INSTRUCTIONS: *This description has been provided by SCORE. Please review and make a SCORE project coordinator aware of any edits, additions, and corrections you would suggest to the paragraph. You are free to add additional descriptions of your project in a separate paragraph.*

We selected the claim that there is an impact of realistic threat on psychological distress/well-being. This reflects the following statement from the paper's abstract: "Studies reveal that both realistic and symbolic threat predict higher anxiety and lower wellbeing, and demonstrate convergent validity with other measures of threat sensitivity." Using SEM, the authors examined the association between realistic threat (at T1), and all criterion outcomes assessed one week later (at T2), simultaneously in one model. This analysis yielded that realistic threat (at T1) was positively associated with negative affect experienced over the course of a subsequent week. From Table 10: b = 4.02, p = 0.000.

4. Hypotheses (provided by SCORE with possible RR team additions)

RR TEAM INSTRUCTIONS: *The focal test for SCORE is indicated as H*. If you will test additional hypotheses (or use alternate analyses) that help you to evaluate the claim your replication/reproduction is testing, number them H1, H2, H3 etc. (You can place H* in the list wherever makes sense). Please make sure that any additional hypotheses are logical deductions/operationalizations of the selected SCORE claim or are necessary to properly interpret the focal H* hypothesis. Research that is outside this scope should be described in a separate preregistration.*

Specific points to keep in mind (please also consult the Reviewer Criteria):

- *Are the listed hypotheses specific, concise, clearly testable, and specified at the level of operationalized variables?*
- *Are hypotheses identified as directional or non-directional, and, if applicable, have the direction of hypotheses been stated? (Example: "Customers' mean choice satisfaction will be higher in the CvSS architecture condition than in the standard attribute-by-attribute architecture condition.")*
- *Does the list of hypotheses/tests indicate whether additional hypotheses are taken from the original study or modified/added by the team?*

H* (SCORE focal test): Realistic threat is positively associated with negative affect experienced over the course of the subsequent week.

No other hypotheses will be examined.

Design Plan

5. Study type (multiple choice question)

NOTE: *Select one option from the list below that applies for your study by bolding it.*

- Experiment - A researcher randomly assigns treatments to study subjects, this includes field or lab experiments. This is also known as an intervention experiment and includes randomized controlled trials.
- **Observational Study - Data is collected from study subjects that are not randomly assigned to a treatment. This includes surveys, natural experiments, and regression discontinuity designs.**
- Meta-Analysis - A systematic review of published studies.
- Other

6. Blinding (multiple choice question)

RR TEAM INSTRUCTIONS: *Select any/all of the below that apply for your study by bolding them. You will give a longer description in the next question.*

- **No blinding is involved in this study.**
- For studies that involve human subjects, they will not know the treatment group to which they have been assigned.
- Personnel who interact directly with the study subjects (either human or non-human subjects) will not be aware of the assigned treatments. (Commonly known as “double blind”)
- Personnel who analyze the data collected from the study are not aware of the treatment applied to any given group.

7. Blinding (free response)

RR TEAM INSTRUCTIONS: *Please describe the blinding procedures for your study here, including enough detail to allow the reviewers to evaluate your plan. If the details of a blinding procedure are closely tied to the experimental protocol, you can refer to longer descriptions (e.g. in your Data Collection response) so long as the information is available somewhere in the preregistration.*

Specific points to keep in mind (please also consult the Reviewer Criteria):

- *Does the preregistration comment on blinding of both participants and study personnel?*
- *Does the preregistration comment on blinding of both hypotheses and condition assignment?*

- *If the original materials do not provide substantial detail on the blinding procedures, is it clear what additions the replication is making?*

There is no blinding in this study.

8. Study Design

RR TEAM INSTRUCTIONS: *In this section, state your study design. Depending on the type of study you are conducting, this may be very brief (i.e. listing the factors and how they are manipulated, such as "2 (Color: Red/Blue) x 2 (Height:Tall/Short), between subjects"), or may be much longer. For instance, observational studies may involve more precise specification of the population and sampling strategy, or discussion of inferences involving assumptions about causal effects. Examples of study design include two-group, factorial, randomized block, and repeated measures. Is it a between (unpaired), within-subject (paired), or mixed design? Typical study designs for observation studies include cohort, cross sectional, and case-control studies.*

Specific points to keep in mind (please also consult the Reviewer Criteria):

- *Does the preregistration specify the unit of analysis?*
- *Does the preregistration describe how many treatment conditions will be used in the study, and how many conditions participants will be exposed to?*
- *Does the preregistration provide sufficient detail about how the study design deviates from or is congruent with the study design employed in the original study?*

Participants will be measured at two time points using a repeated measures (within-subject) design with approximately one week between testing times. At each time point they will be given scales present in the original manuscript: Integrative COVID-19 Threat Scale (realistic and symbolic measures developed in Study 1 of the original design), Beck Anxiety Inventory, the COVID modified Impact of Event Scale, the Satisfaction with Life Scale, the PANAS (Positive and Negative Affect Scale), the CDC Social and Hand washing measurement questions, a social distancing support scale, and a measure of behavior during the previous week. The hypothesized research question only requires a few of these for time 1, however, participants were measured for each of these at time 1 and time 2 in the original study. The original study 1 is not included in this replication (replication includes Time 1 and Time 2 from FIgure 1, excluding divergent measures, as they are not part of the primary hypothesis for this replication). No manipulated measures are present, and participants see all questions. Last, five manipulation check questions are included for data screening purposes.

Materials can be found on the OSF page at:
https://osf.io/y2qv5/?view_only=2ec84ee2a99d4b57a07f3c0aa54789ed

9. Randomization (free response)

RR TEAM INSTRUCTIONS: *If you are doing a randomized study, state how will you randomize, and at what level. If you will not randomize some factors in your study design, please draw a clear distinction regarding which factors are randomized, and how other factors are distributed or determined across units of analysis.*

Specific points to keep in mind (please also consult the Reviewer Criteria):

- *Does the preregistration describe the level at which randomization takes place? (Examples include randomization within subject, blocked by condition, by cluster, etc.)*
- *Does the preregistration describe the method of randomization that is used? (Examples include simple, block, stratified, and adaptive covariate randomization, etc.)*
- *Does the preregistration describe how the randomization is implemented? (Examples include Kish grid, random number table, statistical software package, etc.)*

No randomization will be present in this study.

Sampling Plan

In this section we'll ask you to describe how you plan to collect samples, as well as the number of samples you plan to collect and your rationale for this decision. Please keep in mind that the data described in this section should be the actual data used for analysis, so if you are using a subset of a larger dataset, please describe the subset that will actually be used in your study.

10. Existing data (multiple choice question, provided by SCORE)

- **1.1.1. Registration prior to creation of data**
- 1.1.2. Registration prior to any human observation of the data
- 1.1.3. Registration prior to accessing the data
- 1.1.4. Registration prior to analysis of the data
- 1.1.5. Registration following analysis of the data

11. Explanation of existing data (provided by SCORE)

NOTE: *For a replication, this question refers to the data from the replication itself, not the original study. Even if we have access to the data from the original study, that is **not** the data that will be used for the replication of the claim and does not need to be included in this question.*

12. Data collection procedures

RR TEAM INSTRUCTIONS: *Please describe the process by which you will collect your data. If you are using human subjects, this should include how you will identify the population from which you obtain subjects, recruitment efforts, payment for participation, how subjects will be selected for eligibility from the initial pool (e.g. inclusion and exclusion rules), and your study timeline, in addition to the experimental/observational protocol itself. For studies that don't include human subjects, include information about how you will collect samples, duration of data gathering efforts, source or location of samples, or batch numbers you will use.*

Where details are described in other questions (e.g. study design, blinding) you can refer to those questions, so long as the complete description is provided somewhere. You are strongly encouraged to supplement your description here with materials (which might include stimuli, survey instruments, code for running data collection software, instructions for experimenters) uploaded to your OSF project, in the "Materials and Methods" component. Please use the specific file names when referencing them in your description.

Specific points to keep in mind (please also consult the Reviewer Criteria):

- *Does the preregistration describe the target population, and how members of the target population are sampled for the study?*
- *Does the protocol describe in detail any materials that will be presented to participants, including variation or structure in those materials relevant to the experimental design? Are these materials available for review?*

We will recruit American participants who are over 18 years of age. Participants will be recruited from Prolific, an online participant pool, where subjects can complete surveys for compensation. The participants will be paid $9.00/hour based on the time to complete the study. Surveys are posted on Prolific, and participants who meet the criteria for the study will be able to self-enroll in the study until data collection is finished.

Participants who complete time 1 will be recruited to complete time 2, approximately one week after the original completion time. Each testing time point should be completed in approximately 30 minutes or less (all items linked above in *Materials* document). Studies advertised on Prolific generally complete in two to four days. Replication analyses should be completed by October 1, 2020.

Advertisement: You are invited to participate in a study that concerns your thoughts, attitudes, and behaviors related to COVID-19 in order to understand coping mechanisms and psychological distress that occurs during a global pandemic. You may be asked questions about your anxiety, humor, life satisfaction, and actions in the last weeks or months along with general demographic questions (age, gender).

13. Sample size

RR TEAM INSTRUCTIONS: *The analytic sample sizes below come from the SCORE power analysis (see next question). These sample sizes do not account for participant attrition, data exclusions, or otherwise missing data. Your actual recruited sample will likely need to be larger than these analytic sample sizes in order to attempt to arrive at a sufficiently powered analysis. It is at your discretion to propose a sampling approach and rationale to address this difference in target **recruited** vs target **analytic** sample sizes - you can use the suggested language below or frame it in your own words.*

Specific points to keep in mind (please also consult the Reviewer Criteria):

- *Does the description of the analytic sample size (and target sample size for recruitment, if this differs) include targets for both first round and second round data collection?*
- *If there is more than one possible 'sample size' that could be referred to (cell vs. total size, cluster levels, whole design vs. subset for focal analysis), is the distinction made clear?*

The initial target analytic sample size is **243 participants**. If a statistically significant effect is not observed after the first round of data collection, a second round will begin. The second round of

data collection will sample an additional **303 participants** for a target pooled analytic sample of **546 participants.**

IF APPLICABLE: To achieve the target analytic sample size (as defined above for each data collection round), we anticipate the need to collect a larger sample size to account for participants who do not finish the surveys, do not complete time 2, or fail to answer the manipulation check questions as described in the materials. The target sample size for recruitment is 304 participants (i.e., 243 * 1.25). If necessary, the second round of data collection will sample an additional 379 participants (i.e., 303 * 1.25) for a pooled recruited sample size of 683 participants.

If more participants than the target analytic size are collected, they will be included in the analysis at each round of data collection. We will continue recruitment until the required sample size (defined above for each round) is achieved - as described below, we can view the data manipulation checks without running the analysis to help with this determination.

14. Sample size rationale

NOTE: *Power calculations for SCORE protocols are performed by either a Research Scientist at the Center for Open Science or by one of our consultants. In some cases, the power calculation will not yet be done for your protocol by the time you begin work on it; if you urgently require a defined sample size in order to submit your IRB application or otherwise make progress on your protocol, please contact the Project Coordinators (scorecoordinator@cos.io) so we can prioritize your protocol. Otherwise, please be patient as we complete these calculations and we will notify you when the target sample size has been defined.*

Power calculations were done in accordance with the guidelines of the Social Sciences Replication Project (SSRP). The first round of data collection achieves 90% power to detect 75% of the original effect size. The pooled sample, if necessary after testing the effect on the first round of data collection, achieves 90% power to detect 50% of the original effect size.

For this replication, the power analysis can be found here: https://osf.io/uz3cx/?view_only=08aa70a261f34e2b930969de0bc1b7fa

15. Stopping rule

RR TEAM INSTRUCTIONS: *The first paragraph of this response refers to the two-stage data collection strategy for SCORE. Beyond this, your data collection procedures may not give you full control over your exact sample size; specify here how you will decide when to terminate your data collection. You will describe the specifics of what data is excluded in question 22, but*

please describe here how you will determine when to stop collecting new data, aiming to meet your analytic sample size.

Specific points to keep in mind (please also consult the Reviewer Criteria):

- *If the stopping rule is based on an estimated fall-off rate (e.g. attrition rate), is that rate justified? Does the plan specify how you will proceed if the resulting sample size is somewhat over or under the target?*
- *If the study includes post-collection data exclusion (e.g. participants are excluded who fail manipulation checks; analytic sample consists of all who fall below 1SD on some measure), does the stopping rule allow you to track inclusion without seeing the critical results?*
- *Does the preregistration make clear whether the plan for finishing data collection follows or deviates from the original study? If the original study is silent on an explicit stopping rule, is this made clear?*

The planned sample size is **243**. After achieving that sample, planned analyses will be run. If a significant effect in the hypothesized direction is found, sampling stops. If that significant effect is not found, a second round of data collection will collect data from **303** additional observations, for a pooled sample of **546**. Sampling will stop after the second round of data collection regardless of a significant effect.

The manipulation check/attention items will be examined to determine the current applicable sample size, which can be examined without analyzing the data. The sample size was increased to account for failed manipulation checks, as the items in this study may only partially meet Prolific's guidelines on rejecting poor data to failed manipulation checks. The original study indicated only that they restricted time 2 participation to one day after recruitment. We will try to recruit participants within the same window, however, not as strictly in order to achieve the desired sample size. We will use a three-day window within recruitment time.

Variables

RR TEAM INSTRUCTIONS: *The preregistration form divides variables across three questions: manipulated variables, measured variables, and indices (i.e. analytic variables derived from raw variables). Transformed variables (e.g. reaction time → log reaction time) can be defined here as well; you will discuss how those transformations are calculated in the analysis section.*

Across these questions, you should define all variables that will later be used during your analysis (including data preparation/processing). You can describe all variables in the preregistration and/or summarize and link to a data dictionary (codebook) in your repository to answer these questions; please make sure to indicate which variables are manipulated and which are measured.

If you will share data from your replication, this is also the place to state whether any variables will be removed prior to sharing the dataset (e.g. to reduce risk of participant identification or comply with copyright restrictions on scale items.)

16. Manipulated variables

RR TEAM INSTRUCTIONS: *Describe all variables you plan to manipulate and the levels or treatment arms of each variable (not applicable to an observational study). For any experimental manipulation, you should give a precise definition of each manipulated variable, e.g. "loud or quiet," should instead give either a precise decibel level or a means of recreating each level. 'Presence/absence' or 'positive/negative' is an acceptable description if the variable is precisely described. You can also refer to your data collection protocol if variable levels are more completely described there.*

Specific points to keep in mind (please also consult the Reviewer Criteria):

- *For each of these variables, does the preregistration describe how each condition will be manipulated?*
- *Does the preregistration comment on the role of each manipulated variable in the focal analyses (e.g., independent variable, moderator, etc)?*
- *Does the preregistration describe any changes from the original study in procedure, context, or instruments used for these manipulated variables (e.g., sound condition played over headphones instead of speakers)?*

There are no manipulated variables.

17. Measured variables

RR TEAM INSTRUCTIONS: *Describe each variable you will measure, including outcome measures, as well as any predictors, covariates, or descriptive information that you will measure. As with the previous questions, the answers here must be precise. For example, 'intelligence,' 'accuracy,' 'aggression,' and 'color' are too vague. Acceptable alternatives could be 'IQ as measured by Wechsler Adult Intelligence Scale', 'percent correct,' 'number of threat displays,' and 'percent reflectance at 400 nm.'*

Specific points to keep in mind (please also consult the Reviewer Criteria):

- *Does the preregistration comment on the role of each measured variable in the focal analyses (e.g., inclusion criteria, dependent variables, control variables, etc)?*
- *If the study will measure variables which will not be involved in the focal analysis, are these variables disclosed?*
- *Does the preregistration describe any changes in procedure, context, or instruments used for these measured variables (e.g., extraversion measured with EPI vs MIES)?*

We are using *formr* (Arslan, Walther, & Tata, 2020) to collect data. The survey materials are formulated into a Google Sheet, which provides a data codebook. The name column represents the name of the item in the final dataset, while the label column indicates the item shown to the participant. Other columns allow for visual styling (class), the type of item to show to the participant (i.e., mc = multiple choice, type), and the choice options shown to participants (choice1-12).
Consent: SCORE_Consent
Survey: Kachanoff_Survey

The materials can be found on our OSF page:
https://osf.io/y2qv5/?view_only=2ec84ee2a99d4b57a07f3c0aa54789ed

Measured scales include:

- **Beck Anxiety Inventory**
- **The Integrated COVID-19 Threat Scale created in the original study, which is divided into Realistic and Symbolic Threat subscales**
- **The COVID Impact of Event Scale (a modified version of the Impact of Event Scale, focusing on the Intrusion and Avoidance subscales)**
- **The Satisfaction with Life Scale**
- **The Positive and Negative Affect Scale**
- **Three questions asking about handwashing and social distancing from CDC guidelines**
- **Four questions measuring social distancing support**
- **Five questions measuring behaviors during the pandemic**

Five manipulation check items are also included.

18. Indices

RR TEAM INSTRUCTIONS: *If any of the measured variables described in Section 17 are going to be combined into a composite measure (including simply a mean), describe what measures you will use and how they will be combined. Include either a formula or a precise description of your method. If you are using a more complicated statistical method to combine measures (e.g. a factor analysis), you can note that here but describe the exact method in the analysis plan section.*

Specific points to keep in mind (please also consult the Reviewer Criteria):

- *Does the preregistration specify each of the composite measures (e.g. mean scores, factor scores) that are needed for the focal analysis, and which of the measured variables in Section 17 are used in each one (e.g. the happiness, joy, and satisfaction items will be used to create the 'positive feelings' measure)?*
- *Does the preregistration provide a detailed description of the methodology or a precise formula that will be used to construct each composite measure?*

- **Beck Anxiety Inventory**
    - **Scores are summed across the 9 item scale.**
- **The Integrated COVID-19 Threat Scale created in the original study, which is divided into Realistic and Symbolic Threat subscales**
    - **Scores are averaged separately for Realistic and Threat Subscales.**
- **The COVID Impact of Event Scale (a modified version of the Impact of Event Scale, focusing on the Intrusion and Avoidance subscales)**
    - **Scores are summed separately for Intrusion and Avoidance.**
- **The Satisfaction with Life Scale**
    - **Scores are averaged across the five item scale.**
- **The Positive and Negative Affect Scale**
    - **Scores are summed across the Positive and Negative Items separately.**
- **Three questions asking about handwashing and social distancing from CDC guidelines**
    - **One item is included for handwashing.**
    - **Two social distancing items are averaged.**
- **Four questions measuring social distancing support**
    - **Scores are averaged.**
- **Five questions measuring behaviors during the pandemic**
    - **Scores are averaged into two subscales: Norms and American.**

Exact item scoring can be found on the Materials document on our OSF page: https://osf.io/y2qv5/?view_only=2ec84ee2a99d4b57a07f3c0aa54789ed

Analysis Plan

19. Statistical models

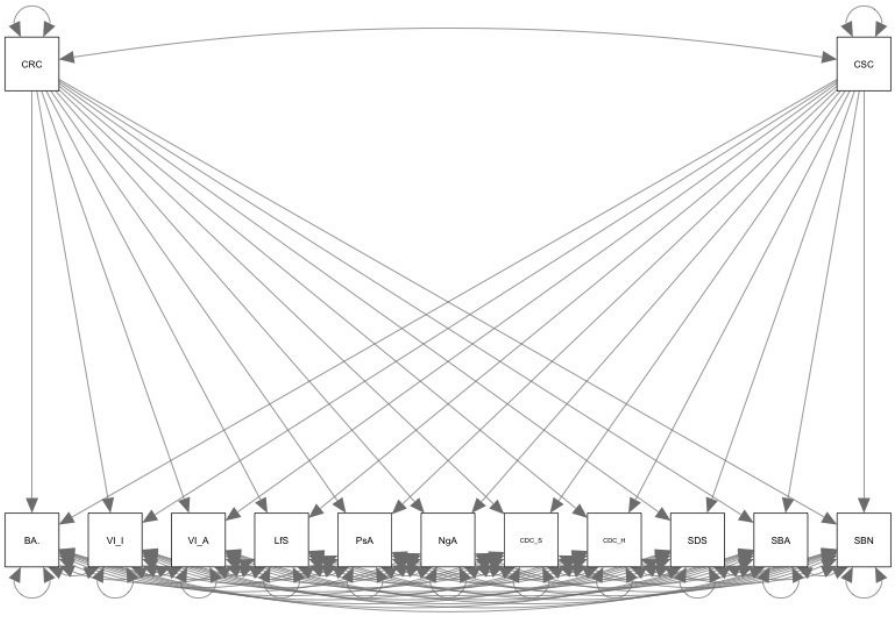
RR TEAM INSTRUCTIONS: *This section should describe in detail the analysis that will be performed to replicate the focal result. This analysis must align as closely as possible with the original study's analysis, even if you have identified limitations in the original study. The level of detail should allow anyone to reproduce your analyses from your description below. Examples of what should be specified: the model; each variable; adjustments made to the standard errors and to case weighting; additional analyses that are required to set up the focal analysis ; the software used.*

Beyond the replication of the focal analysis from the original study, it is at your discretion to test the claim using other analytic approaches as a check of the robustness of the claim. The original test should be listed first and be clearly distinguished from any other tests. If you are testing additional confirmatory hypotheses, describe them in the same order as you numbered them in the "Hypotheses" section above and make clear reference to the specific hypothesis being tested for each.

Specific points to keep in mind (please also consult the Reviewer Criteria):

- *Does the preregistration specify which statistical model will be used to provide the 'focal evidence' for the SCORE test (e.g. a regression coefficient in a larger multiple regression model), and does it correspond closely to the model and evidence from the original study?*
- *Does the preregistration describe each variable that will be included in the focal analysis, and what role each variable has (e.g. dependent variable, independent variable)?*
- *Does the preregistration include a detailed specification of the focal analysis, including interactions, lagged terms, controls, etc.?*

For the purposes of SCORE, to test **H*** in line with the original paper, [I/we] will use **a structural equation model provided in the original analysis code, analyzed using the *lavaan R* package. The figure below was generated with *semPlot* to display the model:**



From the paper: Using SEM, we examined the association between symbolic threat and realistic threat (at T1), and all criterion outcomes assessed one week later, simultaneously in one model. We covaried symbolic and realistic threat in the model, and, we covaried the nine psychological response outcomes in the model.

Therefore, the COVID Realistic and Symbolic subscales at time 1 are used to predict each of the criterion measures (Beck Anxiety, Intrusion, Avoidance, Life Satisfaction, Positive Affect, Negative Affect, CDC Social, CDC Handwashing, Social Distance Support, Behavior Norms, Behavior American). The COVID Realistic and Symbolic scales were allowed to covary. The criterion measures were also allowed to covary on their error terms. The exact model in *lavaan* can be found at:
https://osf.io/xshv6/?view_only=7483d14537804056936f2d19971a2385

20. Transformations

RR TEAM INSTRUCTIONS: *This section should describe how any of the measured variables or composite measures mentioned above will be transformed prior to the analyses listed in Section 19. These are adjustments made to variables **after** measurement or measure creation, and might include centering, logging, lagging, rescaling etc. Please provide enough detail such that anyone else could reproduce the transformations based on the description below.*

Specific points to keep in mind (please also consult the Reviewer Criteria):

- *Does the preregistration specify which of the measured variables or composite measures will need to be transformed prior to the focal analysis?*
- *For each variable needing transformation, does the preregistration adequately describe the transformations, including any centering, logging, lagging, recoding, or implementation of a coding scheme for categorical variables?*
- *For any categorical predictors that are included in a regression, does the preregistration indicate how those variables will be coded (e.g. dummy coding, summation coding, etc.) and what the reference category will be?*

No transformations will be performed.

21. Inference criteria

RR TEAM INSTRUCTIONS: *This section describes the precise criteria that will be used to assess whether the hypotheses listed above were confirmed by the analyses in Section 19. The default language below only applies to the test of the SCORE claim, **H***. It is at your discretion to describe the inferential criteria you will use for any additional analyses. They need not rely on p-values and/or the same alpha level we have specified for **H***.*

If the additional analyses will use multiple comparisons, the inference criteria is a question with few "wrong" answers. In other words, transparency is more important than any specific method of controlling the false discovery rate or false error rate. One may state an intention to report all tests conducted or one may conduct a specific correction procedure; either strategy is acceptable.

Specific points to keep in mind (please also consult the Reviewer Criteria):

- *For each hypothesis listed in the Hypotheses section above, does the preregistration clearly describe the inference criteria necessary to call the replication attempt for that hypothesis test successful, specified at the level of the operationalized variables?*
- *Example:"...For this replication attempt, this criteria is met by a statistically significant difference in customers' mean choice satisfaction in the CvSS architecture condition compared to the standard attribute-by-attribute architecture condition, with the mean higher in the CvSS architecture condition than in the standard attribute-by-attribute architecture condition."*

Criteria for a successful replication attempt for the SCORE project is a statistically significant effect (alpha = .05, two tailed) in the same pattern as the original study on the focal hypothesis test (**H***). For this study, a successful replication is a positive coefficient on the term for realistic threat at time 1 in the SEM predicting negative affect one week later.

No other hypotheses are examined.

22. Data exclusion

RR TEAM INSTRUCTIONS: *The section below should describe the rules you will follow to exclude collected cases from the analyses described in Section 19. Note that this refers to exclusions **after** data collection; exclusion criteria that prevent a case from entering your recruitment sample should be described in earlier sections. Please be as detailed as possible in describing the rules you will follow (e.g. What is the specific definition of outliers you will use? Exactly how many attention checks does a participant need to fail before their removal from the analytic sample?).*

Specific points to keep in mind (please also consult the Reviewer Criteria):

- *Does the preregistration comment on whether any cases recruited for the study sample will be excluded prior to data analysis?*
- *If yes, does the preregistration provided detailed instructions on how the exclusions will be performed (e.g. Is the definition of outlier provided? Is the number of attention checks failed before a participant is excluded specified?)*

Five attention checks are included (taken from original study directly):

We have a total of 5 attention checks. For each, if subjects pass it, they receive a value of 1, if they fail it, they receive a value of zero. We will only analyze participants who score a 4 or 5.
1. In the Beck Anxiety Inventory, we ask people to "choose 'Moderately'" as one of the questions. We fail all subjects who do not choose option2/"moderately."
2-4: A task with three sliders (labeled x,y,z) tells subjects "This is an attention check. Please set X at 50, and make it so Y is smaller than X, and Z is smaller than Y. Please also make sure that Y is evenly divisible by 5". For each of these that is failed, subjects receive a fail.
5: In the question that asks "Do you have any comments regarding this survey?" there is a picture of a dog with the text over top that asks people to simply write the sound that the dog makes if they are paying attention. We fail subjects who do not write something that seems like it could be a sound that a dog makes.

Note: the only place to find this information is here: https://aspredicted.org/blind.php?x=2ed62c from the original authors. In summary, participants can miss one attention check and still be included in the analysis.

23. Missing data

RR TEAM INSTRUCTIONS: *The section below should describe how missing or incomplete data will be handled. Please be as detailed as possible in describing the exact procedures you will*

follow (e.g. last value carried forward; mean imputation) and any software required (e.g. We will use Amelia II in R to perform the imputation).

Specific points to keep in mind (please also consult the Reviewer Criteria):

- *Does the preregistration comment on how missing or incomplete data will be addressed (e.g. casewise removal, missing data imputation)?*
- *If applicable, does the preregistration specify how many missing variables will lead to a case's removal (e.g. If a subject does not complete any of the three indices of tastiness, that subject will not be included in the analysis.)?*
- *If applicable, does the preregistration describe how missing data imputation will be performed, including relevant software?*

From examining the SPS and R syntax provided with the study, it appears that missing values were ignored when present, and sum/average scores were created without regard to any missing points. Their data appears complete (i.e. no missing values), which may not happen in a replication. Therefore, we will use participants who complete at least 80% of the scale and sum/average scores when appropriate.

24. Exploratory analysis (Optional)

RR TEAM INSTRUCTIONS: *If you plan to explore your data set to look for unexpected differences or relationships, you may describe those tests here. An exploratory test is any test where a prediction is not made up front, or there are multiple possible tests that you are going to use. A statistically significant finding in an exploratory test is a great way to form a new confirmatory hypothesis, which could be registered at a later time. If any exploratory analyses involve additions to the data collection procedure beyond what was performed in the original study (e.g. additional items on the survey; running another condition in the experiment), please describe them below.*

No exploratory analyses will be calculated.

25. Other

RR TEAM INSTRUCTIONS: *This section serves two purposes. First, please use this section to discuss any features of your replication plan that are not discussed elsewhere. Literature cited, disclosures of any related work such as replications or work that uses the same data, plans to make your data and materials public, or other context that will be helpful for future readers would be appropriate here. Second, please also re-surface any major deviations from earlier in the preregistration that you expect a reasonable reviewer could flag for concern. Give a summary of these deviations, focusing on larger changes and any possible challenges for comparing the results of the original and replication study.*

Specific points to keep in mind (please also consult the Reviewer Criteria):

- *Does the preregistration reference other sections of the preregistration where substantial deviations from the original study have been described (including deviations due to differences in location or time compared to the original study)?*
- *Does the preregistration comment on plans to make the data and materials from the replication study public?*

Data, materials, and scripts will be made public as part of the SCORE project plans.

Final review checklist

REVIEWER INSTRUCTIONS: *For the following questions, reviewers please indicate whether you can 'sign off' on the following items by adding a comment. You can update this response as the lab moves through revisions during the review period!*

- Included with this pre-registration are the specific materials needed to conduct the replication (surveys, stimuli, etc). If not,
    - Have the pre-registration authors detailed when these materials will be made available prior to final registration?
    - Can you evaluate whether this preregistration represents a good-faith replication of the original study without seeing these materials?
- Included with this pre-registration are the specific analytic scripts/code/syntax that will be used for the final analysis. If not,
    - Have the pre-registration authors detailed when these analyses will be made available prior to final registration?
    - Can you evaluate whether this preregistration represents a good-faith replication of the original study without seeing these materials?
- I have reviewed all sections of this pre-registration, and I believe it represents a good-faith replication attempt of the original focal claim.