Predictors of COVID-19 booster vaccine intent (UPDATED #78122) (#78370)

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Author(s)
Kirsten Barnes (University of Sydney) - kirsten.barnes@sydney.edu.au
Ben Colagiuri (University of Sydney) - ben.colagiuri@sydney.edu.au

1) Have any data been collected for this study already?
It's complicated. We have already collected some data but explain in Question 8 why readers may consider this a valid pre-registration nevertheless.

2) What's the main question being asked or hypothesis being tested in this study?
COVID-19 booster vaccine programmes are being implemented across a growing number of countries. However, little is known about the factors associated with increased booster intention. The present study (survey data collected as part of a larger project investigating the effect of framing on booster intentions: AsPredicted#78120) takes an exploratory approach to investigate the COVID-related factors (e.g., vaccine history, side effect familiarity and experience, COVID-19 exposure and concern) that predict self-reported willingness to receive a booster vaccine.

Secondary analysis explores differences in booster perceptions dependent on vaccine familiarity (i.e., same as previous vaccine, different but familiar vaccine, different and unfamiliar vaccine). It is hypothesised that positive booster perceptions (increased vaccine intention, reduced perception of vaccine risk, reduced perception of vaccine side effect severity, and increased vaccine contentment) will increase with vaccine familiarity.

3) Describe the key dependent variable(s) specifying how they will be measured.
The primary outcome variable concerns the self-reported intention to be vaccinated. This will be assessed via a single-item measure ("The rollout of booster COVID-19 vaccinations has begun in the UK. If offered, how likely would you be to accept a booster vaccination?"), accompanied by a 100-point Visual Analogue Scale (VAS) with anchors at 0 (definitely would not accept vaccine) and 100 (definitely would accept vaccine).

4) How many and which conditions will participants be assigned to?
All participants will complete the same survey items included in this study.

Participants will be randomised to one of 12 experimental conditions for a separate study (see AsPredicted #78369). However, this randomisation occurs AFTER the point at which the present study is complete and is therefore irrelevant for the current study.

5) Specify exactly which analyses you will conduct to examine the main question/hypothesis.
Primary analysis is a path model exploring the predictors of booster vaccine intention.

The model will be pruned to remove non-significant predictors, starting with the variable with the smallest standardised beta. Change in model fit will be assessed at each iteration. Variable removal will only take place where the overall model is significantly improved ($p<.05$).

As stated, the primary outcome is booster vaccine intention. Predictor variables are: 1) age; 2) months since last COVID-19 vaccine; 3) previous COVID-19 vaccine type (AstraZeneca or Pfizer – see inclusion criteria below); 4) familiarity with vaccine side effects (across single-item ratings for AstraZeneca, Pfizer, and Moderna vaccines where intercorrelated); 5) single-item side effect severity rating regarding first COVID-19 vaccine; 6) single-item side effect severity rating regarding second COVID-19 vaccine; 7) personal COVID exposure (yes/no); 8) COVID exposure significant others (yes/no); 9) COVID-19 concerns scale (factor analysis of five items taken from the World Health Organisation BeSD measure).

Two subsidiary analyses will run exploring the association between severity of COVID-19 symptoms (personal – regression model 1; significant other – regression model 2) on the primary outcome, among those participants with exposure to COVID-19.

The above states our analysis plan prior to any data collection. Based on a soft launch (9.4% of the total sample), we will do the following if the primary outcome is found to be highly skewed (>50% at ceiling): 1) the primary outcome will be dichotomised (VAS score 100 vs. all other scores) and the above path model will be run; 2) a secondary path model with a linear outcome (i.e., excluding VAS scores of 100) will be performed with the same predictors.

6) Describe exactly how outliers will be defined and handled, and your precise rule(s) for excluding observations.
Participants must:
1) be 18 years of age or older
2) be fluent English speakers
3) currently reside in the UK
4) have had two doses of either an AstraZeneca or Pfizer COVID-19 vaccine (no other combination)
5) not know of any medical reason (e.g., allergy) that would prohibit acceptance of either the AstraZeneca or the Pfizer COVID-19 vaccine
6) not have received a third booster dose of a COVID-19 vaccine

Participants will be screened and those ineligible to participate will be excluded prior to informed consent.

All serious attempts at survey completion will be retained in the dataset. Non-serious attempts are categorised as follows: 1) those completing the survey quicker than a reasonable reading rate (8 minutes, 5th percentile of soft-launch data); 2) failure to answer 'catch' questions appropriately; 3) stating that side effects were experienced, then skipping all specific side effect items (i.e., inconsistent answers); 4) difference in previous vaccine type (AstraZeneca vs. Pfizer) identified during screening and during the survey (i.e., inconsistent answers); 5) spending more than five minutes on the timed manipulation page; 6) respondents stating that they had receiving a specific vaccine then later stating that they had never heard of that vaccine (i.e., inconsistent answers); 7) consistently clicking on the same rating.

7) How many observations will be collected or what will determine sample size? No need to justify decision, but be precise about exactly how the number will be determined.
We will stop testing once the full sample has been collected (1,200 participants) or until December 1st, 2021, whichever occurs first.

Sample size is determined by a power analysis with an alpha of .05 and power of 95% to detect a small effect size (f2 = 0.02) with up to 9 predictor variables in a regression model (N = 1,188). This number was then increased to ensure an equal number of participants across the 12 experimental conditions (each N = 100) in a separate study with concurrent data collection (see AsPredicted #78369).

8) Anything else you would like to pre-register? (e.g., secondary analyses, variables collected for exploratory purposes, unusual analyses planned?)
A within-subjects secondary analysis will be run exploring whether there is a change in booster perceptions dependent on vaccine continuation between previous COVID-19 vaccine-type (AstraZeneca or Pfizer) and the booster on offer, or a switch to a different but familiar or unfamiliar vaccine.
The primary outcome is booster vaccine intention (as above). Secondary outcomes are: perception of booster vaccine risk (single-item); perception of booster vaccine side effect severity (single-item); vaccine contentment (data reduction of three items (satisfaction, happiness, anxiety) where intercorrelation exists). In the case of highly skewed data, the same steps as above will be performed (i.e., dichotomisation and reduction of the outcome).

A soft launch (running 27th October 7:19pm – 28th October 4:47am AEDT) was conducted to confirm that the survey structure and procedure functioned as intended. 140 respondents provided complete data, of which 27 were excluded (final n = 113; 9.4% of the total sample).

Descriptive statistics were performed on the primary outcome (booster intention), revealing potential ceiling effects in the data. We have updated our primary analysis to account for this eventuality before we collect any more data (see Section 5).

Two additional exclusion criteria have been added: 1) participants spending five minutes or more reading the timed manipulation materials; 2) participants who respond that they received a previous vaccine type, then later indicate that they have never heard of that specific vaccine (i.e., inconsistent response). Based on soft launch data, we have also updated an existing exclusion criterion: participants will be removed when taking <=8 minutes to complete the survey (i.e., 5th percentile of the soft launch data).

No formal analysis was run and we have retained our original preregistration submitted prior to any data collection (Predictors of COVID-19 booster vaccine intent (#78122), created 10/26/2021 10:33 PM (PT)) for comparison.

IMPORTANT
This pre-registration is part of a set of similar and related pre-registrations sharing at least one author. When one of these pre-registrations was shared by an author, the rest were shared automatically. Links to all of them, including this one, appear below:

https://aspredicted.org/8e6af.pdf
https://aspredicted.org/d9ws9.pdf