Pre-analysis plan: AFSA online ‘consequences tool’

Key dates

Pre-registration on the AEA RCT registry:	9 March 2021
Trial launch (online):	17 February 2021
Trial closed:	11 March 2021

Policy problem

The Australian Financial Securities Authority (AFSA) is responsible for administering personal bankruptcy laws in Australia. AFSA is currently digitising its services and from 1 October 2020 has offered an **entirely online bankruptcy form**.

To ensure people understand the consequences of bankruptcy, the application process highlights these consequences a number of times:

- **A ‘consequence tool’** that an applicant completes before starting the application process,
- **‘Prescribed information’** that appears at the start of the bankruptcy form, and
- Conditional and static prompts/warnings that appear when the applicant enters a certain value into the application form, or when it is most relevant to the applicant.[1]

Trial aim

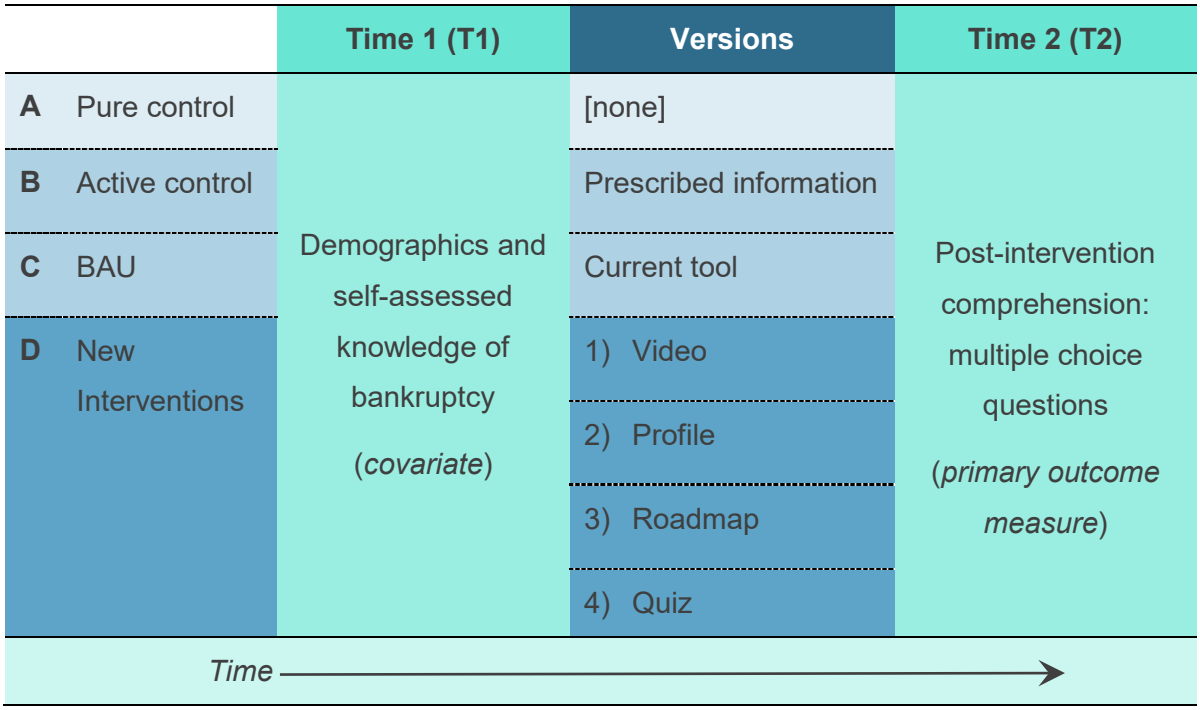
The aim of this trial is to evaluate the effectiveness of four new ‘consequences tool’ interventions in teaching people the consequences of bankruptcy, compared to the current tool, to the prescribed information, and to no tool. Participants in the trial will be recruited from the general population (they are *not* bankruptcy applicants).

[1] Subject of a separate trial

Interventions

The trial will be a 7-arm between-subject online experiment. Participants will be randomly assigned to one of 4 new interventions, to a baseline condition of no information ("pure control"), to read the prescribed information ("active control"), or to the current consequences tool ("business-as-usual"). After the intervention participants will answer 13 comprehension questions about bankruptcy. See Figure 1 for an illustration of the trial design.

Figure 1: Trial design



Outcome measures

Primary outcome measure

The primary outcome measure is **comprehension of the consequences of bankruptcy**. We will assess comprehension using a 13-question multiple choice quiz administered after the intervention (at T2; see Figure 1 above). Each question has four response options, including "I don't know". Only one of the response options is correct. Participants will receive a score out of 100 (percent correct) by summing the number of correct responses, dividing by 13 and multiplying by 100. This comprehension score will be our primary outcome measure.

Secondary outcome measure

Participants will be asked to indicate how confident they feel that they understand the consequences of bankruptcy (6-point scale from 0 = not at all confident, to 5 = completely confident). This item will be our secondary outcome measure.

Population and sample selection

Our population of interest is the general population of Australian adults. Participants will be 6,600 people recruited by Dynata from their participant pool (i.e., not bankruptcy applicants), and will be between 18 and 65 years old. They will otherwise be representative of the Australian population on gender, age (three bands: 18-34, 35-49, 50-64). Age and gender quotas are interlocking. We will also aim for location (metro/regional) and employment statistics to match the general population (soft quotas) or as close as possible given the constraints of Dynata's panel and our time frames. We do not have any exclusion criteria. Participants complete the trial on their own devices.

Hypotheses

H1: $A < B$

$A < C$

Participants in the active control (B) and BAU (C) conditions will achieve a higher score on the comprehension questions than participants in the pure control group (A).

H2: $B \neq C$

$B \neq D$

Scores will differ for participants in the current consequences tool (BAU; C) compared to the current prescribed information (active control; B). Scores will also differ for participants in the different intervention groups (D), compared to the current prescribed information (active control; B). We will conduct these analyses separately for interventions D1 to D4.

H3: $C \neq D$

Scores will differ for participants in the different intervention groups (D), compared to the current consequences tool (BAU; C). We will conduct these analyses separately for interventions D1 to D4.

We will use one-tailed *p*-values to evaluate the evidence for hypotheses H1, and two-tailed *p*-values to evaluate the evidence for hypotheses H2 and H3 (1-4).

Secondary comparisons

In order to “pick a winner” among the new interventions we will compare each new intervention to each new other intervention (D1 to D2, D3, D4, etc) and to pure control (A). We are conscious this involves many different comparisons. We will not adjust our *p*-values, but will treat marginal results with caution.

Randomisation

This trial is an individually randomised online experiment. Participants will be randomised to 1 of 7 cells (4 new interventions, 1 current consequences tool, 1 prescribed information, 1 pure control). Randomisation will be done by Qualtrics (the survey software), by giving each participant a 1/7 probability of being assigned to each trial arm. This means that we may not get *exactly* the same number of people in each arm. However, Qualtrics also provides an option to “ensure even allocation”, which means that cell sizes will not become too uneven.

The randomisation will be stratified by the device participants are using to access the survey. We will use meta-data to determine whether participants are completing the experiment on a mobile device (or not). If they are not on a mobile device, they will be randomised as described above. However, if they are using a mobile device, the “roadmap” intervention will not function as intended. Therefore, these participants will only be randomised to 1 of 6 cells (excluding the roadmap condition). This “two-pronged” randomisation will not affect our estimates for the conditions other than the roadmap. For the roadmap intervention, we will be limited in our ability to generalise (if desktop only participants differ systematically from the rest of the population). The roadmap intervention will also have a lower sample size than the other interventions.

Sample size and power calculations

We plan to recruit a sample of 6,600 participants, for a total of at least 940 people per cell of the design (except the roadmap intervention; see above). Based on results from a pilot study, a Cohen’s *d* of 0.20 would translate to a 0.6-point difference in raw comprehension scores (scale from 0 to 13).

H1: When comparing prescribed information (B; n = 940) or the current consequences tool (C; n = 940) to pure control (A; n = 940) we will have 90% power to detect a small effect (Cohen’s *d* = 0.14) in a 1-sided test (alpha = .05).

H2: We have conducted a sensitivity analysis to explore the range of effect sizes we will be able to detect when comparing the prescribed information (n = 940), to each of the interventions (n = 940) for a range of power values. Keeping alpha at .05, with power from 80% to 95% we'll be able to detect effects from 0.13 to 0.17 (Cohen's *d*) in a 2-sided test.

H3: The sensitivity analysis for comparing the current consequences tool (n = 940), to each of the interventions (n = 940) is the same as the above.

For all H2 and H3 comparisons that include the "roadmap" intervention (D3), we will only use the subset of the sample that completed the trial on a non-mobile device. This means we will have less power to detect differences between the roadmap intervention and the other interventions.

Method of analysis

We will use ordinary least squares (OLS) regression with robust standard errors (HC2) to estimate the effects of our intervention. All effect estimates, confidence intervals, and *p*-values will be derived from the following model:

$$1.\ y = a + \beta_1 T + \beta_2 X + \beta_3 XT\ + \varepsilon$$

Where *Y* is participants' post-intervention score (percent correct), *T* is a binary indicator of which intervention group the participant was in (depending on the analysis), *X* is a vector of covariate (participants' self-assessed knowledge of bankruptcy, treated as a continuous variable, 0-5) and block indicators (device type: mobile vs non-mobile), and ε is the error term. The co-efficient β_1 indicates the difference in participants' comprehension, across the two intervention groups being analysed (holding everything else constant).

For all comparisons that include the "roadmap" intervention (D3), we will only use the subset of the sample that completed the trial on a non-mobile device, and we will not include the block indicator in the model (as it will be a constant).

Trial threats

The only trial threat is the potential for differential attrition: There is the potential for **missingness** to vary due to treatment status – if, for example, participants drop out at higher rates from the "roadmap" or "video" interventions. We will assess this by examining completion rates for each of the interventions. If it is a strong effect, we

will calculate bounds on the results from the affected interventions, and interpret any effects with caution.

Participants will not be blind to the fact that they are participating in a study, or to which intervention group they are in. However, they will have no knowledge of what the other intervention groups involve.

Interpretation of results

The main question of interest is whether a consequences tool can help people understand the consequences of bankruptcy. **We will consider *p*-values together with effect size, robustness checks and design limitations** to assess the strength of a finding. AFSA already have a consequences tool live on their website. Varying the details of the consequences tool is therefore relatively low cost, and even small effects could be practically meaningful.

We also have a few sources of **additional data** about how participants perceive and use the interventions (e.g., which aspects do they like, how long do they spend on it). These data will be used in interpreting the main effects and providing recommendations to AFSA.

We are not planning to exclude any **outliers**. (We do not expect to observe any outliers, as our outcome measures are scores on a multiple choice quiz (0-13) and self-reported confidence on a scale from 0 to 5.)

Pre-analysis plan commitments

The trial was launched before this pre-analysis plan was completed. But no analyses have been undertaken prior to the completion of this pre-analysis plan. We will be transparent about, and provide justification for, any deviations (additions or omissions) from this plan.