Developing a Scale to Measure Attitudes Towards Mandatory Vaccination

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Rationale

- A variety of scales exist to measure general attitudes towards vaccination and their psychological antecedents (e.g., Betsch et al., 2018, Sarathchandra et al., 2018)

- However, none have been developed to specifically and comprehensively measure attitudes towards vaccination mandates

- Integral to the MandEval project(Study 2)

- Aims:
  - To develop a validated, reliable measure of attitudes towards vax mandates (for MandEval, wider use in vaccination social science, & potential generalisation/transfer to other coercive policies)
  - Shed light on the underlying structure of attitudes towards mandates

Procedure

1. Item generation
2. Cognitive interviews
3. Initial survey
4. Exploratory factor analysis
5. Confirmatory factor analysis
6. Implementation

1. Item Generation

- Process of literature review and expert consultation and discussion
- Identified 13 prospective dimensions underlying mandate attitudes
- A total of 96 items were developed to comprehensively measure these dimensions (7-pt Likert)
- A scenario description was also developed to capture the pandemic and mandate context
- Items were refined for content validity in consultation with the expert team
- 75 items remained across the 13 prospective dimensions

1. Item Generation - Dimensions

Dimension	Example item
1. Acceptability	In the event of another pandemic occurring, I would be in favour of a mandatory vaccination policy
2. Active support	If a mandatory vaccination policy was implemented, I would be likely to express a positive opinion about it on social media
3. Compliance	If a mandatory vaccination policy was implemented, I would still try to avoid being vaccinated
4. Effectiveness	I believe that having a mandatory vaccination policy would help to control the spread of the disease
5. Evidence	For a mandatory vaccination policy to be implemented, there should be evidence that the vaccine reduces the spread of the disease
6. Expected outcomes	I believe that having a mandatory vaccination policy would help protect my family and friends from the disease
7. Rights	I believe that having a mandatory vaccination policy takes away people's freedom to live normal lives
8. Fairness	I believe that mandatory vaccination policy would be fairer if it only imposed vaccine requirements for those at high risk from the disease
9. Sanctions	If a vaccination mandate was implemented the government should impose serious penalties for non-compliance
10. Exemptions	If a mandatory vaccination policy was implemented, there should be exemptions for religious beliefs
11. Trust	If a mandatory vaccination policy was implemented, it would reduce my trust in the government
12. Affective response	If a vaccination mandate was implemented, I would feel angry
13. Legitimacy	I believe that the government cannot legitimately require people to be vaccinated

2. Cognitive Interviews

- Cognitive interviews were then conducted with members of the public to further refine the items
- Two rounds (*N*=12 total)
- Participants were presented the draft items and asked to read them, paraphrase each item's meaning, and asked about how they would interpret and answer it, and the thought process(es) behind their answers
- After each round of interviews, researchers' notes and comments on responses to each question were reviewed and items were amended, added to, or removed to ensure items a) reflected the target construct(s), and b) were understood and interpreted correctly
- This process resulted in a draft scale containing 59 items after round 1, further refined to 55 items after round 2

2. Cognitive Interviews – question guide

1. [Prompt participant to read question aloud]
2. What do you think the question is asking you?
   (Alternative: Can you rephrase the question in your own words?)
3. Did the question make sense to you? (If not, why?)
4. Is it clear or unclear what this question is asking? (If unclear, why?)
5. Are there other ways of asking this question that would be clearer?
6. Do you feel like you can select a response that suits you from the ones available?
   (Why? How accurate would you say your response is?)
7. How did you decide on your answer? (What were you thinking about when you decided how to answer? Was there anything in particular that affected your decision?)
8. [If similar to a previous question in the same section]
   Do you see a difference between this question and the previous question about (xxx)?
   (If so, what is the difference?)

3. Initial Survey

- The draft scale (55 items) was then programmed into a Qualtrics survey
- Demographic questions and other measures of vaccination attitudes and behaviour (for validation) were also included
- Dimensions were presented in random order; scale items were randomized within dimensions
- Survey was administered to a general population sample of Australian adults (*N*=1007)
- The sample was split in two randomly, with half (*n*=504) being used to conduct exploratory factor analysis, and the other half (*n*=503) to conduct confirmatory factor analysis

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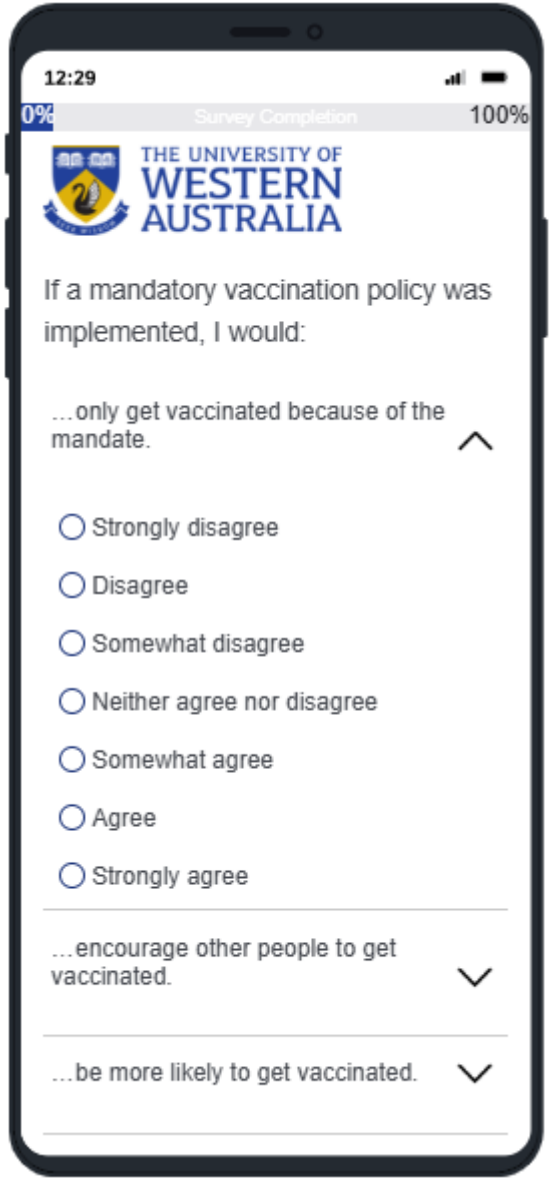
If a mandatory vaccination policy was implemented, I would:

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
...only get vaccinated because of the mandate.	○	○	○	○	○	○	○
...encourage other people to get vaccinated.	○	○	○	○	○	○	○
...be more likely to get vaccinated.	○	○	○	○	○	○	○
...think that other people should follow the mandate.	○	○	○	○	○	○	○
...try to avoid being vaccinated.	○	○	○	○	○	○	○

→

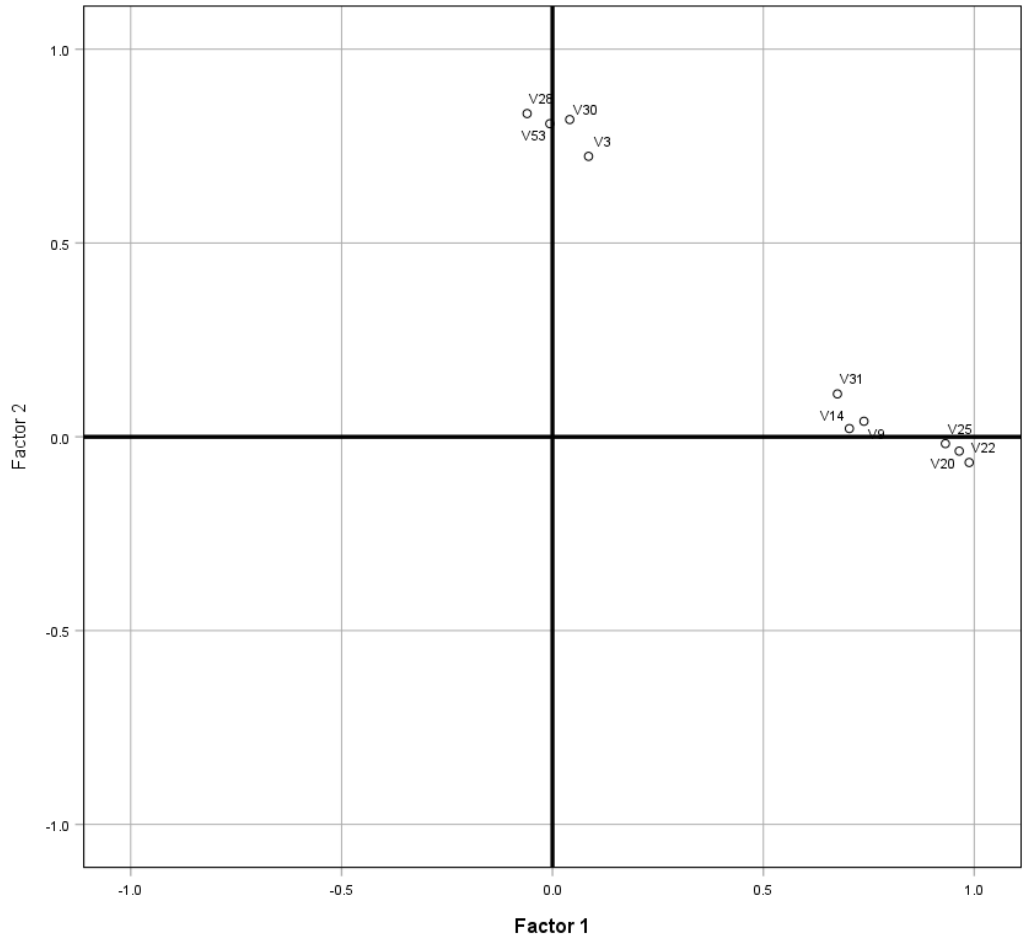


4. Exploratory Factor Analysis

- EFA Conducted in SPSS (*n*=504)
- Negatively worded items were reverse-coded (NB. only changes valences of results / interpretation)
- Iterative process; multiple rounds of analysis and item reduction/refinement
- Maximum likelihood model; direct oblimin rotation
- Two-dimensional structure of vaccination mandate attitudes was identified
- Final (draft) version of the mandate attitudes scale was established and validated, containing 10 items.

4. Exploratory Factor Analysis – 10 items, 2 factor solution

Factor Plot in Rotated Factor Space



Pattern Matrix[a]

	Factor	
	1	2
…prefer that a mandatory vaccination policy was not put into place.		.724
…be more likely to get vaccinated.	.739	
…help to increase the rate of vaccination.	.704	
…help protect me from the disease.	.964	
…help protect the community from the disease.	.988	
…be a safe response to the threat of the disease.	.932	
…it should be a personal choice whether to get vaccinated or not. (I believe that…)		.834
…infringe on people's rights. (I believe that having a mandatory vaccination policy would….)		.818
…make vaccination a shared responsibility for the whole community.	.676	
…should not have the power to require people to be vaccinated. (I believe that the government…)		.808

Extraction Method: Maximum Likelihood.

Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 4 iterations.

4. Exploratory Factor Analysis – Reliability

- Scale alpha = .933

	Alpha if Item Deleted
…prefer that a mandatory vaccination policy was not put into place.	.929
…be more likely to get vaccinated.	.927
…help to increase the rate of vaccination.	.929
…help protect me from the disease.	.921
…help protect the community from the disease.	.921
…be a safe response to the threat of the disease.	.921
...it should be a personal choice whether to get vaccinated or not. (I believe that...)	.930
…infringe on people's rights. (I believe that having a mandatory vaccination policy would....)	.926
…make vaccination a shared responsibility for the whole community.	.926
…should not have the power to require people to be vaccinated. (I believe that the government...)	.929

- Factor 1 alpha = .936

	Alpha if Item Deleted
…be more likely to get vaccinated.	.932
…help to increase the rate of vaccination.	.935
…help protect me from the disease.	.915
…help protect the community from the disease.	.915
…be a safe response to the threat of the disease.	.916
…make vaccination a shared responsibility for the whole community.	.931

- Factor 2 alpha = .881

	Alpha if Item Deleted
…prefer that a mandatory vaccination policy was not put into place.	.855
...it should be a personal choice whether to get vaccinated or not. (I believe that...)	.854
…infringe on people's rights. (I believe that having a mandatory vaccination policy would....)	.834
…should not have the power to require people to be vaccinated. (I believe that the government...)	.846

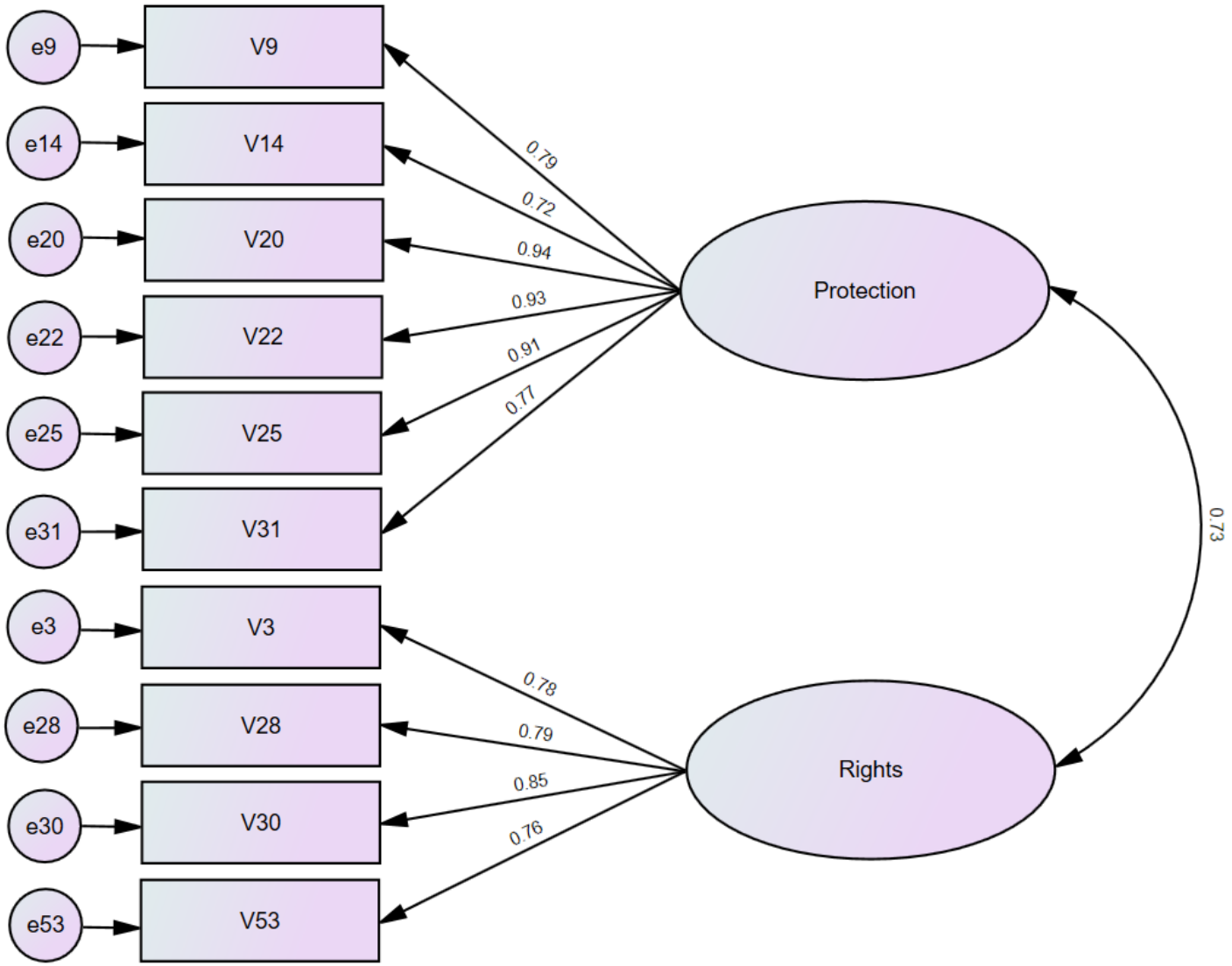
5. Confirmatory Factor Analysis

- Conducted using SPSS AMOS (*n*=503)

- As expected, a two (correlated) factor model demonstrated good model fit, and was superior to a single-factor model

Fit index	2F Model	1 Factor	Benchmark (Wood et al., 2008)
Chi-squared	98.66***	529.65***	(N/A)
SRMR	.08	.29	.08 (max)
Comparative fit index	.98	.88	.95 (min)
RMSEA	.06	.17	.06 (max)

5. Confirmatory Factor Analysis



Final Measure – Vaccination Mandate Attitudes Scale (VMAS)

Item	Wording	Factor
A mandatory vaccination policy would…		
VMAS_1	…help to increase the rate of vaccination	1 (“Protection”)
VMAS_2	…help protect me from the disease	1 (“Protection”)
VMAS_3	…help protect the community from the disease	1 (“Protection”)
VMAS_4	…be a safe response to the threat of the disease	1 (“Protection”)
VMAS_5	…infringe on people’s rights	2 (“Rights”)
VMAS_6	…make vaccination a shared responsibility for the whole community	1 (“Protection”)
Please indicate how strongly you agree or disagree with the following statements.		
VMAS_7	I would prefer that a mandatory vaccination policy was not put into place	2 (“Rights”)
VMAS_8	If a mandatory vaccination policy was implemented, I would be more likely to get vaccinated	1 (“Protection”)
VMAS_9	It should be a personal choice whether to get vaccinated or not	2 (“Rights”)
VMAS_10	Government should not have the power to require people to be vaccinated	2 (“Rights”)

6. Implementation

- The VMAS has been included in the main MandEval Study 2b survey (currently at field) (4000 adults in each of Australia, France and Italy)

- An adapted version to measure perceptions of others' attitudes is also included

- The survey also includes a range of measures of personality, culture, political preference, vaccination attitudes, behaviours, and experiences (incl. COVID), and demographic variables

Any questions?

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