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Cognitive and emotional determinants of influenza vaccination: Testing the effects of an anticipated regret manipulation

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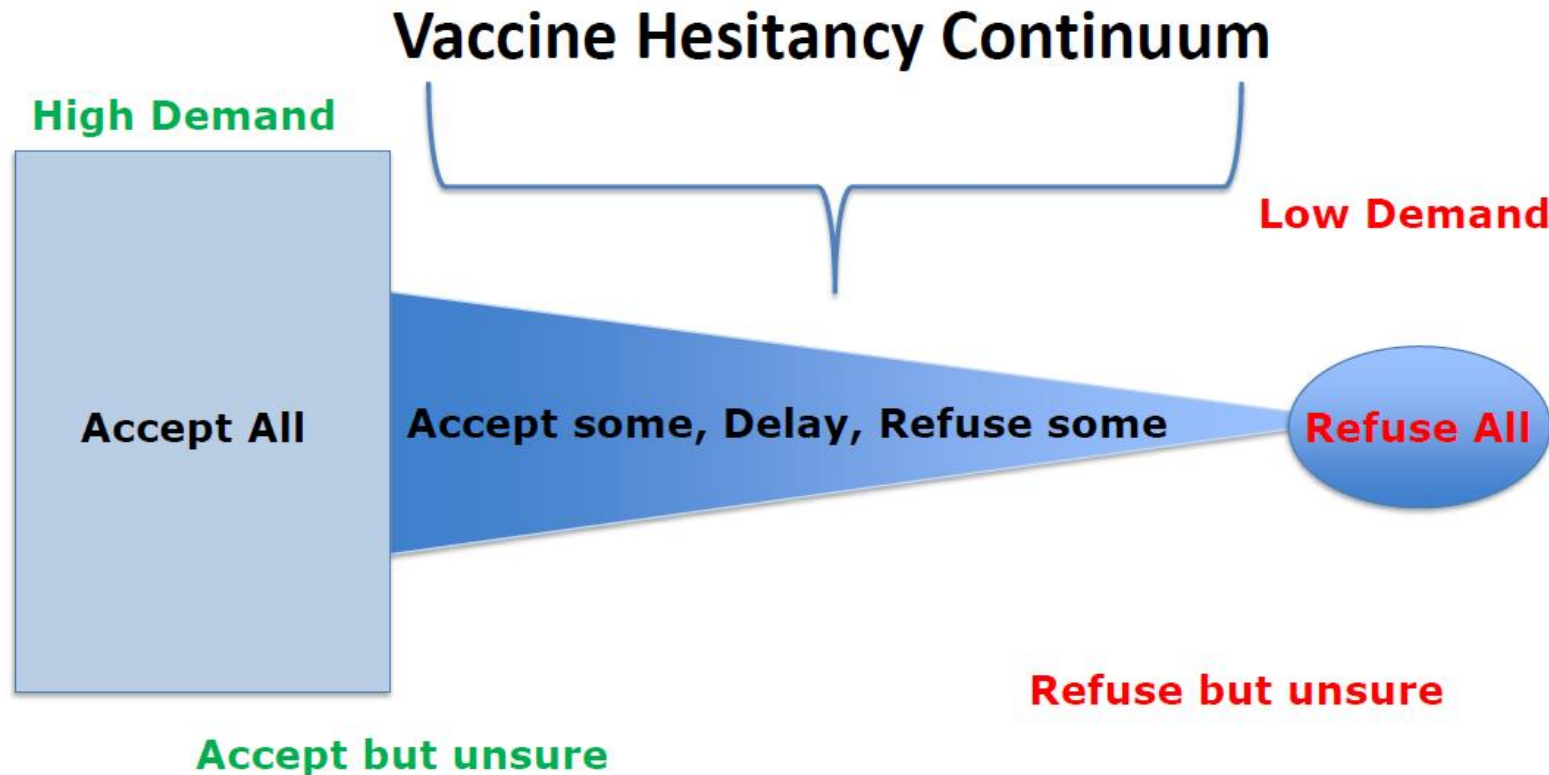


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Vaccine Hesitancy

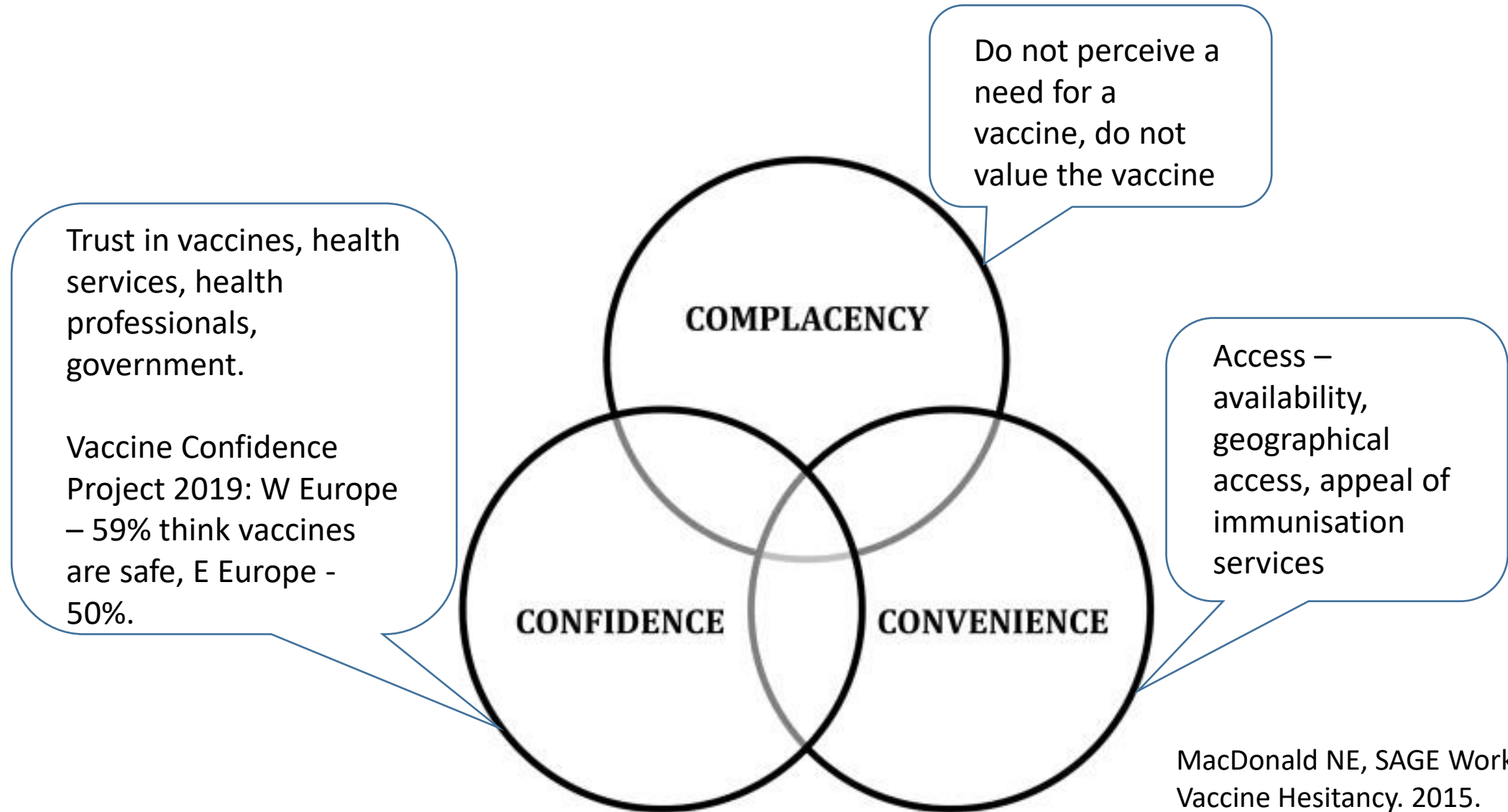
- The WHO listed vaccine hesitancy as one of the top ten threats to global health in 2019 due to falling vaccination uptake worldwide.
- Refers to “the delay in acceptance or refusal of vaccines despite availability of vaccination services” (WHO SAGE Vaccine Hesitancy Working Group, 2015).
- The reasons for vaccine hesitancy are complex and involve psychological, social and contextual factors (Brewer et al., 2017).

Vaccine Hesitancy – A Continuum



Report of the SAGE Working Group on Vaccine Hesitancy. 2014.

3C's Model of Vaccine Hesitancy



MacDonald NE, SAGE Working Group on Vaccine Hesitancy. 2015.

Influenza Vaccination

- Seasonal influenza remains a significant public health threat, with seasonal influenza leading to an estimated 3 to 5 million cases of severe illness, and between 290 000 to 650 000 respiratory deaths (WHO, 2018).
- Flu vaccine is offered free of charge on the NHS to people who are at risk (e.g. over 65 years, pregnant, certain medical conditions, healthcare workers).
- WHO has uptake targets of 75% in these groups, but vaccination rates are well below this, e.g. 45% in those with medical conditions in Scotland.
- Anyone else can receive the vaccination privately via a pharmacy (cost of £12.99).

Barriers to Influenza Vaccination Uptake

- Schmid et al., (2017) carried out a systematic review of influenza vaccine hesitancy and identified many different psychological, contextual, sociodemographic and physical barriers.
 - Sociodemographic variables (e.g. age, gender, education)
 - Past behaviour
 - Lack of confidence, concerns about vaccine effectiveness
 - Negative attitudes towards vaccines
 - Perceived risk of side effects
 - Complacency – lower perceived severity in relation to influenza

Cognitive Factors

- These findings can be mapped onto the 4C model of vaccine hesitancy.
 - Complacency, convenience, confidence, and calculation (i.e. engagement in information searching) (Betsch et al., 2015).
- Model recently extended to add fifth factor of collective responsibility, and the 5C scale developed to assess these five constructs (Betsch et al., 2018).
- **Aim 1 – Utilise the 5C scale in the UK for the first time and examine the relationships between the 5C factors and influenza vaccination intention.**

What about the role of emotion?

- Decision-making regarding vaccination will not only be influenced by cognitive evaluations of the evidence, but also by emotional factors.
- E.g. worry and regret can influence preventive health behaviours, such as vaccine uptake (Chapman & Coups, 2006).
- But the impact of emotional factors on vaccination behaviour has been investigated far less than the role of cognitive factors.
- Some studies suggest that anticipated worry and anticipated regret are better predictors than cognitive risk estimates in predicting vaccination uptake (Chapman & Coups, 2006; Weinstein et al., 2007; Thompson et al., 2012).
- **Aim 2: Investigate if anticipated regret is more associated with vaccination intention than the cognitive-based 5C factors.**

Anticipated regret

- Simple anticipated regret manipulations can motivate health behaviours and behavioural intentions:
 - Blood donation (Godin et al., 2008)
 - Organ donation (O'Carroll et al., 2011)
 - Cervical screening attendance (Sandberg & Conner, 2009)
- In these interventions participants complete a questionnaire containing anticipated regret items (vs a control group with no questionnaire or a questionnaire with no anticipated regret items) (Question-behaviour effect).
- Conner et al., (2017) found that adding anticipated regret items did not enhance the question-behaviour effect when examining vaccination uptake in older adults.
- **Aim 3 - Test the effect of a simple anticipated regret manipulation on seasonal-influenza vaccination intention in the general population.**

Methods

- **Participants**

- N=300 from the general population
- Mean age=38.6 years
- 37% of sample in an “at-risk” group
- Recruited via social media

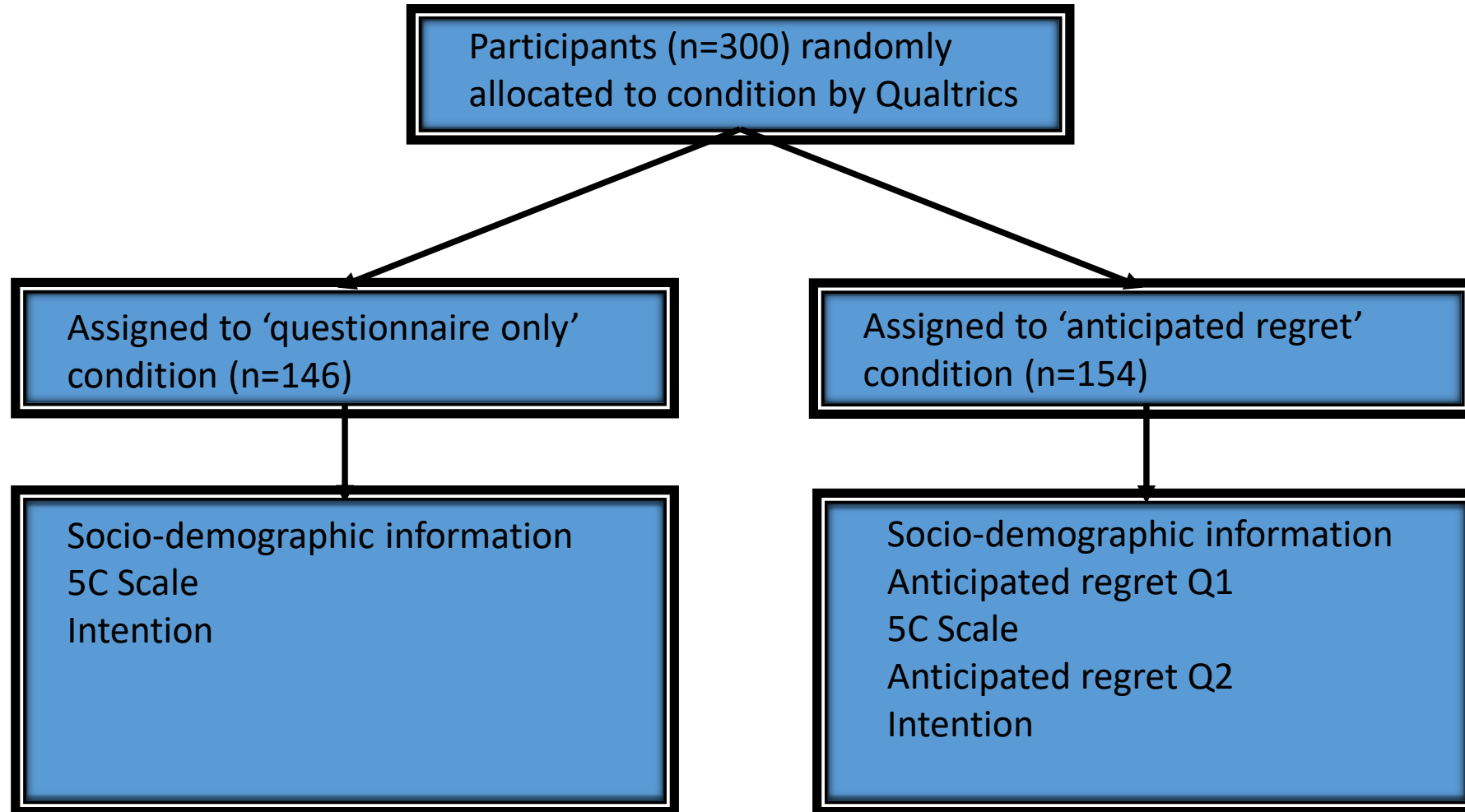
- **Questionnaire**

- Completed online via Qualtrics
- Sociodemographic info
- Flu vaccination previous behaviour + intention
- 5C Scale
- Anticipated regret (for half the sample)

Measures

- **5C Scale** (Betsch et al., 2018): 15 items, scored on a 7-point scale from “strongly disagree” to “strongly agree”
 - Confidence – “I am completely confident that vaccines are safe”
 - Complacency – “Vaccination is unnecessary because vaccine-preventable diseases are not common anymore”
 - Constraints – “Everyday stress prevents me from getting vaccinated”
 - Calculation – “When I think about getting vaccinated, I weigh benefits and risks to make the best decision possible”
 - Collective responsibility – “When everyone is vaccinated, I don’t have to get vaccinated too”
- **Anticipated Regret**: 2 items (based on O’Carroll et al., 2011) (inaction regret)
 - “If I didn’t get the flu vaccination and I became ill with the flu, I would feel regret”
 - “If I don’t get the flu vaccination, I will later wish I had”
- **Intention**: 1 item
 - “I intend to get the flu vaccination this year”

Procedure



Results

- Correlations between 5C factors, anticipated regret and intention

Dimension	Correlation with intention
Confidence	$r=.363, p<.001$
Complacency	$r=-.320, p<.001$
Constraints	$r=-.238, p<.001$
Calculation	$r=.034, p=.56$
Collective Responsibility	$r=.297, p<.001$
Anticipated regret	$r=.760, p<.001$

Results (cont)

- Mean intention score by condition and group:

Condition	Mean (SD) Intention Score
Questionnaire only	4.51 (2.41)
Anticipated regret	4.51 (2.42)

Risk Group (Y/N)	Mean (SD) Intention Score
Risk Group	6.08 (1.94)
Not in Risk Group	3.59 (2.17)

- Two-way ANOVA:
 - No significant difference in vaccination intention scores between the anticipated regret and questionnaire only conditions $F(1, 296) = .028, p = .867$).
 - Those who were members of an “at-risk” group had significantly higher intention scores $F(1, 296) = 98.03, p < .001$).
 - There was no interaction between risk group membership and condition on intention.

Conclusions

- Vaccination beliefs (confidence, complacency, constraints, collective responsibility) and anticipated regret are associated with seasonal-influenza vaccination intention.
- Anticipated regret was more highly associated with intention than any of the 5C variables.
- Our simple anticipated regret manipulation was not effective in increasing intention to receive the seasonal-influenza vaccination.