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# The role of altruism versus self-interest in Covid-19 vaccination uptake in the UK

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**Abstract:**

Objectives: The aim of the current study was to explore self-interest, kin-altruism and non-kin altruism reasons that influence people to vaccinate against Covid-19.

Study design: Cross-sectional, employing a fully repeated measures design.

Methods: Participants ($N$= 178) answered questions on perceived threat and likelihood of infection, vaccination status and opinion on mandatory vaccination. Participants also rated a set of statements that asked how likely these would influence them and others to vaccinate against Covid-19. Statements reflected either self-interest, kin altruism or non-kin altruism.

Results: Just over half of the sample (50.8%) reported likelihood of infection as somewhat or extremely likely and almost three quarters (74.2%) reported that Covid-19 posed a minor or moderate threat to their physical health. Almost three quarters (74.3%) of the sample were vaccinated with just over half (56.2%) in favour of mandatory vaccination. A 2 (self/ other) x 3 (self-interest/ kin altruism/ non-kin altruism) fully repeated measures ANOVA showed that kin-altruistic reasons were rated most highly, regardless of whether this was regarding oneself or others. Participants rated others as having greater self-interest reasons for vaccination compared to oneself, whereas non-kin altruism reasons for vaccination were rated higher for oneself, compared to others.

Conclusion: Highlighting the benefits of vaccination for close relatives and vulnerable others in the population would be a useful strategy for government to employ when urging the public to vaccinate against Covid-19.

**Keywords:**

Covid-19, vaccination; altruism

**Data availability statement:**

Data available on request from the authors

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**Abstract**

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**Introduction**

The impact of the Covid-19 pandemic has been felt worldwide. Global attempts to control the spread of the virus have included imposing restrictions on behaviour with the hope of returning to normality in the UK by focusing on vaccinating the population.

Vaccination protects not only the individual but also others, either directly (by reducing transmission) or indirectly (via herd immunity)[1]. Nonetheless, vaccine uptake depends on a variety of factors and has been shown to be highly variable across different vaccines[2]. It has been estimated that to achieve herd immunity, approximately 80% of the population would need to receive the Covid-19 vaccination to reduce the spread of the disease and to offer protection to those unimmunised[3] although this figure may vary with the emergence of new variants of the virus.  Therefore, it is imperative that empirical research is conducted to examine ongoing factors that contribute to vaccine uptake.

Research suggests that prompting altruism may be a useful strategy to encourage vaccination against Covid-19[4,5]. Ultimately, receiving a vaccine can be seen as an altruistic act since the benefit would be greater to wider society than to the individual[6]. Unvaccinated individuals would receive greater protection as the number of vaccinated individuals increase. However, the cost of infection would be higher for an unvaccinated individual when less people have been vaccinated overall[7].

This study aimed to investigate motivations for vaccine uptake in the UK and whether factors such as altruism, contribute to this. Furthermore, altruism can vary depending on the recipient. From an evolutionary perspective, high levels of altruism are more prominent towards kin (those who share genetic material with us) compared to non-kin[8]. The theoretical reasoning lies in evolutionary theory, suggesting altruism increases inclusive fitness (genetic fitness and survival of those who share genetic code with us). We examined whether there

were differences between kin altruism, non-kin altruism (altruism towards non-genetic relatives), or self-interest reasons for having the Covid-19 vaccine. We also examined which reasons were perceived to be important for oneself and which reasons were perceived to be important for others.

**Method**

Participants

One-hundred-seventy-eight participants took part (42 male, 134 female, 2 non-binary). The mean age was 33.31 ($SD$=12.28-see supplementary materials for demographic information). Participants were recruited from the general population via social media platforms (such as Facebook and Twitter) and undergraduate students via the host universities research participation scheme. Data were collected between April 2021-November 2021. This study did not form part of a larger research project.

Materials and Procedure

Once informed consent was provided, participants completed the following measures online:

*Demographic information*

Participants provided their age, gender, education, nationality, and ethnicity.

*Perceived threat of infection and vaccine uptake*

Two questions were used to assess the participants' perceived likelihood of infection in terms of personal susceptibility ("how likely do you believe it is that you will get infected with Covid-19?") and threat to physical health ("If you got infected with Covid-19, how threatening would it be to your physical health?"). These were rated on a 5-point scale (*1=not at all – 5=extremely*).

Two questions asked about vaccine uptake for participants that may have already received the vaccine ("Have you been vaccinated for Covid-19?" Yes/ No) or intentions to receive the vaccine ("If you have not yet received the vaccine, how likely is it that you would get vaccinated for Covid-19 in the future?" *1=Highly unlikely – 5=Highly likely*).

Finally, one question examined opinions on mandatory vaccination adapted from Reiger[5] "What do you think of a mandatory Covid-19 vaccination?" (*1=Strongly oppose – 4=Strongly favour*).

*Reasons for vaccination*

Participant's reasons that influence their decision to vaccinate for Covid-19 was measured using two sets of statements adapted from Robertson et al.[9]. First, participants were asked "How likely is it that the following reasons would influence **you** to vaccinate against Covid-19?". The statements reflected either kin-altruism, non-kin altruism or self-interest. For example, participants rated self-interest statements such as "To prevent me catching coronavirus or getting very ill from it", non-kin altruistic statements such as "To protect others that are clinically vulnerable" and kin-altruistic statements such as "Because a member of my family is vulnerable". Second, participants were asked "How likely do you think it is that the following reasons would influence **others** to vaccinate against Covid-19?". The statements were amended to reflect this perspective (e.g., "To prevent them from catching coronavirus or getting very ill from it"). These were rated on a 5-point scale (*1=Extremely unlikely – 5=Extremely likely*).

**Results**

This research examined participants perceptions of Covid-19 and reasons for vaccination for both oneself and perceptions of why others would get vaccinated. When asked about

perceived likelihood of infection and threat to physical health, 50.8% of participants reported that likelihood of infection was 'somewhat/ extremely likely' with most participants (74.2%) reporting that Covid-19 posed a minor or moderate threat to their physical health. In the current sample, 74.3% were vaccinated ($N$=133) and 25.7% ($N$=46) were not yet vaccinated. Of the participants not yet vaccinated, 38.9% ($N$=21) said it was 'highly likely' that they would get vaccinated compared to 25.9% ($N$=14) who said it was 'highly unlikely' that they would get vaccinated in the future. When asked about mandatory vaccine, 56.2% ($N$=100) somewhat/ strongly favour mandatory vaccines whereas 43.8% ($N$=78) somewhat/ strongly oppose mandatory vaccine.

A two-way repeated measures ANOVA was used to analyse reasons for vaccination for both self and others. The first factor was Perspective with two levels (self/others). The second factor was Vaccination Motives with three levels (self-interest/ kin-altruism/ non-kin altruism). The dependent variable was the ratings across the reasons for vaccination that influenced participants' motives to get vaccinated.

There was no significant main effect of Perspective $F(1, 170)$=2.59, $p$=.11, $\eta_p^2$=.015. The main effect of Vaccination Motives was significant $F(2, 170)$=114.42, $p$<.001, $\eta_p^2$=.402. The interaction was also significant $F(2, 340)$=64.54, $p$<.001, $\eta_p^2$=.275. Simple contrasts reveal significant differences between self-interest and kin altruism reasons ($p$<.001) and between self-interest and non-kin altruism reasons ($p$<.001). As can be seen from Figure 1, kin-altruistic reasons were rated most highly, regardless of whether this was for self or others, however participants rated others as having greater self-interest reasons for vaccination compared to themselves whereas non-kin altruism reasons were rated higher for self, compared to others. Follow up tests confirmed these difference were significant for self-interest reasons $t(170)$=-5.56, $p$<.001, $d$=-.42 and for non-kin altruistic reasons $t(170)$=2.8, $p$=.006, $d$=.21.

**Figure 1.** A graph to show self-interest, kin-altruistic and non-kin altruistic reasons for vaccination for self and others
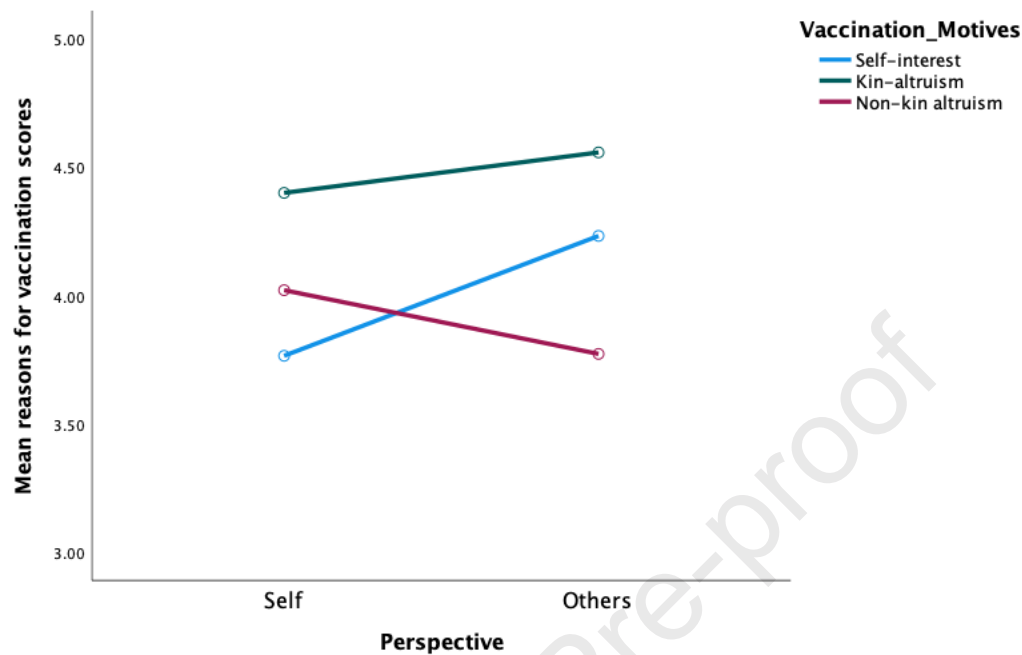


**Discussion**

These findings offer a novel contribution to the literature by highlighting the reasons *why* people choose to vaccinate against COVID-19. First, kin-altruistic reasons were rated most highly, regardless of whether this was regarding oneself or others. This is consistent with previous research demonstrating that high levels of altruism are more prominent towards kin and fit within an evolutionary framework[8]. Second, we found that participants rated others as having greater self-interest reasons for vaccination compared to themselves whereas non-kin altruism reasons were rated higher for oneself, compared to others. This suggests that people see others as having the vaccine for self-interest (possibly selfish) reasons but see themselves having the vaccine for the benefit of others. This aligns with previous research demonstrating that altruistic acts and feeling good about oneself, may motivate people to vaccinate[10].

Furthermore, our findings are consistent with Cucciniello et al.[4] and Reiger[5] who found that individuals are responsive to altruistic notions.

Given that a quarter of our sample were not yet vaccinated and twenty-five percent of these said they were unlikely to vaccinate in the future, findings such as these are vital to inform strategies for public health messaging that may encourage more people to vaccinate against disease. Emphasising the benefits of vaccination for those close to us and how this could potentially help vulnerable others, would be a beneficial strategy for government to adopt[4] as opposed, or in addition to, emphasising the positive effects of vaccination to the self.

There are some limitations of this research. First, we did not utilise established psychometric scales when constructing our variables. Second, there was not an equal number of vaccinated and unvaccinated participants in each group, meaning we were unable to run additional parametric analyses. Third, although our results align with existing data on the role of altruistic motives in vaccination uptake, more research is needed to establish the role of altruism in Covid-19 vaccine uptake, with the use of various methodologies and statistical analyses. Future research aimed at identifying strategies for public health messaging are important, particularly with the continued need for booster vaccinations against Covid-19.

**Acknowledgements**

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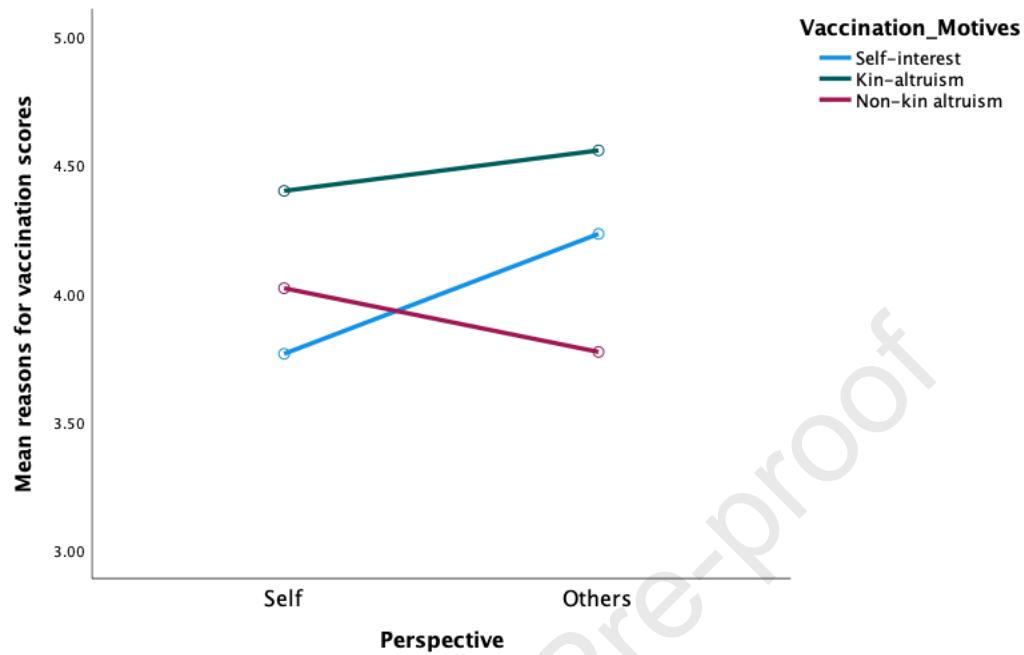
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**Figure 1.** A graph to show self-interest, kin-altruistic and non-kin altruistic reasons for

vaccination for self and others
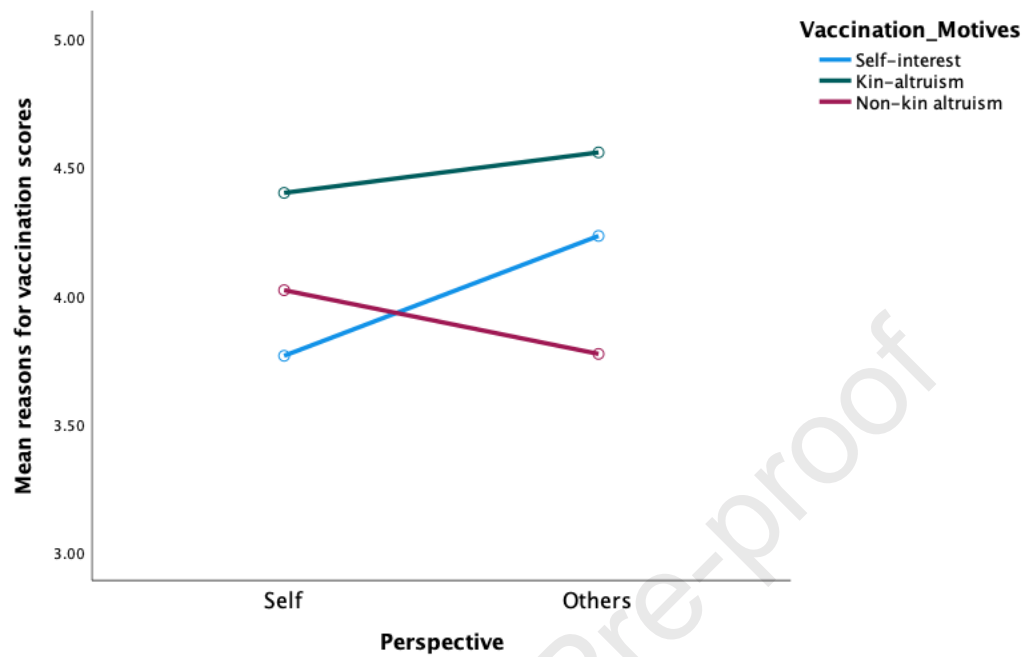
**Supplementary information**

Table 1.

*Demographic variables of education, nationality, and ethnicity for all participants*

| Education | Frequency (%) |
|---|---|
| Secondary school | 21 (11.8) |
| Technical, trade or vocational training | 12 (6.7) |
| Some University | 56 (31.5) |
| Bachelor's degree | 27 (15.2) |
| Postgraduate certificate | 3 (1.7) |
| Master's degree | 17 (9.6) |
| Doctoral degree | 19 (10.7 |
| Other | 23 (12.9) |
| | |
| **Nationality** | |
| American | 1 (.6) |
| British | 118 (66.7) |
| Canadian | 2 (1.1) |
| Dutch | 1 (.6) |
| English | 35 (19.8) |
| Filipino | 1 (.6) |
| German | 5 (2.8) |
| Indian | 1 (.6) |
| Irish | 3 (1.7) |
| Pakistani | 2 (1.1) |
| Polish | 1 (.6) |
| Romanian | 2 (1.1) |
| Scottish | 2 (1.1) |
| Spanish | 1 (.6) |
| Taiwanese | 1 (.6) |
| Yemeni | 1 (.6) |
| | |
| **Ethnicity** | |
| Welsh/ English/ Scottish/ Northern Irish/ British | 126 (70.4) |
| Irish | 2 (1.1) |
| Any other white background | 14 (7.8) |
| White and Black Caribbean | 4 (2.2) |

| | |
|---|---|
| White and Black African | 4 (2.2) |
| White and Asian | 5 (2.8) |
| Any other Mixed/ Multiple ethnic background | 1 (.6) |
| Indian | 8 (4.5) |
| Pakistani | 7 (3.9) |
| Chinese | 1 (.6) |
| Any other Asian background | 2 (1.1) |
| African | 1 (.6) |
| Caribbean | 2 (1.1) |
| Any other Black/ African/ Caribbean background | 2 (1.1) |
| Any other ethnic group | 2 (1.1) |

**Figure 1.** A graph to show self-interest, kin-altruistic and non-kin altruistic reasons for

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*Should be displayed in colour