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## Zero-sum or worse? Considering detrimental effects of selective mandates on voluntary childhood vaccinations



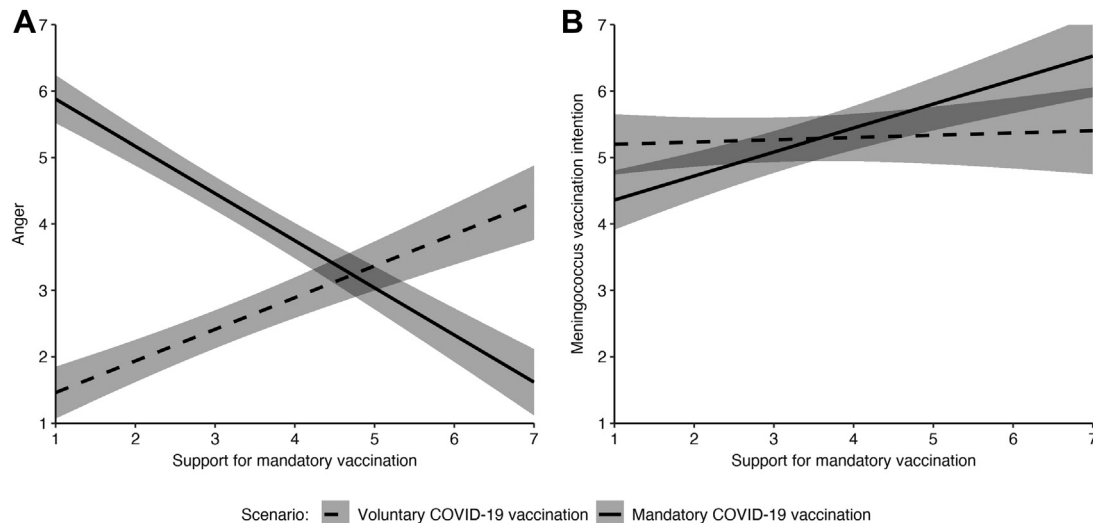
### To the Editor:

Savulescu et al argued that mandating vaccination of children against coronavirus disease 2019 (COVID-19) could contribute to public health but may be difficult to justify, given the low disease severity and uncertainties about vaccination safety and effectiveness for children.<sup>1</sup> However, when assessing the utility of mandatory vaccination, potential detrimental effects on the uptake of voluntary vaccines should also be considered. Based on reactance theory and previous research,<sup>2-4</sup> we expected that mandating children's vaccinations against COVID-19 could elicit parental anger and motivate the refusal of voluntary vaccines. To test our assumption, we conducted an online experiment on May 18 and 19, 2021, as part of a larger study with 950 German participants, quota-representative for age  $\times$  sex and federal state. A subset of 244 participants were parents of children under 18 years of age and, thus, enrolled in the experiment. They were 18-70 years old (mean = 38.86, SD = 9.72), 119 were male and 125 female. After assessing their attitudes toward mandatory vaccination (31% supported a mandate for

children), one-half of the participants should imagine that vaccinating their children against COVID-19 would be recommended, but voluntary; the remainder should imagine mandatory vaccination. All parents were asked how angry they felt about the imagined regulation. Afterward, they read a short text about meningococcus type B and were asked to imagine that vaccination against this disease was recommended (which was not the case in reality) but voluntary for their children. Finally, they indicated how likely they would be to get their children vaccinated against meningococcus type B. A mandatory vaccination policy elicited anger in parents, especially when support for a mandate was low (Figure A, solid line). For these parents, meningococcus vaccination intentions were also lower compared with parents who were offered a voluntary vaccination (Figure B). As the results were drawn from hypothetical decisions, the detrimental effects of mandatory regulations on the overall vaccination program may be even stronger in reality. Therefore, decision-makers should focus on other measures, such as communication interventions addressing concerns about vaccine safety and efficacy and highlighting the benefits of children's vaccination for the protection of vulnerable populations.<sup>5,6</sup>

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**Figure.** Effects of voluntary and mandatory vaccination of children against COVID-19. Results from linear regression analyses; ribbons visualize 95% CIs. **A**, Imagining mandatory vs voluntary COVID-19 vaccination for children elicited anger in their parents ( $\beta = 0.41$ ,  $b = 1.81$ , SE = 0.19, 95% CI [1.43; 2.18]), especially when support for a mandate was low (interaction effect:  $\beta = -0.88$ ,  $b = -1.19$ , SE = 0.09, 95% CI [-1.35; -1.02]). **B**, In this case, intentions to get children vaccinated against meningococcus type B were also lower (interaction effect of mandatory vs voluntary vaccination and support for mandatory vaccination:  $\beta = 0.28$ ,  $b = 0.33$ , SE = 0.10, 95% CI [0.12; 0.53]).

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*Data and the data analysis script are available at <https://doi.org/10.17605/OSF.IO/VTCPE>.*

*The authors declare no conflicts of interest.*

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## Reply

### To the Editor:

We provided what we take to be the criteria that justify mandating vaccines for children. Our claim is that mandatory child vaccination is justified only if 3 conditions are

satisfied. First, there is a serious enough public health threat that can be addressed by vaccinating children. Second, the expected net benefit (considering also any risk posed to children) of mandatory policies is greater than the expected net benefit of the alternatives (for example, alternatives with lower risk for children). Third, the level of coercion is proportionate to the threat.

We did not claim that our criteria support mandatory vaccination against coronavirus disease 2019 (COVID-19) for children at this moment. We suggested instead that, at this stage, “the case for mandatory COVID-19 vaccination for children is not strong.”

Sprengholz and Betsch claim that the anger that a vaccine mandate would elicit might undermine motivation to vaccinate. We do not think that this ‘backfiring objection’ is a good reason against mandatory COVID-19 vaccination. Their backfiring objection would not be a sufficient reason against implementing mandatory COVID-19 vaccination for children, if at some point our 3 conditions are met.

Sprengholz and Betsch present the results of a survey of 244 German parents that shows that parents tend to be angry when asked to imagine mandatory COVID-19 vaccination policies and mandatory meningococcus B vaccination policies. That anger correlates with lower intention to vaccinate.

First, different types of mandates can be differently effective. “Mandatory vaccination” is a broad term. It indicates that some penalty or limitation of freedom is attached to the decision not to vaccinate. It can refer to very different policies. One example is withholding state childcare benefits from families who do not vaccinate their children against certain diseases (as happens in Australia with the ‘no jab, no pay’ policy). Another is preventing unvaccinated children from attending certain schools (such as in the US, or again in Australia with the ‘no jab, no play’ policy). Yet another example is fining parents of unvaccinated children who attend school (such as in Italy). Sprengholz and Betsch discuss what they call “mandatory vaccination” without further specification. It is not clear what conclusion we can draw with regard to a possible mandatory COVID-19 vaccination for children, given the different forms that this might take.

Second, there is conflicting evidence about the effectiveness of mandatory vaccination policies. In California there was a 2.8% increase in vaccine uptake among children 1 year after the introduction of school mandates.<sup>1</sup> When Italy introduced a 500 euro fine for parents of unvaccinated children attending school, there was a 4.4% registered increase of vaccine uptake the following year, with the actual effect of the law likely to be even greater.<sup>2</sup> However, some evidence suggests that increases in vaccine uptake after the introduction of school mandates might be a short-lived phenomenon.<sup>3</sup> The evidence on either side of the debate is far from conclusive. The survey by Sprengholz and Betsch involves hypothetical mandatory vaccination scenarios. It is not clear that this does much to tip the balance in the interpretation of the evidence available about the real world.

