

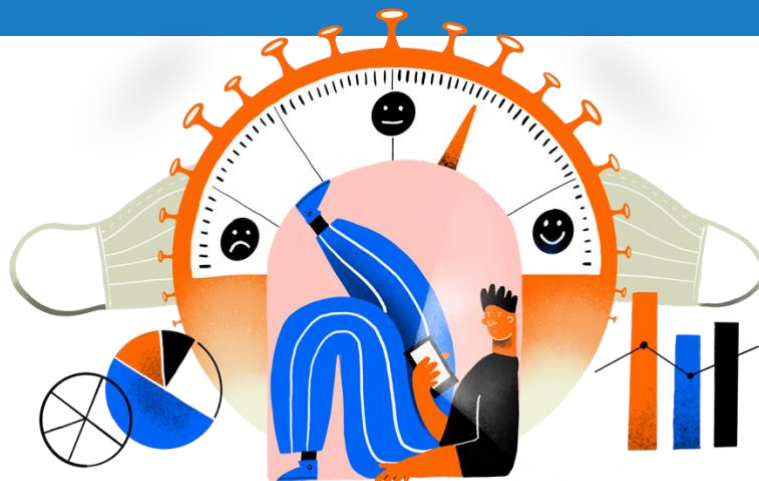
REPORT 31

Seduce, persuade and/or inform? How to deal with vaccine doubters?

The Motivation Barometer

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Reference: Motivation Barometer (June 23, 2021). Seduce, persuade and/or inform? How to deal with vaccine doubters? Ghent & Leuven, Belgium.



The vaccination campaign is now at cruising speed. More than 65% of the adult Belgian population received their first shot. Many hundreds of thousands will follow suit in the coming weeks. In order to achieve herd immunity, it is crucial that as many people as possible are vaccinated. In order to achieve this goal, there is a chance that we will need vaccine doubters. The question, then, is how to motivate this critical group to get vaccinated? Do they like to be rewarded for their efforts? Do they want more time? And can vaccinated individuals have this patience?

In the current Motivation Barometer report, we discuss the following four questions:

- (1) What is the state of vaccination motivation and willingness among -35 year olds today?
- (2) In what direction have vaccine doubters and refusers tilted in recent months?
- (3) What modes of influence do doubters, refusers, and vaccinated believe are most appropriate to encourage people to vaccinate?
- (4) To what extent does using an autonomy-supportive interviewing style and introducing a vaccination reward have a (de)motivating effect on doubters and refusers?

This 31st report is the last before the summer break in a long series. This corona crisis was fascinating to us psychologists from a scientific perspective. Long-term monitoring of motivation, behavior, and well-being yielded numerous fascinating results to provide evidence-based policy advice.

Take home shopping

- Voluntary vaccination willingness among -35 year olds also remains high in June. Among the unvaccinated, 73% are (very) sure to accept a vaccine. When vaccinated individuals are included, 82% of those surveyed are either vaccinated or (very) willing to vaccinate.
- Vaccine doubters tilt to the positive side: 60% of those who were doubtful at the beginning of the vaccination campaign were (very) willing to vaccinate by April, and 18% had already been vaccinated. As many as 79% of those who hesitated in April turned out to be vaccinated in June.
- A personal meeting with a health professional and offering targeted information are the most appropriate strategies for encouraging doubters to vaccinate, according to refusers, doubters and vaccinated. While doubters ask for patience to be able to come to a decision at their own pace, vaccinated want to ratchet up the pressure through rewarding and mandating vaccination and granting unique privileges to vaccinated people.
- Doubters misjudge the motivational impact of applying pressure. A vignette study comparing autonomy-supportive and coercive communication styles of health professionals found that doubters perceived the autonomy-supportive conversational style as more effective and predicted greater autonomy, more reflection on vaccination, and greater vaccine willingness.
- The use of rewards by health professionals is also perceived as a pressure. It also has a negative impact on reflecting on vaccination and vaccination willingness, although the effect is small. These disadvantages do not appear when health workers refer to the covid certificate, where a negative PCR test is presented as an equivalent alternative.

Recommendations

- These results provide overall evidence for the vaccination policy pursued and point to a number of potential pitfalls if the strategy pursued were to be adjusted.
- Continue to engage plenty of health professionals (family physicians, pharmacists) to proactively contact citizens and provide them with relevant information about vaccination in a motivating way.
- Health workers are best advised to use an autonomy-supporting conversational style and to refrain from a coercive style. Provide training for health workers to master this conversational style.
- Don't fall into the reward trap. Although material rewards or a vaccination passport with unique privileges is used in several other countries, employing rewards tarnishes the inherent value of prosocial motivation and creates pressure in doubters that drives them further away from vaccination. Follow the rhythm of vaccine doubters so they can come to their own informed decision.
- Inform health professionals and the broader public about the motivating power of autonomy support and the demotivating role of rewards so that they can arrive at an accurate picture of the impact of various motivational strategies.
- Inculcate a collective, prosocial mindset by indicating that staying faithful to the measures will ensure that crucial goals in the COVID numbers (number of persons on intensive care; more opportunities for all) are met more quickly. Thus, everyone, including unvaccinated individuals, can enjoy new flexibilities and regained freedom.
- Encourage vaccinated individuals to testify about their prosocial motivation to get vaccinated to others. This may encourage peers to also get vaccinated.

Description of the data files.

Cross-sectional waves

- N since December = 155 986
- 16 cross-sectional data waves since March 2020
- Average age = 50.17 years (64.8% female; 69% Dutch-speaking; 26.8% highly educated)
- N vaccinated: steady increase over the months, going from 0% in December to 38%* in May.
- Status: 43% full-time and 14.5% employed, 6.8% unemployed, 7.1% student, and 28.7% retired

Vignette sample

- N = 14 274
- Average age = 51.62 years (61.3% female; 70.8% Dutch-speaking; 27.1% highly educated)
- N vaccinated: 10 928 (71.8%), with 21% of those vaccinated working in the health sector
- Status: 39.4% full-time and 14.6% part-time employed, 5.4% unemployed, 6.5% student, and 31.4% retired

Longitudinal sample

- N = 4 338
- Study in three waves, with wave 1 occurring in December-January, wave 2 in March-April, and wave 3 in June.
- At baseline (wave 1), 37 237 participants were invited, of whom 24 412 (66%) participated. For the first follow-up survey (wave 2), 19121 participants were contacted again, of whom 8422 (44%) participated. Of this group, 4338 participated in the third wave (52%).
- Average age = 53 years (62% female; 84.4% Dutch speaking; 30.7% highly educated)
- N vaccinees: 16 at T1 and 1082 at T2, with 64% of vaccinees working in the health sector
- Status: 34.9% full-time and 13.9% part-time employed, 5.7% unemployed, 3.2% student, and 39.7% retired

*At this time (May 11, 2021), 31.6% are partially vaccinated and 9.6% fully vaccinated in Belgium

Question 1: How does vaccine willingness change over time among young adults?

Given the crucial role of individuals' motivation for ultimate vaccination (see report #30), a crucial question is how individuals' motivation for vaccination and their intention to be vaccinated has evolved since December. We focus on the -35 year olds because this age group is now and will soon be invited to vaccinate in abundance.

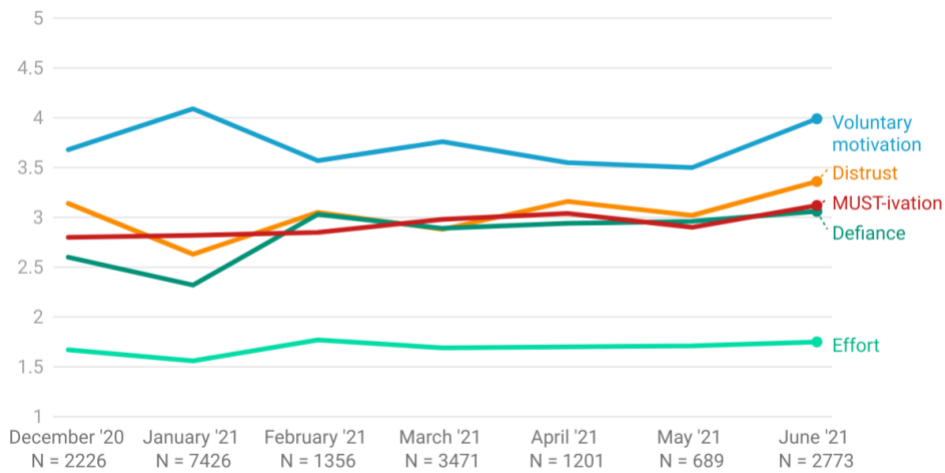
- *Shifts in motivation*¹ : As shown in Figure 1, the different types of motivation of non-vaccinated individuals have remained fairly stable over time, with the exception of a spike in voluntary motivation and a slight decrease in distrust and resistance in January. Overall, people are more motivated than demotivated to get the vaccine. In June, voluntary motivation, as well as should-ivation and amotivation appears to have increased.

Box 1: Vaccination motivation.

- **Voluntary or autonomous motivation:** indicates the extent to which a person is fully convinced of the added value and necessity of vaccination, e.g., because it offers protection for him/herself, for his/her loved ones, or for the population.
- **'Must' motivation:** indicates the extent to which one feels obligated to be vaccinated, for example, because others require it of us or to avoid criticism.
- **Distrust** expresses the degree to which people distrust the effectiveness of the vaccine or the person recommending the vaccination.
- **Difficulty (effort)** indicates how much effort or difficulty it takes to get vaccinated.
- **Resistance (opposition)** expresses the degree of opposition to the authorities, who are seen as a source of interference with individual freedom. This distrust is based on the idea that the measures they take are excessive.

¹ The samples collected are not representative of the socio-demographic distribution of the population. Nevertheless, both Dutch- and French-speaking participants were recruited since December and the presented findings are weighted for age, region, level of education and gender to (partially) correct for the non-representative nature of the samples.

Figure 1.
Evolution in (lack of) motivation for vaccination over time among young adults



- Vaccination willingness:** In the vaccination willingness, an increase could also be observed from December to January (Figure 2, left panel). Since then, the number of -35 year olds who would (without a doubt) accept a vaccine has a fluctuating pattern with a peak in March (71%) and an increase since April: from 65% to 73% in June. When taking into account the increasing number of those vaccinated (Figure 2, right panel), the figures are "rosier": in June, 82% of participants were vaccinated or (without a doubt) planning to take a vaccine. This may be an overestimate, since the percentage of vaccinated participants in successive measurements is usually higher than the percentage vaccinated in population (after June 20, 30% of 18-34 year olds, sciensano).

Figure 2.
Evolution among young adults of intention to be vaccinated, excluding (left panel) and including (right panel) unvaccinated individuals

If you had the opportunity to be vaccinated next week, what would you decide?

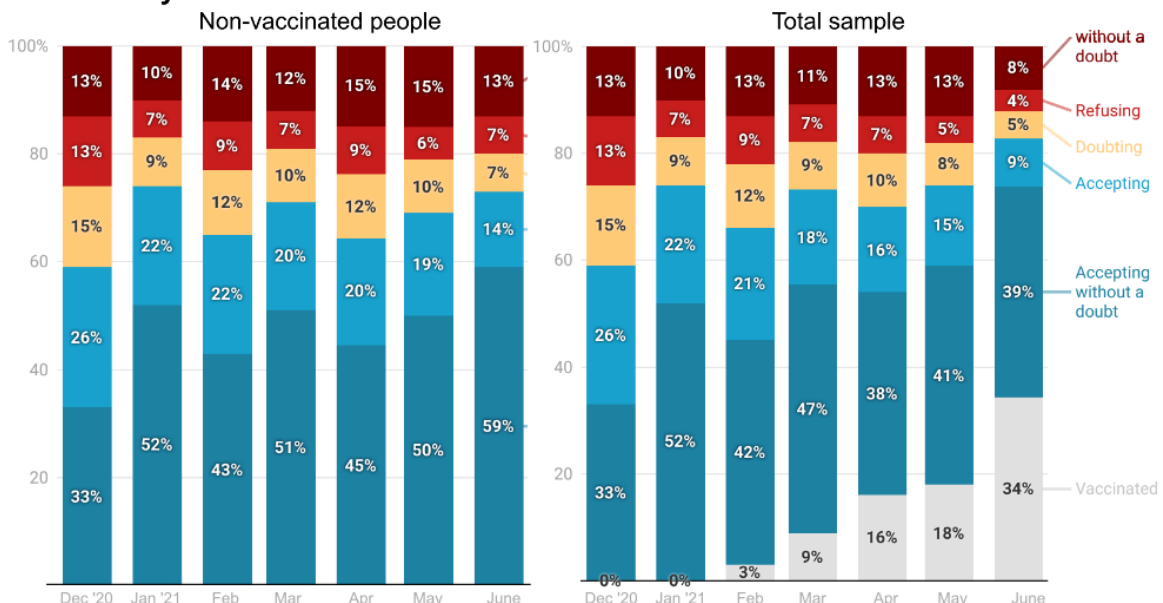
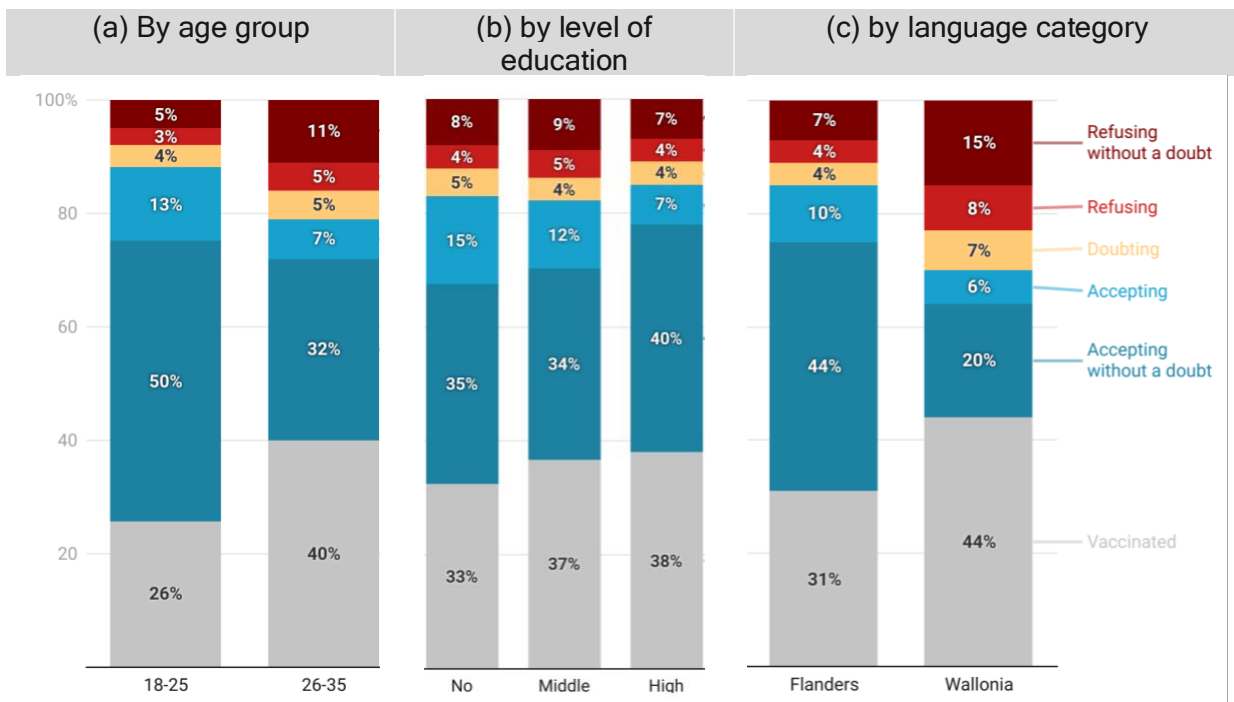


Figure 3.

Socio-demographic distribution of vaccination intentions in June 2021 among young adults



- *The role of sociodemographic characteristics:* In the pattern of findings, age (Figure 3, left panel), education level (Figure 3, middle panel), and region (Figure 3, right panel) play a role.

Question 2: In what direction do vaccine doubters evolve spontaneously within the entire population ?

- How do initially hesitant participants spontaneously change over time? Do they become more willing to vaccinate or more reluctant over time? Indeed, this category of citizens may be crucial to achieving the collective goal of herd immunity.

Appendix 1 shows the evolution of vaccination willingness from December to June, with an interim measurement in April. The thickness of the arrows indicates the percentage of adult participants who change their choice (where actual vaccination is also an outcome), while their color indicates the category to which participants shift. A more detailed picture of the percentage shift between response categories is shown in Tables 1a (December/January - March/April) and 1b (March/April - June) (the shift from December/January to June can be found in Appendix 2). Although not all surveyed participants had received an invitation, the percentage of vaccinated participants in this longitudinal sample increased from 0.5% in December-January (Belgium: 0.3%), to 25.2% in March-April (Belgium: about 10%) and 84.2% in June (Belgium: about 50%). The percentages in our sample are higher because 17.5% of our participants work in the healthcare sector where vaccination was prioritized. A number of findings are noteworthy:

- (a) **The doubters tilt to the positive side over time.** For example, 60% (=33+27) of those who hesitated in December appeared (very) willing to vaccinate in April and 18% had already been vaccinated. Of the adults who doubted in April, as many as 79% had already been vaccinated by June. Virtually none of the doubters developed a negative attitude toward vaccination over time.
- (b) **A similar favorable evolution is even noticeable among the '(likely) refusers'.** Only a small minority (i.c., 26% and 20%) continued to refuse during the measured period and more than 6/10 evolved from refusal to doubt or even (great) willingness to vaccinate. Almost half of these initially reluctant participants even vaccinated at a later date.
- (c) **The more extreme response categories (extreme refusers and very vaccine-willing individuals) are the most stable.** But even among individuals who initially refused the vaccine without question, a positive evolution is noticeable, although the likelihood is greater from December to April than in the period April to June. A negative attitude towards the vaccine becomes, in percentage terms, slightly more persistent over time (from 48% to 61% stability), but it later appears that no less than a fifth of these refusers still had themselves vaccinated. Furthermore, it is noteworthy that none of the young adults who were (very) willing to vaccinate at an earlier point in time start to doubt or become opposed to the vaccine.

Table 1a

Changes in vaccine willingness and status (%) between December-January 2020 and March-April 2021

| | | N | March-April '21 | | | | Vaccinated | | |
|--------------|---------------------------|------|--------------------------|----------|----------|-----------|------------|----|---------------------------|
| | | | Refusing without a doubt | Refusing | Doubting | Accepting | | | Accepting without a doubt |
| December '20 | Refusing without a doubt | 305 | 48 | 16 | 9 | 8 | 12 | 8 | 100% |
| | Refusing | 184 | 8 | 26 | 18 | 23 | 14 | 11 | 100% |
| | Doubting | 312 | 3 | 4 | 15 | 33 | 27 | 18 | 100% |
| | Accepting | 657 | 1 | 1 | 4 | 22 | 51 | 22 | 100% |
| | Accepting without a doubt | 2590 | 1 | 0 | 0 | 4 | 65 | 30 | 100% |
| January '21 | Vaccinated | 15 | | | | | | | |

Table 1b

Changes in vaccine willingness and status (%) March-April 2021 and June 2021

| | | June '21 | | | | | | | |
|-------------------|---------------------------|--------------------------|----------|----------|-----------|---------------------------|------------|----|------|
| | | Refusing without a doubt | Refusing | Doubting | Accepting | Accepting without a doubt | Vaccinated | | |
| March - April '21 | Refusing without a doubt | 194 | 61 | 9 | 6 | 2 | 1 | 21 | 100% |
| | Refusing | 121 | 16 | 20 | 12 | 6 | 2 | 45 | 100% |
| | Doubting | 148 | 0 | 3 | 11 | 4 | 3 | 79 | 100% |
| | Accepting | 439 | 0 | 0 | 1 | 8 | 11 | 79 | 100% |
| | Accepting without a doubt | 2281 | 0 | 0 | 0 | 1 | 13 | 85 | 100% |
| | Vaccinated | 1073 | | | | | | | |

Question 3: What motivational strategies are found to be most appropriate for encouraging doubters?

To achieve the intended herd immunity, it is important that as many people as possible get vaccinated. Which motivational strategy is considered most effective in encouraging doubters? We posed this question to vaccine doubters, refusers, and convinced, the convinced being a mixed group of vaccinated and those who are (very) definitely willing to vaccinate. Specifically, we asked, "*Below are some strategies that one can use to motivate people to get vaccinated. We would like to ask you to indicate for each strategy to what extent you think this strategy could motivate the doubters.*". Figure 4 shows the percentage of individuals by vaccination category (doubters, refusers, convinced (including the vaccinated)) who consider a specific motivational strategy to be effective. Table 2 shows the mean scores for the different motivational strategies of these three groups.

- **Mean differences:** In general, people who get vaccinated attribute greater effectiveness to all motivational strategies than do vaccine doubters and refusers (Table 2). This is understandable because those who are more or less opposed to the vaccine more easily assume that no one can convince them to vaccinate.
- **Top Strategies (according to participants):** Three strategies appear in the top five of all groups. All three groups believe in the effectiveness of 1. providing targeted information, 2. having a face-to-face conversation with a health care provider, and 3. having the home health care provider vaccinate a person.

Figure 4.

Percentage distribution of estimated appropriateness of motivational strategies according to refusers, doubters, and convinced (including vaccinated) individuals

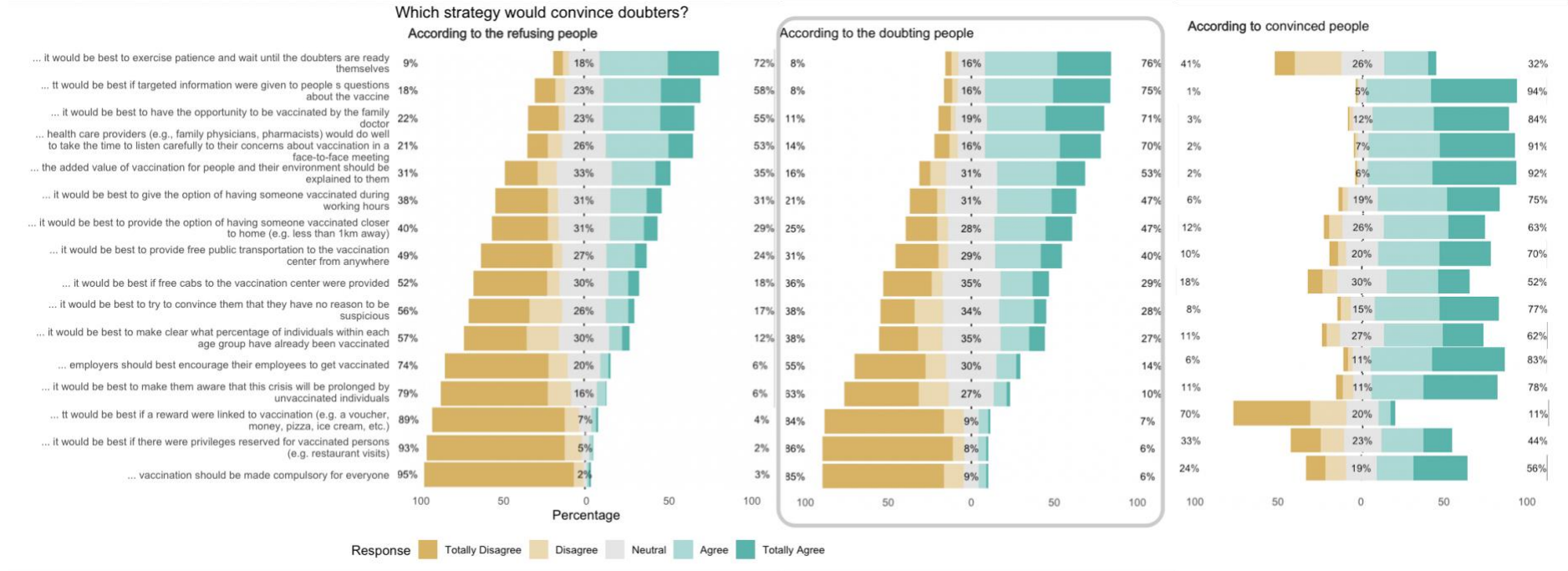


Table 2. Averages of estimated appropriateness of motivational strategies according to refusers, doubters, and convinced (including vaccinated) individuals

| Items | Refusers ¹ | Doubters ² | Convinced ³ | F-value | η^2 |
|---|-----------------------|-----------------------|------------------------|------------|----------|
| ... it would be best to exercise patience and wait until the doubters are ready themselves | 3.88a | 3.97a | 2.84b | 305.63*** | .05 |
| ... it would be best if targeted information were given to people's questions about the vaccine | 3.52a | 3.97b | 4.45c | 337.98*** | .05 |
| ... it would be best to have the opportunity to be vaccinated by the family doctor' | 3.35a | 3.88b | 4.27c | 201.99*** | .03 |
| ... health care providers (e.g., family physicians, pharmacists) would do well to take the time to listen carefully to their concerns about vaccination in a face-to-face meeting | 3.34a | 3.72b | 4.35c | 376.33*** | .06 |
| ... the added value of vaccination for people and their environment should be explained to them' | 2.93a | 3.48b | 4.42c | 867.69*** | .13 |
| ... it would be best to give the option of having someone vaccinated during working hours | 2.70a | 3.24b | 4.00c | 373.66*** | .06 |
| ... it would be best to provide the option of having someone vaccinated closer to home (e.g., less than 1km away) | 2.64a | 3.18b | 3.70c | 197.75*** | .03 |
| ... it would be best to provide free public transportation to the vaccination center from anywhere | 2.39a | 2.95b | 3.87c | 391.05*** | .06 |
| ... it would be best to try to convince them that they have no reason to be suspicious | 2.29a | 2.77b | 4.03c | 737.70*** | .11 |
| ... it would be best to make clear what percentage of individuals within each age group have already been vaccinated | 2.22a | 2.75b | 3.73c | 467.25*** | .07 |
| ... it would be best if free cabs to the vaccination center were provided | 2.29a | 2.74b | 3.44c | 206.25*** | .03 |
| ... employers should best encourage their employees to get vaccinated | 1.71a | 2.19b | 4.19c | 1709.03*** | .22 |
| ... it would be best to make them aware that this crisis will be prolonged by unvaccinated individuals | 1.63a | 2.05b | 4.08c | 1316.64*** | .18 |
| ... it would be best if a reward were linked to vaccination (e.g., a voucher, money, pizza, ice cream, etc.) | 1.37a | 1.52a | 1.97b | 71.70*** | .01 |
| ... it would be best if there were privileges reserved for vaccinated persons (e.g., restaurant visits) | 1.19a | 1.48a | 3.54b | 837.61*** | .12 |
| ... vaccination should be made compulsory for everyone | 1.26a | 1.44b | 3.11c | 548.28*** | .08 |

Note: Wilks Lambda = 0.704, $F(32, 22898) = 137.31$, $p < .001$; ¹Participants who will probably refuse their vaccination; ²Participants who are doubting to be vaccinated; ³Participants who are willing to be vaccinated without a doubt and those who are already vaccinated; letters refer to Tukey post-hoc testing

- Following one's own rhythm: The strategy that refusers and doubters see as most appropriate, namely following their rhythm, is rated as much less appropriate by convinced people (including vaccinated). 72% of refusers and 76% of doubters think they should be able to come to a decision at their own pace, while only 32% of convinced (including vaccinated) people are convinced of this.
- Mandatory: The fact that vaccinated people want to go quicker is also reflected in the fact that a larger percentage of them indicate that mandating vaccination would be an effective strategy. 95% of refusers and 85% of doubters oppose obligation, while 24% of convinced do not favor it. In contrast, 56% of convinced do think that mandating vaccination is an appropriate strategy.
- Rewards: The vast majority of the three groups do not consider giving a reward (e.g., voucher) an appropriate strategy. Granting unique privileges to vaccinated people (e.g., going to the restaurant) 44% of vaccinated do find this an appropriate strategy, while more than 80% of refusers and doubters do not.

In summary, convinced individuals feel that all motivational strategies may be used to influence doubters to vaccinate. They feel much less that the pace of doubters needs to be followed and are more in favor of making vaccination mandatory and granting unique privileges to vaccinated persons. The question is whether these strategies are as effective as convinced people estimate them to be. Therefore, a vignette study was designed in which the degree of pressure on doubters is increased or their autonomy is more supported. We explain its results under question 4.

Question 4: How can health professionals communicate in a motivational way?

All groups feel that one of the most appropriate strategies is for health professionals to have a face-to-face conversation with vaccine doubters or refusers. But which communication style is best used by health professionals? In this study, we compared two styles. **Autonomy-supporting** health workers empathetically take the perspective of the doubter or refuser, provide meaningful explanations about the importance of vaccination, and offer a genuine choice to be vaccinated or not. **Controlling** health professionals exert pressure on doubters or refusers through guilt induction, by reminding them of their duty of solidarity, and by minimizing their concerns.

In addition to this communication style, external factors were also manipulated. Either health professionals indicated that those who get vaccinated could earn a 50€

voucher or referred to a covid certificate, presenting a PRC test as an equivalent alternative to vaccination. The effect of these two external factors was examined by comparing it to a control group, where the reference to these external factors was absent. In this way, a 3x2 design was created (see Table 3).

Table 3

Experimental design vignette study

| | | External motivators | | |
|---------------------|---------------------|---------------------|-----------------|-------------------|
| | | Control group | Reward (50€) | Covid Certificate |
| Communication style | Autonomy-supportive | <i>n</i> = 2430 | <i>n</i> = 2362 | <i>n</i> = 2389 |
| | Compelling | <i>n</i> = 2386 | <i>n</i> = 2356 | <i>n</i> = 2351 |

The role of communication style (2 variants) and external factors (3 variants) was examined in different groups. Each participant was presented with one of these 6 hypothetical scenarios in a randomized fashion. This included controlling for characteristics of the respondents. All participants read the following: "*Below you can read a hypothetical scenario. Please read this scenario carefully and imagine this situation occurring*". Depending on their vaccination attitudes and status, participants were then given three specific instructions to read:

- Vaccine Doubters: Participants with high vaccination doubt ("I'm still doubtful" in response to the question "*If you had the opportunity to be vaccinated against COVID-19 next week, what would you decide?*") were instructed to **imagine that the health worker's conversation was directed toward them**. They read the following: "*You indicate that you are unsure whether to accept or refuse the vaccine. Imagine that a health professional (e.g., your pharmacist, physician) would initiate a conversation about vaccination with you in the following way.*"
- (Certain) refusers: Both participants who would refuse the vaccine and those who would definitely refuse it were given the same instructions as the doubters.
- Convinced people: Participants who were already vaccinated or who experienced little vaccine hesitation ("I would probably accept" and "I would accept without hesitation") were instructed to imagine that **the health worker's conversation was directed toward a "hesitant citizen"**. They thus assessed the health worker's approach to doubters.

Box 2 shows the instructions used for two conditions (i.e., autonomy support + reward; controlling + COVID-safe certificate). After reviewing these instructions, participants were asked four types of questions:

- **Autonomy**. To what extent did people in such a conversation with a health professional feel that their free decision was respected?

- **Effectiveness:** To what extent did they find the conversational style used effective?
- **Reflection:** To what extent would they think further about vaccination after such a conversation?
- **Vaccination intention:** To what extent do they intend to be vaccinated?

The following results appear after analyzing the data.

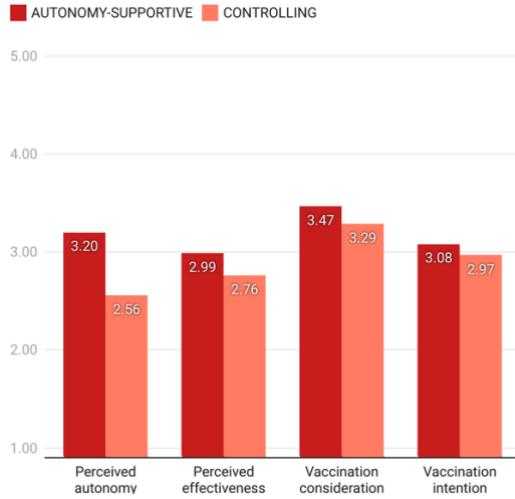
- **Effect communication style:** Communication style makes a difference. When health workers used an autonomy-supportive style, participants experienced a greater sense of choice and psychological freedom and perceived this style as more effective (see Figure 5A). After an autonomy-supportive interaction, respondents indicated that they would think more about vaccination, and showed a greater willingness to vaccinate than when the health worker used a coercive style.
- **External factors:** A similar pattern is observed when the health worker referred to external factors. These were also experienced as pressures, although the effects were smaller and significant only when reference was made to a material reward (see Figure 5B). Compared to a control group, reference to a reward was associated with a lower sense of autonomy, was perceived as less effective, and undermined the willingness to reflect and vaccinate. The demotivating effect of rewards was not observed with the reference to the covid certificate.
- **Role of vaccination status:** The effects of communication style and external motivators appear to have little dependence on participants' vaccination status. All participants benefit from an autonomy-supportive style, and no group believes that rewards would have a beneficial effect. However, it does appear that individuals who would definitely refuse the vaccine experience a less beneficial effect from an autonomy-supportive style. This confirms the impression that convinced refusers are difficult to motivate.

In summary, this vignette study offers fascinating insights that are consistent with the vaccination policy being pursued. Unlike other countries, no material reward was given to vaccinated persons in Belgium. This study confirms that such a reward would not have a motivating effect on doubters and refusers, on the contrary. Rewards are experienced as baiting or coercing, preventing them from coming to a decision at their own pace, whereas doubters and objectors highly value the latter. But not all external motivators necessarily have a demotivating effect. In particular, the reference to a covid certificate, with a PCR test as a full-fledged alternative, had no demotivating effect. Such a certificate was not experienced, as a means of pressure by also providing doubters and refusers with an alternative to vaccination. Finally, it appears that a coercive conversational style has unfavorable effects compared to an autonomy-supportive conversational style. Moving to an obligation to vaccinate, something that

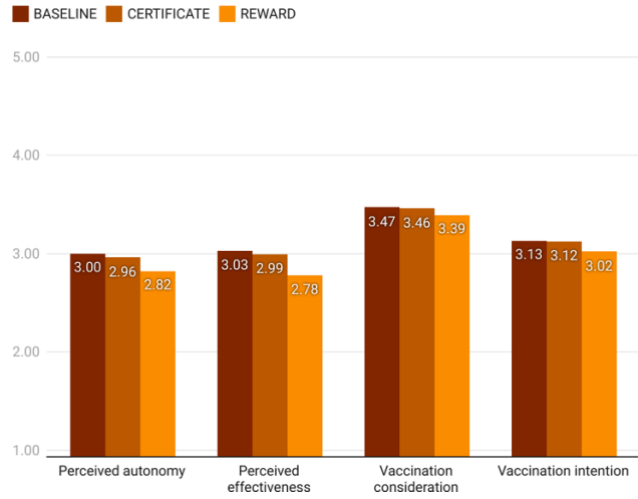
quite a few vaccinators favor, is not seen by respondents as the best strategy to get the doubters and refusers to vaccinate.

Figure 5. Condition and style effects on outcomes

A. Communication Style



B. External motivation strategy.



Box 2. Two examples of hypothetical scenarios

Example 1: Communication style (autonomy-supportive) + external strategy (voucher 50 euros)

"I don't know if **you feel like talking about vaccination**, but I was wondering **what you thought of the vaccination campaign**. Some people can't wait to be vaccinated, but others hesitate. I think **everyone has the right to** be critical and decide freely to wait longer or refuse the vaccine altogether. It is important to **follow your own rhythm** to come to an informed decision. I **am happy to answer any questions** or concerns you may have at this time. You may have already gathered some information yourself or plan to do so in the coming weeks to form your opinion. **You probably know this, but** vaccination brings a host of health benefits. While not 100% protection against future infection, it really is a big step forward, both for yourself and for your family members. If you do get infected after vaccination, the chances of you actually getting sick are very low.

To encourage hesitant people to get vaccinated, the government may decide to set up a rewards program. Rewards would be given as a sign of appreciation to citizens for their immense efforts during this crisis. Under this program, one would be given a voucher of 50 euros after vaccination.

So it's **really your decision** whether you want to accept the vaccine or not. **I have seen many people who want more time to make a decision**. If you have any questions, feel free to ask or call me. **I'm here to help you make the decision that's best for you.**"

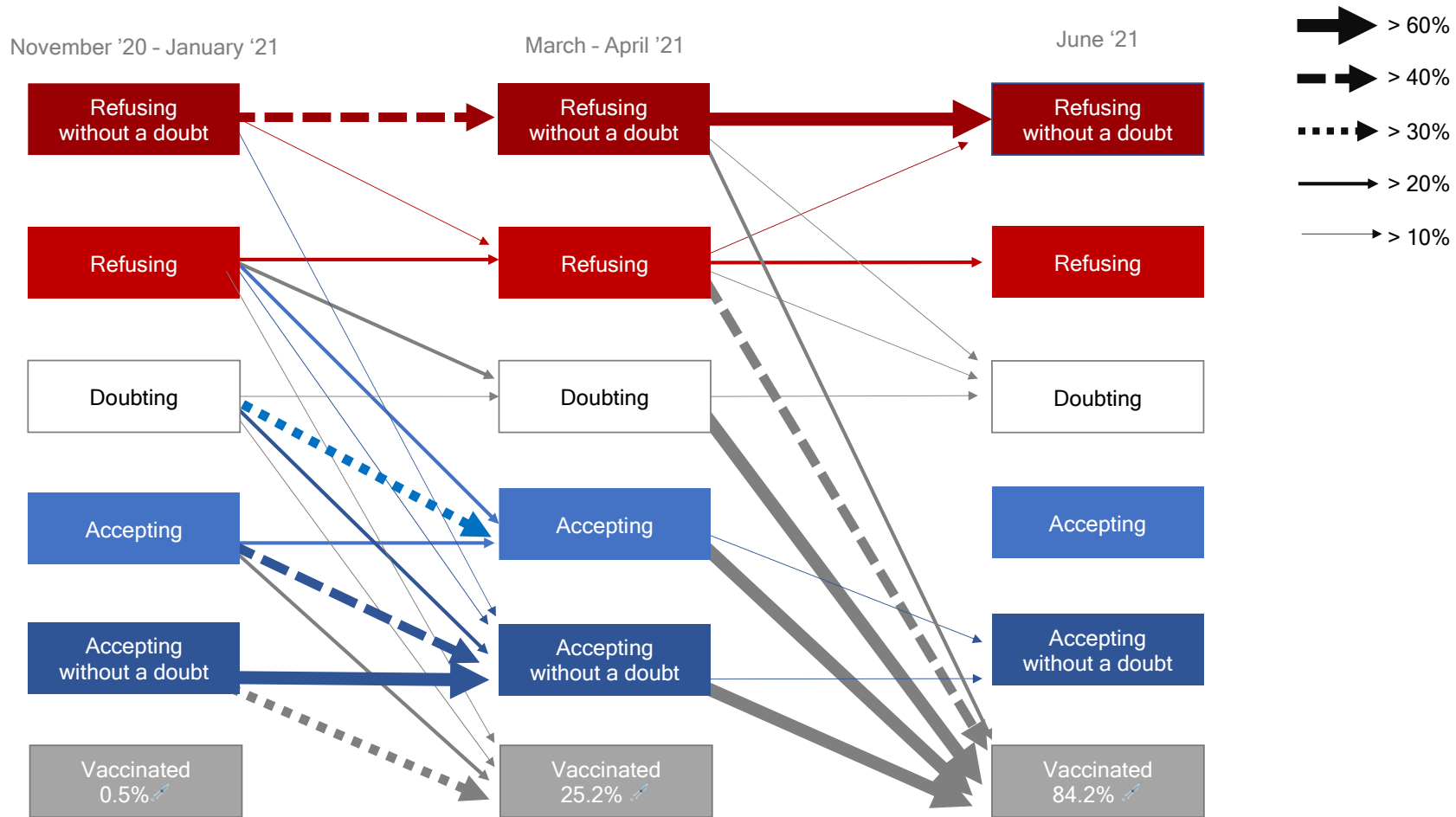
Example 2: Communication style (controlling) + external strategy (corona certificate)

"Given the doubts you have, it is **my job to engage with you** about vaccination to **convince you that it is the right thing to do**. The government has pointed out that we **need to reach** a vaccination rate of 85 or even 90% to achieve herd immunity. So we will need people like you who are hesitant now. **If you don't change your mind**, there is a risk that it will just take much longer for us to return to normal life. **I am sure** you have already gathered information. **Now is the time to ask your questions so that I can provide a scientific answer if your concerns turn out to be irrational. There is no reason to be concerned** at all. Because vaccination will give you a lot of health benefits, **you really should take the vaccine**. Although the protection against future infection is not 100%, it really is a big step forward, both for yourself and for your family members. If you do get infected after vaccination, the chances of you actually getting sick are very small.

To encourage people to get vaccinated, the government is about to launch a corona certificate. This certificate will allow people to travel in Europe and have some access to domestic activities such as attending a large-scale summer festival. Although a PCR test, which confirms that you are not infected, or a test that provides some evidence that you have overcome the infection, are alternatives, it is far better to accept the vaccine. Obviously, a vaccine is much more valuable in the long run than a negative PCR test.

So, I **would really urge you to overcome your doubts**. After all, if we all refuse the vaccine, **we will not move forward in this crisis**. If you have any questions, please feel free to ask or call me. **Still, I really hope you make the right decision in the next few weeks.**"

Appendix 1. Evolution in vaccination status over time (the thickness of the arrows indicates the percent of people in a block who change to another block during successive measurement periods)



Appendix 2. Changes in vaccine willingness and vaccine status (%) between December-January 2020 and June 2021

| | | June '21 | | | | | | | |
|-----------------------------------|---------------------------|----------|--------------------------|----------|----------|-----------|---------------------------|------------|------|
| | | N | Refusing without a doubt | Refusing | Doubting | Accepting | Accepting without a doubt | Vaccinated | |
| December '20 - January '21 | Refusing without a doubt | 305 | 36 | 8 | 8 | 3 | 4 | 43 | 100% |
| | Refusing | 184 | 10 | 9 | 6 | 5 | 5 | 64 | 100% |
| | Doubting | 312 | 2 | 2 | 3 | 4 | 5 | 85 | 100% |
| | Accepting | 657 | 1 | 0 | 0 | 4 | 10 | 84 | 100% |
| | Accepting without a doubt | 2590 | 0 | 0 | 0 | 0 | 9 | 92 | 100% |
| | Vaccinated | 15 | | | | | | | |

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