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# Intrinsic Preferences for Autonomy

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**Abstract**

Personal autonomy has been argued to be fundamental to well-being and is often discussed as an important driver of economic and political behavior. Yet, preferences for autonomy are not well understood, because their identification requires the separation of instrumental value attached to autonomous choice. We propose a novel elicitation method that solves this identification challenge. We establish the existence of intrinsic preferences for choice autonomy and show substantial heterogeneity in a large online sample. We further study their antecedents by relating them to existing personality scales and socioeconomic characteristics. Finally, we test their association with other preferences, attitudes and beliefs.

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# 1 Introduction

Understanding individual preferences is of fundamental importance to appropriately model and predict economic behavior. As a consequence, a vast economic literature has empirically studied and substantially advanced our understanding of individual preferences, in particular in the domains of risk, time and social behavior.

In this paper, we study the empirical foundations of intrinsic preferences for autonomy, where we define intrinsic preferences for autonomy as a desire to take decisions oneself rather than having someone else decide over own consequences on one's behalf — independent of the actual consequences of the decision. Arguments for such a desire can be found, for example, in Deci and Ryan's self-determination theory (Deci and Ryan, 1985), who hypothesize that autonomy is "essential for ongoing psychological growth, integrity, and well-being" (Deci and Ryan, 2000, p.229). The capabilities approach by Sen and Nussbaum (Sen, 1985; Nussbaum, 2000) emphasizes that freedom of choice is important for a person's quality of life, and not only outcomes. Frey, Benz and Stutzer (2004) argue that independence and autonomy at the workplace are sources of procedural utility that raise happiness, and according to John Stuart Mill, liberty is "one of the elements of wellbeing" (1859, Chapter III).

In contrast, the dominant view in economics has been that the value of autonomy is mainly instrumental, derived from the fact that autonomy allows individuals to make their own choices and thereby to maximize their utility. Potential intrinsic value components of autonomy have been largely ignored. Studies that discuss a potential relevance of intrinsic preferences for autonomy usually treat them as a residual theory, for example to explain otherwise unexplained wage differentials in self-employment and entrepreneurship (Hamilton, 2000; Hurst and Pugsley, 2011; Astebro et al., 2014), in science (Stern, 2004), or as an explanation for the underdelegation of decision rights in organizations (Fehr, Herz and Wilkening, 2013; Sturm, Herz and Antonakis, 2021). However, ascribing such observed residuals to a preference poses an identification challenge, because the residuals could be the result of potential measurement error in relevant control variables (Gillen, Snowberg and Yariv, 2019) or due to omitted variables bias. The underlying preference ultimately remains unidentified.

Why is it important to distinguish between instrumental and intrinsic value components of autonomy? To understand individual behavior, it is essential to have a precise understanding of the underlying motives. Intrinsic preferences for autonomy may not only be a crucial determinant of individual occupational choices and decentralization decisions within organizations. At a societal level, they may also be a fundamental driver of the (de-)centralization of institutions and political integration, and these separate motives may not be aligned with the instrumental utility consequences. For example, a YouGov poll asking British voters

about Brexit revealed that 61% of leave voters consider "significant damage to the British economy to be a price worth paying for bringing Britain out of the EU" (Smith 2017). Autonomy preferences may thus also be an important determinant of welfare across systems with different degrees of centralization.

One potential reason for the limited attention towards intrinsic preferences for autonomy is that they are inherently difficult to assess empirically, because it requires the separation of instrumental and intrinsic value components of autonomy. We propose a simple and easily applicable preference elicitation tool that allows such separation.[1] Our preference elicitation tool relies on a simple two-step procedure: In the first step, a choice set is identified that contains only alternatives between which an individual is revealed indifferent. In the second step, an individual's willingness to pay to make a choice from the choice set herself, rather than having someone else choose on her behalf, is elicited. The key idea that allows identification of intrinsic preferences for autonomy is the revealed indifference between the choice alternatives elicited in step 1. Since alternatives are equally valuable to the decision maker, there is no instrumental value attached to choosing oneself. Thus, a subject who does not receive any intrinsic value from autonomy should be indifferent as to whether she chooses or another individual makes the choice on her behalf. However, if choice is intrinsically valued, the individual should display a willingness to pay to make the choice herself.[2] The elicited willingness to pay in step 2 can thus directly be interpreted as an intrinsic preference for autonomy, without the need to control for *any* other preferences or beliefs.

The principle underlying our elicitation tool can be applied using any type of alternatives over which individuals have well defined preferences. It can thus be applied across a large variety of contexts. In the application presented here, we focus on choices under risk and use lotteries as alternatives. Lotteries are particularly suitable as alternatives because they allow for an easy incremental adjustment of value, which is essential to approximate an individual's point of indifference as closely as possible. In step 1, all subjects make 10 binary decisions between lotteries, where one of the lotteries remains fixed throughout and the high payoff of the other lottery is adjusted from decision to decision, with the objective to identify a subject's point of indifference. For step 2, a choice set is constructed that contains two lotteries such that the individual is expected to be revealed indifferent between them, based

[1] Our approach is inspired by Bartling, Fehr and Herz (2014), who have developed an experimental measurement of the intrinsic value of decision rights. However, their experiment did not isolate preferences for autonomy, and it relied on a complicated and lengthy laboratory experiment that is not suitable for wide-scale application. We discuss further differences at the end of the introduction.

[2] Note that the willingness to pay could in principle be positive or negative, reflecting an intrinsic desire to have others decide for oneself.

on the information gained in step 1. We then elicit the willingness to pay to make a choice oneself from this choice set, rather than having someone else make this choice on the subject's behalf.

The premise that the decision maker is indifferent between all alternatives in the choice set presented in step 2 is crucial for the identification of intrinsic preferences for autonomy, because otherwise instrumental value considerations can affect the elicited willingness to pay for choice. Thus, it is important to obtain information, for each individual, about how well identified the point of indifference is. A caveat of many methods used to elicit points of indifference, such as the Becker-deGroot-Marschak mechanism (Becker, DeGroot and Marschak, 1964), multiple price lists (Holt and Laury, 2002) or the staircase method, also called unfolding brackets (Cornsweet, 1962; Falk et al., 2022), is that they only deliver reliable estimates if individuals are *consistent in their choices*. All of the above methods assume and some even enforce consistency. In this case, identification of an indifference point critically rests on the assumption that individuals are indeed *fully* consistent in their choices. If this assumption is violated, the elicited point of indifference may not reflect the true point of indifference. To control for potential bias in the elicited willingness to pay that would stem from misidentified indifference sets, we thus empirically account for potential inconsistencies by designing step 1 of our elicitation tool as a 'Dynamically Optimized Sequential Experiment' (DOSE, Wang, Filiba and Camerer (2010)). From decision to decision, one of the alternatives is adjusted such that the next choice simultaneously maximizes both, the information gain regarding an individual's risk preference as well as an individual's consistency in choice.[3] After ten decisions are made, DOSE delivers an estimate of the indifference point, a structural estimate of a consistency parameter, as well as an estimate of the variance in the estimated indifference point. This additional information allows us to assess potential bias in our estimate of intrinsic preferences for autonomy that may stem from misidentified indifference sets.[4]

Based on data from two large-scale online experiments on Prolific.ac with a total of 1395 individuals from around the globe, we find that, on average, individual willingness to pay for choice autonomy is significantly larger than zero. Thus, we provide evidence for the existence of intrinsic preferences for autonomy. On average, the intrinsic value component accounts for 4-5% of the overall utility generated by the decision. We also find substantial heterogeneity in preferences for autonomy. While 54.4% of our subjects have a strictly positive willingness

[3]Participants may show inconsistent choice patterns for a variety of reasons, such as inattention or errors. Apparently inconsistent choice patterns may also be a consequence of preferences for randomization (Agranov and Ortoleva, 2017, 2022). Our elicitation method is not geared to identify indifference for such preferences. Instead, our procedure picks up such randomization as inconsistency in choice. We return to this topic in section 2.

[4]In step 2, we again apply a DOSE procedure to maximize the amount of information regarding the individual's willingness to pay for having the right to choose and regarding the individual's choice consistency.

to pay, 18.8% have a willingness to pay of zero, and the willingness to pay is strictly negative for 26.5% of the subjects. A replication with university students in the laboratory yields similar results with 47% of participants showing a strictly positive willingness to pay.

We can use the information about choice consistency at the individual level to assess the robustness of our findings in this respect. In particular, our data enables us to calculate the expected residual instrumental utility of choice autonomy. For subjects with reasonably high levels of choice consistency, this component turns out to be very small, accounting for less than 1% of the overall utility generated by the lotteries, and it is unable to explain the observed willingness to pay for choice autonomy, which ranges from 4-5%. While the average expected residual instrumental value of choice is larger for individuals that displayed substantial choice inconsistencies in step 1, we still find that residual instrumental value cannot fully explain the observed willingness to pay. Thus, we can rule out that imprecise measurement of the indifference set explains the existence of a willingness to pay for choice in our setting.

Having established the existence of intrinsic preferences for autonomy, we can assess the relation of such preferences to well-established constructs in psychology that are heavily utilized in the literature, such as the Index of Autonomy (Deci and Ryan, 2006), Locus of Control (Rotter, 1966), Generalized Self-Efficacy (Bandura et al., 2006; Schwarzer, Jerusalem et al., 1995), desirability of control (Burger and Cooper, 1979) or the world value survey question on perceived freedom and control (Inglehart et al., 2014). It is important to note that these surveys measure *perceptions* of own autonomy, not a *preference* for autonomy. While preferences may well be associated with reported perceptions, there is no a priori reason to assume that an association between beliefs about and preferences for own autonomy must exist. Indeed, we find that our measure of intrinsic preferences for autonomy is unrelated to Deci and Ryan's index of autonomy, Rotter's locus of control as well as to self-efficacy.

To explore the antecedents of the heterogeneity in preferences for autonomy, we combine our preference measure with individual level socioeconomic variables and the BIG 5 personality traits. Overall, we find limited evidence for strong socioeconomic antecedents of preferences for autonomy. Instead, such preferences appear to be similarly distributed across socio-demographic groups such as age and income.

Finally, we relate our measure of intrinsic preferences for autonomy to other preferences and attitudes. We find that intrinsic preferences for autonomy are significantly correlated with individual risk taking. Interestingly, individual risk taking is also significantly correlated with independent survey measures of preferences for and perceptions of autonomy, suggesting that there may be a fundamental connection between these preference dimensions (Chapman et al., 2018). In addition, we find that individuals with stronger intrinsic preferences for

autonomy are more opposed towards the introduction of measures that restrict individual freedoms during the Covid-19 pandemic, in particular towards restrictions on unvaccinated citizens, but the statistical significance of these results remains weak.

Our paper advances the understanding of whether and how people derive value from decision autonomy. Bartling, Fehr and Herz (2014) have demonstrated the general existence of an intrinsic value of decision rights in an organizational setting, where decision rights referred to decisions that had consequences for multiple parties, including the decision-maker. Subsequent papers have further assessed the utility consequences of (i) controlling own payoffs and from non-interference (Owens, Grossman and Fackler, 2014; Neri and Rommeswinkel, 2016; Ferreira, Hanaki and Tarroux, 2020; Meemann, 2023)[5], (ii) the size of choice sets (Sethi-Iyengar et al., 2004; Iyengar and Kamenica, 2010; Scheibehenne, Greifeneder and Todd, 2010; Iyengar and Kamenica, 2010; Messner and Wänke, 2011; Le Lec and Tarroux, 2020), (iii) the desirability of the consequences of choice (Botti, Orfali and Iyengar, 2009), (iv) socio-economic background (Snibbe and Markus, 2005), or (v) the impact of potential losses (Bobadilla-Suarez, Sunstein and Sharot, 2017). By providing an easy to administer elicitation tool that isolates intrinsic preferences for autonomy, we provide a methodological innovation that will allow studying the antecedents and consequences of such preferences in detail. In particular, it enables their simple and direct measurement, which simplifies research on the *direct* impact of preferences for autonomy on economically relevant outcomes. This is important given that such preferences have been invoked as potential explanations for economically relevant outcomes such as occupational choices (Hamilton, 2000; Stern, 2004; Hurst and Pugsley, 2011), the (non-)delegation of decision rights within organizations (Fehr, Herz and Wilkening, 2013; Fehrler and Janas, 2021), or for negotiation stragegies (Greiner, 2023).

Intrinsic preferences for autonomy may also have an important impact on optimal organizational design. This literature has so far primarily considered the instrumental value of decision rights, as reflected in conflicts of interests between parties within an organization (see, for example, Aghion and Tirole (1997)). Recently, Dessein and Holden (2022) show theoretically how private benefits stemming directly from decision making, such as intrinsic preferences for autonomy, can shape organizational design. Bloom, Sadun and Van Reenen (2012) show a cross-country correlation between the degree of decentralization of organizations and the power distance index (Hofstede, 2001), which "measures the perceptions of and the preferences for hierarchical relationships" (Bloom, Sadun and Van Reenen (2012),

[5]Boissonnet and Ghersengorin (2022) provide an axiomatic revealed preference model of so-called 'reactance-based choice', expressing the idea that people are averse to interference with their freedom of choice.

p.1687). However, the ultimate cause of this relationship remains unclear: Differences in decentralization could be caused by differences in intrinsic preferences for self-determination (or autonomy), they could be caused by differences in the instrumental value of different organizational forms across countries, or the power distance index may mostly pick up the *perception* of decentralization in a country, and thus the causality could be reversed. We provide micro-foundations and a measurement tool that will allow to deepen our understanding of the relationships between preferences and organizational structures.

Finally, our methodology may be valuable for the recent literature on paternalism and decision-making for others. Pikulina and Tergiman (2020) demonstrate an intrinsic preference for power in a laboratory experiment in which subjects have a willingness to pay to determine the outcomes of other people. Ackfeld and Ockenfels (2021) suggest that people tend to take the other person's autonomy into account when taking paternalistic actions that may restrict their autonomy, and Ambuehl, Bernheim and Ockenfels (2021) suggest that people may project their own preferences on others when being able to influence their choice sets. Such a possible preference for making choices over others is conceptually distinct and may or may not be correlated with a preference for own autonomy. However, it is of fundamental interest to the literature on paternalism to understand if and when people exhibit an intrinsic preference for making own choices that are free from external interference.

Section 2 describes the elicitation method in detail. Results are presented in Section 3. Finally, we conclude in Section 4.

# 2 Measuring Intrinsic Preferences for Autonomy

Intrinsic preferences for autonomy postulate that individuals receive utility from being autonomous per se, independent of the instrumental value associated with making a choice among multiple alternatives. Identifying such intrinsic value components using observational data or survey measures is, in most circumstances, impossible. Whenever an individual has autonomy over a choice, or is asked about the importance of having autonomy over a choice, as it is done in commonly used surveys that aim to measure perceptions and attitutes towards autonomy, there is likely instrumental value associated with the choice. In addition, due to heterogeneity in preferences over outcomes, or differences in beliefs about outcomes when an individual is not autonomous in its choice, there can be large individual heterogeneity in the subjectively perceived instrumental value component of autonomy. As a consequence, controlling for the instrumental utility component of autonomy at the individual level is essential in order to identify *intrinsic* preferences for autonomy. To achieve this goal, we designed a novel preference elicitation tool that allows us to capture the purely intrinsic

value attached to autonomy. Our novel elicitation tool consists of two steps:

1. First, participants engage in a choice task in which they are repeatedly confronted with a choice between two alternatives. The goal of the first step is to identify two alternatives, alternative $A$ and alternative $B$, between which an individual is revealed indifferent ($A \sim B$).

2. Second, a choice set containing alternatives $A$ and $B$ is constructed and the individual's willingness to pay for making a choice from this set oneself, rather than having someone else choose for herself, is elicited.

The first step serves the purpose to eliminate any instrumental value considerations in the second step. If instrumental value were the sole determinant of the value of choice autonomy in our setting, the decision maker should be indifferent between choosing oneself and having someone else choose for her, and thus have a willingness to pay to choose of zero. Alternatively, if choice autonomy is intrinsically valuable, individuals should display a positive willingness to pay to choose. Moreover, the larger the intrinsic value attached to choice autonomy, the larger should be the willingness to pay to choose. Vice versa, individuals who are averse to having the right to choose themselves are expected to show a negative willingness to pay in step 2.

In the following subsections, we describe the exact procedures used in step 1 and step 2 in detail.

## 2.1 Step 1: Eliciting indifference between two choice alternatives

To create a choice set that only contains alternatives between which the decision maker is indifferent, we made the following design choices: (i) we use choice alternatives whose value can be easily and incrementally adjusted, (ii) we create a simple and easy to understand choice environment to minimize confusion, and (iii) we structurally model and measure the degree of choice (in)consistency of participants, providing us with important information about the accuracy with which we have identified the indifference point.

The nature of the alternatives contained in the choice set in step 2 is in principle irrelevant for our measurement tool. However, the importance of identifying indifference between two alternatives means that alternatives that can be easily and incrementally adjusted are suited best. Thus, we decided to use lotteries over monetary payments as our choice alternatives. Lotteries allow to easily alter payments in incremental steps to fine-tune the alternatives until a point of indifference is identified. Another advantage of lotteries as alternatives is

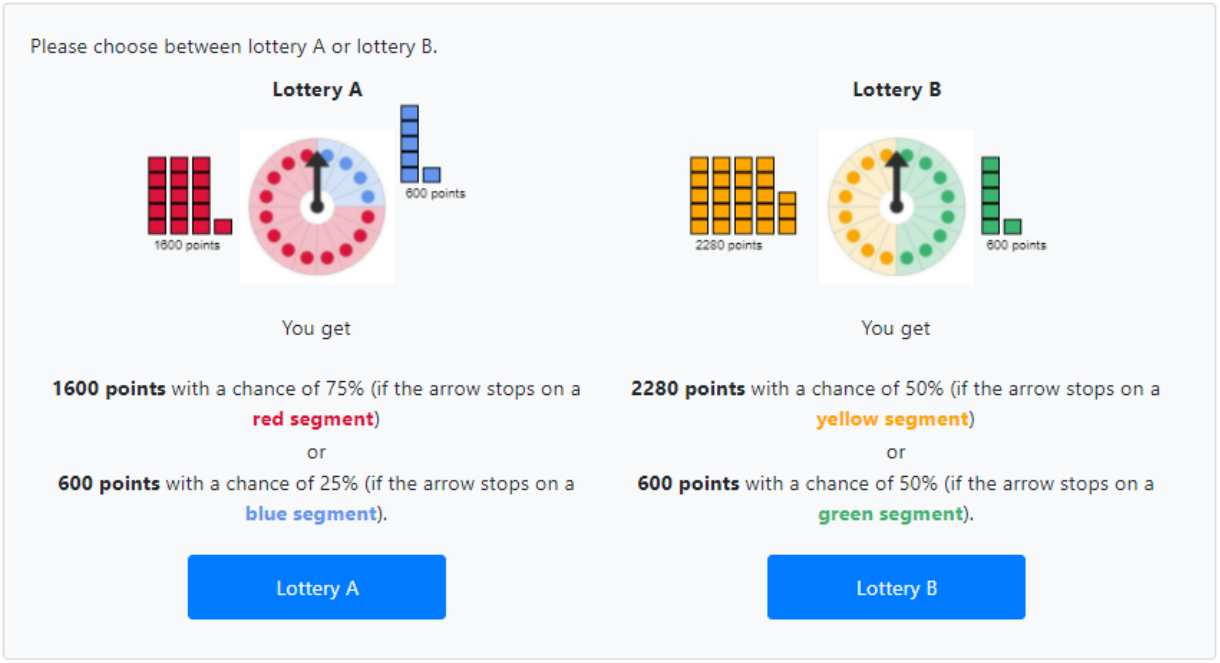



Figure 1: The experimental interface in step 1 of the preference elicitation tool

that outcomes are purely monetary, which enables the easy application of the preference elicitation tool in online settings.

Each participant goes through an individual sequence of 10 choice situations in each of which she faces the simple choice between two lotteries $A$ and $B$. Lottery $A$ is fixed and always provides a payoff of 600 points with 25% probability and a payoff of 1600 points with 75% probability. Lottery $B$ provides a payoff of 600 points with 50% probability and a payoff of $X$ selected from $\mathcal{X} \in \{1890, ..., 2840\}$ points with 50% probability. The value $X$ is adjusted from choice situation to choice situation. Probabilities and payments are represented both in numerical and graphical terms. An example of the decision screen that participants faced is displayed in Figure 1.

To optimize the informational gain about the indifference point from each individual choice, and to obtain an individual measure of the precision with which the indifference point is identified, the adjustment of $X$ in lottery $B$ from choice situation to choice situation is determined using DOSE — Dynamically Optimized Sequential Experimentation (Wang, Filiba and Camerer, 2010; Chapman et al., 2018). To apply DOSE, we impose some structural assumptions on individual's utility and choice functions, in order to be able to apply an information criterion to determine the most informative choice sequence and to estimate a consistency parameter.

Concretely, we assume that individual's utility has constant relative risk aversion and is

given by

$$u_i(w) = \frac{w^{1-r_i}}{1-r_i} \tag{1}$$

where $w$ is the payoff in points and $r_i$ is the individual's risk aversion parameter. Further, we assume that individual choice behavior is governed by the following probabilistic function

$$Pr_i(A) = \frac{1}{1+e^{-\mu_i(U_i(A)-U_i(B))}}, \tag{2}$$

where $Pr(A)$ is the probability of choosing lottery $A$, $\mu_i$ specifies individual $i$'s degree of stochastic response in choice, and $U_i$ denotes individual $i$'s expected utility from a lottery given $u_i$.

The key individual parameters that we want to estimate using the DOSE procedure are thus $r_i$ and $\mu_i$. We define an initial discrete parameter space for $r$ and $\mu$. The parameter space for $r$ is chosen based on the implied risk aversion parameters from the set of lotteries B (following from the set of high payoffs $\mathcal{X}$), and contains 96 values given by $\mathcal{R} \in \{-1.2, ..., 1.2\}$.[6] $\mu$ can take on the 13 different values given in $\mathcal{M} \in \{1, 10, ..., 120\}$, ranging from almost exclusive stochasticity in choice to very high consistency in choice.[7] Finally, the function $f(r, \mu) : \mathcal{R} \times \mathcal{M} \rightarrow [0, 1]$ assigns a probability to each parameter combination $(r, \mu)$, and we assume as a prior that the probability distribution over $(r, \mu)$ is uniform.[8] After each choice, the joint distribution is updated using Bayes Rule. Details about the exact procedures and parameterization are given in Appendix A.1

After individual $i$ has completed its individual sequence of ten choices (denoted by $C_{1,i}$), we consider the posterior probability distribution $f_i(r, \mu|C_{1,i})$ to estimate the risk preference parameter of individual $i$ in order to define the indifference lottery used in step 2. To this end, we first determined the *modal* value of $\mu$ conditional on $C_1$, denoted $\mu^m$, and then

[6]The 96 values contained in the vector $\mathcal{R}$ are determined based on the identifiable parameters of $r$ given the set of lotteries $B$ defined by $X$ above.

[7]Note that $\mu$ is simply a scaling parameter for differences in expected utility (see equation 8. Thus, the values of $\mu$ have to be interpreted in connection with the values of the utility function defined in 7, and cannot be interpreted in isolation. The values chosen here are such that they capture a relevant range from highly inconsistent to very consistent behavior. The value of 0, which would imply completely random choice, has been excluded as otherwise DOSE would excessively try to learn whether or not a participant's choices are random, which hinders learning about the risk parameter given the limited amount of choices that we can elicit.

[8]The parameter space was based on prior experiments (Wang, Filiba and Camerer, 2010) as well as on pre-tests and calibrations. The choice of a uniform prior distribution over the joint parameter space has some impact on the sequence of lotteries B that are presented to subjects. However, the assumption of a uniform distribution does not substantially impact results with sufficiently many choices.

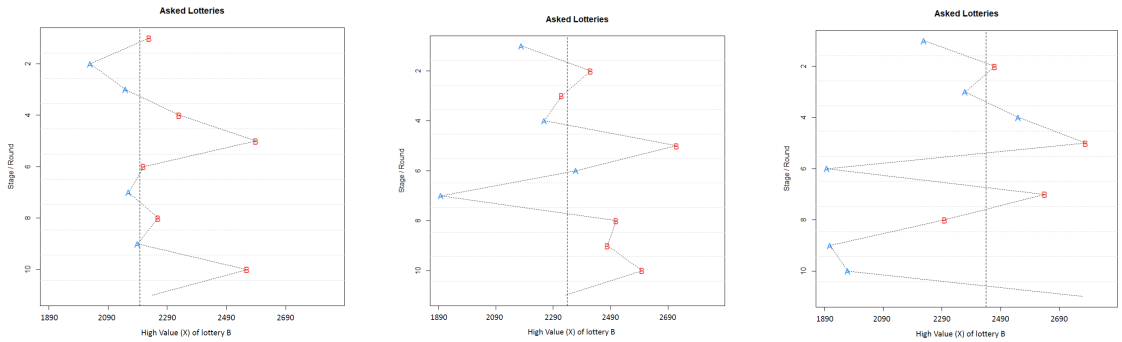



Figure 2: Choice Patterns of three selected participants in our experiment. A/B indicates the value $X$ of lottery B that was presented in the respective round of step 1, as well as the subject's choice of lottery (A vs. B). The leftmost subject displayed perfect consistency, the rightmost subject a very inconsistent choice pattern, and the middle subject was moderately consistent. Vertical lines represent the identified indifference lottery, based on the estimated risk parameter $\hat{r}$.

calculate the expected value for $r$ conditional on $\mu^m$, that is

$$\hat{r_i} = \sum_{r \in \mathcal{R}} r f_i(r|\mu_i^m, C_{1,i}).^9$$

Based on the estimated risk parameter $\hat{r}_i$, we then construct an *indifference lottery* $\hat{B}_i$ that pays a high payoff $\hat{X}_i$ such that individual $i$ is expected to be just indifferent between lotteries $A$ and $\hat{B}_i$.[10] Figure 2 displays typical choice patterns as well as the selected indifference lottery $\hat{B}_i$ for individuals with different levels of choice consistency. We can see that the estimated indifference lottery $\hat{B}_i$ fits the choice pattern very closely for very consistent subjects, and it still approximates the choice pattern reasonably well for subjects with moderate consistency levels.

[9] We condition on the modal value of $\mu$ because convergence to the true $\mu$ parameter is relatively slow. Given that we initially assume a uniform distribution over models, the posterior probability distribution over models when using the unconditional expectation still puts considerable probability mass on low levels of $\mu$ even if choice patterns are perfectly consistent. But since convergence on the true $r$ parameter is slower conditional on low levels of $\mu$ (because there is a larger probability that any choice is the consequence of an error rather than an expression of the true risk preference), taking the conditional expectation improves the precision of the chosen indifference lottery for participants whose true consistency is high (but may worsen it for participants with inconsistent choice patterns). Importantly, we can show in Appendix A.1.3 that the choice between the unconditional expectation of $r$ and the expectation of $r$ conditional on the modal value of $\mu$ to determine the indifference lottery is not particularly consequential for the large majority of our participants (except for highly inconsistent ones). As Figure A.1 shows, the differences in the estimation of $\hat{r}$ is small, unless subjects are highly inconsistent. For moderately consistent subjects, the average difference in the estimated $\hat{r}$ amounts to 0.013.

[10] $\hat{X}_i = \left[\frac{\frac{3}{4}1600^{1-\hat{r}_i} - \frac{1}{4}600^{1-\hat{r}_i}}{\frac{1}{2}}\right]^{\frac{1}{1-\hat{r}_i}}$

## 2.2 Step 2: Eliciting the Willingness to Pay For Choice Autonomy

In step 2, participants are again presented with a choice between a lottery $A$ and $\hat{B}_i$. Lottery $A$ is identical to step 1 and pays 1600 points with 75% probability and 600 points with 25% probability. Lottery $\hat{B}$ pays $\hat{X}_i$ points with 50% probability and 600 points with 50% probability, such that the participant is expected to be just indifferent between the two choice alternatives ($A \sim \hat{B}$).[11] Participants are told that either $A$ or $\hat{B}$ will determine their payoff, but that the choice between $A$ and $\hat{B}$ is either made by the participant herself, or by another study participant.[12]

Participants are again faced with a sequence of 10 choice situations, in each of which they must choose between choosing themselves (phrased "I choose") and paying a price $p$, or delegating the choice to an anonymous study participant (phrased "I delegate"). The price $p$ can take on values defined in $\mathcal{P} \in \{-600, -590, ..., -10, 10, 20, ..., 600\}$, varies from situation to situation and can either be positive or negative.[13] The experimental interface that participants faced in step 2 of the elicitation procedure is shown in figure 3.

We assume that the participant's utility function can be characterized as follows:

$$v_i(d_i, p, c) = \begin{cases} U_i(A) + d_i - p, & \text{if participant chooses by herself } (c = 1) \\ U_i(A), & \text{if participant delegates choice } (c = 0) \end{cases} \tag{3}$$

where $U_i(A)$ is the expected utility derived from lottery $A$ (note that $U_i(A) = U_i(\hat{B}_i)$ when $A \sim \hat{B}_i$), $d_i$ is the intrinsic utility of the participant associated with deciding herself, $p$ is the (positive or negative) price she has to pay, and $c$ is a dummy that indicates choosing oneself ($c = 1$) or delegating ($c = 0$). Given this utility specification, the price $p$ at which an individual is just indifferent between choosing oneself and delegating is exactly equal to the

[11] The difference in the high outcome of lottery $\hat{B}$ in step 2 when it is determined using the unconditional expectation of $r$ and the expectation of $r$ conditional on the modal value of $\mu$ is small. For example, for participants with modal values of $\mu \geq 40$, the average point difference in $X$ for the chosen indifference lottery according to the two methods amounts to 5.6 points (median: 4.43). In contrast, the average $X$ is 2285 points. For participants with at least moderate degrees of choice consistency, the chosen high outcome of the indifference lottery thus only varies by approx. 0.2% across the two methods.

[12] Participants were told that another study participant would choose a lottery on their behalf and receive a fixed base payment that is independent of whether one delegates or the choices s/he makes. This other participant made decisions for 295 choice situations that may occur in step 2 prior to the actual preference elicitation. At the end of step 2, participants were informed that the other participant's decision were recorded beforehand using the strategy method procedure as described above to guarantee a smooth experience without delay.

[13] Negative prices were framed as "bonuses" that the participant receives if s/he chooses him/herself. $p = 0$ was excluded because we expected a significant fraction of participants to have a true willingness to pay of 0, and forcing a choice at 0, which would then be a tie breaker, would bias our estimate in the positive or negative domain.

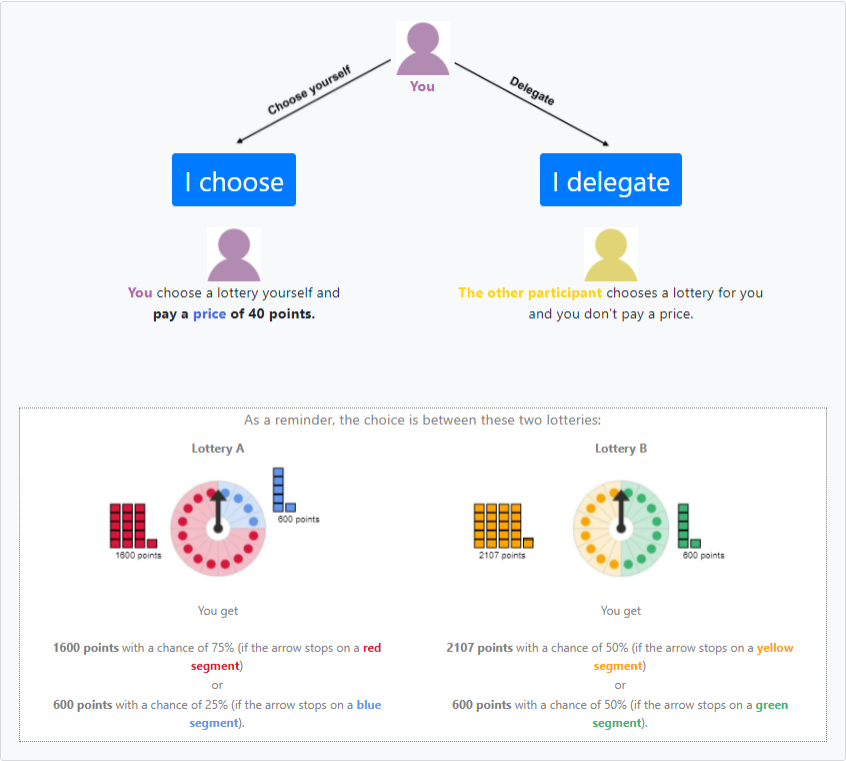



Figure 3: The experimental interface in step 2 of the preference elicitation tool

intrinsic utility of choosing oneself, $d_i$.

Further, an individual's choice behavior is determined by the following choice function:

$$Pr_i(c=1) = \frac{1}{1+e^{-\gamma_i(v_i(d_i,p,c=1)-v_i(d_i,p,c=0))}} = \frac{1}{1+e^{-\gamma_i(d_i-p)}} \tag{4}$$

where $Pr(c=1)$ is the probability of choosing to pay $p$ for choosing oneself, and $\gamma_i$ specifies participant $i$'s degree of stochastic response in choice which can take values in $\Gamma \in \{1, ..., 15\}$.

We again define an initial discrete parameter space for $d$ (denoted $\mathcal{D}$ and derived from the possible prices defined in $\mathcal{P}$) and $\gamma$, and assume that the prior joint probability distribution $f(d, \gamma)$ over these parameters is uniform.[14] After each choice, the joint distribution is updated using Bayes Rule. Details about the exact procedures and parameterization are again given in Appendix A.1.

After individual $i$ has completed its individual sequence of ten choices (denoted by $C_{2,i}$), we consider the posterior probability distribution $f_i(d, \gamma | C_{2,i})$ to estimate the individual willingness to pay for choice autonomy. To this end, we first determine the *modal* value of

[14]The values of $\gamma$ have to be interpreted in connection with $v_i(d_i, p)$, as it simply scales up differences in expected utility, and values cannot be interpreted in isolation. We again chose the range of $\gamma$ such that highly inconsistent and highly consistent choice behaviors are covered.

$\gamma$ conditional on $C_2$, denoted $\gamma^m$, and then calculate the expected value for $d$ conditional on $\gamma^m$, that is

$$\hat{d}_i = \sum_{d_i \in \mathcal{D}} df_i(d|\gamma_i^m, C_{2,i}).^{15}$$

## 2.3 Discussion of the Preference Elicitation Method

In this section, we review some key assumptions and properties of our proposed method, in particular the conditions that need to be met for us to identify intrinsic preferences for autonomy without bias.

First, our preference measure may not be valid if preferences are not stable, or participants have preferences for randomization (Agranov and Ortoleva, 2017, 2022). Both might result in apparent preference reversals or choice inconsistencies. Note that we are not able to distinguish between the exact motives that cause choice inconsistencies. The primary aim of measuring inconsistencies in the lottery choices is detecting possible measurement errors that can hinder our identification strategy. For which reason these occur—mistakes or a preference for randomization—is thus not of primary importance for us. Key is that controlling for inconsistencies allows us to ensure the validity of the indifference between alternatives in step 2 of the preference elicitation tool, and our structural approach provides us with a quantified measurement of the precision with which the indifference point is identified at the individual level.

Only cases in which a change in preference occurs precisely between parts 1 and 2 are problematic, as the identified indifference point in part 1 no longer represents the indifference point in part 2. While we cannot rule out that such preference instability may occur, note that the time frame of the overall study was relatively short, there was no resolution of uncertainty at the end of part 1, and the display of the alternatives (lottery A and B) remained practically identical between the study parts. We thus consider such preference instability between parts an unlikely occurrence.

Second, to apply DOSE, we had to impose some structural assumptions on individual's utility and choice functions, in order to be able to apply an information criterion to determine the most informative choice sequence and to estimate a consistency parameter. One might worry that these structural assumptions crucially drive our results, However, while these

[15] We condition on the modal value of $\gamma$ for the same reasons as before. Again, we show in Appendix A.2 that the choice between the unconditional expectation of $d$ and the expectation of $d$ conditional on the modal value of $\gamma$ to determine the willingness to pay for autonomy is not particularly consequential for the large majority of our participants (except for highly inconsistent ones). As Figure A.2 shows, the differences in the estimation of $\hat{d}$ are small, unless subjects are highly inconsistent. For at least moderately consistent subjects, the average difference in the estimated $\hat{d}$ amounts to 1.6 points.

assumptions may have some impact on the most informative sequence of lottery choices, we can show that they only very marginally impact the identified point of indifference, which is our ultimate object of interest. In Appendix A.1.3, we re-run our estimation of the implied indifference point based on each participant's actual choice data using alternative structural assumptions, and show that differences are minimal. The left panel of Figure A.1 illustrates this point very well. When participant's are reasonably consistent in their choice, the selection of the indifference lottery is not strongly dependent on the underlying structural model in which CRRA utility was assumed.

## 2.4 Implementation and Procedures

We conducted two surveys on the platform Prolific Academic (www.prolific.co) in June 2021 and in January 2022. Each survey consists of two parts, the behavioral task described in section 2 and a subsequent questionnaire. The instructions of the behavioral task, including the consent form, can be found in section A.3 and the complete list of questions of each survey in section A.4 of the appendix. The questionnaire of the June wave consists of ten question blocks that were presented to participants in random order. We include several scales measuring preferences for and perceptions of autonomy that have been widely used in psychology (locus of control (Rotter, 1966), autonomous functioning (Deci and Ryan, 1985), generalized self-efficacy (Schwarzer, Jerusalem et al., 1995) and desirability of control (Burger and Cooper, 1979)) together with several questions capturing personal characteristics, related preferences and socio-demographic information.

**Implementation of June 2021 wave.** The data for the June 2021 wave were collected between June 15$^{th}$ and June 21$^{st}$ 2021. Participants completed the behavioral experiment and could then enter the questionnaire within 24 hours (retention rate of 89.9%). The study was open to anyone[16], but participants were predominantly Europeans.[17] On average, participants earned £7.09 (consisting of a base payment of £2, an average variable bonus of £2.09, and a payment of £3 for completing the questionnaire) and spent 15.55 minutes on the behavioral experiment and 28.92 minutes on the questionnaire.

**Implementation of January 2022 wave.** The implementation and procedures of the survey in January 2022 was similar to the June 2021 wave. The replication study was run in

[16]Data was collected during the UEFA EURO 2020. Because of the emotions triggered by this event, we excluded nationalities whose team had a game on the same day.

[17]Nationalities: Greece (5.4%), Italy (6.2%), Mexico (5.7%), Poland (11.2%), Portugal (14.0%), South Africa (9.8%), United Kingdom (13.4%), the remaining nationalities were represented with less than 5% of the sample.

January 2022 on Prolific Academic.[18] We excluded subjects who participated in the previous study and restricted participation to subjects with a 'prolific score' of at least 99/100, which means they behaved in a reliable way in previous studies on Prolific. The complete study took on average 20.66 minutes and the base payment for participation was £3.5 plus an average variable payment of £2.12.

**Sample composition.** We recruited 998 participants in June 2021 and 794 participants in January 2022. Control questions make sure that participants understand the instructions in the behavioral task and in addition there are several clearly marked attention checks throughout the questionnaire in order to make sure that participants answer the questions carefully and attentively. A participant is excluded from the survey if they fail one set of control questions or the attention checks a third time. The data used for the analyses thus consists of participants who successfully completed the whole study and passed the control questions and attention checks. For the analysis we exclude subjects who failed at least one of the clearly market attention checks in the survey because this indicates that they did not read the questions attentively (103 observations).

From this data set, we exclude subjects without a nearly perfect Prolific score (Prolific score<99) in the June 2021 dataset (116 observations).[19] In addition, we exclude participants who never switch between lotteries in part 1, and thus are categorized as extremely risk averse/risk loving—and as highly consistent—in our data. There are different explanations for such choices: subjects might not pay attention and just click the same button, they might have extreme risk preferences, or they might use a simple heuristic for making the choices between lotteries. While we cannot distinguish these possibilities, the key reason for excluding these participants is that we cannot identify an indifference set for these participants, and therefore the elicitation of the willingness to pay for an intrinsic value for choice in part 2 does not work accurately for them (198 observations). This leaves us with a dataset with 1395 observations.

**Laboratory Replication.** In May 2022 we replicated the main results in a laboratory study at the University of Fribourg, Switzerland. Subjects were students at the University

[18]The behavioral task and the (shorter) questionnaire were now run as one study. In addition, the study was run together with another parallel one that addresses different research questions. For this study, we balanced the nationalities that we recruited in the following way: 30-40% Continental Europe, 25% US, 25%, 5-10% South Africa, and 5-10% Mexico. Given these restrictions, we recruited participants with the following nationalities (plus several others with less than 5% of participants in our sample): Italy (7.2%), Mexico (6.4%), Poland (9.9%), Portugal (10.1%), South Africa (6.6%), United Kingdom (23.9%), United States (23.8%).

[19]Individuals with a Prolific score below 99 were excluded from participation in the January 2022 data collection.

of Fribourg, the mean age is 23 and almost 74% are women. We recruited 152 students, 13 of whom played the role of the person to whom the choices are delegated during part 2, which leaves us with 139 decisions makers in part 2 of the experiment. The experimental design and presentation was identical to the studies on Prolific, the payoffs were adapted to commonly paid salaries for student jobs in Fribourg (24.25 CHF on average, including a 10 CHF show-up fee). The questionnaire at the end was adapted and shortened, for the complete list of questions see section A.4.3 in the appendix. We conducted 13 sessions and in each session one participant was randomly selected to be the person to whom all other participants in this session can choose to delegate their choice. This person received a fix payment of 10 CHF for part 2 (plus their payment from part 1 and the show-up fee of 10 CHF). In the analysis of the laboratory data, we apply the same exclusion restrictions as in the online studies, meaning that subjects who failed attention checks or displayed extreme risk preferences in step 1 are excluded.[20]

# 3 Results

## 3.1 Willingness to Pay for Autonomy

The data from our preference elicitation task reveals that individuals on average have a positive willingness to pay for autonomy. We state our findings in the following result:

**Result 1**

*a) The average and median willingness to pay for autonomous choices in our decision task is significantly positive. We thus infer that, on average, individuals have intrinsic preferences for autonomy.*

*b) The average intrinsic utility component of autonomy amounts to 4.8% of the total expected utility received from the choice individuals faced.*

*c) There is substantial heterogeneity in the willingness to pay for autonomous choices: While the average value for autonomous choice is positive and this corresponds to the decision of the majority of subjects (54.7%), more than one fourth (26.5%) exhibit a negative value and 18.8% a value of zero.*

Support for Result 1a) can be seen in Figure 4, which shows the distribution of the willingness to pay for taking the decision in our preference elicitation task for all individuals

[20] 4 subjects failed at least one attention check and also 4 subjects never switched between lotteries in part 1 (not the same ones).

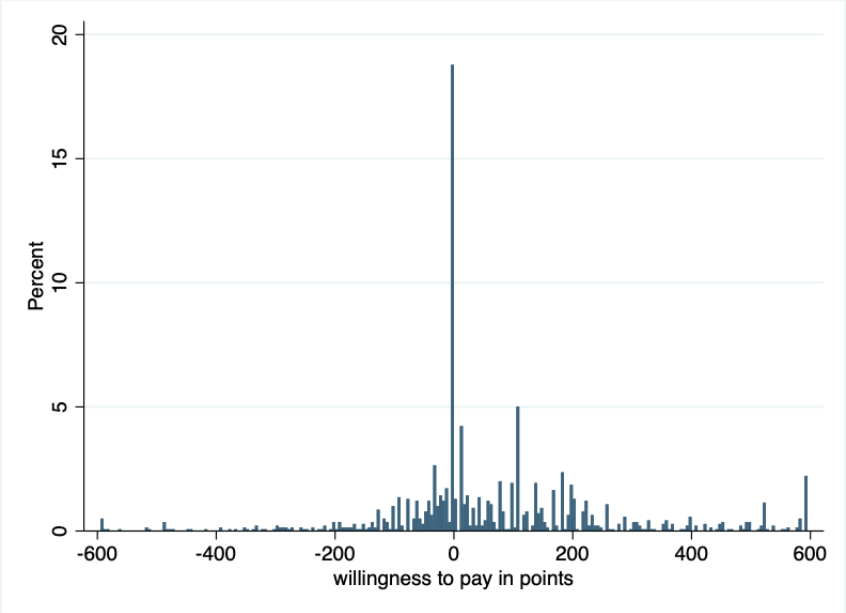



Figure 4: Distribution of the willingness to pay for autonomy (June 2021 and January 2022, $N = 1395$).

in the June and January samples. The average willingness to pay amounts to 70 points, which is significantly different from 0 (N= 1395, t-test: $p < 0.001$, Wilcoxon sign-rank test (in the following WSR): $p < 0.001$). The median willingness to pay is 12 points.

To support Result 1b), we calculate how much individuals are willing to give up for their autonomy in terms of the value of the underlying decision at hand. We can assess this relative value by calculating the utility from monetary outcomes that an individual is willing to forgo by keeping the decision right. In our choice task, when delegating the decision to another individual, an individual receives the following expected utility:[21]

$$v_i(c = 0) = 0.75\frac{1600^{(1-\hat{r}_i)}}{1-\hat{r}_i} + 0.25\frac{600^{(1-\hat{r}_i)}}{1-\hat{r}_i}, \tag{5}$$

where the risk parameter $\hat{r}_i$ is individually calculated based on the decision behavior in step 1 of our elicitation task. When the individual keeps the decision right, she has to pay a price $p$ to do so. When $p = WTP$, the individual is just indifferent between deciding herself and delegating. Thus, the utility from the resulting monetary payments when keeping the decision right at a price of $WTP$ can be written as

$$v_i(c = 1) = 0.75\frac{(1600 - WTP)^{(1-\hat{r}_i)}}{1-\hat{r}_i} + 0.25\frac{(600 - WTP)^{(1-\hat{r}_i)}}{1-\hat{r}_i}. \tag{6}$$

[21]Remember that given the nature of our task, the utility is the same for lottery $A$ and lottery $B$. We thus use lottery $A$ for every individual to calculate the individual utility.

Using these terms, $\frac{v_i(c=0)}{v_i(c=1)} - 1$ gives us the percentage difference in utility from monetary payoffs between delegating the choice and choosing oneself. Because at the price $WTP$ the individual is revealed indifferent between delegating and choosing herself, it must be that this difference in utility from monetary payoffs is just compensated by intrinsic utility from autonomy.

We find that the intrinsic value of autonomy in our sample on average amounts to 4.8% of the utility received from monetary payoffs. Quite similarly, expressed in expected value, we find that the willingness to pay for autonomy on average amounts to 5.2% of the expected value of lottery $A$.[22]

Finally, Result 1c) states that there is substantial heterogeneity in the measured preference. 54.7% of individuals have a strictly positive willingness to pay, 18.8% have a willingness to pay of zero, and for 26.5%, the willingness to pay is strictly negative.[23] This implies that preferences over autonomous choices can take a positive or a negative value, the latter expressing an aversion to choosing oneself. These subjects thus exhibit a willingness to pay to delegate.

In Figure 4, it is noteworthy that some individuals indicate either a very high or very low willingness to pay for autonomy (see Figure 4), and one might be worried that these values do not reflect the true preference. However, our results are robust to excluding participants who indicate an extremely high or extremely low willingness to pay (i.e. those who always accepted or always rejected an offer in part 2 and thus exhibit a WTP at one of the corners of the range that we can estimate). The average WTP remains positive without these observations and it amounts to 61.8 points, which is still significantly different from 0 (N= 1357, t-test, $p < 0.001$, WSR: $p < 0.001$).[24]

In May 2022 we replicated the main results in a lab experiment at the University of Fribourg, Switzerland. In this sample of Swiss university students, the average willingness to pay to choose oneself in part 2 is 49.8 points (with a median WTP of zero points), which is again significantly different from 0 (N=131, t-test: $p = 0.001$, WSR: $p = 0.001$). Overall, 29.8% of the students display a WTP of zero, 23.7% have a negative WTP and 46.6% a positive WTP. Both the average and the median are thus somewhat lower compared to the online sample and we observe fewer participants with a positive and more participants with zero willingness to pay for autonomy.

[22] We chose lottery $A$ for the expected value comparison because lottery $A$ is the same for every individual, whereas lottery $B$ differs based on individuals' risk preferences.

[23] This distribution is similar in the two survey waves (June: 24.3% negative, 17.9% zero, 57.8% positive; January: 28.9% negative, 19.8% zero, 51.3% positive).

[24] 31 subjects were willing to pay every price offered to them. 7 subjects were willing to delegate for every bonus offered to them.

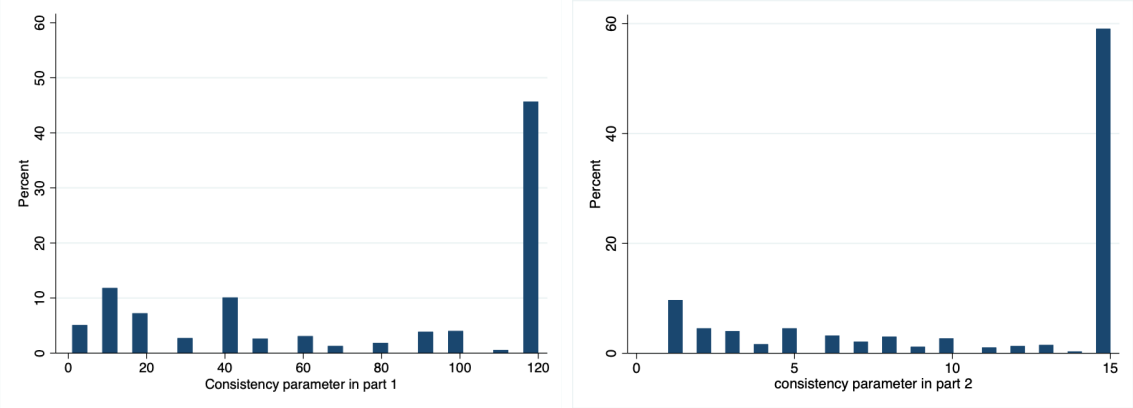



Figure 5: Distribution of individual modal choice consistency parameters in part 1 ($\mu$) and part 2 ($\gamma$). LHS: those who never switch between lotteries A and B in part 1 excluded, $N = 1395$; RHS: those who never switch between delegating and not delegating in part 2 excluded, $N = 1517$.

## 3.2 The effect of consistency on the estimates of intrinsic preferences for autonomy

Our preference measurement provides us with detailed information not only about the willingness to pay, but also about the choice consistency of our participants. Because identification of an indifference lottery is crucial for our identification of intrinsic preferences for autonomy, we discuss the relationship between consistency, the precision with which we identify the indifference lottery, as well as the implications of potentially inconsistent measurement of the indifference point for our estimates of preferences for autonomy in detail in this section.

Figure 5 displays the distribution of the estimated consistency parameters in the June and January samples for both tasks. In part 1, the highest possible consistency parameter ($\mu = 120$, given our parameterization) is the modal value; 45% of subjects were (almost) perfectly consistent.[25] In the elicitation of the willingness to pay in part 2, 59% of subjects were perfectly consistent, and in turn the highest possible consistency parameter given our parameterization, $\gamma = 15$, is their modal value. In both cases, those who never switch between the two choice options are excluded since they are mechanically highly consistent. While a substantial part of our participants show high levels of consistency, there is also a fraction that display inconsistent choice patterns (we discuss potential reasons for such choice patterns in section 2.3.[26]

[25] 43% were perfectly consistent. For 2% of subjects, the modal $\mu$ is still the maximum value of 120 despite a (very) minor inconsistency in the choice sequence. Again, note that we exclude those individuals who never switched between the lotteries, and thus were also perfectly consistent.

[26] The heterogeneity in choice consistency partly reflects differences in socio-economic backgrounds. Male

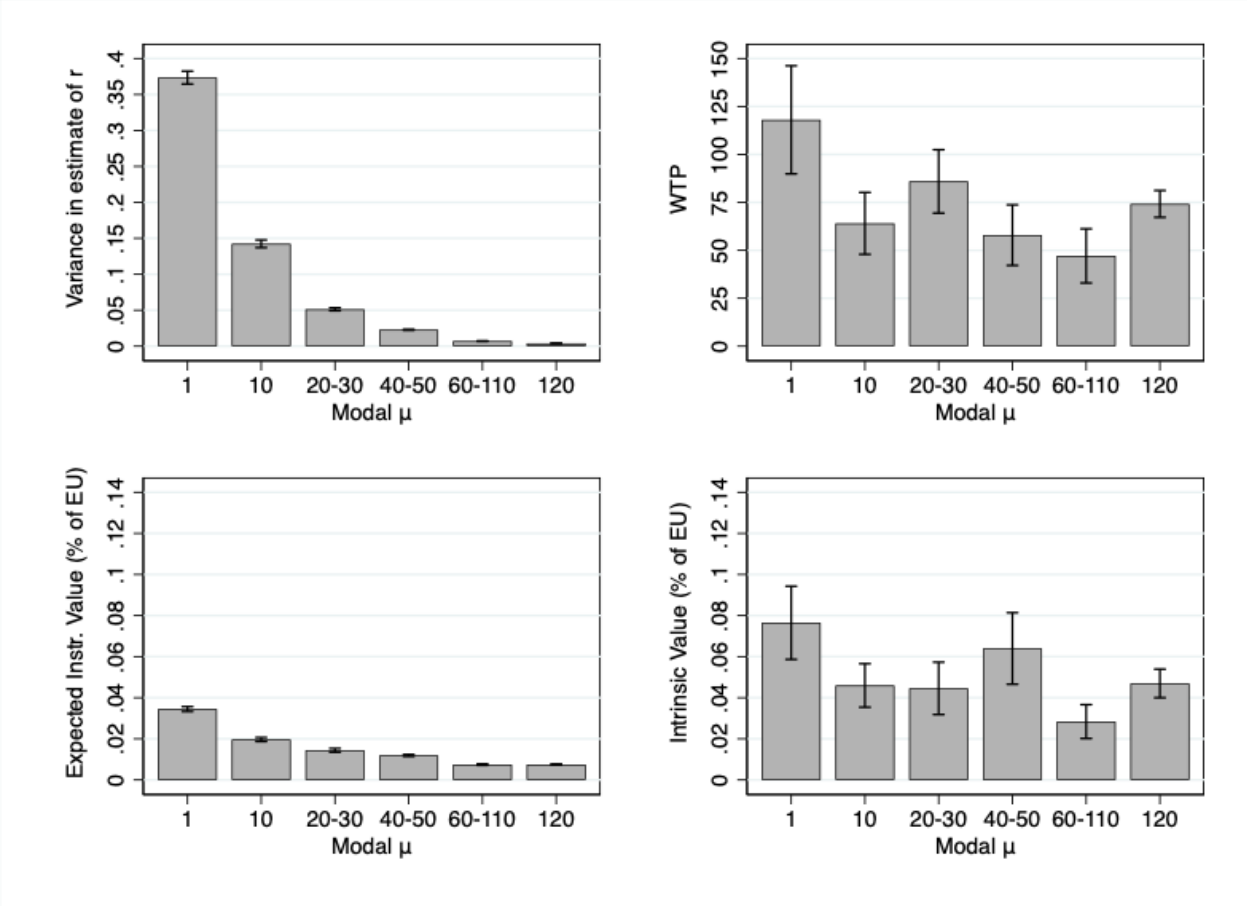



Figure 6: The top left panel shows the relationship between the variance in $r$, conditional on $\mu^m$ and the estimated modal consistency parameter $\mu^m$. The top right panel shows the relationship between the estimated willingness to pay and the estimated modal consistency parameter $\mu^m$. The bottom right panel displays the relationship between the expected average instrumental value of autonomy and the estimated modal consistency parameter $\mu^m$. The bottom left panel displays the relationship between the estimated intrinsic utility derived from autonomy and the estimated modal consistency parameter $\mu^m$.

How do the measured inconsistencies affect our identification strategy? First, recall that our procedure to estimate the indifference lottery started from a prior distribution over the preference parameters $r$ and $\mu$ and that the indifference lottery is based on the expected value of $r$, conditional on $\mu^m$. Thus, an alternative measure of the precision is the variance in the posterior distribution of $r$, conditional on $\mu^m$. The top left panel of Figure 6 displays the relationship between the variance in the estimate of $r$ and the modal consistency parameter. It can be clearly seen that, as one would expect, there is a strong monotonic relationship.[27]

participants and participants with a higher education level exhibit somewhat higher consistency scores, especially in part 1 (see Table A.2 in Appendix A.2).

[27]The negative relationship between variance and consistency is also highly significant in a simple linear

Thus, also unsurprisingly, the indifference lottery is identified with substantially more error for those participants with low consistency in their choice patterns.

Can we assess the impact of this imprecision on our estimation of intrinsic preferences for autonomy? If a participant is presented with an indifference lottery B based on the assumption that her risk preference parameter is equal to $\hat{r}$, but the true risk preference parameter is $\tilde{r}$, then the choice in part 2 contains instrumental value (because the participant is no longer indifferent between the two lotteries). More precisely, the instrumental value, expressed in expected utility terms, is given by:

$$U_{instrumental} = |U(A|\tilde{r}) - U(\hat{B}(\hat{r})|\tilde{r})|,$$

where $U(A|\tilde{r})$ is the expected utility of the fixed lottery A, and $U(\hat{B}(\hat{r})|\tilde{r})$ is the expected utility of the lottery $\hat{B}$ that was chosen based on the estimated risk preference parameter $\hat{r}$, given the true risk preference parameter $\tilde{r}$.[28] Thus, for each participant, we can calculate the expected instrumental value of choice given $\hat{B}(\hat{r})$ and given $f(r|\mu^m)$:

$$U_{instrumental} = \int_{\underline{r}}^{\overline{r}} f(r|\mu^m)|U(A|r) - U(\hat{B}(\hat{r})|r)|$$

The bottom left panel of Figure 6 displays the relationship between $U_{instrumental}$ and the modal consistency parameter $\mu^m$, expressed as a percentage of the utility obtained from lottery $A$ (assuming that $\hat{r} = \tilde{r}$). We see that the expected instrumental value of choice is substantial when the modal consistency parameter is low, but substantially decreases when the modal consistency parameter is sufficiently large. The mean expected instrumental value drops below 1 percent of the estimated expected value of lottery A once $\mu^m$ is at least 40.[29] The bottom right panel of Figure 6, in contrast, shows that the average estimates of the intrinsic value of autonomy are substantially higher for all levels of $\mu^m$. The difference between the measured intrinsic value of autonomy (in percent of overall utility) and the calculated expected instrumental value of autonomy (in percent of overall utility) is significantly different from zero using a t-test, both overall ($p < 0.01$) and for each of the $\mu^m$ categories shown in Figure 6 ($p < 0.05$ for $\mu^m < 40$, $p < 0.01$ for $\mu^m \geq 40$). Thus, residual instrumental value, due to imprecise measurement of the point of indifference in step 1 of the elicitation process, cannot explain the measured willingness to pay for autonomy in our experiment.

While for all subjects the chosen indifference set constitutes the best estimate for the indifference point given our data, there is more potential that instrumental value is present

regression as well as in a second degree polynomial regression.

[28] Note that $U_{instrumental}$ is equal to zero when $\tilde{r} = \hat{r}$.

[29] With the exception of $\mu^m = 80$, where it accounts for 1.1 percent, but the sample size in this bin is small.

for inconsistent subjects. The top right panel of Figure 6 however shows that there is no significant (linear) correlation between consistency in the indifference point elicitation task and the willingness to pay ($\rho = -0.01$, $p = 0.60$). Combining the insights from all four panels of Figure 6 suggests that only the highly inconsistent subjects ($\mu^m = 1$) are the ones for whom we also find a high—and possibly inflated—WTP that may include an instrumental value component.[30] For everyone with moderate to high levels of consistency, this is not the case. We therefore replicate all our results excluding subjects with low levels of consistency in Appendix A.2.2 in order to make sure that the results we find for the entire sample are not driven by relatively inconsistent subjects. Figure A.3 replicates Figure 4, showing the distribution of the willingness to pay only for subjects with $\mu > 30$. The distribution looks similar with somewhat more observations at zero.

Our analysis thus overall shows that the measured willingness to pay for autonomy cannot be explained by instrumental utility that is present in the choice due to imprecisely estimated indifference lotteries.

**Result 2** *The expected instrumental utility component is negligible except for subjects with very low levels of consistency. For all subjects, we observe that the instrumental utility due to imprecise measurement of the indifference set cannot explain the measured willingness to pay for autonomy.*

## 3.3 What Predicts Preferences for Autonomy?

In this subsection, we provide a first assessment of potential antecedents of intrinsic preferences for autonomy and explore to what extent such preferences are associated with different socio-demographics and other selected personal characteristics. First, Figure 7 plots the distribution of the willingness to pay for decision autonomy separately for male and female participants.[31]

The willingness to pay appears to be higher for male than for female participants (female: mean=58.01, median= 4.68, male: mean=83.83, median=32.59; two-sided ttest: $p = 0.013$, Mann-Whitney test: $p = 0.002$, two sample Kolmogorov-Smirnoff test of equality of distributions: $p = 0.003$). On average, the willingness to pay for autonomy is 44% higher among males in our sample. However, the pure difference in means does not control for any other socioeconomic characteristics, which is done in the regression analysis in Table 1.

[30] The difference in the willingness to pay is statistically significant using a ttest (p=0.034), but not with MWU (p=0.124)).

[31] We excluded individuals who indicated "other" as their gender here (24 individuals, or 1.34%). Figure A.4 replicates it for subjects with $\mu > 30$ and again, except for somewhat more observations at zero, the distributions look similar to Figure 7.

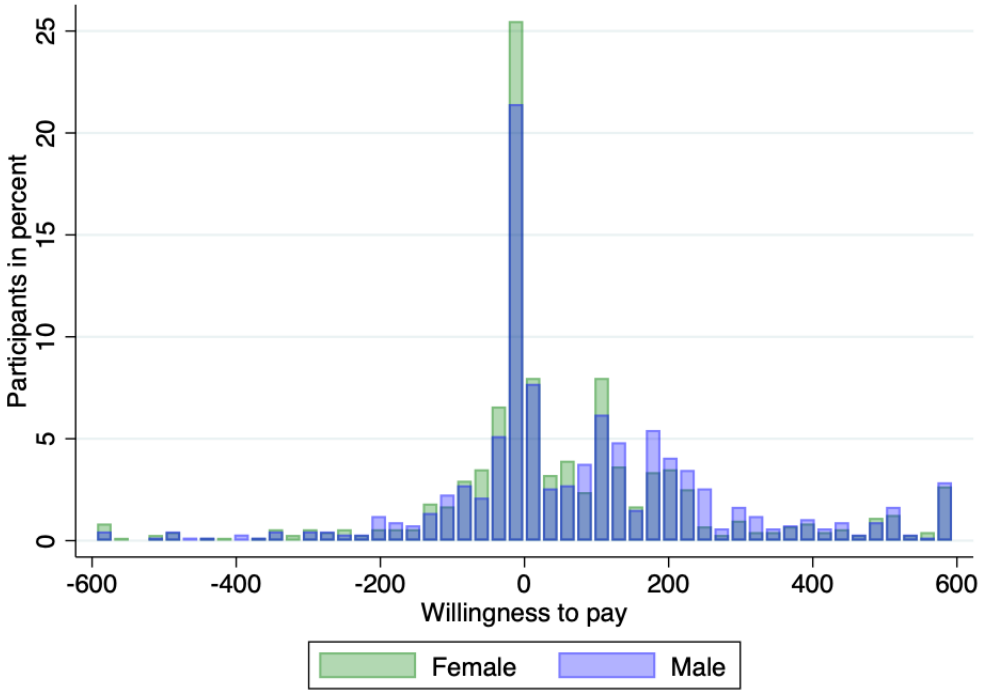



Figure 7: Willingness to pay by Male=[0,1]. Individuals who indicated "other" as their gender are excluded. $N = 1377$.

Table 1 displays the results of linear regressions on willingness to pay for decision autonomy that include the following socio-demographic variables: gender, age, income, education, marital status, number of kids as well as variables capturing whether a person is an English native speaker. Income is included as an ordered variable representing income categories in steps of 10000 GBP. Education is an ordered variable ranging over 5 categories from "less than high school" to "more than 4-year college degree". In columns (4-8), we additionally include the Big 5 personality traits (Gosling, Rentfrow and Swann Jr, 2003), which were only collected in the June 2021 subsample. In addition to the socioeconomic variables above, nationality and risk attitudes may be further potentially important characteristics that are predictive of intrinsic preferences for autonomy. As discussed in the previous subsection, it is important to control for highly inconsistent choice behavior in part 1, as the willingness to pay that we measure for these subjects may include instrumental value considerations. Thus, we additionally control for Nationality, Risk_taking and Low_consistency in columns (2, 4, 6, 8) of Table 1. Nationality is included as a categorical variable, where we grouped the nationalities that were indicated by less than 10 participants as "other".[32] Risk attitudes are

[32]We refrain from analysing the data with respect to nationalities since we do not have sufficient statistical power for this analysis.

defined according to subjects' answers to the question "How willing are you to take risks in general?" on an 11-point scale (see Section A.4.1). Finally, we add two dummy variables for having very low consistency scores in either part 1 (low_consistency_risk=1 if $\mu = 1$) or part 2 (low_consistency_wtp=1 if $\gamma = 1$). Columns (3, 4) and (7, 8) repeat the same estimations using median regressions. This way, we account for the fact that the mean and median of the dependent variable WTP differ quite substantially due to the presence of outlier values with a very high willingness to pay.

Columns (1-4) of Table 1 show the results for the entire sample. It can be seen that the coefficient of Male remains significant at the 5% level (at the 10% level in column (2), OLS with additional controls) after controlling for the additional socioeconomic characteristics. The coefficients of the dummy variable for being married and for the number of kids are rather large and they become statistically significant when using median regressions (columns 3, 4). Interestingly, the other socio-economic characteristics are of limited explanatory power. Similarly, as can be seen in columns (5-8), the BIG-5 remain mostly insignificant predictors of intrinsic preferences for autonomy with the exception of conscientiousness, expressing that a person sees herself as dependable and self-disciplined rather than as careless or disorganized, see section A.4.1. The coefficient on Male loses statistical significance in the smaller subsample of June only, but remains similar in size—as do the coefficient for Married and Number of Kids.

In order to assess the robustness of our results, we re-estimate our regression models using a different specification of the dependent variable, in which the willingness to pay for choice autonomy in part 2 is calculated based on the unconditional expectation, rather than conditional on the modal value of $\gamma$.[33] Unsurprisingly, given the similarity in the estimates of the intrinsic value of autonomy, results remain highly similar, see Table A.4 in Appendix A.2.1. Second, we replicate all estimations in Table 1 excluding the relatively inconsistent subjects with $\mu < 40$ in Table A.9. This leads to insignificant results for the coefficients on Male (previously statistically significant when including the entire sample in columns (1-4)), although the magnitudes of the coefficients decrease only slightly. The coefficients of the dummy variable for being married and for the number of kids also loose statistical significance (columns 3, 4).

Overall, socio-demographics do not seem to be strong predictors of intrinsic preferences for autonomy. With the exception of gender, where we find some evidence that intrinsic preferences for autonomy are less strong among women, intrinsic preferences for autonomy seem to be fairly equally distributed in the population regarding socioeconomic characteristics.

Nonetheless, for all subsequent analyses, we will provide robustness checks in which

[33] See footnote 14, and recall that the differences in the estimates at the individual level are only minor.

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| | **June+Jan (OLS)** | | **June+Jan (Median R.)** | | **June (OLS)** | | **June (Median R.)** | |
| Male | 22.938** | 20.509* | 18.941*** | 13.711** | 18.523 | 23.584 | 15.736 | 16.773 |
| | (10.723) | (10.886) | (6.083) | (6.509) | (16.254) | (16.533) | (13.680) | (10.364) |
| Age | 0.635 | 1.288 | 0.901* | 0.666 | 0.333 | 0.257 | –0.186 | –0.060 |
| | (0.757) | (0.795) | (0.525) | (0.410) | (1.458) | (1.479) | (1.171) | (0.991) |
| Income | –1.497 | –1.148 | –0.503 | 0.170 | –3.928 | –6.401** | –2.009 | –3.702*** |
| | (1.790) | (1.857) | (0.860) | (0.827) | (2.848) | (3.210) | (2.010) | (1.359) |
| Education | 3.476 | 3.903 | –5.070 | –1.070 | –2.636 | –0.106 | –8.438 | –1.612 |
| | (5.271) | (5.446) | (3.734) | (2.385) | (7.798) | (8.229) | (7.137) | (5.527) |
| Married | –23.903 | –24.902 | –20.428* | –21.281** | –33.344 | –33.621 | –26.108 | –22.556 |
| | (17.206) | (17.463) | (12.043) | (10.208) | (24.679) | (25.341) | (24.843) | (17.043) |
| Number_kids | –9.081 | –12.925* | –10.285** | –9.057** | –15.386 | –14.620 | –0.849 | –2.969 |
| | (6.818) | (6.831) | (4.988) | (3.677) | (12.109) | (12.482) | (13.123) | (9.670) |
| English_speaker | –14.413 | 13.233 | –2.138 | 0.493 | –6.586 | 8.380 | –0.185 | 3.245 |
| | (12.947) | (23.471) | (6.637) | (9.126) | (18.678) | (32.528) | (19.429) | (20.490) |
| Big5_extraverted | | | | | 1.155 | 0.326 | –1.166 | 0.518 |
| | | | | | (4.336) | (4.439) | (4.363) | (3.217) |
| Big5_agreeable | | | | | –1.588 | 0.995 | 0.535 | 2.483 |
| | | | | | (5.768) | (5.715) | (5.567) | (3.267) |
| Big5_conscientious | | | | | 7.012 | 8.742* | 2.914 | 7.747** |
| | | | | | (5.087) | (5.203) | (4.933) | (3.596) |
| Big5_calm | | | | | 1.047 | –0.155 | –1.832 | –5.695* |
| | | | | | (4.599) | (4.633) | (4.391) | (3.181) |
| Big5_open | | | | | 7.251 | –1.913 | 8.542 | –1.294 |
| | | | | | (5.766) | (6.769) | (5.322) | (4.953) |
| Constant | 62.082* | 54.975 | 26.071 | 193.922 | 43.789 | 32.066 | 34.463 | 65.004 |
| | (33.078) | (82.040) | (20.641) | (172.584) | (66.244) | (123.024) | (59.332) | (91.258) |
| $R^2$ / Pseudo $R^2$ | 0.004 | 0.021 | 0.006 | 0.029 | –0.001 | 0.026 | 0.01 | 0.046 |
| Controls | no | yes | no | yes | no | yes | no | yes |
| Observations | 1380 | 1380 | 1380 | 1380 | 719 | 719 | 719 | 719 |

Table 1: Correlation between willingness to pay and personal characteristics. Dependent variable: WTP. Columns (1,2) and (5,6): OLS estimates with robust standard errors. Columns (3,4) and (7,8): Median regressions with robust standard errors. January and June waves in columns (1-4), June 2021 wave in columns (5-8). Controls in columns (2, 4, 6, 8) include risk taking, nationality as a categorical variable and Low_consistency_risk=1 if $\mu = 1$ and Low_consistency_wtp=1 if $\gamma = 1$, zero otherwise. Significance levels: $^{***}: p < 0.01, ^{**}: p < 0.05, ^{*}: p < 0.1$.

we add our full list of socio-demographic characteristics (as specified above) as controls. In addition, the two robustness checks, replicating the analyses with an alternative specification of WTP and replicating them excluding subjects with low choice consistency in part 1 ($\mu < 40$), will be performed for all subsequent regressions and reported in Appendix A.2.1 and A.2.2.

## 3.4 Related Psychological Constructs

In this section, we explore how the measured preference for autonomous choice relates to established concepts in psychology. The questionnaire at the end of the experiment includes the following well-established measures of perceived autonomy: locus of control (LOC, Rotter (1966)), autonomous functioning (IA, Deci and Ryan (1985)), generalized self-efficacy (GSE, Schwarzer, Jerusalem et al. (1995)) and desirability of control (DC, Burger and Cooper (1979)). Each of the four measures consists of a list of questions (see Section A.4.1) that are used to construct an additive summary index for each individual expressing the respective psychological trait.

Rotter's concept of an internal locus of control is probably the most famous concept capturing a feeling of personal autonomy. We use the original locus of control scale by Rotter (1966) that consist of 23 items. For each item, respondents can position themselves on a scale between two statements that express a feeling of internal versus external locus of control. For example, in item 7, participants are asked to place themselves between "I have often found that what is going to happen will happen" and "Trusting to fate has never turned out as well for me as making a decision to take a definite course of action". Deci and Ryan's widely applied self-determination theory is rooted in a concept of perceived autonomy (Deci and Ryan, 2012, 1987, 1985). Their basic idea is that people have a 'fundamental need' to be autonomous. People with a higher sense of autonomy believe that they are in greater control of their lives and that external factors have a smaller influence. We use the General Index of Autonomy included in the Basic Personality Needs scale by Deci and Ryan (2006), where subjects are asked to state to what extend they agree to statements such as "I feel like I am free to decide for myself how to live my life" (item 1). Self–efficacy denotes an individual's belief in her *ability* to achieve goals and meet situational demands, see Bandura et al. (2006). It expresses a subjective judgment of how well someone thinks they can handle a challenging situation and persist when facing adversity. With this, it is distinct from but closely related to perceived autonomy and it indeed highly correlated with perceived autonomy, see Aldama et al. (2021). Following Schwarzer, Jerusalem et al. (1995), we use a measure of domain-independent generalized self-efficacy that asks subjects

to indicate their agreement to statements such as "I can handle whatever comes my way". The scale measuring a 'desirability of control' (Burger and Cooper, 1979) has not been as influential as the other three concepts that have been widely applied and developed over the last decades. We include it since it is relatively close to the concept we are measuring with our behavioral task as it rather measures a preference for autonomy than a perception. However, the questions from which the final index is constructed span quite a wide range of domains, including political participation, leadership and entrepreneurship and they include both, preferences for individual autonomy and for power over others. Finally, we measure perceived freedom and control via a general question taken from the world value survey wave 6 (see Section A.4.1, Inglehart et al. (2014)).

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | **WTP (OLS)** | | **WTP (Median R.)** | |
| LOC | 14.774 | 11.622 | 12.236 | 14.630* |
| | (12.776) | (13.306) | (12.341) | (8.146) |
| IA | 0.602 | 2.396 | -12.007 | -3.516 |
| | (8.404) | (8.543) | (8.794) | (6.464) |
| GSE | 10.602 | 0.631 | 13.712 | -4.528 |
| | (8.180) | (8.451) | (8.597) | (6.187) |
| DC | 24.461** | 13.192 | 25.970*** | 16.171** |
| | (9.695) | (10.470) | (9.787) | (6.351) |
| WVS | 9.206** | 6.418 | 6.382 | 3.056 |
| | (4.583) | (4.723) | (4.006) | (2.782) |
| Controls | no | yes | no | yes |
| Observations | 728 | 719 | 728 | 719 |

Table 2: Each cell shows the coefficient of one regression with willingness to pay as the dependent variable. Columns (1, 2): OLS regressions with robust standard errors. Columns (3, 4): Median regressions with robust standard errors. Constants are omitted. Respective independent variables in the 20 regressions are: LOC: index of internal control (Rotter, 1966), IA: index of autonomy (Deci and Ryan, 2006), GSE: self-efficacy index (Schwarzer, Jerusalem et al., 1995), DC: index of desirability of control (Burger and Cooper, 1979), WVS: world value survey question on freedom and control (Inglehart et al., 2014). Columns (1, 3) without controls, columns (2, 4) include controls for age, gender, income, education, risk taking, nationality, Low_consistency_risk=1 if $\mu = 1$ and Low_consistency_wtp=1 if $\gamma = 1$, zero otherwise. June 2021 wave. Significance levels: $^{***}: p < 0.01$,$^{**}: p < 0.05$,$^{*}: p < 0.1$.

Table 2 displays coefficients of OLS regressions of the psychological constructs on our measure of intrinsic preferences for autonomy, in column (1) without and in column (2) with controls. In columns (3) and (4) the same estimations are repeated using median regressions.

Table 2 shows that the correlations with locus of control, the index of autonomy, generalized self-efficacy and the world value survey question on freedom and control are (mostly) insignificant. Only the correlations with the desirability of control index are statistically significant in most specifications. In contrast, the correlations between the psychological constructs themselves are large and highly significant (see Table A.3 in Appendix A.2). Again, results remain unchanged when using the alternative measure of intrinsic preferences for autonomy which does not condition on the modal value of $\gamma$ (see Table A.5 in Appendix A.2.1). Restricting the sample to the relatively more consistent subjects ($\mu > 30$) replicates the pattern aswell. The correlation with desirability of control is highly significant when including control variables (columns (2, 4) in Table A.10) and significant at the 5% level without additional controls (columns (2, 4) in Table A.10). The correlations with the world value survey question on freedom and control are now also significant at the 5% level when including controls.

Considering the nature of the different concepts looked at in this section may help understanding the results. The main distinction between LOC, IAF, GSE, the WVS question and our measure is that we elicit a *preference*, or a value of choice, whereas the other four measures express a *perception*, in other words, a person's belief about the degree of autonomy (freedom/control/self-efficacy) she has. It is not ex ante clear how these two should relate. Verme (2009) argues that for a person to value freedom of choice she has to believe to have an internal locus of control—because the latter allows her to take advantage of free choices. On the other hand, experiencing poverty and restricted freedom of choice that may be associated with a low locus of control can possibly induce a strong desire for autonomy in the individual. One can thus construct arguments for a positive as well as for a negative relationship and our data show that the constructs are rather independent. We seem to indeed measure a conceptually distinct psychological construct. The finding of a significant positive correlation with the desirability of control scale is consistent with our interpretation since the desirability of control scale contains, among others, questions that are clearly related to intrinsic preferences for autonomy, but not exclusively so.

**Result 3** *The willingness to pay for autonomy in our decision task is not related to well-established survey-based measures used in the psychology literature. This indicates that we measure a psychological construct that is different from perceptions of own autonomy, locus of control and self-efficacy.*

## 3.5 How are Preferences for Autonomy related to other preferences, attitudes and beliefs?

In this section we investigate to what extend a preference for autonomous choice can predict related preferences and attitudes such as trust and political attitudes, here acceptance of different rules during the covid-19 pandemic, and whether it can be explained by risk attitudes.

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | **Trust (General)** | **Trust in Intentions** | **Trust in Expertise** | **Trust in Decisions** |
| WTP/100 | –0.026 | –0.038 | –0.036 | –0.030 |
| | (0.027) | (0.025) | (0.024) | (0.024) |
| Constant | 4.253*** | 4.609*** | 4.939*** | 4.405*** |
| | (0.053) | (0.051) | (0.044) | (0.047) |
| $R^2$ | –0.000 | 0.002 | 0.002 | 0.001 |
| Controls | no | no | no | no |
| Observations | 728 | 728 | 728 | 728 |
| WTP/100 | –0.010 | –0.034 | –0.030 | –0.029 |
| | (0.027) | (0.026) | (0.024) | (0.023) |
| Constant | 3.611*** | 3.555*** | 4.839*** | 4.442*** |
| | (0.913) | (0.865) | (0.506) | (0.511) |
| $R^2$ | 0.033 | 0.014 | 0.014 | 0.041 |
| Controls | yes | yes | yes | yes |
| Observations | 719 | 719 | 719 | 719 |

Table 3: Willingness to pay divided by 100 on different measures of trust: general trust towards other people, trust in others' good intentions, expertise and quality of decision-making. OLS regressions with robust standard errors. First panel without controls, second panel including controls for age, gender, income, education, risk taking, nationality, Low_Consistency_Risk=1 if $\mu = 1$ and Low_Consistency_WTP=1 if $\gamma = 1$, zero otherwise. June 2021 wave. Significance levels: $^{***}: p < 0.01, ^{**}: p < 0.05, ^{*}: p < 0.1$.

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| | **WTP** | | **WVS** | | **DC** | |
| **OLS Reg** | | | | | | |
| Risk_Taking | 8.852*** | 8.369*** | 0.169*** | 0.173*** | 0.113*** | 0.115*** |
| | (2.426) | (2.500) | (0.031) | (0.033) | (0.013) | (0.014) |
| Constant | 16.737 | 30.374 | 6.288*** | 5.807*** | 7.236*** | 6.773*** |
| | (14.838) | (76.124) | (0.206) | (0.561) | (0.084) | (0.252) |
| $R^2$ | 0.009 | 0.020 | 0.046 | 0.044 | 0.118 | 0.116 |
| **Median Reg** | | | | | | |
| Risk_Taking | 4.039** | 3.135** | 0.200*** | 0.178*** | 0.125*** | 0.122*** |
| | (1.645) | (1.492) | (0.041) | (0.026) | (0.014) | (0.012) |
| Constant | –8.078 | 174.246 | 6.400*** | 6.304*** | 7.181*** | 6.569*** |
| | (6.670) | (150.456) | (0.270) | (0.311) | (0.089) | (0.151) |
| Pseudo $R^2$ | 0.002 | 0.027 | 0.033 | 0.052 | 0.069 | 0.099 |
| Controls | no | yes | no | yes | no | yes |
| Observations | 1395 | 1380 | 728 | 719 | 728 | 719 |

Table 4: Risk taking on willingness to pay, DC: index of desirability of control (Burger and Cooper, 1979), WVS: world value survey question on freedom and control (Inglehart et al., 2014). First panel: OLS regressions with robust standard errors. Second panel: Median regressions with robust standard errors. Columns (1, 3, 5) without controls, columns (2, 4, 6) including controls for age, gender, income, education, risk taking, nationality, Low_Consistency_Risk=1 if $\mu = 1$ and Low_Consistency_WTP=1 if $\gamma = 1$, zero otherwise. June 2021 and January 2022 waves. Significance levels: $^{***}: p < 0.01, ^{**}: p < 0.05, ^{*}: p < 0.1$.

Risk and trust have long been considered basic preference domains that are important in many economic and political decisions. Are they systematically related to a preference for autonomy? A series of questions in our questionnaire in the June 2021 wave capture individuals' general trust in others as well as their trust in others' expertise, decision-making quality and good intentions (exact questions in Section A.4). In Table 3, we relate these survey items to our measure of intrinsic preferences for autonomy. It can be seen that the correlations with all items are negative, small, and not statistically significant, both with and without controlling for socioeconomic characteristics. Results are also robust in specifications that use the alternative measure of intrinsic preferences for autonomy that does not condition on the modal value of $\gamma$ (see Table A.6), and that exclude subjects with

low choice consistency ($\mu < 40$, see Table A.11).[34] This observation supports our previous conclusion that we successfully excluded instrumental value aspects of choice. Given that the decision maker is revealed indifferent between the different choice options, trust in others should not matter for the utility received from a delegated choice. Thus, the finding is consistent with the observation that instrumental value related to trust in others does not play an important role in our setting.

In contrast, a remarkably strong correlation is found for a person's self-reported willingness to take risks, see Table 4. The more willing to take risks, the higher the willingness to pay.[35] While one might worry that this correlation contains some experimental confound since we elicit the individual's willingness to pay via choices between lotteries, note that columns (3-6) show that the correlation is equally strong between the measure of risk and independent survey measures of a preference for or perception of free choice. In particular, we observe a significant positive correlation with the world value survey question on freedom and control and with the desirability of control index, as reported in tables 4, A.7 and A.12. Columns (2), (4), and (6) show that the relationship between intrinsic preferences for autonomy and risk preferences is robust to the inclusion of our set of control variables. It is also robust to the estimation method, with statistically significant coefficients using OLS (first panel) and median regressions (second panel of Table 4)) as well as to using our alternative specification in Table A.7. Restricting the sample to include only subjects with $\mu > 30$ (Table A.12) shows the same results as for the entire sample with one exception: the results are not statistically significant when using median regressions (second panel, columns (1, 2)).

These findings suggests that an intrinsic preference for autonomy and a willingness to take more risk may be related characteristics (see also Dean and Ortoleva (2019) for a discussion of related behavioral characteristics). An alternative explanation would be that preferences for autonomy are domain-dependent and therefore the preference measure we obtain in the context of choices between lotteries is correlated with risk attitudes in the same decision context. However, the fact that correlations of comparable magnitudes and significance exist for other survey measures of autonomy makes this explanation somewhat less likely.

[34]The coefficients of WTP become slightly larger and part of the regressions become weakly significant (the correlation with trust in others' decision-making quality even becomes statistically significant at 5%, see column (4)), but overall the results to also not point to a robust relationship between the willingness to pay and trust in others.

[35]Note that, if anything, delegation increases outcome risk. Thus, this observation is inconsistent with an interpretation related to instrumental value—if instrumental value would drive this correlation, a person should be less willing to delegate if she is risk averse.

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| | **BehRules** | | **Vax** | | **RUnvax** | |
| **June + January** | | | | | | |
| WTP/100 | –0.011 | –0.007 | –0.028 | –0.011 | –0.077** | –0.050* |
| | (0.024) | (0.023) | (0.029) | (0.028) | (0.031) | (0.029) |
| Constant | 5.432*** | 5.188*** | 4.901*** | 4.887*** | 4.491*** | 3.491*** |
| | (0.043) | (0.614) | (0.057) | (0.694) | (0.060) | (0.817) |
| $R^2$ | –0.001 | 0.061 | 0.000 | 0.096 | 0.004 | 0.121 |
| **June** | | | | | | |
| WTP/100 | –0.051 | –0.023 | –0.081** | –0.055 | –0.132*** | –0.095** |
| | (0.034) | (0.032) | (0.039) | (0.039) | (0.041) | (0.039) |
| Constant | 5.679*** | 5.297*** | 5.023*** | 5.554*** | 4.394*** | 3.124*** |
| | (0.057) | (0.773) | (0.075) | (0.881) | (0.081) | (1.006) |
| $R^2$ | 0.003 | 0.066 | 0.005 | 0.072 | 0.014 | 0.127 |
| **January** | | | | | | |
| WTP/100 | 0.016 | 0.012 | 0.024 | 0.027 | –0.007 | –0.004 |
| | (0.032) | (0.034) | (0.044) | (0.042) | (0.046) | (0.044) |
| Constant | 5.182*** | 4.554*** | 4.786*** | 3.373*** | 4.607*** | 3.778*** |
| | (0.064) | (0.784) | (0.084) | (0.766) | (0.086) | (1.311) |
| $R^2$ | –0.001 | 0.079 | –0.001 | 0.128 | –0.001 | 0.116 |
| Controls | no | yes | no | yes | no | yes |
| Obs June + January | 1395 | 1380 | 1395 | 1380 | 1395 | 1380 |
| Obs June | 728 | 719 | 728 | 719 | 728 | 719 |
| Obs January | 667 | 661 | 667 | 661 | 667 | 661 |

Table 5: Willingness to pay on acceptability of covid measures: rules of behavior, mandatory vaccines and restrictions for unvaccinated people. Controls in columns (2, 4, 6): gender, age, income, education, risk taking, nationality, Low_consistency_risk=1 if $\mu = 1$ and Low_consistency_wtp=1 if $\gamma = 1$, zero otherwise. OLS regressions with robust standard errors. June 2021 and January 2022 waves. Significance levels: $^{***} : p < 0.01, ^{**} : p < 0.05, ^{*} : p < 0.1$.

Due to the fact that we conducted all waves of the survey during the Covid-19 pandemic, we are able to assess the extend to which elicited intrinsic preferences for autonomy correlate with reported acceptance of measures implemented by national and regional governments in order to reduce Covid-19 infections. In particular, we asked each participant the following

three questions:

1. BehRules: To what extend do you find it acceptable that the government restricts individual freedoms in order to keep covid-19 infections under control (think of mandates to wear a mask, curfews, quarantine or social distancing rules)?

2. Vax: To what extend would you find it acceptable if the government mandates its citizens to get vaccinated against Covid-19?

3. RulesUnvax: To what extent would you find it acceptable if the government restricts individual freedoms of unvaccinated citizens?

Table 5 shows how answers to these questions (on a 7-point Likert scale from 1-not at all to 7-completely) correlate with our preference measure, both for the full sample and for the two waves individually. The estimated coefficients are always negative, implying that individuals with stronger intrinsic preferences for autonomy tend to find it less acceptable that the state restricts freedoms. However, the observed negative correlation is only statistically significant for behavioral rules for the unvaccinated. When including our set of control variables, the estimated correlations become smaller and the correlation with the acceptability of rules restricting unvaccinated citizens remains only weakly significant.[36]

When splitting up the results for the data collected in June 2021 and January 2021, we observe quite substantial differences between these two data collections. Especially, the correlation with RUnvax almost disappears when using only the data collected in January 2022, whereas in the June 2021 data it is of higher statistical significance ($p < .05$). In addition, all coefficient are of larger magnitudes in the June 2021 data. This difference may reflect the fact that in the beginning of 2022 much more people were already vaccinated themselves, the public discourse had moved forward and the pandemic had become a less important influence on many people's lives.[37]

When restricting the sample to the relatively more consistent subjects ($\mu > 30$, Table A.13) we find the same results except for the correlations with RUvax in the June sample (second panel, columns (5, 6)), which are less significant (only at the 5%level without additional controls) and of somewhat smaller magnitude.

In the sample of university students in our lab experiment, the relationships of sociodemographic variables as well as attitudes such as trust towards others, risk aversion and

[36]Table A.8 again shows results when using the alternative measure of WTP. Results are again qualitatively very similar.

[37]In order to reflect the developments in public discourse around this topic we slightly modified the wording of this question in the January 2022 wave, see section A.4. However, we do not believe this small change to have affected answers.

acceptance of covid measures to the willingness to pay are overall not statistically significant and of small magnitudes.[38] The latter can be related to the fact that the lab experiment has been conducted at a point in time when the pandemic has been perceived as largely over in Switzerland (in May 2022).

# 4 Conclusion

In this paper, we develop a novel incentivized behavioral measure for intrinsic preferences for autonomy that is suitable for wide-scale applications in the laboratory as well as in online and lab-in-the-field experiments. We provide evidence for the existence of intrinsic preferences for autonomy in a large online sample. There is substantial heterogeneity with respect to these preferences with a majority of subjects exhibiting a positive value, but about one fourth of participants showing an aversion to making autonomous choices. Overall, these preferences are fairly equally distributed across the population with respect to socio-economic characteristics. The structural approach of our elicitation tool allows us to quantify the preference and to assess the measurement quality and precision at the individual level. We find that the intrinsic value of autonomous choice amounts to about 4.8% of the expected utility attached to the choice. Measurement error in the construction of the choice set is minor and cannot explain the willingness to pay for autonomous choices. Moreover, the preferences for autonomy in our decision task seem to express a psychological construct that is distinct from a person's perception of her own autonomy as commonly measured in the psychology literature (Rotter, 1966; Deci and Ryan, 2012, e.g.).

In order to better integrate preferences for autonomy into empirically informed microeconomic models, more research needs to be done. While we show that they are wide-spread across the population, future research should take on the task of providing more empirical evidence on how to model such preferences in economic decision making. For example, a few studies in social psychology suggest that the value of choice autonomy might influence the utility derived from the *outcome* of a choice (Iyengar and Lepper, 2000; Messner and Wänke, 2011). Whether this holds true more generally or whether preferences for autonomy should be rather represented by a constant procedural utility (as discussed for example in Frey, Benz and Stutzer (2004)) is an open empirical question that can possibly be addressed with extensions of our experimental set-up. We hope that our contribution stimulates more research in this direction.

While this article provides first exploratory evidence for a potentially important role of preferences for autonomy in economic and political decisions by showing that they can

[38] Detailed results are available from the authors upon request.

predict participants' attitudes towards restrictions for unvaccinated people during the covid-19 pandemic, much more research is needed. We believe that our behavioral measure will enable future research that analyses the role of these preferences for economic and political behavior. For example, Rebonato et al. (2012), Sugden (2008) or Arad and Rubinstein (2018) suggest that a preference for freedom of choice (or an aversion to a reduction of the freedom of choice) might play a role in how some people perceive and react to libertarian paternalist policies, including commonly employed nudges such as defaults. Likewise, one cause of the British vote to leave the European Union appears to have been a desire to "take back control" (May, 2017). Consistent with the view that autonomy may have intrinsic value, a YouGov poll asking British voters about Brexit revealed that 61% of leave voters consider "significant damage to the British economy to be a price worth paying for bringing Britain out of the EU" (Smith, 2017). Our approach can contribute to better understand the preferences and values underlying such political developments.

# References


**Ackfeld, Viola, and Axel Ockenfels.** 2021. "Do people intervene to make others behave prosocially?" *Games and Economic Behavior*, 128: 58–72.

**Aghion, Philippe, and Jean Tirole.** 1997. "Formal and real authority in organizations." *Journal of political economy*, 105(1): 1–29.

**Agranov, Marina, and Pietro Ortoleva.** 2017. "Stochastic choice and preferences for randomization." *Journal of Political Economy*, 125(1): 40–68.

**Agranov, Marina, and Pietro Ortoleva.** 2022. "Revealed Preferences for Randomization: An Overview." Vol. 112, 426–30.

**Aldama, Abraham, Cristina Bicchieri, Jana Freundt, Barbara Mellers, and Ellen Peters.** 2021. "How Perceptions of Autonomy Relate to Beliefs about Inequality and Fairness." *PLoS ONE*, 16(1).

**Ambuehl, Sandro, B Douglas Bernheim, and Axel Ockenfels.** 2021. "What motivates paternalism? An experimental study." *American Economic Review*, 111(3): 787–830.

**Arad, Ayala, and Ariel Rubinstein.** 2018. "The people's perspective on libertarian-paternalistic policies." *The Journal of Law and Economics*, 61(2): 311–333.

**Astebro, Thomas, Holger Herz, Ramana Nanda, and Roberto A Weber.** 2014. "Seeking the roots of entrepreneurship: Insights from behavioral economics." *Journal of Economic Perspectives*, 28(3): 49–70.

**Bandura, Albert, et al.** 2006. "Guide for constructing self-efficacy scales." *Self-efficacy beliefs of adolescents*, 5(1): 307–337.

**Bartling, Björn, Ernst Fehr, and Holger Herz.** 2014. "The intrinsic value of decision rights." *Econometrica*, 82(6): 2005–2039.

**Becker, Gordon M, Morris H DeGroot, and Jacob Marschak.** 1964. "Measuring utility by a single-response sequential method." *Behavioral science*, 9(3): 226–232.

**Bloom, Nicholas, Raffaella Sadun, and John Van Reenen.** 2012. "The organization of firms across countries." *The quarterly journal of economics*, 127(4): 1663–1705.

**Bobadilla-Suarez, Sebastian, Cass R Sunstein, and Tali Sharot.** 2017. "The intrinsic value of choice: The propensity to under-delegate in the face of potential gains and losses." *Journal of risk and uncertainty*, 54(3): 187–202.

**Boissonnet, Niels, and Alexis Ghersengorin.** 2022. "Reactance: a Freedom-Based Theory of Choice."

**Botti, Simona, Kristina Orfali, and Sheena S Iyengar.** 2009. "Tragic choices: Autonomy and emotional responses to medical decisions." *Journal of consumer research*, 36(3): 337–352.

**Burger, Jerry M, and Harris M Cooper.** 1979. "The desirability of control." *Motivation and emotion*, 3(4): 381–393.

**Chapman, Jonathan, Mark Dean, Pietro Ortoleva, Erik Snowberg, and Colin Camerer.** 2018. "Econographics." *NBER Working Paper*, , (w24931).

**Cornsweet, Tom N.** 1962. "The staircase-method in psychophysics." *The American journal of psychology*, 75(3): 485–491.

**Dean, Mark, and Pietro Ortoleva.** 2019. "The empirical relationship between nonstandard economic behaviors." *Proceedings of the National Academy of Sciences*, 116(33): 16262–16267.

**Deci, Edward L, and Richard M Ryan.** 1985. "The general causality orientations scale: Self-determination in personality." *Journal of research in personality*, 19(2): 109–134.

**Deci, Edward L, and Richard M Ryan.** 1987. "The support of autonomy and the control of behavior." *Journal of personality and social psychology*, 53(6): 1024.

**Deci, Edward L, and Richard M Ryan.** 2000. "The" what" and" why" of goal pursuits: Human needs and the self-determination of behavior." *Psychological inquiry*, 11(4): 227–268.

**Deci, Edward L, and Richard M Ryan.** 2006. "Basic Psychological Needs Scales."

**Deci, Edward L, and Richard M Ryan.** 2012. "Motivation, personality, and development within embedded social contexts: An overview of self-determination theory."

**Dessein, Wouter, and Richard Holden.** 2022. "Organizations with power-hungry agents." *The Journal of Law and Economics*, 65(S1): S263–S291.

**Falk, Armin, Anke Becker, Thomas Dohmen, David Huffman, and Uwe Sunde.** 2022. "The preference survey module: A validated instrument for measuring risk, time, and social preferences." *Management Science*.

**Fehr, Ernst, Holger Herz, and Tom Wilkening.** 2013. "The lure of authority: Motivation and incentive effects of power." *American Economic Review*, 103(4): 1325–59.

**Fehrler, Sebastian, and Moritz Janas.** 2021. "Delegation to a Group." *Management Science*, 67(6): 3714–3743.

**Feldman, Stanley.** 2003. "Enforcing social conformity: A theory of authoritarianism." *Political psychology*, 24(1): 41–74.

**Ferreira, João V, Nobuyuki Hanaki, and Benoît Tarroux.** 2020. "On the roots of the intrinsic value of decision rights: Experimental evidence." *Games and Economic Behavior*, 119: 110–122.

**Frey, Bruno S, Matthias Benz, and Alois Stutzer.** 2004. "Introducing procedural utility: Not only what, but also how matters." *Journal of Institutional and Theoretical Economics (JITE)/Zeitschrift für die gesamte Staatswissenschaft*, 377–401.

**Gillen, Ben, Erik Snowberg, and Leeat Yariv.** 2019. "Experimenting with measurement error: Techniques with applications to the caltech cohort study." *Journal of Political Economy*, 127(4): 1826–1863.

**Gosling, Samuel D, Peter J Rentfrow, and William B Swann Jr.** 2003. "A very brief measure of the Big-Five personality domains." *Journal of Research in personality*, 37(6): 504–528.

**Greiner, Ben.** 2023. "Strategic uncertainty aversion in bargaining—Experimental evidence." *Journal of Economic Psychology*, 95: 102604.

**Hamilton, Barton H.** 2000. "Does entrepreneurship pay? An empirical analysis of the returns to self-employment." *Journal of Political economy*, 108(3): 604–631.

**Hofstede, Geert.** 2001. *Culture's consequences: Comparing values, behaviors, institutions and organizations across nations.* sage.

**Holt, Charles A, and Susan K Laury.** 2002. "Risk aversion and incentive effects." *American economic review*, 92(5): 1644–1655.

**Hurst, Erik, and Benjamin Wild Pugsley.** 2011. "What do small businesses do?" National Bureau of Economic Research.

**Hvidberg, Kristoffer B, Claus Kreiner, and Stefanie Stantcheva.** 2020. "Social Position and Fairness Views." National Bureau of Economic Research.

**Inglehart, Ronald, Christian Haerpfer, Alejandro Moreno, Christian Welzel, Kseniya Kizilova, Jaime Diez-Medrano, Marta Lagos, Pippa Norris, Eduard Ponarin, and Bi et al. (eds.) Puranen.** 2014. "World values survey: Round six-country-pooled datafile version." *Madrid: JD Systems Institute*, www.worldvaluessurvey.org/WVSDocumentationWV6.jsp.

**Iyengar, Sheena S, and Emir Kamenica.** 2010. "Choice proliferation, simplicity seeking, and asset allocation." *Journal of Public Economics*, 94(7-8): 530–539.

**Iyengar, Sheena S, and Mark R Lepper.** 2000. "When choice is demotivating: Can one desire too much of a good thing?" *Journal of personality and social psychology*, 79(6): 995.

**Jutz, Regina, Evi Scholz, Michael Braun, and Markus Hadler.** 2018. "The ISSP 2015 Work Orientations IV Module."

**Le Lec, Fabrice, and Benoît Tarroux.** 2020. "On attitudes to choice: some experimental evidence on choice aversion." *Journal of the European Economic Association*, 18(5): 2108–2134.

**Liñán, Francisco, and Yi-Wen Chen.** 2009. "Development and cross–cultural application of a specific instrument to measure entrepreneurial intentions." *Entrepreneurship theory and practice*, 33(3): 593–617.

**May, Theresa.** 2017. "PM's Florence speech: a new era of cooperation and partnership between the UK and the EU." `https://www.gov.uk/government/speeches/pms-florence-speech-a-new-era-of-cooperation-and-partnership-between-the-uk-and-the-eu`, accessed on March 23, 2023.

**Meemann, Christine.** 2023. "On the economic value of decision rights: An experimental test." PhD diss. Helmut-Schmidt-Universität/Universität der Bundeswehr Hamburg.

**Messner, Claude, and Michaela Wänke.** 2011. "Unconscious information processing reduces information overload and increases product satisfaction." *Journal of Consumer Psychology*, 21(1): 9–13.

**Mill, John Stuart.** 1859. *On Liberty.*

**Neri, Claudia, and Hendrik Rommeswinkel.** 2016. "Freedom, Power and Interference."

**Nussbaum, Martha C.** 2000. *Women and human development: The capabilities approach.* Vol. 3, Cambridge university press.

**Owens, David, Zachary Grossman, and Ryan Fackler.** 2014. "The control premium: A preference for payoff autonomy." *American Economic Journal: Microeconomics*, 6(4): 138–61.

**Pikulina, Elena S, and Chloe Tergiman.** 2020. "Preferences for power." *Journal of Public Economics*, 185: 104173.

**Rebonato, Riccardo, et al.** 2012. "Taking liberties: A critical examination of libertarian paternalism."

**Rotter, Julian B.** 1966. "Generalized expectancies for internal versus external control of reinforcement." *Psychological monographs: General and applied*, 80(1): 1.

**Scheibehenne, Benjamin, Rainer Greifeneder, and Peter M Todd.** 2010. "Can there ever be too many options? A meta-analytic review of choice overload." *Journal of consumer research*, 37(3): 409–425.

**Schwarzer, Ralf, Matthias Jerusalem, et al.** 1995. "Generalized self-efficacy scale." *Measures in health psychology: A user's portfolio. Causal and control beliefs*, 1(1): 35–37.

**Sen, Amartya.** 1985. *Commodities and Capabilities.* Oxford: Oxford University Press.

**Sethi-Iyengar, Sheena, Gur Huberman, Wei Jiang, et al.** 2004. "How much choice is too much? Contributions to 401 (k) retirement plans." *Pension design and structure: New lessons from behavioral finance*, 83: 84–87.

**Sidanius, Jim, and Felicia Pratto.** 1999. *Social dominance: An intergroup theory of social hierarchy and oppression.* Cambridge University Press.

**Smith, Matthew.** 2017. "The 'extremists' on both sides of the Brexit debate." YouGov `https://yougov.co.uk/topics/politics/articles-reports/2017/08/01/britain-nation-brexit-extremists`, accessed on March 23, 2023.

**Snibbe, Alana Conner, and Hazel Rose Markus.** 2005. "You can't always get what you want: educational attainment, agency, and choice." *Journal of personality and social psychology*, 88(4): 703.

**Stern, Scott.** 2004. "Do scientists pay to be scientists?" *Management science*, 50(6): 835–853.

**Sturm, Rachel E, Holger Herz, and John Antonakis.** 2021. "The science of leader power." *The Leadership Quarterly*, 32(4): 101550.

**Sugden, Robert.** 2008. "Capability, happiness and opportunity."

**Verme, Paolo.** 2009. "Happiness, freedom and control." *Journal of Economic Behavior & Organization*, 71(2): 146–161.

**Wang, Stephanie W, Michelle Filiba, and Colin F Camerer.** 2010. "Dynamically optimized sequential experimentation (dose) for estimating economic preference parameters." *Manuscript submitted for publication.*

# Appendix

## A.1 DOSE Method

### A.1.1 DOSE Method for Step 1 of the elicitation procedure

DOSE adjusts the value of $X$ from choice situation to choice situation in such a way that given an individual's decision pattern in choice situations 1 to $t$, the choice between alternatives $A$ and $B$ in choice situation $t+1$ maximizes the information regarding the individual's degree of risk aversion as well as his/her choice consistency. In particular, we assume that the participant's risk preferences and choice behavior can be characterized by the following two equations:

$$u_i(w) = \frac{w^{1-r_i}}{1-r_i} \tag{7}$$

where $w$ is the payoff in points and $r_i$ is the individual's risk aversion parameter.

$$Pr(A) = \frac{1}{1+e^{-\mu_i(U_i(A)-U_i(B))}} \tag{8}$$

where $Pr(A)$ is the probability of choosing lottery $A$ over $B$, $\mu_i$ specifies the individual's degree of stochastic response in choice, and $U_i$ denotes the expected utility of a lottery given $u_i$.

For estimating $r_i$ and $\mu_i$, DOSE uses sequential Bayesian updating and combines it with information entropy to increase speed of inference. To initialize DOSE, we first decided on the appropriate discrete parameter space for $r$ given by $\mathcal{R} \in (r_1, r_2, ..., r_n)$ and $\mu$, given by $\mathcal{M} \in (\mu_1, \mu_2, ..., \mu_m)$ whereby we define $\mathcal{R} \times \mathcal{M} = \mathcal{K}$ models k, one for each possible combination of $r$ and $\mu$. We then assign to each model $k$ a prior probability $p_k = Pr(r_k, \mu_k) = Pr(r_k)Pr(\mu_k)$.

Like Wang, Filiba and Camerer (2010), we use a similar range for the risk parameter as Holt and Laury (2002), namely from -1.2 to 1.2. The range for $\mu$ is sensible to the chosen payoff values for $A$ and $B$. Based on precision in estimating parameters of simulated subjects, we found that $\mathcal{M} \in \{1, 10, 20, ..., 120\}$ provides a sensible parameter space for our setup. Finally, regarding the assumed prior distribution over models, we choose a uniform prior, i.e. $\forall j, i : p_j = p_i$, given that estimates made using different priors only slightly differ (Wang, Filiba and Camerer, 2010; Chapman et al., 2018) and given that data on the distribution of the choice consistency parameter in our setting is non-existent.

Second, we define a reference lottery[39] $A$ that pays a high payoff of 1600 points with

[39]Henceforth, a lottery $L$ is defined by $L = (x^{high}, x^{low}, p)$ where $x^{high}$ and $x^{low}$ are two monetary payoffs and $p$ is the probability of receiving $x^{high}$

75% probability and a low payoff of 600 points with 25% probability, and a set of lotteries $\mathcal{B} = \{B_1, B_2, ..., B_n\}$ with $B_j$ paying a high payoff of $X_j$ points with 50% probability and a low payoff of 600 points with 50% probability. We then define the set of all binary combinations of lottery $A$ and some lottery $B$ as $\mathcal{Q} \in \{(A, B_1), (A, B_2), ..., (A, B_n)\}$.

This setup allows updating prior probabilities for every model $k$ with Bayes' rule when asking a participant to make a choice for a choice situation $Q_i \in \mathcal{Q}$ as follows:

$$p(k|a) = p(r_k, \mu_k|a) = \frac{p(a|r_k, \mu_k)p(r_k, \mu_k)}{\sum_j^k p(a|r_j, \mu_j)p(r_j, \mu_j)} \tag{9}$$

where $a \in \{\text{choosing A, choosing B}\}$ denotes the individual's choice.

Iterating this procedure of asking a question and updating beliefs leads to a lower variance in the posterior probability distribution over models, i.e. a more precise estimation of an individual's true parameters. To optimize the sequence of questions with respect to the speed of inference, an information criterion is used: Following Wang, Filiba and Camerer (2010) and Chapman et al. (2018), we define a Kullback-Leibler information number for each model $k$ for question $Q_i \in \mathcal{Q}$:

$$I(k; Q_i) = \sum_a log(\frac{l_k(a; Q_i)}{\sum_{j=1}^k p_j l_j(a; Q_i)}) p_k l_k(a; Q_i) \tag{10}$$

where $a \in \{\text{choosing A, choosing B}\}$ denotes the binary choice between choosing lottery A or B and $l_k$ is the associated likelihood of choosing $a$ in $Q_i$ under model $k$. $I(k; Q_i)$ measures how informative question $Q_i$ is if $k$ is the correct model. By summing up $I(k; Q_i)$ for every model and weighing according to the model's probability $p_k$, we get the Kullback-Leibler information number for a given question $Q_i \in Q$:

$$KL(Q_i) = \sum_k^n p_k I(a; Q_i) \tag{11}$$

Asking a participant the question $Q^* = \max_Q KL(Q)$ maximizes information gained from the observed choice. In other words, $Q^*$ is the question that in expectation updates the prior the strongest. Iterating the process of (i) choosing $Q^*$ given the current probability distribution and (ii) updating beliefs delivers the most informative sequence of questions at the participant level. It is important to note that after every iteration the current $Q^*$ is excluded from $Q$ for the next round.

Each participant made a total of 10 choices, where one choice is chosen at random for payment at the end of the experiment. In each round, questions were selected according to the DOSE procedure explained above, except for rounds 5 and 10. For participants that are

very consistent in their choice patterns, the DOSE algorithm quickly converges to a narrow range of lotteries $B_j$, in order to fine-tune the risk aversion parameter at incremental levels. Thus, to break the monotonicity of the choice situation sequence, in round 5 a lottery $B_j$ was chosen for which the expected value of the corresponding lottery B is significantly different[40] to the prior choice situations. In round 10, the reason for deviating from the choice situation suggested by DOSE was that in step 2 of our elicitation procedure, we want to use the lottery $B_j^*$ that makes the individual indifferent to lottery $A$. DOSE would likely choose a lottery in round 10 that is very close to $B_j^*$, which we wanted to avoid , and rather create more diversity in the lotteries the individual faced.[41]

Because every participant starts with the same prior distribution over models $k$, the most informative choice situation in the first round is always the same for each participant. Because each choice situation only leaves 2 options (choosing lottery $A$ or lottery $B$), there are a total of $2^{10} = 1024$ possible decision paths in our elicitation procedure. We pre-specified and stored the optimal sequence of choice situations for each decision path in our experimental implementation, which made intensive computations during the experiment unnecessary.[42]

### A.1.2 DOSE Method for Step 2 of the elicitation procedure

In step 2, we want to estimate $d_i$ and $\gamma_i$. Thus, we initialize DOSE by defining the parameter space for $d$, given by $\mathcal{D} \in (d_1, d_2, ..., d_n)$ and the parameter space for $\gamma$, given by $\Gamma \in (\gamma_1, \gamma_2, ..., \gamma_m)$ and assign prior probabilities to all $n \times m = k$ models. Second, we define the parameter space for prices $p$ given by $\mathcal{P} \in (p_1, p_2, ..., p_n)$. The set of choice situations is defined by all combinations of a price $p$ as $Q = \{([p_1, \text{"I choose"}],\ [0, \text{"I delegate"}]),..., ([p_n, \text{"I choose"}],\ [0, \text{"I delegate"}])$. We again chose a uniform prior distribution over all models. Based on pilot data and simulations, we chose a discrete parameter space of $\mathcal{P} \in \{-600, -590, ..., -10, 10, 20, ..., 600\}$[43] and $\gamma \in \{1, 2, ..., 15\}$. As in step 1, we pre-specified and stored the optimal sequence of choice situations in our experimental implementation, creating 1024 predetermined decision paths.

[40] Based on simulations, we decided to randomly select a lottery $B$ in choice situation 5 whose value $X$ differed between 50 and 150 points from the $B_j$ in the previous choice situation.

[41] While we lose some information relative to the application of DOSE in all 10 rounds, simulations have shown that the 8 rounds in which DOSE is applied to deliver sufficient information on the parameters $r$ and $\mu$ to obtain precise parameter estimates at the individual level, at least for high levels of consistency.

[42] The fact that using an information criterion like Kullback-Leibler needs a lot of computing power to calculate the optimal question for a given round makes the calculation of optimal decision paths in real time a major implementation challenge for experiments.

[43] Note that, $p$ is never zero because of the abstractness of paying a price/receiving a bonus of zero.

### A.1.3 Estimated Indifference Lotteries using different underlying utility functions

In order to apply the DOSE method, we had to impose a structural model of utility and assumed that participants' utility function has constant relative risk aversion (CRRA). In principle, one could worry that this choice introduces bias or arbitrariness into our estimation procedure. In this appendix, we show that the choice of CRRA utility had very little impact on the estimated indifference lotteries, at least as long as participants were reasonably consistent. Only when choice patterns of participants were wildly inconsistent, the structural assumptions on the utility function matter more for the best estimate of the indifference lottery, which by the nature of inconsistency is less precisely estimated in any case.

To show this, we assume that the "true" utility function of participants is either constant absolute risk aversion (CARA) or that participants have reference dependent preferences and are loss averse. More precisely, we assume the following two additional potential utility functions:

$$u_i^{CARA}(w) = \frac{1 - e^{-aw}}{a}, \tag{12}$$

where $a$ is the coefficient of absolute risk aversion, and $u_i^{CARA}(w) = w$ when $a = 0$.

$$u_i^{PT}(w) = \begin{cases} w + (w - R) & \text{if } w \geq R \\ w - \lambda(R - w) & \text{if } w < R, \end{cases} \tag{13}$$

where $\lambda$ is the degree of loss aversion and $R$ is the assumed reference point against which gains and losses are judged. We chose to keep the utility function simple and assume that the reference point is given by the expected value of the $A$ lottery, which is 1350.

Similar to our procedure with CRRA, the parameter space for $a$ and $\lambda$ is chosen based on the implied parameters from the set of lotteries B (defined by the set of high payoffs $X$). For $a$, it contains 96 values and is given by $\mathcal{A} \in \{-0.89, ..., 0.825\}$. For $\lambda$, it contains 96 values and is given by $\Lambda \in \{-0.12, ..., 5\}$. The value range of potential consistency parameters $\mu$ is identical to the CRRA case. We again assume that the prior joint distributions $f(a, \mu)$ and $f(\lambda, \mu)$ over these parameters is uniform.

Identical to our procedure with CRRA, we then consider the posterior probability distributions conditional on the actual choice sequence $C_1$ to determine the expected value of $a$ resp. $\lambda$, conditional on the median value of $\mu$. These expected values are then in turn used to determine the best estimate of the indifference lottery for each individual.

Table A.1 displays the absolute difference between the estimated high value of the B lottery that makes a participant indifferent, conditional on the estimated consistency parameter

| $\mu$ | $\lvert B^H_{CRRA} - B^H_{CARA}\rvert$ | $\lvert B^H_{CRRA} - B^H_{PT}\rvert$ |
|---|---|---|
| 1 | 51.90128 | 75.0847 |
| 10 | 34.84466 | 42.42621 |
| 20 | 22.98735 | 30.78778 |
| 30 | 15.4205 | 17.3854 |
| 40 | 8.750415 | 5.667201 |
| 50 | 4.788067 | 3.461659 |
| 60 | 4.216756 | 2.352913 |
| 70 | 9.891176 | 2.010346 |
| 80 | 2.541365 | 1.045298 |
| 90 | 3.588772 | 2.119755 |
| 100 | 1.51981 | 1.118348 |
| 110 | 6.044819 | 2.21568 |
| 120 | 2.758342 | 3.225347 |

Table A.1: Absolute difference between the estimated high values of the indifference lottery B with different underlying utility functions. $B^H_{CRRA}$ is the calculated value for the B lottery under CRRA, $B^H_{CARA}$ under CARA, and $B^H_{PT}$ under Prospect Theory.

(in the CRRA estimation).

It can be seen that differences are substantial when participants are inconsistent, but become marginal once consistency improves. Once $\mu \geq 40$, the average absolute difference between the CRRA and CARA estimates is only 3.8 points, and between the CRRA and the Prospect Theory estimates only 3.2 points. Recall that the range of high outcomes of the B lottery was given by $\mathcal{X} \in \{1890, ..., 2840\}$. Thus, the implied high values of the B lottery that is expected to make the participant indifferent vary only very marginally for reasonably consistent subjects.

## A.2 Additional analyses

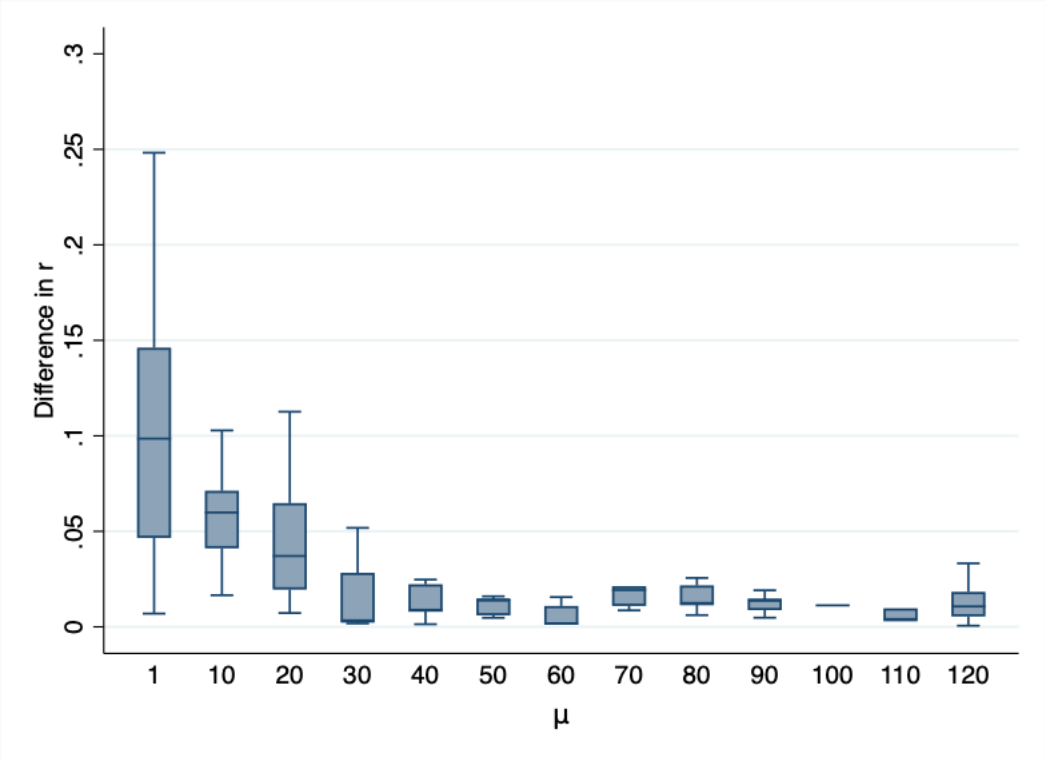



Figure A.1: Absolute Difference in $\hat{r}$ (the individually estimated risk preference parameter) depending on whether it is determined using the unconditional expectation of $r$ or conditional on the modal value of $\mu$.

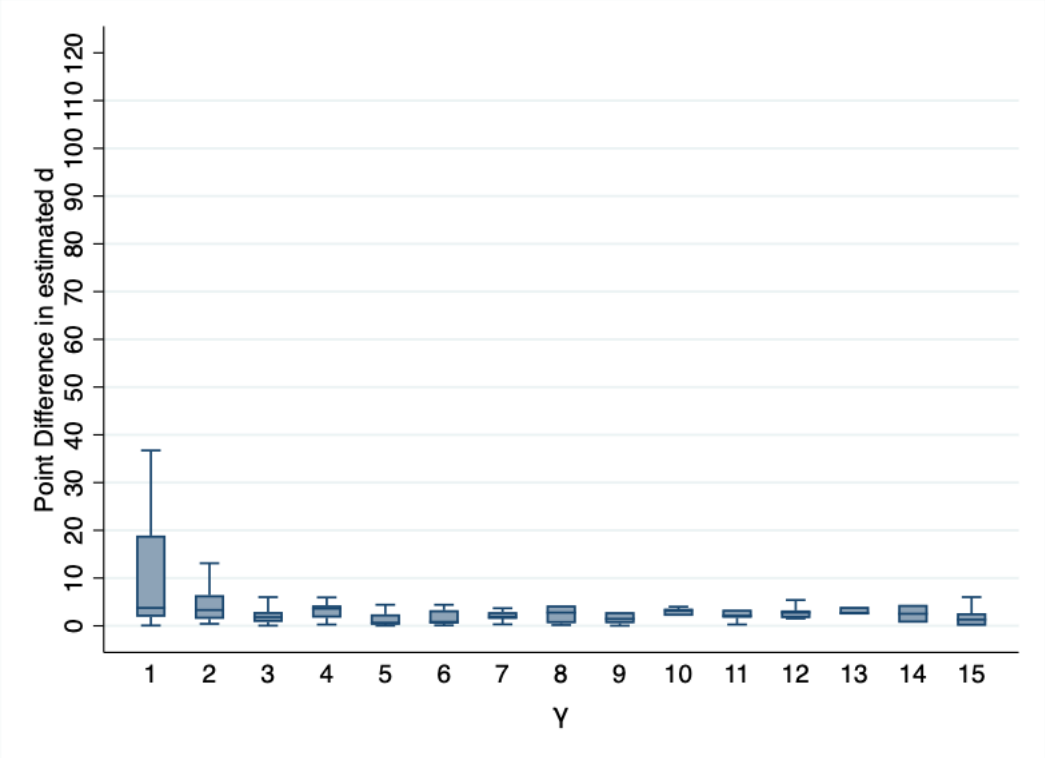



Figure A.2: Absolute Difference in $\hat{d}$ (the individually estimated willingness to pay) depending on whether it is determined using the unconditional expectation of $d$ or conditional on the modal value of $\gamma$.

| | (1) | (2) |
|---|---|---|
| | $\mu$ | $\gamma$ |
| Male | 8.245*** | 0.015 |
| | (2.424) | (0.282) |
| Age | 0.199 | –0.017 |
| | (0.127) | (0.014) |
| Income | 0.033 | 0.037 |
| | (0.444) | (0.050) |
| Education | 2.634** | 0.247* |
| | (1.187) | (0.139) |
| Survey_Wave | 0.009 | 0.002 |
| | (0.023) | (0.003) |
| Constant | 56.470*** | 10.241*** |
| | (5.983) | (0.719) |
| $R^2$ | 0.011 | 0.000 |
| Observations | 1380 | 1380 |

Table A.2: Consistency in part 1 and part 2($\mu$ and $\gamma$), estimated by DOSE. OLS regressions with robust standard errors, June 2021 and January 2022 waves. Significance levels: $^{*}**: p < 0.01, ^{*}*: p < 0.05, ^{*}: p < 0.1$.

| | **WTP** | **LOC** | **IA** | **GSE** | **DC** | **WVS** |
|---|---|---|---|---|---|---|
| **WTP** | 1.000 | | | | | |
| **LOC** | .045 | 1.000 | | | | |
| **IA** | .003 | .316*** | 1.000 | | | |
| **GSE** | .05 | .25*** | .334*** | 1.000 | | |
| **DC** | .087** | .189*** | .191*** | .547*** | 1.000 | |
| **WVS** | .077** | .31*** | .502*** | .402*** | .221*** | 1.000 |

Table A.3: Correlation coefficients of the willingness to pay and autonomy indices: LOC: locus of control (Rotter, 1966), IA: index of autonomy (Deci and Ryan, 1985), GSE: generalized self-efficacy (Schwarzer, Jerusalem et al., 1995), DC: desirability of control (Burger and Cooper, 1979), WVS: question on perceived freedom and control from wave 6 of the world value survey (Inglehart et al., 2014). June 2021 wave. Significance levels: $^{*}**: p < 0.01, ^{*}*: p < 0.05, ^{*}: p < 0.1$.

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| | **June+Jan (OLS)** | | **June+Jan (Median R.)** | | **June (OLS)** | | **June (Median R.)** | |
| Male | 23.976** | 21.513** | 19.948*** | 16.094*** | 19.534 | 24.521 | 18.066 | 19.335** |
| | (10.659) | (10.816) | (6.315) | (6.149) | (16.176) | (16.439) | (13.993) | (9.672) |
| Age | 0.717 | 1.371* | 0.891 | 0.600 | 0.459 | 0.431 | 0.036 | 0.288 |
| | (0.750) | (0.788) | (0.586) | (0.474) | (1.444) | (1.466) | (1.299) | (0.881) |
| Income | –1.485 | –1.147 | –0.451 | 0.131 | –3.909 | –6.389** | –2.481 | –3.539** |
| | (1.783) | (1.850) | (0.863) | (0.717) | (2.845) | (3.200) | (1.945) | (1.587) |
| Education | 3.507 | 3.930 | –3.971 | –0.262 | –2.664 | –0.199 | –9.140 | –2.164 |
| | (5.245) | (5.413) | (3.431) | (2.414) | (7.769) | (8.189) | (7.352) | (4.600) |
| Married | –23.043 | –23.981 | –23.494* | –19.208*** | –32.716 | –32.902 | –19.901 | –21.799 |
| | (17.110) | (17.370) | (12.319) | (7.240) | (24.606) | (25.281) | (23.038) | (15.283) |
| Number_Kids | –9.093 | –12.942* | –10.502** | –8.827** | –15.992 | –15.417 | –0.658 | –5.625 |
| | (6.788) | (6.806) | (4.830) | (3.448) | (12.055) | (12.451) | (12.579) | (8.562) |
| English_Speaker | –14.433 | 11.737 | –4.035 | –0.828 | –6.895 | 5.837 | –0.683 | –15.245 |
| | (12.827) | (23.386) | (7.055) | (10.680) | (18.493) | (32.506) | (17.468) | (25.151) |
| Big5_extraverted | | | | | 1.028 | 0.160 | –0.266 | 0.186 |
| | | | | | (4.330) | (4.427) | (4.311) | (3.121) |
| Big5_agreeable | | | | | –1.472 | 1.208 | 0.568 | 2.856 |
| | | | | | (5.743) | (5.676) | (5.389) | (3.200) |
| Big5_conscientious | | | | | 6.822 | 8.538 | 3.505 | 6.597* |
| | | | | | (5.086) | (5.191) | (5.104) | (3.407) |
| Big5_calm | | | | | 1.251 | –0.017 | –1.464 | –4.660 |
| | | | | | (4.598) | (4.631) | (4.408) | (3.116) |
| Big5_open | | | | | 6.749 | –2.527 | 6.928 | –1.155 |
| | | | | | (5.717) | (6.643) | (5.373) | (4.439) |
| Constant | 58.936* | 52.833 | 25.248 | 191.812 | 42.644 | 29.052 | 29.028 | 56.086 |
| | (32.845) | (82.586) | (22.246) | (171.536) | (65.891) | (123.699) | (59.336) | (94.479) |
| $R^2$ / Pseudo $R^2$ | 0.005 | 0.021 | 0.0063 | 0.0282 | –0.001 | 0.026 | 0.0092 | 0.0423 |
| Observations | 1380 | 1380 | 1380 | 1380 | 719 | 719 | 719 | 719 |

Table A.4: Willingness to pay ($WTP$ calculated using the unconditional expectation) on socio-demographics and Big5: gender, age, income education, family status ($Married \in [0, 1]$), number of kids, English native speaker. Columns (1, 2, 5, 6): OLS regression with robust standard errors. Columns (3, 4, 7, 8): Median regression with robust standard errors. Additional controls in columns (2, 4, 6, 8): risk attitude, nationality and Low_consistency_risk=1 if $\mu = 1$ and Low_consistency_wtp=1 if $\gamma = 1$, zero otherwise. June 2021 and January 2022 waves in columns (1-4), June 2021 wave in columns (5-8).

### A.2.1 Additional analyses: Replications with alternative parameter estimate

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | **WTP_uncond.(OLS)** | | **WTP_uncond.(Median R.)** | |
| LOC | 15.346 | 11.963 | 12.554 | 17.435* |
| | (12.749) | (13.257) | (11.914) | (8.900) |
| IA | 0.401 | 2.043 | –12.099 | –2.972 |
| | (8.313) | (8.425) | (8.736) | (6.360) |
| GSE | 10.854 | 0.956 | 11.297 | –3.430 |
| | (8.132) | (8.425) | (8.546) | (6.485) |
| DC | 24.175** | 12.626 | 25.109*** | 17.792** |
| | (9.721) | (10.533) | (8.520) | (7.994) |
| WVS | 8.773* | 6.037 | 7.094* | 2.675 |
| | (4.589) | (4.717) | (3.806) | (2.975) |
| Controls | no | yes | no | yes |
| Observations | 728 | 719 | 728 | 719 |

Table A.5: Each cell shows the coefficient of one OLS regression with robust standard errors with willingness to pay ($WTP$ calculated using the unconditional expectation) as the dependent variable. Constants are omitted. Respective independent variables in the five regressions are: LOC: index of locus of control (Rotter, 1966), IA: index of autonomy (Deci and Ryan, 2006), GSE: generalized self-efficacy index (Schwarzer, Jerusalem et al., 1995), DC: index of desirability of control (Burger and Cooper, 1979), WVS: world value survey question on freedom and control (Inglehart et al., 2014). Columns (1-2): OLS regressions with robust standard errors. Columns (3-4): Median regressions with robust standard errors. Columns (2) and (4) include controls age, gender, income, education, risk attitudes, nationality, Low_consistency_risk=1 if $\mu = 1$ and Low_consistency_wtp=1 if $\gamma = 1$, zero otherwise. June 2021 wave. Significance levels: $^{***}: p < 0.01, ^{**}: p < 0.05, ^{*}: p < 0.1$.

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | **Trust** | **Trust** | **Trust** | **Trust** |
| | **(General)** | **in Intentions** | **in Expertise** | **in Decisions** |
| WTP_uncond./100 | –0.025 | –0.037 | –0.035 | –0.030 |
| | (0.026) | (0.025) | (0.024) | (0.024) |
| Constant | 4.253*** | 4.609*** | 4.938*** | 4.405*** |
| | (0.053) | (0.051) | (0.044) | (0.047) |
| $R^2$ | –0.000 | 0.002 | 0.002 | 0.001 |
| Controls | no | no | no | no |
| Observations | 728 | 728 | 728 | 728 |
| WTP_uncond./100 | –0.009 | –0.033 | –0.028 | –0.029 |
| | (0.027) | (0.026) | (0.024) | (0.024) |
| Constant | 3.611*** | 3.554*** | 4.838*** | 4.441*** |
| | (0.913) | (0.864) | (0.505) | (0.511) |
| $R^2$ | 0.033 | 0.013 | 0.014 | 0.041 |
| Controls | yes | yes | yes | yes |
| Observations | 719 | 719 | 719 | 719 |

Table A.6: Willingness to pay ($WTP$ calculated using the unconditional expectation) divided by 100 and trust: general trust towards other people, trust in others' good intentions, expertise and quality of decision-making. Controls in the second panel: gender, age, income, education, risk taking, nationality, Low_consistency_risk=1 if $\mu = 1$ and Low_consistency_wtp=1 if $\gamma = 1$, zero otherwise. OLS regressions with robust standard errors. June 2021 wave. Significance levels: $^{***}: p < 0.01, ^{**}: p < 0.05, ^{*}: p < 0.1$.

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | **WTP_uncond.(OLS)** | | **WTP_uncond.(Median R.)** | |
| Risk_Taking | 8.779*** | 8.316*** | 4.338*** | 3.199** |
| | (2.409) | (2.480) | (1.581) | (1.391) |
| Constant | 17.719 | 29.494 | –8.677 | 172.585 |
| | (14.764) | (76.698) | (6.392) | (146.361) |
| $R^2$ / Pseudo $R^2$ | 0.009 | 0.020 | 0.0028 | 0.0263 |
| Controls | no | yes | no | yes |
| Observations | 1395 | 1380 | 1395 | 1380 |

Table A.7: Risk attitudes on willingness to pay ($WTP$ calculated using the unconditional expectation). Columns (1-2): OLS regressions with robust standard errors. Columns (3-4): Median regressions with robust standard errors. Controls in columns (2, 4): gender, age, income, education, risk taking, nationality, Low_consistency_risk=1 if $\mu = 1$ and Low_consistency_wtp=1 if $\gamma = 1$, zero otherwise. OLS regressions with robust standard errors. June 2021 and January 2022 waves. Significance levels: $^{***}: p < 0.01, ^{**}: p < 0.05, ^{*}: p < 0.1$.

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| | **BehRules** | | **Vax** | | **RUnvax** | |
| **June + January** | | | | | | |
| WTP_uncond./100 | –0.012 | –0.007 | –0.028 | –0.010 | –0.077** | –0.050* |
| | (0.024) | (0.023) | (0.030) | (0.028) | (0.031) | (0.029) |
| Constant | 5.433*** | 5.188*** | 4.902*** | 4.887*** | 4.492*** | 3.490*** |
| | (0.043) | (0.614) | (0.057) | (0.694) | (0.060) | (0.817) |
| $R^2$ | –0.000 | 0.061 | 0.000 | 0.096 | 0.004 | 0.121 |
| **June** | | | | | | |
| WTP_uncond./100 | –0.051 | –0.023 | –0.078** | –0.053 | –0.130*** | –0.093** |
| | (0.034) | (0.032) | (0.040) | (0.039) | (0.041) | (0.039) |
| Constant | 5.679*** | 5.296*** | 5.022*** | 5.552*** | 4.393*** | 3.121*** |
| | (0.057) | (0.773) | (0.075) | (0.882) | (0.081) | (1.007) |
| $R^2$ | 0.003 | 0.066 | 0.005 | 0.071 | 0.014 | 0.126 |
| **January** | | | | | | |
| WTP_uncond./100 | 0.015 | 0.011 | 0.021 | 0.024 | –0.009 | –0.006 |
| | (0.033) | (0.034) | (0.044) | (0.043) | (0.047) | (0.045) |
| Constant | 5.183*** | 4.555*** | 4.787*** | 3.374*** | 4.608*** | 3.779*** |
| | (0.064) | (0.784) | (0.084) | (0.765) | (0.087) | (1.309) |
| $R^2$ | –0.001 | 0.079 | –0.001 | 0.128 | –0.001 | 0.116 |
| Controls | no | yes | no | yes | no | yes |
| Obs June + Jan | 1395 | 1380 | 1395 | 1380 | 1395 | 1380 |
| Obs June | 728 | 719 | 728 | 719 | 728 | 719 |
| Obs January | 667 | 667 | 667 | 661 | 661 | 661 |

Table A.8: Willingness to pay ($WTP$ calculated using the unconditional expectation) on acceptability of covid measures: rules of behavior, mandatory vaccines and restrictions for unvaccinated people. Controls in columns (2, 4, 6): gender, age, income, education, risk taking, nationality, Low_consistency_risk=1 if $\mu$ and Low_consistency_wtp=1 if $\gamma = 1$, zero otherwise. OLS regressions with robust standard errors. June 2021 and January 2022 waves. Significance levels: $^{***}: p < 0.01, ^{**}: p < 0.05, ^{*}: p < 0.1$.

### A.2.2 Additional analyses: Replications with consistent subjects

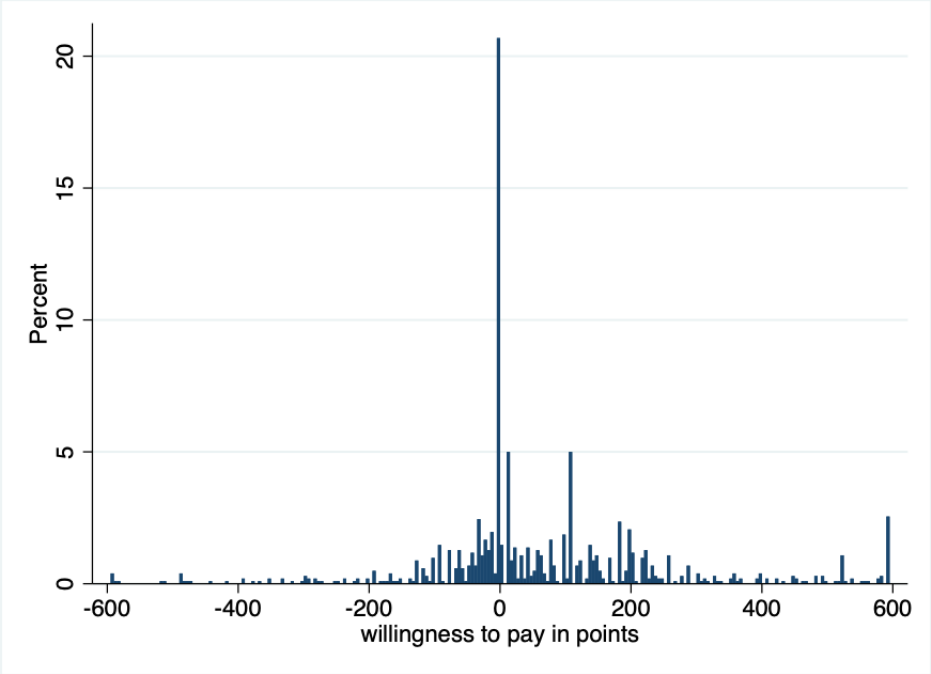



Figure A.3: Distribution of the willingness to pay for autonomy among subjects with $\mu > 30$ (June 2021 and January 2022, $N = 1020$).


Figure A.4: Willingness to pay by Male=[0,1], only subjects with $\mu > 30$ included. Individuals who indicated "other" as their gender are also excluded. $N = 1005$

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| | **June+Jan (OLS)** | | **June+Jan (Median R.)** | | **June (OLS)** | | **June (Median R.)** | |
| Male | 20.446 | 15.363 | 10.793 | 7.403 | 18.226 | 14.556 | 13.002 | 10.572 |
| | (12.690) | (12.894) | (8.011) | (7.018) | (19.211) | (19.675) | (8.048) | (11.275) |
| Age | 0.099 | 0.950 | 0.306 | 0.660 | –0.669 | –1.012 | –0.142 | –0.719 |
| | (0.832) | (0.887) | (0.650) | (0.544) | (1.788) | (1.807) | (1.112) | (1.296) |
| Income | –2.335 | –1.923 | –0.575 | –0.193 | –8.431** | –12.514*** | –3.803** | –5.965** |
| | (2.045) | (2.148) | (1.112) | (0.649) | (3.288) | (3.739) | (1.767) | (2.323) |
| Education | –0.154 | 1.403 | –3.587 | –0.298 | –2.606 | 1.448 | –6.447 | 0.634 |
| | (6.181) | (6.406) | (3.650) | (3.284) | (9.358) | (9.829) | (7.191) | (6.345) |
| Married | –24.669 | –22.226 | –15.104 | –17.037* | –42.065 | –38.480 | –1.060 | –14.554 |
| | (18.954) | (19.174) | (12.072) | (9.676) | (29.055) | (29.113) | (19.746) | (16.517) |
| Number_kids | –4.165 | –6.648 | –6.352 | –8.501** | –10.112 | –1.478 | 15.484 | 6.782 |
| | (8.437) | (8.449) | (6.081) | (3.499) | (14.983) | (15.586) | (14.477) | (13.006) |
| English_speaker | –20.121 | 25.495 | –1.408 | 10.213 | 6.005 | 53.118 | 16.970 | 22.633 |
| | (14.824) | (27.618) | (7.372) | (10.794) | (21.413) | (39.206) | (15.005) | (31.858) |
| Big5_extraverted | | | | | –0.802 | –3.255 | 0.045 | 0.802 |
| | | | | | (4.832) | (5.024) | (4.044) | (3.665) |
| Big5_agreeable | | | | | –0.155 | 3.924 | –2.046 | 3.510 |
| | | | | | (6.656) | (6.576) | (5.269) | (4.302) |
| Big5_conscientious | | | | | 8.030 | 12.016** | 3.877 | 4.274 |
| | | | | | (5.617) | (6.051) | (4.485) | (3.904) |
| Big5_calm | | | | | 2.021 | –1.334 | –2.978 | –7.138* |
| | | | | | (5.113) | (5.305) | (3.480) | (3.644) |
| Big5_open | | | | | 4.535 | –6.033 | 5.336 | 0.309 |
| | | | | | (7.122) | (8.056) | (5.694) | (6.105) |
| Constant | 88.989** | 61.300 | 27.591 | 195.549 | 91.092 | 58.403 | 30.266 | 72.900 |
| | (35.962) | (84.779) | (22.767) | (158.102) | (80.938) | (135.180) | (49.280) | (90.429) |
| $R^2$ / Pseudo $R^2$ | 0.003 | 0.018 | 0.0033 | 0.0212 | –0.001 | 0.023 | 0.0121 | 0.0438 |
| Controls | no | yes | no | yes | no | yes | no | yes |
| Observations | 1009 | 1009 | 1009 | 1009 | 523 | 523 | 523 | 523 |

Table A.9: Correlation between willingness to pay and personal characteristics with subjects with $\mu > 30$ only. Dependent variable: WTP. Columns (1,2) and (5,6): OLS estimates with robust standard errors. Columns (3,4) and (7,8): Median regressions with robust standard errors. January and June waves in columns (1-4), June 2021 wave in columns (5-8). Controls in columns (2, 4, 6, 8) include risk taking, nationality as a categorical variable and Low_consistency_wtp=1 if $\gamma = 1$, zero otherwise. Significance levels: $^{***}: p < 0.01, ^{**}: p < 0.05, ^{*}: p < 0.1$.

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | **WTP (OLS)** | | **WTP (Median R.)** | |
| LOC | 2.209 | –2.930 | 8.640 | 4.531 |
| | (15.669) | (16.523) | (12.959) | (10.009) |
| IA | –6.107 | –3.428 | –16.977* | –11.295* |
| | (9.937) | (10.080) | (8.949) | (6.477) |
| GSE | 12.330 | 6.305 | 8.440 | 0.521 |
| | (9.636) | (10.113) | (8.840) | (5.567) |
| DC | 21.538* | 14.505 | 25.742** | 21.527*** |
| | (11.574) | (12.275) | (10.584) | (8.230) |
| WVS | 8.513 | 9.437 | 6.518* | 7.382** |
| | (5.638) | (5.818) | (3.750) | (3.096) |
| Controls | no | yes | no | yes |
| Observations | 529 | 523 | 529 | 523 |

Table A.10: Each cell shows the coefficient of one regression with willingness to pay as the dependent variable. Subjects with $\mu > 30$ only. Columns (1, 2): OLS regressions with robust standard errors. Columns (3, 4): Median regressions with robust standard errors. Constants are omitted. Respective independent variables in the 20 regressions are: LOC: index of internal control (Rotter, 1966), IA: index of autonomy (Deci and Ryan, 2006), GSE: self-efficacy index (Schwarzer, Jerusalem et al., 1995), DC: index of desirability of control (Burger and Cooper, 1979), WVS: world value survey question on freedom and control (Inglehart et al., 2014). Columns (1, 3) without controls, columns (2, 4) include controls for age, gender, income, education, risk taking, nationality, Low_consistency_wtp=1 if $\gamma = 1$, zero otherwise. June 2021 wave. Significance levels: $^{***}: p < 0.01$,$^{**}: p < 0.05$,$^{*}: p < 0.1$.

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | **Trust** | **Trust** | **Trust** | **Trust** |
| | **(General)** | **in Intentions** | **in Expertise** | **in Decisions** |
| WTP/100 | –0.031 | –0.054* | –0.050* | –0.055** |
| | (0.032) | (0.029) | (0.027) | (0.028) |
| Constant | 4.292*** | 4.618*** | 4.959*** | 4.378*** |
| | (0.062) | (0.058) | (0.052) | (0.055) |
| $R^2$ | 0.000 | 0.005 | 0.005 | 0.006 |
| Controls | no | no | no | no |
| Observations | 529 | 529 | 529 | 529 |
| WTP/100 | –0.018 | –0.047 | –0.039 | –0.047* |
| | (0.033) | (0.030) | (0.027) | (0.027) |
| Constant | 3.589*** | 3.665*** | 4.873*** | 4.692*** |
| | (0.940) | (0.918) | (0.541) | (0.586) |
| $R^2$ | 0.018 | –0.005 | 0.017 | 0.039 |
| Controls | yes | yes | yes | yes |
| Observations | 523 | 523 | 523 | 523 |

Table A.11: Willingness to pay divided by 100 on different measures of trust: general trust towards other people, trust in others' good intentions, expertise and quality of decision-making. Subjects with $\mu > 30$ only. OLS regressions with robust standard errors. First panel without controls, second panel including controls for age, gender, income, education, risk taking, nationality, Low_Consistency_WTP=1 if $\gamma = 1$, zero otherwise. June 2021 wave. Significance levels: $^{***}: p < 0.01, ^{**}: p < 0.05, ^{*}: p < 0.1$.

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| | **WTP** | | **WVS** | | **DC** | |
| **OLS Reg** | | | | | | |
| Risk_Taking | 9.769*** | 10.338*** | 0.109*** | 0.113*** | 0.113*** | 0.116*** |
| | (2.675) | (2.842) | (0.035) | (0.038) | (0.015) | (0.017) |
| Constant | 7.539 | 34.238 | 6.656*** | 6.302*** | 7.238*** | 6.786*** |
| | (16.224) | (77.727) | (0.221) | (0.583) | (0.101) | (0.277) |
| $R^2$ | 0.011 | 0.018 | 0.018 | 0.021 | 0.116 | 0.105 |
| **Median Reg** | | | | | | |
| Risk_Taking | 2.995 | 2.721 | 0.167*** | 0.116*** | 0.139*** | 0.130*** |
| | (1.828) | (1.783) | (0.044) | (0.025) | (0.016) | (0.015) |
| Constant | –5.990 | 187.380 | 6.667*** | 6.464*** | 7.111*** | 6.527*** |
| | (7.464) | (133.762) | (0.286) | (0.233) | (0.099) | (0.195) |
| Pseudo $R^2$ | 0.003 | 0.020 | 0.026 | 0.064 | 0.071 | 0.108 |
| Controls | no | yes | no | yes | no | yes |
| Observations | 1020 | 1009 | 529 | 523 | 529 | 523 |

Table A.12: Risk taking on willingness to pay, DC: index of desirability of control (Burger and Cooper, 1979), WVS: world value survey question on freedom and control (Inglehart et al., 2014). Subjects with $\mu > 30$ only. First panel: OLS regressions with robust standard errors. Second panel: Median regressions with robust standard errors. Columns (1, 3, 5) without controls, columns (2, 4, 6) including controls for age, gender, income, education, risk taking, nationality, Low_Consistency_WTP=1 if $\gamma = 1$, zero otherwise. June 2021 and January 2022 waves. Significance levels: $^{***}: p < 0.01, ^{**}: p < 0.05, ^{*}: p < 0.1$.

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| | **BehRules** | | **Vax** | | **RUnvax** | |
| **June + January** | | | | | | |
| WTP/100 | –0.002 | 0.006 | –0.035 | –0.019 | –0.086** | –0.060* |
| | (0.028) | (0.027) | (0.036) | (0.036) | (0.037) | (0.036) |
| Constant | 5.429*** | 5.295*** | 4.883*** | 4.750*** | 4.543*** | 3.201*** |
| | (0.049) | (0.628) | (0.067) | (0.722) | (0.069) | (0.840) |
| $R^2$ | –0.001 | 0.061 | 0.000 | 0.067 | 0.005 | 0.097 |
| **June** | | | | | | |
| WTP/100 | –0.039 | –0.014 | –0.090** | –0.068 | –0.107** | –0.074 |
| | (0.039) | (0.037) | (0.046) | (0.048) | (0.048) | (0.048) |
| Constant | 5.679*** | 5.485*** | 5.004*** | 5.447*** | 4.437*** | 2.725** |
| | (0.066) | (0.822) | (0.090) | (0.964) | (0.096) | (1.071) |
| $R^2$ | 0.001 | 0.061 | 0.006 | 0.047 | 0.008 | 0.098 |
| **January** | | | | | | |
| WTP/100 | 0.020 | 0.023 | 0.022 | 0.032 | –0.050 | –0.036 |
| | (0.040) | (0.042) | (0.056) | (0.056) | (0.058) | (0.056) |
| Constant | 5.180*** | 4.642*** | 4.771*** | 3.329*** | 4.656*** | 3.681*** |
| | (0.072) | (0.792) | (0.098) | (0.835) | (0.099) | (1.340) |
| $R^2$ | –0.002 | 0.083 | –0.002 | 0.081 | –0.000 | 0.083 |
| Controls | no | yes | no | yes | no | yes |
| Obs June + January | 1020 | 1009 | 1020 | 1009 | 1020 | 1009 |
| Obs June | 529 | 523 | 529 | 523 | 529 | 523 |
| Obs January | 491 | 486 | 491 | 486 | 491 | 486 |

Table A.13: Willingness to pay on acceptability of covid measures: rules of behavior, mandatory vaccines and restrictions for unvaccinated people. Subjects with $\mu > 30$ only. Controls in columns (2, 4, 6): gender, age, income, education, risk taking, nationality, Low_consistency_wtp=1 if $\gamma = 1$, zero otherwise. OLS regressions with robust standard errors. June 2021 and January 2022 waves. Significance levels: $^{***}: p < 0.01, ^{**}: p < 0.05, ^{*}: p < 0.1$.

## A.3 Experimental Instructions (Preference Elicitation Tool)

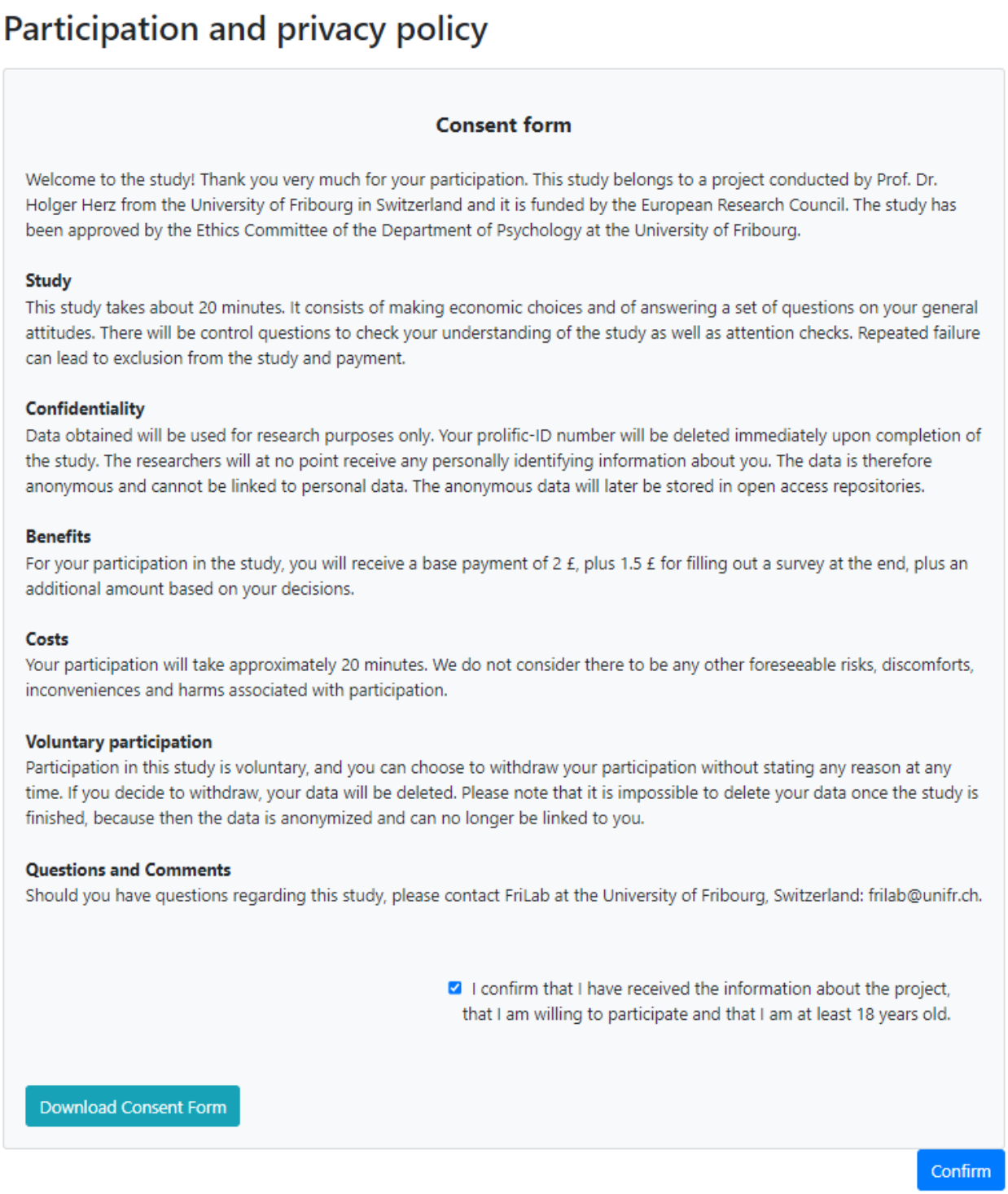



Figure A.5: Screenshot: consent form

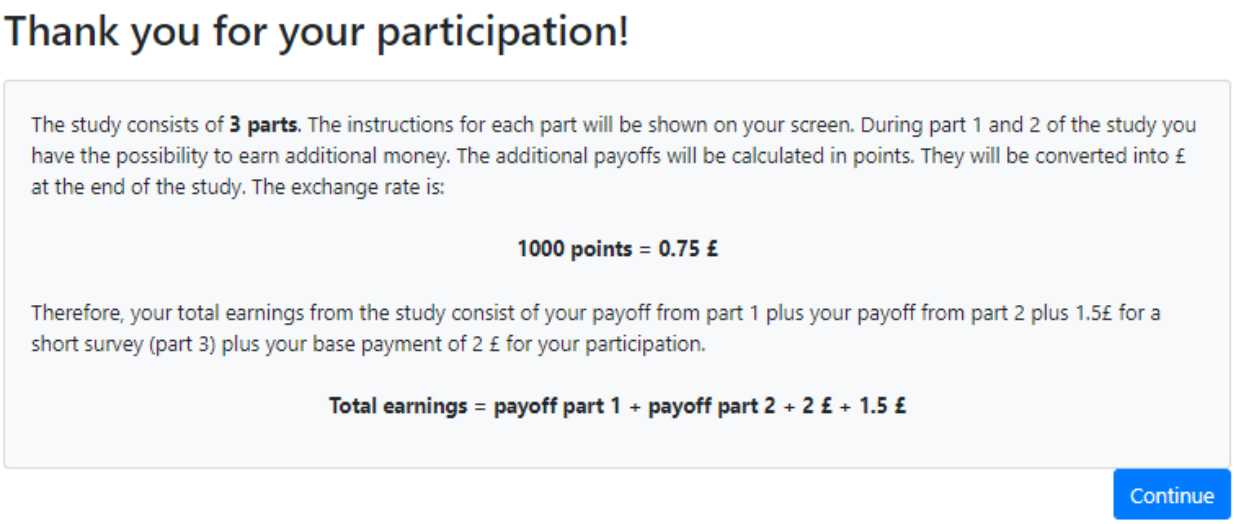



Figure A.6: Screenshot: payoffs

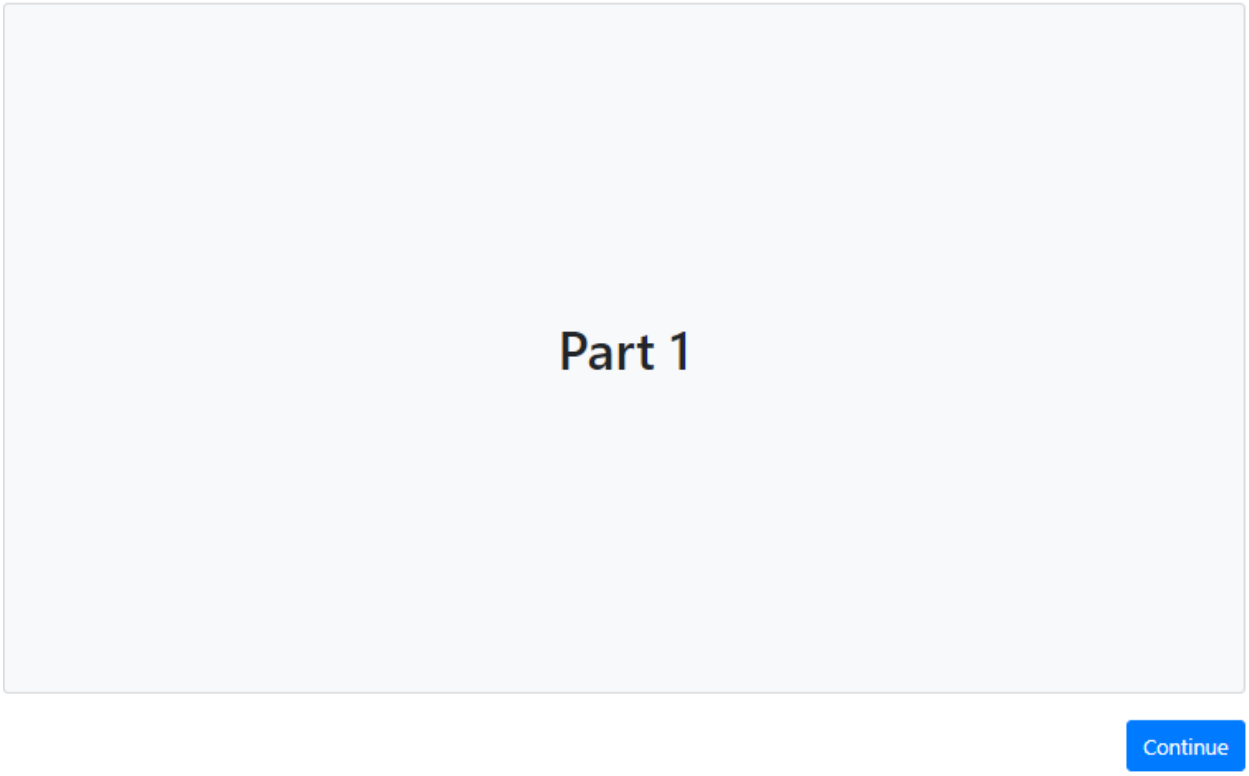



Figure A.7: Screenshot: begin of part 1

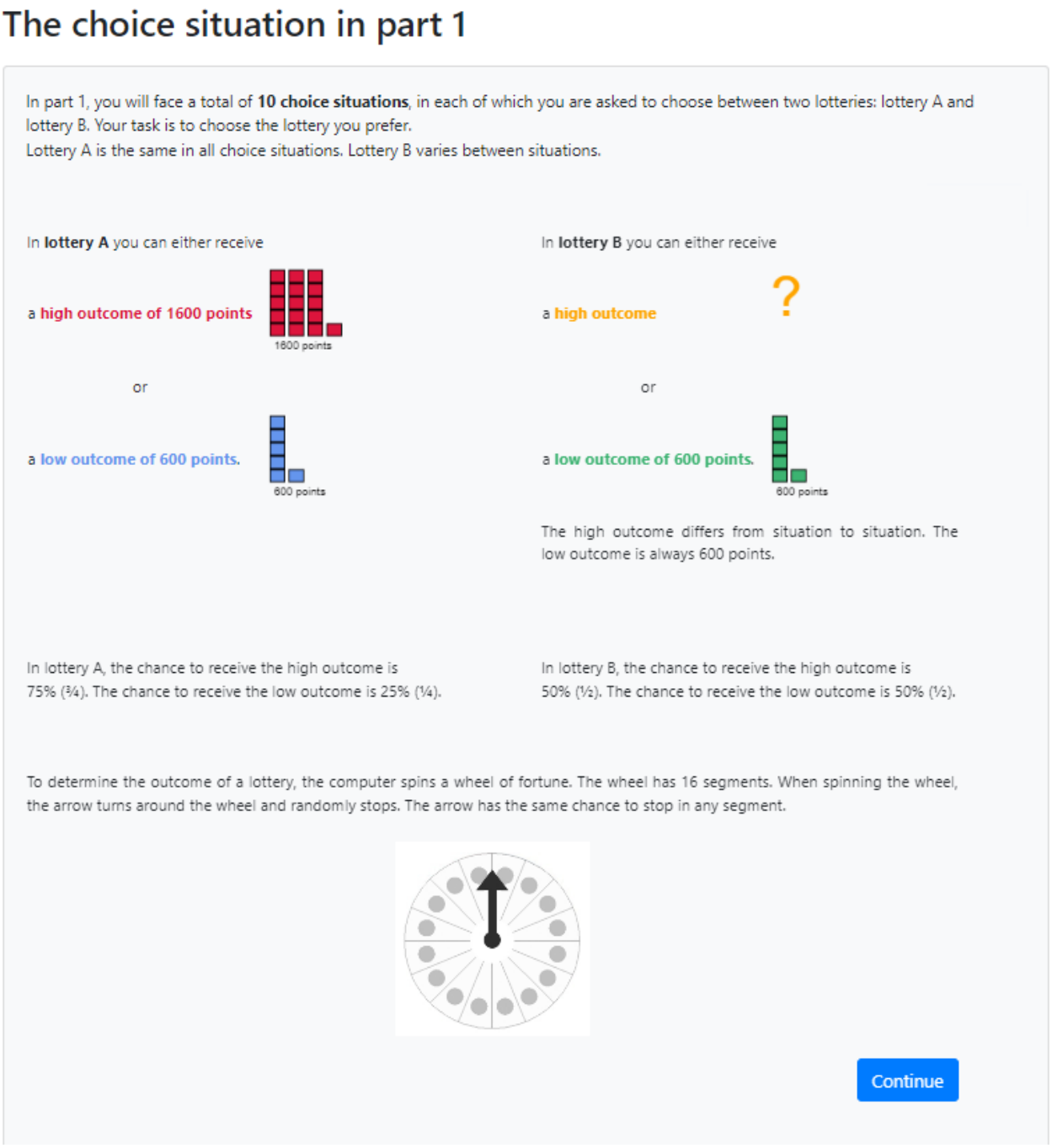
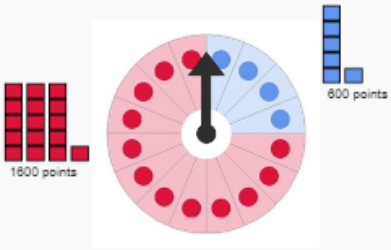



Figure A.8: Screenshot: description of the lotteries (Elements of the screen appear sequentially. When the participant clicks "continue", the next picture and description appears.

The outcome of lottery A is determined by wheel A. On wheel A, 12 of the 16 segments (75%) are **red**, 4 segments (25%) are **blue**.




If the arrow stops on a **red segment** you receive **1600 points.**
If the arrow stops on a **blue segment** you receive **600 points.**

The outcome of lottery B is determined by wheel B. On wheel B, 8 of the 16 segments (50%) are **yellow**, 8 segments (50%) are **green**.


If the arrow stops on a **yellow segment** you receive the **high outcome**
If the arrow stops on a **green segment** you receive **600 points.**

☑ I understood the instructions

Continue to control questions

# Control Questions

The following questions ensure that you have understood the instructions. Once you have answered all questions correctly, you will be directed to the next screen.
Note: You have **three** tries to answer the questions correctly. After the third wrong answer you will not be able to finish the study and you will not receive any payment.

| **Which of the following is correct?** | Wrong | Correct |
|---|---|---|
| If a participant chooses lottery B... | | |
| *it is equally likely that he or she receives the high or the low outcome.* | ○ | ◉ |
| If a participant chooses lottery A... | | |
| *he or she always gets a payout of 1600 points.* | ◉ | ○ |
| *the computer spins a wheel of fortune which determines if he or she receives 1600 or 600 points.* | ○ | ◉ |
| *he or she gets a payoff of 600 points with a likelihood of 25%.* | ○ | ◉ |

Confirm my answers

Figure A.9: Screenshot: description of the lotteries continued and control questions part 1

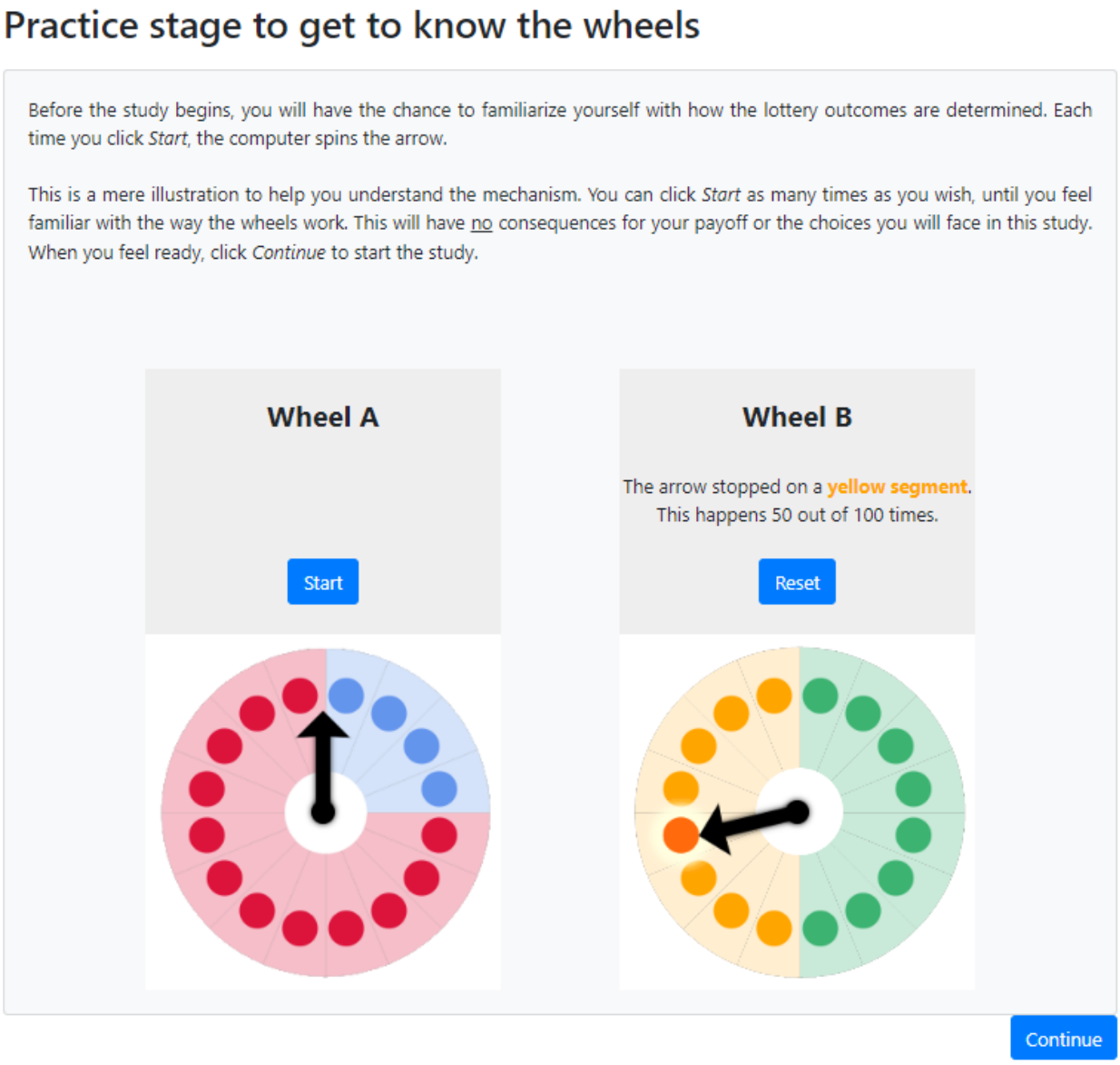



Figure A.10: Screenshot: practice wheels

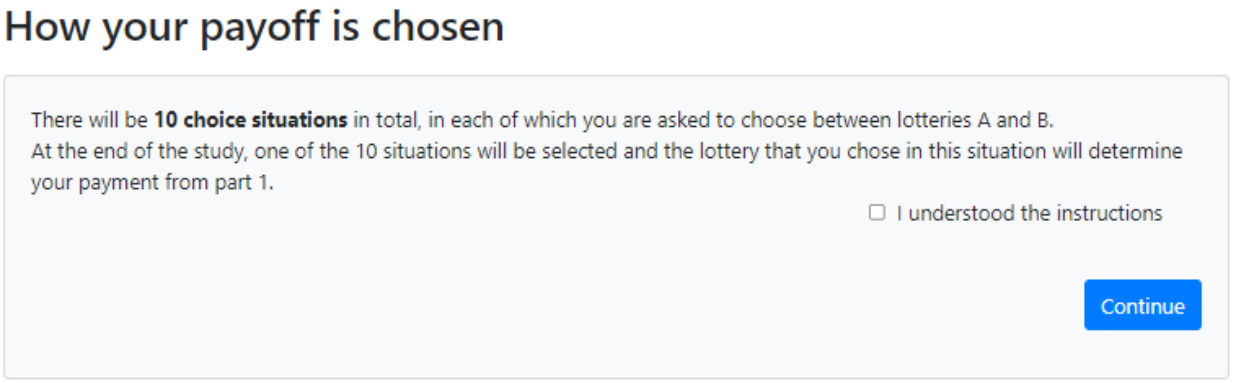



Figure A.11: Screenshot: procedure part 1

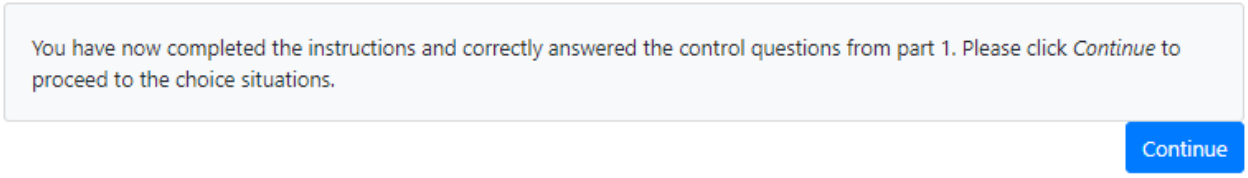



Figure A.12: Screenshot: transition to choice situations part 1

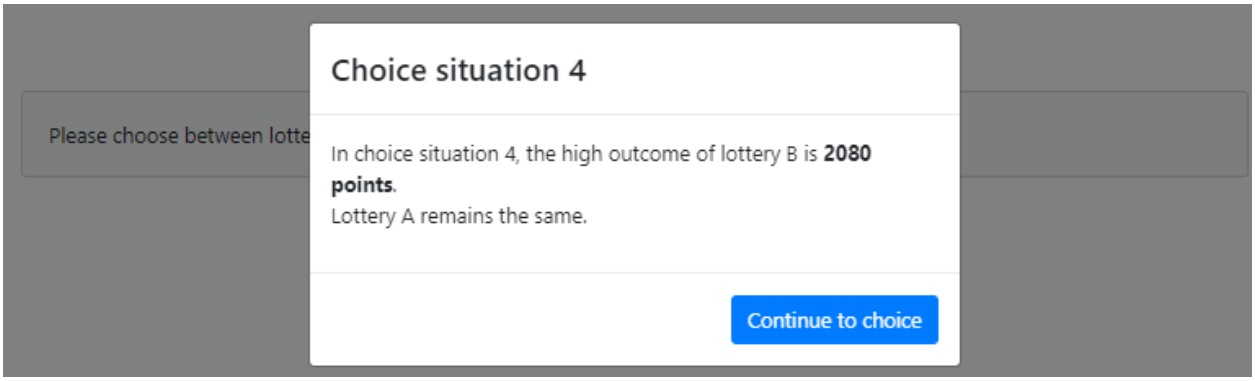



Figure A.13: Screenshot: announcement of the next choice situation in part 1 (for choice situations 1 to 10)

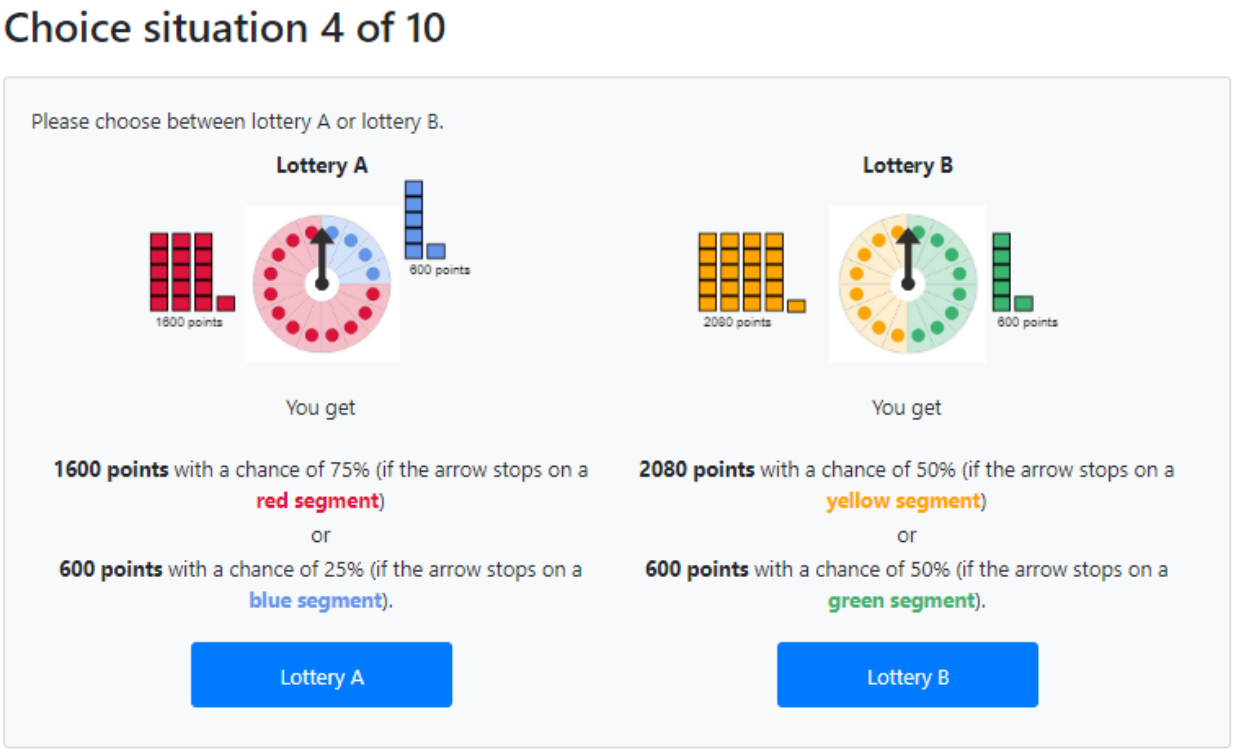



Figure A.14: Screenshot: choice situation 4 in part 1 (the same for choice situations 1 to 10)

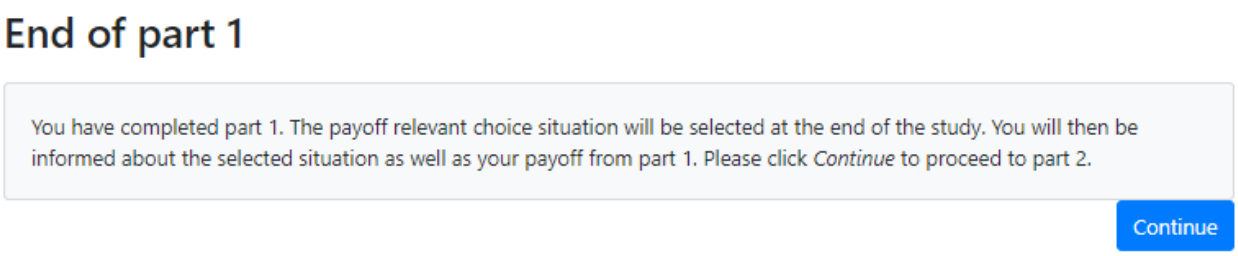



Figure A.15: Screenshot: end of part 1

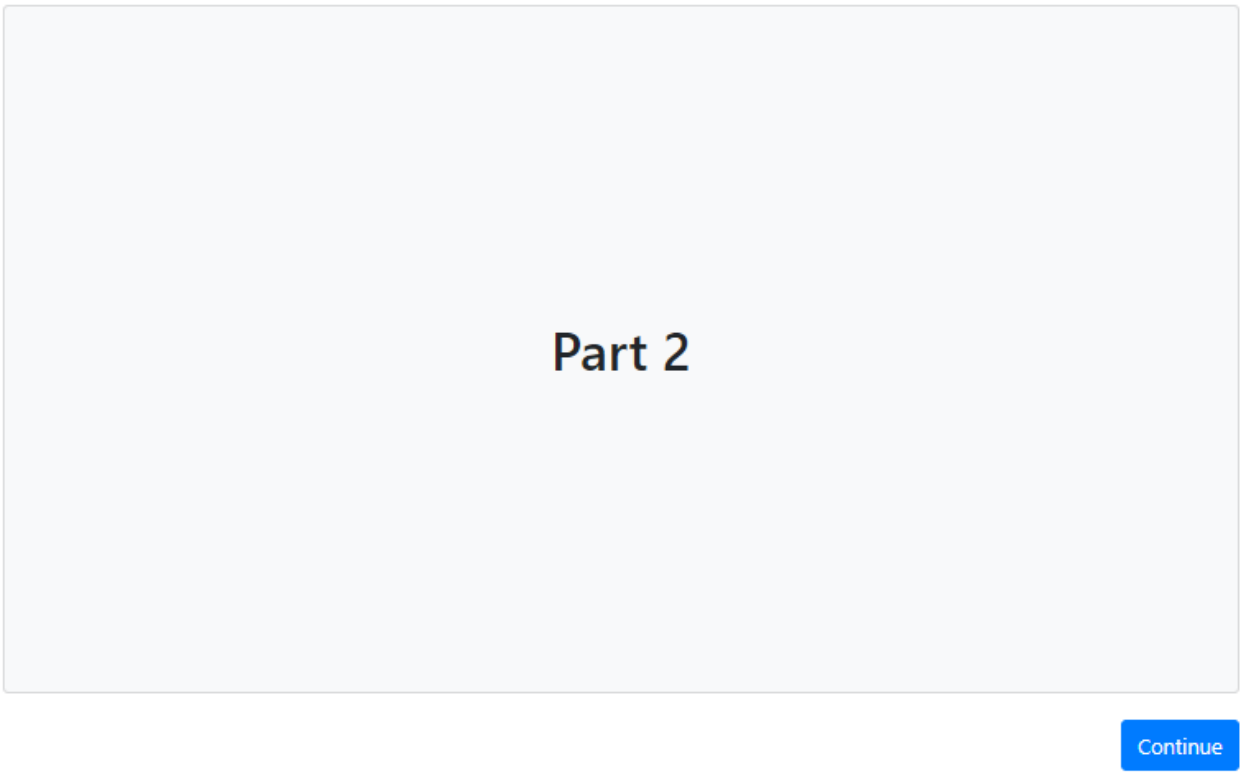



Figure A.16: Screenshot: begin of part 2

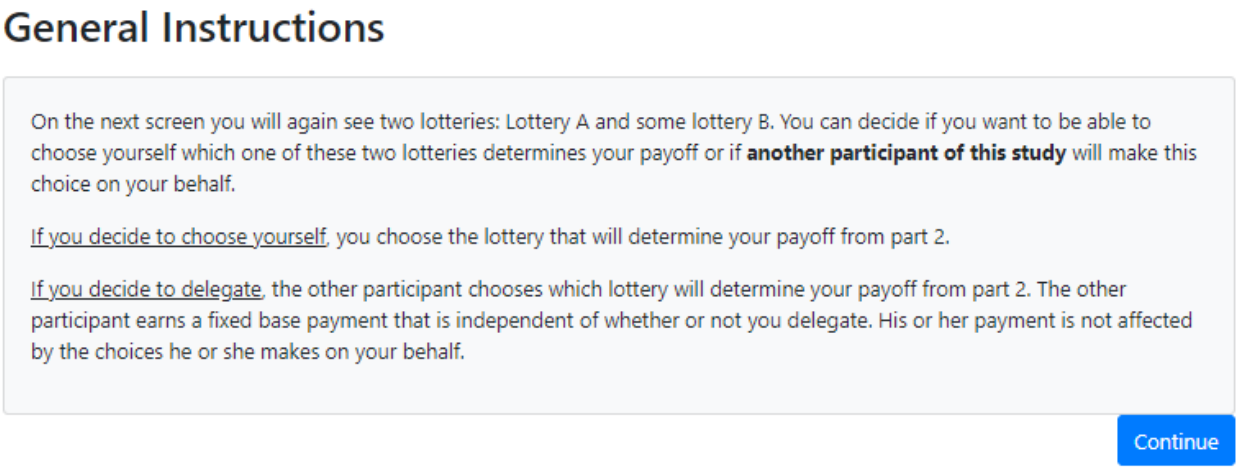



Figure A.17: Screenshot: general instructions for part 2

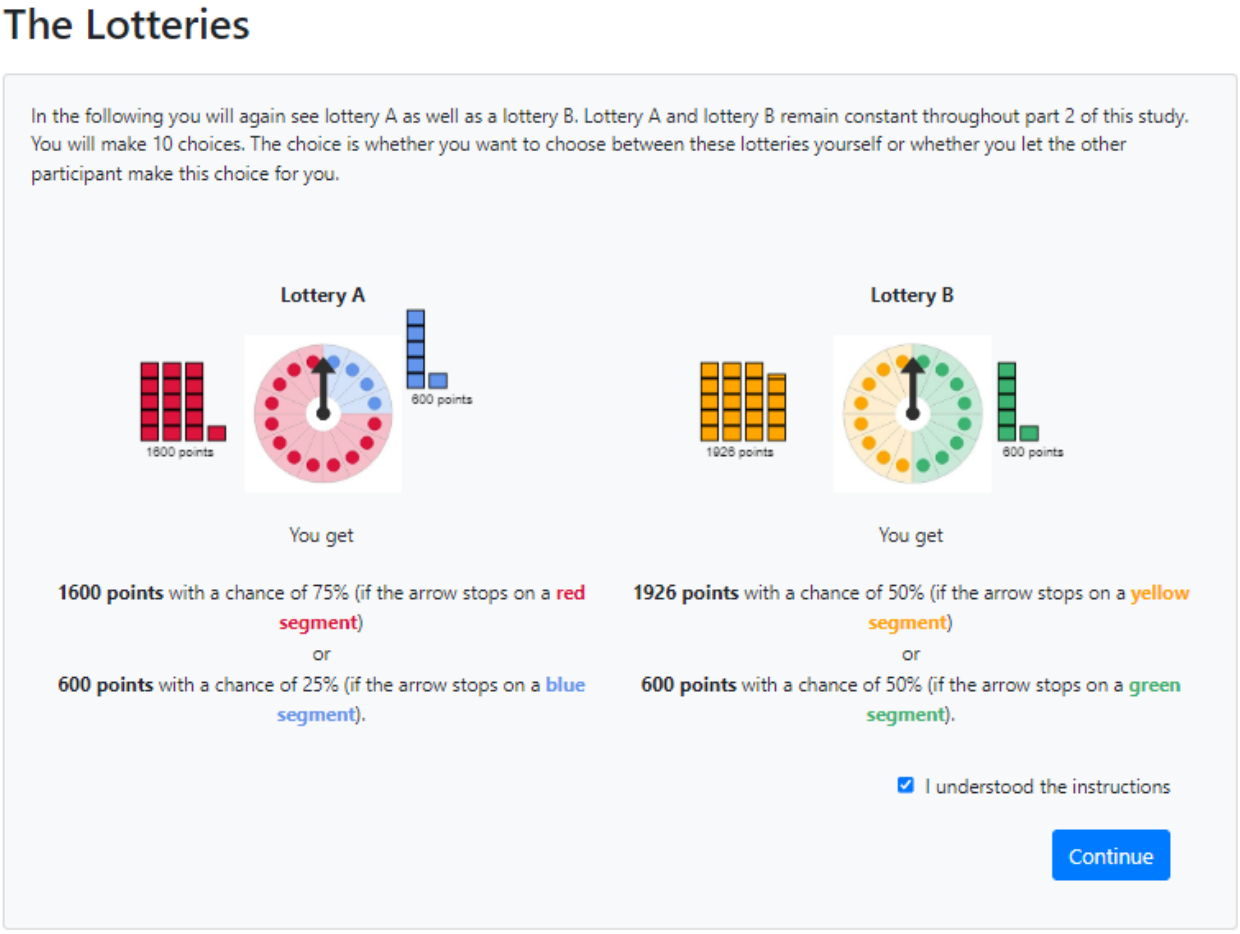



Figure A.18: Screenshot: choice set with lotteries for part 2

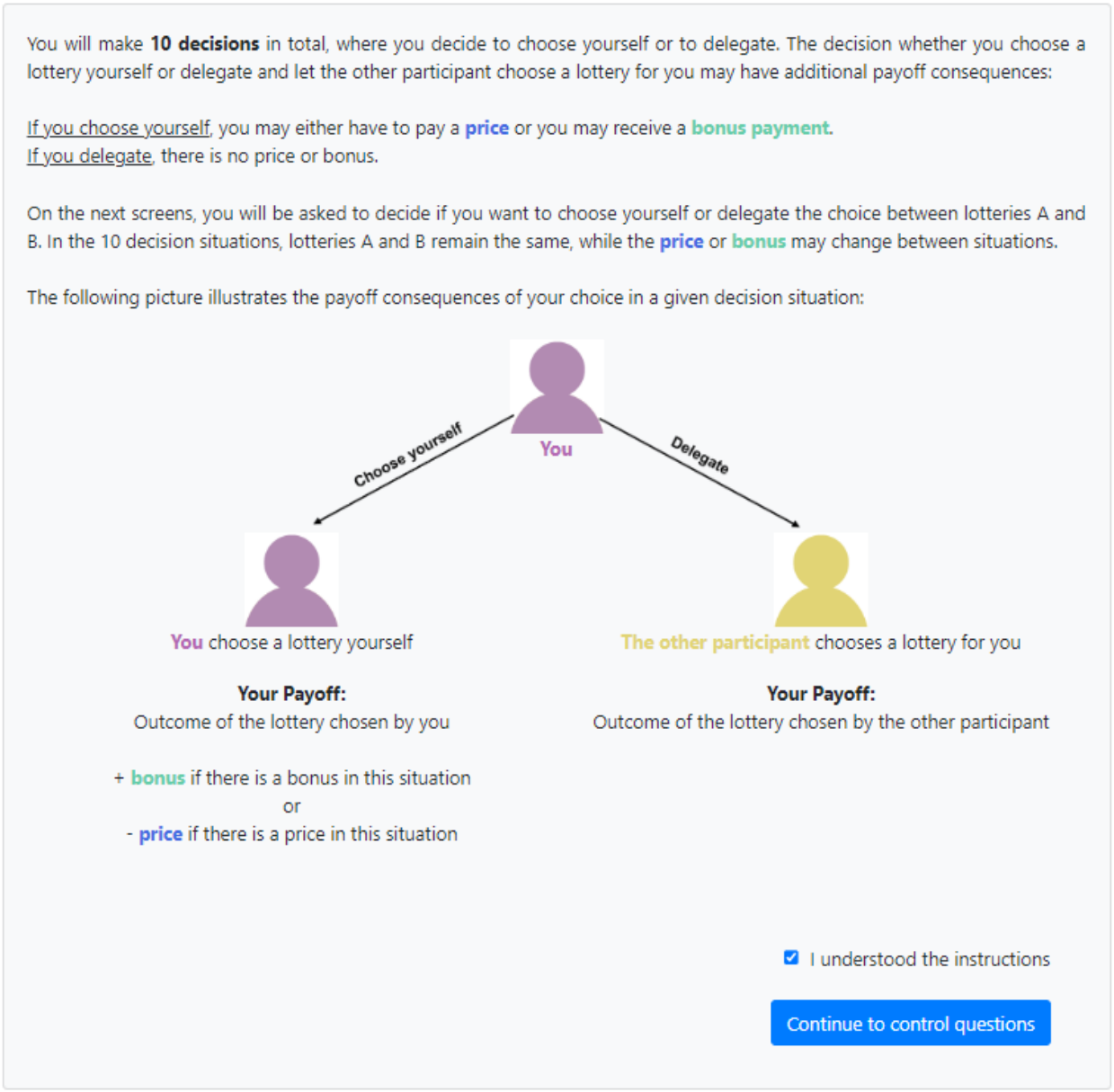



Figure A.19: Screenshot: description of the delegation decision

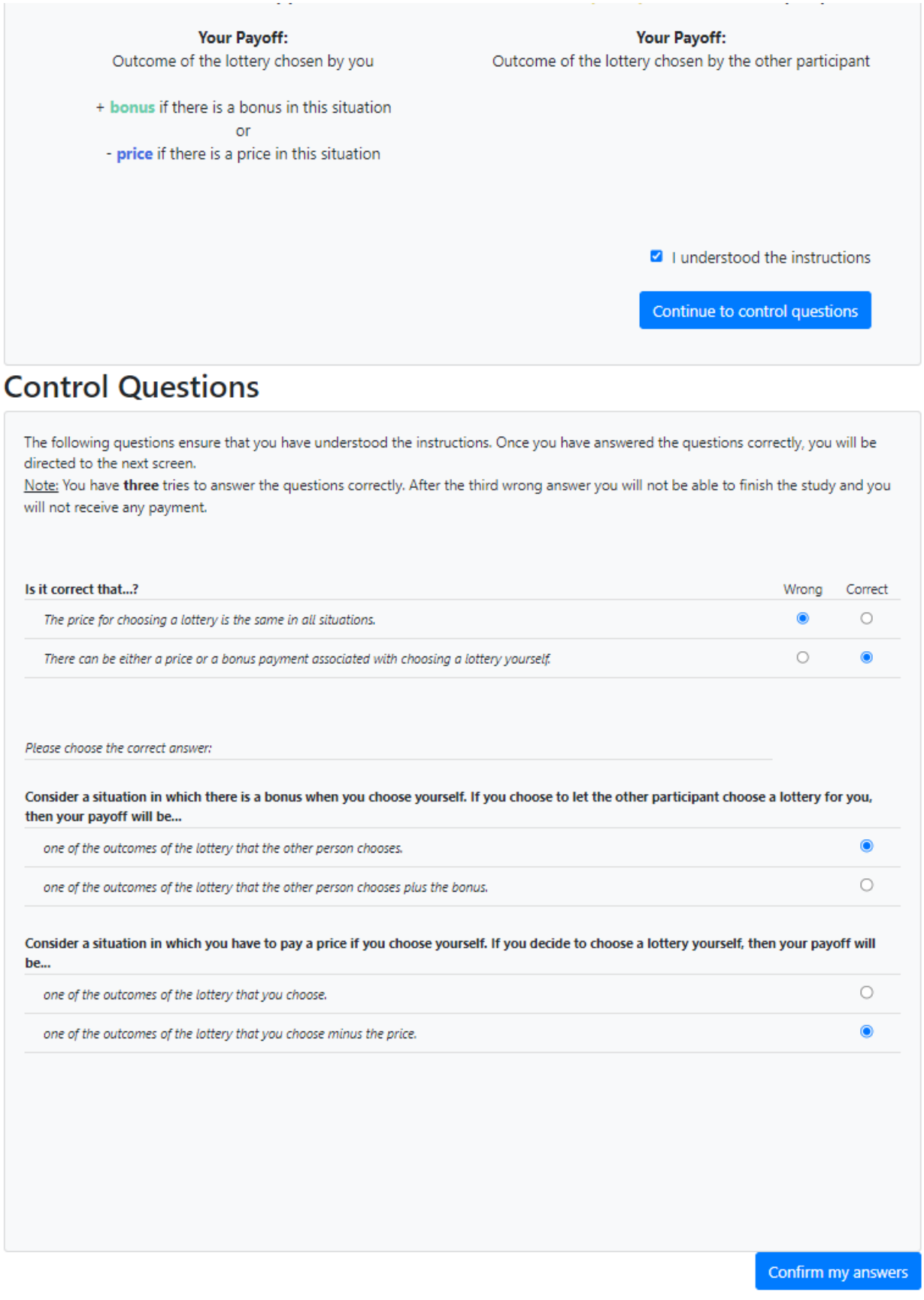



Figure A.20: Screenshot: control questions part 2

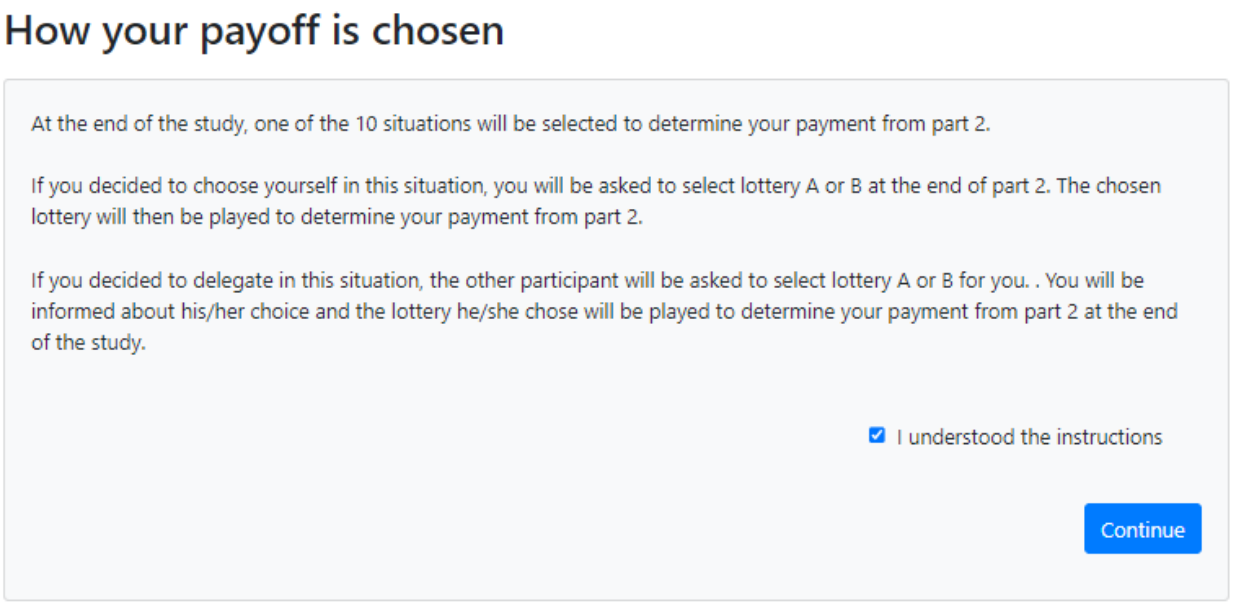



Figure A.21: Screenshot: payoffs in part 2

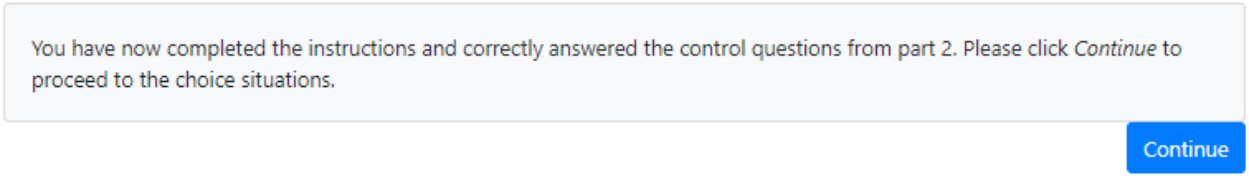



Figure A.22: Screenshot: transition to choice situations part 1

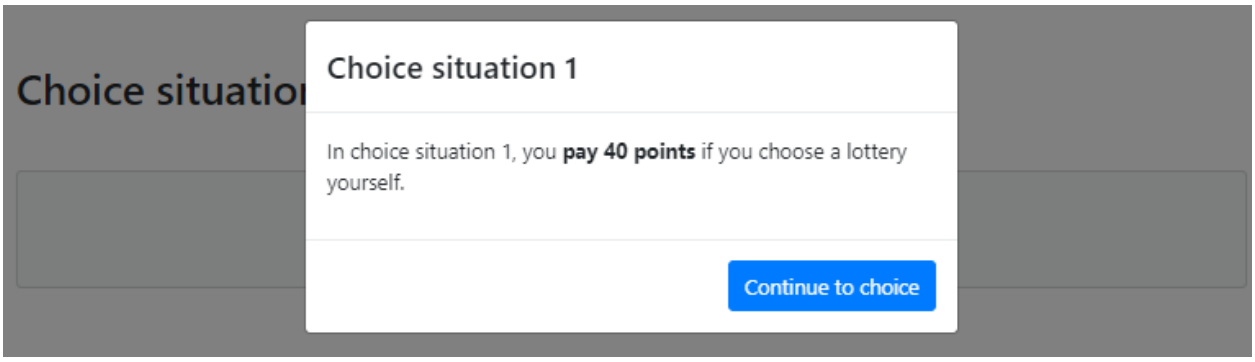



Figure A.23: Screenshot: announcement of the next choice situation in part 2 (for choice situations 1 to 10)

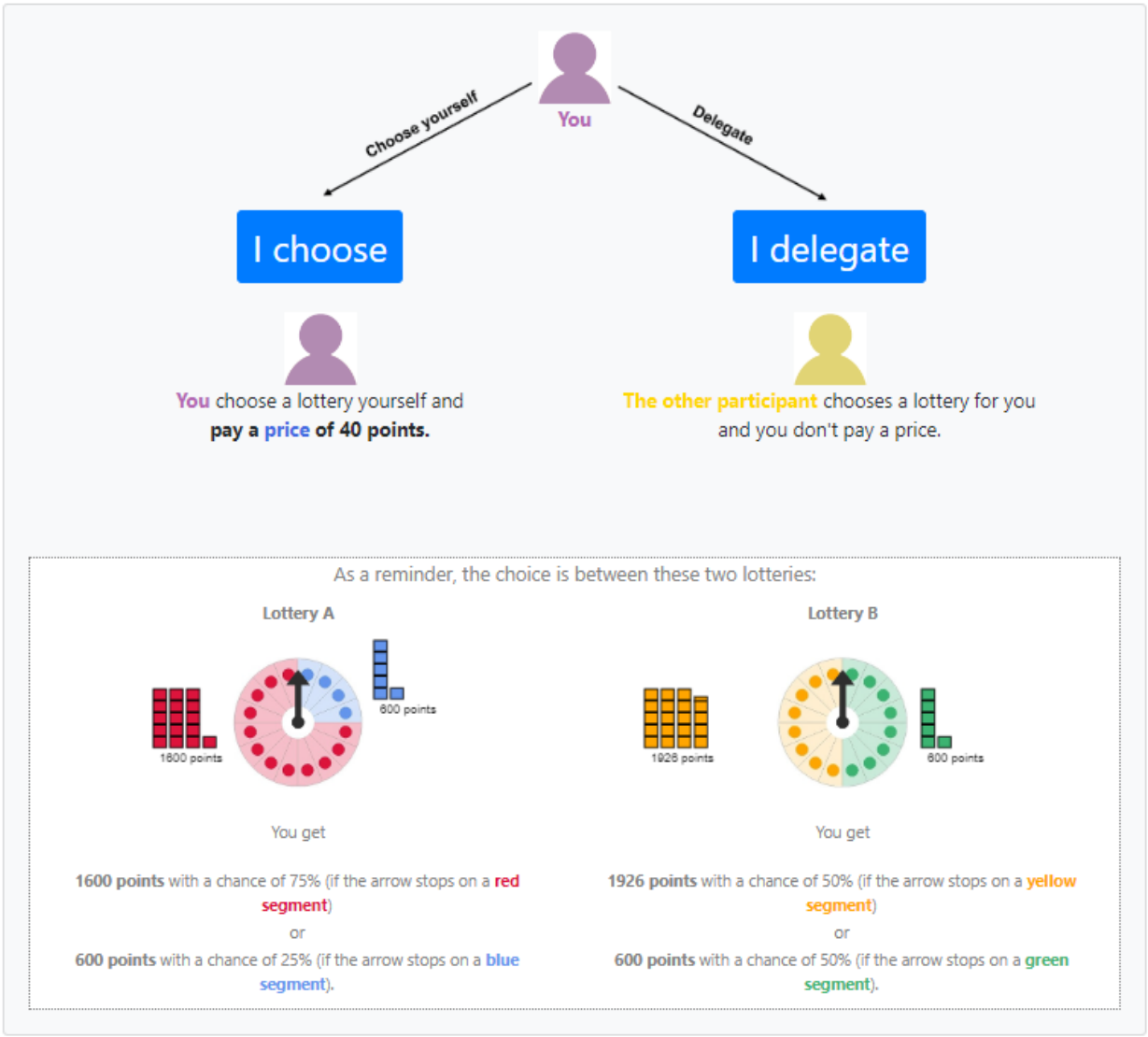



Figure A.24: Screenshot: choice situation 1 in part 2 (the same for choice situations 1 to 10)

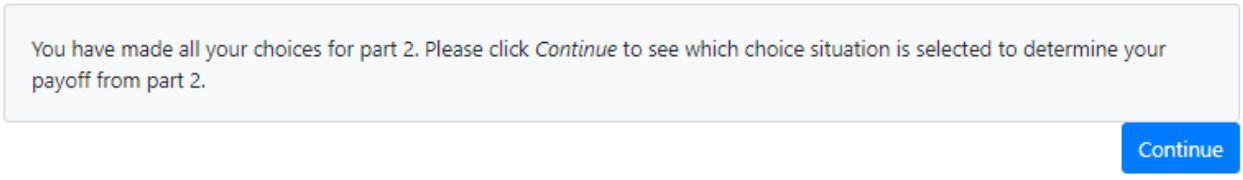



Figure A.25: Screenshot: end of choice situations part 2

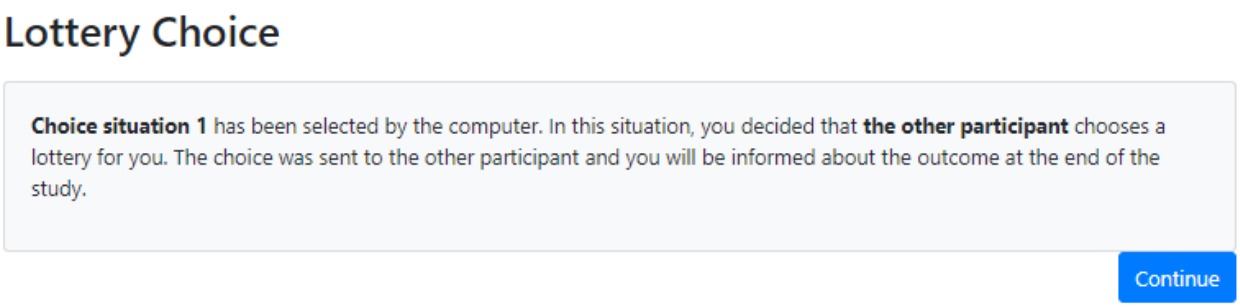



Figure A.26: Screenshot: information about delegation of the lottery choice (in case of delegation)

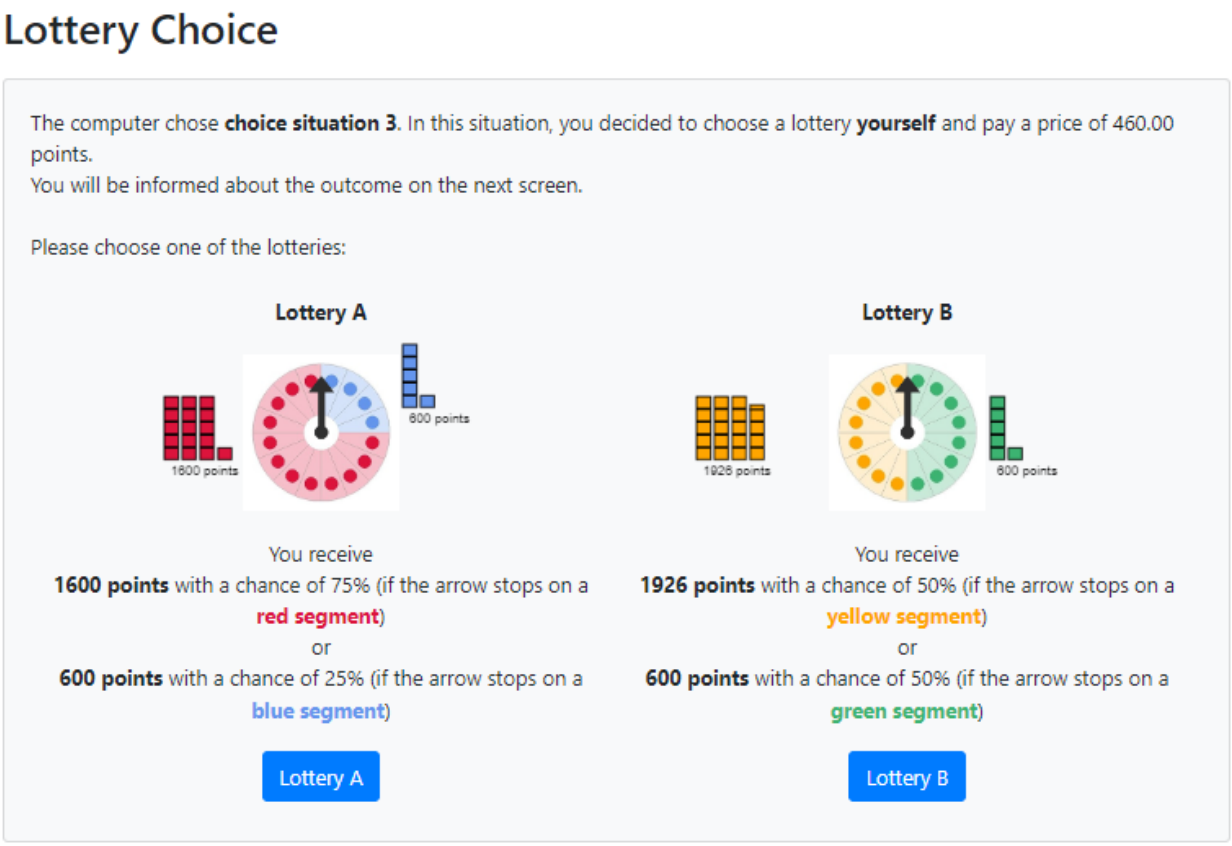



Figure A.27: Screenshot: information and own lottery choice (in case of choosing oneself)

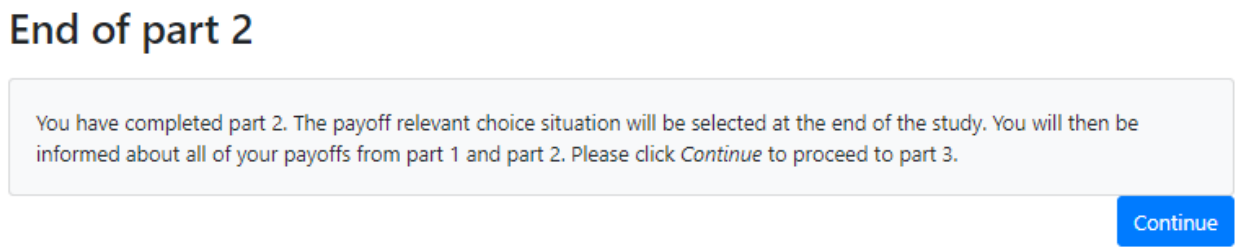



Figure A.28: Screenshot: end of part 2

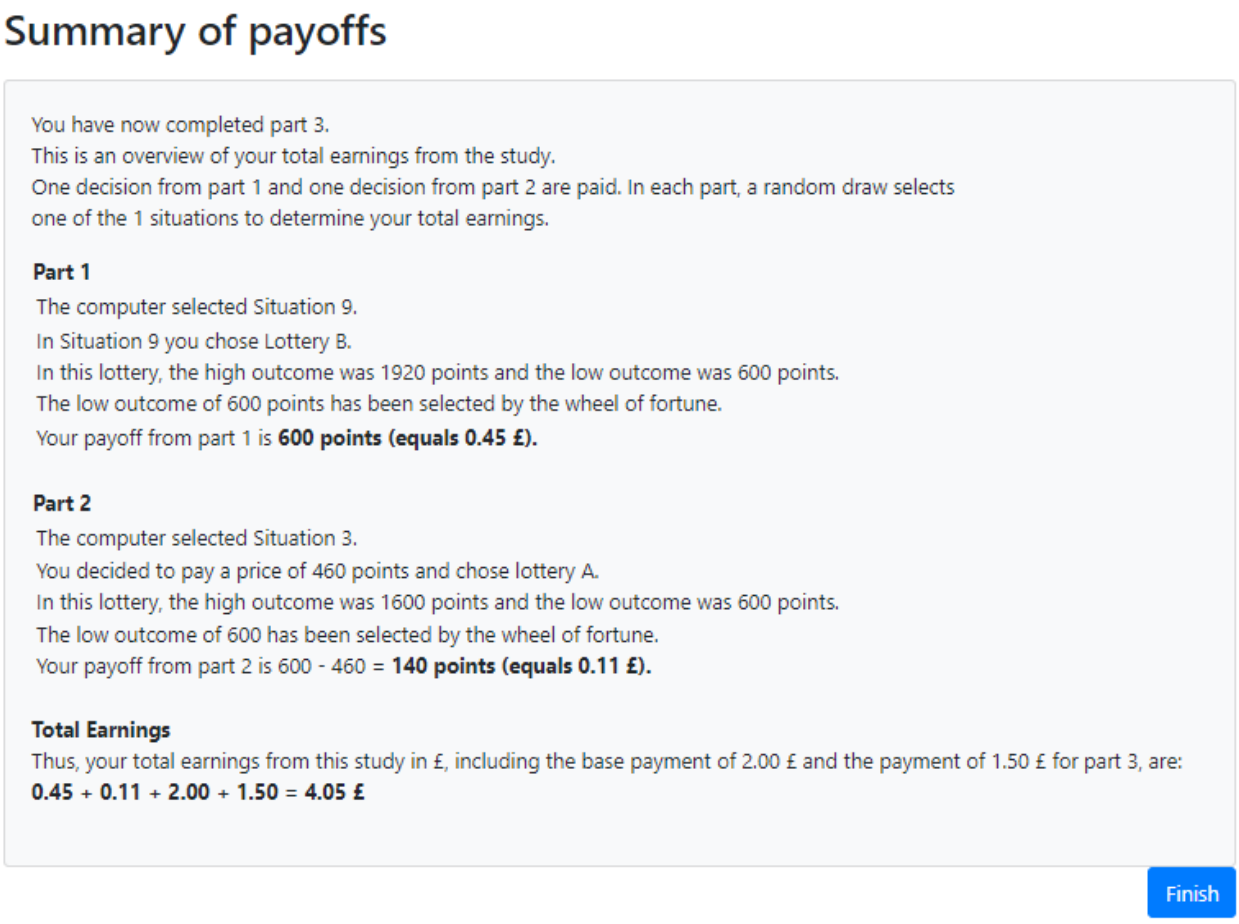



Figure A.29: Screenshot: summary of payoffs

## A.4 Questionnaires

We present all questionnaires in the following subsections. Explanations are added in italic.

### A.4.1 Questionnaire June 2021

*(Note: The order of the question blocks has been randomized at the individual level and the titles were replaced by, e.g., "Part 1".)*

**Validation questions for intrinsic value of autonomy** *(This has always been the first block.)*

Please state how much you agree to each of the following statements on a scale from 0 to 10.

1. In general, it is important for me to take decisions myself and to live my life without external interferences.
2. I am much happier with an outcome when I know that I chose it myself, even if the outcome would have been the same if someone else had decided.
3. When I know I made the right decision myself, I don't mind if something turns out good or bad. The important thing is that I decided myself to do so.
4. I try to avoid situations in which my outcomes depend on other people's actions.
5. I'd rather make my own mistakes than depend on someone else's decisions.
6. I feel bad when a decision of mine is overruled.
7. I don't like to be told how to organize a certain task.
8. It is important to me to feel in control.
9. I don't mind letting other people make choices on my behalf.

**Perceived Autonomy: Locus of Control (Rotter, 1966)** For each question select the statement that you agree with the most. *(Six additional buffer items for distraction in the original scale are omitted here. Reversed items: 2, 3, 4, 8, 9, 10, 11, 12, 18, 21, 22.)*

| | | |
|---|---|---|
| 1. | a.Many of the unhappy things in people's lives are partly due to bad luck. | b.People's misfortunes result from the mistakes they make. |
| 2. | a.One of the major reasons why we have wars is because people don't take enough interest in politics. | b.There will always be wars, no matter how hard people try to prevent them. |
| 3. | a.In the long run people get the respect they deserve in this world. | b.Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries. |
| 4. | a.The idea that teachers are unfair to students is nonsense. | b.Most students don't realize the extent to which their grades are influenced by accidental happenings. |
| 5. | a.Without the right breaks (opportunities, good fortune) one cannot be an effective leader. | b.Capable people who fail to become leaders have not taken advantage of their opportunities. |
| 6. | a.No matter how hard you try some people just don't like you. | b.People who can't get others to like them don't understand how to get along with others. |
| 7. | a.I have often found that what is going to happen will happen. | b.Trusting to fate has never turned out as well for me as making a decision to take a definite course of action. |
| 8. | a.In the case of the well prepared student there is rarely if ever such a thing as an unfair test. | b.Many times exam questions tend to be so unrelated to course work that studying is really useless. |
| 9. | a.Becoming a success is a matter of hard work, luck has little or nothing to do with it. | b.Getting a good job depends mainly on being in the right place at the right time. |
| 10. | a.The average citizen can have an influence in government decisions | b.This world is run by the few people in power, and there is not much the little guy can do about it. |

| | | |
|---|---|---|
| 11. | a.When I make plans, I am almost certain that I can make them work. | b.It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow. |
| 12. | a.In my case getting what I want has little or nothing to do with luck. | b.Many times we might just as well decide what to do by flipping a coin. |
| 13. | a.Who gets to be the boss often depends on who was lucky enough to be in the right place first. | b.Getting people to do the right thing depends upon ability. Luck has little or nothing to do with it. |
| 14. | a.As far as world affairs are concerned, most of us are the victims of forces we can neither understand, nor control. | b.By taking an active part in political and social affairs the people can control world events. |
| 15. | a.Most people don't realize the extent to which their lives are controlled by accidental happenings. | b.There really is no such thing as "luck". |
| 16. | a.It is hard to know whether or not a person really likes you. | b.How many friends you have depends upon how nice a person you are. |
| 17. | a.In the long run the bad things that happen to us are balanced by the good ones. | b.Most misfortunes are the result of lack of ability, ignorance, laziness, or all three. |
| 18. | a.With enough effort we can wipe out political corruption. | b.It is difficult for people to have much control over the things politicians do in office. |
| 19. | a.Sometimes I can't understand how teachers arrive at the grades they give. | b.There is a direct connection between how hard I study and the grades I get. |
| 20. | a.Many times I feel that I have little influence over the things that happen to me. | b.It is impossible for me to believe that chance or luck plays an important role in my life. |
| 21. | a.People are lonely because they don't try to be friendly. | b.There's not much use in trying too hard to please people, if they like you, they like you. |
| 22. | a.What happens to me is my own doing. | b.Sometimes I feel that I don't have enough control over the direction my life is taking. |
| | | |
| 23. | a.Most of the time I can't understand why politicians behave the way they do. | b.In the long run the people are responsible for bad government on a national as well as on a local level. |

**Perceived Autonomy: General Index of Autonomy (Basic Personality Needs Scale, Deci and Ryan (1985))** Please read each of the following items carefully, thinking about how it relates to your life, and then indicate how true it is for you on a scale from 'Not at all true' to 'Very true'.

1. I feel like I am free to decide for myself how to live my life. (Scale from 1=Not at all True to 7=Very True)
2. I feel pressured in my life.
3. I generally feel free to express my ideas and opinions.
4. In my daily life, I frequently have to do what I am told.
5. People I interact with on a daily basis tend to take my feelings into consideration.
6. I feel like I can pretty much be myself in my daily situations.
7. There is not much opportunity for me to decide for myself how to do things in my daily life.

**Perceived Autonomy: Generalized Self-Efficacy Scale (Schwarzer, Jerusalem et al., 1995)** Please read each of the following items carefully, thinking about how it relates to your life, and then indicate how true it is for you.

1. I can always manage to solve difficult problems if I try hard enough. (Scale from 1=Not at all True to 7=Very True)
2. If someone opposes me, I can find the ways and means to get what I want.
3. I am certain that I can accomplish my goals.
4. I am confident that I could deal efficiently with unexpected events.
5. Thanks to my resourcefulness, I can handle unforeseen situations.
6. I can solve most problems if I invest the necessary effort.
7. I can remain calm when facing difficulties because I can rely on my coping abilities.
8. When I am confronted with a problem, I can find several solutions.
9. If I am in trouble, I can think of a good solution.
10. I can handle whatever comes my way.

**Perceived Autonomy: Desirability of Control (Burger and Cooper, 1979)** Please read each of the following items carefully, thinking about how it relates to your life, and then indicate how true it is for you from on a scale from 'Not at all true' to 'Very true'. *(Please note that we deleted items 7 and 16 from the original 20-item scale since they specifically refer to driving a car and they have an ambiguous interpretation in addition to their lack of generality.)*

1. I prefer a job where I have a lot of control over what I do and when I do it. (7-Point Scale from 'Not at all true' to 'Very true')
2. I enjoy political participation because I want to have as much of a say in running government as possible.
3. I try to avoid situations where someone else tells me what to do.
4. I would prefer to be a leader rather than a follower.
5. I enjoy being able to influence the actions of others.
6. Others usually know what is best for me.
7. I enjoy making my own decisions.
8. I enjoy having control over my own destiny.
9. I would rather someone else took over the leadership role when I'm involved in a group project.
10. I consider myself to be generally more capable of handling situations than others are.
11. I'd rather run my own business and make my own mistakes than listen to someone else's orders.
12. I like to get a good idea of what a job is all about before I begin.
13. When I see a problem I prefer to do something about it rather than sit by and let it continue.
14. When it comes to orders, I would rather give them than receive them.
15. I wish I could push many of life's daily decisions off on someone else.
16. I prefer to avoid situations where someone else has to tell me what it is I should be doing.

17. There are many situations in which I would prefer only one choice rather than having to make a decision.

18. I like to wait and see if someone else is going to solve a problem so that I don't have to be bothered by it.

**Perceived Autonomy: Mixed**

**Freedom and Control:** Some people feel they have completely free choice and control their lives while other people feel that what they do has no real effect on what happens to them. Please use this scale where 1 means "no choice at all" and 10 means "a great deal of choice" to indicate how much freedom of choice and control you feel you have over the way your life turns out. (Scale: 1 (No choice at all) to 10 (A great deal of choice)), *original question of the world value survey wave 6, Inglehart et al. (2014)*

**Mobility Experience:** How do you perceive your economic situation compared to the situation your parents were in when they were about your age? (Scale: Much better—The same—Much worse)

**Value of political autonomy:** How important is it for you to personally express your voice when it comes to political decision making? (Scale: 0=not at all important, 10=extremely important)

**Perceived equality of opportunity:** On a scale from 1 to 7 where 1 is "Only luck", 4 is "Equally important", and 7 is "Only effort", indicate to what extent you think that differences in income are caused by differences in peoples' efforts over their lifetime or rather by luck? By luck, we mean conditions which you have no control over. By effort, we mean conditions which you can control. *(question from Hvidberg, Kreiner and Stantcheva (2020))*

**Job Autonomy** *(based on similar questions in the 2015 ISSP work (Jutz et al., 2018) and the world value survey wave 6 (Inglehart et al., 2014))*

For each of the following, please indicate how important you personally think it is in a job. How important is...

1. good opportunities for advancement? (Scale: Not important at all - Very important)

2. a job that allows someone to work independently?

3. a job that allows someone to decide their working hours (meaning the times they start and finish work, not the total number of hours they work)?

For the following, please indicate how much you think this describes your current work situation. (If you do not work currently, characterize the last job you had.) Do you have...

1. independence in performing your tasks at work? (Scale: Does not at all describe situation well – describes situation very well)
2. good opportunities for advancement?
3. the possibility to decide your working hours (meaning the times you start and finish work, not the total number of hours you work)?

**Social Dominance Scale** *(scale by (Sidanius and Pratto, 1999), also in (Feldman, 2003))* Which of the following objects, events, or statements do you have a positive or negative feeling towards?

1. Our country would be better off if inferior groups stayed in their place.
2. We should try to treat one another as equals as much as possible.
3. It's OK if some groups have more of a chance in life than others.
4. There should be much more equal opportunity for everyone from birth, regardless of who their parents are.
5. The best people should not be expected to accept others as "equals".
6. We would have fewer problems if we treated people more equally.
7. Some people are just much better than everyone else and deserve to have power and control over others.
8. No one group should dominate in society.

**General Questions**

**Risk:** On a scale from 0 to 10, where 0 means you are "completely unwilling to take risks" and a 10 means you are "very willing to take risks", how willing are you to take risks in general?

**Trust Others:** Generally speaking, how much do you trust other people? (Scale: Completely Distrust to Completely Trust)

**Trust Government:** How much do you trust the government to take actions in the interest of its citizens? (Scale: Completely Distrust to Completely Trust)

**Very short Big 5:** *(Gosling, Rentfrow and Swann Jr, 2003)* Here are a number of personality traits that may or may not apply to you. Please indicate to what extent you agree or disagree that these personality traits apply to you. Note: You should rate the extent to which the pair of traits applies to you, even if one characteristic applies more strongly than the other. I see myself as... (Scale: 1=Disagree strongly, 2=Disagree moderately, 3=Disagree a little, 4=Neither agree nor Disagree, 5=Agree a little, 6=Agree moderately, 7=Agree strongly)

- Extraverted, enthusiastic (NOT reserved or shy)
- Agreeable, kind (NOT quarrelsome or critical)
- Dependable, self-disciplined (NOT careless or disorganized)
- Emotionally stable, calm (NOT anxious or easily upset/stressed)
- Open to new experiences, creative (NOT conventional)

**Trust Measures:**

1. In general, I have trust in other people's good intentions. (Scale: Completely Distrust to Completely Trust)
2. In general, I have trust in other people's expertise.
3. In general, I have trust in other people ability to make decisions of high quality.

**Norm Compliance:** Now consider the values of people in your community. How important is it for you to do what other people consider socially appropriate? (Scale: 0: Not important at all – 10: Very Important)

**Socio-demographics** *(This block always came second-last.)*

**Household Size:** How many people live in your household (including family members and partners, not including roommates)? (field to enter number)

**Income:** The next question is about the total income of you and your family members living in your household in 2020. This figure should include income from all sources including salaries, wages, pensions, social security, dividends, interest and any other income. Please select the category that represents your household income. (Less than GBP 10,000 / steps of 10 000 GPB / More than GBP 150,000)

**Marital Status:** Please indicate your marital status:

- Divorced
- Married
- Single
- Widowed

**Children:** How many children do you have? (field to enter number)

**Employment Status:** Are you...

- Employed?
- Retired?
- Self-employed?
- A stay-at-home mother/father?
- A student?
- Unemployed?

**Education:** What is the highest level of education that you have achieved?

- Less than High School
- High School diploma

- Some college or associate degree
- 4-year college degree
- More than 4-year college degree

**Religion:** Are you religious? (Yes, No)

**Siblings:** How many siblings do you have? (field to enter number)

*Information on age, gender, country of birth, nationality, country of residence, native language and student status has been extracted from prolific, where subjects are asked to provide this information (and update it on a regular basis).*

**Acceptability of Covid Rules** *(This block has always been the last one.)*

**Rules of behavior:** In order to keep infections with covid-19 under control, many governments implemented temporary rules of behavior. To what extend do you find it acceptable that the government restricts individual freedoms in order to keep covid-19 infections under control (think of mandates to wear a mask, curfews, quarantine or social distancing rules)? (7-point scale from 1: The government should not restrict freedoms at all. – 7: The government should restrict freedoms whenever it helps reduce infections.)

**Vaccination mandate:** To what extend would you find it acceptable if the government mandates its citizens to get vaccinated against Covid-19? (7-point scale from Not at all to Completely)

**Rules for unvaccinated:** To what extent would you find it acceptable if the government restricts individual freedoms of unvaccinated citizens? (7-point scale from Not at all to Completely)[44]

### A.4.2 Questionnaire January 2022

*(Note: The order of the question blocks has been randomized at the individual level and the titles were replaced by, e.g., "Part 1". Socio-economics questions and the questions about the*

[44]There was a slight change in wording in this question to account for the changes in public debates in the January 2022 wave: "To what extent would you find it acceptable if the government restricts individual freedoms of unvaccinated citizens (think of restrictions like not being able to go to restaurants or public events)?"

*acceptability of covid rules were always the last block. The validation questions were either asked first or second-last (randomized at the individual level).)*

**Autonomy at the workplace—Home office**

**Home office 1:** In your current job, would it at least in principle be possible to carry out parts of your job from home? *(Yes, No, Not applicable/I don't have a job)*

*If Home office 1=yes:* **Home office 2a:** Have you been able to work in home office, at least part-time, in the last 12 months? *(Yes, No)*[45]

*If Home office 1=no:* **Home office 2b:** If you had a job that at least in principle would allow you to work in home office for a part of your working time, how important would it be for you to use this option? Indicate from 1 (Not important at all) to 7 (Very important).

*If Home office 2a=yes:* **Home office 3a:** How important is it for you to continue to be able to work in home office for a part of your working time once the pandemic is over? Indicate from 1 (Not important at all) to 7 (Very important).

*If Home office 2a=no:* **Home office 3b:** How important would it be for you to be able to work in home office at least for a part of your working time? Indicate from 1 (Not important at all) to 7 (Very important).

**Employment status:** Which of the following best describes your employment status?

- Employed
- Retired
- Self-employed
- Entrepreneur
- Stay-at-home mother/father
- Student
- Unemployed

[45]Not applicable appeared as an additional answer option if 'Not applicable/I don't have a job' has been selected int he above question.

**Entrepreneur experience:** Have you engaged in entrepreneurship/been self-employed/run your own business?

1. I am currently doing this.
2. No, but I intend to in the future.
3. No, and I don't intend to.
4. No, but I have in the past.

*If Entrepreneur experience=4:* **Number employees a:** At the time you were engaged in entrepreneurship/were self-employed, were running your own business, how many people did you employ? *(Categories: 0, 1-5, 5-10, 10-50, 50+)*

*If Entrepreneur experience=1:* **Number employees b:** How many people are you employing? *(Categories: 0, 1-5, 5-10, 10-50, 50+)*

**Sector:** Which sector do you currently work in? (If you are currently not working, please indicate the sector you plan to work in/ you have worked in most of your life) *(dropdown menu: care, construction, design/art, education, finance, gastronomy, IT, medicine, production, research, retail, tourism, none of the above)*

**Entrepreneurial Intentions** *(original questionnaire by Liñán and Chen (2009))*

**Personal attitude:** Please indicate your level of agreement with the following sentences from 1 (total disagreement) to 7 (total agreement):

1. Being an entrepreneur implies more advantages than disadvantages to me.
2. A career as entrepreneur is attractive for me.
3. If I had the opportunity and resources, I'd like to start a firm.
4. Being an entrepreneur would entail great satisfactions for me.
5. Among various options, I would rather be an entrepreneur.

**Subjective norm:** If you decided to create a firm, would people in your close environment approve of that decision? Please indicate others' approval from 1 (total disapproval) to 7 (total approval).

1. Your close family
2. Your friends
3. Your colleagues

**Perceived behavioral control:** To what extent do you agree with the following statements regarding your entrepreneurial capacity? Value them from 1 (total disagreement) to 7 (total agreement).

1. To start a firm and keep it working would be easy for me.
2. I am prepared to start a viable firm.
3. I can control the creation process of a new firm.
4. I know the necessary practical details to start a firm.
5. I know how to develop an entrepreneurial project.
6. If I tried to start a firm, I would have a high probability of succeeding.

**Entrepreneurial intention:** Please indicate your level of agreement with the following statements from 1 (total disagreement) to 7 (total agreement).

1. I'm ready to make anything to be an entrepreneur.
2. My professional goal is becoming an entrepreneur.
3. I will make every effort to start and run my own firm.
4. I'm determined to create a firm in the future.
5. I have very seriously thought in starting a firm.
6. I've got the firm intention to start a firm someday.

**Questions that are identical to the June 2021 survey:** validation questions 1 and 9; work autonomy; acceptability of covid rules[46]; risk; socio-demographics: age, gender, income household size, marital status, number of kids, education

[46]A slight change in wording to account for the changes in public debates in the question Rules for unvaccinated: To what extent would you find it acceptable if the government restricts individual freedoms of unvaccinated citizens (think of restrictions like not being able to go to restaurants or public events)?

### A.4.3 Questionnaire Lab Replication 2022

**Questions that are identical to the June 2021/January 2022 survey:** Validation Questions 1 and 9; Freedom and Control; Risk, Trust Others; Trust Measures 1-3; Norm Compliance; Education; Number of Siblings; Gender; Age; Entrepreneurial Intention Questionnaire EIQ; Acceptability of Covid Rules 1-3.
**Language:** What is/are your native language(s) (multiple answers possible)?

- French
- Swiss German/German
- Italian
- Other:

**Canton:** In which canton do you currently live?

**Home Canton:** In which canton did you grow up (if several, pick the one in which you lived most of the time)?

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## Abstract

Personal autonomy has been argued to be fundamental to well-being and is often dis-cussed as an important driver of economic and political behavior. Yet, preferences for autonomy are not well understood, because their identification requires the separation of instrumental value attached to autonomous choice. We propose a novel elicitation method that solves this identification challenge. We establish the existence of intrinsic preferences for choice autonomy and show substantial heterogeneity in a large online sample. We further study their antecedents by relating them to existing personality scales and socioeconomic characteristics. Finally, we test their association with other preferences, attitudes and beliefs.



## Jel Classification

JEL: C91, D01, D90

## Keywords

autonomy; delegation; experiment design; choice consistency



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