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DOI:
10.57938/be708f6b-2c6a-48fd-a61b-c805d4278f57

Published: 01/03/2024

Document Version:
Publisher's PDF, also known as Version of record

Document License:
Unspecified

Department of Economics
Working Paper No. 358

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March 2024

WIRTSCHAFTS UNIVERSITÄT WIEN VIENNA UNIVERSITY OF ECONOMICS AND BUSINESS

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Unexpected Waiting Corrupts*

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January 29, 2024

Abstract

The experience of waiting is ubiquitous in all areas of life, and sometimes a waiting experience is followed by decisions where morality matters. We present the results of a lab–in–the–field study to analyze the effects of (un)expected waiting duration on moral behavior. Passengers who had just joined the check–in line at the Ben Gurion Airport guessed how long they would have to wait to check in. After checking in, they then completed the die–under–the–cup task, wherein they could lie without being caught to improve their financial outcomes. Specifically, passengers rolled a die privately and reported *any* number of dots, knowing that their earnings increase linearly in the number reported. We found that both the wait duration and its unexpectedness adversely shape morality. For comparison, an expected 100–minute wait and an unexpected 25–minute wait resulted in the same average increase of one dot in the reported number. We propose that after a wait (especially if unexpected), people seek compensation. As we fail to find selections on observables, we argue that the setup provides variations that are comparable to random assignments, giving support to the effects estimated. These results underscore that managing expectations about waiting duration could play an important role in mitigating subsequent immoral behavior.

Keywords: die–under–the–cup task; lying; expectations; compensation–seeking; waiting

JEL codes: C99; D91

*We thank Loukas Balafoutas, Gábor Békés, Márta Bisztray, Edoardo Cefala, Stephanie Heger, Marc Kaufmann, Robert Lieli, George Loewenstein, Daniela Roshi, Jonathan Steinhart, Linh Thô, Neil Thakar, Andrea Weber, and participants of the Applied Ethics and Morality research seminar at Prague University of Economics for helpful comments on the project.

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1 Introduction

The experience of waiting, be it brief or extended, and expected or unexpected, is ubiquitous in all domains of life. We wait for promotions, customer service, the cable repairman, medical care, or a review decision. Empirical evidence shows that waiting experiences could negatively influence our subsequent well–being (Prentice and Pizer, 2007; McGuire et al., 2010), preferences (Houston et al., 1998; Bielen and Demoulin, 2007; Kremer and Debo, 2016), and purchase decisions (Ülkü et al., 2020). In the medical domain, long waits can entail delayed treatments that are not only costly, but also detrimental to health outcomes (e.g., Moran, 2013). In the service sector, long waits induce frustration which contaminates satisfaction with services and products (e.g., Hui and Tse, 1996; McGuire et al., 2010). To the best of our knowledge, waiting research has so far focused on how waits shape the evaluation of consumption (e.g., medical care, service, or a product) for which people waited.

In this research, we expand the view of how waiting shapes preferences. We propose and empirically demonstrate a more general and negative potential consequence of waiting. We show that, despite a successful resolution, an extended waiting episode with unexpected duration has the potential to change moral behavior for the worse.[1] We examine a situation where the waiting episode and the measured moral behavior are only temporally — and therefore, incidentally — linked. We document that although the waiting episode was resolved successfully, the unexpectedness of its duration adversely shaped subsequent and incidental choices, where monetary benefits were pitted against honesty.

Our setup eliminates the scope for negative reciprocity, such that the unethical behavior targets to even the score with those held responsible for the waiting experience. By doing so, we provide evidence that the corrupted morality observed after lengthy and unexpected waiting is not driven by wanting to even the scores with the perceived wrongdoer, but rather that experiencing loss in the time domain triggers immoral behavior in the monetary domain. The uncovered pattern suggests that an unexpected loss on the time domain prompts a cross–domain compensation on the monetary

[1] We only consider waiting experiences concluded with some resolution, and thus eliminate the inherent uncertainty of waiting on how things will resolve.

domain which is attained by relaxing morality.

We propose that this documented link between unexpectedly long waits and immoral behavior may explain various forms of unethical behavior in certain situations. Those performing jobs where dependencies on upstream inputs can lead to long and unexpected waits may behave unethically in other domains of work, such as, for instance, in logging hours. Or, a patient who shows up at the doctor's office after a long wait, may overstate complaints or symptoms to access specialist care faster (Behrens et al., 2023). Or, living under unpredictable institutional circumstances may breed corruption and relaxed morals in everyday matters, such as not validating transit tickets, sorting the trash, or paying the full taxes one owes. The mechanism may also underlie findings from Craig et al. (2017), who document that longer waits among blood donors for their turns decrease their willingness to convert to plasma donation (which is less comfortable and takes longer). Although these seemingly minor and trivial reactions to lengthy or unexpected waiting episodes may seem negligible, when frequent or widespread in a society, they may erode morals and impose nontrivial aggregate costs on societies.

Academic research on how waiting experiences shape subsequent behaviors comes from marketing (Kumar et al., 1997), management (Kaufmann et al., 2019), healthcare management (e.g., Tlapa et al., 2020; Rotstein and Alter, 2006), and operations research (e.g., Ilk and Shang, 2022; Nie, 2000). This research distinguishes between two instrumental aspects of a waiting episode: the absolute and relative durations of the waiting (McGuire et al., 2010; Kumar et al., 1997). The absolute duration captures how long it took to wait for something (e.g., getting served, seeing the health professional, etc.). The relative duration captures how the absolute duration compares to the waiting duration which was initially expected. Service management research advances the idea that the key factor in customer satisfaction or subsequent purchases is relative duration (Nie, 2000; Kumar et al., 1997). This indicates that it is meeting the expectations about the waiting duration, rather than the actual duration per se, which are instrumental in shaping subsequent preferences. To target these expectations, many firms introduce offline or online tools providing real–time updates on the expected waiting time for customers. In support of the notion that meeting customer expectations about waiting time is crucial in customer experience, the application of these de-

vices has been found to successfully mitigate customer disappointment or dissatisfaction (Ulmer and Thomas, 2019; Kostami and Ward, 2009). In extreme cases, where customers become violent with service providers after longer waits, such expectation management decreases the occurrence of violent reactions to long waits (Efrat-Treister et al., 2019).

The primary and instrumental role of expectations in shaping honesty has also been documented in behavioral economics research. Receiving less money than expected has a detrimental effect on subsequent tax compliance (Dezső et al., 2022), sabotaging behavior (Grosch and Rau, 2020), or truth–telling (Houser et al., 2012) — specifically, in cases where monetary gains are pitted against morality. In this research, decision–makers fall behind monetary expectations and seek compensation in the monetary domain which they attain by relaxing their ethics. Here, we propose and demonstrate that failing to reach expectations in the time domain results in similar unethical behaviors to improve one's financial outcomes. The idea of fungibility of lost time and lost gains appears to have an intuitive appeal, as some research documents robust similarities between loss aversion in the monetary and time domains (Abdellaoui and Kemel, 2014; Leclerc et al., 1995).

We present the results of a lab–in–the–field study conducted at the departure side of Ben Gurion Airport, Israel, in November and December 2022. The research assistants approached passengers just arriving at various check–in lines at the airport and invited them to participate in a study, for which they would earn money. First, they were asked how much they expected to wait until they were checked in. Next, they responded to a list of demographic questions and some heterogeneity measures about themselves (i.e., the purpose and destination of their travels and how patient they perceive themselves to be). The passengers were then left alone in the check–in line.

Participating passengers were reapproached right after they had checked in. At this time, they privately completed the die–under–the–cup task (hereafter DUTC) (e.g., Fischbacher and Föllmi-Heusi, 2013; Tobol et al., 2020). The DUTC task is an experimental task in which subjects privately roll a die under an opaque cup and report *an* outcome, which may or may not coincide with the *actual* outcome they rolled. The payoff structure is simple in the DUTC task. The higher the number the participant reports having rolled, the more money they receive, with payment increasing linearly in the reported number. A key feature of the DUTC task is that the number which participants

actually rolled remains unobserved by the experimenters. Therefore, participants do not face any risk of being caught misreporting, which allows them to report any number they wish to and find morally acceptable. Under these rules, the monetary–maximizing behavior is to report the number six. However, empirical evidence documents that those who presumably rolled less than six, lie only *some* (e.g., report higher numbers such as four or five) to increase rather than maximize their payoffs (Abeler et al., 2019). In one strand of research, this restraint is explained by lying aversion, whereby lying offsets the monetary utility gained by misreporting (Dufwenberg and Gneezy, 2000). The other strand advances that not reporting a six is caused by people's motivation to maintain a positive self–image which would be tainted by lying (Bénabou and Tirole, 2002).

In our study, for each participant, we recorded the exact time of joining the check–in line (and agreeing to participate), their line position at that time, and the exact time at which they ultimately got checked in. In this way, we determined the duration each person had waited in line. This duration was exogneous, as passengers could not influence how fast their line progressed.[2] Although participants have the ability to decide whether to join the line in a particular position upon arrival at the airport, given that it is essentially unpredictable which line position they would get at a later time point, we assumed that there is no such selection into any line positions.[3]

To elicit passengers' beliefs about how long they would have to wait until they were checked in, immediately after joining the line and consenting to participate, they provided their guesses about this duration. Eliciting participants' guesses allowed us to calculate the difference between the actual and estimated waiting durations. We decided not to incentivize this belief–elicitation procedure because this could have created wealth effects that might have undermined participants' reporting behavior on the DUTC task.

First, we observed that longer waits — especially when unanticipated — were associated with higher reports on the DUTC task. In other words, the length and unexpectedness of a wait were both associated with lying behavior. This relationship is robust after controlling for demographic characteristics (which are not systematically associated with lying behavior in our sample), and also

[2]We selected flights with only one check–in line to eliminate a potential endogeneity between the ability to seek out the fast line and ethical behavior.

[3]As a matter of fact, none of the personal characteristics we collected from passengers showed any association with line position in our sample.

when we control for waited duration in a flexible way. The only personal characteristic that was negatively associated with lying on the DUTC task was participants' self–reported patience level. In particular, mean reports on the DUTC task were higher among those whose self–reported patience level was below rather than above the median, which effect did not vary conditional on other factors in the model. These results are again robust after controlling for participants' demographics.

We estimate that a 100–minute increase in expected waiting duration results in an average increase of one dot in reports on the DUTC task. When, however, the increased duration is unexpected, this threshold is 25 minutes. Simply put, only a quarter of the wait time is needed to get the equivalent increase in lying when the wait time is unexpected rather than expected.

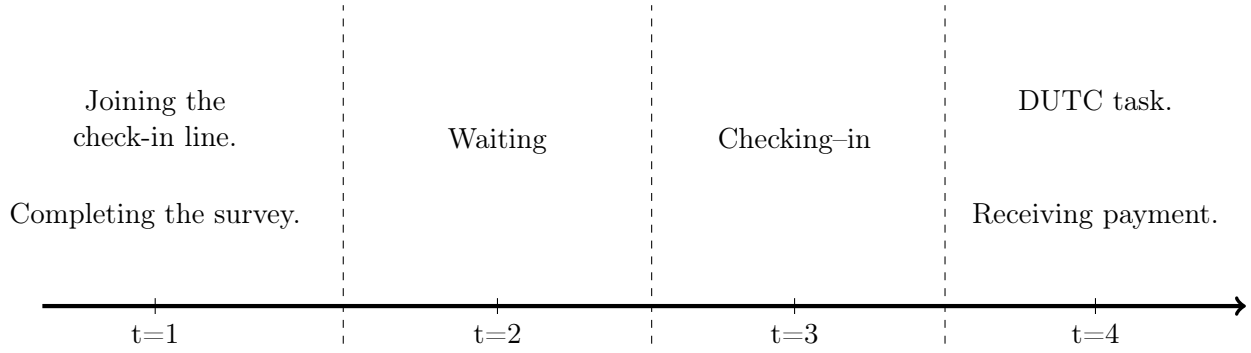
To our knowledge, this is the first study that documents the association between long and unexpected waiting and unethical behavior. We also demonstrated a causal relationship between greater unexpected waiting and malleability of moral preferences in a setting where the choice to behave morally was not related to the context of waiting. Our results suggest that regularly failing to meet expectations about the time spent waiting for something may have a more lasting impact by shaping subsequent ethicality. Although this association has been widely acknowledged in economic research on the consequences of falling behind expectations in the monetary domain, our results suggest that this link carries across domains. That is, the experience of lost time prompts compensation seeking in the monetary domain, which is attained by unethical behavior. We surmise that our results have nontrivial implications for morality in general, as people routinely need to endure long and unpredictable waits.

In Section 2, we describe the study and its procedure. Section 3 details the hypothesis and the empirical strategy. Section 4 presents the results, followed by a discussion in Section 5.

2 Study design and procedure

Figure 1 presents the study steps, and Appendix B includes the study material. Assistants blind to the research questions approached more than 500 randomly selected passengers joining various check–in lines at the Ben Gurion Airport Israel in November and December, 2022. Only a few passengers from each line were approached to avoid possible spill–over effects. The approached passengers were invited to participate in a 5–minute study in which they could earn between 10 and 60 NIS (New Israeli Shekel).[4] A total of 441 passengers agreed to participate in the study.

Figure 1: The timeline of the study from the participant's perspective



Those willing to participate received a short survey sheet that included their assigned ID number (which they also received as a small slip for later identification), a time stamp, and their line position number. This timestamp recorded the exact time the participant entered the check–in line. The line position was counted from the beginning of the line, where the check–in desk is located (i.e., it captures how far the participant is from the check–in desk). The first survey question asked participants to provide their best guesses on how long they would wait to check in. They indicated their guessed duration in minutes. Next, they answered some basic demographic questions, disclosed their flight destination, the purpose of their trip, and where they would place themselves on a

[4] At the time of the study, 10 NIS $\approx$ 3 USD.

patient–impatient continuum. Then, they gave back their sheet and kept the slip with their ID number.

After subjects checked in, the research assistants recorded the exact time when the check–in occurred. All participants successfully checked in to their flights, and this was confirmed by the research assistants. Eventually, 300 participants continued with the study. The main part of the study was implemented immediately after this time point. The participants privately completed the DUTC task as follows. They received a cup in which there was a fair–sided die. They were informed that rolling a 1 pays them 10 NIS, rolling a 2 pays 20 NIS, and so on, up to 60 NIS for rolling a 6. They were assured that no one would check the actual number they rolled, and they would be paid based solely on the results they reported. Next, they privately rolled the die and reported the claimed result on the sheet. Finally, they returned the sheet indicating the number they rolled and were paid according to their reports.

3 Hypotheses and empirical strategy

We conjecture that the longer one waits, the more dishonestly one behaves. Additionally, dishonesty increases the more that one underestimates how long they will have to wait. To test our intuitions, we construct a variable called *Gap*. *Gap* is the difference between the *Waited Duration*, defined as the duration for which the participants waited in line to check in (i.e., the time difference between joining the line and checking in) and the duration that the participant initially guessed.[5] We estimate the following regression specification:

$$Normalized\_Report_i = \beta_1 + \beta_2\ Waited\_Duration_i + \beta_3 Gap_i(+\gamma X_i) + \epsilon_i \tag{1}$$

$Normalized\_Report$ is defined as the reported die roll on the DUTC, minus the expected value of the die roll (i.e., 3.5). X_i is a vector of personal characteristics.

Our outcome variable is *Normalized Report*, so that β_1 captures how much the baseline level of reporting deviates from the expected outcome of the roll. We predict a positive value for β_1.

[5] For example, if someone waited 60 minutes and guessed that they would wait 40 minutes, their *Gap* is $60-40=20$ minutes.

This captures that, on average, in the event of zero Waited Duration and zero Gap values, mean reports are higher than the expected outcome of the die roll. β_2 captures the effect of an increase in *Waited Duration* on *Normalized Report*, assuming that this increase was anticipated. β_3 captures the differential effect of unexpectedness on the relationship between *Waited Duration* on *Normalized Report*. Therefore, β_2 and $\beta_2 + \beta_3$ give the effects of expected and unexpected *Waited Duration* on the *Normalized Report*, respectively.

We form the following three hypotheses.

HYPOTHESIS 1. There is a positive baseline level of over–reporting ($\beta_1 > 0$).

HYPOTHESIS 2. Expected *Waited Duration* has a positive effect on *Normalized Report* ($\beta_2 > 0$).

HYPOTHESIS 3. The unexpectedness of a *Waited Duration* has a further, positive effect on *Normalized Report* ($\beta_3 > 0$).

4 Results

4.1 Descriptive results

The final sample consists of 300 participants who performed the DUTC task.[6] The sample's mean(SD) age in years is 34.23(11.21), and half of the participants are male.[7] The majority of participants (73.7%) traveled for pleasure, 17% for business, and 8.7% for "other" purposes. Most of the participants are middle–class in their respective population, and the majority report being full–time employed.[8] Finally, the majority of the participants have less than a college degree.

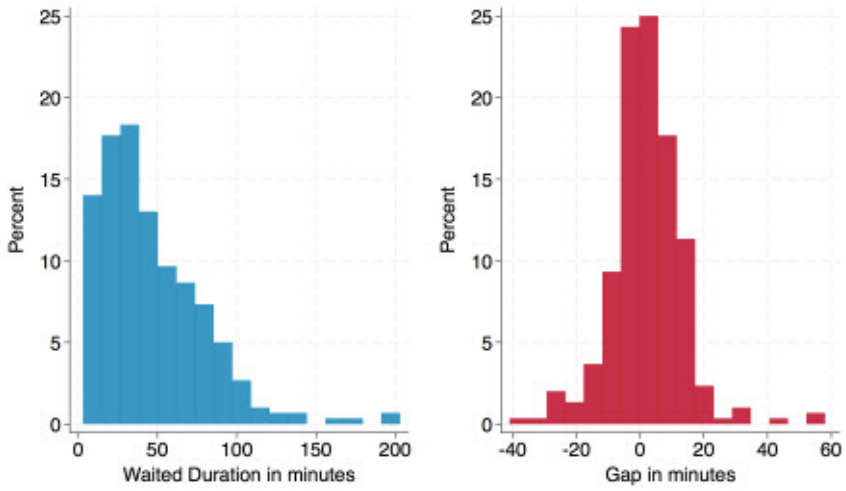
Figure 2 presents the distributions of *Waited Duration* and *Gap* in our sample. From the right panel, we learn that approximately one–third of the participants deviated by at least 10 minutes from their *Waited Duration*. The fact that a significant proportion of participants made imprecise guesses creates a meaningful variation in the *Gap* variable.

[6] See the summary of the basic demographics of the 300 passengers in Table A1 and Table A2 in the Appendix A.

[7] One participant indicated 1795 as their birth year, and we removed this participant when calculating the mean age.

[8] Four participants did not indicate their income level.

Figure 2: Distributions of Waited Duration and Gap



Notes: The left panel presents the distribution of Waited Duration (i.e., how much time in minutes participants waited to get checked in). The right panel shows the distribution of Gap (i.e., the difference between Waited Duration and Guessed Duration for each participant).

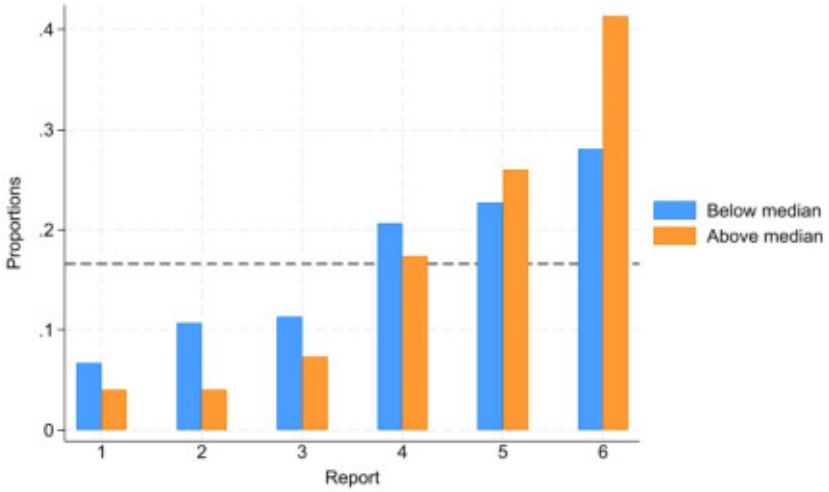
The relationship between *Waited Duration* and *Report* is presented in Figure 3 where we plot the distributions of *Report* made by participants with *Waited Duration* above and below the median value (i.e., 38.5 minutes). The distribution of *Report* is shifted towards a higher number among participants with *Waited Duration* above the median value versus those with waits below the median.[9]

4.2 The effects of expected and unexpected Waited Duration

To measure the effects of expected and unexpected *Waited Duration* on *Report*, we estimate the specification presented in Equation 1 and summarize the results in Table 1. The constant presented in the first column supports Hypothesis 1. The baseline reporting is, on average, 0.5 higher than the expected outcome of the dice roll (i.e., 3.5). Confirming Hypothesis 2, we find a positive estimated coefficient of *Waited Duration*, indicating that the expected *Waited Duration* has a positive effect

[9] $\chi^2(N = 300, 5) = 11.46$, $p = 0.043$ indicating that the distribution of *Report* differs between participants below and above the median Waited Duration.

Figure 3: Waited Duration and Report



Notes: Empirical distributions of Report for participants with Waited Duration values below and above the median (i.e., 38.5 minutes). The dashed horizontal line represents the theoretical expectation of the proportions in the event of honest reporting.

on *Normalized Report*. The 0.0096 estimated coefficient of the *Waited Duration* implies that a roughly 100–minute ($\approx 1/0.0096$) increase in expected wait corresponds to an average one–dot increase in the reports. Supporting Hypothesis 3, the estimated coefficient of the *Gap* term is positive. The differential effect of unexpected *Waited Duration* on reports is 0.0361. In other words, unexpectedness further exacerbates the deleterious effect of *Waited Duration* on reports.

Therefore, when the increase in *Waited Duration* is unexpected, 25 minutes ($1/(0.0096 + 0.0361)$) is enough to induce a one–dot increase in the report. Simply said, when unexpected, one fourth of the expected increase in Waited duration is enough to create equally adverse moral consequences. It is the unexpectedness of an increased *Waited Duration*, rather than the increased time spent waiting in line per se, that most adversely shapes moral behavior.

Column 2 documents that the magnitude of the estimated coefficients is preserved after entering all control variables.[10]

[10]We report the estimated coefficients for these controls in Table A3. Note that none of the coefficients differ significantly from zero.

Table 1: The effects of Waited Duration and Gap on Report
(Dependent variable: Normalized Report)

	(1)	(2)	(3)	(4)
Constant	0.5231***	1.1181	0.9667***	2.1546**
	(0.1415)	(0.6933)	(0.0218)	(0.8493)
Waited_Duration	0.0096***	0.0106***		
	(0.0023)	(0.0024)		
Gap	0.0361***	0.0358***	0.0370**	0.0366**
	(0.0091)	(0.0094)	(0.0115)	(0.0129)
Observations	300	295	300	295
Adjusted R^2	0.149	0.146	0.077	0.066
Controls	No	Yes	No	Yes
Waited_Duration FE	No	No	Yes	Yes

Notes: OLS with robust standard errors. Standard errors are in parentheses. The samples in Columns 2 and 4 do not include 1 participant who reported their age incorrectly and 4 participants who did not report their income levels. The entered Controls are age, income levels, female dummy, education, employment, and travel purposes. Waited Duration FE denotes the Waited Duration deciles fixed effects.

** $p < 0.05$; *** $p < 0.01$

Translating our results into monetary terms, in the event of honest reporting, the expected earnings for our DUTC task is 35 NIS ($\approx$ 10.5 USD). The baseline over–reporting in our sample is associated with an increase of 5 NIS in earnings, which corresponds to 14% of the expected earnings. From the observed level of over–reporting, our participants asked 20% of the maximum increase that they could have accumulated if they were willing to report the highest number on the die. This proportion is comparable to the 23.4% reported by Abeler et al. (2019), which combined the results of 90 experimental studies examining preferences for truth–telling.

The average payoff in our sample was 45 NIS. The difference between this amount and the 40 NIS (i.e., corresponding to the mean payoffs due to over–reporting in the event of zero *Waited Duration*) indicates that the experienced *Waited Duration* is responsible, on average, for another increase of 5 NIS in payoffs in our sample. That is, as a result of the waiting experience, participants, on average, double their over–reporting (i.e, the 5 NIS increase is due to the baseline over–reporting, and the other increase of 5 NIS is attributable to the waiting experience).

Recall that Figure 2 documents that the distribution of *Waited Duration* is right–skewed. To ensure flexible control and equal weights across different levels of *Waited Duration* when estimating the coefficient of the *Gap* term, we rerun the specification with fixed effects for the deciles of Waited Duration and summarize the results in Columns 3 and 4. We learn that the estimates of the Gap are robust to these alternative specifications. Note that in specifications from Column 2 and later, the value of the constant can no longer be interpreted as the baseline level of (over)reporting because the controls and/or the Waited Duration fixed effects are included.

One may expect differential effects of waiting among more and less patient people. Recall that we collected participants' self–reports on how patient they consider themselves to be. The distribution of these Patience values is reported in Figure A1. We learn from this figure that the median value is 72, indicating that the participants perceive themselves to be rather patient. Therefore, we examine whether the effects of *Waited Duration* and *Gap* on reports differ across participants with below– and above–median patience levels, and summarize these results in Table 2. The specifications presented in this table include a Patience dummy variable (i.e., $D\_Patient$) that divides the participants into levels above and below the median patience level in the sample. The coefficients of the interaction

Table 2: Effects of Waited Duration and Gap on Report across different patience levels
(Dependent variable: Normalized Report)

	(1)	(2)
Constant	0.8231***	1.8121**
	(0.1902)	(0.7725)
Waited_Duration	0.0092***	0.0091***
	(0.0026)	(0.0027)
Gap	0.0228*	0.0240*
	(0.0124)	(0.0125)
D_Patient	-0.5622*	-0.7579**
	(0.2911)	(0.2974)
D_Patient × Waited_Duration	0.0006	0.0047
	(0.0051)	(0.0050)
D_Patient × Gap	0.0223	0.0202
	(0.0176)	(0.0187)
Observations	300	295
Adjusted R^2	0.175	0.175
Controls	No	Yes

Notes: OLS with robust estimates of standard errors. Standard errors are in parentheses. D_Patient is a dummy for participants above the median patience level in the sample (i.e., 72) coded as 1 if above the median and 0 if below. The sample in Column 2 does not include the 1 participant who reported their age incorrectly, and the 4 participants who did not report their income levels. The entered Controls are age, income levels, female dummy, education, employment, and travel purpose. Only a few passengers from each line were approached to avoid possible spill–over effects.

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

terms (i.e., *Waited Duration* by (*D_Patience*) and *Gap* by (*D_Patience*)) present by how much the effect of *Waited Duration* and *Gap* change between participants with levels above and below the median patience. While the magnitudes of the *Gap* and the *Waited Duration* estimates are similar to those presented in our baseline specifications (see Table 1), we find no significant interaction effects. That is, *Waited Duration* and *Gap* do not differentially impact those above than below the sample's median patience level.

4.3 Addressing potential selection issues

Like most field studies, our setup also contains unobserved and uncontrolled variations. However, only those variations that may correlate with one's endogenous propensity to lie, the Waited Duration participants experience, and their Guessed Duration may cause threats to the identification. In what follows, we briefly discuss these issues.

Let us first consider selecting into different values of Waited Durations. One can imagine that everyone has a different level of endogenous propensity to lie, and this trait is instrumental to which line position one is willing to take. For instance, those with a low propensity to lie would only accept a low line position (i.e. closer to the check–in desk). These participants would then naturally experience a lower Waited Duration as line position highly correlates with Waited Duration (Pearson's $rho = 0.876$ 95%[0.846, 0.900], $p \leq 0.001$). Although, in theory, such selections could undermine our results, we demonstrate that they are absent in our sample.

Admittedly, one can imagine that people with specific traits that may correlate with their endogenous propensities to lie systematically differ in how long ahead of their scheduled flights show up at the airport. Even allowing for this type of selection, the length of the check–in line at any arrival time point is highly unpredictable to a passenger, as it is a rather complex coordination problem. To provide additional evidence for the absence of selection for any line positions in our sample, we tested the associations between observables (i.e., personal characteristics and the purpose of the travel) and line positions. We find no such relationships between these measures (see Figure A2). In short, we argue that an average passenger has no means of selecting their check–in line position.

Second, let us consider the case of selecting into different values of Guessed Durations. One can imagine that at one particular line position, a person with a higher propensity to lie guesses a lower duration of how much they would have to wait to get checked in (i.e., has a lower Guessed Duration value). This would count as a more optimistic estimate than that of a person with a low propensity to lie. Consequently, for the same line position, the mean Gap would be higher for those with a higher endogenous inclination to lie than for those with a lower propensity. This systematic difference would bias upward the estimated coefficient of Gap (β_3).

To assess the extent of such selection in our sample, we test for potential endogeneity in Guessed Duration with respect to the observables. That is, while controlling for Line Position, we test for the differences in the mean Guessed Durations across the observed characteristics. We find no indication of selection along these observables (see Figure A3).

We also create a proxy for the aforementioned optimism by determining whether the participant guesses below or above the average *Guessed Duration* vis a vis their line position.[11] We find that the estimated effects of waiting are robust to controlling for the optimism proxy (see Table A4).

5 Discussion

Our study documented that long and unexpected waits increase lying to improve one's financial conditions. It was not only the length of waiting that mattered in shaping preferences for lying, but its unexpectedness as well. The associations between these factors and over–reporting were robust after controlling for demographic variables that were not systematically associated with the measured behavior. Our participants did not systematically select into any waiting duration (i.e., line position) along their demographic characteristics or their travel purposes. This suggests that — although the key predictors of lying were not exogenously varied — there was no threat for identification in our setup.

The self–reported level of patience was the only personal characteristic associated with lying behavior. An increase in this patience measure was associated with lower mean reports on the

[11] We casually use the term "optimism" to categorize participants into two groups. However, we acknowledge that our terminology captures a level of relative optimism among participants rather than a general trait of being an optimist.

DUTC task, and patience did not interact with the effects of the waited duration or the discrepancy between the guessed and the actual waited duration. Patience is generally seen as a strong correlate or even an underlying trait for variations in persistence, attention to details, or self–control. From this perspective, our results fit well into the literature documenting that these skills are positively associated with honest behaviors in various real–life settings (e.g., Cohn and Maréchal, 2018; Irlenbusch and Villeval, 2015).

We provide a novel explanation for the observed adverse effect of long and unexpected waiting on moral behavior. We rule out that the observed immoral behavior could be a form of negative reciprocity since the budget from which the die reports were paid had nothing to do with the airport, which could be held responsible for the lengthy and unexpected waits. One may argue that in the domain of reference–dependent choices (Kahneman and Tversky, 1979; Kőszegi and Rabin, 2006, 2007, 2009), incurring a loss in the monetary domain alters the marginal utility of money, which, in our setup, would have made passengers secure higher income through lying. We propose that passengers' guesses about how long they would have to wait in line were their reference points on the time dimension. This implies that, although falling behind expectations caused losses in the time dimension, they were redressed in the monetary domain through lying. Although this pattern does not exclude the possibility of a changed marginal utility of money after having incurred a loss in the time domain, it suggests that there may be a cross–domain compensation. Therefore, we propose that people who experience unexpected waits may seek monetary compensation in another situation that occurs incidentally after their unfortunate experience, even if this involves relaxing their morals.

To our knowledge, academic research on waiting has not yet recognized the negative potential of waiting experiences in shaping preferences. However, we surmise that the association uncovered between waiting and eroded morals may have broader implications. Even when a waiting experience is unrelated to a choice situation where morality is pitted against pecuniary gains, just having experienced long and unexpected waits could undermine one's morals. Falling behind expectations may instill the sense of having lost out, which then instigates compensation seeking.

Provided that people routinely make choices that mainly rely on their ethicality (e.g., buying

transit tickets, weighing one's own fruits or vegetables at the self check–out at the grocery store, returning e–mobility rentals undamaged), any experience that could erode moral preferences imposes negative externalities on others, which further exacerbates the negative welfare consequences of unethical behaviors. From a broader perspective, one can imagine that in societies with corrupt and unpredictable institutions and where citizen expectations are regularly unmet — such as in many developing countries (Hope, 2017; Olken and Pande, 2012) — citizens may react with deteriorated morals that secure them some form of loss repair. Although we acknowledge the existence of various mechanisms that could corrupt morals within a society, our approach offers some novel insights into these sources of demoralization.

In our research, we solely focused on the consequences of long and unexpected waits on lying behavior, and hence we refrain from making statements about welfare implications. This would require mapping the subjective experience of waiting and how this experience depends on one's expectations about its length. When it comes to generalizability, one may consider whether there was something special about the participants in our study. Although our participants were mainly from Israel and among the wealthier population strata, we see no reason to assume that they would be special in reacting with increased lying to long and unexpected waits. Overall, we do not see any peculiarities of the waiting experience in the study or our participants that would suggest that the proposed mechanism is only relevant in the specific context of the study.

5.1 Some concluding remarks

We conclude that managing expectations in situations that entail waiting could have beneficial consequences. These advantages of expectation management have long been recognized and exploited in the service sector when it comes to shaping the customer experience and increasing sales. From our study, it seems that unpleasant waiting experiences may have more general negative consequences on human behavior. This suggests that expectation management in any waiting situation could indirectly improve human behavior by mitigating the possibility of eroding morals.

References

Abdellaoui, M. and Kemel, E. (2014). Eliciting prospect theory when consequences are measured in time units: "Time is not money". *Management Science*, 60(7):1844–1859.

Abeler, J., Nosenzo, D., and Raymond, C. (2019). Preferences for truth-telling. *Econometrica*, 87(4):1115–1153.

Behrens, D. A., Morgan, J. S., Krczal, E., Harper, P. R., and Gartner, D. (2023). Still looking in the wrong place: Literature-based evidence of why patients really attend an emergency department. *Socio-Economic Planning Sciences*, 90:101707.

Bénabou, R. and Tirole, J. (2002). Self-confidence and personal motivation. *Quarterly Journal of Economics*, 117(3).

Bielen, F. and Demoulin, N. (2007). Waiting time influence on the satisfaction-loyalty relationship in services. *Managing Service Quality: An International Journal*, 17(2):174–193.

Cohn, A. and Maréchal, M. A. (2018). Laboratory measure of cheating predicts school misconduct. *The Economic Journal*, 128(615):2743–2754.

Craig, A. C., Garbarino, E., Heger, S. A., and Slonim, R. (2017). Waiting to give: stated and revealed preferences. *Management Science*, 63(11):3672–3690.

Dezső, L., Alm, J., and Kirchler, E. (2022). Inequitable wages and tax evasion. *Journal of Behavioral and Experimental Economics*, 96:101811.

Dufwenberg, M. and Gneezy, U. (2000). Measuring beliefs in an experimental lost wallet game. *Games and Economic Behavior*, 30(2):163–182.

Efrat-Treister, D., Cheshin, A., Harari, D., Rafaeli, A., Agasi, S., Moriah, H., and Admi, H. (2019). How psychology might alleviate violence in queues: Perceived future wait and perceived load moderate violence against service providers. *PloS One*, 14(6):e0218184.

Fischbacher, U. and Föllmi-Heusi, F. (2013). Lies in disguise—an experimental study on cheating. *Journal of the European Economic Association*, 11(3):525–547.

Grosch, K. and Rau, H. A. (2020). Procedural unfair wage differentials and their effects on unethical behavior. *Economic Inquiry*, 58(4):1689–1706.

Hope, Kempe, R. S. (2017). Fighting corruption in developing countries: Some aspects of policy from lessons from the field. *Journal of Public Affairs*, 17(4):e1683.

Houser, D., Vetter, S., and Winter, J. (2012). Fairness and cheating. *European Economic Review*, 56(8):1645–1655.

Houston, M. B., Bettencourt, L. A., and Wenger, S. (1998). The relationship between waiting in a service queue and evaluations of service quality: A field theory perspective. *Psychology & Marketing*, 15(8):735–753.

Hui, M. K. and Tse, D. K. (1996). What to tell consumers in waits of different lengths: An integrative model of service evaluation. *Journal of Marketing*, 60(2):81–90.

Ilk, N. and Shang, G. (2022). The impact of waiting on customer-instigated service time: Field evidence from a live-chat contact center. *Journal of Operations Management*, 68(5):487–514.

Irlenbusch, B. and Villeval, M. C. (2015). Behavioral ethics: How psychology influenced economics and how economics might inform psychology? *Current Opinion in Psychology*, 6:87–92.

Kahneman, D. and Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica*, 2(47):263–291.

Kaufmann, W., Taggart, G., and Bozeman, B. (2019). Administrative delay, red tape, and organizational performance. *Public Performance & Management Review*, 42(3):529–553.

Kostami, V. and Ward, A. R. (2009). Managing service systems with an offline waiting option and customer abandonment. *Manufacturing & Service Operations Management*, 11(4):644–656.

Kőszegi, B. and Rabin, M. (2006). A model of reference-dependent preferences. *The Quarterly Journal of Economics*, 121(4):1133–1165.

Kőszegi, B. and Rabin, M. (2007). Reference-dependent risk attitudes. *American Economic Review*, 97(4):1047–1073.

Kőszegi, B. and Rabin, M. (2009). Reference-dependent consumption plans. *American Economic Review*, 99(3):909–936.

Kremer, M. and Debo, L. (2016). Inferring quality from wait time. *Management Science*, 62(10):3023–3038.

Kumar, P., Kalwani, M. U., and Dada, M. (1997). The impact of waiting time guarantees on customers' waiting experiences. *Marketing Science*, 16(4):295–314.

Leclerc, F., Schmitt, B. H., and Dube, L. (1995). Waiting time and decision making: Is time like money? *Journal of Consumer Research*, 22(1):110–119.

McGuire, K. A., Kimes, S. E., Lynn, M., Pullman, M. E., and Lloyd, R. C. (2010). A framework for evaluating the customer wait experience. *Journal of Service Management*, 21(3):269–290.

Moran, V. (2013). Waiting time policies in the health sector: What works? In *OECD Health Policy Studies*. OECD Publishing.

Nie, W. (2000). Waiting: integrating social and psychological perspectives in operations management. *Omega*, 28(6):611–629.

Olken, B. A. and Pande, R. (2012). Corruption in developing countries. *Annu. Rev. Econ.*, 4(1):479–509.

Prentice, J. C. and Pizer, S. D. (2007). Delayed access to health care and mortality. *Health Services Research*, 42(2):644–662.

Rotstein, D. L. and Alter, D. A. (2006). Where does the waiting list begin? A short review of the dynamics and organization of modern waiting lists. *Social Science & Medicine*, 62(12):3157–3160.

Tlapa, D., Zepeda-Lugo, C. A., Tortorella, G. L., Baez-Lopez, Y. A., Limon-Romero, J., Alvarado-Iniesta, A., and Rodriguez-Borbon, M. I. (2020). Effects of lean healthcare on patient flow: A systematic review. *Value in Health*, 23(2):260–273.

Tobol, Y., Siniver, E., and Yaniv, G. (2020). Do tightwads cheat more? Evidence from three field experiments. *Journal of Economic Behavior & Organization*, 180:148–158.

Ülkü, S., Hydock, C., and Cui, S. (2020). Making the wait worthwhile: Experiments on the effect of queueing on consumption. *Management Science*, 66(3):1149–1171.

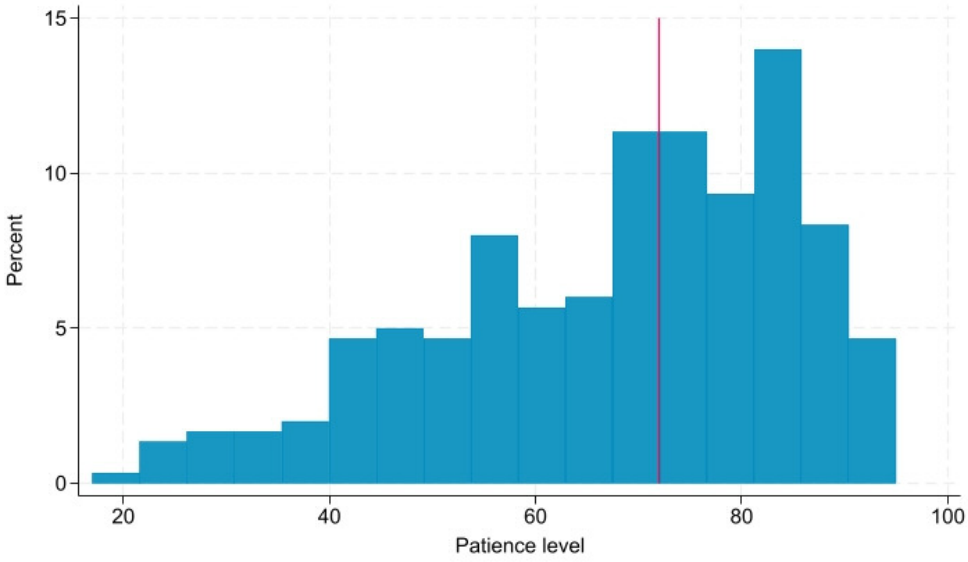
Ulmer, M. W. and Thomas, B. W. (2019). Enough waiting for the cable guy—estimating arrival times for service vehicle routing. *Transportation Science*, 53(3):897–916.

A Appendix

Table A1: Descriptive statistics of the non-categorical variables

	Mean	Std.Dev.	Obs
Waited_Duration	46.59	32.63	300
Guessed_Duration	44.70	31.17	300
Age	34.23	11.21	299

Figure A1: Distribution of self–reported Patience levels in the sample

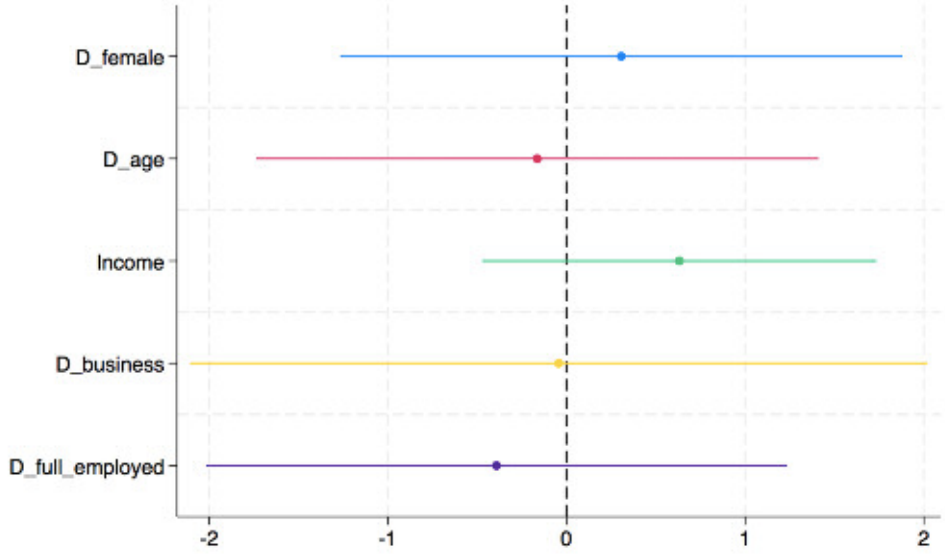


Notes: Patience is a self–reported measure. Participants reported how patient they perceive themselves to be on a scale ranging from 0 (extremely impatient) to 100 (extremely patient). The purple vertical line shows the median patience level (= 72) in the sample.

Table A2: Descriptive statistics of the categorical variables

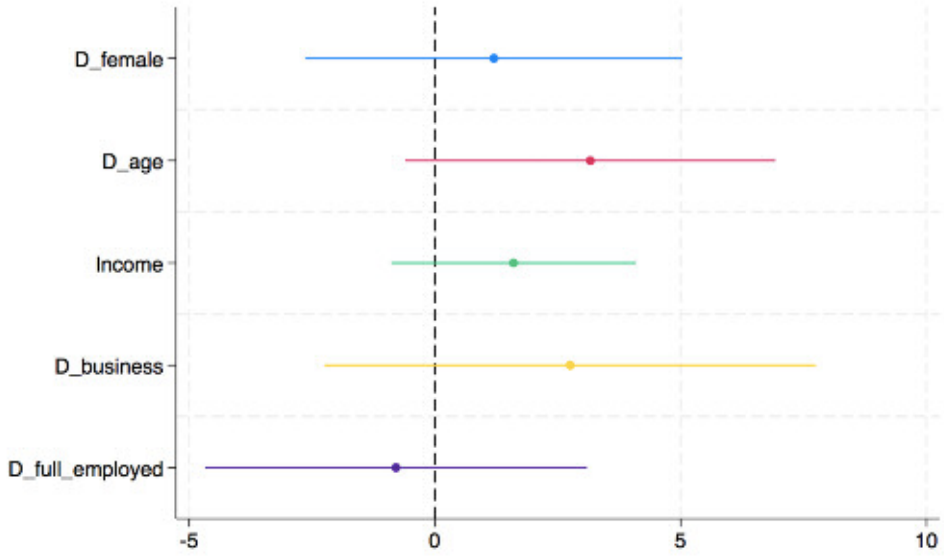
	N	%
Income level		
in the lowest 25%	5	1.69
between 25% and 50%	67	22.64
between 50% and 75%	129	43.58
top 75% or higher	74	25.00
prefer not to say	21	7.09
Total	296	100%
Employment status		
full time	188	62.67
part time	52	17.33
student	44	14.67
unemployed	7	2.33
other	9	3.00
Total	300	100%
Travel purpose		
business	53	17.67
pleasure	221	73.67
other	26	8.67
Total	300	100%
Highest level of education		
elementary	1	0.33
high school	110	36.67
associate degree	105	35.00
college degree BA/BSc	60	20.00
university degree MA/MSc	24	8.00
Total	300	100%

Figure A2: Differences in Line Positions for the controls



Notes: This is a coefficient plot from regressing Line Position on each of the listed variables coded as dummies. The circles give the mean coefficient estimates for the category and the horizontal lines their 95% confidence interval. D_age is a dummy, taking the value of 1 for participants above the median age.

Figure A3: Differences in Guessed Duration for the controls



Notes: This is a coefficient plot from regressing *Guessed Duration* on each of the listed variables coded as dummies separately using line position fixed effects. The circles give the mean coefficient estimates for the category and the horizontal lines their 95% confidence interval. D_age is a dummy, taking the value of 1 for participants above the median age.

Table A3: The effects of Waited Duration and Gap on Report
(Dependent variable: Normalized Report)

	(1)	(2)
Constant	0.5231***	1.1181
	(0.1415)	(0.6933)
Waited_Duration	0.0096***	0.0106***
	(0.0023)	(0.0024)
Gap	0.0361***	0.0358***
	(0.0091)	(0.0094)
D_female		0.1248
		(0.1631)
Age		-0.0104
		(0.0088)
Income		-0.0420
		(0.0906)
Observations	300	295
Adjusted R^2	0.149	0.146
Controls	No	Yes
Waited_Duration FE	No	No

Notes: OLS with robust standard errors. Standard errors are in parentheses. The sample in Columns 2 does not include 1 participant who reported their age incorrectly and 4 participants who did not report their income levels. The entered Controls are age, income levels, female dummy, education, employment, and travel purpose.

*** $p < 0.01$

Table A4: The effects of Waited Duration and Gap on Report controlling for the Optimism proxy
(Dependent variable: Normalized Report)

	(1)	(2)	(3)
Constant	0.5231***	1.1181	0.7983
	(0.1415)	(0.6933)	(0.7445)
Waited_Duration	0.0096***	0.0106***	0.0114***
	(0.0023)	(0.0024)	(0.0025)
Gap	0.0361***	0.0358***	0.0321***
	(0.0091)	(0.0094)	(0.0099)
D_optimist			0.1993
			(0.1742)
Observations	300	295	295
Adjusted R^2	0.149	0.146	0.146
Controls	No	Yes	Yes

Notes: OLS with robust standard errors. Standard errors are in parentheses. D_optimist is a dummy capturing whether the participant's Guessed Duration is below the average (coded as 1) or not (coded as 0) of the corresponding mean Guessed Duration in their line position. The samples in Columns 2 and 3 do not include the 1 participant who reported their age incorrectly and the 4 participants who did not report their income–levels. The entered Controls are age, income levels, female dummy, education, employment, and travel purposes.

*** $p < 0.01$

B Appendix - Survey sheet used in the study

DATE_____

SUBJECT ID_____

LINE POSITION____

TIME STAMP _____ *(when the survey was filled out, and this is when the timer starts)* -

##

Welcome to our experiment, and thanks for your willingness to participate. The experiment is about financial behavior, and the involved researchers are XX from XY, and YY from ZZ.

You can earn between 10 NIS and 60 NIS. Your final earnings depend on your choice and luck.

You can discontinue participation at any time point without completing the study. In this case, however, we will not be able to pay you. The IRB# of this study is: XXX

If you have any questions or comments, please email XXXX

##

1. In your best estimate, how many minutes will you have to wait in this check-in line before you get checked in?

   I expect to wait _____ minutes *(indicate your answer)*

2. Where are you flying to? _____ *(indicate your answer)*

3. What is the purpose of your travel? *(select one answer)*
   - Pleasure
   - Business
   - Other
   - Prefer not to answer

4. In which country are you currently living? _____ *(indicate your answer)*
5. Your birth year: _____ *(indicate your answer)*

6. Your gender *(select one answer)*
   - Male
   - Female
   - Other
   - Prefer not to answer

7. Your highest level of education *(select one answer)*
   - Elementary school
   - High school graduate
   - Associate degree
   - College degree/BA/BSc
   - University degree/MA/MSc
   - Advanced degree (e.g., Ph.D., MBA)
   - Prefer not to answer

8. Your perception of your income level (or your household's income level if you are not living alone) in the population of the country where you are living. *(select one answer)*
    - In the lowest 25%
    - In the second lowest 25 % (i.e., between 25% - 50%)
    - Between 50% and 75% of the population
    - Top 75% or higher
    - Prefer not to answer

9. Your nationality: _____ *(indicate your answer)*

10. Your employment status *(you can select more than one answer)*
    - Unemployed
    - Employed full-time
    - Employed part-time
    - Other
    - Student
    - Retired
    - Prefer not to answer

11. People differ in how patient they are. Some people perceive themselves as rather patient, some and as rather impatient when it comes to waiting to get something, standing in line, waiting for a response from someone, waiting for their turns, etc.

    On a scale between 0 and 100, how would you rate yourself?

    0 – Implies that you are extremely impatient,
    50 – Implies that you are neither impatient nor patient,
    100 – Implies that you are extremely patient.

    You can indicate any integer between 0 and 100.
    My response _____ *(indicate your answer)*

Thank you! We will return to you once you have checked in to complete the survey and give you your payment.

DATE_____

SUBJECT ID_____

LINE POSITION_____

TIME STAMP _____ (when the check-in happened)

Now, we give you a cup with one die inside. Please shake the cup, roll the die, and observe your rolled die. We do not see the number you rolled, but you will report it. Your report determines your earnings.

- If you report having rolled 1, you will be paid 10 NIS.
- If you report having rolled 2, you will be paid 20 NIS
- If you report having rolled 3, you will be paid 30 NIS
- If you report having rolled 4, you will be paid 40 NIS
- If you report having rolled 5, you will be paid 50 NIS.
- If you report having rolled 6, you will be paid 60 NIS.

Now, please go to a private place and roll the dice.

Please write down the number you rolled here _____

your earnings here _____and hand us the sheet.

Thank you for your participation and safe flight!