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Determinants of willingness to help: Evidence from a survey experiment

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Abstract

We analysed determinants of willingness to help using a factorial survey approach (n = 405 individuals, n = 5937 vignettes). We tested the effect of situational characteristics and how characteristics of the bystander and the person in need influence willingness to help in hypothetical situations within the framework of a cost-reward model. We found that the situation itself has the strongest effect: willingness to help was strongest when the net gain of helping was positive, whereas it was weaker in situations when the cost of helping and cost of not receiving help were equal. These results provide support for the cost-reward model of helping and illustrate that the factorial survey approach could supplement or in some cases replace more widely used experimental methods (laboratory or field experiments).

Keywords: factorial survey approach, experiments, willingness to help, cost-reward model

1 Introduction

In this paper our aim is to analyse the determinants of people's willingness to help a stranger in everyday life situations. Our paper is based on empirical research that focuses on social integration in Hungary. In our comprehensive research on integration we studied interpersonal relationships, cooperation, trust and norm-following behaviour as factors that are important in the functioning of a society. An individual can be connected to society in many ways and on many levels: through their personal network including family and friends, through their participation in labour market, through civil society, and through politics.

However, beyond these interpersonal and organizational ties, attitudes and behaviour towards strangers is also a relevant factor in how modern societies function. In modern societies, with the strong division of labour, everyday activities often involve interactions with strangers (Green et al., 2011). Beside individual differences, such as how helpful a person is, the level of willingness to help strangers depends to a great extent on cultural norms. The

issue of trusting a stranger or helping someone who belongs to a different social group is an important aspect of social cohesion. In a socially cohesive society, people take some responsibility for each other, even if they do not share any personal links (Wickham, 2017).

Willingness to help across group boundaries is an important aspect of the study of social cohesion. Class, gender, ethnicity, and religious affiliation have received a lot of attention in the literature (Jenson et al., 2010; Schiefer & van der Noll, 2017), although there is an explicit claim that studying social cohesion should also cover minorities (Jenson et al., 2010; Tolsma & van der Meer, 2017).

Willingness to help strangers is generally studied in lab and field experiments in social psychology (see Eagly & Crowley, 1986; Gneezy et al., 2012; Saucier et al., 2005). Our research is based on a nationally representative factorial (vignette) survey in which we used hypothetical everyday situations to test respondents' willingness to help a stranger.

We tested how different situational characteristics affect levels of willingness to help, and what social characteristics of the helper and of the person in need influence this. We analysed the situations within the framework of a cost-reward model (Dovidio, 1984; Piliavin et al., 1981). Our paper has an additional methodological aim as well: we seek to expand our knowledge by using the factorial survey approach instead of the usual laboratory or field experiments. Although the factorial survey approach has rarely been used for analysing social behaviour, particularly in the literature on helping, it is designed to measure social judgements (Rossi & Anderson, 1982). With the factorial survey approach, we have been able to use extensive and representative survey data in Hungary, which allow for greater external validity and have more statistical power (Highhouse & Gillespie, 2008; Peterson, 2001; Schram, 2005).

This paper is structured as follows: first, we outline the theoretical background of the study – i.e., give a short introduction to the factorial survey approach, and a brief summary of literature on willingness to help. Then, in Section 3, we describe how we designed our factorial survey, the data, and the empirical strategy. In Section 4 we present the results of the data analysis, followed by a discussion of our main findings, the limitations of our study, and concluding remarks (Section 5).

2 Theoretical background

2.1 Aspects of social cohesion

Most scholars agree that social cohesion is a multidimensional phenomenon (Chan et al., 2006; Fonseca et al., 2019; Schiefer & van der Noll, 2017). It is also very closely related to the concepts of social integration, social capital, and solidarity (Schiefer & van der Noll, 2017)). Classical sociological references to social cohesion stem from Durkheim's concept of organic solidarity, which is derived from the division of labour (Durkheim, 2013). Studies on social cohesion also often cite Granovetter's thesis (Granovetter, 1973) according to which tightly bonded small social groups are connected via bridges of weak ties, forming a wider social network in society. Based on these traditions, several definitions of social cohesion have emerged in the social sciences. Many of them are rather broad (Fonseca et al., 2019) and include diverse concepts such as social equality, trust, welfare, and shared norms and values (Schiefer & van der Noll, 2017).

However, for the purpose of our empirical research we needed a narrower definition of social cohesion. Chan and his co-authors offer a detailed yet coherent and analytical definition of social cohesiveness based on general altruism (such as trust and willingness to help and to cooperate with those outside one's primary network), common identity, or a sense of belonging: 'Social cohesion is a state of affairs concerning both the vertical and horizontal interactions of society as characterized by a set of attitudes and norms that includes trust, a sense of belonging and the willingness to participate and help, as well as their behavioural manifestations' (Chan et al., 2006).

Chan et al. (2006) describe the aspects of social cohesion using a two-by-two framework (see p. 294, Table 3). They argue that social cohesion has a subjective as well as an objective component: while the subjective component is people's state of mind, the objective one refers to behavioural manifestations. Social cohesion has horizontal and vertical dimensions as well. The horizontal dimension refers to cohesion *within* civil society, while the vertical dimension refers to the links formulated *between* the state and its citizens.

Our research covers the horizontal and subjective part of this social cohesion scheme, as we analyse willingness to cooperate and help fellow citizens, including people from 'other' social groups.

2.2 Willingness to help

In this subsection, we review the literature on the most important determinants of willingness to help a stranger.

Helping a fellow citizen is an altruistic act; i.e., there is no regard to any benefit in a one-off situation with a stranger. This type of situation is sometimes called bystander-intervention, and it has attracted wide interest in the social science literature.

According to a study by Latané and Darley (1970), a potential helper must undertake the following five consecutive steps to assist the target of help: they should (1) notice the need for help, (2) be able to identify it as such, (3) take responsibility for the action, (4) decide on a way to help, and (5) weigh perceived costs and risks.

The underlying motives for help patterns depend to a large extent on situational characteristics and on the interpersonal relationship between the potential helper and the target. Saucier et al. (2005) suggest considering the following characteristics of helping situations:
1. The time it would take to help
2. The effort one would need to expend
3. The financial costs of helping
4. Difficulty: how difficult it would be to help successfully
5. The perceived risks related to the act of helping (the presumed risk one would take by helping)
6. The perceived emergency level of the situation
7. Perceived ambiguity about whether the target actually needs help
8. The perceived distance between the helper and the target

According to Saucier et al. (2005), it is more justifiable to withhold help if the risks are perceived to be high, if giving help appears to be costly (would take a lot of time, require a great deal of effort, or cost a significant amount of money to help, or the target is

far away from the potential helper), if the level of emergency is perceived to be low, or if there appears to be a high degree of ambiguity about the actual need for help.

At the interpersonal level, personalised and generalised trust appears to be crucial when cross-racial or interethnic interactions are examined. Attributional mechanisms also play an important role in the decision-making process (i.e., the perception of whether the person in need of help is deserving of it, see also Heider, 1958).

Probably the most influential model on bystander intervention is the cost-reward model (Dovidio, 1984; Piliavin et al., 1981). According to this model, another person's distress causes psychological distress to us, and the act of helping decreases this distress. Meanwhile, potential helpers' willingness to help is based on a kind of cost-reward calculation. They consider their own personal cost and the direct cost of helping (time, money, effort, or the violation of personal safety), and they also consider the costs of not helping (guilt, and the empathy-related cost of the recipient not receiving help). According to this model, willingness to help depends on these two factors; potential helpers will choose the option with the lowest net cost (for possible outcomes, see Table 1).

Table 1 The arousal: cost-reward model

The cost of helping	The cost of not helping	
	Low	High
Low	Social norms or helpers' personality decides	High probability of helping
High	Low probability of helping	Reframing of the situation (avoidance, reinterpretation as low cost of the victim)

Note: Based on Dovidio (1984), Piliavin et al. (1981).

Of the two kinds of cost, it is the cost of helping which is more important: the cost of not helping plays a secondary role (Piliavin et al., 1981). Empirical studies based on this model have confirmed the hypothesis that the higher the cost of helping, the lower the rate of help-giving (Dovidio et al., 1991). In empirical studies, the cost of not helping is usually simplified to mean the cost of the victim not receiving help. If the cost of helping and the cost of not receiving help were both high, the rate of helping is low. In these kinds of situations, people tend to reframe the situation in order to decrease the costs of not helping (i.e., claiming the victim is not really in need or they could not really help). Another possibility is to decrease the cost of helping – for example, by summoning others to help.

The cost-reward model has been empirically tested in various experimental studies (e.g., Dovidio et al., 1991; Schroeder et al., 1995, Fischer et al., 2006; Piliavin et al., 1975). In a meta-analysis, Saucier et al. (2005) found that in situations when the cost of helping was higher, less help was given – as predicted by the cost-reward model.

Using survey methodology, Jenkins and Nickerson (2017) found that students who interpreted a bullying situation as an 'emergency' (i.e., a situation associated with a high cost for not receiving help) were more likely to defend others. Brewster and Tucker (2016), using a factorial research design, found that a time constraint (being late for class), similar to a situation associated with a high cost of helping, had no effect on the likelihood of helping.

Fritzsche et al. (2000) used within-subject design and the factorial survey approach in a study similar to ours. They analysed the motives behind helping a friend. Their results support the cost-reward model as they found that willingness to help was less in situations when the cost of helping was low and the cost of not helping was high. It is not only the situation itself that determines the willingness to help strangers. The social characteristics of a person in need affect the level of altruistic help, either increasing or decreasing the cost of helping.

Gender. A meta-analysis of gender differences (Eagly & Crowley, 1986) – based on 99 empirical studies from the United States and Canada carried out in the 1970s and 80s – revealed that men are more helpful than women and women are more likely than men to receive help; however, gender differences in helping were extremely inconsistent across studies. The highly variable degree to which gender affected helping behaviour is not that surprising from the perspective of social roles: helping behaviour is embedded in social norms and there are certain norms associated with being 'helpful' for male and female members of society (Eagly & Crowley, 1986).

Racial background. Perhaps the most studied aspect of bystander intervention is cross-racial help. Shared identity plays an important role in individual helping decisions. Members of the same social groups may show a higher willingness to help each other (in-group preferences, in-group favouritism) (Sober & Wilson, 1999). This is particularly true in cross-racial relationships where ethnic minorities are treated as out-groups and hence less trusted (Gaertner & Bickman, 1971). A meta-analysis was provided by Saucier et al. (2005) to assess racial differences in helping behaviour. The analysis of the 48 empirical studies conducted since the early 1970s shows significant discrimination against black people in helping studies. The authors also conclude that discrimination against black people was more likely when potential helpers could rationalize their decisions not to help using reasons other than race (e.g., helping would require too much effort in terms of time).

In a recent empirical study based on a large-scale controlled field experiment (analysing 3000 interactions) helping situations were examined in order to test racial, gender and age-based discrimination in US informal markets (Gneezy et al., 2012). The situations were quite similar to those used in our factorial survey (e.g., asking for directions in the street, or dropping a pen or a key). The statistically significant findings show that young white females were most likely to receive help, while young black males were least likely to receive the required help in all the situations which were tested.

Social status and deprivation. A recent series of studies (Piff et al., 2012; 2010) showed that lower-class individuals are more generous, charitable, trusting, and helpful. Kraus and Callaghan (2016) also claimed that higher status correlates with lower levels of prosocial behaviour. However, a study by Korndörfer et al. (2015) found that in representative samples people belonging to higher social classes tended to be more helpful in economic games involving interacting with strangers. According to the findings of Van Doesum et al. (2017), higher status elicits less prosocial behaviour: higher-class people are less helped, while the social status of the helper does not affect helping behaviour. Similarly, Callan et al. (2017) found no effect of socio-economic status in itself, although higher subjective status negatively affected prosocial behaviour. In the same study, people with a stronger perception of personal relative deprivation (a feeling that they are worse off than similar others) were less

inclined to help others. Social exclusion also decreases prosocial behaviour, according to a lab experiment (Nettle et al., 2011). In contrast, the findings of a recent field experiment suggest that there is no difference between deprived and non-deprived neighbourhoods with regard to helping a stranger in the street (Nettle et al., 2011).

Trust. Empirical findings on the relationship between generalised trust and prosocial behaviour are also not equivocal. Certain authors state that generalised trust is necessary for prosocial behaviour (e.g., Irwin, 2009) and is associated with giving (Kolm & Ythier, 2006), while other authors were not able to find any or only found a weak connection between generalised trust and prosocial behaviour in their experiments (Cadenhead & Richman, 1996; Dohmen et al., 2008). However, in a recent comparative 'dropped-wallet' experiment carried out in 40 countries with 17,000 wallets, the best predictor of wallet-reporting rates was the level of generalized trust in the given country (Cohn et al., 2019).

Education. Somewhat contrasting with the aforementioned factors, the effect of education is more unambiguous: there is a wide range of prosocial behaviours (volunteering, blood donation, charity) for which researchers have found a positive correlation with level of education (Bekkers, 2005; Brooks, 2005; Healy, 2000).

2.3 Research questions

Based on the theoretical framework presented above, our research questions were as follows:
1. Are helpers' considerations with regard to the cost of helping and the cost of not receiving help in line with the cost-reward model?
2. What are the characteristics of the situations that influence willingness to help?
3. What are the characteristics of the a) bystander, and b) the person in need (the target) that influence willingness to help?
4. Is it the situational characteristics that matter more or the personal characteristics of the target/helper?

3 Data and methods

3.1 The factorial survey approach to assessing social behaviour

The most important aspect of factorial surveys is that respondents are presented with randomly varied hypothetical situations or social objects (fictive descriptions), also called vignettes, and asked to evaluate these situations or social objects. The vignettes represent different combinations of situational characteristics (i.e., different values of various variables). These characteristics (experimental stimuli) are deemed relevant to the evaluation and to the decision. Since the characteristics are randomly varied, the factorial survey approach is similar to the experimental approach; this is why the result can be described as a quasi-experiment (Wallander, 2009), although this method also retains the strength of surveys in terms of reliability and external validity (Hox et al., 1991; Lauder, 2002).

Factorial surveys are becoming increasingly common in the social sciences (Auspurg & Hinz, 2015; Hox et al., 1991; Jasso, 2006); however, they are still relatively rarely used, which might be explained by the fact that most of the textbooks on research methods for the social sciences do not include them (Wallander, 2009). Factorial surveys were first used in the 1970s (Jasso, 1978; Rossi, 1979); later they were improved upon, and the method of analysis was developed for use with more complex data (Auspurg & Hinz, 2015; Hox et al., 1991; Jasso, 2006).

Compared to classical experiments, factorial surveys allow researchers to use more extensive and representative survey data which provide better external validity and more statistical power (Highhouse & Gillespie, 2008; Ioannidis, 2005; Maxwell, 2004; Peterson, 2001; Schram, 2005). The survey method itself also lets researchers collect detailed information not only about respondents' socio-demographic characteristics, but also about their attitudes and values. Furthermore, the larger sample size makes it possible to dissociate the effects of several stimuli (not only one) in the analysis using multilevel models (Auspurg & Hinz, 2015; Hox et al., 1991; Wallander, 2009). Consequently, the effects of several variables can be estimated in the same model. There are three key additional advantages that these surveys have over social surveys (Alexander & Becker, 1978; Lauder, 2002; Rossi & Anderson, 1982; Wallander, 2009). The situations portrayed in factorial surveys are closer to real life than abstract questions in standard social surveys, making the method appropriate when researchers study the determinants of individual judgements. Using this approach, instead of analysing associations between variables, the effect of the analysed characteristics can be estimated. Last, the answers might be less exposed to social desirability bias since respondents are not directly asked about the determinants of their decisions.

3.2 Design of the factorial survey

In the questionnaire, we showed the respondents hypothetical situations in which a stranger asks for help and asked them to rate their willingness to help in these situations. We chose everyday situations that are familiar to the respondents and/or situations in which they would be able to imagine how they would act. Our second selection criterion was whether the situation fits with the cost-reward model. We chose situations associated with different levels of cost for helping and not receiving help.

The situations were as follows:
1. … a stranger asks for directions on the street. Would you help them?
2. … a stranger does not notice that they have dropped their wallet in the street. Would you warn them?
3. … a stranger loses their ID card. You find it. Would you go to the police station to leave it there?
4. … a stranger becomes ill on the street right next to you. Would you wait 60 minutes for the ambulance with them?
5. … you are waiting at the doctor's office when a stranger arrives. They ask you to let them in before you because they only need a prescription. Would you do this?
6. … you witness a traffic accident. The victim of the accident asks you to give eyewitness testimony in court. You would have to go to court twice the following month. Would you do it?

7. … in the street, a stranger asks you to change a banknote for them into coins. Would you do it?

8. … a stranger approaches you in the street. They say that their mobile phone is not working, and ask you to make a short but very important phone call for them. Would you do it?

Table 2 summarizes the cost of helping and cost to the target in the eight situations. We assigned low, medium, and high costs to the eight situations based on the results of a survey in which university students and researchers (n = 49) evaluated the cost of helping and cost to the target.[1] The cost of helping is perceived to be low in the first four situations (giving directions, warning about a dropped wallet, changing the banknote, and letting someone in line at the doctor's office), where only a few seconds or a couple of minutes (and basically no effort) are required to help the target. The perceived cost is somewhat higher in three situations (lost ID card, mobile phone call, and waiting for the ambulance) when the potential helper needs to invest more time and money, and/or needs to actively do something in order to help. The perceived cost is highest in the last situation when the potential helper needs to invest the most time and effort (go to court twice).

The cost of not receiving help is perceived to be low in two situations (changing the banknote and the doctor's office). It is perceived to be very high in four situations when there is a possibility of losing both money and time (dropped wallet, lost ID card, testimony) or a possibility of health consequences (need for an ambulance). In the remaining two situations (directions, mobile phone call), the level of perceived cost is somewhere between the former two since potential losses appear to be smaller. In summary, the perceived cost of helping and not receiving help varied sufficiently for us to test whether the cost-reward model is able to explain levels of willingness to help.

It is worth noting that there is no difference between the level of the two costs in four situations (doctor's office, changing the banknote, mobile phone call, testimony), whereas in the other four situations the cost of not receiving help is higher than the cost of helping – i.e., there is theoretically a net gain associated with helping.[2]

In addition to the eight situations, the basic socio-demographic characteristics of the stranger in need of help (gender, age, occupation, ethnicity, and residence) were also randomly varied. These characteristics are summarised in Table 3. The minimum and maximum values of the variables were based on low and high values of the given characteristic in real life in order to provide sufficiently broad ranges. The hypothetical stranger might be male or female, and with regard to age either 20, 32, 41, 53 or 62 years old. In terms of their occupations, we included the following jobs: lawyer, high school teacher, administrator, waiter, postman, and cleaner; we did this in order to represent both more and less prestigious jobs.[3]

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[1] Respondents were sociology students from two universities and researchers from a research institute. We asked participants to evaluate the cost (in terms of money, time, and effort) of helping and the cost (in terms of money, time, and effort) for the target in the eight situations using an 11-point scale where 0 means no costs and 10 means very high cost. We categorized the cost as low when the mean cost was 0–4 points, as medium when the mean cost was 4–6 points, and as high when the mean cost was 6–10 points.

[2] Whereas the average difference between the two costs (target's – helper's) was 0.47 points on the 11-point scale in the four situations labelled 'no difference,' it was 4.34 points in the four situations where the cost of not receiving help was higher.

[3] The social prestige of the occupations was taken from the *Standard International Occupational Prestige Scale* (SIOPS) (Ganzeboom & Treiman, 1996).

The place of residence of the stranger might be a village, a town, a big city or the capital Budapest (which is the only city in Hungary with a population of over one million inhabitants). As mentioned previously, the ethnicity of the stranger was also an important variable. The only significant ethnic minority in Hungary is the Roma, who constitute around six percent of the population. They are significantly poorer and less educated than the majority; moreover, anti-Roma prejudice is also widespread in Hungary.[4] If the stranger was not Roma, their ethnicity was not indicated. Vignette examples are shown in Figure 1.

Table 2 Cost of helping and costs of not receiving help in the eight situations

Situation	Cost of helping	Cost of not receiving help
1. Directions	Low	Medium
2. Dropped wallet	Low	High
3. Doctor's office	Low	Low
4. Banknote	Low	Low
5. Lost ID card	Medium	High
6. Mobile phone call	Medium	Medium
7. Ambulance	Medium	High
8. Testimony	High	High

Table 3 List of stimuli on the vignettes

Characteristics	Parameters
Gender	man/woman
Age	20/32/41/53/62
Occupation	lawyer/high school teacher/administrator/waiter/postman/cleaner
Residence	village/town/city/capital (Budapest)
Ethnicity	Roma/non-Roma

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[4] We overrepresented Roma strangers in the vignettes at a ratio of 1 Roma to 4 non-Roma in order to obtain a statistically examinable quantity.

Figure 1 *Examples of the vignettes*

Example 1

Imagine that you have witnessed a traffic accident. The victim of the accident, a 50-year-old Roma waitress from a village, asks you to give eyewitness testimony in court. You would have to go to court twice next month.

Would you do it?

Certainly NO   0   1   2   3   4   5   6   7   8   9   10   Certainly YES

Example 2

Imagine that you are waiting at the doctor's office when a 41-year-old administrator from a city arrives. He asks you to let him go before you because he only needs a prescription.

Would you do it?

Certainly NO   0   1   2   3   4   5   6   7   8   9   10   Certainly YES

3.3 Data

Our factorial survey was a random part of a larger survey that was carried out on a nationally representative sample of 2687 persons conducted between March 12 and May 10, 2015. Respondents were selected using a stratified two-stage probability sampling procedure.[5] We asked 442 randomly chosen people from the total sample to respond to an additional, self-completed questionnaire. We used a self-completion questionnaire to minimize potential social desirability bias. Each of the respondents was asked to evaluate 15 situations (vignettes).

Respondents with more than nine missing answers were dropped (3 observations). Respondents with missing answers for ethnicity (1 observation), severe material deprivation (11 observations), trust in others (2 observations), or trust in police (20 observations) were also left out of the analysis, thus we had responses from 405 individuals.

The sample was representative in terms of age (mean age 48.4, ranging from 18 to 92 years of age), gender (54.3 per cent women), settlement type (20.0 per cent living in the capital, 50.7 per cent living in cities, 29.3 per cent living in villages) and education (22.1 per cent with primary education, 62.0 per cent with secondary education, 15.9 per cent with tertiary education).

Our initial 'vignette universe' consisted of 8×2×5×6×4×2=3840 vignettes. We excluded unrealistic vignettes (e.g., vignettes with a 20-year-old lawyer and a 20-year-old high school teacher), thus our final vignette universe consisted of 3584 vignettes. A total of 300 vignettes were chosen at random from this collection and randomly allocated to 20 decks. Finally, the decks were randomly assigned to the respondents. As each respondent evaluated 15 vignettes, and we had answers from 405 individuals, altogether we had 15×405=6075 individual

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[5] The questionnaire and other documentation from the survey are available in Hungarian through the following link: https://openarchive.tk.mta.hu/id/eprint/387

vignettes.[6] Vignettes with missing answers regarding willingness to help were also left out of the analysis (138 vignettes in total), thus our final sample size was 5937 vignettes.

3.4 Analytical strategy

After the descriptive analysis we used multilevel or hierarchical regression models, since the data derived from the vignettes have a hierarchical structure and the units of the primary level of analysis are not independent of each other (i.e., vignettes are nested by individual respondents, as each respondent evaluated 15 vignettes, and respondents are nested within decks as 20 decks are randomly assigned to the respondents). As a result, we estimated multilevel models where vignette characteristics were level-one variables, characteristics of the respondents were level-two variables, and decks were level-three. Our level-one model was as follows:

$$H_{ijk} = \beta_{0jk} + \beta_{1jk}\mathbf{V}_{ijk} + e_{ijk}.$$

Our level-two models were as follows:

$$\beta_{0jk} = \gamma_{00k} + \gamma_{01k}\mathbf{X}_{0jk} + u_{0jk},$$

$$\beta_{1jk} = \gamma_{10k}.$$

Our level-three models were as follows:

$$\gamma_{00k} = \delta_{000} + v_{00k},$$

$$\gamma_{01k} = \delta_{010},$$

$$\gamma_{10k} = \delta_{100}.$$

The combined model was as follows:

$$H_{ijk} = \delta_{000} + \delta_{100}\mathbf{V}_{ijk} + \delta_{010}\mathbf{X}_{0jk} + v_{00k} + u_{0jk} + e_{ijk},$$

where H_{ijk} is the response for vignette i by respondent j in deck k, γ_{000} is the grand mean across all respondents, $\mathbf{V}_{ijk}$ is a vector of vignette characteristics for vignette i and respondent j in deck k, $\mathbf{X}_{0jk}$ is a vector of respondent characteristics for respondent j in deck k, v_{00k} is the residual error term at the deck level, u_{0jk} is the residual error term at the individual level, and e_{ijk} is the residual error term at the vignette level.

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[6] We chose this design to simplify the fieldwork for the survey as much as possible. Since vignettes were chosen at random, the final evaluated number varied between 551 and 967.

Our individual-level control variables were age, gender, education, place of residence, trust in others, trust in police, labour force status, marital status, material deprivation, and ethnicity.[7]

4 Results

In this section, we first provide descriptive results comparing the level of willingness to help in the eight situations. Then we present the results of the regression models where the intra-respondent variation of the vignettes and socio-demographic characteristics of the respondents are controlled for.

4.1 Level of willingness to help: Descriptive results

Table 4 shows the mean level of cooperation by situation. Overall, the reported level of willingness to help is high: it varies from 6.32 to 8.77 (with an overall mean of 7.55).

The cost-reward model provides an explanation for the varying levels of willingness to help across the different situations. Willingness to help is highest in situations in which the cost for the target not receiving help is higher than the cost of helping them. In these situations, the cost-reward model predicts a high probability of helping. Indeed, mean levels of willingness to help are between 7.92 and 8.77 in these situations, with an overall mean of 8.47.

In situations where the cost of helping and cost of not receiving help are equal, the level of willingness to help is considerably lower, and below the average helping level; it is between 6.32 and 7.06, with an overall mean of 6.50. These results are also in line with the cost-reward model. If both costs are high, the model predicts a low probability of helping since people tend to reframe the situation in order to be able to avoid helping (e.g., by lowering the cost of the target not receiving help). If both costs are low (or medium), the model predicts that social norms (or personality) decide whether someone helps. Since in Hungary motivation driven by self-interest is relatively strong (Keller, 2009) and altruistic attitudes are relatively weak (Giczi & Sik, 2009), it is not surprising that willingness to help is also lower in these situations.

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[7] Descriptive statistics of the control variables are shown in Table A1 in the appendix. Education had four categories: primary, vocational school, secondary school, tertiary education. Place of residence had four categories: village, town, county seat, capital. Trust in others and trust in police was measured on an 11-point scale (0 – no trust at all, 11 – complete trust). Labour force status had five categories: working, retired, unemployed, student, other. Marital status had four categories: single, married, divorced, widowed. Material deprivation is a standard indicator of Eurostat. It was measured by nine lack-of-resources indicators. Respondents were classified as living in material deprivation if they experienced at least four deprivation items. Ethnicity was a binary variable that took a value of '1' if the respondents identified themselves as Roma.

Table 4 Levels of willingness to help in the eight situations

Situation	Mean	SD	N	Cost of helping	Cost of not receiving help
Directions	8.77	2.02	941	L	M
Dropped wallet	8.67	2.12	729	L	H
Lost ID card	8.36	2.29	967	M	H
Ambulance	7.92	2.46	622	M	H
Doctor's office	7.06	2.92	551	L	L
Testimony	6.44	3.19	739	H	H
Banknote	6.33	3.28	664	L	L
Mobile phone call	6.32	3.32	821	M	M
Total	7.55	2.90	5937		

Note: H: high, M: medium L: low

4.2 Explaining willingness to help with regression models

Table 5 shows the results of the regression models. In these models we are able to use the intra-respondent variation of the vignettes at the same time as controlling for the most important characteristics of the respondents. Model 1 includes only the dummy variables for the situations. We use the situation of the doctor's office as the reference category since willingness to help is the strongest in this situation of the four situations in which the two types of cost are equal and levels of helping are relatively low. While Model 2 includes the characteristics of the respondents, Model 3 includes the characteristics of the target. The estimates remain the same if we include all control variables (Model 3), which shows that our factorial survey design is indeed close to that of experiments; hence what follows is the interpretation of Model 3.

It should be highlighted, first and foremost, that the situation itself is the most important influence on levels of willingness to help, while coefficients for other variables (except for the ethnicity of the target) are insignificant. Differences between the situations are similar to the differences found in the descriptive results; this means that these effects remained stable after we controlled for the characteristics of the hypothetical stranger and the respondents. The highest level of willingness to help was found in the four situations in which the cost of the target not receiving help is higher than the cost of helping: the estimated coefficients are between 0.820 and 1.686 and are significant at the 0.1 per cent level. Willingness to help is weakest in the three situations where the cost of helping is similar to the cost of the target not receiving help: estimated coefficients are between -0.631 and -0.880 and are significant at the 1 per cent level. This means that there are highly significant differences between levels of willingness to help in situations when the cost of the target not receiving help and the cost of helping are equal, and in situations where helping might result in a net gain.

The socio-demographic characteristics of the target (age, gender, profession place of residence) do not alter willingness to help; the only exception is ethnicity – if the stranger was Roma, they received significantly less help (–0.274, p < 0.001), which might be explained by the longstanding prejudice against the Roma minority in Hungary (Bernáth & Messing, 2013; Enyedi et al., 2004; Örkény & Váradi, 2010).

The characteristics of the respondents correlate significantly with levels of willingness to help. Highly educated people report higher levels of helping (the estimated coefficient for tertiary education is 0.783, p = 0.029), which might mean that they would indeed be more likely to help, but this might also be explained by their awareness of the social norms of helping, or their finding such norms to be more important; the presence of a social desirability bias in their answers is therefore more likely. Respondents from outside the capital (from smaller towns and villages) report higher willingness to help: the coefficient for living in a village is 1.068 (p < 0.001), living in a small town 0.698 (p = 0.003), and living in a bigger city is 0.751 (p = 0.019). Trust in police and trust in other people also correlate with the reported levels of helping (estimated coefficients are 0.131, p < 0.001 and 0.087, p = 0.087, respectively), which might be explained by expectations about other people's behaviour and expectations about the correct functioning of institutions that influence willingness to help.

Table 5 Effects on willingness to help, multilevel models

	(1)			(2)			(3)		
	B	**SE**	**p**	**B**	**SE**	**p**	**B**	**SE**	**p**
Level of situation									
Situation (ref. cat.: Doctor's office)									
Dropped wallet	1.714	(0.191)	0.000	1.714	(0.192)	0.000	1.686	(0.199)	0.000
Directions	1.705	(0.172)	0.000	1.706	(0.171)	0.000	1.683	(0.174)	0.000
Lost ID	1.339	(0.189)	0.000	1.337	(0.190)	0.000	1.298	(0.179)	0.000
Ambulance	0.831	(0.230)	0.000	0.833	(0.230)	0.000	0.820	(0.228)	0.000
Testimony	−0.626	(0.238)	0.009	−0.629	(0.239)	0.008	−0.631	(0.232)	0.007
Banknote	−0.694	(0.236)	0.003	−0.701	(0.237)	0.003	−0.664	(0.235)	0.005
Mobile phone call	−0.848	(0.183)	0.000	-0.847	(0.183)	0.000	−0.880	(0.172)	0.000
Woman							0.052	(0.048)	0.277
Age							−0.002	(0.002)	0.332
Prestige of profession							0.000	(0.004)	0.892
Roma							−0.274	(0.068)	0.000
Place of residence (ref.cat.: Capital)									
Village							−0.031	(0.094)	0.742
Small town							0.126	(0.079)	0.111
Bigger city							−0.099	(0.067)	0.139

Table 5 *(continued)*

	(1)			(2)			(3)		
	B	**SE**	**p**	**B**	**SE**	**p**	**B**	**SE**	**p**
Level of respondent									
Woman				0.004	(0.179)	0.980	0.004	(0.179)	0.981
Age				0.013	(0.008)	0.103	0.013	(0.008)	0.108
Education (ref.cat.: Primary)									
Vocational				−0.098	(0.235)	0.675	−0.103	(0.234)	0.660
Secondary				0.103	(0.269)	0.701	0.098	(0.270)	0.717
Tertiary				0.789	(0.360)	0.028	0.783	(0.359)	0.029
Place of reference (ref.cat.: Capital)									
Village				1.065	(0.221)	0.000	1.068	(0.222)	0.000
Town				0.699	(0.235)	0.003	0.698	(0.236)	0.003
Bigger city				0.747	(0.319)	0.019	0.751	(0.319)	0.019
Trust in others				0.086	(0.050)	0.087	0.087	(0.051)	0.087
Trust in police				0.131	(0.036)	0.000	0.131	(0.036)	0.000
Roma				0.426	(0.442)	0.335	0.425	(0.442)	0.336
Labour force status (ref.cat.: Working)									
Retired				−0.047	(0.301)	0.875	−0.045	(0.301)	0.880
Unemployed				−0.059	(0.379)	0.876	−0.061	(0.378)	0.871
Student				0.213	(0.595)	0.721	0.199	(0.598)	0.740
Other				−0.556	(0.380)	0.144	−0.557	(0.381)	0.143
Severe material deprivation				−0.117	(0.266)	0.660	−0.121	(0.265)	0.646
Marital status (ref.cat.: Single)									
Married				0.396	(0.291)	0.173	0.397	(0.292)	0.174
Divorced				0.062	(0.375)	0.868	0.064	(0.375)	0.864
Widowed				−1.085	(0.538)	0.044	−1.085	(0.537)	0.044
Constant	6.407	(0.181)	0.000	5.635	(0.397)	0.000	5.696	(0.400)	0.000
Variance components									
Var(decks)	0.140	(0.037)	0.000	0.098	(0.027)	0.000	0.102	(0.030)	0.000
Var(respondents)	2.915	(0.150)	0.000	2.396	(0.128)	0.000	2.398	(0.128)	0.000
Var(residual)	4.330	(0.096)	0.000	4.329	(0.095)	0.000	4.311	(0.095)	0.000
AIC	27093.3			27036.6			27012.4		
N	5937			5937			5937		

4.3 Robustness

In the robustness test we used two variables to measure the cost of helping and the cost of not receiving help rather than the situation. Both variables had three values (low, medium, and high cost) based on Table 2. This model allowed us to test whether the two costs are related to willingness to help as we hypothesised – i.e., we could test whether willingness to help indeed decreased with the cost of helping and whether it indeed increased with the cost of not receiving help.

Supplementary Table S1 shows the results. In situations when the cost of helping was medium level, willingness to help was 1.5 points less than in situations where the cost of helping was low. When the cost of helping was high, willingness to help was 2.9 points lower than in situations associated with a low cost of helping. Similarly, willingness to help was 1.6 points higher when the cost of not receiving help was medium level, and 2.7 points higher when the cost of not receiving help was higher than in situations associated with a low cost of not receiving help.

The results were similar when we ran the regression models by situation.[8] While willingness to help a Roma target was lowest in situations when there was direct contact with the stranger (dropped wallet, giving directions, phone call, changing the banknote, doctor's office, waiting for the ambulance), in situations when there was no contact with the target the estimated coefficients were zero (lost ID, testimony). The estimated coefficients on the trust variables were highest in situations where there was a possibility of cheating and where institutions (e.g., police or the court) were involved (changing the banknote, phone call, doctor's office, lost ID, testimony, waiting for the ambulance).

5 Conclusion

Our aim in this paper was to analyse the determinants of people's willingness to help a stranger in everyday situations. We tested how different situational characteristics affect levels of willingness to help, and what characteristics of the bystander and of the target person (the one in need) influence this.

We found that the situation itself has the strongest effect on willingness to help, and the socio-demographic characteristics of the target person (except for their ethnicity) do not have a significant effect. Our findings support the cost-reward model of helping (Dovidio, 1984; Piliavin et al., 1981). In the eight situations included in the survey, willingness to help was strongest in situations when the cost of not helping the target person were higher than the cost of helping them; i.e., where the net gain of helping was positive. Conversely, willingness to help was weaker in situations when the cost of helping and cost of the target person not receiving help were equal.

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[8] For results see Supplementary Table S2.

In testing willingness to help between strangers, we aimed to study the subjective (attitudinal) component of social cohesion in the horizontal dimension (among fellow citizens) based on the theoretical framework offered by Chan et al. (2006). What are the implications of our results in terms of social cohesion? The level of willingness to help was generally high, with an overall mean of 7.55 on an 11-point scale. In some respects, this might mean that the level of norm establishment for pro-social behaviour and helping in Hungary is high. The observed strong norm of helping referred to the high level of the attitudinal aspect of social cohesion. Moreover, willingness to help did not seem to work in a selective way; in other words, according to our empirical models neither social status nor age, gender, or place of residence influence respondents' self-reported helping behaviour. Consequently, these variables do not play a significant role in creating boundaries that might decrease social cohesion across groups. In contrast, ethnicity was found to have a special relationship with social cohesion – in line with the literature (Schiefer & van der Noll, 2017; Tolsma & van der Meer, 2017).

It is worth noting, however, that the reported high level of willingness to help contradicts the results of the literature about the values and attitudes of Hungarians. Keller (2009) shows that in Hungary self-interested motivation is relatively strong, whereas Giczi and Sik (2009) report that altruistic attitudes are relatively weak in a European context. These findings suggest that respondents might have reported high levels of willingness to help (at least partially) due to social desirability bias (Fisher, 1993; Krumpal, 2013).

Based on our findings it appears that Roma people would receive considerably less help than non-Roma people in several everyday life situations. This result is in line with previous findings about willingness to provide help to minorities, including ethnic minorities (Gneezy et al., 2012; Saucier et al., 2005), and might be explained by the significant and widespread prejudice against the Roma in Hungary (Bernáth & Messing, 2013; Enyedi et al., 2004; Örkény & Váradi, 2010). Our results suggest that in the case of Roma people negative stereotyping overrides general norms associated with helping. This difference suggests that social cohesiveness extends to the Roma to a lesser extent in Hungarian society, even if it is measured in the attitudinal dimension as opposed to the behavioural dimension.

Nevertheless, as our results rely on a factorial survey – as opposed to behavioural data – the data allow us to measure intentions to help and not helping behaviour in real-world settings. Although we chose situations that would be familiar to the respondents, and social desirability bias was low due to the fact that we used a self-completion questionnaire, any extrapolation of our results to the real world should be done with caution. Further research is needed to find out if there are differences between levels of willingness to help and actual helping behaviour, using a more complex experimental research design (i.e., testing the same situations with field experiments and survey experiments).

Using experimental research to assess helping behaviour is crucial not only from sociological and methodological points of view, but may have policy implications. A better and more thorough understanding of the working mechanisms of prosocial behaviour may be helpful for policy makers, for public educators, as well as for those planning public awareness-raising campaigns.

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Appendix

Table A1 Summary statistics

	Mean	**SD**	**Min**	**Max**	**N**
Level of situation					
Dropped wallet	0.123	0.328	0	1	5937
Directions	0.157	0.364	0	1	5937
Lost ID	0.148	0.355	0	1	5937
Ambulance	0.105	0.307	0	1	5937
Doctor's office	0.094	0.292	0	1	5937
Testimony	0.123	0.328	0	1	5937
Banknote	0.113	0.317	0	1	5937
Mobile phone call	0.137	0.344	0	1	5937
Woman	0.503	0.500	0	1	5937
Age	44.213	13.778	20	62	5937
Prestige of profession	12.034	7.480	1	25	5937
Roma	0.218	0.413	0	1	5937
Village	0.283	0.450	0	1	5937
Small town	0.200	0.400	0	1	5937
Bigger city	0.299	0.458	0	1	5937
Capital	0.219	0.413	0	1	5937
Level of respondent					
Woman	0.543	0.498	0	1	5937
Age	48.481	17.775	18	92	5937
Education: Primary	0.220	0.414	0	1	5937
Education: Vocational	0.315	0.465	0	1	5937
Education: Secondary	0.305	0.460	0	1	5937
Education: Tertiary	0.160	0.367	0	1	5937
Village	0.293	0.455	0	1	5937
Town	0.284	0.451	0	1	5937
Bigger city	0.224	0.417	0	1	5937
Trust in others	4.760	2.325	0	10	5937
Trust in police	5.422	2.448	0	10	5937
Roma	0.071	0.257	0	1	5937

Working	0.535	0.499	0	1	5937
Retired	0.282	0.450	0	1	5937
Unemployed	0.060	0.237	0	1	5937
Student	0.057	0.233	0	1	5937
Other	0.065	0.247	0	1	5937
Severe material deprivation	0.261	0.439	0	1	5937
Single	0.310	0.462	0	1	5937
Married	0.422	0.494	0	1	5937
Divorced	0.141	0.348	0	1	5937
Widowed	0.127	0.333	0	1	5937

Supplementary table

Table S1 Effects on willingness to help, multilevel models

	(1)			(2)			(3)		
	B	**SE**	**p**	**B**	**SE**	**p**	**B**	**SE**	**p**
Cost of helping (ref.cat.: Low)									
Medium	−1.511	(0.144)	0.000	−1.512	(0.144)	0.000	−1.541	(0.147)	0.000
High	−2.903	(0.153)	0.000	−2.906	(0.153)	0.000	−2.928	(0.165)	0.000
Cost of not receiving help (ref.cat.: Low)			0.000			0.000			0.000
Medium	1.602	(0.161)	0.000	1.607	(0.160)	0.000	1.575	(0.174)	0.000
High	2.698	(0.233)	0.000	2.702	(0.232)	0.000	2.673	(0.245)	0.000
Level of situation controls	no			no			yes		
Level of respondent controls	no			yes			yes		
Variance components									
Var(decks)	0.150	(0.037)	0.000	0.109	(0.030)	0.000	0.117	(0.032)	0.000
Var(respondents)	2.902	(0.150)	0.000	2.384	(0.129)	0.000	2.386	(0.129)	0.000
Var(residual)	4.521	(0.104)	0.000	4.521	(0.104)	0.000	4.496	(0.103)	0.000
AIC	27332.8			27282.4			27252.1		
N	5937			5937			5937		

Table S2: Determinants of willingness to help by situations, multilevel models

Level of situation controls: as in Table 5 except of situation dummies. Level of respondent controls: as in Table 5.

	(1) Directions			(2) Dropped wallet			(3) Lost ID			(4) Ambulance		
	B	SE	p	B	SE	p	B	SE	p	B	SE	p
Level of situation												
Woman	0.123	(0.093)	0.183	0.102	(0.149)	0.493	−0.035	(0.058)	0.545	−0.019	(0.122)	0.876
Age	−0.004	(0.003)	0.218	0.001	(0.006)	0.820	−0.005	(0.002)	0.007	−0.001	(0.005)	0.749
Prestige of profession	0.004	(0.007)	0.607	−0.006	(0.011)	0.583	−0.006	(0.005)	0.176	0.021	(0.008)	0.011
Roma	−0.416	(0.107)	0.000	−0.340	(0.152)	0.025	−0.030	(0.059)	0.607	−0.256	(0.155)	0.098
Place of residence (ref.cat.: Capital)												
Village	−0.129	(0.129)	0.316	−0.150	(0.150)	0.318	0.110	(0.074)	0.139	0.046	(0.241)	0.850
Smaller town	0.138	(0.136)	0.309	0.059	(0.328)	0.858	0.092	(0.102)	0.370	0.116	(0.201)	0.566
Bigger city	−0.285	(0.119)	0.016	−0.201	(0.227)	0.377	0.013	(0.085)	0.877	0.054	(0.157)	0.732
Level of respondent												
Woman	−0.034	(0.223)	0.880	0.167	(0.238)	0.483	0.231	(0.309)	0.454	−0.096	(0.225)	0.669
Age	0.006	(0.011)	0.553	−0.004	(0.010)	0.679	0.016	(0.012)	0.202	0.012	(0.010)	0.203
Education (ref.cat.: Primary)												
Vocational	−0.065	(0.285)	0.820	0.030	(0.401)	0.940	0.219	(0.435)	0.615	0.082	(0.360)	0.820
Secondary	0.069	(0.268)	0.796	0.393	(0.342)	0.250	0.127	(0.433)	0.770	0.662	(0.339)	0.051
Tertiary	0.560	(0.385)	0.145	0.881	(0.475)	0.064	1.196	(0.476)	0.012	0.906	(0.464)	0.051

	(1) Directions			(2) Dropped wallet			(3) Lost ID			(4) Ambulance		
	B	SE	p	B	SE	p	B	SE	p	B	SE	p
Place of residence (ref.cat.: Capital)												
Village	0.450	(0.263)	0.087	0.496	(0.388)	0.201	1.206	(0.356)	0.001	1.563	(0.273)	0.000
Town	0.153	(0.245)	0.531	0.336	(0.282)	0.234	0.920	(0.279)	0.001	1.330	(0.328)	0.000
Bigger city	0.154	(0.384)	0.689	0.282	(0.365)	0.440	0.565	(0.352)	0.109	1.528	(0.355)	0.000
Trust in others	−0.042	(0.035)	0.233	−0.088	(0.051)	0.082	0.105	(0.055)	0.058	0.018	(0.058)	0.762
Trust in police	0.056	(0.043)	0.192	0.039	(0.048)	0.414	0.092	(0.042)	0.027	0.131	(0.046)	0.004
Roma	0.403	(0.575)	0.484	−0.025	(0.787)	0.975	−0.537	(0.840)	0.522	1.475	(0.369)	0.000
Labour force status (ref.cat.: Working)												
Retired	0.063	(0.308)	0.839	0.259	(0.344)	0.452	−0.414	(0.412)	0.315	0.081	(0.429)	0.849
Unemployed	0.039	(0.485)	0.937	−0.414	(0.534)	0.438	−0.651	(0.521)	0.211	−0.503	(0.478)	0.293
Student	0.402	(0.541)	0.457	0.781	(0.642)	0.224	0.866	(0.720)	0.229	1.015	(0.507)	0.045
Other	−0.037	(0.591)	0.951	−0.421	(0.680)	0.536	−0.395	(0.575)	0.493	0.239	(0.567)	0.673
Severe material deprivation	−0.195	(0.326)	0.550	−0.505	(0.314)	0.108	0.185	(0.263)	0.482	−0.221	(0.325)	0.497
Marital status (ref.cat.: Single)												
Married	0.618	(0.324)	0.057	0.898	(0.382)	0.019	0.882	(0.377)	0.019	0.059	(0.421)	0.888
Divorced	0.504	(0.488)	0.301	0.584	(0.438)	0.182	0.993	(0.348)	0.004	−0.645	(0.524)	0.218
Widowed	−0.446	(0.562)	0.428	−0.052	(0.689)	0.940	−0.387	(0.598)	0.517	−1.245	(0.701)	0.076
Constant	8.244	(0.544)	0.000	7.725	(0.604)	0.000	6.856	(0.598)	0.000	6.697	(0.545)	0.000

	(1) Directions			(2) Dropped wallet			(3) Lost ID			(4) Ambulance		
	B	SE	p	B	SE	p	B	SE	p	B	SE	p
Variance components												
Var(decks)	0.240	(0.107)	0.108	0.031	(0.079)	0.496	0.110	(0.062)	0.048	0.060	(0.055)	0.121
Var(respondents)	2.368	(0.223)	0.000	3.225	(0.229)	0.000	3.657	(0.250)	0.000	3.007	(0.244)	0.000
Var(residual)	1.122	(0.099)	0.517	0.857	(0.115)	0.567	0.696	(0.076)	0.098	1.673	(0.166)	0.009
AIC	3542.5			2819.2			3207.8			2648.6		
N	941			729			870			622		

	(5) Doctor's office			(6) Testimony			(7) Banknote			(8) Phone call		
	B	SE	p	B	SE	p	B	SE	p	B	SE	p
Level of situation												
Woman	0.283	(0.166)	0.087	-0.051	(0.080)	0.521	0.060	(0.197)	0.761	0.175	(0.134)	0.190
Age	0.001	(0.005)	0.795	0.003	(0.005)	0.496	-0.007	(0.007)	0.354	0.006	(0.004)	0.160
Prestige of profession	-0.015	(0.005)	0.005	0.006	(0.007)	0.387	-0.029	(0.011)	0.006	0.013	(0.012)	0.295
Roma	-0.246	(0.162)	0.128	0.015	(0.208)	0.943	-0.323	(0.195)	0.098	-0.949	(0.105)	0.000
Place of residence (ref.cat.: Capital)												
Village	-0.033	(0.246)	0.895	0.196	(0.162)	0.225	-0.604	(0.305)	0.048	-0.235	(0.194)	0.225
Smaller town	0.302	(0.249)	0.226	0.093	(0.095)	0.332	0.005	(0.324)	0.989	0.118	(0.157)	0.451
Bigger city	-0.136	(0.231)	0.557	0.049	(0.170)	0.774	-0.267	(0.271)	0.323	-0.000	(0.164)	0.998

	(5) Doctor's office			(6) Testimony			(7) Banknote			(8) Phone call		
	B	SE	p	B	SE	p	B	SE	p	B	SE	p
Level of respondent												
Woman	−0.190	(0.291)	0.513	−0.116	(0.431)	0.787	0.208	(0.331)	0.530	−0.061	(0.368)	0.868
Age	0.017	(0.022)	0.427	0.012	(0.022)	0.600	0.021	(0.016)	0.185	0.048	(0.016)	0.003
Education (ref.cat.: Primary)												
Vocational	−0.532	(0.344)	0.122	0.147	(0.730)	0.841	−0.014	(0.352)	0.968	−0.449	(0.360)	0.212
Secondary	−0.497	(0.522)	0.341	0.588	(0.687)	0.392	−0.439	(0.464)	0.344	−0.418	(0.487)	0.391
Tertiary	0.573	(0.635)	0.367	1.714	(0.905)	0.058	1.180	(0.813)	0.147	0.377	(0.639)	0.555
Place of residence (ref.cat.: Capital)												
Village	0.193	(0.486)	0.691	1.184	(0.376)	0.002	1.962	(0.446)	0.000	1.834	(0.442)	0.000
Town	−0.102	(0.330)	0.758	1.249	(0.607)	0.040	1.172	(0.544)	0.031	1.138	(0.340)	0.001
Bigger city	0.384	(0.372)	0.303	0.826	(0.653)	0.206	1.417	(0.584)	0.015	0.967	(0.505)	0.055
Trust in others	0.168	(0.085)	0.047	0.065	(0.111)	0.561	0.120	(0.087)	0.168	0.264	(0.075)	0.000
Trust in police	0.026	(0.090)	0.775	0.205	(0.096)	0.033	0.268	(0.061)	0.000	0.156	(0.064)	0.015
Roma	−0.024	(0.680)	0.972	−1.236	(1.260)	0.327	2.322	(0.509)	0.000	1.237	(0.627)	0.048
Labour force status (ref.cat.: Working)												
Retired	0.087	(0.636)	0.891	0.073	(0.675)	0.914	0.650	(0.491)	0.185	−1.162	(0.499)	0.020
Unemployed	0.767	(0.663)	0.247	0.381	(0.824)	0.643	0.239	(0.683)	0.726	−0.057	(0.599)	0.924
Student	−0.266	(0.985)	0.787	−0.400	(1.273)	0.753	0.658	(0.974)	0.499	1.081	(0.695)	0.120
Other	−0.992	(0.650)	0.127	0.757	(1.034)	0.464	−0.309	(0.956)	0.747	−0.886	(0.863)	0.305
Severe material deprivation	−0.851	(0.512)	0.096	−0.000	(0.541)	1.000	0.319	(0.415)	0.442	−0.065	(0.466)	0.890

	(5) Doctor's office			(6) Testimony			(7) Banknote			(8) Phone call		
	B	SE	p	B	SE	p	B	SE	p	B	SE	p
Marital status (ref.cat.: Single)												
Married	0.325	(0.693)	0.639	0.217	(0.502)	0.666	0.039	(0.571)	0.946	−0.021	(0.537)	0.968
Divorced	0.045	(0.503)	0.929	−0.403	(0.563)	0.474	−0.004	(0.675)	0.996	−0.915	(0.732)	0.212
Widowed	−1.125	(0.895)	0.209	−1.283	(0.817)	0.116	−2.514	(0.775)	0.001	−2.559	(0.762)	0.001
Constant	7.259	(0.587)	0.000	5.122	(0.913)	0.000	5.250	(0.864)	0.000	6.462	(0.722)	0.000
Variance components												
Var(decks)	0.426	(0.177)	0.305	0.256	(0.096)	0.069	0.132	(0.083)	0.107	0.128	(0.139)	0.345
Var(respondents)	4.867	(0.339)	0.000	7.472	(0.323)	0.000	6.096	(0.303)	0.000	6.823	(0.201)	0.000
Var(residual)	2.279	(0.177)	0.000	1.487	(0.105)	0.005	2.754	(0.205)	0.000	2.371	(0.180)	0.000
AIC	2620.1			3225.0			3241.1			3845.2		
N	551			739			664			821		